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Promising Approaches and Lessons Learned for Preventing or Reducing Early Childhood Caries

Summary of a Workshop Convened by the Maternal and Child Health Bureau

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I. Overview and Purpose

Early childhood caries (ECC) is a major public health concern. ECC is an infectious disease that is passed from mother/caretaker to child. It is caused by the bacteria *Streptococcus mutans* (*S. mutans*) which, under frequent exposure to fermentable carbohydrates, produces acids that can demineralize the outer surfaces of the teeth. When exposure is prolonged over a significant period of time, severe tooth destruction occurs. It is estimated that 5 to 10 percent of young children age 5 years or younger have ECC. This proportion increases to nearly 20 percent among children from families with low incomes and to over 40 percent in some racial/ethnic minority populations (Seif, 1999). Fortunately, this disease is preventable and largely manageable with routine preventive care, early detection, and treatment.

In 2000, the American Dental Association (ADA) issued a statement on ECC that emphasized children's susceptibility to tooth decay as soon as their teeth begin to erupt. The ADA recommended that oral health providers initiate care within 6 months of eruption of the first tooth or by 12 months of age and educate parents/caregivers on how to prevent and manage ECC (ADA, 2000). The American Academy of Pediatrics' (AAP) Section on Pediatric Dentistry subsequently issued a policy statement noting that pediatricians and other primary health care providers are often more likely to interact with infants and young children than are oral health providers. The statement encouraged pediatric health care providers to learn how to identify children at high risk of developing ECC and to work with the dental community to assist families with timely referral to oral health care services (AAP, 2003).

Despite the release of these two major policy statements and the increasing prevalence of ECC, a coordinated national strategy to address ECC prevention and treatment does not exist. This has prompted the need to identify and better understand the effectiveness of ECC intervention strategies currently in place across the country. In response to this need, the Health Resources and Services Administration's (HRSA) Maternal and Child Health Bureau (MCHB) convened a national forum on ECC. The workshop, held on May 16–17, 2005 in Washington, DC, brought together a cross-section of professionals involved in funding, developing, and managing ECC programs to share experiences and lessons from their work and to lay the groundwork for future activities to prevent, manage, and reduce ECC.

More specifically, the objectives of the workshop were to:

- Identify common program elements using the Association of State and Territorial Dental Directors' (ASTDD) Best Practices for Oral Health Programs criteria as a framework.¹
- Develop a knowledge base of promising program approaches, practices, challenges, and lessons aimed at reducing and preventing the incidence of ECC to be shared with a variety of oral health stakeholders.

¹ ASTDD launched the Best Practices project to build more effective State, territorial, and community oral health programs. A working framework was created to identify best practices in dental public health, which include services, functions, and processes implemented by oral health programs to produce superior results that demonstrate impact/effectiveness, efficiency, and collaboration/integration (ASTDD, 2003)

Workshop participants from across the country were invited to present information about their respective ECC programs. The speakers represented an array of perspectives from public-, private-, and academic-sector programs funded by public and/or private agencies and organizations. Although participation at this first workshop was limited, a broader cadre of stakeholders will be invited to participate in future activities.

During Day 1 of the workshop, each speaker provided a brief overview of their respective ECC program. The presentations were followed by a question-and-answer session and discussion with the larger group. During Day 2, participants reviewed ASTDD's best-practices framework and identified strategies that contribute to a successful ECC program.

This paper provides a summary of the common themes identified during the workshop. The paper is broken down into the following four sections: (1) core principles of ECC prevention and disease management, (2) promising strategies and challenges of ECC programs, and (3) key considerations in developing and sustaining ECC initiatives. (Appendices A, B, and C include the workshop agenda, an overview of the ECC programs presented at the workshop, and a list of the workshop participants, respectively.)

II. Core Principles of ECC Prevention and Disease Management

Several central themes/action steps relating to ECC prevention and disease management emerged from the workshop discussions. Of those, the following key activities were prioritized by meeting attendees and are considered core principles for ECC prevention programs:

Recognize that oral health is an integral part of overall health. ECC prevention and disease management programs that integrate infant and toddler oral health into primary care services which include early oral health assessment and prevention interventions are key to connecting children's oral health with general health and well-being. Child health providers from all disciplines must join together to assure the overall health and well being of all children.

When young children experience oral health, they are more likely to be healthy and have normal social, intellectual, physical, and emotional development. By the same token, young children who experience poor oral health are more likely to experience social dysfunction, decreased learning capacity, impaired growth, and an array of physical problems such as heart disease and diabetes mellitus. Until oral health is fully integrated into the health care system, painful disease in young children will go unnoticed and untreated, and families, health care providers, oral health care providers, and society at large will continue to pay the price of this devastating childhood disease.

Integrate oral health into broader systems of care. Because oral health is not separate and distinct from overall health, efforts to promote oral health and treat oral disease should be integrally linked to the broader systems through which children receive their primary health care services. Linkages between the oral health and health care communities must be strengthened and the lines between oral health and health care diminished, such as through efforts to engage primary health care providers in oral health education, risk assessment, and prevention activities.

ECC needs to be addressed through a chronic disease management model. The traditional model of one-size-fits-all for delivering oral health services must be changed to an individualized risk assessment model that incorporates evidence-based disease prevention and management strategies. This chronic disease model approach focuses resources on those at higher risk for developing oral diseases and takes into account the need for routine risk assessment throughout an individual's lifespan.

Employ a variety of strategies to prevent and manage ECC. To prevent and manage ECC effectively among children at high risk, a comprehensive approach that incorporates multiple, parallel, short- and long-term strategies must be implemented. Public education and awareness initiatives, provider education and training, workforce expansion, policy development, coalition building, collaborative efforts, and seamless integration of health and oral health care systems are key to successful prevention of ECC.

III. Lessons from the Field: Themes from Program Presentations

As each ECC program was described a variety of common themes were noted. This section synthesizes these themes. Section A presents lessons learned regarding promising approaches for ECC prevention and disease management and for implementation of the aforementioned core principles. Section B discusses challenges commonly experienced by these programs.

A. Lessons Regarding Promising Strategies

The presenters shared many important strategies from their programs that have contributed to their ability to educate program participants about ECC and offer a wide range of services. These lessons address three major components of ECC programs:

- Program infrastructure and staff support
- Family outreach, education, and support
- Provider support and outreach.

1. Program Infrastructure and Staff Support

A comprehensive system of health care needs to include ECC prevention and disease management efforts. One example of such a program is Kentucky's *KIDS SMILE* program. Administered under a statewide Early Childhood Development Initiative, *KIDS SMILE* uses local public health department nurses to conduct oral health screenings, family education, and referrals to oral health providers. This strategy helps to reinforce the understanding that ECC is an important health problem that can be prevented through integrated and coordinated oral health care services.

Programs benefit from a centralized planning process that includes a variety of stakeholders working together to increase public awareness about ECC and improve access to oral health services. It is important to guide ECC program development in a way that maximizes integration and avoids fragmentation and duplication of services. The use of

multidisciplinary and multi-organizational coalitions helps prioritize ECC intervention strategies, develops a mutually agreed-upon action plan, and efficiently distributes resources. South Carolina's *More Smiling Faces in Beautiful Places* established a steering committee to oversee a statewide ECC strategy. Comprised of an integrated network of representatives from State health and dental associations, health centers, schools, and various community-based organizations, the steering committee guides all program components and links the oral health system to the larger primary health care system. In addition to having a statewide committee, South Carolina's model also uses multiple local advisory committees to address unique local needs, strengths, and challenges.

Community input is critical. Community input early in program design and development helps tailor programs to meet locally defined needs. It also promotes community ownership of programs. Washington State's *Cavity Free Kids* employed this strategy for its family and teacher training sessions, conducting focus groups with parents and teachers during the initial planning phase. During the focus groups, Head Start staff learned that parents want programs to be administered in a respectful and culturally sensitive manner and to communicate oral health messages in a visual and interactive format. The focus groups also revealed that teachers preferred a training format that does not overburden them and is well-integrated into current student health education requirements. As communities discussed their oral health needs and concerns, potential barriers to seeking oral health care were often identified, informing programs of important areas of emphasis.

Comprehensive staff orientation and skills-based training are essential components to consider early in the program development process. To help children remain caries free, oral health programs need to train their staff to work with families on building their awareness and adopting prevention strategies. Programs that interact with families through meetings and home visits help reduce ECC risk behaviors. Many programs have emphasized staff training that describes different techniques for coaching and motivating families to follow health-promoting practices like proper oral hygiene. Programs also have allowed staff to gain hands-on experience using ECC screenings such as *Show Me Your Smile!*² and *Lift the Lip*³ curricula and toolkits.

Providers are often unfamiliar with the latest clinical advances in preventing and treating ECC and ways that this new knowledge can be put into practice. As in many fields of science and medicine, advances in the knowledge base regarding the prevention and treatment of the caries process may take years to be translated into practice. ECC programs featured at this forum have taken a proactive role in helping to bridge this gap, training a variety of providers that work with young children and their families to incorporate new ECC prevention and treatment innovations into their current clinical practices. For example, North Carolina's *Into the Mouths of Babes* program trains providers to identify early dental disease in young children and to apply fluoride varnish on high-risk children between the ages of one and three years.

² The *Show Me Your Smile!* Oral Health Flip Chart is a family education tool developed by the Missouri Coalition for Oral Health Access that instructs parents/caregivers on how to inspect their young children's teeth visually and provides information about good oral hygiene and the importance of seeking regular dental care.

³ *Lift the Lip* is a toolkit consisting of a descriptive video and flip chart developed by the University of Washington's School of Dentistry to instruct families and program staff on how to conduct a brief oral health screening of infant and toddler teeth.

Outcome evaluation monitors the effectiveness and helps promote the longevity of ECC programs. The featured programs have each designed a strategy to evaluate program outcomes, which include measures on oral health status. This includes pre- and post-treatment evaluations of the proportion of participants with untreated caries, severe ECC, and urgent treatment needs, among other measures. Iowa's *Healthy Smiles* program requires their home visitors to complete an oral health risk assessment three times during the program's duration to document any changes in children's oral health status and families' oral health habits. Equally important is evaluating whether a program improves access to oral health care. This may include tracking the proportion of children screened or receiving clinical preventive services, the number of patient referrals, and receipt of followup care. For example, Washington State's *Access to Baby and Child Dentistry* (ABCD) program tracks the oral health service utilization of children under age 6 and found that utilization rates increased from 23 percent the year prior to program implementation in 1998–1999 to 32 percent in 2001. Some programs also have used technological advances such as Web-accessible databases and portable computers like personal digital assistants that allow onsite electronic data entry in remote settings.

Incorporating rigorous methods of scientific research can help improve the quality and effectiveness of ECC programs. Although the amount of research conducted on ECC interventions has increased in the past decade, very few studies have included randomized clinical trials on the populations at highest risk to assess the effectiveness of training tools, education curricula, and clinical services. The University of California at San Francisco has responded to this need by initiating two randomized clinical trials to assess the effectiveness of ECC prevention interventions. The first program, *Prevention of Early Childhood Caries Using Fluoride Varnish*, is designed to evaluate the effectiveness of fluoride varnish and parental counseling in preventing ECC. The second program, *Mother and Youth Access* (MAYA) project, evaluates the impact of a caries prevention model in lowering salivary *S. mutans* levels in postpartum women, thereby inhibiting transmission of these bacteria to their young children. Findings from these studies will help increase the scientific oral health knowledge base and help improve the ability of programs to improve ECC outcomes.⁴

Care coordination can serve as a critical link to diverse health and social services. To promote overall health and well-being, many ECC programs have trained care coordinators (also referred to as patient navigators in some programs) as generalists to address a broad spectrum of families' health and social needs. Such positions can increase access to both oral health and primary health care services by promoting effective reciprocal communication between dental and medical providers. This often involves tracking all health referrals (including medical and dental), ensuring timely receipt of followup care, and keeping all providers informed of treatment plans and progress. In addition, care coordinators' family outreach duties may increase care utilization by addressing barriers to accessing care. Comprehensive client outreach is a central component of California's *Healthy Kids, Healthy Teeth* program model. The

⁴ These clinical trials are examples of research funded by the NIH's National Institute of Dental and Craniofacial Research (NIDCR) as part of its research program to eliminate oral health disparities. Four of the five Centers to Reduce Oral Health Disparities focus on the prevention of ECC. The Centers are co-funded by the NIH's National Center for Minority Health and Health Disparities. The NIDCR welcomes applications for research related to ECC and other oral health disparities.

bilingual/bicultural care coordinators are able to effectively communicate with families of differing English proficiency and health literacy levels.

2. Family Outreach, Education and Support

Parents/caretakers are children's main source of general health and hygiene instruction. Programs that provide family education about oral health, including daily oral hygiene, help to ensure that parents/caretakers understand the importance of oral health and ways to help maintain it. Outreach efforts also form strong relationships between families and providers that encourage access to and utilization of oral health care on a routine basis.

Effective family education programs include basic oral hygiene instruction, oral health education, dental screening, and nutrition. Of those programs providing family education, each recommended that oral health education materials include anticipatory guidance on patterns of tooth eruption, age-appropriate oral hygiene instruction, and nutrition behaviors. They also recommended that oral hygiene supplies such as toothbrushes, floss, and toothpaste be given to each family member free of charge. Parents and caretakers are taught how to screen their children's teeth for early signs of dental decay, using guidelines such as the *Lift the Lip* technique to check the status of their young children's teeth periodically in between dental visits. The *Early 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 oral health care. Some programs also found that family training performed in conjunction with regular nurse home visits reinforce oral health education and promote positive behavior change. *Klamath Falls Early Childhood Cavity Prevention Program* targets pregnant women eligible for Medicaid with multiple home visits conducted by county health department staff beginning in the prenatal period through age 2. These home visits are designed to educate families about oral disease transmission, provide oral health toolkits, and address barriers to accessing oral health care.

Encouraging all family members to practice good oral hygiene and obtain regular oral health care helps prevent *S. mutans* transmission and improves oral health outcomes. The transmissible nature of caries creates the need to promote good oral hygiene habits among all members of a household. Programs such as Iowa's *Healthy Smiles Parent Education Program* include information about disease transmission so families learn to refrain from sharing personal hygiene items such as toothbrushes and dental floss, a practice reported by programs to be common among siblings. Similarly, mothers/caregivers are being taught to avoid sharing utensils (e.g., spoons) or orally cleaning a pacifier or a bottle nipple. Additionally, all members of a household are encouraged to obtain oral health care on a regular basis so providers can better assess individual- and household-level risks for caries and other oral health problems. It is anticipated that these visits will serve as an educational and behavioral foundation for a lifetime of good oral health for all family members.

Care coordinators help families maneuver their way through complex oral health care systems. As previously stated, many ECC programs described care coordinators as playing an essential role in encouraging families to access oral health care services. In many cases, care coordinators help families apply for health insurance, explain dental coverage benefits, act as a

communication liaison between the families' health care and oral health providers, and assist providers with patient referral and followup. Care coordinators also are often able to address other family needs in addition to oral health, including helping families apply for health and social services such as WIC, transportation assistance, and public financial assistance.

3. Provider Support and Outreach

Oral health and other child health providers need specialized training in assessment, early diagnosis, and treatment of ECC. Many oral health as well as nonoral health providers lack the specialized knowledge and skills necessary to treat infants and young children. Children under the age of 3 have unique behavioral and treatment needs not generally required by older children. Some programs have trained oral health providers and others to appropriately respond to young children's behavior during oral examinations and treatments. For example, the public health nurses in *Kentucky's Kids Smile Oral Health Education and Prevention Program* were taught to use knee-to-knee or lap-to-lap handling positions to more safely conduct screenings and apply fluoride varnish. Programs also have provided specific instruction in conducting ECC risk assessment when primary teeth first erupt, as well as training on the provision of appropriate anticipatory guidance and the latest pharmacological treatments and restorative procedures.

When oral health components are integrated into existing primary care protocols it increases the likelihood that health providers will adopt ECC prevention methods and refer patients to oral health providers. Primary care providers play a critical role in ECC prevention through early diagnosis and referral. 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, created a modified well-child exam form that includes two new sections on clinical oral exams and oral health anticipatory guidance. Other programs have broadened their scope to also include pregnant women and new mothers. AAP's *Pediatric Collaborative Care Program (PedsCare)* provides pediatricians with one-on-one preceptorship training in performing maternal/caretaker oral health assessment interviews to determine their patients' oral health care needs. In this program, referrals to oral health providers are similar to referrals for other specialized health care services, thereby promoting more formal communication among different types of providers by requiring specialists (including oral health care providers) to keep primary care physicians informed about patients' treatment progress and need for followup assessment and care.

Providers that understand both the health risks and benefits of clinical oral health services are more likely to administer them appropriately. While programs have promoted the effectiveness of clinical preventive services in reducing the prevalence of ECC, they also have recognized the potential harm these services can cause if used improperly, and most have included product safety information during provider training sessions. *Kentucky's Kids Smile* program educates providers about the risk of dental fluorosis in young children when excessive amounts of fluoride are ingested. Similarly, *Oregon's Klamath Falls Early Childhood Cavity Prevention Program* had to correct misconceptions about the safety of administering chemotherapeutic agents to pregnant women to encourage providers to begin using them. In general, programs stressed that these and other health risks from clinical preventive services are generally minimal and can be avoided by following safety guidelines.

Enhanced insurance reimbursement can increase provider participation in ECC prevention and treatment efforts. Health insurance plans do not cover universally all of the clinical services necessary to prevent and treat ECC. In response, some programs have made it a priority to enhance dental benefits coverage to help increase access to ECC prevention and treatment services. Washington's *ABCD Program* created a new billable service under Medicaid that covers anticipatory guidance and family education, oral examinations, risk assessments, and fluoride varnish applications twice a year for each family enrolled in the program. North Carolina's *Into the Mouths of Babes* oral preventive program encourages primary health care providers to deliver preventive oral health services in a collaborative effort with the State Medicaid office to develop an oral health preventive service package for Medicaid covered children. The package includes an oral screening, parent counseling, and fluoride varnish application by a primary health care provider beginning at initial tooth eruption up to age 3.

Train-the-trainer models motivate participating providers to recruit other providers into ECC programs. Programs have observed that often the most effective provider outreach is initiated by providers already participating in ECC programs. They can attest firsthand to programs' merits and pass along their newly acquired knowledge about ECC prevention and treatment strategies. Washington's *ABCD Program* created the *Champions Program* to train oral health leaders participating in *ABCD* to present information about the program's history and the impact of ECC on children's health, in addition to delivering training in anticipatory guidance and counseling. Other programs used veteran providers as mentors to offer more hands-on experience to new providers. AAP's *Pediatric Collaborative Care Program* created the *Oral Health Risk Assessment Preceptorship Program* to provide pediatricians with more individualized in-the-field training in performing oral health risk assessments and other skills.⁵

B. Common Challenges

Although programs have developed many innovative strategies to address ECC, they also have encountered a number of challenges that may affect their impact and effectiveness. Their common challenges include:

- *Communication barriers* with families and providers about the importance of and strategies for preventing and managing ECC
- *Providers' unfamiliarity with the chronic nature of ECC* and the need for ongoing risk assessment throughout an individual's lifecycle
- *Challenges to building strong political will* and broad stakeholder support for ECC programs
- *Limited financial and workforce resources* for ensuring adequate access to oral health care.

These issues are described more fully below.

⁵ In addition to AAP, other professional medical organizations such as the American Academy of Family Physicians provide hands-on ECC training and education for their members.

Increasingly diverse families offer special challenges for effectively communicating oral health messages and delivering culturally competent oral health care. Cultural differences exert a strong influence on beliefs about oral health, oral hygiene and nutrition practices, and health-seeking behaviors. These differences stem from a range of factors including race, ethnicity, language, socioeconomic status, and education level, among others. Designing culturally competent programs can be costly and time intensive. For clients with limited English proficiency, programs may need to translate educational materials into multiple languages; hire bilingual staff; and provide other enabling services, such as low-cost oral hygiene supplies and oral health care or transportation assistance. In addition, a single strategy may not be easily transposed from one population group to another (e.g., programs targeted to Latinos in Florida may not be well received by Latinos in California).

Many providers have limited knowledge of an evolving chronic disease management model to address ECC. California's *First Five Oral Health Initiative* found substantial resistance among the State's providers to an evolving paradigm that seeks to monitor and respond to oral health risks throughout an individual's entire lifecycle. Such attitudes were also encountered by other ECC programs, highlighting the challenge of convincing providers to reach beyond conventional standards of oral health and primary health care practice. Providers who recognize the underlying disease process that contributes to caries risk across the lifespan are more likely to support ECC prevention and treatment that manage these risks.

Building broad support for ECC programs requires intensive lobbying and networking with a diverse group of stakeholders. Experience has shown that targeted efforts are needed to engage, and foster collaboration among, the range of stakeholders required to increase attention and resources to ECC. For example, programs have to convince legislators and public health officials that ECC is prevalent in a large portion of the State's population and that interventions are cost effective. Similarly, oral health and child health providers need assistance in working together to address ECC, which is a change from the traditional separation between oral health and primary health care practices. Other networking challenges relate to fragmentation and competition among agencies serving maternal and child populations who often have to compete for limited resources, and the difficulty of building support for programs at the State and local levels concurrently. Programs that do not overcome these networking challenges successfully may delay program implementation or inhibit their own success.

Current dental workforce capacity may be insufficient to meet the new demand created by ECC programs. In seeking to increase access to oral health care, programs have had to respond to oral health providers' anxiety about increasing demands on their time. In addition, general dentists typically have had little experience treating young children, and the pool of available providers often has few pediatric dentists in which to refer patients with complex oral health needs. Although there are high numbers of mid-level oral health providers, such as dental hygienists and nurses, they are underused in many areas. Some State practice acts or regulations prohibit mid-level providers from providing preventive and treatment services. States that do allow mid-level oral health providers to deliver clinical oral health services often are not well integrated into maternal and child health programs. Nevertheless, some of the highlighted programs found that insufficient provider capacity does not necessarily present an insurmountable barrier to implementing ECC initiatives. Increased patient demand for oral health

care can prompt health systems to provide the additional resources to increase or expand dental workforce capacity.

Insurers can create barriers to recruiting providers into ECC programs and ensuring access to ECC prevention and treatment services. Families with low-incomes are at increased risk for acquiring ECC. However, public insurance eligibility requirements can make it difficult to establish and maintain consistent coverage, as fluctuations in income cause near-poor families to lose their eligibility status. Often, parents are less likely to qualify for public programs than are children, but coverage of both is necessary to effectively prevent and treat ECC. Citizenship status further complicates the situation, as undocumented family members are often ineligible for any public insurance program. Among those that do qualify for programs, insurance coverage does not always guarantee access to oral health care. Many providers will not see families who rely on Medicaid because of the program's low reimbursement rates. In addition, many public and private insurance plans do not cover all ECC prevention and treatment services. To meet this challenge, *Washington's ABCD program* conducted special negotiations with Medicaid, creating a unique billable service to cover ECC prevention and treatment resulting in greater provider involvement in ECC programs.

Inadequate resources can limit the ability to build and maintain program infrastructure. Many programs designed to promote greater investment in children's oral health initiatives operate under tight budgets. From an administrative viewpoint, limited resources often result in high staff turnover, less comprehensive staff training, and poor monitoring systems to evaluate the program. Financial constraints also limit a program's ability to support providers in tracking patient records and keeping up to date on ECC innovations. In considering which program services to offer, it becomes difficult to balance both prevention and treatment. Ensuring access to treatment services is especially expensive and difficult to find for children with urgent care needs.

IV. Looking to the Future: Considerations for Developing and Sustaining Initiatives to Prevent and Treat ECC

This workshop represented an important step in national ECC prevention and treatment efforts. Not only did the participants garner lessons from current ECC prevention and treatment programs, but they also had the opportunity to look to the future and consider ways in which national efforts can be strengthened. This section draws upon those discussions and presents considerations for ongoing efforts. Systems integration and collaboration considerations are presented first, followed by those addressing ECC infrastructure. Program design and management considerations are then discussed, with those relating to program sustainability presented last.

A. Systems Integration and Collaboration

Make ECC a national public health priority. 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. Public-private partnerships, community collaborations, and interagency agreements across all stakeholders can help to coordinate resources and plan client-driven programs that meet diverse community health and welfare needs. To make ECC prevention and treatment a priority, the public must become more informed about the importance of maintaining good oral health and demand that resources be devoted to improving access to needed oral health care services.

Design collaborative efforts that draw on existing public and private resources. An array of partners can work together to bolster oral health system capacity. State and local public health agencies can prioritize oral health promotion strategies within existing health and social welfare programs, while State primary care associations can help to increase access to clinical oral health services across an array of primary care settings including hospitals, community health centers, and clinics. Similarly, State health and oral health provider associations are often effective in engaging local providers. Partnerships with private organizations, such as foundations and insurers, can help families access lower-cost oral health services. 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 help encourage buy-in for oral health interventions.

Integrate oral health, health, and social service systems. One of the most effective strategies for creating an integrated service delivery system is to incorporate oral health promotion into existing health care systems that serve maternal and child populations. As primary health care providers are often more likely to come into contact with the populations most at risk for ECC than are oral health providers, they are well-positioned to identify, prevent, and manage ECC. Specifically, pediatric primary health care providers should assess ECC risks during routine visits, such as well-baby and well-child checkups, while obstetrical providers should assess the oral health of their patients during prenatal and postnatal visits. Efforts to collaborate with social service systems, which also reach a large portion of the vulnerable population, are also important. Where possible, ECC interventions should be integrated into early childhood education and development services such as Head Start, child care, and schools, as well as maternal health services such as WIC, Parents as Teachers, and parenting classes.

B. ECC Infrastructure

Include ECC into existing national oral health surveillance. A comprehensive and standardized ECC surveillance system is necessary to measure the prevalence and incidence of ECC across the nation accurately 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. However, the NOHSS only measures these indicators in third grade students and does not include health measures specifically for younger children or the maternal population. Furthermore, not all States and Territories currently submit oral health data to the NOHSS. In addition to NOHSS, surveys such as the BRFSS and PRAMS 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 efforts into programs currently serving this population, such as WIC and Head Start.

Develop standardized practice guidelines for improving the quality and safety of ECC interventions. Guidelines should be developed that incorporate all current knowledge of best practices from recent studies and promising practices, including approaches for minimizing potential health risks. Clinical recommendations for risk assessment, prevention, and treatment need to be tailored to specific demographic characteristics, including age group, household makeup, and pregnancy/parental status. Family, staff, and provider education curricula also should be subject to formal credentialing processes, such as accreditation, to validate the accuracy of information presented and evaluate the effectiveness of curricula across different audiences. New ECC research agendas that use better research methods also are needed to help evaluate the effectiveness of existing clinical services and training tools as well as encourage the development of new ECC interventions.

Take advantage of partnership opportunities and resources offered by academic institutions. On a broad level, the multidisciplinary nature of academic health centers can help integrate oral health and health services into a more holistic health system. Many centers are well-connected to the local communities in which they operate and can help foster more community-oriented and culturally competent services. University-based health care providers are also among the largest providers of quality, affordable clinical services to the disadvantaged populations most at risk for ECC. In addition to direct clinical services, academic health centers can be important partners in health research and development. An enhanced oral health focus could contribute to ECC best-practices research and the development of new training materials, surveillance tools, and pharmacological products. Partnerships with academic health centers also may aid the day-to-day operation of ECC programs by providing additional technical assistance and support.

C. Program Design and Management

Communities should play a role in ECC program development and implementation. Community members should be brought to the table 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 facilitate outreach efforts effectively and raise the profile of oral health as an important community issue. Community members also should participate in 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 help ensure that programs balance long-term prevention and health promotion goals with immediate community needs to access ECC treatment services. Community feedback also helps programs determine if they are effectively reaching all high-risk populations and are delivering services in a culturally competent manner.

Use health communication models to deliver health messages. To help families understand that ECC can affect their general health and that daily oral hygiene and regular oral health care are important throughout an individual's life, health messages that link ECC with overall health and well-being must be communicated. Those health messages are most effective when tailored

to specific audiences. For example, children often respond better to information presented in the form of hands-on activities and games. Adult learning theory suggests that messages targeting adults need to promote discussion and problem solving, rather than a passive lecturing and memorization. Oral health education must also take into account different cultural health beliefs, practices, and care-seeking behaviors. Lastly, oral health information must have diverse dissemination outlets, ranging from those that reach a large audience, such as media and health fairs, to those that reach a smaller audience, such as home visits and group classes.

Train dedicated care coordinators to support both families and providers. As mentioned previously, care coordinators can serve a variety of critical roles in ECC programs that benefit families and providers. To be effective in their role as a liaison between families and providers, it is important that care coordinators understand the family's culture and dynamics, are knowledgeable about the process and ramifications of oral diseases, and understand how systems of care operate and interact with each other.

Evaluate outcomes to determine program success. Program staff should be trained to work with providers, other key personnel, and researchers to collect and analyze different types of data, including conducting quality control checks to ensure scientific rigor. Client data should be collected at baseline and followup to measure changes in ECC incidence, prevalence, and oral health risk behaviors. These include measures of services used, including adequate levels of health education and clinical services, as well as measures of client satisfaction with service levels and quality.

D. Program Sustainability

Acknowledge the chronic nature of ECC. A chronic disease management model should be used in ECC programs as dental disease is one that must be monitored over an individual's lifespan. This requires a long-term approach to issues such as the prevention of *S. mutans* transmission between adults and children, with family education efforts beginning in the prenatal period, and continued systems integration across services targeting young children and their families. Also essential to the success and sustainability of ECC programs is the training of both oral health and health care providers to conduct risk assessments, administer anticipatory guidance, provide clinical preventive services, and make needed referrals for oral health care.

Maintain flexibility in program design and management. As new research continues to be translated into practice, current knowledge of causal factors in caries development and best-practices guidelines will be updated. To translate new research into practice and ensure the most effective and high-quality services, program administrators will have to find ways to incorporate these updates into their design. Technological innovations such as telemedicine and remote data entry capabilities offer valuable tools for transferring new findings to enhance service delivery, management, and program evaluation. Program evaluation results are also valuable for improving training protocols, education curricula, and service delivery.

ECC needs effective oral health champions. Champions must be identified, nurtured, and supported to elevate the importance of oral health as a health issue and to lobby public support for prevention and early intervention efforts. The Surgeon General's report on oral health found

that trusted nonoral health providers often make effective spokespersons for oral health (U.S. Department of Health of Health and Human Services, 2000). ECC workshop participants also noted that successful broad-based oral health coalitions have succeeded in advocating for oral health by involving families to speak about their firsthand experiences in trying to access services for their children.

Increase access to adequate financial resources that can support a range of activities for improving oral health. ECC health outcomes cannot improve without adequate funding to bolster the oral health infrastructure in which ECC programs operate. This involves ensuring a substantial oral health provider workforce to meet growing demand for a full range of preventive and treatment services in all communities, including community water fluoridation. It also requires financial incentives for encouraging health providers to see those patients who are most at risk for ECC, as well as access to adequate health care coverage for families that includes coverage for oral health services.

V. Summary and Next Steps

In convening this workshop, the MCHB provided a unique forum for ECC programs to share experiences with one another and begin communicating lessons learned with a broader audience. The findings from this workshop—which identified core principles of ECC prevention and disease management, lessons learned from ongoing programs, and considerations for developing and sustaining initiatives to prevent and treat ECC—can inform national, State, and local efforts to address ECC.

This workshop represents an early step in MCHB’s envisioned efforts to increase the knowledge base on successful approaches for addressing ECC. Future activities will include sharing the proceedings of this workshop broadly and convening a broader group of oral health stakeholders to discuss strategies for bolstering national efforts to address this critical public health issue.

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Promising Approaches and Lessons Learned for Preventing or Reducing Early Childhood Caries

Washington, DC
May 16-17, 2005

Workshop Objectives:

- Using the ASTDD Best Practices for Oral Health Programs criteria as a framework, identify common program elements from each criterion that are necessary to prevent or reduce the incidence of early childhood caries (ECC).
- Create a knowledge base to share with stakeholders that highlights promising program approaches for preventing and reducing the incidence of ECC.

Monday, May 16, 2005

9:00 a.m. – 9:15 a.m.

Welcome, Introductions, and Workshop Overview

- Mark Nehring, MCHB Chief Dental Officer
- John Rossetti, MCHB Oral Health Consultant

9:15 a.m. – 10:45 a.m.

Promising Approaches for Preventing or Reducing ECC: Discussion Panel I

Facilitator – Mary Foley, Massachusetts Department of Health,
Office of Oral Health

- Marcia Manter – Iowa Healthy Smiles Parent Education Program and Kansas Head Start Association Early Head Start Oral Health Initiative
- Peter Milgrom – Klamath Falls Early Childhood Cavity Prevention Program
- Laura Smith – Cavity Free Kids

Each speaker will provide a brief overview of their ECC program, identify their core program elements using ASTDD Best Practices for Oral Health Programs criteria as a framework, and share lessons learned in planning and implementing their program.

10:45 a.m. – 11:00 a.m.

Break

**11:00 a.m. – 12:30 p.m. Promising Approaches for Preventing or Reducing ECC:
Discussion Panel II**

Facilitator – Mary Foley

- Gerald Ferretti – Kids Smile Screening and Fluoride Varnish Program
- Christine Veschusio – More Smiling Faces in Beautiful Places
- Francisco Ramos-Gomez – Mother and Youth Access Program

12:30 p.m. – 1:30 p.m. Lunch

**1:30 p.m. – 3:00 p.m. Promising Approaches for Preventing or Reducing ECC:
Discussion Panel III**

Facilitator – Mary Foley

- Peter Domoto – Washington’s ABCD Champion Program
- Kelly Haupt – Into the Mouths of Babes
- David Krol – AAP Pediatrics Collaborative Care Program

3:00 – 3:15 p.m. Break

**3:15 p.m. – 4:00 p.m. Promising Approaches for Preventing or Reducing ECC:
Discussion Panel IV**

Facilitator – Mary Foley

- Jared Fine – California First Five Oral Health Initiative
- Gregory Whelan – Indian Health Service Pediatric Dentistry Program

4:00 – 5:00 p.m. Promising Approaches for Preventing or Reducing ECC: Q&A

Facilitator – Mary Foley

During this moderated discussion, participants will have an opportunity to ask questions to clarify or seek additional information from the program presenters about common program elements. Of interest are those elements that can be replicated in any environment.

Tuesday, May 17, 2005

9:00 – 10:30 a.m.

Common Elements to Achieve Success

Facilitator – James Crall, National Oral Health Policy Center

In this session, participants will review ASTDD’s best-practice framework and identify and refine the common elements that appear to ensure a successful program.

10:30 a.m. - 10:45 a.m.

Break

10:45 a.m. – 12:00 p.m.

Common Elements to Achieve Success (continued)

Facilitator – James Crall

12:00 p.m. – 12:15 p.m.

Closing Remarks

Mark Nehring, MCHB

12:15 p.m.

Adjourn

Early Childhood Caries Program Overviews

Program	Primary Contact	Program Components	Funder(s)	Target Population	Staffing/Support
<p>American Academy of Pediatrics Collaborative Care Program (PedsCare)</p> <p>http://www.aap.org/comm/peds/dochs/oralhealth/</p>	<p>Wendy Nelson, AAC Program Coordinator Department of Community Pediatrics 141 Northwest Point Blvd. Elk Grove Village, IL 60007 American Academy of Pediatrics Phone: (800) 433-9016, ext. 7789 Email: wnelson@aap.org</p>	<ul style="list-style-type: none"> • Training program and education sessions for pediatricians on a variety of children’s oral health issues, including OH risk assessment training. • Mentorship program to provide pediatricians practicing in underserved areas with one-on-one training on screenings, counseling and fluoride varnish application. • Listserv with up-to-date information on oral health issues and events • OH Web Site with information for health providers and parents • Technical support to OH projects 	<ul style="list-style-type: none"> • MCHB • Core funding no longer available • Technical support to oral health projects funded by CATCH, HTPCP and mentorship site 	<ul style="list-style-type: none"> • Pediatricians and other child health professionals 	<ul style="list-style-type: none"> • Pediatricians • Pediatric dentists • Dental hygienists
<p>Access to Baby and Child Dentistry (ABCD) program</p> <p>http://www.abcd-dental.org</p>	<p>Washington State Medicaid Margaret Wilson PO Box 45530 Olympia, WA 98504 Phone: (360) 725-1658 E-mail: wilsoma@dshs.wa.gov</p> <p>UW, Pediatric Dentistry: Jessica Mortensen ABCD Educational Coordinator 1959 NE Pacific Street, B242 Box 357136 Seattle, WA 98195 Phone: (206) 543-4885 Email: mortenjm@u.washington.edu</p>	<ul style="list-style-type: none"> • Outreach to and education for families • Training and certification of oral health professionals • New and enhanced oral health benefits • Enhanced dental fees 	<ul style="list-style-type: none"> • Washington State Medical Assistance Administration (Medicaid) • Washington Dental Service Foundation 	<ul style="list-style-type: none"> • General dentists • Low-income families with children ages 0 to 6 	<p>State level:</p> <ul style="list-style-type: none"> • Program leaders from partner organizations • Billing and administrative staff at Medicaid office • Funding and technical assistance support staff at WDSF • Dental technical assistance and training support staff from UW <p>Local level:</p> <ul style="list-style-type: none"> • Oral health educators • Outreach workers • Dental trainers (ABCD Champions) • Program administration staff

Program	Primary Contact	Program Components	Funder(s)	Target Population	Staffing/Support
ABCD program (cont.)	Washington Dental Service Foundation: Laura Smith PO Box 75688 Seattle, WA 98175 Phone: (206) 528-2335 E-mail: lsmith@deltadentalwa.com				
California First Five Oral Health Initiative http://www.cfc.ca.gov/prg.htm http://www.cfc.ca.gov/PDF/Programs/C7.pdf	Barbara Marquez First Five Commission 501 J Street, Suite 530 Sacramento, CA 95814 Phone: (916) 324-7783 Email: Marquez@CCFC.CA.GOV	<ul style="list-style-type: none"> • Insurance-based demonstration project to increase patient access and utilization and increase provider capacity • Provider education and training • Social services worker and consumer education • Preventive care and restorative treatment 	<ul style="list-style-type: none"> • California First 5 Commission • Federal matching funds • Insurance plans 	<ul style="list-style-type: none"> • Oral health and health providers • Parents, caregivers, and children 	<ul style="list-style-type: none"> • Members of CA First 5 Commission • Medical and oral health educators, trainers, and providers • Promoturas, social service workers, and other outreach resources • Insurance plans
Cavity Free Kids: Oral Health Education for Preschoolers and their Families http://www.cavityfreekids.org	Tracy Garland President & CEO Washington Dental Service Foundation P.O. Box 75688 Seattle, WA 98175-0688 Phone. (206) 528-7388 Email: tpgarland@deltadentalwa.com	Train the trainer program using a standardized curriculum that provides oral health education to preschoolers and their families	<ul style="list-style-type: none"> • Washington Dental Foundation • (California) Dental Health Foundation • Region X Head Start 	<ul style="list-style-type: none"> • Head Start program staff 	<ul style="list-style-type: none"> • Cavity Free Kids curriculum trainer • Head Start staff
Indian Health Service	Gregory Whelan, DMD National Clinical Specialty Consultant Pediatric Dentistry Indian Health Service Phoenix Indian Medical Center 4212 N. 16 th Street Phoenix, AZ 85016 Phone: (602) 263-1592 Email: gregory.whelan@his.gov	<ul style="list-style-type: none"> • Quarterly oral health recall • Head Start intervention • Chlorhexidine varnish investigation • Post-partum early intervention 	<ul style="list-style-type: none"> • Federal hospital budget • Grantee from HP/DP division of IHS. Oral Health • Tribal oral health programs 	<ul style="list-style-type: none"> • Head Start centers • High risk child population 	

Program	Primary Contact	Program Components	Funder(s)	Target Population	Staffing/Support
<p>Iowa Healthy Smiles Parent Education Program</p> <p>http://www.iowaheadstart.org</p>	<p>Tom Rendon IA Head Start Collaboration Director <i>Grimes State Office Building</i> 321 East 12th Street Des Moines, IA 50319 Email: tom.rendon@iowa.gov</p>	<ul style="list-style-type: none"> • Train the trainer program for 5 training teams • 8 Healthy Smiles orientation sessions for community home visitors, health specialists, and managers • 15 Healthy Smiles Skill Building Workshops for home visitors and supervisors • Oral health risk assessments, monthly “Lift the Lip” visual screening, fluoride varnish applications, oral exams • Families receive oral hygiene instruction, oral disease prevention education and “Lift the Lip” training and quarterly oral hygiene supplies. • An evaluation component tracks child’s oral health status and family practices 	<ul style="list-style-type: none"> • Delta Dental Plan of Iowa Foundation and the Mid-Iowa Health Foundation provided a 1 year implementation grant • Future funding not identified at this time 	<ul style="list-style-type: none"> • Head Start Health Specialists • Home visitors of Head Start/Early Head Start and other home-based programs • Family service/support staff 	<ul style="list-style-type: none"> • Two program coordinators • Healthy Smiles Management Team representing state government agencies, Head Start association, and dental hygiene association • Director, Medicaid staff, University of Iowa College of Dentistry pediatric faculty and dental hygiene faculty • Five training teams: Dental hygienists, home visiting trainers, maternal/child health nurses
<p>Into the Mouth of Babes North Carolina</p> <p>http://www.ncafp.com/imb</p>	<p>Kelly Haupt, RDH, MHA Program Coordinator 1303 Annapolis Drive Raleigh, NC 27608 Phone: (919) 833-2466 Email: khaupt@ncafp.com</p>	<p>Health provider training on oral screening, parent/caregiver counseling and fluoride varnish application for high-risk Medicaid eligible children from the time of tooth eruption to age 3.</p>	<ul style="list-style-type: none"> • CMS • CDC • HRSA • SOHCS grant to cover and training material for the Preschool Oral Health Coordinator 	<ul style="list-style-type: none"> • Physicians 	<ul style="list-style-type: none"> • Preschool Oral Health Coordinator • Oral health educators • Pediatric and family medicine practices with large numbers of Medicaid-covered children
<p>Kansas Head Start Association’s Early Head Start Oral Health Initiative</p> <p>http://www.ksheadstart.org</p>	<p>Marcia A. Manter Project Coordinator 9247 Twilight Lane Lenexa, Kansas 66219 Email: mmanter@aol.com</p>	<ul style="list-style-type: none"> • Parent and Early Head Start staff education, screening and referral. • Pregnant women are offered paper screening for oral health problems and free oral health cleanings and exams • Children enrolled in EHS 	<ul style="list-style-type: none"> • United Methodist Foundation, • Delta Dental Plan of Kansas Foundation • Kansas Association of Community Action Agencies • American Academy of Pediatrics CATCH 	<ul style="list-style-type: none"> • Pregnant women, infants and toddlers enrolled in participating EHS programs longer than 3 months 	<ul style="list-style-type: none"> • Training team of Head Start oral health educators • EHS oral health coordinator per grantee • At least one dentist or dental practice near the EHS program to provide oral health services • Local health department

Program	Primary Contact	Program Components	Funder(s)	Target Population	Staffing/Support
Kansas Head Start Association (cont)		<p>receive oral health risk assessments, monthly <i>Lift the Lip</i> screening, fluoride varnish applications, oral exams</p> <ul style="list-style-type: none"> • Families receive oral hygiene instruction, oral disease prevention education and <i>Lift the Lip</i> training and quarterly oral hygiene supplies. • An evaluation component tracks children's OH status and services for comparison over time. 	Planning grant		<p>nurses, EHS nurses, community dentists and dental hygienists apply fluoride varnishes</p> <ul style="list-style-type: none"> • State Deputy Dental Director, Medicaid staff, University of Iowa College of Dentistry pediatric faculty and dental hygiene faculty provide technical assistance
Kids Smile: Kentucky's Screening and Fluoride Varnish Program for Children 0 to 5 by non-dentists	<p>Gerald A. Ferretti, DDS, MPH Professor Pediatric Dentistry and Pediatrics Division of Dental Public Health 333 Waller Ave. Suite 101 Lexington, Ky. 40504 Phone: (859) 323-6400 Fax: (859) 257-9634</p>	<ul style="list-style-type: none"> • Screening and fluoride varnish training for public health nurses • There is also an evaluation component 	<ul style="list-style-type: none"> • HRSA • Kentucky Early Childhood Development Program • Kentucky Division of Dental Public Health 	<ul style="list-style-type: none"> • Public health nurses 	<ul style="list-style-type: none"> • Oral health educators to train public health nurses • Nearly 1,100 public health nurses provide screening and fluoride varnish applications • Community oral health providers to accept referrals
Klamath Falls Early Childhood Cavity Prevention Program	<p>Marilynn Sutherland Director of Public Health Sharity Ludwig Oral Health Services Coordinator Klamath County Department of Public Health 403 Pine Street Klamath Falls, OR 97601 Phone: (541) 882-8846 Email: sludwig@co.klamath.or.us</p>	<p>Preventive and Restorative services including use of chemotherapeutic agents to eliminate the transmission of caries causing bacteria from mother to child. Distribution of free fluoridated toothpaste. Also a continuing education component aimed at health and oral health providers. Plan to incorporate elements of Motivational Interviewing in the program this year.</p>	<ul style="list-style-type: none"> • RWJ Foundation • Local health department funds • NIDCR/NIH (for technical assistance) 	<ul style="list-style-type: none"> • Pregnant women and newborns • Health and oral health providers • WIC 	<ul style="list-style-type: none"> • Health Department staff provide outreach and home and WIC visits • Women are identified from OR Medicaid records • Health care and social service providers make referrals • Dental hygiene students provide preventive care • DCOs provide dental home and restorative care • U of WA Center to Reduce Oral Health Disparities provides TA/ evaluation

Program	Primary Contact	Program Components	Funder(s)	Target Population	Staffing/Support
<p>More Smiling Faces in Beautiful Places</p> <p>http://www.chcs.org/info-url_nocat3961/info-url_nocat_show.htm?doc_id=206321</p> <p>http://www.scdhec.net/co/media_relations/releases/pdf_files/nrfssmiles.pdf</p>	<p>Christine Veschusio Oral Health Division South Carolina Department of Health and Environmental Control 1751 Calhoun St. Columbia, SC 29201 Phone: (803) 898-0830 Email: veschucn@dhec.sc.gov</p>	<ul style="list-style-type: none"> • Pediatric oral health training for health and oral health providers linking medical health and dental homes. • Referral, prevention and treatment for children from 0 to 6 and children and adolescents with special needs • Educational guidance and support to parents and caregivers to effectively manage their children's oral health needs 	<ul style="list-style-type: none"> • RWJ Foundation 	<ul style="list-style-type: none"> • Health and oral health providers • Children from 0 to 6 and children • Adolescents with special needs • Parents and caregivers 	<ul style="list-style-type: none"> • Pediatric oral health trainers • Community oral health and health providers • Patient navigators from community and faith-based organizations • Dental hygienist provide training in their local communities
<p>Mother and Youth Access Program</p> <p>http://www.ucsf.edu/cando</p>	<p>Francisco Ramos-Gomez, DDS, MPH Associate Professor Department of Orofacial Sciences Division of Pediatric Dentistry University California San Francisco Email: ramos@itsa.ucsf.edu</p>	<p>Clinical trial to assess effectiveness of infant oral disease prevention program. Includes use of chemotherapeutic agents and other prevention treatment and parent outreach and counseling</p>	<ul style="list-style-type: none"> • NIDCR 	<ul style="list-style-type: none"> • Pregnant women in their second trimester • Infants • Toddlers 	<ul style="list-style-type: none"> • San Ysidro Community Health Center staff • Native American Health Center staff • Oral Health providers from the University of San Francisco's Infant Oral Care Program



Promising Approaches and Lessons Learned for Preventing or Reducing Early Childhood Caries

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May 16-17, 2005

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