

Introduction Paper

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Introduction to the Conference: Innovations in the Prevention and Management of Early Childhood Caries

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These proceedings of the October, 2014 conference on Innovations in the Prevention and Management of Early Childhood Caries are a follow-up to the initial Early Childhood Caries Conference held in Bethesda in 1997.¹ The major conclusion from the initial conference sparked a paradigm shift to move away from the terms nursing caries, baby bottle syndrome, baby bottle tooth decay, etc., to early childhood caries (ECC). Several lines of evidence were presented to support this shift, including: (1) the lack of association between bottle use and dental caries; (2) the lack of evidence that milk in the baby bottle and breastfeeding were associated with ECC; (3) evidence that other etiologies, such as cariogenic bacteria, enamel hypoplasia, and other dietary habits, need to be considered in managing this disease; and (4) previous preventive approaches that emphasized eliminating the baby bottle were ineffective. Additionally, the initial conference and subsequent publications established the case definition of ECC that allowed for comparability between clinical trials.²

An understanding of the current prevalence of ECC in the U.S. can be derived from the National Health and Nutrition Examination Survey (NHANES III; 1988-1994)³ and the Continuous National Health and Nutrition Examination Survey, which compared caries prevalence among children between 1988 to 1994 and 1999 to 2004.⁴ The NHANES data showed a high prevalence of decayed or filled teeth (dft) in preschool children. Poor and near-poor five-year olds had an average of 2.7 dft, with over 50 percent of these poor children affected. Data presented by Drs. Dye and Hsu at this conference, however, suggests that we may be seeing a decline in dental caries in U.S. two- to five-year-olds.

Despite reductions of the disease prevalence, ECC has a major impact on children's health and a major cost to society. The U.S. Medical Expenditures Survey found that dental expenditures exceeded \$1.55 billion in 2010 for children younger than five years old.⁵ A study of just the general anesthesia costs in New York State to facilitate dental treatment for children with ECC found an average cost of \$5,471 per case in 2008.⁶ If such costs are extrapolated to 2014 dollars, the current cost per case exceeds \$7,000.

Research over the past 20 years has facilitated a better understanding of ECC and how to deliver evidence-based care at lower costs. One of the goals of the 2014 conference was to synthesize the science regarding preventing this disease and to

establish policies and protocols regarding better management of ECC. Some of these approaches include: improvements in the early identification of at risk children; family focused interventions; effects of antimicrobials (sugar alcohols, heavy metals, antiseptics); the effects of remineralizing agents (fluoride, calcium phosphates, therapeutic restorative materials); effects of early interventions and patient-centered approaches in medical settings; and effects of different clinical models (chronic disease management, collaborative efforts among health care providers, and that restorative care should be the treatment of last resort).

Clinical trials to advance the oral health care of infants and toddlers, however, have been challenging for several reasons. Preschool children are difficult to recruit and retain in clinical trials. Parents of young children, especially those with high caries risk, may have difficulty adhering to oral health recommendations. Furthermore, institutional review boards are cautious about approving studies in very young children and make demands on the study design, such as not allowing untreated control groups and requiring that treatment be assured for all children identified with disease. Despite these barriers, there have been rigorous clinical trials that have helped to make progress in understanding ECC.

Thus the goals of the 2014 conference were to: (1) update our understanding of the prevalence, case definition, risk factors, and microbiology of ECC; (2) gather information from the medical and dental literature regarding how to prevent and manage ECC as a chronic disease; (3) understand how to care for ECC for individual patients as well for populations; (4) establish policies and protocols for practitioners regarding management of this disease; and (5) foster a transformation in the way ECC is treated by practitioners and reimbursed by insurance companies.

This conference gathered national and international experts to systematically assess the evidence and the potential of emerging approaches to reduce the prevalence of ECC. Following the conference, the authors and the organizing committee developed an executive report to synthesize the conference findings and propose a research agenda, clinical guidelines, and policy. The ultimate objective of this conference was to examine the state of the science regarding ECC and apply this knowledge to improve the care of individuals and populations that have or are at risk of having ECC.

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