

The Truth About Tooth Decay (Part 1)

Educating parents and children about the importance of oral health and the prevention of oral diseases, rather than treatment after the fact, is critical to creating a lifetime of healthy smiles. Attitudes and habits established at an early age can last a lifetime. Tooth decay (also known as dental caries) is still one of the most preventable childhood diseases, yet it occurs five times more often than asthma and seven times more often than hay fever.

Tooth decay is still a leading infectious disease facing children despite impressive advances in technology and education. This preventable health problem begins early: 17 percent of children age two–four years have already experienced decay, 52 percent of children by age eight have experienced decay, and 78 percent of children by age seventeen have dental decay. Low-income children have substantially higher levels of untreated tooth decay, and young children with significant dental problems are often distracted by their pain and unable to focus on learning. Dental disease inhibits learning, speech and nutrition, causing more than 51 million school hours and 164 million work hours to be lost each year.



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What is tooth decay, and what causes it?

Tooth decay is an infectious, transmissible disease that can lead to the destruction of the hard protective surfaces of teeth. The process of tooth decay requires three primary factors: bacteria in dental plaque (the primary oral bacteria is called streptococcus mutans), sugar and a vulnerable tooth surface. After eating and drinking foods or beverages containing sugar (carbohydrates), bacteria convert the sugar left on the tooth surface into acids. These acids damage tooth enamel overtime by dissolving, or demineralizing, the mineral structure of teeth, producing tooth decay and weakening the teeth. If left undisturbed, the infected dental plaque continues to grow, metabolizing the sugar from the diet, and creating acid that dissolves and weakens the tooth structure. The weakened tooth surface can create holes in the teeth or tooth decay.

When the decay spreads to the dentin (the middle layer of the tooth), the tooth can become more sensitive to sweet, hot, or cold foods and drinks. When decay reaches the pulp (the center of the tooth), the patient can experience more severe pain and discomfort. Tooth decay can cause pain and lead to infections in surrounding tissues and tooth loss if not treated properly. Some signs of tooth decay can include white spots, tooth discolorations, holes in the teeth and sensitivity to temperatures.

Tooth decay is contagious

Tooth decay is an infectious, transmissible disease that can spread from parents and caregivers to babies. Although babies are not born with decay-causing bacteria in their mouths, many unsuspecting parents (especially mothers) and caregivers pass these bacteria onto their children. Once tooth decay bacteria take up residence in the mouth they convert sugars (especially sucrose) from foods and beverages into acids that attack and destroy tooth enamel producing cavities.

Tooth decay-causing bacteria are transmitted by saliva to children from parents and caregivers. These bacteria can spread easily through common behaviors such as:

- Kissing when there is saliva transfer
- Sharing a feeding spoon or other utensils when tasting a baby's food
- Pre-chewing a baby's food
- "Cleaning" a baby's pacifier or the nipple of the baby's bottle by putting it in the parent or caregiver's mouth
- Testing the temperature of a baby's bottle by mouth
- Allowing a baby to put hands into parent or caregiver's mouth and then into her own mouth
- Sharing cups and toothbrushes

(continued on next page)

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(cont. page 2)

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oral health
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Tooth decay in children is a preventable health condition that can occur as soon as teeth erupt if children have been exposed to decay-causing bacteria. Children most susceptible to tooth decay are those who acquire decay-causing bacteria early in life. The higher the levels of decay-causing bacteria in the parent or caregiver's mouth, the more likely the child will become infected. Research has shown that children have a reduced risk of developing tooth decay if their mothers have had good oral health.

Infants and very young children can suffer from tooth decay

Primary (baby) teeth are susceptible to decay as soon as they appear, so special care should be taken to keep them healthy. Tooth decay that occurs in infants is usually called baby bottle tooth decay or Early Childhood Caries.

This occurs when baby teeth are frequently exposed to liquids containing sugar. Among these liquids are milk, formula, fruit juice, sodas and other sweetened drinks. An increased risk of tooth decay is also associated with unrestricted, on demand nocturnal breastfeeding after eruption of the child's first tooth, and with use of pacifiers that are frequently dipped in honey, sugar or syrup. When children are allowed to drink sugary liquids from a bottle or sippy cup, the sugars can pool around the teeth and gums and feed the bacteria that cause decay.

Is your child at risk?

Today, dental decay is clearly recognized as a transmissible infection that has a number of identifiable factors involved in its initiation and progression.

Guidelines for the identification of individuals susceptible to dental caries and for the treatment of this infectious disease have been developed. These guidelines take into consideration various factors such as:

- An individual's past caries history (i.e., number of cavities in the last year)
- Anatomy of tooth (pits and fissures)
- Oral hygiene (daily brushing, flossing, healthy nutrition)
- Use of fluorides
- Regularity of dental visits
- Presence of white spot lesions
- Frequency of fermentable carbohydrate intake (including bottle feeding/nursing habits)
- Adequacy of salivary flow
- Mutans streptococci counts (level of bacteria present in the mouth)
- Physical/mental illness
- Gingival recession (gums)
- Use of some medications (with side effects that include dry mouth and changes in the gum tissue)

While risk assessment is not a perfect science at this point, use of these guidelines can assist the dentist in classifying child and adult patients into low, moderate and high-risk disease categories, and permit individualizing dental caries prevention and treatment to the unique needs of each patient.

Oral health is an important indicator of overall health. Tooth decay is a serious infection that can lead to other health problems. Learning about tooth decay and its risks is one step to preventing the disease. Be sure to read *Tooth Decay – Part 2* to learn about important preventive measures to reduce and prevent tooth decay. By establishing healthy dental habits early, parents can influence the health of their children's teeth for a lifetime.