What are dental caries?

Dental caries is the most common chronic disease of early childhood and the leading cause of tooth loss in adults. Dental caries (tooth decay) is the result of a specific bacterial infection that impacts the entire mouth. Two bacterial species have been implicated in dental caries, *lactobacillus sp.* and *streptococcus mutans*. These bacteria are transmitted in saliva and can be passed from one individual to the next. Recent studies suggest that 75% of these infections occur between the 19 and 24 months age.

How do bacteria cause tooth decay?

Our teeth are constantly being damaged and repaired. Damage occurs as acids in the mouth dissolve the minerals necessary to make up the tooth. We call this process de-mineralization. The process of repair, called re-mineralization, occurs as minerals present in your food and water, tooth paste and mouth rinses, and saliva recombine with your tooth to repair areas damaged by acids. De-mineralization and re-mineralization are in a constant tug of war where anything that shifts the balance in favor of damage will result in dental caries. Once demineralization has weakened the structure of the tooth enough, the tooth crumbles in forming a cavity. At this point bacteria may enter the tooth and cause further infection of the tooth.

What things put me at risk of having Dental Caries?

There are three important influences that effect whether you are at risk of having dental caries:

1. Your individual susceptibility, for example:
   a. Do you have a healthy immune system that can fight *s.mutans* or lactobacilli? – Did you know that your saliva has antibodies and other proteins that kill bacteria?
   b. Can your saliva block the actions of acid on tooth structure? – Fact, some people are better able to neutralize acids in our foods and those acids produced by bacteria.
   c. Medications and overall health – *Did you know: that one of the most common side effects to medications is reduced saliva production? Less saliva means more bacteria and more damage from their acids! With increasing age and some diseases, like diabetes and sjogrens syndrome, we also experience decreased saliva production!*

2. Diet
   a. Foods higher in simple carbohydrates are easier for *s. mutans* to produce acid from! The more frequently you ingest food high in sugar the more damage (de-mineralization).
   b. The faster foods are removed from the mouth the less chance bacteria have to produce acid. *Did you know: at night your body produces less saliva? Less saliva means food is not washed away and leads to prolonged damage to teeth! Remember to brush if you have a bed time snack!*

3. The right...or wrong stuff! (good vs bad bacteria)
   a. Everyone has bacteria in the mouth. Some bacteria help contribute to our overall health by killing harmful bacteria.
   b. *S. mutans* must be present to develop dental caries. Without this bacteria present, caries are not seen. *Something to consider: Although brushing and daily flossing are necessary to promote good oral health they cannot remove 1 00% of the bacteria around your teeth. Since it takes very few of these *bad* bacteria to cause cavities, even for the best brushers and flossers this may not be enough to prevent dental caries.*

**Question:** Which is more likely to cause the most damage from bacterial acid production?

1. A sip of juice
2. A sip of coffee with sugar added
3. A bite of a cupcake?

**Answer:** All three are equal. Each contains a dose of simple sugar. Each dose of sugar results in 20 minutes of acid demineralization by bacteria! The key is how often do you ingest the dose!
So how can we treat Dental Caries? *(Our Caries Management Program)*

If you are considering our caries management program here is what it has to offer. If you have already made up your mind to start then here are the principals. Let's get started!

1. **Remove known areas of infection.** This is the basis of dental treatment as most people know it, and for caries means removal of infected tooth structure and repair of the damaged tooth (yes, fillings!)
2. **Protect vulnerable teeth.** One of the most common sites of infection is in the grooves and pits seen on the top surfaces of teeth (as much as 90%). Sealants when used for high risk teeth can help prevent new cavities from starting. *Ask your dentist, are sealants right for you?* It is also advisable to fix worn-out or broken dental-work as rough surfaces provide a nice location for bacteria to hide out!
3. **Fluoride application to re-mineralize damaged teeth.** Fluoride can help to promote re-mineralization (repair) of teeth damaged by bacteria. Fluoride can also help to prevent bacteria from growing when applied topically! *Ask your dental professional which type is best for you! We will customize the program to get the best result for you!*
4. **Increase your ability to neutralize acids produced by bacteria:** A buffering gel is provided as part of our caries treatment kit that helps you to neutralize those dangerous acids. This is best applied at night just before bed using your toothbrush.
5. **Prevent acid Production during the day.** Xylitol gum when used regularly helps prevent bacterial growth and reduces production of acids by bacteria. By chewing gum you may reduce your risk of new cavities by as much as 30%! Xylitol gum also helps slow the growth of *S. mutans*! Don't like gum? We also have lolly-pops as an alternative for your package!
6. **Maintenance of a cavity free mouth.** As a dentist our job is to give you the tools to remain healthy. If you have dental caries, your risk is higher than the average individual that new cavities may appear. Special toothpastes, maintenance rinses and routine dental visits with dental X-rays to check for new dental decay are essential. Again, a schedule for dental evaluation and the best supplementary caries prevention aids will be selected to meet your individual needs.

**Summary of your plan:**

1. **Initial Treatment - Your first month of treatment should include**
   a. Remove areas of infection (As determined by your dentist)
      o Fillings for damaged teeth (cavities)
      o Sealants in high risk areas for new infection
      o Repair of broken fillings and removal of areas where bacteria can escape daily cleaning
   b. Professional fluoride application (Ask you hygienist!)
      o Fluoride varnish application or
      o Fluoride gel application or
      o Professionally applied anti-cavity MI-paste (Adults over 18 years)
   c. Medicated mouth rinse to kill bacteria causing caries
      o Carifree™ treatment rinse
   d. Neutralizer for bacterial acids
      o 1 tube Carifree™ Neutralizer gel or
      o 1 bottle Carifree™ pH neutralizing mouth spray
   e. Xylitol based topical agents preventing acid production!
      o 1 case of Carifree™ Xylitol gum or
      o 1 case of Carifree™ Xylitol breath mints or
      o 1 case of Carifree™ Lolly-pops

2. **Maintenance Treatment - follow-up to reduce the risk of future cavities**
   a. Follow up visits with dental X-rays every 6 months is advised until free of new cavities for 2 years (all ages)
   b. Anti-cavity aids to be used following the first month of treatment
      o Carifree™ Fluoride and Xylitol maintenance rinse (ages 6 to 18)
      o MI-Paste anti-cavity professionally supervised home treatment (Adults over 18 years)