

# Essential dentistry

## Module 2 - Oral Health and Disease

With a growing body of evidence around the contribution of good oral hygiene to both dental and general health, disease prevention is one of the most important clinical and political themes in dentistry today. So no matter which area of dentistry we are involved in, having an appreciation of the causes of disease and the associated preventive treatments, is vital to increasing our appreciation of the industry.

### Prevention

#### Prevention is organised into three categories:

1. Primary prevention refers to procedures used to prevent disease in those patients who have no previous experience of disease, such as recommending the use of fluoride toothpaste and mouthwash.
2. Secondary prevention comes into play when a patient is identified as being at increased risk of developing disease. An example of secondary prevention would be the application of fissure sealants to children.
3. Tertiary prevention refers to treatment aimed at preventing the recurrence of disease, such as recommending the use of antibacterial mouthwash for patients with periodontal disease.

#### What are the causes of dental caries?

Commonly referred to as tooth decay, dental caries is caused by a number of factors, including the types of sugars involved, the length of time teeth are exposed to acid attack, saliva and the susceptibility of the tooth surface.

Plaque is a sticky substance that forms naturally on the surface of the teeth. It contains millions

of bacteria, some of which react with sugars in our diet to produce acid. This acid reduces the pH on surface of the tooth and causes demineralisation.

If the plaque on the tooth surface is subject to prolonged exposure to sugars, the saliva, which under normal circumstances helps to neutralise the effects of acid, doesn't get time to work and there is an increased risk of irreversible loss of tooth structure.

Saliva plays a crucial role in preventing caries and those who have saliva flow restricted for some reason, usually as a result of medication, can find themselves at increased risk of dental decay, through no fault of their own.

#### Prevention of dental caries

Reducing sugar intake will naturally decrease an individual's propensity to demineralisation. But also reducing the frequency of sugar intake has a significant impact, simply by enabling the mouth greater time to recover. This is why avoiding constantly sipping sugary drinks helps prevent dental caries, and why educating parents about the dangers of giving children fruit juice from a baby's bottle and too many sweets is crucial in ensuring children's improved oral health.

Controlling sugar intake is one way to control dental disease, but the other way involves oral hygiene. The application of a

fluoride toothpaste twice a day is recommended. For difficult to reach areas, interdental brushes and floss are also useful aids in assisting with plaque removal, and stimulating saliva production by chewing sugar-free gum also helps to restore the mouth's pH neutral status.

#### How do we get fluoride?

We ingest fluoride in a number of ways. In some parts of the UK (affecting approximately 10% of the population) fluoride is added to the water supply and there is strong evidence that shows the beneficial effects of this. Toothpaste is the most common way to get exposure to fluoride as 98% of toothpaste sold contains it, however toothpaste on general sale cannot contain more than 1,500ppm of fluoride. Other methods of taking fluoride include mouthwash, fluoride drops, tablets and gels. Fluoride varnish contains high concentrations of fluoride and are applied in surgery. Too much fluoride can result in discolouration of the enamel, known as fluorosis. It is therefore important to ensure that children living in areas where the drinking water contains a level of 1ppm do not supplement their fluoride intake in any way.

#### Gum health

Poor oral hygiene is the starting point for a number of oral health diseases. As well as caries, neglect can cause gingivitis and eventually periodontitis.

If your gums bleed when you brush your teeth, this can be a sign of the early stages of gingivitis (gum disease). Gingivitis is caused by an accumulation of plaque bacteria above the gum margin. It

is, however, a reversible condition and professional removal of the plaque bacteria soon restores the gingiva to health without any permanent damage.

If gingivitis is left untreated, it can spread to the bone, periodontal ligament and cementum, this is known as periodontitis and is a disease that can ultimately result in the loss of teeth. Gingivitis does not automatically develop into periodontitis, however, if the plaque above the gum margin persists the plaque bacteria can spread below the gum margin where it cannot be removed by toothbrushing or mouth rinses.

## Gum health and systemic disease

There is now a growing body of evidence that shows that gingivitis and periodontitis play a role in the development of a number of systemic diseases and conditions such as diabetes, some forms of heart disease and premature birth.

## Disease prevention

There is evidence that shows that despite the population's insistence that they brush twice a day as recommended, two thirds of adults have visible plaque on at least one tooth.

Most children and adolescents also have gingivitis affecting one or more teeth, and by the age of 35-44 many have moderate periodontitis. Approximately 10% of those aged 55+ years have severe periodontitis that threatens the life of one or more teeth.

These statistics show the importance of regular professional dental hygiene in effectively removing bacteria from below the gum margin and for those patients who have plaque and calculus formations below the gum margin, the root surfaces need to be cleaned professionally with hand or ultrasonic instruments for healing to take place. This is known as root debridement. In

addition to professional treatment, maintaining an effective plaque control programme at home, using antibacterial toothpastes and mouthwashes, is the foundation of preventing and controlling periodontal disease.

## Tooth wear

### Tooth wear is categorised in three ways:

1. Erosion: The loss of tooth substance by chemical means. Soft drinks, juices and citrus fruits are the major sources of dietary acids and an increase in the consumption of carbonated drinks is probably the reason why erosion is increasingly prevalent.
2. Attrition: Loss of tooth substance caused by tooth contact. Teeth can be worn by grinding the teeth at night (bruxism), causing loss of tooth substance on the occlusal surface.
3. Abrasion: Loss of tooth substance from sources other than the teeth, ie over-vigorous toothbrushing.

## Preventing tooth wear

The majority of people are unaware of tooth wear. This problem can be reduced by modifying the frequency and the way in which soft drinks, fruit juices and fruit are consumed. Using a custom-made splint or night guard can reduce the effects of attrition from grinding the teeth at night and using softer toothbrushes can help with symptoms of over-zealous toothbrushing.

## Dentine hypersensitivity

This is a common condition, causing pain arising from exposed dentine in response to external stimuli. Tooth roots are not normally exposed but if there is gum recession the underlying

dentine can be exposed, and movement of the fluid in the dentinal tubules, which stimulates nerve endings in the pulp, results in hypersensitivity.

Treatments include the blocking of the dentinal tubules at the surface, using either a high fluoride toothpaste or a fluoride varnish. Or the inhibition of sensory nerve activity by using a toothpaste that reduces nerve responsiveness.

## Oral cancer

This is the fastest growing cancer in the UK and each year accounts for the death of more than 1,700 people. Oral cancer can involve the lips, cheeks, tongue and palate. In the UK the majority of cases occur in people aged 50 or over. However, the number of people under the age of 40 years developing the disease has been rising.

Poor detection rates are blamed for the high mortality rate of oral cancer, approximately 60%, and as with other cancers, early detection can improve survival chances to more than 90%. Dentists are now encouraged to screen for oral cancer using a simple test performed on a regular basis.

*Despite the population's insistence that they brush twice a day as recommended, two thirds of adults have visible plaque on at least one tooth.*

**Barbara Hutchinson,**  
Director at Manan Ltd,  
takes readers through  
Module 2 of the  
BDIA Certificate:  
Introduction to Dentistry.



# Essential dentistry

## Delivering an evidence-based approach to promoting oral health and preventing oral disease



Healthcare professionals are placing a greater emphasis on prevention of disease and maintaining health by the giving of advice based on sound, clinical evidence. This is also true of dental professionals who have access to more of the population than any other healthcare professional. Not only do patients access their dentist more often than any other healthcare provider, they are also, in the main, healthy when they arrive, unlike when they visit the doctor.

This offers a real opportunity for the entire dental team to proactively provide tailored oral care advice to all their patients to help them improve their oral health and prevent disease. The latest Adult Dental Health Survey<sup>1</sup> shows primary care dental teams do give toothbrushing advice with over three-quarters of patients surveyed recalling receiving their advice. The question is, what is the advice

they are receiving? I have spent a lot of time working in practice and when group working with a dental team, have asked them to let me know what oral care advice they routinely give to their patients.

The result is often astonishing. Debate starts between the team as the lack of conformity in oral care advice is revealed. I can fairly accurately guess the individual dentist's age and where they

qualified just by their responses. Highlighting these inconsistencies has been very compelling for some practice principals. They realise the potential impact on their patient's customer care through inconsistent messaging, the opportunity lost for maximising patient outcome through improved home care and of course, loss of potential practice sales from patients not receiving appropriate advice, along with a product recommendation to help them along.

### Finding what works

Evidence-based dentistry includes the integration of best evidence, clinical judgement and patient values and circumstance. Just as this article goes to print, there is extensive media coverage questioning the benefits of flossing. The important fact here is to understand nobody is suggesting interdental cleaning is not important. What is being debated is the strength of evidence on what works best and in which situations. Dental professionals will be questioned by patients and hopefully their reply will include the importance of acting on the evidence available, plus tailoring any advice to individual need. This latest evidence shows patients with some interdental space between their teeth may gain a greater benefit from using an interdental brush. This still leaves a role for floss as an alternative for those patients who have no space to use an interdental brush. It is true to say therefore that evidence-based practice does require a discipline of lifelong learning to ensure dental professionals are up to date and the most recent and relevant scientific evidence is translated into practical clinical applications.

## The toolkit

*Delivering better oral health – an evidence based toolkit for prevention*, now in its third edition and published by Public Health England<sup>2</sup>, brought key experts together to provide practical, evidence-based guidance to help clinical teams promote oral health and prevent oral disease in their patients. This toolkit is the result of dental teams requesting clear guidance on the advice they should give their patients, and the actions they should take to prevent disease. It challenges the perception that prevention is only for patients at risk, stating that ‘all patients should be given the benefit of advice and support to change behaviour regarding their general and dental health, not just those thought to be at risk’. This guide lists the advice and actions that should be provided for all patients to maintain good oral health. For those patients about whom there is greater concern (eg, those with medical conditions, those with evidence of active disease and those for whom the provision of reparative care is problematic) there is guidance about increasing the intensity of generally applied actions.’

The evidence-base within the toolkit is also a compelling tool for the dental industry and gives the direction of travel for product development and promotion. All the major toothpaste manufacturers changed the fluoride level in their children’s toothpaste to meet the minimum 1000 parts per million fluoride concentration, after *Delivering better oral health* was first published by the Department of Health back in 2007.

There are many product manufacturers making clinical claims. *Delivering better oral health* helps dental teams understand the evidence-based benefit of certain product types through the giving of advice or

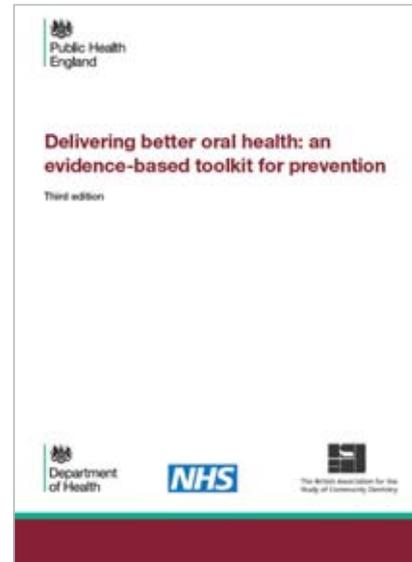
using as part of an intervention. There is a hierarchy of clinical evidence across healthcare, with the most compelling and independent being a systematic review of multiple well-designed randomised control trial/s. Each piece of advice or clinical intervention presented in *Delivering better oral health* is presented with an evidence grade. This represents the highest grade of evidence which currently exists for the advice or intervention.

## The grades of evidence shown

- Grade I – Strong evidence from at least one systematic review of multiple well-designed randomised control trial/s.
- Grade II – Strong evidence from at least one properly designed randomised control trial of appropriate size.
- Grade III – Evidence from well-designed trials without randomisation, single group pre-post, cohort, time series of matched case-control studies.
- Grade IV – Evidence from well-designed non-experimental studies from more than one centre or research group.
- Grade V – Opinions of respected authorities, based on clinical evidence, descriptive studies or reports of expert committees.

Additionally, a symbol that indicates good practice has been added to statements for which specific evidence is not available, but which make practical sense. This is shown as GPD.

So why is an understanding of the evidence-based approach important to us working within the dental industry? Prevention is for all, NHS or private, and increasingly patients expect to be given appropriate advice to help them to improve or maintain their oral health. Prevention remains at the heart of the NHS contract reform and the FP17



reimbursement form asks the performer to indicate if they have worked to the principles of *Delivering better oral health*. This guidance document is now also part of undergraduate teaching, so increasingly more dentists will be embedded into this way of working. It is important to show we understand to leverage the commercial opportunities *Delivering better oral health* provides to drive an incremental increase in product and consumable sales.

## References

1. The Adult Dental Health Survey, (2009) published 2011, NHS Information Centre for Health and Social Care.
2. *Delivering better oral health – An evidence-based toolkit for prevention*, published by the Public Health England, June 2014. [www.gov.uk/government/publications/delivering-better-oral-health-an-evidence-based-toolkit-for-prevention](http://www.gov.uk/government/publications/delivering-better-oral-health-an-evidence-based-toolkit-for-prevention).

### Gail Vernon, Director at VSM Healthcare

provides insights on how policy can positively influence oral care outcomes.

