



Empowering Physicians, Nurses, Pharmacists and other Non-Dental Healthcare Providers to Care for the Oral Health of Children and Adolescents

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Approved for CME credit
(in Canada and the United States)

Introduction

Every healthy newborn has the potential for success and good health; however, profound disparities in access to basic dental care very often have a devastating impact on the health, education, and well-being of children and adolescents.* In fact, dental caries may serve as a sentinel disease for other pediatric conditions that are related to inadequate diet, poor oral hygiene and lack of dental care in childhood. Oral pain causes children to lose sleep and compromises growth. Oral health problems are also associated with a substantial reduction in school attendance, consequently diminishing learning potential. The reality for many underserved children and adolescents is that persistent oral pain, the inability to comfortably chew, and the embarrassment of discolored and damaged teeth undermine the socialization process. As a result, unmet dental needs perpetuate low self-esteem and over time can wear down a child's stamina—ultimately hampering the child's dreams and ambitions. The most vulnerable are children and adolescents in populations of lower socioeconomic status, those in indigenous communities, immigrant and migrant populations, homeless families, and children with disabilities. All children and adolescents should have access to basic dental care.

(Introduction continued on page 2)

KEYWORDS: early childhood caries (ECC); fluoride; gingivitis; infective endocarditis (IE); oral dental screening; oral developmental abnormalities; oral health anticipatory guidance; oral health literacy; oral hygiene; oral dental trauma; pediatric dentistry; periodontal diseases; teething; tooth avulsion; tooth development.

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*For the purposes of this course: **infancy** is defined as birth-11 months of age; **childhood** is defined as 12 months-12 years of age; **adolescence** is defined as age 13-19 years of age.



Introduction *(continued from cover page)*

Although the majority of infants and toddlers have not seen a dentist, most see physicians, nurses, pharmacists and other non-dental healthcare providers (HCPs) on a regular basis. Each of these visits is an opportunity to screen for caries (tooth decay) and periodontal diseases (e.g., gum disease), and provide preventive services that may limit exposure to oral disease. Physicians, nurses and other non-dental HCPs also have an important role in advocating for more comprehensive and universal dental care for children.

This course provides information and ideas that will empower non-dental HCPs to care for the oral health of children and adolescents. The importance of establishing a dental home will be discussed. Overviews of the clinical presentation of the most common oral diseases and abnormalities in children and adolescents will be presented, along with strategies to prevent caries and gingivitis. This course provides key information for non-dental HCPs to incorporate into anticipatory guidance to help parents understand the importance of oral health during infancy, childhood and adolescence. In addition, this course offers recommendations for preventing and managing oral trauma, and preventing infective endocarditis following dental procedures. The course concludes by illuminating a number of programs that have successfully provided children and adolescents from underserved populations with access to basic dental care. ♦

Learning Objectives

Upon completion of this course, participants will be able to do the following:

1. Describe the role of the primary care provider (PCP; e.g., physician, physician assistant, or nurse) in ensuring the oral health of children and adolescents, and support the concept of the dental home.
2. Describe the prevalence, etiology, clinical presentations, and prevention and management of the most common dental diseases (i.e., caries and periodontal disease) in children and adolescents.
3. Provide anticipatory guidance to parents regarding oral health during infancy, childhood and adolescence.
4. Identify common oral abnormalities found in children and adolescents, and treat or refer patients to appropriate HCPs as necessary.
5. Manage oral trauma from accidents.
6. Prevent infective endocarditis resulting from dental procedures in children and adolescents.
7. Provide supportive care for acute dental conditions of children and adolescents living in areas underserved by dentists and dental hygienists.
8. Describe successful programs that have provided access to basic dental care for children and adolescents from underserved populations.

Accreditation

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Special Thanks

The Colleges of Medicine and Dentistry at the University of Manitoba want to thank the Manitoba Government for providing an educational grant to support the development of the Oral-Systemic Health Education for Non-Dental Healthcare Providers curriculum.



Scientific investigation conducted over the last several decades has provided compelling evidence that diseases and conditions of the oral cavity can have a profound and pervasive impact on overall health, especially in high-risk populations where access to care may be limited. With this emerging body of knowledge has come increased awareness that among non-dental healthcare providers (e.g., physicians, nurses, pharmacists and the greater healthcare community) there is a significant gap in knowledge concerning the interrelationships between oral and systemic health, or recognition of the significance of oral health in achieving and sustaining general health outcomes.

With appropriate education and training, physicians, nurses, pharmacists, dieticians, speech pathologists and other non-dental healthcare providers can significantly affect the epidemiologic trends in serious and often debilitating oral diseases and conditions. This innovative curriculum is the first comprehensive plan to fill the gaps in oral health knowledge and its application to practice in medicine, nursing and other healthcare disciplines.

PREVIEW

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Case Study 1: Case in Point

This case study demonstrates a lost opportunity to identify **early childhood caries (ECC)** at the incipient **white spot lesion** stage, and subsequently prevent the progression of the disease. Had this child received oral screening at an earlier age, and had the parent been counseled regarding healthy diet and good oral hygiene practices, the outcome may have been different.

Unfortunately, cases like this are common, resulting in pain, tooth loss, and heavy use of public health resources, such as dental treatment provided in the hospital under general anesthesia (GA).

DAY 1: A four-year, one-month-old girl presented to her primary care provider (PCP) for a routine pediatric examination. She had seen the same PCP since she was 18-months-old, but she had never seen a dentist or dental hygienist.

The child was in good health, took daily multivitamins, and had no known allergies. At this visit, her mother explained that recently her daughter had been fussy and reluctant to eat cold and sweet foods. The PCP had not previously performed an oral examination on this patient, nor had he discussed aspects of oral health with the parent.

Upon visual examination of the child's mouth, the PCP found white spot lesions on the **labial** aspects of her **maxillary** anterior teeth (*Figure 1*), and visible **caries** on the **lingual** aspects of these teeth (*Figure 2*). The PCP referred the child to a local dentist, where she had an initial examination the following week.

DAY 9: The dentist diagnosed decay in all four maxillary incisors as well as deep caries into the **dental pulp** of both maxillary and **mandibular** primary molars. Given the extent of the child's treatment needs, the dentist recommended that she be treated under GA.

DAY 111: The backlog of other children requiring GA services for dental care was so great that it was not possible to treat this child for three months. During this long waiting period, the child experienced several episodes of tooth pain that interfered with her ability to eat and sleep.

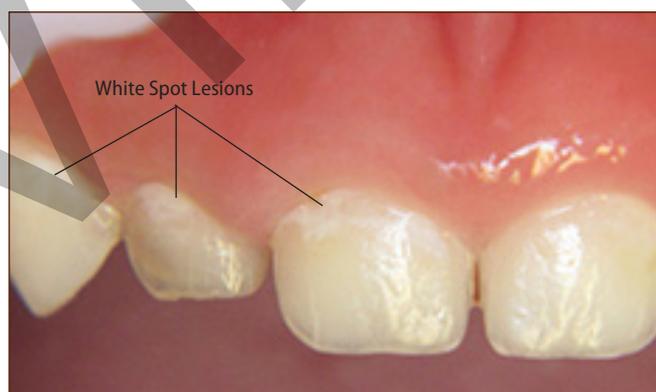


Figure 1. White spot lesions. These areas of demineralization are readily visible on the labial (lip-side) aspects of the child's maxillary central incisors. White spots are precursors to caries. Source: Travis Nelson.



Figure 2. Cavitated ECC (frank caries) is readily visible on the lingual (tongue-side) aspects of the same teeth shown in Figure 1. Source: Travis Nelson.

After waiting more than 100 days, the child's dental treatment was completed in one hour under GA. Treatment consisted of extracting an abscessed mandibular molar, root canal treatments (**pulpotomy**) on three teeth, stainless steel crowns on five primary maxillary and mandibular molar teeth (*Figure 3*), and cosmetic crowns on four maxillary anterior teeth (*Figure 4*).

CONCLUSION: If caries in this child's mouth had been diagnosed earlier, she may have been treated with **minimally invasive dental procedures**, such as **remineralization**. Delayed diagnosis precipitated severe **carious lesions** that required more invasive dental treatment, necessitating GA for this child.

Earlier diagnosis and treatment would have substantially decreased the child's pain, possibly eliminated the need for **invasive dental procedures**, and significantly reduced the treatment expense. ♦

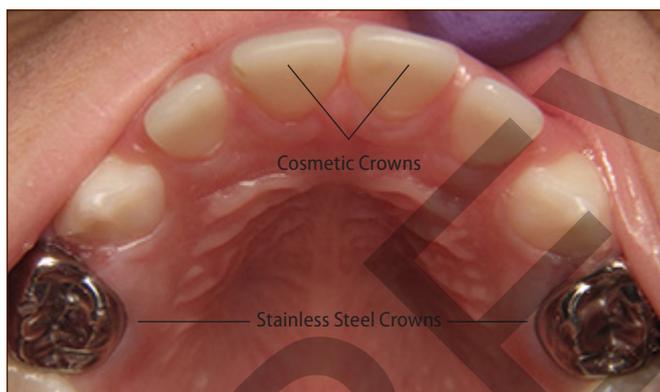


Figure 3. Lingual aspects of cosmetic crowns, which were created from white dental composite material, are visible on maxillary primary incisor teeth. Stainless steel crowns are visible on maxillary primary molars. Source: Travis Nelson.

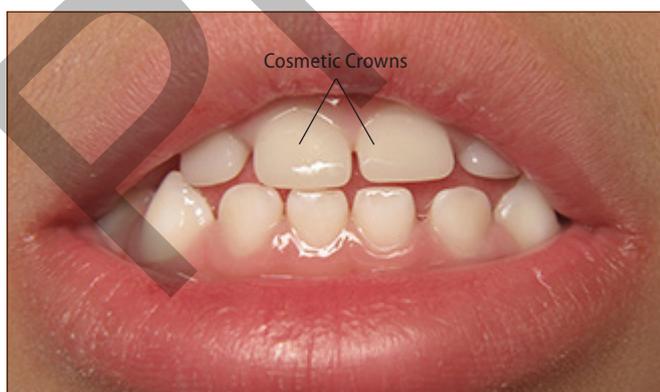


Figure 4. Labial aspect of cosmetic crowns on anterior teeth. Source: Travis Nelson.

Role of the Primary Care Provider in Ensuring the Oral Health of Children and Adolescents

For most children the entry point into the healthcare system is through primary care providers (PCPs). Recognizing this fact, the Canadian Dental Association (CDA), the Canadian Academy of Pediatric Dentistry (CAPD), the American Academy of Pediatrics (AAP), and the American Academy of Pediatric Dentistry (AAPD) now recommend that children receive oral health screening by a dental or medical provider by one year of age.¹

PCPs are experts at screening for and diagnosing disease. With respect to oral health, the role of the PCP is to: screen for caries, gingival inflammation, and abnormalities of the oral cavity; determine caries risk; provide **anticipatory guidance**; and refer at-risk children and adolescents to oral HCPs when indicated. HCPs should recognize that they are already communicating many of the messages that promote oral health to their patients, such as educating them about food selection and eating behaviours that help reduce obesity. Simply stating, "and this will also help reduce cavities and make your gums healthier" helps influence positive oral health behaviours.

To encourage habits that promote a lifetime of oral health, a dental home should be established for each child.² The notion of a dental home is derived from the AAP's concept of a medical home, which is where comprehensive, continuously-accessible, family-centred, coordinated, compassionate, and culturally-effective care is provided.³ This is best established by either a non-dental HCP's early referral to a dentist, or a parent/caregiver's selection of a dentist.⁴ The dental home should be established either within six months of the eruption of the first tooth, or by 12 months of age.² The dental home promotes continuity of care, and is associated with fewer emergency visits and reduced treatment costs.⁵ There are also long-term psychological benefits that accrue to children and adolescents who receive routine dental care.

When a dental home does not exist, tooth decay may go untreated until a child reaches school age. This often results in extensive interventions to restore or extract damaged teeth, which may be invasive and traumatic for the child. Employing early and continuous prevention strategies reduces the need for invasive procedures and the risk of serious dental problems in the future.⁶ ♦

Pearls to Practice



Role of the PCP in Ensuring the Oral Health of Children and Adolescents

1. All HCPs should encourage parents and caregivers to ensure that their children receive an oral health exam by a dental or medical provider by one year of age.
2. The dental home is best established through early referral to the dentist. **Non-dental HCPs can play a vital role by screening for oral disease early and facilitating dental referral for all pediatric patients.**

Most Common Oral Health Problems of Children and Adolescents

The two most-common oral health problems that children and adolescents encounter are tooth decay (Figure 5) and **periodontal disease**. Pain, suffering, and eventual tooth loss from untreated caries and/or periodontal disease may interfere with breathing, tasting, eating, swallowing, sleeping, speaking and language development—all of which are vital to the health and development of children and adolescents. ♦

Early Childhood Caries (ECC)

Prevalence of Dental Caries in Children and Adolescents

While many North Americans have experienced improved oral status over the past 20 years, prevalence of caries in children aged two to six years has actually increased.⁷ A recent national survey showed that 57% of Canadian children aged 6-11 years have had tooth decay.⁸ Alarmingly, in some Canadian indigenous populations the prevalence of decay may exceed 90%.⁹ ¹⁰ More alarming still is the fact that dental caries in these groups is on the rise. Similar statistics have been reported in the United States. According to recent reports from the Centers for Disease Control and Prevention (CDC), more than one-quarter (27.9%) of all American children aged two to six years have experienced dental decay and nearly three-quarters (73.4%) of these affected children have unrepaired teeth.¹¹ This equates to 4.5 million toddlers in the United States who are affected, of which 3 million need dental restoration before kindergarten.

Dental caries remains the single-most common disease

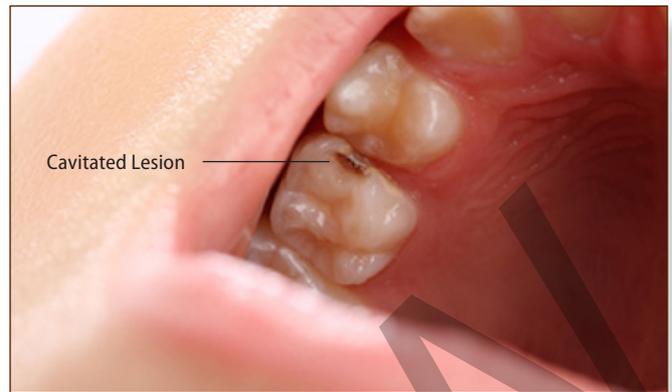


Figure 5. This lesion represents decay in a molar that has advanced beyond the white spot lesion stage when the lesion may be remineralized Source: © iStockphoto.com/kgfoto.



Figure 6. Rampant dental caries (decay) is noted in this five-year-old girl. (This photograph is for illustrative purposes only). Source: phetsamay philavanh/Shutterstock.com.

of childhood. Caries is not self-limiting like the common cold; and, unlike an ear infection, caries does not respond to a simple course of antibiotics.¹² Early childhood caries (ECC) is an aggressive disease process that can result in severe destruction of the primary dentition (**rampant dental caries**; Figure 6). Children who suffer from this condition may experience pain and tooth loss, which can impair sleep, normal growth, nutrition, and school performance.^{13,14} Historically, dental caries in young children was described as “baby bottle tooth decay” and “nursing bottle caries”.¹⁵ Over time, our understanding of this condition as a disease process has improved. We now recognize that many factors other than bottle use may contribute to a child’s caries experience. Children under six years of age are now considered to have ECC if the child has one or more decayed (**noncavitated lesions** or **cavitated lesions**), missing (due to caries), or filled tooth surfaces in any **primary tooth**.^{16,17}

The consequences of dental disease are cumulative, and children who have experienced decay often develop more decayed teeth as they grow older. Indeed, roughly