

Cavities occur as a result of the tooth decay process that happens over time. Did you know that it is all preventable and you can interrupt and even reverse this process to avoid a cavity? To help prevent tooth decay, it is best to have an understanding of why it occurs in the first place, whatever the age.

Tooth decay can be thought of as the result of an infection with certain types of bacteria that use sugars in food to make acids. Over time, these acids can make a cavity in the tooth. Throughout the day a tug of war takes place in our mouth. Ordinarily in the mouth the pH fluctuates throughout the day. For most people the pH at rest, as determined by their saliva, is roughly 7 (neutral). After sugars are ingested, they are metabolised by the oral bacteria to produce acids and the pH in the mouth falls.

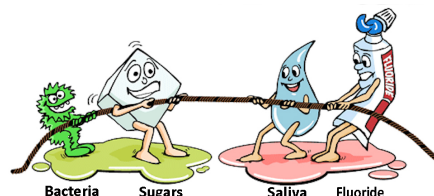
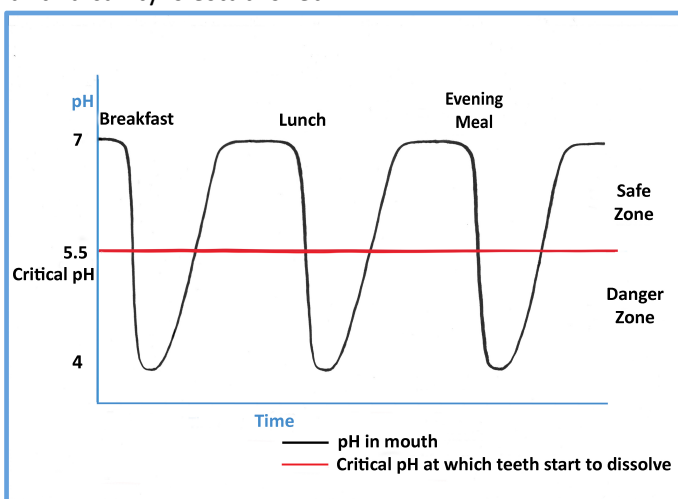


Image courtesy of NIDCR

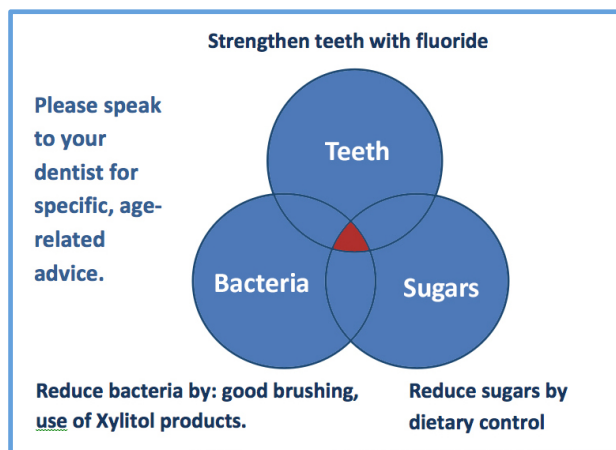
Once it falls below a "critical pH" of about 5.5 the tooth structure microscopically starts to dissolve. Saliva contains bicarbonate, which is alkaline and this buffers the acid to cause the pH to rise and return to a neutral healthy state....until the next ingestion of sugars. Our teeth go through this natural process of losing minerals and regaining minerals all day long. Providing sugars are taken only at regular mealtimes, the body is normally able to cope, but when sugars are taken in between meals, the recovery phase is over-ridden and the tooth continues to dissolve. As the tooth dissolves, the bacteria move in to this area and the process continues until a cavity is established.



Variation in oral pH throughout the day in response to sugar intake and it's potential to dissolve tooth enamel and cause decay.

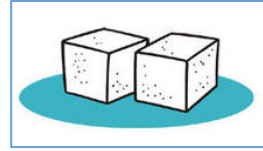
In perfect health, susceptibility varies between individuals and even within the same family. It doesn't seem fair, but it happens, so if decay is to be prevented we need to help.

Prevention of decay revolves around reducing the sugar intake and particularly the frequency, reducing the number of bacteria that can metabolise the sugars and strengthening the teeth to make them more resistant to decay.



The interaction of bacteria, sugars and teeth leading to decay (red), and the options for prevention.

Reduction of dietary sugars is by far the most important factor here. Whilst refined sugar (sucrose) is the worst cause, glucose that is added to many foods and snacks is a potent cause whilst in more susceptible individuals fructose in fruit and occasionally even lactose in dairy products can cause decay. Did you know that one portion of baked beans contains the equivalent of 4 cubes of sugar, the average low-fat fruit yoghurt contains (4½ cubes) of sugar in every 100g and a bowl of bowl of Crunchy Nut Cornflakes or Frosties 9 cubes per 100g. Sugars, just because they are natural eg in honey, does not mean that they will not cause decay; dried fruits equally will contain lots of sugar condensed from the original fruit. Suggestions for “safe” snacks are unsweetened crackers, oatmeal biscuits, crisp bread, rice cakes, savoury muffins, bread rolls, pitta bread, chapattis, toast fingers, bread sticks, carrots, cheese, cottage cheese, cheese spread, Marmite, humus. For most people, fresh fruit, natural yoghurt, natural fromage frais and other natural milk products are fine in moderation. Cheese in particular appears helpful in preventing decay, as it helps neutralise the acids, with the casein it contains giving further benefits.



Whilst poor oral hygiene, with residual debris around the teeth acting as food for the bacteria, can be a significant contributor to decay, good oral hygiene alone will not reduce the bacterial numbers enough to prevent decay. Xylitol is a naturally occurring sugar that harms the bacteria that try to metabolise it, resulting in a significantly reduced number of bacteria to be present in the mouth. It is best used in chewing gum and mints, the recommendation is to chew 6 pieces of gum daily. We stock a variety of flavours but once a flavour is settled on, it is cheapest bought in bulk on-line (eg Spry 600 piece packs). The use of Xylitol as an alternative to sucrose in drinks etc is not recommended as in enough quantity it can cause diarrhoea.

Fluoride is a mineral that can prevent tooth decay from progressing. It can even reverse, or stop, early tooth decay. It protects the teeth by making the tooth surface more resistant to dissolving and helps replace lost minerals in existing early decay. It is important to brush the teeth twice a day with fluoride toothpaste and avoid rinsing after brushing but just spit out instead, as rinsing removes the fluoride that will give the benefit. It is now recommended that children under 3 should use a smear of paste of no less than 1000ppm (eg Aquafresh Milk Teeth), and children 3-6 yrs a pea sized amount of 1350-1500ppm concentration (eg Aquafresh Little Teeth). Higher fluoride toothpastes for older children and adults are also available on prescription from the dentist, if deemed necessary.



The Department of Health requires dentists, with parental consent, to apply fluoride varnish to children's teeth between 3 and 16 yrs old at every examination and in some cases, depending on decay risk, more frequently. The use of fluoride mouthwashes may be helpful in high susceptibility patients, but must be kept separate by an hour or so from the toothbrushing.

Since most cavities in children and adolescents develop in the molars (the back teeth), it's best in susceptible patients to get these teeth sealed as soon as they erupt. Sealants are thin, plastic coatings placed onto the chewing surfaces of the back teeth (molars). Food and bacteria can get stuck in in the uneven surfaces of those teeth and stay there a long time because toothbrush bristles can't easily brush them away. Sealants cover these surfaces and form a barrier that protects teeth and prevents food and bacteria from getting trapped there.

Last but not least; don't forget that regular dental visits are essential for the maintenance of healthy teeth and gums!

