

HEALTHY TEETH, HAPPY TEETH



Smile! Say “cheese”! Healthy teeth are happy teeth! If you have healthy teeth, then you probably don’t think about them too much except when it’s time to brush them or visit the dentist. Hearing that you don’t have any cavities during your dental check-up is always great news. Hearing that you do have a cavity, not so great.

What are cavities, and what causes them?



A **cavity**, also called tooth decay, is a damaged area or hole in the surface of a tooth. Tooth decay breaks down **tooth enamel**, the hard outer surface of a tooth. Enamel is stronger than most bones, with a mineral content of about 95% compared to other bones which have a mineral content of about 50%. This hard surface allows teeth to stand up to biting and chewing hard foods.

A cavity starts out as a white spot where the enamel begins to break down. As they get larger, cavities cause deeper holes in the teeth, and the damaged teeth may turn brown or black. A small cavity may not cause any symptoms, but if cavities are not treated, they will get bigger and cause a toothache or pain and sensitivity when eating and drinking.

A dentist treats a cavity by drilling out the decayed area and then fills the hole with a special material. The repair is called a **filling**. Larger cavities may need to be covered by a **crown** (a tooth-shaped cap that fits on top of a tooth to restore its strength) or may even result in tooth loss.

Cavities form when foods containing **carbohydrates** (sugars and starches) stay in contact with your teeth. The bacteria that normally live in your mouth turn these sugars into acids. The combination of bacteria, acid, bits of food, and saliva form **plaque**, a sticky film on teeth. If your teeth feel fuzzy when you run your tongue over them, it is a sign that you have plaque. Acids produced by the bacteria in plaque can dissolve tooth enamel and create cavities. If the plaque isn’t removed, it can harden into tartar, which must be removed by a dental professional.

Things that increase your risk of getting cavities include poor dental hygiene and eating sugary foods that stick to your teeth, like cereal, ice cream, candy, milk, and sugary soda.





How can you help to prevent cavities?

- ✓ Brush your teeth at least twice a day and after eating and drinking.
- ✓ Floss your teeth.
- ✓ Use a toothpaste that has added **fluoride**, a mineral that helps protect teeth and prevent cavities.
- ✓ Eat a healthy diet and avoid eating sugary and starchy foods.
- ✓ Visit your dentist for regular check-ups and cleanings.

ACTIVITY: Explore the cause of tooth decay using eggshells

Materials:

- 3–5 jars, depending on the number of substances you want to test
 - 3–5 eggs. You can also use pieces of eggshells, all about the same size.
 - 3–5 different “test” beverages or liquids (such as milk, orange juice, cola, sparkling water, grape juice, vinegar, or other sodas) **HINT:** Cola is a very good choice!
 - sugar
 - tongs or tweezers to remove the eggshells
 - pencil and paper to record your results
1. Fill one jar with 12 ounces of water, then add 9-10 teaspoons of sugar and stir until dissolved. This is about the amount of sugar that is in a 12 ounce can of cola. This jar will allow you to test the effect of sugar alone.
 2. Fill the other jars with your choice of “test” beverages or liquids.
 3. Gently lower one egg or eggshell into each jar
 4. Cover the jars with plastic wrap or a lid and let them sit for a week
 5. Remove the eggs or shells from the jars each day and record how each shell has changed.

What happened?

Eggshells are made of calcium carbonate, and teeth are made of calcium phosphate. Eggshells aren't as tough as teeth since they aren't coated with enamel, but they can give you a good idea of the effect of different substances on teeth since their chemical composition is similar.

Most of us have heard that sweets cause tooth decay. It is actually the acid produced by the bacteria feeding on the sugar within plaque that produces decay. If you chose cola or vinegar, you probably noticed that these caused the shells to soften. Cola contains phosphoric acid, and vinegar contains acetic acid. Both are relatively strong acids. Lemonade and orange juice contain citric acid. Citric acid is not as strong as the acids in cola and vinegar, so you probably didn't see as much damage to the shells in one week. Milk contains lactic acid, a weak acid. As milk “sours”, it becomes more acidic. You will need to soak your shells longer than a week to see the damaging effect of lemonade, orange juice and milk.



Were you surprised to see that the shell soaked in sugar water still looked good?

Take it one step further: Try coating an eggshell with a thin layer of fluoride toothpaste and place it in some vinegar or cola. Place another uncoated shell in another jar of vinegar and compare what happens.

More facts about your teeth:

-  Your teeth are one of the strongest parts of your body!
-  Teeth help you bite and chew foods to aid with digestion.
-  Teeth work with your tongue and lips to make it easier to pronounce words. Notice how your tongue pushes against your teeth when you say words ending in “th” and beginning with the letter “L”.
-  Teeth help to shape your face.
-  Babies start developing teeth before birth and begin “teething” at about 6 months of age.
-  Children have 20 primary teeth, 10 on the top and 10 on the bottom.
-  Children usually lose their primary teeth between age 6 and 12.
-  Most people have all of their permanent or secondary teeth by age 21. Adults have 32 teeth (28 if their wisdom teeth are removed).



ADDITIONAL RESOURCES

Books available at the Washoe County Library System:

- [*ABC Dentist*](#) by Harriet Ziefert
- [*Brush Well: A Look at Dental Care*](#) by Katie Bagley
- [*A Day in the Life of a Dentist*](#) by Heather Adamson
- [*Healthy Teeth*](#) by Angela Royston
- [*I Know Why I Brush My Teeth*](#) by Kate Rowan
- [*Nos Gustan Nuestros Dientes = We Like Our Teeth*](#) by Marcus Allsop
- [*Open Wide: Tooth School Inside*](#) by Laurie Keller
- [*Taking Care of My Teeth*](#) by Terri DeGazelle



[Teeth](#) by Beth Ferguson

[The Tooth Book: A Guide to Healthy Teeth and Gums](#) by Edward Miller

[You Wouldn't Want to Live Without Dentists!](#) by Fiona Macdonald

[Your 206 Bones, 32 Teeth, and Other Body Math](#) by Robyn O'Sullivan

[What to Expect When You Go to the Dentist](#) by Heidi Murkoff

Videos:

American Dental Association, "How to Floss Your Teeth" <https://youtu.be/HhdoPXNKNm4>

Colgate, "How to Brush Your Teeth Correctly" <https://youtu.be/1q10LWifXkw>

Peekaboo Kidz, "Cavities – The Dr. Binocs Show" <https://youtu.be/3ZHYQ6f1BhU>

SciShow Kids, "Why do We Brush Our Teeth?" <https://youtu.be/aOebfGGcjVw>

TedEd, Mel Rosenberg, "What causes cavities?" <https://youtu.be/zGoBFU1q4g0>

Websites:

American Academy of Family Physicians, Mouth and Teeth: How to Keep Them Healthy
<https://familydoctor.org/mouth-and-teeth-how-to-keep-them-healthy/>

American Dental Association, Mouth Healthy <https://www.mouthhealthy.org>

Oral Health Foundation, Keeping Your Mouth Healthy
<https://www.dentalhealth.org/keeping-your-mouth-healthy>

Mayo Clinic, Oral health: A Window to Your Overall Health
<https://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/dental/art-20047475>

