



- What is dental caries and how does it affect children?
- What are the four main principles of caries prevention?
- How can the dental team promote prevention?

VITAL GUIDE TO

Preventing dental caries

Annie Morgan* looks at the cause and effects of dental caries and what role DCPs can play in advising and protecting their young patients.

Introduction

Having good oral health is an important part of a person's general well-being.¹ Dental caries, as shown in Figures 1-3, is a disease of the mineralised tissues of teeth caused by the action of micro-organisms on dietary carbohydrates, such as sugar. The number of young people who have decay has reduced over recent decades, but it is still the predominant oral disease in children within the UK, and the most common chronic disease of childhood in the USA.²⁻⁴ This reduction in prevalence has not occurred uniformly across the country, and there is still disparity existing both across and within different regions. This has meant children who live in material and social deprivations have much higher levels of decay.¹ Worryingly, the decline in dental caries in the younger age groups appears to have stopped.⁵

If caries is left untreated it can cause both pain and infection, which can be, in extreme cases, life-threatening.⁶ Unfortunately many children experience toothache.⁷ A child suffering as a result of dental pain can disrupt normal family life: they may not be able to sleep at night, concentrate in school, or have to miss school completely. They may also struggle to eat at mealtimes.^{1,7-8}

As dental caries is a preventable disease the objective for the dental team should be to keep all children and young people completely free from tooth decay. This potentially results in a significant lifelong gain in health for those young people as they grow into adults.² Preventative measures should be based on the individual patient's need, so those who have good dental health stay that way, and resources are targeted and focused at those who are at greatest risk.⁹ Assessment of caries risk involves consideration of multiple factors including: the patient's previous decay experience; dietary habits; social history; use of fluoride; plaque control; and saliva and medical history.² The dental team also has an ethical obligation to inform patients about decay and provide them with advice on how to prevent it.²

The aim of this paper is to describe the advice and practical measures that the whole dental team can use to promote prevention of dental decay in children and adolescents.

Role of the team

To prevent dental caries there are four main principles: oral hygiene; healthy eating advice; increasing fluoride availability; and placement of fissure sealants.¹⁰ Dental health education (ie information giving) is most beneficial on a one-to-one basis, and within the dental setting.¹¹ Team work by all in the dental practice can potentially be very effective in this, particularly if a unified and consistent approach is used to deliver the preventive messages, which

should be practical, personal and positive. Family support is also crucial, as to modify behaviours past the short-term the patient's parents or carers would need to create a supportive home environment for this modification to be sustained.^{2,11-12}

1. Oral hygiene

Toothbrushing removes dental plaque, which is important to prevent gingivitis and periodontal disease, but for dental caries it is the fluoride in the toothpaste that has the important health benefit.² Fluoride has a number of actions but most importantly is its topical action in inhibiting demineralisation and encouraging remineralisation of the tooth surface. The Department of Health's recently published guidance document, *Delivering better oral health*,¹⁰ outlines the key messages to give patients and their parents about toothbrushing and these are summarised in Table 1.

There exists an anxiety that because young children tend to swallow and ingest toothpaste they are at an increased risk of developing fluorosis, with cosmetic consequences. The perceived wisdom is that this can be avoided by using lower fluoride (children's) concentration toothpaste. However, this risk needs to be balanced against fluoride's protective effect, and therefore it is sensible to reduce the amount of toothpaste placed on the toothbrush, rather than a lower fluoride concentration, and this would be a much more effective way to prevent caries and the risk of fluorosis.¹¹

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Figs 1-3 Dental caries in a young patient

2. Healthy eating advice

The dental team is ideally placed to promote children having a healthy diet. The key messages of healthy eating are also described in the document *Delivering better oral health*¹⁰

and these include: to have meals based on starchy foods; to eat lots of fruit and vegetables, with the much publicised '5-a-day'; to eat more fish; to cut down on saturated fat and sugar; and to eat less salt. In the prevention of

caries a key principle is that if a child has a diet where they frequently have foods and drinks that contain sugar, they increase their chances of getting decay. The aim should be to reduce the amount and also how often these foods and drinks are consumed.^{2,11} A useful initiating tool is a 3-day diet diary, which can be used to help motivate the patient. Advice is most helpful if it is constructive, so rather than 'banning' all confectionery the dental team should provide encouragement for healthier food choices, and give parents assistance in finding alternatives. A common misconception is that crisps are a 'healthier' snack; they tend to be high in salt and fats. Instead parents can encourage older children to have sugar-free chewing gum, this not only encourages saliva production, which is protective, but if the gum contains xylitol it is also antibacterial.²

In the media there has been discussion and debate on the increasing prevalence of childhood obesity within the UK. Although the causes of this are complex, one part is that it is related to children having an increased sedentary lifestyle, and instead of being active and playing outdoors, are spending more time inside watching television and playing computer games.¹³ Research has found that with increased television viewing there is also an increase in the amount of snacking, and these are often sugar-rich junk foods.¹⁴ Any relationship between overweight children and caries does need further investigation but there may well be common risk factors.¹³ Therefore, the dental team can promote a varied, good diet in a wider context of a healthier lifestyle.

3. Increasing fluoride availability

The introduction of fluoride in toothpaste that occurred in the 1970s has been held responsible for the subsequent decrease in caries levels.¹⁵ Oral health advice that concentrates on increasing fluoride use has been shown to be effective in reducing caries.¹⁶ There are now many products that contain fluoride available for either professional application or home use, such as fluoride rinses, supplements (tablets or drops) and varnishes. These are described in detail in the Department of Health's *Delivering better oral health*¹⁰ document. There is evidence that children who use other forms of topical fluoride, such as a mouthrinse or varnish, as well as the use of fluoride toothpaste, will have an additional reduction in decay then if they used toothpaste alone.¹⁷ Fluoride varnishes (Fig. 4) which are applied by a dental professional are an effective option. They have been shown to substantially reduce tooth decay in both the primary and permanent dentition.¹⁸ Unlike the use of a mouthrinse or supplement, the

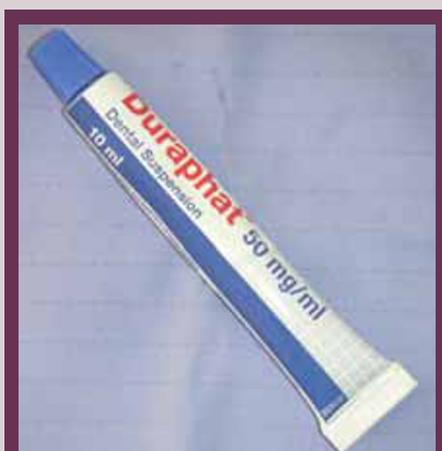


Fig. 4 A well-known brand of fluoride varnish

Table 1 Principles of toothbrushing for children

- Brushing should occur twice daily including last thing at night
- Family fluoride toothpaste (1350-1500 ppm fluoride) should be used for all children (except those who cannot be prevented from eating toothpaste)
- Children under 3 years should use a toothpaste of minimum concentration 1000 ppm fluoride
- Children under 3 years should use a smear of toothpaste, and between 3 and 6 years a pea-sized amount
- Children need to be assisted or supervised with brushing until at least 7-years-old
- Spitting out excess toothpaste and not rinsing

use of fluoride varnish does not depend on the patient's compliance at home. Application is also easy, with a small amount applied to dried tooth surfaces, and the patient's only requirement is then not to eat, drink or brush their teeth for 30 minutes. The regular use of a fluoride mouth rinse is also effective, and similarly fluoride tablets have a well-documented potential to inhibit caries, although both of these depend on the patient's use at home.^{2,19}

Within the UK only 11% of the population benefit from fluoridated water.²⁰ There is evidence that water fluoridation both decreases caries prevalence and decreases dental health inequalities across social classes.²¹ The dental team can have a role in educating the public about the benefits of water fluoridation, which could raise the profile of this important issue within local communities.

4. Placement of fissure sealants

The occlusal surfaces of permanent molar teeth are the sites most at risk of developing caries in young patients, and actually represent almost 50% of the carious lesions in schoolchildren.^{22,23} A fissure sealant (Fig. 5) is a material that is placed in the pits and fissures to prevent caries development and they have been shown to work.²⁴ Their use should be targeted at those patients who will benefit the most, such as those who are at an increased risk of developing caries.² The strongest predictor is a child's past caries experience, so if a patient had decay in their primary teeth they are then at greater risk of developing it in their permanent teeth and their first permanent molars should be fissure-sealed as soon as possible after their eruption. Their use does extend beyond permanent molars as they can also be placed on other susceptible sites, such as palatal pits on upper anterior teeth and primary teeth.

It is not always possible to place resin-based

sealants; if the tooth is only partially erupted; in an anxious child who is unable to manage the washing and drying needed for acid etching; or in a hypoplastic tooth that is too sensitive. An alternative is to use a glass-ionomer sealant, such as Fuji Triage (GC Europe), which by not requiring acid-etching is well-tolerated by young patients, although it can only be seen as temporary measure.

Conclusions

Dental caries is still a significant health concern for children and young people living in the UK, with many still suffering as a result. As discussed in this article all dental team members can play an important role its prevention, and can therefore improve the health of their young patients.

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Fig. 5 Fissure sealants in a teenage patient

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CPD questions on this article can be found on page 50.

HOTSPOT



Name: Maureen Chaseley
Age: 52
Town: Tunbridge Wells
Loves: Family get-togethers, dancing, cooking, history.
Hates: Rudeness, gardening.
Hobbies: Dancing, reading, going to church, holidays abroad.

What is your job? I am the dental advisor for AXA PPP healthcare. I review claims to see if they are eligible for benefit against the policy. This can mean talking to oral maxillo-facial specialists about the patient's treatment plan; on other days I am explaining dental terms to the phone contact team so they can speak to the customers; then the next day I am researching a new treatment which has just come onto the market to see if it is clinically proven.

How did you get your job? I started working for AXA nine years ago in the

phone contact centre but being a dental nurse prior to joining the company I always ended up with the dental calls. I then applied for a vacancy in the clinical centre with the medical staff and took up the position of dental advisor.

How did you end up working in dentistry? I originally wanted to be a nurse when I was at school and I met a friend who had left school to become a dental nurse and hated it. When she was talking about the job and what it involved I thought I would like to do that. I applied for the same job and 30 years later I am still working in dentistry.

What do you enjoy most about your job? The variety. Some days I'm doing a presentation to trainees on all things dental and the next I am talking to an Oral Max about complex oral cancers.

What is the most challenging part of your job? Explaining to a specialist that I am not challenging his or her clinical judgement, just querying the treatment plan so I can check eligibility against the patient's insurance policy.

If you weren't working in dentistry, what would you be doing? I would be a tour guide. There are so many castles and places of interest in Kent. I would love to share my enthusiasm for history with others.

Would you recommend a career in dentistry? Definitely. There is so much variety and diversity nowadays in dentistry. It's not just washing up dirty instruments.

What three things could you not live without? My family and friends, a good book and my necklace collection (I am the accessory queen!)

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