

# Contents

<b>Foreword: Teeth: Vital to Our Children's Health</b>	<b>xv</b>
Bonita F. Stanton	
<b>Preface: Oral Health: A Critical Piece to Develop into a Healthy Adult</b>	<b>xvii</b>
Max J. Coppes and Susan A. Fisher-Owens	
<b>A Developmental Approach to Pediatric Oral Health</b>	<b>885</b>
Bhavna T. Pahel, Anne Rowan-Legg, and Rocio B. Quinonez	
<p>Orofacial growth and development is a complex process spanning the life course. This article provides an oral health overview in the context of overall growth and physical and social development from infancy through adolescence. It reviews oral health-specific developmental milestones during childhood (0–12 years) and adolescence (<math>\geq 13</math> years). It examines issues particular to each age category or spanning multiple ages (eg, pediatric overweight and obesity, tobacco use, and dental trauma) in relation to oral health and development. In addition, the oral microbiome and its potential role in informing personalized oral health care across the life course is discussed.</p>	
<b>Infant Oral Health</b>	<b>909</b>
Erica A. Brecher and Charlotte W. Lewis	
<p>It may be easy to discount oral health in infancy because most infants are not born with teeth and only a few teeth erupt during the first year of life. Infancy, however, is a critical time for formation of habits. Positive habits, such as twice-daily brushing with fluoride toothpaste starting at first teeth eruption, provides topical fluoride, which is important for remineralization of the tooth and helps establish a lifelong healthy practice. Negative habits, such as bottle propping and frequent juice consumption, reinforce behaviors that promote caries and obesity. This article reviews normal dental development and eruption. Congenital anomalies affecting the mouth as well as acquired conditions, primarily dental caries, are reviewed. Oral health preventive modalities, including professionally applied products and home-based strategies, are discussed.</p>	
<b>The Role of Fluoride in the Prevention of Tooth Decay</b>	<b>923</b>
Howard Pollick	
<p>Although there are recommendations to prevent tooth decay by other means, this nonsystematic review finds that fluoride is the key to prevention and control of tooth decay. There are multiple fluoride modalities with effectiveness and safety of fluoride depending on dose and concentration. Prevention of tooth decay occurs at the individual level by fluoride use at home and with professional application and at the community level through fluoridation of water or salt.</p>	

**Early Childhood Caries**

941

Wan Kim Seow

Early childhood caries (ECC) is a common childhood disease with the highest prevalence found in poor, socially disadvantaged, and minority groups. The main risk factors for ECC are frequent sugar consumption, lack of tooth brushing, and enamel hypoplasia. Contributory factors include environmental and psychosocial stresses that modify caregiver behaviors. Strategies for prevention include preventing mutans streptococci transmission, restricting dietary sugars, tooth brushing, topical fluoride applications, and early dental examinations. This article provides an overview of ECC based on current understanding of its cause, prevention, and management.

**The Burden and Management of Dental Caries in Older Children**

955

John Timothy Wright

Dental caries is endemic in children and adolescents and has significant morbidity. This complex and chronic disease has both genetic and environmental etiologic factors. In children the preponderance of caries affects tooth surfaces with pits and fissures despite these representing only a small portion of the tooth surfaces that are at risk. Pit and fissure sealants are effective in preventing and managing noncavitated caries lesions in these surfaces. A variety of materials are clinically effective, and health care guidelines recommend the use of pit and fissure sealants as part of a comprehensive dental caries prevention program.

**Oral Health Disparities in Children: A Canary in the Coalmine?**

965

Richard G. Watt, Manu Raj Mathur, Jun Aida, Marcelo Bönecker, Renato Venturelli, and Stuart A. Gansky

Despite being largely preventable, oral diseases are still a major public health problem in child populations in many parts of the world. Increasingly, however, oral diseases disproportionately affect socially disadvantaged groups in society. It is unjust and unfair that children and families from disadvantaged backgrounds experience high levels of oral diseases. This article analyzes oral diseases through a health disparities lens. Action to combat oral health disparities requires a radical multifaceted strategy that addresses the shared underlying root causes of oral diseases, the social determinants of health inequality.

**Oral Health for US Children with Special Health Care Needs**

981

Donald L. Chi

Children with special health care needs (CSHCN) are a vulnerable population subgroup, but little is known about their oral health, particularly regarding the cause and prevalence of tooth decay. This lack of knowledge is a barrier to progress in terms of developing evidence-based clinical interventions and policies aimed at promoting oral health in CSHCN. This article reviews the oral health literature pertaining to CSHCN, identifies critical knowledge gaps, highlights future research opportunities, and extends clinical recommendations to pediatric health care providers.

**Orthodontics in Children and Impact of Malocclusion on Adolescents' Quality of Life** 995

Lucas Guimarães Abreu

Orthodontics is the dental specialty concerned with the position of teeth and the relationship between the maxilla and mandible. Much evidence regarding the characteristics of normal occlusion during childhood/adolescence, the timely referral of children/adolescents to orthodontic treatment, and the impact of orthodontic outcomes on individuals' physical, functioning, and psychosocial well-being exists in the literature. This body of evidence may be helpful for pediatricians and primary care physicians. For those willing to be skilled providers of health care to children/adolescents, knowledge of basic concepts of oral health may contribute to the communication among physicians, the young individual, and the parents/caregivers.

**Recognizing the Relationship Between Disorders in the Oral Cavity and Systemic Disease** 1007

Paul S. Casamassimo, Catherine M. Flaitz, Kimberly Hammersmith, Shilpa Sangvai, and Ashok Kumar

Oral health is integral to general health. The oral cavity may harbor manifestations of systemic disease and can be the harbinger of early onset. Primary care providers (PCPs) can therefore use the oral cavity to support working diagnoses. Conversely, systemic diseases and treatments can affect oral health and require interactions between PCPs and dental providers. Acute oral manifestations of systemic disease may involve teeth and/or gums. This article reviews oral and systemic disease connections for some diseases, identifies issues that benefit patients through medical-dental collaboration, and highlights some nondental oral injuries that might confront PCPs or emergency medical providers.

**Benign and Malignant Oral Lesions in Children and Adolescents: An Organized Approach to Diagnosis and Management** 1033

Brian T. Yuhan, Peter F. Svider, Sean Mutchnick, and Anthony Sheyn

Oral lesions in children encompass a wide range of causes, including idiopathic entities as well as those related to an underlying systemic illness. In addition, oral masses include benign entities harboring locally destructive behavior and even malignancies in rare cases. Thorough patient history and detailed and efficient physical examination are critical for determining which lesions can be closely observed versus those that require further diagnostic workup. Understanding normal oral cavity anatomy is crucial for performing appropriate evaluation. This article describes the appropriate diagnostic and therapeutic strategies for oral cavity lesions and reviews the broad differential diagnosis of oral cavity masses.

**Periodontal Diseases and Traumatic Dental Injuries in the Pediatric Population** 1051

Belinda Nicolau, Geneviève Castonguay, Sreenath Madathil, Thien Vuong, and Tahyna Duda Deps Almeida

This article provides an overview of periodontal diseases and traumatic dental injuries (TDIs) in children and adolescents, which are serious public

health problems worldwide. Periodontal diseases, including gingivitis and periodontitis, commonly affect the oral soft tissues and teeth and often co-occur with other chronic diseases. TDIs are prevalent from an early age and carry high treatment costs. Behavioral and environmental factors contribute to both TDIs and periodontal diseases, but the cause varies according to population characteristics and case definition. Both conditions may lead to pain, function impairment, esthetic problems, and psychosocial effects, with major consequences on quality of life.

**Preventing Oral Disease: Alternative Providers and Places to Address This Commonplace Condition**

1063

Susan A. Fisher-Owens and Elizabeth Mertz

Oral health disease in young children has not decreased, despite adequate modalities for treatment and prevention. Because many children may not see a dentist before oral disease has begun, disease progression can be expected, affecting short-term and long-term oral health. However, most children are seen by other health professionals frequently in their youngest years, providing a unique opportunity to help weave a safety net of oral health care until they are established in a dental home. This article details ways primary care providers can promote oral health, including ways to integrate ancillary dental professionals into the primary care home.

**Oral-Health-Related Quality of Life in Children and Adolescents**

1073

William Murray Thomson and Hillary L. Broder

This article describes child oral-health-related quality of life measures and provides some examples of their use in determining the effect of clinical interventions, such as dental treatment under general anesthesia, orthodontic treatment, and treatment of orofacial clefting.

**Pediatric Oral Health Policy: Its Genesis, Domains, and Impacts**

1085

Burton L. Edelstein

Over recent years, pediatric oral health has become well established in the United States as an essential component of pediatric health policy as evidenced by the programs authorized and funded by Congress. These actions have improved access and utilization of dental care, engaged primary care pediatrics in oral health, and improved children's oral health outcomes. Nonetheless, there remains a host of authorized but unfunded approaches to addressing children's oral health through coverage, workforce, safety net, prevention, and surveillance. Child health advocates and practitioners need to actively engage as advocates if further improvements are to be attained through policymaking.