



Preventive dental information for young adults....

Facts:

- Dental decay and gum disease account for most of the dental disease requiring treatment by dentists and hygienists throughout the world.
- BOTH of these diseases are entirely preventable
- There is a need for far more preventive dental advice and information.

This information leaflet is designed to help young adults understand dental diseases and the preventive actions that they can take to minimise their experience of tooth decay and gum disease at little or no additional cost to themselves.

There is an enormous amount of information in this leaflet. For this reason we have tried to break the information down into smaller manageable “packets” of information. Read a section at a time.

1. DENTAL DECAY

Dental decay is a major and continuing problem in young people

Many young adults sadly suffer from dental decay. Common factors that contribute to decay in young people are:

- o poor tooth-brushing and failure to floss or use interdental brushes leaving dental plaque on the teeth
- o consumption of sugar in fizzy drinks including Coke-Cola & high energy drinks
- o regular snacking on refined carbohydrates or sugar containing snacks
- o processed foods containing “hidden” sugar as a preservative
- o drinking insufficient water and becoming “low-grade” dehydrated.

Many young people attend our practice suffering from pain, infection and swelling, requiring urgent treatment. These causes will be explained in far more detail in the article that follows.

It is a sad fact of life that many young adults, many of whom are in part-time education and working part-time, have very little spare money and live on processed foods and sugar-containing “high energy drinks”. Their diet and lack of dental knowledge puts them at risk of suffering dental decay but due to their financial constraints they are often not in a position to afford regular dental checks or treatment. Therefore dental decay is allowed to progress until it causes symptoms, including pain. By that stage often teeth cannot be saved and emergency treatment may be required due to advanced infection.

What are the causes of dental decay?

There are many reasons why some people suffer extensive dental disease. In Australia many people face the problem of inaccessibility of dental care and general healthcare in many rural locations. A significant part of our population lives in remote areas with vast distances between them and dentists, therapists and dental hygienists. This means they are unlikely to receive much preventive dental advice.

There are four factors that have to be present for dental decay to occur:



- there must be **dental plaque** (bacteria) on the teeth,
- there must be **sugars** present to feed the bacteria (from the diet), and the resulting acid produced by the fermentation of these sugars must remain in contact with the tooth.
- the **tooth surface** enamel is strong but can be dissolved leading to dental decay while the dentine of the tooth root is far softer and more conducive to acid attack. If a patient has gum recession exposing the root surface to the mouth, root decay is a real danger and often progresses much faster than decay of the crown of the tooth.
- Acid must remain on the tooth for **adequate time** to attack and demineralise or dissolve the enamel or dentine leading to cavity formation.

To prevent decay, it is only necessary to block one of these factors.

2. DENTAL PLAQUE

What is plaque?

Plaque is a gel-like protein matrix derived from the salivary protein. Within this matrix are millions of living bacteria capable of fermenting sugars and producing toxic waste products. The plaque grows on all surfaces in the mouth at an alarming rate, each bacteria dividing into two bacteria every 20-30 minutes.

Who is responsible for removing plaque?

The daily removal of dental plaque should be a routine performed every morning and evening by each individual. However, plaque is extremely sticky being a protein material, and usually after tooth brushing, some plaque remains in many of the more difficult-to-clean areas of the mouth. These areas include the spaces between the teeth and under the edge of the gum margin. To be effective in removing plaque, people need to know exactly what they are aiming to achieve.

It is not easy to disrupt plaque from the tooth surfaces. This is why an effective brushing technique is so important and due to the difficulty in achieving good cleaning, adequate time is also necessary to achieve effective plaque removal at all surfaces of all teeth. In a study of young adults, over 90% of those people observed brushed their teeth for less than 2 minutes. This is too short a time to clean all the teeth effectively.

Floss can help reduce decay between teeth where it often begins

The longer acids remain against the enamel surface of the tooth, the more damage occurs to that enamel and the more quickly the decay becomes established. One area where dental decay often starts in young people is between the teeth. This is the reason why so many dentists advocate the use of dental floss between the teeth.

Floss is pulled tight, and carefully passed through the contact point between the teeth. The contact point is that tiny area of the tooth where it touches the tooth next to it. Often plaque builds up around the contact point, especially just underneath it, where it is protected from the abrasive cleaning action of the food during chewing, and hence this area is especially prone to the development of dental decay.

Once the floss is through the contact point, it is then passed just below the gum margin and then the floss is pulled tight against the tooth surface to be cleaned. Once tight against the tooth, the floss is moved up the tooth surface and back through the contact point. This action allows the floss to “skim” off the plaque from the tooth surface. This flossing should be done for all the tooth surfaces between the teeth because most dental decay begins just under the contact point, particularly in adolescents and young adults.

3. THE IMPORTANCE OF SUGAR IN DENTAL DISEASE

Sugar and tooth decay....



Dietary sugars play a pivotal role in tooth decay. The modern diet consists of significant quantities of refined carbohydrate (sugars). These can be considered fermentable sugars and suitable food for the near 500 different species of bacteria that live in the human mouth. Carbohydrates are often hidden in foods as preservatives, especially in pre-packaged, processed and tinned foods. Beware of this and read the labels for these hidden sugars.

BEWARE, if you buy “low fat” versions of foods, the manufacturers will replace the fats that are removed, with sugars. If you compare the sugar content of full fat and low fat yoghurts, you will see the difference is clear in the total sugar contents in the nutritional information table. This is another example of hidden sugars used in the manufacture of processed foods. These sugars will provide the plaque bacteria with the means to produce acid to cause decay, and toxic chemicals that initiate gum inflammation leading to gum disease.

Chemicals produced by bacteria include organic acids that attack the tooth surface causing demineralisation (dissolving of the calcium in the tooth structure) later cavity formation as the surface layer breaks down to reveal a cavity beneath, that results from the demineralisation process.

Measuring the acid-alkaline balance of the mouth can assess the risk of decay. We call this measurement the pH. If we measure the pH over the day, it varies depending on what foods are eaten. After any sugar, the bacteria ferment the sugar into acid. As a result the pH of the mouth falls from the neutral value of around 7.0 to an acid value of around 3.5. If no more sugar is ingested, the saliva flows, the sugar is cleared from the mouth and over 40 minutes the pH increases, gradually returning to around the neutral value of 7.0.

Snacking or grazing is a problem....

A common problem we face in our modern lifestyle is snacking or grazing; the regular intake of small quantities of food/beverage that takes place throughout the day. This is often referred to as “grazing”. Regular intake of sugar in tea, coffee, carbonated drinks, biscuits, candy, cakes and chewing gum and hidden sugars help to provide a continuous supply of sugar to feed the bacteria in the mouth. This regular supply of sugar allows the plaque to grow, and to ferment the sugars producing a broad range of chemicals.

However, in patients who are grazing or snacking regularly and ingesting sugars from whatever source through the day, the pH decreases to an acid level but never gets the chance to return to neutral, as sugar is repeatedly introduced to the bacteria of the mouth and they constantly ferment the sugar producing acid. This results in an almost constant acid environment for the teeth with no time for re-mineralisation, only ongoing demineralisation and cavity formation.

This is the reason why dentists and hygienists tell patients that they should try to limit sugar intake to mealtimes. This allows the pH of the mouth sufficient time to return to neutral and for re-mineralisation of the early decay lesions to take place every day.

The “demon” fizzy drinks

One of the most popular fizzy drinks (Coke-Cola) is also one of the most damaging constituents of our diet. Other drinks including high energy drinks are also very damaging to teeth. Many of these drinks have three problems:

- they are full of sugar
- they are highly acidic
- they often contain caffeine that promotes the production of urine further dehydrating the person.

Fizzy drinks should not be thought of as a regular dietary component. They not only contribute to decay by demineralisation but the acidity of the drink itself causes severe destruction to the teeth by dissolving the enamel, a process called erosion.



Caffeine contained in many drinks causes a further problem. If caffeine is ingested (*in tea, coffee and in some cold drinks*) it leads to an increase in urine output. We refer to this as a diuretic effect. This leads to additional dehydration and as a result, the body tries to prevent the further loss of water. This is achieved by reducing the production of other body secretions, one of which is the saliva.

A reduction of saliva leaves the teeth less protected from the acids produced by the plaque. It reduces the ability to neutralise the acids produced by the plaque and the acids ingested as part of the diet.

Dietary sugar control is a must....

Limiting the number of times sugar is consumed each day is the best way to prevent tooth decay. In other words, avoid “drip-feeding” sugar into the mouth with all those small snacks and drinks throughout the day. When you are thirsty, the best drink is water, pure and simple!

It is best to try to limit the sugar supply to the bacteria in the plaque to no more than three mealtimes each day. Once a meal is over, it is best to neutralise the acid produced by the bacteria in the mouth before brushing the teeth. This can be achieved by chewing sugar-free gum or a little cheese, which is alkaline and neutralises the acid. Chewing cheese or sugar-free chewing gum is also effective at removing sugars by stimulating the flow of saliva that washes away food debris and sugar residues so that they are swallowed and do not remain in the mouth as food for the plaque bacteria to convert into acid to attack the teeth.

4. THE IMPORTANCE OF SALIVA

The healing power of saliva....

The saliva also delivers minerals that repair the demineralised areas of the teeth that have suffered from acid attack (demineralisation) during the day. The natural mineral content of the saliva results in the demineralised zone of the enamel taking up calcium and phosphate strengthening the damaged enamel surface. This is a process called re-mineralisation.

After having allowed time for neutralisation of the acid and clearance of the acid by salivary flow, then is the best time to brush the teeth with a fluoride toothpaste. Brushing too soon after consuming sugars means you are brushing tooth surface that has been microscopically softened on the surface (due to acid demineralisation) allowing the mechanical abrasion of the toothbrush to remove a very small (*microscopic*) quantity of enamel from the tooth. This act of brushing softened enamel, repeated many hundreds of times, can damage the teeth leading to enamel wear and sensitivity of the tooth to cold foods and drinks.

The constant flow of saliva assists in keeping the entire mouth healthy. Without saliva the mouth feels dry (called *Xerostomia*) and this can make swallowing difficult and can cause difficulty speaking. Both these effects arise due to the dryness of the soft tissues. However, the lack of saliva may also contribute to gum disease.

The benefits of saliva summarised:

- lubrication of the oral soft tissues
- helps with speech
- helps in chewing and swallowing food
- neutralises acids in the mouth
- washes away sugar residues from the mouth after eating



- antibacterial effects limiting bacterial growth.

The antibacterial effect of saliva's natural enzyme systems helps in the control of the bacteria that live in the mouth. Without this control, the bacterial plaque is able to accumulate leading to the formation of tartar (*also known as calculus*) on the tooth and root surfaces. This calculus assists in the development of gum disease.

5. THE VALUE OF FLUORIDE

Fluoride is important....

Fluoride toothpaste normally has around 1000 parts per million (ppm) of Fluoride. This is generally the correct concentration for adults. However, some patients who suffer from extensive or widespread decay may be wise to add, to this use of a Fluoride toothpaste, the daily use of a high concentration fluoride mouthwash each night before going to sleep. This must take place after all food and drink has been consumed and after tooth brushing is complete. Fluoride mouthwashes vary in concentration from the routine use level of 500-550 ppm to the high concentration Fluoride mouthwashes containing 1000-5000 ppm Fluoride. In Australia around 1000ppm would be a high concentration Fluoride mouthwash.

Fluoride toothpaste protects the teeth from decay by reinforcing the enamel and making it more resistant to acid attack. It can only do this if it is left on the teeth so that over night the fluoride can be absorbed onto the tooth enamel and dentine (where it is exposed) and thereby strengthen the tooth surface and repair any areas of acid attack that has taken place during the day.

After tooth brushing with fluoride toothpaste or rinsing with a fluoride mouthwash, you should only spit out the excess toothpaste or mouth wash and NOT wash out the mouth with water. Leaving the fluoride on the teeth is most important to provide an environment suitable for the overnight repair of demineralisation.

6. DO MOUTHWASHES REALLY HELP?

What about using other mouthwashes?

There are many mouthwashes available in the supermarkets and pharmacies. Unfortunately it is very difficult to scientifically evaluate each one and compare one with another in any useful way. In terms of effectiveness, it depends on what you want from a mouthwash. Some are antibacterial, some are analgesic, some effervesce in a cleansing action, and others may be anti-inflammatory.

In many cases it is assumed by patients that by using a mouthwash the plaque will be killed and that it assists in controlling plaque. This is not entirely true. The majority of the cleaning and antibacterial disruption is due only to the mechanical cleaning action of the filaments of a toothbrush used in an effective manner for sufficient time. There is no mouthwash that adequately controls plaque.

Often the manufacturers' claims made advertising the effective antibacterial effect of their mouthwash are based on studies where the mouthwash was used in a bacterial culture dish in a laboratory where the bacteria are not covered by a protein matrix. This does not represent the true clinical situation in the mouth and hence many mouthwashes have very limited antibacterial effect when used in the mouth. Few studies are conducted on thick plaque as would be encountered in many patients, as the protein matrix of the plaque prevents the chemicals of the mouthwash gaining access to the bacteria thereby preventing the mouthwash from exerting the chemical damaging effects on the plaque bacteria.

What works as a mouthwash?

A very effective mouthwash is available containing an antibacterial agent called *Chlorhexidine*. This will have a very significant antibacterial effect, even in the mouth despite the presence of plaque matrix, and will slow the growth of bacterial plaque significantly. Such mouthwashes include *Savacol* and *Curasept*.



Unfortunately Chlorhexidine leads to staining of the teeth and tongue if it is used for around 2 weeks or more. This disadvantage has been overcome by the manufacturers of *Curasept*. This mouthwash contains an anti-discolouration system allowing the mouthwash to be used for longer periods without staining. Other side effects may include a sore mouth, burning sensation, increased formation of tartar (calculus), interference with taste and ulceration of oral soft tissues.

Listerine is a very commonly used mouthwash containing essential oils (*Thymol, Eucalyptol, Menthol and Salicylate*) that have some antibacterial effect and being carried in alcohol may to some degree penetrate into the plaque. It has an effect of reducing bacterial activity and plaque mass and has some anti-inflammatory effect and antioxidant effect. However, the effect on a mature plaque in the mouth environment is only adequate in conjunction with good tooth brushing for adequate time.

A number of other mouthwashes exist containing a number of chemicals and systems that all have differing effects and may have some benefit in different circumstances.

7. GUM DISEASE IS VERY COMMON IN YOUNG PEOPLE

Plaque and gum disease....

When the plaque bacteria metabolise food, chemicals are produced some of which are toxic to the oral soft tissues. These chemicals include hydrogen sulphide, sulphur compounds, organic acids, and ammonia. These toxic chemicals induce an inflammatory protective response in the adjacent gum tissues. This inflammatory condition confined only to the gum tissue is referred to as **gingivitis**. This may progress on to become a destructive inflammatory process that results in loss of the bone around the teeth. This is then referred to as **periodontitis** (destructive gum disease).

Around 95% of people have some gingivitis affecting their gums. Around 15% of adults suffer from destruction of the bone supporting their teeth called Chronic Periodontitis likely to result in tooth loss.

For more information on gum disease, refer to our website, *Media Centre* and click on *Gum Disease* to access several articles written for patients to provide detailed information and advice.

8. WISDOM TEETH OFTEN CAUSE PROBLEMS AROUND AGE 17 TO 25

Wisdom teeth are frequently a problem....

An additional problem many young adults face is infection around their wisdom teeth or crowding of the wisdom teeth referred to as impacted wisdom teeth. This problem is common in young adults usually in the age range of 17-25 years. **For detailed information on wisdom teeth**, refer to our website, *Media Centre* and click on *Wisdom Teeth* to access several articles written for patients to provide useful information and advice.

9. PREVENTIVE DENTAL INFORMATION DOESN'T REACH EVERYONE

The problems of reaching patients....

The fact that emergency dental treatment is still often required is proof that there are a number of problems that the dental team faces in reaching all members of the community and providing sound, early preventive advice about dental disease.

There are still large numbers of the Australians who are not aware of the underlying causes of dental decay and gum disease and appear not to have received sufficient dental preventive advice to promote the changes in oral hygiene measures and nutrition necessary to reduce their experience of dental decay or gum disease.



Dental preventive advice needs to be provided more often and more thoroughly to children and young adults at school and during later tertiary education. Many young people appear to be unaware of the dental problems their diet will cause and the many preventive actions they can take themselves at no extra cost to them.

10. WHY YOU NEED TO LISTEN TO PREVENTIVE ADVICE

Failing to take easy preventive actions may result in:

- a lifetime of dental fillings
- ongoing replacement fillings due to failed restorations
- as fillings get bigger, teeth may die and become abscessed
- huge costs over a lifetime for dental treatment and re-treatment
- the experience of losing teeth later
- the reduced ability to eat the foods you enjoy
- the loss of self esteem and confidence due to poor appearance
- the need to wear partial or even full dentures.

Nowadays many young adults are increasingly focused on their body image. They attend gyms to take part in aerobics classes, “bootcamps” and weight training, they use protein shakes, follow low “Carb” or high protein diets, and yet we still see dental disease because this part of their overall general health has been overlooked and has not received the priority it should in their health education.

These are the messages we need to be giving our young people in Australia to motivate change and influence our young adults to take preventive measures to avoid decay and gum disease.

11. EVERYONE NEEDS A DENTAL HYGIENIST

The benefits of a dental hygienist....

The best way to ensure the necessary standard of plaque removal is being achieved is to make an appointment with a dentist who works with a dental hygienist to arrange for a check up and then follow-up appointments with the hygienist who can teach the newest and most effective ways of achieving good cleaning of the teeth thereby preventing dental disease.

A dental hygienist is trained to:

- ✓ provide patients with clear explanations and sound cleaning techniques



- ✓ they also provide advice on nutritional changes that may help in reducing the quantity of plaque that build-up on teeth
- ✓ they are able to perform detailed cleaning of the teeth above and below the gum margins to help to eliminate or reduce gum disease
- ✓ they can provide resin sealant on the teeth to prevent decay of the biting surface of some teeth
- ✓ they can apply high concentration fluoride gels and varnishes to teeth to repair early decay or prevent new decay.

The most important member of the dental team is in our opinion, the dental hygienist as they are the trained dental professional who can help in the prevention of future dental disease. Failure to benefit from a dental hygienist's preventive therapy leaves you facing costly dental treatment that will need to be periodically replaced over the years ahead. Remember, prevention is better than cure!

12. SPORTS INJURIES AFFECT MANY YOUNG PEOPLE

Finally protecting your teeth during sports....

Decay and gum disease lead to tooth loss but so do contact sports.

Many sporting bodies in Australia insist that players wear mouth guards. The reason players should wear mouthguards, is to protect the teeth from fracture or displacement of the teeth during collision with other players or hard objects.

Mouthguards come in many different types. There are those off the shelf varieties that you place in hot water and then mould them around the teeth and gums and they fit to a degree but they are not close fitting and are not truly protective.

A poorly fitting mouthguard is little better than wearing no mouthguard. It is therefore best to visit a dentist, have impressions taken and then have a professionally manufactured thick mouthguard constructed on models of mouth in a thick, hygienic dimensionally stable material. The cost of a high quality and effective mouthguard is far less than the costs faced to put right a dental injury and possibly have to replace missing teeth.

Some sports are known as contact sports and others are not, however, when playing sports where contact is not part of the sport, unintended falls or contact can still take place. Netball is an ideal example. It is advised that players of most sports should wear mouthguards.

13. SUMMARY OF PREVENTIVE DENTAL ADVICE

A summary of practical advice on preventing dental decay....

1. Be effective in brushing your teeth. Learn the right way to achieve plaque control in all areas of the mouth. Spend some time with your dental hygienist and then make effective cleaning part of your daily routine to remove as much plaque as you can. It takes time to clean well; so don't cut corners.
2. Be aware of where the hidden sugars are in your diet. Consider changing the foods you choose to eat and serve your family, and read labels when shopping.
3. Try to reduce the number of times each day when you consume sugars. Reducing the number of times you consume sugar will reduce the time your teeth spend in an acid environment and that will reduce tooth decay.
4. Reduce the number of times you drink fizzy drinks. This reduces the number of times the bacteria are fed sugar and produce acid to demineralise your teeth causing tooth decay. It also reduces the direct acid attack of the acid drink itself leading to erosion of the tooth surfaces and the development of painful tooth sensitivity.



5. Drink water more often and try to make sure you drink 2-3 litres a day; more if you sweat or work in a hot environment (3-4 litres a day). If you go to the gym or play sport you will sweat far more. Remember to increase the intake of water significantly to cover the additional fluid loss.

6. We should also try to minimise the amount of caffeine we ingest in tea and coffee and of course drink a minimal amount of alcohol. All these lead to greater fluid loss through the kidneys. Reducing the intake of these diuretic drinks will help to ensure you produce an adequate quantity of good quality saliva to protect your mouth keeping the tissues healthy and the teeth intact.

7. Use a fluoride containing toothpaste to brush your teeth with and don't wash out the mouth when you finish brushing. Just spit out the excess toothpaste mixed with your saliva. Leaving the fluoride on the teeth will help the teeth to repair after acid attack. Using a high concentration Fluoride mouthwash will provide additional protection.

8. Make sure you have dental checks with a dentist. The dentist should check for decay and gum disease. A gum check requires gentle gum probing of all areas of the mouth to find any areas of gum inflammation that can indicate a destructive gum disease resulting in the loss of the bone supporting the teeth.