

What's In Your Mouth?

To understand what happens when your teeth decay, it's helpful to know what's in your mouth naturally. Here are a few of the elements:

- **Saliva:** Your mouth and teeth are constantly bathed in saliva. Although we never give much thought to our spit, this simple fluid is remarkable for what it does to help protect our oral health. Saliva keeps teeth and other oral tissues moist and lubricated, washes away some of the food particles left behind after we eat, keeps acid levels in the mouth low, and protects against some viruses and bacteria.
- **Plaque:** Plaque appears as a soft, gooey substance that sticks to the teeth a bit like jam sticks to a spoon. It is, in fact, colonies of bacteria, protozoa, mycoplasmas, yeasts and viruses clumping together in a gel-like organic material. Also in the mix are bacteria byproducts, white blood cells, food debris and body tissue. Plaque grows when bacteria attach to the tooth and begin multiplying. Plaque starts forming immediately after a tooth is cleaned; it takes about an hour for plaque to build up to measurable levels. As time goes on, different types of microorganisms appear, and the plaque thickens.
- **Calculus:** If left alone long enough, plaque begins to mineralize and harden into calculus or tartar because the plaque absorbs calcium, phosphorus and other minerals from saliva. These minerals form crystals and harden the plaque structure. New plaque forms on top of existing calculus, and this new layer can also become calcified.
- **Bacteria:** We have many different strains of bacteria in our mouths. Some bacteria are good; they help control destructive bacteria. When it comes to decay, *Streptococcus mutans* is the bacterial strain that does the most damage. It attaches easily to teeth and produces acid.

How Your Teeth Decay

You need food, particularly sweet and sticky food, for the bacteria in your mouth to produce acids that will attack the tooth enamel (outer surface of the tooth). Sugars, especially sucrose, react with bacteria to produce acid. The acid from the bacteria can decay your teeth.

It's not just candy and ice cream we're talking about. All carbohydrate foods, as they are digested, eventually break down into simple sugars, such as glucose and fructose. Some of this digestion begins in the mouth. Foods that break down into simple sugars in the mouth are called fermentable carbohydrates. These include the obvious sugary foods, such as cookies, cakes, soft drinks and candy, but also pretzels, crackers, bananas, potato chips and breakfast cereals. The sugars in these foods combine with the bacteria normally in the mouth to form acids. These acids cause the mineral crystals inside the teeth to begin to dissolve.

The dental caries lesion forms when these acids start to dissolve a tooth's outer protective layer, the enamel. A cavity forms when the tooth decay breaks through the enamel to the underlying layers of the tooth. You can reverse a caries lesion (before it becomes a cavity) by using a variety of fluoride products. These include fluoridated water, fluoride rinses for use at home, and, of course, any commonly used fluoridated toothpaste.

Every time you eat, the bacteria in your mouth produce acid. Therefore, the more times you eat the more times your teeth are exposed to an acid attack.

Types and Stages of Decay

Dental decay, also known as dental caries, begins first inside the tooth. A white spot appears on the enamel where the tooth has started to weaken inside. At this stage, the tooth can repair the weakened area with the help of fluoride and minerals in saliva. But if the decay continues and breaks through the surface of the enamel, the damage is permanent. The decay must be cleaned out and the cavity filled by a dentist. Left untreated, the decay will worsen

and destroy a tooth all the way through the outer enamel layer, through the inside dentin layer and down to the pulp or nerve of the tooth.

In young children, teeth that have recently emerged have weak enamel and are highly susceptible to acid decay. A type of decay called baby bottle tooth decay or [early childhood caries](#) destroys enamel quickly and is common in children. This type of decay can eat through enamel and leave a large cavity in a matter of months.

Older adults sometimes have chronic caries: cavities that don't seem to get any worse or do so at a very slow rate. Teeth with chronic caries will tend to be darker in color because the edges of the cavities become stained from normal eating and drinking.

Root caries (decay in the roots of the teeth) are more common in older adults. Older adults are more likely to have gums that have receded from years of hard brushing or periodontal disease. They also are more likely to have dry mouth ([xerostomia](#)), which increases the risk of decay. Dry mouth is caused by many common medicines. Be sure to ask the doctor or pharmacist if any of your medicines cause dry mouth.

Decay can form beneath [fillings](#) or other restorations, such as [crowns](#). Sometimes, bacteria and food particles can slip into a tooth if a filling hasn't been placed properly or if the filling cracks or pulls away from the tooth, leaving a gap.

Preventing Cavities

Do you or your family members get cavities frequently? Dental research has identified factors that increase your risk of getting decay. Next time you visit the dental office, ask about your risk factors and discuss the best ways to reduce your risks and limit dental decay.

To prevent your teeth from decaying, you can do two things — strengthen your teeth's defenses with fluoride and sealants, and reduce the number of bacteria in your mouth.

[Fluoride](#) strengthens teeth by penetrating the tooth structure and replacing lost minerals to repair acid damage. Everyone should brush with a fluoride toothpaste every day. Dental offices sometimes recommend additional toothpastes, gels and mouthrinses for both children and adults.

Sealants are protective coatings placed over the tops of chewing teeth — molars and premolars. They block bacteria and acids from sticking in the tiny grooves on the chewing surfaces of these teeth. Children should get sealants soon after their teeth erupt into the mouth.

Although you can never get rid of all the bacteria in your mouth, you can control bacteria by [brushing](#) regularly and flossing daily, seeing your dentist and dental hygienist regularly for a thorough cleaning and check-up, and reducing the number of times each day that you consume fermentable carbohydrates.

Some prescription mouthwashes (those that contain chlorhexidine) can help prevent decay by reducing the number of bacteria in the mouth. Chewing sugarless gums, especially those with xylitol, can help reduce decay and increase the flow of saliva.