Public Health England

Delivering better oral health: an evidence-based toolkit for prevention

Third edition

Department of Health

NHS

The British Association for the Study of Community Dentistry

About Public Health England

Public Health England's mission is to protect and improve the nation's health and to address inequalities through working with national and local government, the NHS, industry and the voluntary and community sector. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England
133-155 Waterloo Road
Wellington House
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: @PHE_uk

For queries relating to this document, please contact: jenny.godson@phe.gov.uk

Published June 2014
PHE gateway number: 2014126

This document is available in other formats on request. Please call 020 8327 7018 or email publications@phe.gov.uk

Contents

About Public Health England

Foreword 1

Introduction to third edition 2

The prevention toolkit 4

Section 1 Summary guidance for primary dental care teams 6

Section 2 Principles of toothbrushing for oral health 17

Section 3 Increasing fluoride availability 19
Fluoridation of water and milk 19
Toothpaste – list of current products by fluoride concentration level 22
Fluoride varnish 28
Prescribing high concentration fluoride toothpaste 30
Prescribing additional fluoride – tablets and rinses 30

Section 4 Healthy eating advice 32
Dietary advice to prevent dental caries 32
General good dietary practice guidelines 34
Diet diary 38

Section 5 Sugar-free medicines 42

Section 6 Improving periodontal health 44

Section 7 Smoking and tobacco use 51

Section 8 Alcohol misuse and oral health 63

Section 9 Prevention of erosion 69

Section 10 Helping patients to change their behaviour 74

Section 11 Supporting references 79

Acknowledgements 99

Foreword

It is well recognised that oral health has an important role in the general health and well-being of individuals and it is of concern that significant inequalities in oral health exist across England.

The risk factors for many general health conditions are common to those that affect oral health, namely smoking, alcohol misuse and a poor diet. It is therefore important that all clinical teams make every contact count and support patients to make healthier choices. By doing this not only will patients' oral health benefit but their general health will be at lower risk as well. Clinical dental teams therefore have an important role in advising their patients about how they can make choices that improve and maintain both their dental and general health.

Public Health England is pleased to provide this third edition of the prevention toolkit for clinical teams. Current evidence has been reviewed and used to revise and develop the previous edition.

I am sure this key document will allow all patients to benefit from modern preventive treatments and improved methods of self-care. It should be used by the whole dental team to ensure that all patients have equity of access to improved preventive advice and care.

Prof. Kevin Fenton, director of Health and Wellbeing

Sue Gregory, head of dental public health

Public Health England

Introduction to third edition

Publication of 'Delivering better oral health – an evidence-based toolkit for prevention' in 2007 led to a range of positive changes that have increased the likelihood of people in England benefiting from improved oral health. The guidance states the minimum concentrations of fluoride in toothpaste to control caries and prompted several manufacturers to reformulate their children's toothpaste to a more effective level for caries control. Coupled with clear advice about twice daily brushing, this is likely to have reduced caries activity among our very young children. Guidance regarding the important role of fluoride varnish as part of clinical activity to control caries has led to a large increase in the number of primary care teams applying this routinely and regularly to their child patients and to adults at higher risk. The simple item of advice that patients should spit out after brushing instead of rinsing away the fluoride in their toothpaste has been widely broadcast and should lead to lower caries levels among children, adolescents and adults.

All of this is good news and large numbers of primary care teams have commented about how useful the toolkit has been to ensure that consistent advice is given as part of preventively orientated treatment plans. The document has also ensured that other health and social care partners are aware of the correct preventive messages and this has improved coherence between dental teams and other agencies.

A further benefit has been the increased training of DCPs to support preventive activity in practices. This is to be encouraged and runs in alignment with the principles of the dental contract reform programme which is focussing dental services towards a more preventive approach. This toolkit is an enabling document which lists the evidence-informed messages which allows them to be given consistently.

The toolkit also supported a new approach whereby all patients, regardless of perceived risk level, were given preventive advice and offered preventive treatment. This serves to establish new social norms for better home care and recognises the fact that not all new disease can be anticipated so all patients can benefit from advice and support. With 52% of adults and 70% of children contacting a dentist in every 24 month period the power of the messages that dental clinical teams can have is considerable.

The toolkit has informed commissioners and allowed contracts to be developed which encourage preventive activity. It has also been useful in informing other health, education and social care work partners so that better daily care can be brought into a variety of settings.

This third edition continues to support these positive effects and will be accompanied by versions which will help patients to better understand the preventive messages. The summary tables have been reviewed and revised, particularly the table referring to

periodontal disease. Where new evidence has emerged this has been assessed and the grade indicating the strength of evidence increased where appropriate. Additional tables have been provided to summarise advice about healthy eating, smoking and alcohol misuse. The sections providing more detail have also been improved and a section about behaviour change has been added.

We would like to thank the members of the working group that have reviewed and revised material for this third edition and the wider organisations that contributed to it. We strongly commend this toolkit to you so that you may develop a preventive approach to your practise.

Sue Gregory OBE
Head of dental public health

Jenny Godson
Lead for oral health improvement

Public Health England

The prevention toolkit

Many dental teams have asked for clear guidance about the advice they should give and the actions they should take to be sure they are doing the best for their patients in preventing disease. There is currently a drive for greater emphasis on prevention of ill-health and reduction of inequalities of health by the giving of advice, provision of support to change behaviour and application of evidence-informed actions. It is important that the whole dental team, as well as other healthcare workers, give consistent messages and that those messages are up to date and correct.

Recent thinking suggests 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.

A number of well-respected experts have come together to produce this document which aims to provide practical, evidence-based guidance to help clinical teams to promote oral health and prevent oral disease in their patients. It is intended for use throughout primary dental care.

This toolkit is not the result of multiple systematic review processes, rather a pragmatic and progressive approach was taken towards the original collation of the available evidence and applied in revisions for each new edition. The steering group conferred with leaders in the field and established core messages and actions for which evidence had revealed a preventive benefit. Relevant papers were assessed for the detail and strength of evidence they revealed, then statements were refined to ensure the wording correctly reflected the conclusions derived. The published papers that gave the highest level of evidence available are provided as references to support each statement (and can be found in section 11). In many instances intelligence was drawn from a range of studies or reviews and statements were derived from the totality of the resulting evidence

The information displayed in the model is supported by evidence of varying levels of strength. Where the evidence level is weak this does not mean that the intervention does not work but simply that the current evidence supporting it is not of the highest quality. Each piece of advice or suggested intervention is presented with an evidence grade. This represents the highest grade of evidence that currently exists for the advice or intervention listed in the model.

The grades of evidence given are as follows:

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

(Gray, 1997)

For this new edition 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 GP✓.

There is an intention to re-classify the evidence in the next edition of the toolkit using the GRADE system.

Section 1 Summary guidance for primary care teams

Prevention of caries in children age 0-6yrs

	Advice to be given	EB	Professional intervention	EB
Children aged up to 3 years	• Breast feeding provides the best nutrition for babies	**I**		
	• From six months of age infants should be introduced to drinking from a free-flow cup, and from age one year feeding from a bottle should be discouraged	**III**		
	• Sugar should not be added to weaning foods or drinks	**V**		
	• Parents/carers should brush or supervise toothbrushing	**I**		
	• As soon as teeth erupt in the mouth brush them twice daily with a fluoridated toothpaste	**I**		
	• Brush last thing at night and on one other occasion	**III**		
	• Use fluoridated toothpaste containing no less than 1,000ppm fluoride	**I**		
	• It is good practice to use only a smear of toothpaste	GP ✔		
	• The frequency and amount of sugary food and drinks should be reduced	**III, I**		
	• Sugar-free medicines should be recommended	**III**		

	Advice to be given	EB	Professional intervention	EB
All children aged 3-6 years	• Brush at least twice daily, with a fluoridated toothpaste • Brush last thing at night and at least on one other occasion	I III	• Apply fluoride varnish to teeth two times a year (2.2% NaF^-)	I
	• Brushing should be supervised by a parent/carer	I		
	• Use fluoridated toothpaste containing more than 1,000 ppm fluoride • It is good practice to use only a pea size amount	I GP✓		
	• Spit out after brushing and do not rinse, to maintain fluoride concentration levels	III		
	• The frequency and amount of sugary food and drinks should be reduced	III, I		
	• Sugar-free medicines should be recommended	III		
Children aged 0-6 giving concern (eg, those likely to develop caries, those with special needs)	All advice as above plus: • Use fluoridated toothpaste containing 1,350-1,500ppm fluoride • It is good practice to use only a smear or pea size amount • Where medication is given frequently or long term request that it is sugar free, or used to minimise cariogenic effects	 I GP✓ GP✓	• Apply fluoride varnish to teeth two or more times a year (2.2% NaF^-) • Reduce recall interval • Investigate diet and assist adoption of good dietary practice in line with the eatwell plate • Where medication is given frequently or long term, liaise with medical practitioner to request it is sugar free, or used to minimise cariogenic effects	I V I GP✓

Prevention of caries in children aged from 7 years and young adults

	Advice	EB	Professional intervention	EB
All patients	• Brush at least twice daily, with a fluoridated toothpaste	I	• Apply fluoride varnish to teeth two times a year (2.2% NaF^-)	I
	• Brush last thing at night and at least on one other occasion	III, I		
	• Use fluoridated toothpaste (1,350-1,500ppm fluoride)	I		
	• Spit out after brushing and do not rinse, to maintain fluoride concentration levels	III		
	• The frequency and amount of sugary food and drinks should be reduced	III, I		
Those giving concern to their dentist (eg, those with obvious current active caries, those with ortho appliances, dry mouth, other predisposing factors, those with special needs)	All the above, plus: • Use a fluoride mouth rinse daily (0.05% NaF^-) at a different time to brushing	I	• Fissure seal permanent molars with resin sealant	I
			• Apply fluoride varnish to teeth two or more times a year (2.2% NaF^-)	I
			• For those 8 years upwards with active caries prescribe daily fluoride rinse	I
			• For those 10+ years with active caries prescribe 2800 ppm fluoride toothpaste	I
			• For those 16+ years with active disease prescribe either 2,800ppm or 5,000ppm fluoride toothpaste	I
			• Investigate diet and assist to adopt good dietary practice in line with the eatwell plate	I

Prevention of caries in adults

	Advice	EB	Professional intervention	EB
All adult patients	• Brush at least twice daily, with a fluoridated toothpaste	**I**		
	• Brush last thing at night and at least on one other occasion	**III, I**		
	• Use fluoridated toothpaste with at least 1350ppm fluoride	**I**		
	• Spit out after brushing and do not rinse, to maintain fluoride concentration	**III**		
	• The frequency and amount of sugary food and drinks should be reduced	**III, I**		
Those giving concern to their dentist (eg. with obvious current active caries, dry mouth, other predisposing factors, those with special needs	All the above, plus: Use a fluoride mouthrinse daily (0.05% NaF-) at a different time to brushing	**I**	• Apply fluoride varnish to teeth twice yearly (2.2% NaF-)	**I**
			• For those with active coronal or root caries prescribe daily fluoride rinse	**I**
			• For those with obvious active coronal or root caries prescribe 2,800 or 5,000ppm fluoride toothpaste	**I**
			• Investigate diet and assist to adopt good dietary practice in line with the eatwell plate	**I**

Prevention of periodontal disease – to be used in addition to caries prevention

	Advice to be given	EB	Professional intervention	EB
All adults and children	**Self-care plaque removal** Remove plaque effectively using methods shown by the dental team This will prevent gingivitis and reduces the risk of periodontal disease	V III	Advise best methods of plaque removal to prevent gingivitis, achieve lowest risk of periodontitis and tooth loss.	III
			Use behaviour change methods with oral hygiene instruction	I
	Daily, effective plaque removal is more important to periodontal health than tooth scaling and polishing by the clinical team	III	Correct factors which impede effective plaque control including; supra- and subgingival calculus, open margins and restoration overhangs and contours which prevent effective plaque removal	GP ✔
	Toothbrushing and toothpaste Brush gum line AND each tooth twice daily (before bed and at least on one other occasion). For further information regarding toothpastes and periodontal health see section 6.1	V	With extensive inflammation start with toothbrushing advice, followed by interdental plaque control	GP ✔
	Use either • Manual or powered toothbrush	I	**Assess patient's/parent/carer's preferences for plaque control** • Decide on manual or powered toothbrush • Demonstrate methods and types of brushesAssess plaque removal abilities and confidence with brush • Patient sets target for toothbrushing for next visit	V
	• Small toothbrush head, medium texture	V		

	Advice to be given	EB	Professional intervention	EB
All adults and ages 12-17	**Interdental plaque control** Clean daily between the teeth to below the gum line before toothbrushing, • For small spaces between teeth: use dental floss or tape • For larger spaces: use interdental or single-tufted brushes • Around orthodontic appliances and bridges: use kit suggested by the dental professional	GP✔ V V V	**Assess patient's preferences for interdental plaque control** • Decide on appropriate interdental kit • Demonstrate methods and types of kit • Assess plaque removal abilities and confidence with kit Patient sets target for interdental plaque control	V

Risk factor control

Tobacco (all adults and adolescents)	Do not smoke Smoking increases the risk of periodontal disease, reduces benefits of treatment and increases the chance of losing teeth.	III	Ask, Advise, Act: take a history of tobacco use, give brief advice to users to quit and sign post to local stop smoking service (see tobacco table for more detail)	I
Diabetes	Patients with diabetes should try to maintain good diabetes control as they are • At greater risk of developing serious periodontal disease • Less likely to benefit from periodontal treatment if the diabetes is not well controlled	V III V	For patients with diabetes: • Explain risk related to diabetes	GP✔

	Advice to be given	EB	Professional intervention	EB
Medications	Some medications can affect gingival health	V	For patients who use medications that cause dry mouth or gingival enlargement • Explain oral health findings and risk related to medication • Assess and discuss clinical management (see section 6)	 GP ✔ GP ✔

Prevention of peri-implant disease

All adults with dental implants	Dental implants require the same level of oral hygiene and maintenance as natural teeth	V	Advise best methods for self-care plaque control, both toothbrushing and interdental cleaning	V
	Clean both between and around implants carefully with interdental kit and toothbrushes	V		
	Attend for regular checks of the health of gum and bone around implants	V		

Prevention of oral cancer

Risk level	Advice	EB	Professional intervention	EB
All adolescents and adults	• Do not smoke	III	• Ask, Advise, Act – tobacco use very brief advice	I
	• Do not use smokeless tobacco (eg, paan, chewing tobacco, gutkha)	I	• Take a history of tobacco use, give brief advice to users and signpost to local stop smoking service	I
	• Reduce alcohol consumption to moderate (recommended) levels	I	• Ask, Advise, Act – alcohol very brief advice Establish if the patient is drinking above low risk (recommended) levels. If appropriate signpost to GP or local alcohol misuse support services if available See tobacco and alcohol tables	I
	• Increase intake of non-starchy vegetables and fruit	III		

Evidence-based advice and professional intervention about smoking and other tobacco use

	Advice	EB	Professional intervention	EB
All adolescents and adults	Tobacco use, both smoking and chewing tobacco seriously affects general and oral health. The most significant effect on the mouth is oral cancers and pre-cancers.	**III**	Ask, Advise, Act: take a history of tobacco use, give brief advice to users and signpost to local stop smoking service	**I**
	• Do not smoke or use shisha pipes	**I**	• Ask – establish and record smoking status	
	• Do not use smokeless tobacco (eg, paan, chewing tobacco, gutkha)	**I**	• Advise – advise on benefits of stopping and that evidence shows the best way is with a combination of support and treatment • Act – offer help referring to local stop smoking services	
	If the patient is not ready or willing to stop they may wish to consider reducing how much they smoke using a licensed nicotine-containing product to help reduce smoking. The health benefits to reducing are unclear but those who use these will be more likely to stop smoking in the future.	**V**		

Evidence-based advice and professional intervention about alcohol and oral health

	Advice	EB	Professional intervention	EB
All adolescents and adults	Drinking alcohol above recommended levels adversely affects general and oral health with the most significant oral health impact being the increased risk of oral cancer. Reduce alcohol consumption to low risk (recommended) levels. **Recommended levels (May 2014):** Men should not regularly consume more than 3 to 4 units per day Women should not regularly consume more than 2 to 3 units per day All drinkers should avoid alcohol for 2 days following a heavy drinking session to allow the body to recover Pregnant women or women trying to conceive should avoid drinking alcohol but if they choose to drink they should limit this to no more than 1 to 2 units once or twice a week and avoid getting drunk	IV I	For all patients: Ask – establish and record if the patient is drinking above low risk (recommended) levels Advise – offer brief advice to those drinking above recommended levels Act – refer or signpost high risk drinkers to their GP or local alcohol support services	I

Evidence-based advice and professional intervention about healthier eating

	Advice to be given	EB	Professional intervention	EB
All ages	The frequency and amount of consumption of sugars should be reduced	**III, I**	To aid dietary modification advice consider using a diet diary over 3 days, one weekend day and 2 weekdays	GP ✔
	Avoid sugar containing foods and drinks at bedtime when saliva flow is reduced and buffering capacity is lost	**III**		

Prevention of erosion/toothwear

No table could be provided as the evidence to support interventions to prevent toothwear is currently limited. Some tooth wear is a natural part of ageing; thus at present evidence-based population advice on tooth wear, and particularly erosion, cannot be substantiated. Evidence from studies to support preventive interventions for individuals with pathological wear is limited, but growing. Much of the available evidence to date relates to associations and is largely limited to epidemiology, laboratory and in situ studies; thus, further research in this field is recommended. The later chapter about erosion and toothwear describes possible causes and an overview of methods of management, which includes advice about prevention of toothwear according to the need of individual patients.

Section 2 Principles of toothbrushing for oral health

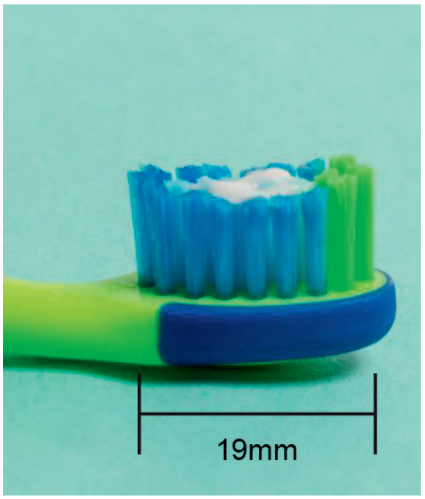
The major dental conditions of caries and periodontal disease can both be reduced by regular toothbrushing with fluoride toothpaste.

To control caries it is the fluoride in toothpaste which is the important element of toothbrushing, as fluoride serves to prevent, control and arrest caries. Higher concentration of fluoride in toothpaste leads to better caries control.

To control gum disease the physical removal of plaque is the important element of toothbrushing as it reduces the inflammatory response of the gingivae and its sequelae. Some toothpastes contain ingredients which also reduce plaque, gingivitis and bleeding gums.

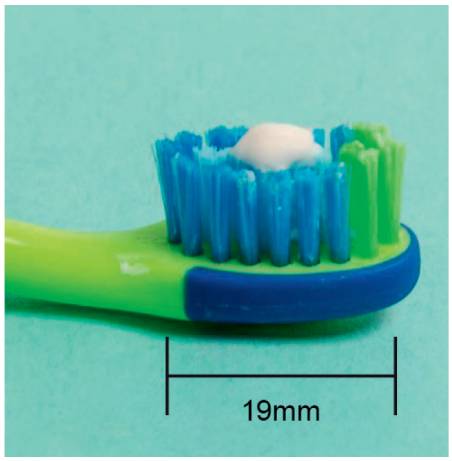
There is evidence to suggest that the preventive action of toothbrushing can be maximised if the following principles are followed:

- brushing should start as soon as the first primary tooth erupts
- brushing should occur twice daily as a minimum – clean teeth last thing at night before bed and at least one other time each day
- children under three years should use a toothpaste containing no less than 1,000 ppm fluoride
- children under three years should use no more than a smear of toothpaste (a thin film of paste covering less than three-quarters of the brush) and must not be permitted to eat or lick toothpaste from the tube



- family fluoride toothpaste (1,350-1,500 parts per million fluoride – ppmF) is indicated for maximum caries control for all children except those who cannot be prevented from eating toothpaste. Advice must be given about adult supervision and the small amounts to be used

- children between three and six years should use no more than a pea-sized amount of toothpaste



- children need to be helped or supervised by an adult when brushing until at least seven years of age and must not be permitted to eat or lick toothpaste from the tube
- rinsing with lots of water after brushing should be discouraged – spitting out excess toothpaste is preferable
- rinsing with water, mouthwashes or mouth rinses (including fluoride rinses) immediately after toothbrushing will wash away the concentrated fluoride in the remaining toothpaste, thus diluting it and reducing its preventive effects. For this reason rinsing after toothbrushing should be discouraged
- the patient's existing method of brushing may need to be modified to maximise plaque removal, emphasising the need to systematically clean all tooth surfaces. No particular technique has been shown to be better than another
- disclosing tablets can help to indicate areas that are being missed
- brushing is more effective with a small-headed toothbrush with medium-texture bristles (ISO 20126: 2012), (V)

While there is evidence that some powered toothbrushes (with a rotation, oscillation action) can be more effective for plaque control than manual tooth brushes, probably more important is that the brush, manual or powered, is used effectively twice daily. Thorough cleaning may take at least two minutes.

Section 3 Increasing fluoride availability

Fluorides are widely found in nature and in foods such as tea, fish, beer and in some natural water supplies. The link between fluoride in public water supplies and reduced levels of caries was first documented early in the last century. Since then fluoride has become more widely available, most notably in toothpaste and is widely recognised as having improved oral health in the UK.

There is abundant evidence that increasing fluoride availability to individuals and communities is effective at reducing caries levels. This can be achieved by a range of methods but similar principles apply to all. Fluoride works topically in the main and is most effective if it is available multiple times during the day. Higher concentrations of fluoride provide better caries prevention effects and vehicles which are parts of normal life are more likely to be effective and avoid increasing inequalities. When vehicles and concentrations of fluoride are considered for caries control the only risk to health is fluorosis, and this is only the case if young children receive excess levels (see section 2). A balance has to be achieved whereby the most benefit can be gained from this naturally occurring substance, while at the same time avoiding the risk of fluorosis.

Water fluoridation

Currently approximately 10% of England's population, or about six million people, benefit from a water supply where the fluoride content, either naturally or artificially, is at the optimum level for dental health. In terms of population coverage, the West Midlands is the most extensively fluoridated area, followed by parts of the North East of England. Consumers seeking information on fluoride levels in their water can obtain this from their water supplier. Many water companies having an online function to allow consumers to check this. This is particularly important where additional fluoride is being considered for young children.

Information on how fluoride availability can be increased on an individual basis to improve oral health now follows.

Milk fluoridation

There are a few schemes in England which supply children with fluoridated milk at school. They are provided in areas which are not fluoridated and where levels of caries are high. Children should not take part if they have fluoride tablets or fluoride rinse on a daily basis.

Fluoride toothpaste

Strong evidence shows that toothpastes containing higher concentrations of fluoride are more effective at controlling caries. It is clear that low fluoride toothpastes (those containing less than 1,000ppmF-) are ineffective at controlling caries.

A Cochrane systematic review of evidence stated that "There should be a balanced consideration between the benefits of topical fluorides in caries prevention and the risk of the development of fluorosis" (Wong, 2010). This review focusses on mild or questionable fluorosis and did not distinguish between this and the more severe forms. Mild fluorosis is not readily apparent to the affected individual or casual observer and often requires a trained specialist to detect it.

The review concluded that the evidence about the risk of fluorosis from starting the use of fluoride toothpaste in children under 12 months of age was weak, and for starting between the age of 12 and 24 months was equivocal. It also stated that where the risk of fluorosis is of particular concern, the fluoride level of toothpaste for young children is recommended to be lower than 1,000ppm. However, for children considered to be at high risk of tooth decay by their dentist, the benefit to health of preventing decay may outweigh the risk of fluorosis. In such circumstances, careful brushing by parents/carers with toothpastes containing higher levels of fluoride would be beneficial.

The risk of fluorosis from ingesting too much fluoride are linked much more to the amount of toothpaste that is used, than to the concentration. Risks of aesthetically challenging fluorosis to permanent incisors are relevant only to ingestion of fluoride by those under three years old. Calcification of the crowns of these teeth is complete by 30 months. Risks of aesthetically challenging fluorosis to premolars are only relevant to those aged under six years as calcification of the crowns of these teeth is complete by this age.

A research study investigated the concentration and amount of toothpaste used by children aged one to two years. This showed that the ingestion of fluoride among children who used a large amount of paste could be as much as twenty times higher than that for children who used only a small amount. In contrast there was only a four fold difference in the amount of fluoride ingested between those who used a low fluoride toothpaste and those using one containing 1,450ppm. See figure 3.1

	mg fluoride ingested	
Fluoride concentration	 Small amount placed on brush	 Large amount placed on brush
1,450ppm	0.05mg	1.02mg
440ppm	0.02mg	0.33mg

4 fold

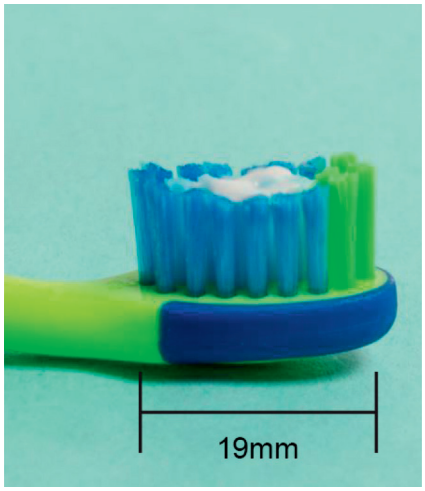
20 fold

Bentley et al 1999

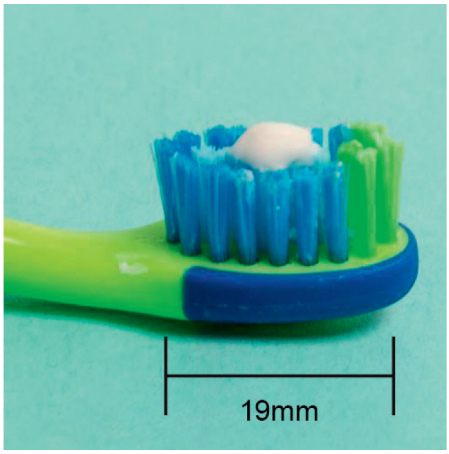
Figure 3.1 The impact of concentration and amount of toothpaste used on fluoride ingested

Putting these pieces of evidence together shows that the best combination is to use higher concentration toothpaste in very small quantities for children aged six years and below. For this reason parents should be shown how small an amount to use and they should ensure their children do not eat or lick the toothpaste.

Children aged under three years should use only a smear of toothpaste.



Children aged three to six years should use only a pea-sized blob of toothpaste.



Types of over-the-counter toothpastes by fluoride concentration level

This table is provided for information only and should NOT be seen as an endorsement of any particular brand by PHE.

Efforts have been made to make the list as comprehensive as possible but it may not represent a complete list of all brands of toothpaste available in the UK and was correct at the time of press, March 2014.

This table cannot provide information about levels of fluoride in brands bought from such places as single price stores, markets, websites and car boot sales, which may be special imports or, on occasion, counterfeit, and not contain known levels of fluoride. Such toothpaste may not offer protection against decay.

Read the label to look for the parts per million of fluoride (ppmF-) in the toothpaste.

Higher concentration fluoride gives better protection against decay

Toothpastes containing 1,000-1,500ppmF-
Brand
ALDI
Dentitex – all types
ASDA
Protect Big Teeth 6+, Total care, Extreme Fresh, Whitening, Sensitive
Smart Price
Aquafresh
Active Cavity Protection, Fresh Breath
Active Whitening Fluoride
Big Teeth
12 Hour Protection
Extreme Clean, Whitening
Fresh Minty
HD White Illuminating Mint, Tingling Mint
Iso-Active fresh mint fluoride, Clean and whiten
Little Teeth
Mild Minty
Milk Teeth 3-5 years
Multi-action whitening
Multi Active Fluoride
Triple Protection, Whitening

Toothpastes containing 1,000-1,500ppmF-
Brand
Arm and Hammer
Advance White, Whitening, Whitening Sensitive
Brilliant Sparkle, Enamel Pro Repair Sensitive, Extra White, Original Coolmint
Beverley Hills Formula
Total enamel sensitive expert
Perfect White
Biotene fluoride
Boots
Smile Fresh Stripe, Total care, Whitening, Sensitive
Expert Sensitive Whitening, Enamel Protection, weekly clean
Expert orthodontic
Smile Kids 6+
Corsodyl
Extra Fresh Original, Whitening
Colgate
2 in 1 Whitening, icy Blast
Advanced White, Whitening, Whitening Go Pure
Fresh Minty Gel
Cavity Protection
Cool Stripe
Deep Clean Whitening
Sensitive Enamel Protect
Cavity Protection Great Regular
Max Beads Blue, Max Fresh Blue
Maxwhite, One, One Active, One Luminous, One Optic, Shine
Sensitive Enamel Protect, Sensitive and Whitening, multi-protection, Plus Whitening, Pro-relief, Pro-relief and whitening, pro-relief Enamel repair, Pro-relief Multi-protect
Kids 4-6
Kids 6+
Total* Advanced, Clean*, Freshening*, Pro-Gum Health*, Pro-Gum Health Whitening*, Sensitive*, Whitening*, Interdental*
Triple Action
Whitening and Fresh breath
Co-operative
Freshmint
Whitening and totalcare, Sensitive and totalcare

Toothpastes containing 1,000-1,500ppmF-
Brand
Fluoridine
Janina
Ultra White Extra strength, White Sensitive
Kingfisher
Mint with Fluoride, Fennel with Fluoride
Kokomo
Peppa Pig
Macleans
Fresh Mint
Ice Whitening Toothpaste
Total Health and Whitening
White 'n' Shine
Whitening, Whitening Fluoride
Mentadent
Mentadent P with zinc citrate, Mentadent SR
Oral B
Stages – Bubble gum
1-2-3
3D White Enamel Protect, White Brilliance, White Luxe Healthy Shine
Complete Extra Fresh, Extra White, mouthwash and whitening
Pro Expert All Around Protection Clean Mint, All Around, Enamel Shield, Premium Gum Protection, Sensitive + Gentle Whitening, Whitening
Pearl Drops
Pro White, Instant White, Restore White, Ultimate White
Everyday white
Sainsbury's own
Basics
Extracare Fresh and Whitening, Sensitive and Whitening
Freshmint
Gentle Whitening
Sensitive, Sensitive Enamel
Whitening
Kids Toothpaste 3-6

Toothpastes containing 1,000-1,500ppmF-
Brand
Sensodyne
Complete Protection, Extra Fresh
Daily Care
Extra Fresh
Gentle Whitening
Gum Protection
Iso Active Whitening
Mint
Pronamel Daily Toothpaste. Daily Fluoride Children 6 – 12 years. Extra Freshness, gentle whitening
Rapid Relief Mint
Repair & Protect Extra Fresh, Whitening
Total Care, gentle whitening
Smith Kline Beecham
Corsodyl Daily Extra Paste, Daily Whitening
Superdrug
Procare
Tesco's own
Everyday Value
Kids Strawberry
Freshmint
Sensitive
Whitening
Steps Toothpaste 0-2
Steps Toothpaste 3-, 6+
Pro-formula Daily protection sensitive. All day protection complete, sensitive, complete whitening, Daily protection enamel protect, Extreme whitening, freshmint
Tom's of Maine
Fennel and Spearmint
Wilkinsons
Wilko whitening, Freshmint Fresh
Wisdom
Xtra clean
Zohar kosher toothpaste

Toothpastes containing exactly 1,000ppmF-
Brand
ASDA
Protect 0-3 Milk Teeth
Aquafresh
Milk Teeth 0-2 years
Beverley Hills Formula
Total protection whitening
Sensitive whitening
Dentist's choice
Boots
Essentials
White Glo 2 in 1
White Glo Coffee & tea formula
White Glo Extra strength
Smile Kids 2-6
Clinomyn
Smoker's
Colgate
Kids 0-3
Dr Fresh
Thomas the Tank Engine
Kingfisher
Aloe Vera
Fennel with Fluoride
Tea Tree
Kokomo
Hello Kitty
Sainsbury's own
Kids Toothpaste 0-3
Tom's of Maine
Fennel and Spearmint
Ultradex – was Retardex
Low Abrasion
White Glo
Recalcifying & whitening
Wilkinsons
Wilko Everyday value

Toothpastes containing less than 1,000ppmF- (low concentration) – limited/no protection against decay
Brand
Blanx Advance whitening Intensive Stain Removal Sensitive White Shock **Boots** Smile Kids 0-2 **Co-operative** **Kingfisher** Aloe Vera Fennel with Fluoride Tea Tree **LIDL** Dentalux for kids 0-6 **Oral B** Stages – Berry Bubble

Toothpastes containing no fluoride
Brand
Beverley Hills Formula Natural whitening **Boots** Smile Non Fluoride **Elgydium** **Eucryl Powder** **Euthymol** **Kingfisher** Fennel fluoride free Baking soda fluoride free Mint with lemon fluoride free Aloe vera, Tea Tree, Mint fluoride free

Toothpastes containing no fluoride
Brand
Optima
AloeDent triple action
AloeDent Bambini
Oral B
Rembrandt Plus Fresh Mint
Sensodyne
Original
Tom's of Maine
Many types of fluoride free

*Toothpastes containing triclosan with co-polymer

Fluoride varnish

Fluoride varnish is one of the best options for increasing the availability of topical fluoride, regardless of the levels of fluoride in the water supply. High quality evidence of the caries-preventive effectiveness of fluoride varnish in both permanent and primary dentitions is available and has been updated recently. A number of systematic reviews conclude that applications two or three times a year produce a mean reduction in caries increment of 37% in the primary dentition and 43% in the permanent. The evidence supports the view that varnish application can also arrest existing lesions on the smooth surfaces of primary teeth and roots of permanent teeth. Much of the evidence of effectiveness is derived from studies which have used sodium fluoride 22,600ppm varnish for application.

Fluoride varnish for use as a topical treatment has a number of practical advantages. It is well accepted and considered to be safe. Further, the application of fluoride varnish is simple and requires minimal training. While a thorough prophylaxis is not essential prior to application, removal of gross plaque is advised.

Dental nurses can be trained to apply fluoride varnish to the prescription of a dentist and this use of skill mix can assist a practice to become more preventively orientated. Primary care commissioning provides guidance about the circumstances under which dental nurses can carry this out and the minimum requirements for training courses, which should include a significant amount of content about giving preventive advice.

Care should be used to ensure that only a small quantity of varnish is applied to teeth, particularly for young children. Teeth should be dried with cotton wool rolls or a triple syringe. The varnish should be carefully applied with a microbrush to pits, fissures and approximal surfaces of primary and permanent teeth and to any carious lesions. The patient should be advised to avoid eating, drinking or rinsing for 30 minutes after application and eat only soft foods in the following four hours. Brushing can

recommence on the day following application of fluoride varnish

The use of Duraphat is contraindicated in patients with ulcerative gingivitis and stomatitis. There is a very small risk of allergy to one component of Duraphat (colophony), so for children who have a history of allergic episodes requiring hospital admission, including asthma, varnish application is contraindicated. Other brands of varnish may have different constituents.

Some fluoride varnishes contain alcohol but it has been agreed on the authority of the West Midlands Shari'ah Council that they are suitable for use by Muslims as they are being used as a medicament and are not an intoxicant, and are used in small amounts well below that which would intoxicate and they are not being used for reasons of vanity.

Clinicians should be aware that many fluoride varnishes on the market are not licensed for caries control, although they may have similar formulations, and take this into consideration with respect to their prescribing responsibilities.

Types of fluoride varnish	Concentration of fluoride	
Fluor protector S	1,000ppm	1.5% Ammonium Fluoride
Lawefluor	22,600ppm	2.2% Fluoride compound
Duraphat varnish	22,600ppm	2.2% Sodium fluoride
Bifluorid cavity liner	56,300ppm	6% sodium fluoride + 6% calcium fluoride
Copal F	22,600ppm	2.2% Fluoride compound
Clinpro Desensitising varnish	22,600ppm	2.2% Fluoride compound

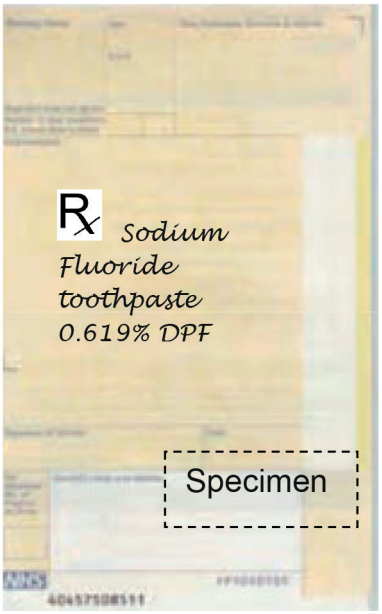
Prescribing high concentration fluoride toothpaste

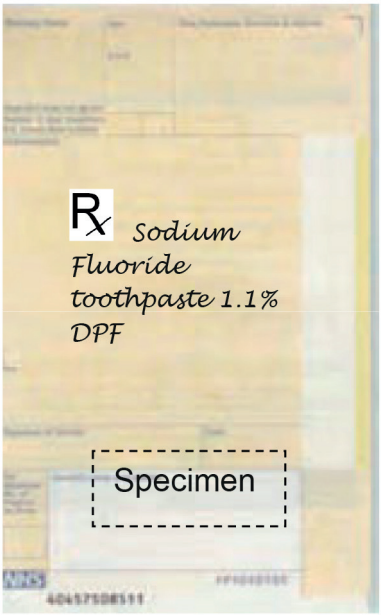
Sodium fluoride 2,800ppm toothpaste

Indications: high caries risk patients aged ten years and over, those with caries present, orthodontic appliances, a highly cariogenic diet or medication.

Sodium fluoride 5,000ppm toothpaste

Indications: patients aged 16 years and over with high caries risk, present or potential for root caries, dry mouth, orthodontic appliances, overdentures, those with highly cariogenic diet or medication.





Use of additional fluoride

Fluoride tablets and drops

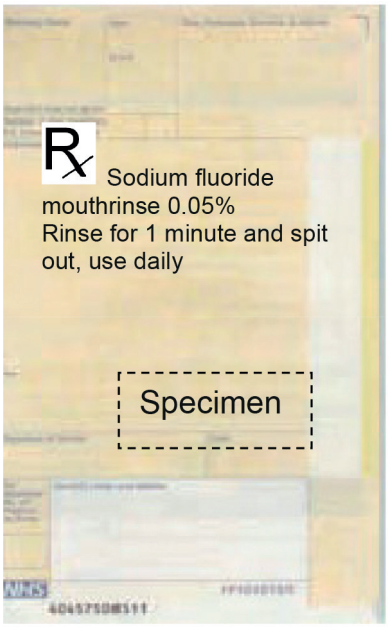
It is recognised that the use of fluoride tablets and drops requires compliance by families and this may include under and over-use. There is a risk of fluorosis if children aged under six years take more than the advised dose. With this in mind, other sources of fluoride may be preferable and therefore be considered first. Twice daily brushing with fluoride toothpaste containing at least 1,000ppm fluoride, or higher for those at risk, is a higher priority step, and is likely to bring lifelong benefits.

A recent systematic review of fluoride tablets, drops, lozenges and chewing gums concluded that the evidence of the effect of these additional sources of fluoride " …was unclear on deciduous teeth".

Fluoride rinses

These can be prescribed for patients aged eight years and above, for daily use, in addition to twice daily brushing with toothpaste containing at least 1,350ppm fluoride. Rinses require patient compliance and should be used at a different time to toothbrushing to maximise the topical effect, which relates to frequency of availability. Rinsing, even with a fluoride rinse immediately after brushing will reduce the beneficial

effects of fluoride toothpaste. Fluoride in toothpaste (1,000-1,500ppm) is at a higher concentration compared with fluoride rinses (225ppm) and so is more effective if retained in the mouth, rather than being diluted or washed away by rinses.



References

Wong MCM, Glenny AM, Tsang BWK, Lo ECM, Worthington HV, Marinho VCC. Topical fluoride as a cause of dental fluorosis in children. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007693. DOI:10.1002/14651858.CD007693.pub2.

Tubert-Jeannin S, Auclair C, Amsallem E, Tramini P, Gerbaud L, Ruffieux C, et al. Fluoride supplements (tablets, drops, lozenges or chewing gums) for preventing dental caries in children. Cochrane Database of Systematic Reviews 2011, Issue 12.

Bentley EM, Ellwood RP, Davies RM, (1999). Fluoride ingestion from toothpaste by young children *Br Dent J*. 8;186(9):460-2.

www.pcc-cic.org.uk/sites/default/files/articles/attachments/the_use_of_fluoride_varnish.pdf

Section 4 Healthier eating advice

Healthier eating advice should routinely be given to patients to promote good oral and general health. Key dietary messages to prevent dental caries are summarised below. The main message is to reduce both the amount and frequency of consuming foods and drinks that have added sugar. Added sugar is defined as sugars or syrups added to foods and drinks by the manufacturer, cook or consumer, plus sugars present in honey, syrups, fruit juices and fruit concentrates. It does not include sugars found in whole fresh fruit and vegetables and those naturally present in milk and milk products.

Dietary advice to prevent dental caries

Consensus recommendations advocate the following to prevent caries:

- the amount and frequency of consumption of sugars should be reduced
- avoid sugar-containing foods and drinks at bedtime
- added sugars should provide less than 10% of total energy in the diet or 60g per person per day whichever is the lesser. Note that for young children this will be around 30g per day (one teaspoon of sugar equates to approximately 5-6g)

The World Health Organisation (WHO) has revised its guidelines on sugar intake for adults and children. They contain a strong recommendation that in adults and children the intake of free sugars should not exceed 10% of total energy and a conditional recommendation of a further reduction to below 5% of total energy.

The Scientific Advisory Committee on Nutrition, a committee of independent experts who advise the government on nutrition issues, are currently reviewing the evidence on sugars and other carbohydrates in diet as part of their report 'Carbohydrates and health'. This will include evaluating the evidence on oral health as well as other health outcomes. A draft report is expected to be published for consultation on 26 June 2014. The healthier eating guidance in 'Delivering better oral health' will be updated in the light of this publication.

Most added sugars in the diet are contained in processed and manufactured foods and drinks. Consumers should check labels carefully.

Potentially cariogenic foods and drinks include:

- sugared soft drinks
- sugar and chocolate confectionery
- cakes and biscuits
- buns, pastries, fruit pies
- sponge puddings and other puddings
- table sugar
- breakfast cereals
- jams, preserves, honey

- ice cream and sorbets
- fruit in syrup or canned in juice
- fresh fruit juices (ONE 150ml glass of fresh fruit juice can count towards 'five a day')
- sugared, milk-based beverages
- sugar-containing alcoholic drinks
- dried fruits
- syrups and sweet sauces

It is important to recognise that honey, fruit smoothies, fresh fruit juice and dried fruit all contain cariogenic sugars.

Frequency of consumption of foods and drinks containing sugar

Stephan's curve illustrates why the frequency of intake of sugars is particularly relevant for caries. Figure 4.1 below illustrates how demineralisation (area coloured red) of tooth surfaces occurs after a sugar intake and the subsequent drop in pH that takes place in the mouth as oral bacteria convert sugar to acid. This process stops as the buffering action of saliva takes place and is more rapid in the presence of fluoride. When sugar intakes are spaced some hours apart there is a good opportunity for remineralisation, which is also more effective in the presence of fluoride. Saliva production is stimulated at mealtimes and much reduced during sleep.

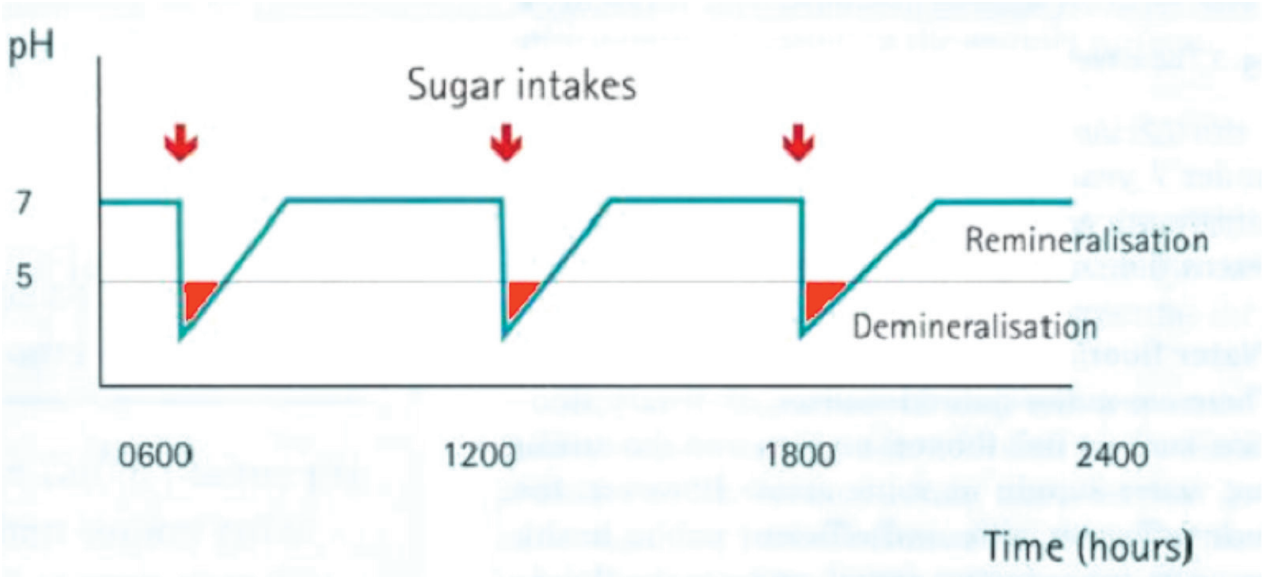


Figure 4.1 Illustration of effects of infrequent sugar intakes.

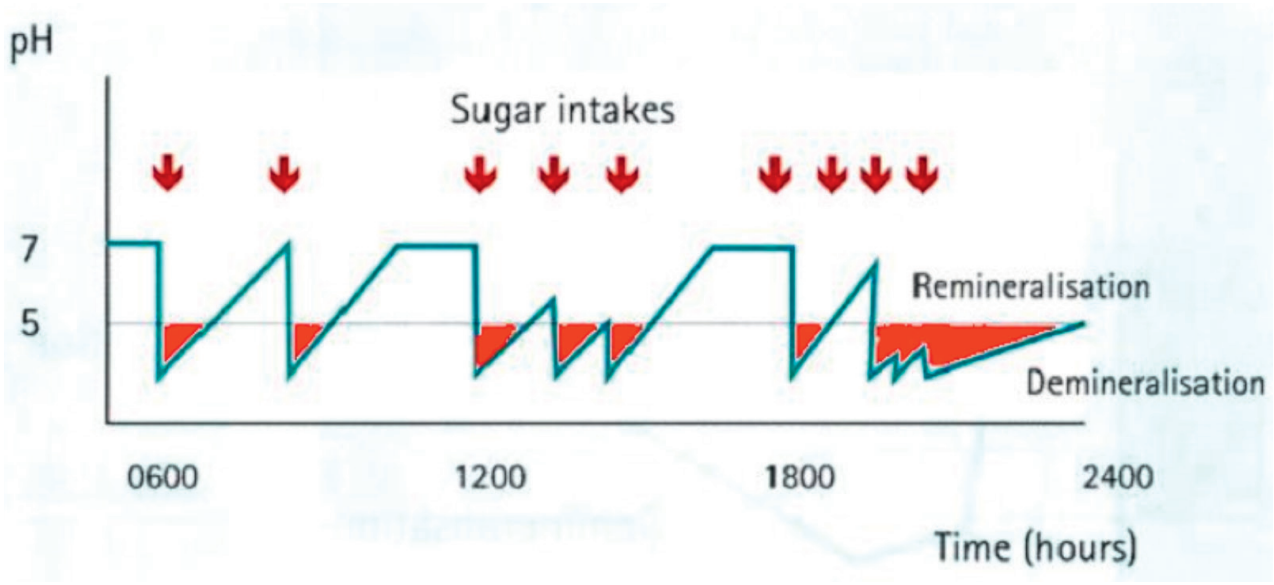


Figure 4.2 Illustration of effects of frequent sugar intakes.

The impact of frequent sugar intakes are illustrated in Stephan's curve in figure 4.2. In this case sugar intakes are experienced on many occasions during the day so demineralisation occurs more often and the time between drops in pH is not long enough for effective remineralisation to take place.

General good dietary practice guidelines

Key facts for eating well

Below are some of the main healthy eating messages aimed at helping people make healthier dietary choices.

The two most important elements of a healthy diet are:

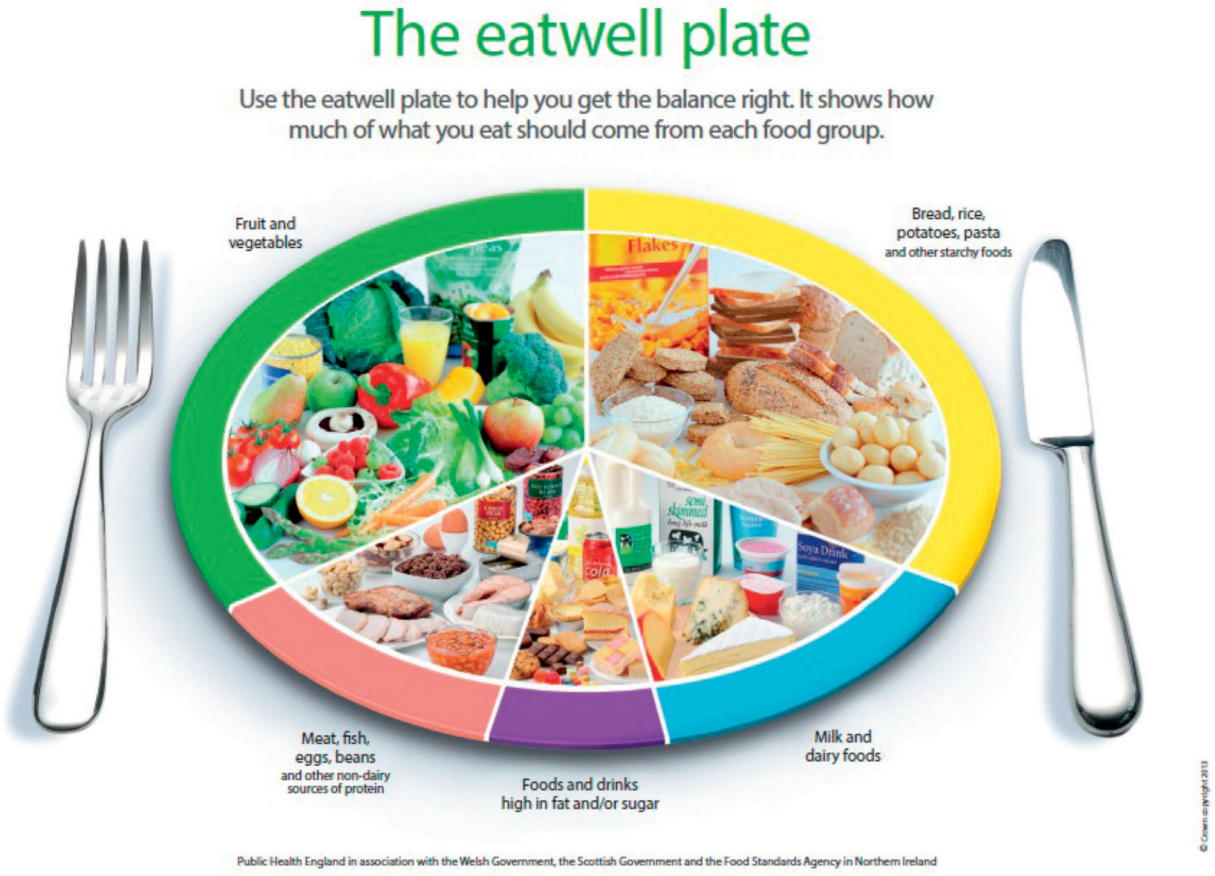
- eating the right amount of food relative to how active a person is to be a healthy weight
- eating a range of foods in line with the eatwell plate

The eatwell plate is a key policy tool that defines the government's recommendations on a healthy diet. It makes healthy eating easier to understand by giving a visual representation of the types and proportions of foods needed for a healthy, balanced diet.

The eatwell plate shows the types and proportions of the main food groups that we should eat as part of a healthy, balanced diet:

- plenty of fruit and vegetables (at least five portions of a variety every day)
- plenty of starchy foods, such as bread, rice, potatoes, and pasta, choosing wholegrain varieties and potatoes with their skins on whenever possible
- some milk and dairy foods
- some meat, fish, eggs, beans and other non-dairy sources of protein

Foods and drinks high in fat, sugar and/or salt should be consumed infrequently and in small amounts.



Key messages for a healthier diet

Base meals on starchy foods

Try to choose wholegrain varieties, and potatoes with their skins on, whenever possible – as wholegrain foods and the skins on potatoes contain more fibre and other nutrients than white or refined starchy foods. We also digest wholegrain foods more slowly so they can help make us feel full for longer.

Eat lots of fruit and vegetables

At least five portions of a variety of fruit and vegetables should be eaten every day; different fruit and vegetables contain different combinations of fibre, vitamins and other nutrients. Eating more fruit and vegetables may help to reduce the risk of the two main killers in this country – heart disease and cancer. Most people know they should be doing this but still don't. Eating five plus portions a day can be easy. A portion of fruit and vegetables is 80g.

Eat more fish

Two portions of fish, including a portion of oily fish, eg salmon, trout, sardines, mackerel, sardines, pilchards, herrings, kipper, eels, whitebait and fresh tuna, should be eaten each week. The choice can be from fresh, frozen or canned – but canned and smoked fish can be high in salt. The fish count as oily fish when they're canned, fresh or frozen. However, fresh tuna is an oily fish but canned tuna doesn't count as oily. This is because when it's canned these fats are reduced to levels similar to white fish. So, canned tuna is a healthy choice for most people, but it doesn't have the same benefits as eating oily fish.

Cut down on saturated fat

To stay healthy we need some fat in our diets. There are two main types of fat:

- saturated fat – having too much can increase the amount of cholesterol in the blood, which increases the chance of developing heart disease. Foods containing this include: fatty meat, pâté, meat pies, sausages, hard cheese, butter, lard, full fat milk, and biscuits, cakes and pastry
- unsaturated fat – having unsaturated fat instead of saturated fat does not increase blood cholesterol levels. Good sources include: vegetable oils (such as sunflower, rapeseed and olive oil), oily fish, avocados, nuts and seeds

However, it is important not to increase the amount of total fat consumed because eating too much will increase energy intake and if greater than energy used may lead to weight gain.

Cut down on the amount and frequency of sugary food intake

As stated at the beginning of this section, consensus recommendations in order to reduce dental caries advocate reducing the amount and frequency of foods and drinks containing added sugars.

Increased intake of sugars can lead to increased energy intake and if greater than expenditure to weight gain.

Eat less salt – no more than 6g a day

Three-quarters (75%) of the salt we eat comes from processed food, such as some breakfast cereals, soups, sauces, bread, biscuits and ready meals. Eating too much salt can raise blood pressure. People with high blood pressure are three times more likely to develop heart disease or have a stroke than people with normal blood pressure.

Drink plenty of water

We should be drinking about six to eight glasses (1.2lts) of water, or other fluids, every day to stop us getting dehydrated.

There are specific dietary recommendations for infants and young children:

www.nhs.uk/conditions/pregnancy-and-baby/Pages/services-support-for-parents.aspx#close and click on the babies and toddlers tab

Source of key messages:
www.gov.uk/government/publications/the-eatwell-plate-how-to-use-it-in-promotional-material

Department of Health, Change4Life:
www.nhs.uk/change4life

Changing the diet

The diet modification approach should be used in conjunction with actions to increase fluoride availability (as outlined in section 1).

However, lowering the amount and frequency of sugars consumed will have wider health benefits, preventing weight gain and obesity which in turn will reducing the risk of heart disease, type 2 diabetes and some cancers.

When giving dietary advice to reduce consumption of sugars it is essential to assess the overall pattern of eating to establish the following information:

- the number of intakes of food and drinks per day
- the number of intakes that contain added sugars and how many were consumed between normal mealtimes

- whether any intakes containing sugars were taken within one hour of bedtime (when the caries protective effects of saliva are reduced)

In some cases it can be helpful to use a diet diary. An example of one type of diary is provided in appendix 4.1

Appendix 4.1 Example of a diet diary

Instructions on completing a diet diary

Please write down everything you (or your child if completing on their behalf) eats or drinks and the time during the day when consumed – this will help us to advise you on how best to improve your diet. Choose one weekend day and two others.

Please bring the diet diary with you to the next appointment.

Here is an example to show you how the diary should be filled in:

Record of food and drinks eaten and drink by ……	
TIME	**DAY 1** – *Friday*
7.30	1 cup of Tropicana orange juice Breakfast - Weetabix + sugar + milk 2 rounds of toast with butter and Marmite
8.30, on the way to school	2 Hobnobs
10.30, school break time	Can of Sprite Muesli health bar
12.45 pm	Ham sandwich, cheese and onion crisps, diet coke
3.30 pm	Banana
6 pm	Roast chicken, potatoes peas, gravy. Rhubarb crumble and custard
7 pm	Packet of Malteasers
8 pm bedtime	Hot chocolate drink and Hobnob

Record of food and drinks eaten and drink by ……..	
TIME	**DAY 1**

Record of food and drinks eaten and drink by ……..	
TIME	**DAY 2**

Record of food and drinks eaten and drink by ……..	
TIME	**DAY 3**

Section 5 Sugar-free medicines

Identifying sugar-free medicines

Products that do not contain fructose, glucose or sucrose are listed as sugar free. Preparations containing hydrogenated glucose syrup, lycasin, maltitol, sorbitol or xylitol are also listed as sugar free, since there is evidence they are non-cariogenic. Artificial sweeteners are also listed as sugar free.

Patients that could be on liquid medications include chronically ill children, frail elderly and adults with special needs. Children with chronic conditions such as epilepsy could require liquid medication for a long time. Frequent liquid medications could also be taken for a number of reasons including analgesia, infections and coughs and colds.

Information from the National Pharmacy Association leaflet 'Sugar in medicines' was adapted for use in previous editions of 'Delivering better oral health'. The leaflet was last reviewed in 2006 and much of the information in the leaflet is now out of date.

NHS Business Services Authority provided data on British National Formulary (BNF) prescribing data at presentation for January to December 2013. From this list the top 10 most prescribed medication as liquids, solutions and suspensions are shown table 5.1.

Table 5.1 List of ten most prescribed liquids and suspensions during 2013*

BNF name	Total number of prescriptions**
Lactulose_Soln 3.1g-3.7g/5ml	3,785,249
Ensure Plus_Milkshake Style Liq(10 Flav)	1,589,278
Amoxicillin_Oral Susp 125mg/5ml S/F	1,320,513
Fortisip Bottle_Liq (8 Flav)	1,161,414
Morph Sulf_Oral Soln 10mg/5ml	778,880
Amoxicillin_Oral Susp 125mg/5ml	715,340
Gaviscon Advance_Liq (Aniseed)(Forum)	699,684
Gaviscon Advance_Liq (Aniseed) (Reckitt)	672,413
Oramorph_Oral Soln 10mg/5ml	648,564
Paracet_Oral Susp Paed 120mg/5ml S/F	617,286

*NHSBSA BNF National prescribing data at presentation level (January 2013 to December 2013). NHSBSA Copyright 2014

**Data based on what is prescribed in England and may include items prescribed in England that have been dispensed in England, Wales or Scotland.

The list shows that two of the four most prescribed liquids/suspensions/solutions are nutritional supplements which, due to their function, would not be available as sugar free. The table also shows there were almost twice as many scripts for sugar free Amoxicillin Oral Suspension 125mg/5ml than for Amoxicillin Oral Suspension 125mg/5ml. Gaviscon Advance liquid is available in a sugar free version, the table shows that there are more prescriptions for the sugared than sugar free version. Patients need to be made aware that sugar free versions are available and to request these.

Where a patient is on long term liquid medication which is not sugar free, clinical teams are advised to check the BNF to see if sugar free alternatives are available. Where a sugar free version is available the clinician should write to the patient's general medical practitioner to ask if they can change the prescription to a sugar free version explaining the reason for the request.

Parents should also be advised to discuss with pharmacists if sugar free versions of over the counter liquid medications are available and explain why they should choose these over versions containing sugar.

For patients that are dentate and children that are on long term medication that is not sugar free and where sugar free alternatives are not available, patients/parents should be advised where possible to try to take/give medications at mealtimes. This may not always be possible if there are specific instructions such as taking medications on an empty stomach. Dental teams should also reinforce the importance of brushing as the last action before sleep, and that nothing should be eaten or drunk in the last hour before bed.

Reference

Baqir W, Maguire A. Consumption of prescribed and over-the-counter medicines with prolonged oral clearance used by the elderly in the Northern region of England, with special regard to generic prescribing, dose form and sugar content. *Public Health 2000* Sep 114(5): 367-73

6. Improving periodontal health –

UK surveys show that some level of irreversible periodontitis affects almost half of all adults (Steele and O'Sullivan, 2010) although this might be an underestimate of true disease levels. Periodontal health will therefore be an issue for most patients at one time or other. In view of the chronic nature of the disease, ongoing prevention and management will be the keys to success. Age is not a barrier to good periodontal health (Lindhe et al. 1985, Axelsson et al. 1991, Wennstrom, 1998, Needleman, 2011). Biologically, there is no overall damaging effect of ageing on the periodontal tissues, although changes in cognitive and motor skills might significantly complicate self-care plaque control and treatment. Maintaining periodontal health and preventing the development of periodontitis is based on the following:

1. Prevention of gingivitis. Gingivitis, if not controlled, will lead to periodontitis in the majority of individuals
2. Early detection of periodontitis using the the basic periodontal examination (BPE)
3. Managing risk factors that either increase the risk of developing periodontitis or complicate its successful care
4. Supportive periodontal therapy (maintenance) for patients treated for periodontitis

1. Prevention of gingivitis

Gingivitis is a predictor both of developing periodontitis and of increased tooth loss (Lang et al. 2009). Prevention of gingivitis is therefore important and is based on maintaining low plaque levels. Successful plaque control will result from a number of factors including:

1. A motivated patient, with appropriate skills, dexterity and oral hygiene kit
2. Effective behaviour change advice and instruction from dental team
3. Teeth, restorations and gingival contours which do not prevent effective plaque control

Oral hygiene – dental plaque control for periodontal health

Oral hygiene should be carefully tailored to an individual's needs and preferences:

- advise and instruct good plaque removal from, and just into, the gingival crevice including interdental areas
- advise replacement of toothbrushes regularly, every one to three months
- encourage daily interdental cleaning before toothbrushing. Since toothbrushing but not interdental cleaning is a routine for the majority of people, carrying out interdental oral hygiene first may link these activities and help develop regularity

- there are many types of interdental aids and personal preference will dominate choice of any individual type. However, in general, people with, or treated for, periodontitis will have larger interdental spaces due to tissue loss and interdental brushes will be more effective than dental floss or tape. The size of the interdental brush should be a snug fit in the interdental space. Therefore many patients with periodontitis will require more than one size of brush for smaller and larger spaces (eg, between anterior and posterior teeth)
- while there is evidence that some powered toothbrushes (with a rotation, oscillation action) can be more effective for plaque control than manual tooth brushes, it is probably more important that the brush, manual or powered, is used effectively twice daily. Thorough cleaning may take at least two minutes. Brushes should have a small-head with medium-texture bristles and be changed regularly (every one to three months).
- time spent brushing may be a useful guide for patients. Assessing efficacy in the dental practice is better based on gingival inflammation levels
- the primary emphasis should be for patients to develop good interdental plaque removal and tooth brushing. Although there is some evidence that fluoride toothpaste containing triclosan and a co-polymer, reduces plaque and gingival inflammation more than toothpastes that contain fluoride only, the clinical relevance of this reduction is unclear
- for patients with limited cognitive and motor skills (eg, children and adults with special needs, frail older people) consider toothbrush adaptations and additional support

Behaviour change (see also section 10)

Current research shows that brief behaviour change interventions can improve plaque control more than traditional oral hygiene instruction alone. These approaches encourage the patient to understand how oral hygiene might be beneficial to them, to develop confidence in their oral hygiene abilities, to set targets for change that they feel able to achieve and to challenge their perceived barriers to performance. Some of these methods address common barriers to the development of an effective oral hygiene routine which may not otherwise be addressed during traditional oral hygiene instruction.

2. Early detection of periodontal disease

The BPE is well known and quick to use (British Society of Periodontology, 2011). Recently, the BPE has been adapted for early detection of periodontal disease in children as it is recognised that periodontitis can start in children and adolescents but is hard to detect without probing (British Society of Periodontology, 2012) Therefore, all children from the age of seven years and upwards should be examined with modifications of the BPE. The summary guidance indicates how to do this in two age bands: seven to 11 years and 12 to 17 years.

Age 7-11 years	Gum disease is difficult to identify unless looked for	III	**Teeth to assess:** 6 1 | 6 6 | 1 6 **BPE codes to use:** 0,1,2 (only) **BPE** = 0, assess again at routine recall visit or within 1 year, whichever the sooner **BPE** = 1 or 2, treat and assess again at routine recall or after six months, whichever the sooner
Age 12-17	Gum disease is difficult to identify unless looked for	III	**Teeth to assess:** 6 1 | 6 6 | 1 6 **BPE codes to use:** 0,1,2,3,4 and * **BPE** = 0-2 as above **BPE** = 3 in 1 or more sextant: treat and review after three months **BPE** = 4 or * in any sextant: full periodontal assessment and normally arrange referral **(possible aggressive periodontitis)**

3. Managing risk factors

Smoking

Smoking (and smokeless tobacco products) has a profound effect on the risk of developing periodontitis but also impairs the treatment response. As a result, people with periodontitis who continue to smoke are more likely to lose teeth than non-smokers:

- checking smoking status for all patients is important. Since smoking status changes with time (non-smokers starting to smoke and people who quit relapsing), review this at oral health assessments
- for patients interested in quitting following brief advice by the dental team, signpost to local stop smoking services as this is the most effective approach to quitting
- patients who are not ready or willing to stop may wish to consider using a licensed nicotine containing product to help reduce smoking. The health benefits to reducing are unclear but those who achieve this are more likely to stop smoking in the future

For more details see section 7

Diabetes

Diabetes increases the risk of developing periodontitis and also may impair the treatment response of periodontitis. While it is true that well controlled diabetes is not a risk factor, many people oscillate between levels of control. Therefore, it is preferable to assume an increased risk for periodontal disease for anyone who has diabetes.

- in addition to usual good practice for periodontal disease prevention, patients with diabetes should be informed of the risk
- discuss how diabetes control affects periodontal health and ask about their level of glycaemic control, also known as HbA1c. Levels consistently below 7.0% indicate good control. Encourage patients to maintain good diabetes control (diet, medication, exercise etc.) and to follow-up with the diabetes physician regularly
- write to the diabetes physician for guidance on patient's diabetes status and health (template in appendix 6.1), particularly HbA1c levels. Informing the physician about the patient's periodontitis status might help the physician to tailor diabetes care and advice appropriately

Medications

There are a number of types of medications that are known to affect periodontal health, which underlines the importance of a comprehensive and up to date medical history. Medications may cause:

- dry mouth – most commonly seen with antidepressants and antihistamines, although a large number of drugs can have this effect (check in formulary)
- gingival enlargement – most commonly seen with calcium channel blockers for cardiovascular disease, although other drugs can have this effect

Ask:

- ask patients on medication if they experience dry mouth/gingival enlargement symptoms

Assess:

- assess oral health for impact of medication, eg, dry mouth: mucosal changes, caries, extensive plaque deposit and candidal infection. Gingival enlargement: gum swelling, especially between teeth

Action:

- explain findings and assess possible need to change medication
- contact physician to request consideration for medication change
- oral hygiene – consider short-term use of chlorhexidine mouthrinse in addition to usual plaque control
- review/professional plaque control – consider increasing frequency of reviews and scaling

4. Preventing disease in patients treated for periodontitis (supportive periodontal therapy/maintenance)

Periodontitis is a chronic disease and will recur and worsen without good plaque control (Axelsson, Nystrom and Lindhe, 2004, Needleman et al. 2005). Support of this is the basis of supportive periodontal therapy (SPT) which requires a long-term commitment from the patient and an intensive level of support, monitoring and care from the dental team.

Important components of SPT include:

- expectations – patients should be advised about the importance of SPT and the commitment required prior to commencing periodontal therapy
- monitoring –
  - plaque and gingival inflammation to guide oral hygiene advice
  - probing depths and bleeding on probing to guide:

    i. evaluation of health/stability
    ii. Targeting of treatment
- oral hygiene advice/behaviour change – as covered above
- debridement –
    - removal of supra and subgingival plaque and calculus,
    - root surface debridement of pockets 5mm and deeper with bleeding on probing

Peri-implant health

The soft tissues and bone around dental implants are at the same risk of inflammation and progressive disease as those around natural teeth. Evidence is accumulating that superficial inflammation (peri-implant mucositis) and true breakdown (peri-implantitis) around dental implants are common (Atieh et al. 2013).

The principles of prevention and health around implants are the same as around teeth and focus on effective plaque control (Heitz-Mayfield et al. 2014). Monitoring of implants also includes regular checking of soft tissue health visually and by probing. Unresponsive pockets with bleeding and pus and progressive bone loss indicate peri-implantitis.

At each visit:

- monitor plaque and marginal inflammation
- monitor probing depths, bleeding and presence of pus
- carry out debridement of all supra and subgingival plaque and calculus
- consider early referral to specialist for unresponsive deepened pocket with bleeding, or pus and progressive bone loss
- decide on recall interval based on peri-implant and periodontal

References

Atieh MA, Alsabeeha NH, Faggion CM Jr, Duncan WJ, (2013) The frequency of peri-implant diseases: a systematic review and meta-analysis. *J Periodontol* 2013;84:1586-1598

Axelsson, P., Lindhe, J. & Nystrom, B., (1991). On the prevention of caries and periodontal disease. Results of a 15-year longitudinal study in adults. *Journal of Clinical Periodontology* 18, 182-189

Axelsson, P., Nystrom, B. & Lindhe, J., (2004). The long-term effect of a plaque control program on tooth mortality, caries and periodontal disease in adults. *J Clin Periodontol* 31, 749-757

British Society of Periodontology, (2011). BPE guidance

http://www.bsperio.org.uk/userfiles/BSP%20guidance%20document%20-%20BPE%202011.pdf

British Society of Periodontology, (2012). www.bsperio.org.uk/publications/downloads/53_085556_executive-summary-bsp_bspd-perio-guidelines-for-the-under-18s.pdf

Heitz-Mayfield, L J. A., Needleman, I, Salvi, G.E. & Pjetursson, Bjarni E., (2014). *International Journal of Oral & Maxillofacial Implants*. Supplement, Vol. 29, p346-350. 5p. DOI: 10.11607/jomi.2013.g5.

Lang, N.P., Schatzle, M.A. & Loe, H., (2009). Gingivitis as a risk factor in periodontal disease. *Journal of Clinical Periodontology* 36, 3-8

Lindhe, J., Socransky, S., Nyman, S., Westfelt, E. & Haffajee, A., (1985). Effect of age on healing following periodontal therapy. *Journal of Clinical Periodontology* 12, 774-787

Needleman, I., Suvan, J., Moles, D.R. & Pimlott, J., (2005). A systematic review of professional mechanical plaque removal for prevention of periodontal diseases. *Journal of Clinical Periodontology* 32, 229-282

Needleman IG., (2011). Chapter 3. Ageing and the Periodontal Tissues. *Clinical Periodontology*, Eds Carranza & Newman & Takei, Mosby, Chicago.

Steele J G, O'Sullivan I., (2010). Executive summary: Adult Dental Health Survey 2009. London: Health and Social Care Information Centre.

Wennstrom, J.L., (1998). Treatment of periodontal disease in older adults. *Periodontology 2000* 16, 106-112

Appendix 6.1 – Template letter for GDP to contact diabetes physician

Practice details

Diabetes physician details

Dear

RE: Name:
DoB:
Address:
NHS number if known:

I am managing the periodontal health of and I understand they attend your diabetes clinic. As you know, diabetes can increase the risk of periodontal disease and compromise treatment, particularly with unstable glycaemic control (typically HbA1c more than 7.0%). I would therefore be grateful for your advice on their diabetes control and recent HbA1c levels would be helpful.

Thank you in advance for your help

Yours sincerely

Dentist details

Copy: Patient's name

Section 7 Smoking and tobacco use

Tobacco use in England continues to kill more than 70,000 people every year, nearly 1,900 of these people die from oral cancer (The Office of National Statistics, 2013). Action by dental teams to reduce tobacco use will help to improve dental treatment outcomes, promote oral and general health and ultimately save lives.

The following are key recommendations made in the related publication 'Smoke free and smiling', those relevant to dental teams are also reproduced within this document for ease of reference:

- people who use tobacco receive advice to stop and are offered support to do so with a referral to their local stop smoking service
- dental schools, postgraduate deaneries and other providers and commissioners of dental teaching should ensure that tobacco cessation training is available and meets national standards
- dental teams are routinely proactive in engaging users of tobacco
- commissioning bodies implement appropriate measures that support the above recommendations

Smoking remains the leading cause of preventable death and disease in England and has a significant impact on health inequalities and ill health. Other forms of tobacco or 'smokeless tobacco' (which are especially prevalent among the South Asian population) also impact on leading a healthy disease-free life (Tsai *et al.*, 2009, Johnson and Bain, 2000). Tobacco use, both smoking and chewing tobacco, seriously affects general and oral health. At least 50 different diseases are caused by tobacco use including various types of cancers, ischaemic heart disease, strokes and chronic lung disease. The most significant effects of tobacco use on the oral cavity are oral cancers and pre-cancers, increased severity and extent of periodontal diseases, tooth loss and poor wound-healing post operatively (Johnson and Bain, 2000). Smokers are seven to ten times more likely to suffer from oral cancer than people who have never smoked (Warnakulasuriya et al., 2005) and in long-term regular users of smokeless tobacco this risk is more than 11 times that of a non-user (Prabhakaran and Mani, 2002). Within England, mortality from oral cancer (ICD10 codes: C00-06/C09-10/C12-14) was 1,883 in 2011 (males, 1,221; females, 662) (The Office of National Statistics, 2013).

While the impact of tobacco use on health is alarming, the benefits of stopping are substantial, particularly for people under 35 years of age, who if they quit successfully will have a normal life expectancy (Doll and Bradford Hill, 1954, Jha et al., 2013). As many of the adverse effects of tobacco use on the oral tissues are reversible, this provides a useful means of motivating patients to stop.

Whether smoked or chewed, nicotine from tobacco is highly addictive. Consequently stopping is a major challenge for most users. The majority of cigarette smokers report

that they would like to stop, and make many attempts to quit (West and Brown, 2012). While some people (less dependent smokers) seem capable of stopping without any support, the majority of people would benefit from using smoking cessation medications and the support of their local stop smoking service. This is especially true for people who are more dependent on tobacco (Department of Health, 2010).

The latest Adult Dental Health Survey (2009) identified that 61% of dentate adults in England reported they attended the dentist for a regular check-up, 10% on an occasional basis and 27% when they had trouble with their teeth (The Health and Social Care Information Centre, 2011). Dental teams are therefore in a unique position to provide opportunistic advice to a large number of 'healthy' people who may use tobacco and need professional support to stop (Chestnutt, 1999). Thirteen percent of women continue to smoke during pregnancy and many of these women attend for free dental treatment (The Health and Social Care Information Centre, 2012). Dental teams working in the primary care, salaried services and in hospitals also have a potentially important role to play in cessation. Surveys indicate that dental teams have an increasingly positive attitude towards tobacco cessation and are becoming more actively involved in the care pathway (John et al., 2003).

All health professionals share an ethical duty of care to provide evidence-based interventions. Although progress has been made, with many dental teams routinely recording information on tobacco use and advising users to quit, there are dental teams who do not routinely offer tobacco cessation advice to their patients.

Reducing tobacco use is a key priority for the NHS (Department of Health, 2010) and a major part of the government's tobacco strategy has been to establish a nationwide network of local stop smoking services. These services provide evidence-based treatment and support for users of tobacco. Cessation/quit rates among smokers who use these services are substantially higher than among those who only receive advice from primary care professionals (West R and Brown J, 2012). Carr and Ebbert's most recent Cochrane systematic review (2012) demonstrated that tobacco cessation interventions (including smoking cessation) were beneficial and increased quit rates when compared to no care from an oral health professional within a dental setting. This is the first systematic review to demonstrate oral health professionals increasing quit rates within the dental setting (Carr and Ebbert, 2012).

A key priority is therefore to ensure that primary care professionals, such as members of a dental team, engage users of tobacco, advise that their local stop smoking service provides the best chance of stopping, and provide a referral to those services.

The role of the dental team in supporting people who use tobacco

In the vast majority of cases, dental teams will only be involved in delivering very brief advice (VBA) to tobacco users. Use of the following pathway will increase the chance of a successful quit attempt and reduce time of delivery.

The National Centre for Smoking Cessation and Training (NCSCT) has developed a simple form of advice designed to be used opportunistically in less than 30 seconds in almost any consultation with a tobacco user. This is VBA and there are three elements to it:

1. Establishing and recording smoking status **(ASK)**
2. Advising on the personal benefits of quitting **(ADVISE)**
3. Offering help **(ACT)**.

A large study of advice given by GPs across England found that smokers were almost twice as likely to try to stop when they received an offer of help, rather than only received advice to stop (Jha et al., 2013). When compared with no advice to smokers, recommending both treatment and support in the VBA, increased the odds of quitting by 68% and 217% respectively (Aveyard et al., 2012).

Ask

All patients should have their tobacco use (current, ex, never used) established and checked at least annually. The member of the dental team who elicits this information ensures the update of this information in the patient's clinical notes.

Advise

Having found someone is a tobacco user, the traditional approach has been to warn them of the dangers of use and advise them to stop. This is deliberately left out of VBA for two reasons:

1. It can immediately create a defensive reaction and raise anxiety levels
2. It takes time and can generate a conversation about their tobacco use, which is more appropriate during a dedicated stop smoking consultation

There is no need to ask how long someone has used tobacco, how much they use or even what they use (cigarettes, shisha, cigars, chewing tobacco or paan). Stopping use will be beneficial in every case and the details of this are better saved for the stop smoking consultation. The best way of assessing motivation to stop is simply to ask: "Do you want to stop smoking/chewing tobacco?"

Therefore, what VBA involves is a simple statement advising that, the best way to stop is with a combination of support and treatment, which can significantly increase the chance of stopping.

Act

All tobacco users receive advice about the value of attending their local stop smoking services for specialised help in stopping. Those who are interested and motivated to stop receive a referral to these services.

For some people, it might not be the right time to stop. For those not interested in stopping a simple, "that is fine but help will always be available, let me know if you change your mind" works best.

Figure 7.1 Very brief advice on smoking

Harm reduction

People who are not ready or willing to stop may wish to consider using a licensed nicotine-containing product to help them reduce their smoking. The NICE guidance on Harm reduction: tobacco (PH45) provides the following advice (National Institute for Health and Clinical Excellence, 2013).

Most health problems are caused by other components in tobacco smoke, not by the nicotine. Smoking is highly addictive, largely because it delivers nicotine very quickly to the brain and this makes stopping smoking difficult. Licensed nicotine-containing products are an effective way of reducing the harm from tobacco for both the person smoking and those around them. It is safer to use licensed nicotine-containing products than to smoke. People who reduce the amount they smoke without supplementing their nicotine intake with a licensed nicotine product will compensate by drawing smoke deeper into their lungs, exhaling later and taking more puffs. It is recommended that those individuals reducing the number of cigarettes they smoke use a licenced nicotine containing product to give them some 'therapeutic' nicotine which is more likely to reduce the amount that they smoke and to improve their health. Nicotine replacement therapy (NRT) products have been demonstrated in trials to be safe to use for at least five years. There is reason to believe that lifetime use of licensed nicotine-containing products will be considerably less harmful than smoking.

Licensed nicotine-containing products are available on prescription, over the counter at pharmacies and on general sale at many retail outlets.

If someone indicates that they are interested in trying a harm reduction approach to their smoking then you should inform them that the health benefits from smoking reduction are unclear. However, advise them that if they reduce their smoking now they are more likely to stop smoking in the future. Explain that this is particularly true if they use licensed nicotine-containing products to help reduce the amount they smoke.

For more information on harm reduction please access the NICE guidance PH45 'Tobacco: harm-reduction approaches to smoking':

guidance.nice.org.uk/PH45/Guidance/pdf/English

The VBA process can be found here:

ncsct-training.co.uk/interventions/resources/57e3cfd6-759d-40e6-837a-3ed70aff89ae/VBA_model.pdf

To date, over 25,000 people have viewed the promotional film and over 28,000 have accessed the training module. Dental health professionals including hygienists, therapists, nurses, practice managers, receptionists, and dentists have all completed the module.

Further information section of the VBA module makes specific reference to 'Making every contact count' and includes a link to this document ('Every contact counts', 2012). Published in January 2012, the document emphasised the importance of healthcare professionals using every patient contact as an opportunity to maintain or improve that individual's mental and physical health and wellbeing, including tobacco, diet, physical activity and alcohol.

Training and support for dental teams in tobacco cessation

As in any area of clinical and preventive practice, appropriate training is essential to enable dental teams to deliver tobacco cessation support and advice. The oral pathology associated with tobacco use and, to a more limited extent, tobacco cessation is taught in detail to undergraduate dental students. Basic training may expose other members of the dental team to other teaching on tobacco cessation.

Cessation case study

The NCSCT 'Very brief advice on smoking' module was made available to medics on the BMJ learning website.

The 1,329 BMJ learning users who had taken the module were sent email invitations to take part in the survey and followed-up with a reminder email a week later. A total of 276 respondents submitted the questionnaire, a response rate of 20.6%. In the year before completing the 'Very brief advice on smoking' module, the average proportion of consultations in which smokers were offered help with smoking cessation by survey respondents was 36.8% (0–100, SD=25.33). Since completing the module, the average proportion of consultations in which smokers were offered help with smoking cessation by survey respondents was 60.4% (0 –100%, SD=27.82).

"This is a really useful module. Has all the information you need and the use of video, slides and MCQ is really engaging. The most advanced and engaging module I have completed on BMJ Learning." [Medic accessing the NCSCT 'Very brief advice on smoking' module hosted by BMJ learning).

"It's inspiring, and helps to remind me of the point of asking about smoking..." [GP, Leicester]

Since the development of the Maudsley model of training for stop smoking practitioners in the early 1990s, training for stop smoking practitioners has continued to evolve. In 2003, the Health Development Agency published the set of competencies required to be present in all smoking cessation training courses (Health Development Agency, 2003). In 2010, the NCSCT updated these competences and launched the first nationally recognised accreditation for delivery of smoking cessation for practitioners (National Centre for Smoking Cessation Training, 2014). This training consists of a two-stage knowledge and practice assessment and supporting online training modules.

A clear need exists to:

- support and promote the NCSCT accredited training, therefore ensuring all dental teams are competent to deliver VBA and/or brief interventions in tobacco cessation. The NCSCT offers online courses at www.ncsct.co.uk/pub_training.php, and local stop smoking services may also provide training for teams
- ensure all dental undergraduate, dental care professional, postgraduate and continuing professional development programmes facilitate access to such training which meets the national quality standards
- support dental teams to identify smokers and users of smokeless tobacco, raise awareness among them of the associated health risks and provide signposting to their local stop smoking service

Training, regardless of whether it occurs in an undergraduate or dental settings, should be consistent and in line with national training standards. The minimum standard that every dental practice member should achieve is 'Very brief advice, just 30 seconds to ask, advise and act' (National Centre for Smoking Cessation Training, 2012).

Case study. Teaching smoking-cessation to aspiring members of the dental team

The General Dental Council, in its recently published guidance on learning outcomes required for registration, states that members of the dental team should be able to communicate appropriately, effectively and sensitively with patients about smoking (General Dental Council, 2012).

At Cardiff University Dental School, teaching smoking-cessation counselling is a vehicle for providing undergraduate dental, dental hygiene and dental therapy students with a number of skills. Changes in smoking patterns are used to teach epidemiology. Psychological theories underlying behaviour change are taught didactically and students also learn why people smoke, what is necessary to motivate behaviour change, and the impact of addictive behaviour. Junior students use role-play techniques to learn how to raise the topic of smoking-cessation in a sensitive manner, enabling them to develop their communication skills. A self-directed learning exercise is used to familiarise student dental hygienists with resources that are available to help patients who are considering stopping smoking and where to direct those patients who want to quit. An awareness of the different forms in which patients from different ethnic backgrounds may use tobacco provides a focus for discussion of how cultural practices may impact on oral health. Assessment of knowledge and competency in this area are tested using objective structured assessments, involving the use of actors to play the role of smokers, with different attitudes to using tobacco.

How can dental teams engage with users of tobacco?

Local stop smoking services have helped many thousands of people to successfully stop using tobacco. In 2011-12 over 400,000 people, 49% of attendees, stopped by using these services. Indeed, smokers are up to four times more likely to stop if they attend these services and use medication, than by trying to quit on their own without support and medication (West and Brown, 2012). As a result, policy guidance to health professionals now emphasises the importance of referring all who wish to stop using tobacco to their local stop smoking services for specialist assistance and support (National Institute for Health and Clinical Excellence, 2006):

- the best outcomes occur when those who are interested in stopping take-up a referral for specialist support. Timing is crucially important: the quicker the contact by a local stop smoking service, the greater the motivation and interest in the individual. Dental patients, who express a desire to stop, signposted directly into their local stop smoking services receive the best opportunity to stop smoking. The dental team's role is vital in giving the patient information on how to contact their local stop smoking service. It just takes 30 seconds and can give patients the motivation to seek professional help which will increase their chances of quitting
- dental teams and the local stop smoking services can work collaboratively in a variety of ways. As a first step, it is important that all members of a dental team are fully aware of the services offered locally and of how these operate. Arranging a meeting with a representative of a local service could provide a useful opportunity for dental teams to learn

about the service and the best ways of signposting dental patients to it

- teams working together provide much more support to the patient in stopping smoking. It is important that no matter who makes the referral, the patient's progress in stopping is assessed and is recorded in their clinical notes at each subsequent dental appointment. Stopping tobacco use can be a difficult process and is often associated with a range of unpleasant, short-term withdrawal symptoms, some of which, such as ulcers, directly affect the oral cavity. Reassurance and advice from dental team members may help patients deal more effectively with these problems, thereby increasing their chances of quitting successfully
- when tobacco users express a desire to stop their dental team can offer advice and support. This advice and support should only be delivered by dental staff trained to the current NCSCT Training Standard and preferably are fully NCSCT certified; having passed the knowledge (Stage 1) and practice (Stage 2) assessments (National Centre for Smoking Cessation Training, 2014). In this case, as with any provider of services, continued commitment to governance and performance monitoring is required to ensure that service users continue to be provided with the best available intervention

Among certain ethnic minority groups, chewing tobacco and/or areca nut (paan) is a common cultural practice. Evidence indicates that chewing tobacco and other products is associated with the development of oral cancers and other oral pathologies (Carr and Ebbert, 2012, Tsai et al., 2009). A recent Cochrane systematic review showed that advice delivered in dental surgeries is effective in helping patients who chew tobacco to stop. Current NICE guidance (National Institute for Health and Clinical Excellence, 2012), regarding smokeless tobacco users in South Asian communities, recommends dental teams:

Ask people if they use smokeless tobacco, using the names that the various products are known by locally. If necessary, show them a picture of what the products look like, using visual aids. (This may be necessary if the person does not speak English well or does not understand the terms being used). Figure 7.2 gives an example of a resource that could be used, with details of each product on the reverse. This resource also provides information on shisha (water pipe top left image on resource below) use. Shisha is **not** a smokeless tobacco product and can be as damaging as smoking cigarettes or chewing any of the smokeless tobacco products listed. Users of shisha, who wish to stop smoking, should be referred to the stop smoking service in the same way as other users of tobacco. Advise the patient of the health risks (eg, the risk of lung cancer, respiratory illness and periodontal disease) (Akl et al., 2010) associated with tobacco use and advise them to stop. Where services exist locally, refer people who want to quit to local specialist tobacco cessation service. Record the outcome in the patient's notes. VBA (ask, advise, act) is the same method you would apply to smokers or smokeless tobacco users.

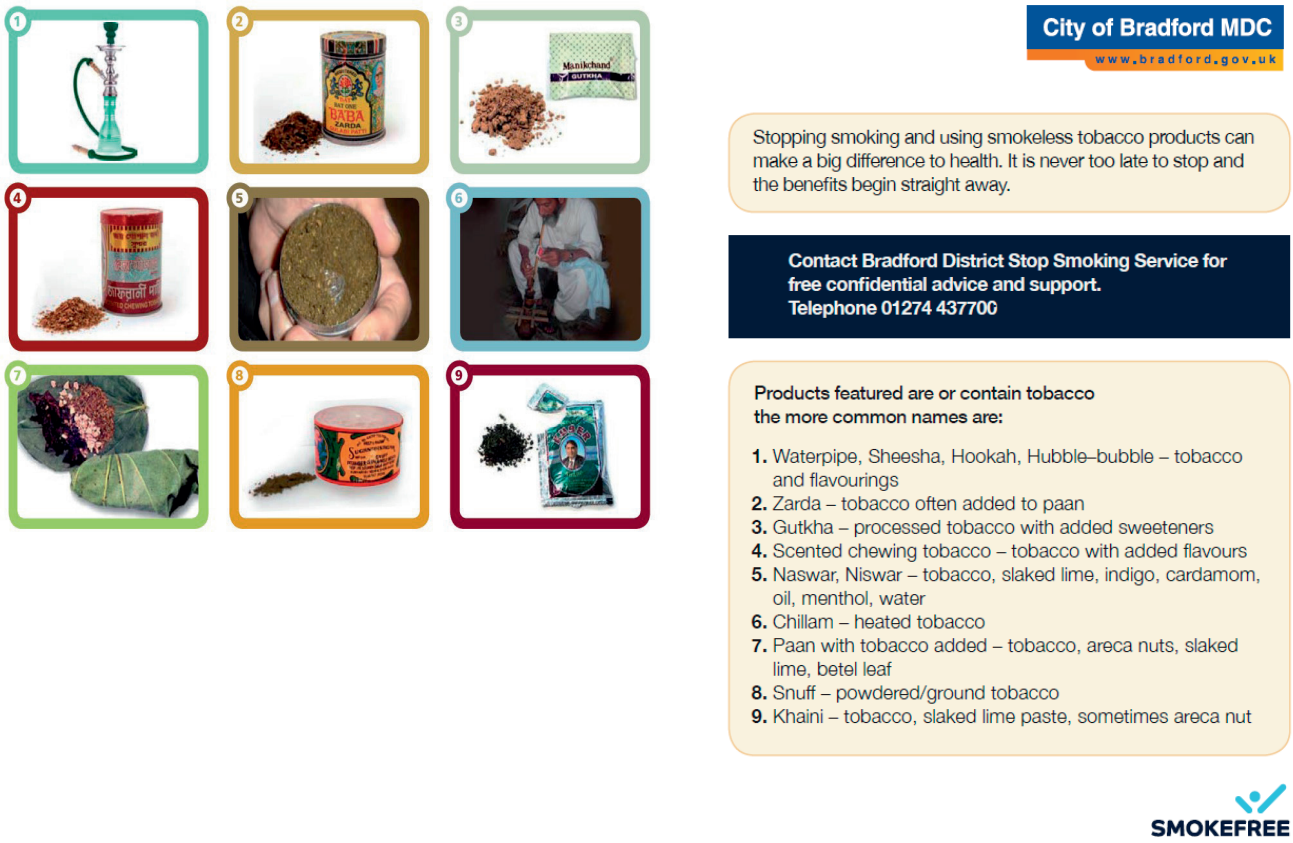


Figure 7.2 Niche tobacco resource developed by Bradford & Airedale stop smoking service

Ensuring that referral pathways are quick and easy to use is essential if systematic local delivery of VBA and referrals are to be achieved. Secondary care is one setting that has often been regarded as a 'missed opportunity' when it comes to the identification and referral of smokers. The NCSCT has developed a national electronic referral system in a hospital setting (www.ncsct.co.uk/publication_national-referral-system.php). This resulted in a 600% increase in referrals to local stop-smoking services in the pilot site and the system has now been adopted by 17 trusts.

- all dental teams should signpost and offer VBA within their current contractual arrangements. In a small number of cases, dependent upon local need, dental teams may be commissioned to provide a specialist support service (taking patients through a full quit attempt)

Further details regarding the commissioning of smoking cessation services within dental teams can be found in the related document 'Smokefree and smiling' (second edition) or from local stop smoking services.

Case Study. Collaborative working between GDP and local stop smoking service

"Our dental team was trained by NHS Bradford & Airedale stop smoking service in November 2012 to be able to conduct VBA and brief interventions with our patients regarding smoking and tobacco use. We enjoyed the training and since then feel more confident when asking and advising patients about their tobacco. It's a quick system that enables us to refer on to local stop smoking services to support our patients to quit. At our dental practice we recognise smoking and tobacco cessation is a team effort and we all have a role to play. The systematic approach we have been trained to deliver (Ask, Advise, Assist) means we all give consistent messages to the patient. Patients seem relaxed with our approach that is professional and confident. It's been great to make the connection with the local Stop Smoking team, now we know they are always at hand to give advice and support to our team whenever we need it."

Waqar Mohammed – principal dentist
Sahdia Fazil – practice manager

Stop smoking services

The majority of stop smoking services offer one-to-one treatment and group sessions, delivered by trained advisors on a weekly basis, normally over an eight-week period. Behavioural support and access to stop smoking medications are provided, focusing on preventing relapse in the early stages of quitting. In addition, specialist advisors often provide support for priority groups, such as pregnant smokers, young people, people with mental health problems and certain ethnic minority groups. Access to the service is either direct, or through referral by a health professional. To date, the majority of referrals have been through GPs and practice nurses. However, other primary care professionals, such as dentists and pharmacists, are potentially very important sources of suitable referrals to these services. Details of the local stop smoking services can be obtained from the smoking helpline (0800 169 0 169) or by visiting www.gosmokefree.nhs.uk

Supporting materials and resources

- The National Centre for Smoking Cessation and Training (NCSCT)

The NCSCT was established in 2009 by the Department of Health to develop and integrate national programmes of training and assessment to improve the overall quality of behavioural support delivered to smokers. The NCSCT website (www.ncsct.co.uk) offers resources for commissioners, managers and practitioners in addition to these courses:

1. NCSCT Training and Assessment Programme: Nearly 17,000 people have registered with the NCSCT. Over 14,600 have passed the knowledge (Stage 1) assessment and of these more than 7,500 have gained Full NCSCT certification by also passing the practice (Stage 2) assessment.
2. Face-to-face courses in providing behavioural support to smokers: 1,200 practitioners from 100 PCTs have been trained on these courses.

Online module on 'Very brief advice on smoking' www.ncsct.co.uk/VBA. 20,000 people have viewed the promotional film and 7,500 have taken the formal assessment attached to the training module.

- 'Choosing better oral health: an oral health plan for England', Department of Health, 2003.

Linked directly to the broader public health agenda, this document outlines approaches needed to promote oral health and reduce inequalities across England. A key priority is the need for dental teams to become more actively engaged in tobacco cessation activity.

- 'Brief interventions and referral for smoking cessation' (PH1), NICE, 2006

This guidance is for GPs and other professionals working in local health services, pharmacies and dental practices – and NHS hospitals.

Monitoring systems should be set up so that health professionals know whether or not their patients smoke tobacco and oral health: A survey of dental education and training in tobacco issues, NICE, 2007

This report presents results from an October 2003 survey to audit the extent and nature of training on tobacco issues and smoking cessation in the dental curricula.

- 'Smokeless tobacco cessation – South Asian communities' (PH39), NICE, 2012

This guidance aims to help people of South Asian origin to stop using smokeless tobacco. The phrase 'of South Asian origin' is used in this guidance to mean people with ancestral links to Bangladesh, India, Nepal, Pakistan or Sri Lanka. The term 'smokeless tobacco' is used in this guidance to refer to any type of product containing tobacco that is placed in the mouth or nose and not burned and which is typically used in England by people of South Asian origin.

- 'Tobacco: harm reduction approached to smoking' (PH 45), NICE, 2013

Nicotine inhaled from smoking tobacco is highly addictive. But it is primarily the toxins and carcinogens in tobacco smoke – not the nicotine – that cause illness and death. The best way to reduce these illnesses and deaths is to stop smoking. In general, stopping in one step (sometimes called 'abrupt quitting') offers the best chance of lasting success (see NICE guidance on smoking cessation). However, there are other ways of reducing the harm from smoking, even though this may involve continued use of nicotine.

This guidance is about helping people, particularly those who are highly dependent on nicotine, who may:

1. Not be able (or do not want) to stop smoking in one step.
2. Want to stop smoking, without necessarily giving up nicotine.
3. Not be ready to stop smoking, but want to reduce the amount they smoke.

This guidance recommends harm-reduction approaches which may or may not include temporary or long-term use of licensed nicotine-containing products.

- 'Brief interventions and referral for smoking cessation in primary care and other settings', NICE, 2006.

Based upon a comprehensive and detailed review of the available evidence, this document outlines guidance on brief smoking cessation interventions and on referrals to specialist services.

An additional smoking cessation training resource for dental teams is planned for publication by NICE at the same time as this guidance (NICE, 2007). Based upon national cessation training guidelines, this flexible training resource has been produced to develop the knowledge of dental teams and, in particular, the practical skills they need to deliver effective tobacco cessation.

- 'Proceedings of the 1st European workshop on tobacco use, prevention and cessation for oral health Professionals', published in Oral Health and Preventive Dentistry 2006; 4:1–77.

This is a detailed report on a workshop that reviewed all aspects of tobacco use and cessation for oral health professionals. It includes papers on public health aspects of tobacco control, an evaluation of tobacco cessation in the dental surgery, cessation in dental and dental hygiene undergraduate education, and cessation in continuing education for dentists and hygienists. A useful tobacco cessation care pathway is also presented.

- 'Tobacco or oral health: an advocacy guide for oral health professionals', FDI World Dental Press, 2005.

This guide, developed jointly by the FDI World Dental Federation and WHO, provides an overview of tobacco facts, discusses the role of the dental team in tobacco control, examines the role of advocacy, and provides a number of recommendations on ways of moving the tobacco control agenda forwards.

Resource for use in dental surgeries

www.gosmokefree.nhs.uk – a website that includes information on local stop smoking services and other smoking cessation leaflets and resources.

References

Akl EA, Gaddam S, Gunukula SK, Honeine R, Jaoude PA & Irani J., (2010). The effects of waterpipe tobacco smoking on health outcomes: a systematic review. International Journal of Epidemiology, 39, 834-57.

Aveyard P, Begh, R., Parsons, A. & West, R., (2012). Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. Addiction, 107, 1066-73.

Carr AB & Ebbert, J., (2012). Interventions for tobacco cessation in the dental setting. Cochrane Database of Systematic Reviews, 6, CD005084.

Chestnutt I., (1999). What should we do about patients who smoke? Dental Update, 26, 227-231.

Department of Health, (2010). Healthy Lives, Healthy People: Our strategy for public health in England. London.

Doll R & Bradford Hill A., (1954). The mortality of doctors in relation to their smoking habits: a preliminary report. British Medical Journal, 328, 1529-33.

Every Contact Counts, (2012). Raising Health Consciousness Using Brief Interventions [Online]. Available: www.everycontactcounts.co.uk/

General Dental Council, (2012). Preparing for practice – Dental team learning outcomes for registration, London, General Dental Council.

Health Development Agency, (2003). Standard for training in smoking cessation treatments. London.

Jha P, Ramasundarahettige C, Landsman V, Rostron B, Thun M, Anderson RN, McAfee T & Peto R, (2013). 21st-century hazards of smoking and benefits of cessation in the United States. New England Journal of Medicine 368, 341-50.

John, J, Thomas, D. & Richards, D., (2003). Smoking cessation interventions in the Oxford region: changes in dentists' attitudes and reported practices 1996-2001. British Dental Journal, 195, 270-275.

Johnson, N. & Bain, C., (2000). Tobacco and oral disease. British Dental Journal, 189, 200-206.

National Centre for Smoking Cessation Training (NCSCT), (2012). Very Brief Advice [Online]. Available: www.ncsct.co.uk/vba.

National Centre for Smoking Cessation Training (NCSCT), (2014). Training Modules [Online]. Available: http://www.ncsct.co.uk/training.

National Institute for Health and Clinical Excellence, (2006). Brief interventions and referral for smoking cessation in primary care and other settings: Public Health Intervention Guidance no.1. London: National Institute for Health and Clinical Excellence.

National Institute for Health and Clinical Excellence, (2012). Tobacco: helping people of South Asian origin to stop using smokeless tobacco. London: NICE.

National Institute for Health and Clinical Excellence, (2013). Tobacco: harm-reduction approaches to smoking In: Excellence, National Institute for Health and Clinical Excellence (ed.) Public Health Intervention Guidance no.45. London.

Prabhakaran PS & Mani S, (2002). Epidemiology of oral cancer. Oral oncology. Bangalore: Kidwai Memorial Institute of Oncology.

Public Health England, (2014). Smokefree and Smiling – Helping Dental Patients to quit tobacco – 2nd Edition [Online]. Available www.gov.uk/government/uploads/system/uploads/attachment_data/file/288835/SmokeFree__Smiling_110314_FINALjw.pdf

The Health and Social Care Information Centre, (2011). Adult Dental Health Survey. Adult Dental Health survey 2009. London. Available: www.hscic.gov.uk/pubs/dentalsurveyfullreport09

The Health and Social Care Information Centre, (2012). Statistics on Women's Smoking Status at Time of Delivery: England. Quarter 4, 2012/13 [Online]. Available: www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/nhs-stop-smoking-services/statistics-on-nhs-stop-smoking-services-england-april-2009--march-2010 [Accessed 16/12/11.

The Office of National Statistics, (2013). Cancer Registration Statistics, England 2011 [Online]. Available: www.ons.gov.uk/ons/rel/vsob1/cancer-statistics-registrations--england--series-mb1-/no--42--2011/rft-main-tables.xls.

Tsai KY, Su CC, Lin YY, Chung JA & Lian IeB, (2009). Quantification of betel quid chewing and cigarette smoking in oral cancer patients. Community Dental & Oral Epidemiology, 37, 555-61.

Warnakulasuriya. KA, Sutherland. G & Scully. C, (2005). Tobacco, oral cancer and treatment dependence. Oral Oncology, 41, 244-260.

West R & Brown J., (2012). Smoking and Smoking Cessation in England 2011 [Online]. Available: www.smokinginengland.info.

Section 8 Alcohol misuse and oral health

Introduction

Alcohol misuse is a major and growing problem in England. This section will highlight the extent of the problem and summarise the links between alcohol and oral health. Dental teams are in a unique position to provide brief advice and support to their patients who drink above the lower-risk levels.

What is the extent of the problem?

Alcohol misuse in England is a significant public health problem with major health, social and economic consequences. The consumption of alcohol has almost doubled since the 1950s and it is estimated that about 22% of adults exceed the Department of Health guidelines (Department of Health, 2010). However, over 83% of people who regularly drink above these guidelines do not think their drinking is putting their long-term health at risk (Stationery Office, 2012). Alcohol consumption above lower risk levels is a major cause of illness, injury and premature death. Alcohol related crime, disorder and domestic violence are also significant social consequences of alcohol misuse. The annual total cost of alcohol misuse to the UK economy is estimated to be in excess of £21 billion (Stationery Office, 2012).

Impact of alcohol misuse on oral health

Drinking above the recommended limits adversely affects oral health in a range of ways. The most important effect is undoubtedly the significantly increased risk of oral cancers among drinkers. The incidence of oral cancer has steadily increased since the 1970s and now oral cancer among men is more common than cervical cancer in women (Conway et al., 2006). The most important risk factors for oral cancers are the combined effect of tobacco use and consumption of alcohol, which together account for about three quarters of oral cancer cases (La Vecchia et al., 1997). It is estimated that heavy drinkers and smokers have 38 times increased risk of developing oral cancer than those people who abstain from both products (Blot, 1992). Excessive alcohol intake is also associated with dental trauma and facial injury either through accidental falls, road traffic accidents or violence, both domestic and street related (Hutchison et al., 1998). Drinking above recommended levels is also associated with non-carious tooth surface loss due to the acidity of drinks such as alcopops, cider and wine (Robb and Smith, 1990). Finally, there is some evidence that alcohol is also associated with increased risk of periodontal disease (Amaral et al., 2008).

What is a unit of alcohol?

One unit of alcohol is 10ml (1cl) by volume or 8g by weight of pure alcohol. This is equivalent to:

- half a pint of ordinary strength beer, lager or cider (3-4% alcohol by volume)
- a small pub measure (25ml) of spirits (40% alcohol by volume)
- a standard pub measure (50ml) of fortified wine such as sherry or port (20% alcohol by volume)
- half a glass (87.5ml) of wine (12% by volume)

www.alcohollearningcentre.org.uk/_library/Change4Life/408723_Your_Drinking_And_You.pdf this link is the source of the picture below

Department of Health guidelines

- men should not regularly consume more than three to four units per day
- women should not regularly consume more than two to three units per day
- alcohol should be avoided for 48 hours following a heavy drinking session to allow the body to recover.
- pregnant women or women trying to conceive should avoid drinking alcohol but if they choose to drink limit to no more than one to two units once or twice a week and avoid getting drunk

Defining drinking categories

Hazardous drinking (increasing risk) – is a level of alcohol consumption or pattern of drinking that increases the risk of harm if current drinking habits persist, eg, regularly drinking more than three to four units per day for men and regularly drinking more than two to three units per day for women.

Harmful drinking (higher risk) – is a pattern of alcohol consumption that is causing mental and/or physical damage or for men, regularly consuming more than eight units per day for men or more than 50 units per week and for women, regularly consuming more than six units per day or more than 35 units per week.

Alcohol dependence – a term used to describe a cluster of behavioral, cognitive and physiological factors that typically include a strong desire to drink alcohol despite harmful consequences and difficulties in controlling its use. Alcohol dependent people may need specialist treatment to support them to overcome their dependence.

Role of dental team in supporting drinkers

Alcohol consumption is clearly an important risk factor to good oral health. A significant proportion of the healthy general population visit a dentist on a regular basis, 56% of adults in England were seen by a dentist in the last two years (Health and Social Care Information Centre, 2013). Dental teams are therefore in a unique position to provide very brief advice and support to members of the public who are hazardous or harmful drinkers and signpost to GP and or local alcohol services (where appropriate).

A substantial body of high quality evidence has highlighted the effectiveness of delivering brief advice to drinkers. The most recent Cochrane review included 29 RCTs of brief interventions delivered in primary care settings. It reported significant reductions in weekly drinking at one year follow up with an average reduction of four to five drinks per week (Kaner et al., 2007). However, more limited research has been conducted in dental settings. A trial conducted in a maxillofacial out-patient clinic demonstrated a significant effect of brief advice on reducing alcohol intakes among a sample of young men (Smith et al., 2003). Evidence also suggests that dentists are increasingly interested and motivated to become more actively involved in providing alcohol advice to their patients (Goodall et al., 2006; Smith et al., 2003; Cruz et al., 2005).

The identification of those drinking above lower-risk levels and offering brief advice consist of three basic stages:

1. Initial screening, determining if the patient is drinking above lower-risk limits.
2. Offering brief advice to patients who are drinking above the recommended levels.

3. Referring or signposting possible high risk drinkers to their GP or local alcohol support service(s).

The overall goals of screening and providing brief advice to patients includes:

- raising awareness of drinking guidelines and whether they are exceeding these lower-risk levels
- offering them feedback on how their drinking may adversely affect their oral and general health
- providing support eg resources to support the need to reduce alcohol consumption levels

A variety of alcohol screening questionnaires have been developed for use in primary care settings (AUDIT; AUDIT-C; AUDIT-PC; FAST) and all have been shown to be a reliable and valid means of detecting alcohol misuse among patients (Fiellin et al., 2000). AUDIT was the 'gold standard' questionnaire but, as it had ten questions it was too long for many health settings.

A useful training resource for dental teams in Bradford and Airedale has used the AUDIT-C tool (Bush et al 1998). This takes approximately three minutes to complete and offers direct and personalised feedback to the patient, identifying excessive drinking within the last year.

Once a total score has been established the following advice should be given:

Patients with a total score of 0-4

- feedback that the patient is at a lower risk of harm from alcohol
- give advice on the safe limits
- encourage and congratulate them

Patients with a total score of 5-9

- feedback that the patient is at increasing or higher risk from alcohol related problems

AUDIT (C): Alcohol use disorder identification test

Questions	Score					Your score
	0	1	2	3	4	
How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times per month	2-3 times per week	4+ times per week	
How many units of alcohol do you drink on a typical day when you are drinking?	1-2	3-4	5-6	7-9	10+	
How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	

- give advice on the safe limits
- encourage them to think about their drinking and benefits of cutting down, eg, reduced risk of:
  - oral cancer
  - dental and facial injury
  - tooth surface loss and periodontal disease
  - physical and mental health problems
- Give a leaflet and list of local services if available

Patients with a total score of 10 plus

If the patient has a score of 10 or more they should be given the brief advice as above but the importance of referral to their GP or a local alcohol support service stressed.

Useful resources and contacts

Professional resources

This is a key website providing online resources and learning for commissioners, planners and practitioners working to reduce alcohol-related harm: www.alcohollearningcentre.org.uk/

Additional information can be found at:

Oral cancer statistics: www.cancerresearchuk.org/cancer-info/cancerstats/types/oral/uk-oral-cancer-statistics

Oral cancer risk factors: www.cancerresearchuk.org/cancer-info/cancerstats/types/oral/riskfactors/oral-cancer-risk-factors

Alcohol and oral health developed by NHS Health Scotland for professionals working as part of a dental team: 'Understanding risk, raising awareness and giving advice' www.healthscotland.com/documents/6124.aspx

Patient resources

www.nhs.uk/Change4Life/Pages/drink-less-alcohol.aspx

www.drinkaware.co.uk/

www.alcoholconcern.org.uk/home

References

Amaral CS et al, (2008). The relationship of alcohol dependence and alcohol consumption with periodontitis: a systematic review. Journal of Dentistry; 37: 643-651.

Blot, W., (1992). Alcohol and Cancer. Cancer Research 52: 2119-2123.

Bush K, et al., (1998). The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. Archives of Internal Medicine 158(16):1789-95.

Conway D et al., (2006). Incidence of oral and oropharyngeal cancer in the United Kingdom (1990-1999) – recent trends and regional variation. Oral Oncol;42: 586-592.

Cruz GD et al., (2005). Preventing and detecting oral cancer. Oral health care providers' readiness to provide health behavior counseling and oral cancer examinations. Journal of American Dental Association; 136: 594-601.

Fiellin D et al., (2000). Screening for alcohol problems in primary care. Archives of Internal Medicine; 160: 1977-1989.

Goodall CA et al., (2006). Assessment of hazardous drinking in general dental practice. Journal of Dental Research; 85: 1219.

Health and Social Care Information Centre, (2013). NHS Dental Statistics for England

– 2012-13: NHS Dental Statistics: 2012/13 www.hscic.gov.uk/searchcatalogue?productid=12370&q=dental+attendance&topics=0%2fPrimary+care+services&sort=Relevance&size=10&page=1#top

HM Government, (2012). The Government's Alcohol Strategy. London, The Stationery Office.

Hutchison IL et al., (1998). The BAOMS UK survey of facial injuries part 1: aetiology and the association with alcohol consumption. British Journal of Oral Maxillofacial Surgery; 36: 3-13.

Kaner E et al., (2007). Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database of Systematic Reviews. CD004148.

La Vecchia C et al., (1997). Epidemiology and prevention of oral cancer. Oral Oncology; 33: 302-312.

National Audit Office, Department of Health, (2008). Reducing Alcohol Harm: health services in England for alcohol misuse. London, The Stationery Office.

Robb ND and Smith BG., (1990). Prevalence of pathological tooth wear in patients with chronic alcoholism. British Dental Journal; 169: 367-369.

Smith AJ et al., (2003). A randomized controlled trial of a brief intervention after alcohol-related facial injury. Addiction; 98: 43-52.

Smith AJ et al., (2003). A randomized controlled trial of a brief intervention after alcohol-related facial injury. Addiction; 98: 43-52.

www.hscic.gov.uk/searchcatalogue?productid=12370&q=dental+attendance&topics=0%2fPrimary+care+services&sort=Relevance&size=10&page=1#top

Section 9 Prevention of pathological tooth wear

Introduction

Tooth wear is the loss of tooth structure involving mechanical and chemical factors leading to attrition, abrasion and/or erosion. Mechanical wear involves physical contact with another material or object such as a brush or erosive paste or an opposing surface leading to attrition and/or abrasion. Erosion is the chemical loss of hard tissue through exposure to acids (extrinsic and/or intrinsic), which are of non-bacterial origin or chelation; however, it is now commonly accepted that dental erosion is a more complex process than merely chemical wear. Often these processes may be combined, leading to a loss in tooth tissue with a change in shape and form.

Tooth wear is a natural part of ageing and so the extent and seriousness of any visible wear must be judged against a patient's age to determine whether or not it is pathological. Severe tooth wear may lead to poor aesthetics and/or sensitivity and therefore should be identified, and actively managed, as early as possible. Management of the condition for affected individuals should have secondary prevention at its core. At present there is insufficient evidence or rationale to recommend a population approach to prevention of tooth wear. The focus, therefore, should be on the identification of individuals who are giving concern because there is evidence of pathological wear.

Tooth wear in the UK

Severe tooth wear affects only 2% of dentate adults in the UK, however, the latest adult dental health survey suggests that over three quarters of adults (77%) have some tooth wear and that moderate tooth wear has increased, with the greatest increases in younger adults (The Information Centre for Health and Social Care, 2011). Among teenagers, national surveys suggest that tooth wear is increasing in 15 year-olds, with 22% demonstrating wear on first molars and 11% on incisors labially and 33% palatally (Chadwick, White et al. 2006). Tooth wear is generally a relatively slow process and should be picked up at regular dental visits. It may also be cyclical.

What factors are associated with erosion?

Much pathological toothwear involves an erosive component. Epidemiological studies suggest that there is an association with extrinsic acid from the diet, both food and drink, as well as intrinsic acid from the stomach due to gastro-oesophageal reflux, rumination, vomiting and eating disorders. Erosive tooth wear is defined as the chemical, or combined chemical and mechanical loss of hard tissue, through acids (extrinsic and/or intrinsic), which are of non-bacterial origin or chelation. The current range of associated factors is listed in table 9.1. The impact of acid will depend on its pH, titratable acidity and

its chemical composition. There is likely to be individual variation in response to the erosive effects of acids. This may be due to a range of factors including the quantity and quality of saliva, features of the pellicle, individual habits with regard to acid availablity. Furthermore, oral swishing, frothing and retention may prolong the effect and overwhelm any protective capacity of saliva. Current evidence suggests that if erosion is present in pathological tooth wear, then fruit, and fruit-based drinks, may be the most important extrinsic risk factors. The aetiological risk factors for mechanical tooth wear are listed in table 9.2.

Professional action for high risk patients

The most important preventive action (secondary prevention) for an individual who has developed pathological tooth wear to ensure that the potential source, or sources, of wear are identified and removed and, where possible, lifestyle is modified. It is also important to assess and record the condition and enable patients to manage it with the necessary expert help.

Professional actions that may be taken for patients who actions concern include the following:

1. Sensitive investigation of general health and diet as well as toothbrushing behaviours to identify possible sources of acid and wear.
2. Provision of tailored, specific advice for each individual patient to manage the tooth wear.
3. Recording and monitoring of tooth wear using the basic erosive wear examination (BEWE). This is a partial scoring system recording the most severely affected surface in a sextant. The cumulative score guides the management of the condition for the practitioner (Bartlett, Ganss et al. 2008).
4. Seeking medical advice for management of intrinsic sources of acid involving reflux or eating disorders and/or the management of medications.

Advice that may be given to manage erosive tooth wear for affected individuals. This is based on professional advice and evidence from cross sectional studies of association or laboratory or in situ studies of erosion *should be tailored to individual patients and their identified risks:*

- avoid frequent intake of acidic foods or drinks
- keep acidic drinks to mealtimes and limit the number of fruit drinks (no more than one a day) (Bartlett, Fares et al. 2011, Fung and Messer, 2013)
- use toothpaste containing at least 1,450ppmF twice daily (Lussi, Hellwig et al. 2006)
- consider high fluoride toothpastes to protect enamel (5000ppm) (Austin, Rodriguez et al. 2010; Ren, Liu et al. 2011)
- ensure toothpaste is low abrasive in nature (Macdonald, North et al. 2010)
- do not brush immediately after eating or drinking acidic food or drinks (Bartlett, Fares et al. 2011)
- do not brush immediately after vomiting (for recurrent vomiters) (Milosevic, 1999) (Bartlett, Lussi et al. 2013)
- facilitate patients in seeking medical assistance for management of gastro oesophageal reflux disease (GORD) and eating disorders, as there is evidence that anti-reflux medication reduces enamel loss from gastric erosion (Wilder-Smith, Wilder-Smith et al. 2009)

- ensure regular medication is acid free and be aware of medications that reduce the flow of saliva, and thus impact on clearance

Management of severe wear

For severe wear, consideration may be given to the following:

- using of dentine bonding agents (Sundaram, Wilson et al. 2007) and sealants (Wegehaupt, Tauboeck et al. 2013)
- providing a mouth guard if bruxism is present

Further research to underpin the evidence base for managing pathological tooth wear is required including longitudinal studies.

Population advice

As a nation, we are not at risk of excessive erosion because of fruit consumption. There is evidence that the majority of children and adults do not consume enough fruit and vegetables for a healthy diet. Nationally, surveys of diet and nutrition among young people aged 11 to 18 years suggest that only 11% of boys and 8% of girls in this age group met the five-a-day recommendation (the population advice is to consume 'at least five-a-day'). The average consumption of fruit and vegetables was three portions per day for boys and 2.8 portions per day for girls (Bates, Lennox et al. 2013). A higher, yet still relatively small, proportion of adults met the five-a-day recommendation with 31% of adults and 37% of older adults eating five or more portions per day (equivalent to 400g for adults) (Bates, Lennox et al. 2013). Adults aged 19 to 64 years on average consumed 4.1 portions of fruit and vegetables per day (including the contribution from composite dishes) and older adults (ie, those aged 65 years and over) 4.4 portions. Furthermore, there is recent evidence that dietary intake nationally of fruit and vegetables may be reducing, particularly the latter (Department for Environment 2013). In light of the paucity of intervention studies to support the avoidance of extrinsic acids, advice should stress the importance of healthy nutrition whereby fresh fruit is an important part of a healthy diet and consumption should be encouraged for everyone.

Table 9.1 Sources of acid that may lead to erosive tooth wear

Extrinsic sources of acid	Intrinsic sources of acid
Drinks containing citric acid, including natural fruit juices – eg, orange, grapefruit, lemon, blackcurrant	Eating disorders including bulimia nervosa
Acidic fresh fruit, particularly in high quantities – other than banana and avocado – all fruit may be erosive, with lemons, oranges and grapefruit most so	Gastric acid reflux including GORD (gastro oesophageal reflux disease)
Carbonated drinks	Chronic vomiting
Alcopops and designer drinks (such as fortified wines with fruity flavours)	
Smoothies	
Cider	
Wine (white and red)	
Fruit teas (but not camomile)	
Sports drinks which contain acid	
Vinegar-based foods, including pickles	
Acidic sweets, eg, acid drops, sherbet lemons, etc.	
Chewable vitamin C tablets	
Aspirin	
Some iron preparations	
Medications and other conditions reducing salivary flow	
Other rare sources	
Hydrogen peroxide	
Occupational exposure to acid	

Table 9.2 Sources of mechanical wear tooth wear

Mechanical wear
Tooth brushing
Abrasive toothpaste
Abrasive food
Bruxism

References

Austin, R. S., J. M. Rodriguez, et al., (2010). The effect of increasing sodium fluoride concentrations on erosion and attrition of enamel and dentine in vitro. Journal of Dentistry 38(10): 782-787.

Bartlett, D., J. Fares, et al., (2011). The association of tooth wear, diet and dietary habits in adults aged 18–30 years old. Journal of dentistry 39(12): 811-816.

Bartlett, D., C. Ganss, et al., (2008). Basic Erosive Wear Examination (BEWE): a new scoring system for scientific and clinical needs. Clinical Oral Investigations 12: S65-S68.

Bartlett, D. W., A. Lussi, et al., (2013). Prevalence of tooth wear on buccal and lingual surfaces and possible risk factors in young European adults. Journal of Dentistry 41(11): 1007-1013.

Bates, B., A. Lennox, et al., (2013). National Diet and Nutrition Survey: A survey carried out on behalf of the Department of Health and the Food Standards Agency. Headline results from Years 1, 2 and 3 (combined) of the Rolling Programme (2008/2009 – 2010/11) 16.

Chadwick, B. L., D. A. White, et al., (2006). Non-carious tooth conditions in children in the UK, 2003. British Dental Journal 200(7): 379-384.

Department for Environment, F. a. R. A., (2013). National Food 2012. London, Office of National Statistics.

Fung, A. and L. B. Messer, (2013). Tooth wear and associated risk factors in a sample of Australian primary school children. Australian Dental Journal 58(2): 235-245.

Lussi, A., E. Hellwig, et al., (2006). Erosive tooth wear: diagnosis, risk factors and prevention. Am J Dent 19(6): 319-325.

Macdonald, E., A. North, et al., (2010). Clinical study investigating abrasive effects of three toothpastes and water in an in situ model. Journal of Dentistry 38(6): 509-516.

Milosevic, A., (1999). Eating disorders and the dentist. Br.Dent J. 186(3): 109-113.

Ren, Y. F., X. J. Liu, et al., (2011). Preventive effects of dentifrice containing 5000ppmF against dental erosion in situ. Journal of Dentistry 39(10): 672-678.

Sundaram, G., R. Wilson, et al., (2007). Clinical measurement of palatal tooth wear following coating by a resin sealing system. Operative Dentistry 32(6): 539-543.

The Information Centre for Health and Social Care, (2011). Theme 2. Disease and related disorders - a report form the Adult Dental Health Survey, 2009." Retrieved 19.11.11, from www.ic.nhs.uk/statistics-and-data-collections/primary-care/dentistry/adult-dental-health-survey-2009--summary-report-and-thematic-series.

Wegehaupt, F. J., T. T. Tauboeck, et al., (2013). Durability of the anti-erosive effect of surfaces sealants under erosive abrasive conditions. Acta Odontologica Scandinavica 71(5): 1188-1194.

Wilder-Smith, C. H., P. Wilder-Smith, et al., (2009). Quantification of Dental Erosions in Patients With GERD Using Optical Coherence Tomography Before and After Double-Blind, Randomized Treatment With Esomeprazole or Placebo. American Journal of Gastroenterology 104(11): 2788-2795.

Section 10 Helping patients to change their behaviour

Introduction

All healthcare providers, including dental teams, have a role in making every contact count, helping their patients to change behaviour and improve their health and wellbeing.

"You should aim to take every appropriate opportunity to encourage and support patients and colleagues to improve their health and wellbeing." (Section 4b of the NHS Constitution)

'Making every contact count' is an opportunity to improve patient care, treatment and outcomes and help people live well for longer

Oral hygiene practices, tobacco and alcohol use, certain dietary practices, the use of fluorides and dental attendance are all important oral health related behaviours. The prevention of oral diseases is largely dependent upon patients changing these behaviours in line with professional guidance. Patients need to be equipped with the appropriate health knowledge, motivation and skills to maintain good oral health. Dental teams can provide guidance and support using very brief advice and signposting (30 second approach), brief interventions and when appropriate, full support to enable their patients to change health related behaviour.

Supporting behaviour change in a clinical setting is very important but this must be underpinned by population and community based oral health improvement strategies that tackle the broader causes of poor oral health in society.

This section provides a brief overview of:

- the principles of behaviour change
- the role of the dental team in supporting patients to change behaviour
- key considerations for effective communication with patients

Overview of behaviour change

A large number of psychological theories and models have been developed to explain behaviour change. However, the key issues are summarised below.

Understanding the process of change:

- changing behaviour is a lengthy and often difficult process that may involve several attempts before the new behaviour is maintained
- the ability to change behaviour is influenced by an array of individual, social and environmental factors. Socio-economic circumstances are a major influence
- the provision of health information alone is unlikely to achieve sustained changes in behaviour for most people

- do not expect patients to be able to change behaviours quickly or easily, just because they have been given a leaflet

Recognising different motivations for change:

- for many patients there may be a varied set of motivations and reasons for altering their behaviour
- avoiding disease is only one of a range of reasons for changing. For example, smokers wishing to quit might be motivated by the negative effects of smoking on their children, appearance, or the costs of tobacco

Clustering of behaviours – shared links:

- groups of behaviours, such as smoking, alcohol misuse and poor hygiene habits, often cluster together in particular groups of people
- therefore altering one behaviour may be problematic if it is linked to others, unless careful thought is given to the underlying influences on these clusters of behaviour

Barriers to change – obstacles to overcome:

- clinical, psychological, social and environmental factors may all be barriers to change
- highly motivated individuals, with well-developed social networks and supportive living environments will be more likely to succeed
- opportunities to change may be more likely at certain key points in the life course, such as pregnancy or new parenthood, leaving school, starting a new relationship or entering retirement

In order to support patients to change behaviour, dental teams need to consider their patient's social circumstances, the process of change and the motivation and barriers to achieving it. All members of the dental team can be involved and it is important that each member's role is carefully considered and agreed within the team and the individuals have access to appropriate training to support them in this role.

Role of the dental team in supporting behaviour change

Dental team members have skills that can support patients to change behaviour, which can positively impact on their oral health. Figure 10.1 outlines how behaviour change can be approached with patients, using either very brief (between 30 seconds to a minute) or more in depth advice such as a brief intervention (between five and ten minutes). It is important to consider the most appropriate team member to deliver the intervention. For example, the dentist may give very brief advice (and ensure this is written in the patient's notes). Brief interventions and/or signposting to local services may be undertaken by dental therapists, health educators or dental nurses.

Training

It is important to ensure that training is available for the dental team to support patients to consider behaviour change and that dental team members access this training. For example, NHS stop smoking services (www.ncsct.co.uk/pub_training.php) and the alcohol learning centre (www.alcohollearningcentre.org.uk/eLearning/IBA/) both provide free online training. This is a useful way to ensure that consistent clear messages can be given to patients.

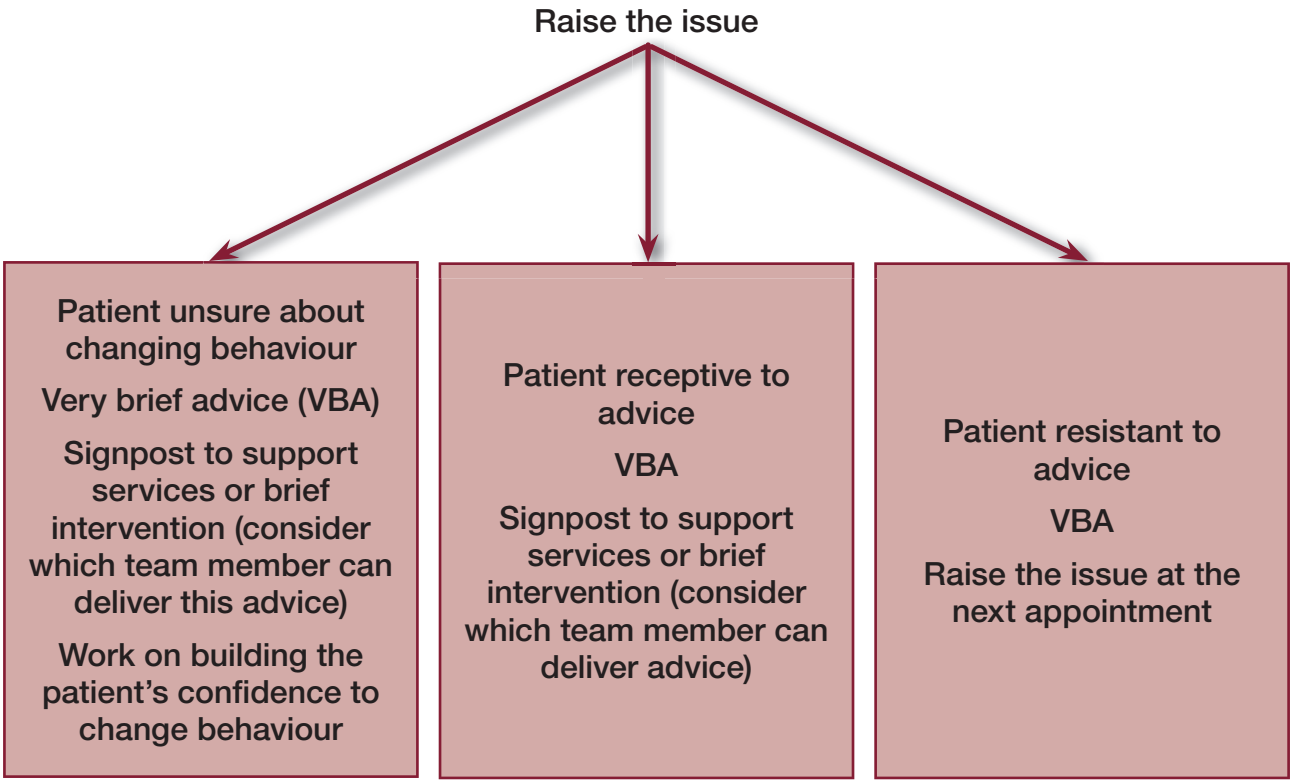


Figure 10.1 Raising the issue of behaviour change

Key considerations for effective communication with patients

It is important to consider how to communicate effectively with patients to maximise the impact of advice and ensure it is supportive and non-threatening, and allows for review and maintenance of the behaviour change. Figure 10.2 outlines the key considerations.

Getting the right message across:

- ensure oral health information delivered to patients is clear, concise, evidence-based and consistent with health messages delivered by other health professionals
- personalise and tailor information to match the individual's circumstances
- deliver positive messages as this is more effective in eliciting change

Effective communication skills:

- use a range of communication skills
- employ active listening skills
- use open questions and an encouraging tone
- do not to rush discussions as people need time to explain themselves
- don't use threatening, patronising or prescriptive language
- consider the impact of non-verbal communication, eg, facial expressions, body posture and eye contact

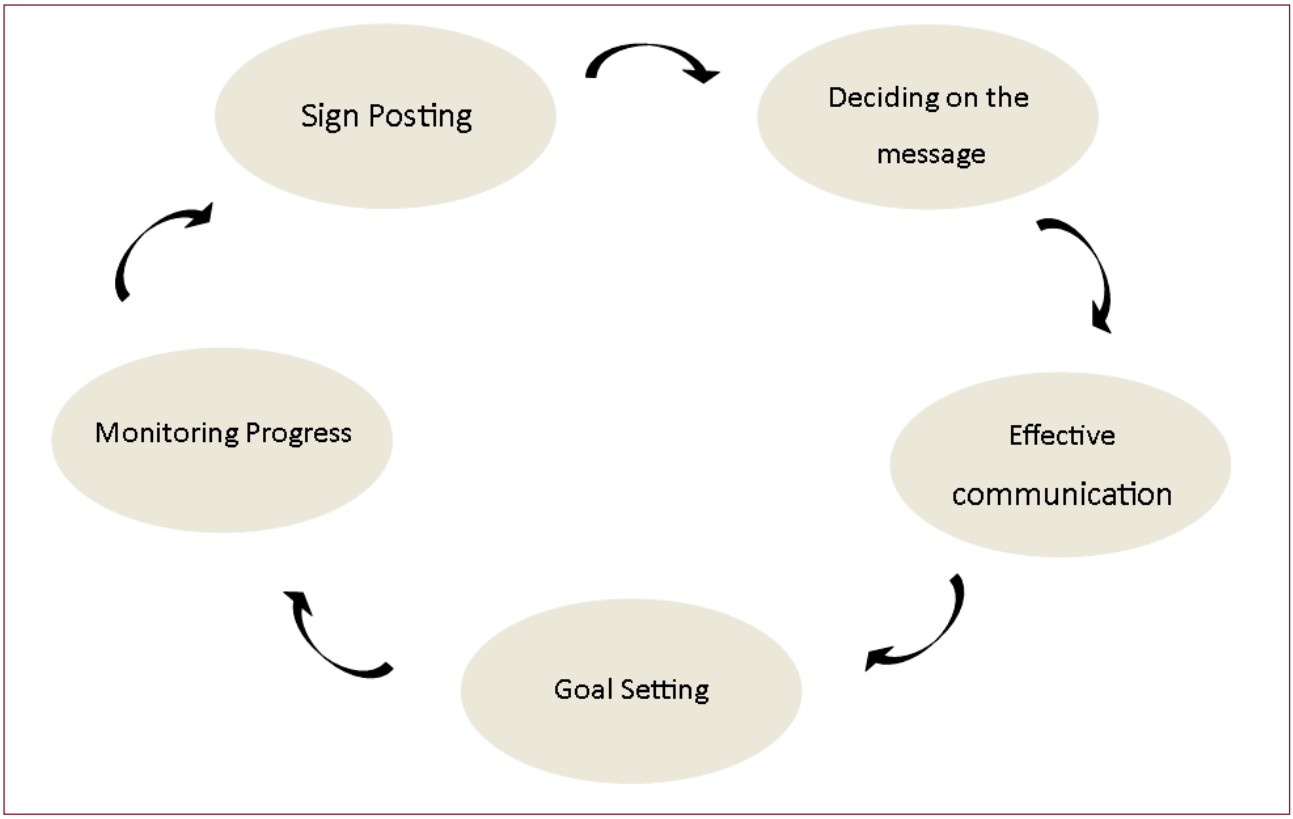


Figure 10.2 Role of dental teams in promoting behaviour change

Reviewing benefits of changing and past experiences:

- try to increase patients' self-confidence to change
- explore the personal benefits of changing a particular behaviour to increase motivation and enthusiasm to change
- review patients' previous behaviour change attempts as this can help identify what helped or hindered them previously and can provide insight and increase patients' self-confidence to attempt change

Goal setting:

- once a person has decided they want to change, it is important to negotiate and agree a clearly defined goal
- goals should be SMART:

  Specific – clear and precise goals provide focus and clarity of purpose.

  Measurable – setting goals that can be easily measured and quantified is important

  Achievable – set goals that are challenging but within the patient's reach. Setting unachievable goals merely demotivates people

  Relevant – it is essential that the goal is considered relevant to the patient's circumstances, motivations and needs

Timely – it is important to check that the goal is the right thing for patient to achieve right now. Setting a clear time frame is also important to help maintain motivation and to monitor progress

- once SMART goals have been agreed, it is then possible to develop an individualised action plan mapping out the practical steps needed to achieve the goals agreed
- identifying suitable and appropriate rewards for any progress achieved is an important part of the planning process and helps maintain motivation

Monitoring progress:

- maintaining new behaviour is critically important especially when patients encounter difficult situations
- support the behaviour change by identifying support networks to help maintain and stabilise their new behaviour
- friends, colleagues and family members can all provide encouragement and support if they understand what the person is going through
- it is also useful to help predict potentially difficult situations ahead and to help patients predict potentially difficult situations ahead and to develop coping mechanisms with patients. For example, at times of particular stress and pressure, people may need to identify how they will cope to avoid relapse

Conclusion

The dental team has an important role in helping patients adopt oral health-promoting behaviour. Changing behaviour is not an easy task. Therefore it is important that dental teams understand the processes and influences on change and provide evidence-based guidance and support.

Key references

Department of Health, (2008). Improving health: Changing behaviour. NHS Health Trainers Handbook. Department of Health, London.

Handbook to the NHS constitution for England 26th March 2013. www.nhs.uk/choiceintheNHS/Rightsandpledges/NHSConstitution/Documents/2013/handbook-to-the-nhs-constitution.pdf

Harris R, Gamboa A,Dailey Y, Ashcroft A. One-to-one dietary interventions undertaken in a dental setting to change dietary behaviour. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD006540. DOI: 10.1002/14651858.CD006540.pub2.

Michie S, van Stralen MM, West R, (2011). The behaviour change wheel: A new method for characterizing and designing behaviour change interventions. Implementation Science, 6: 42.

NICE, (2007). Behaviour change: NICE public health guidance 6. National Institute for Health and Clinical Excellence, London.

NICE, (2014). Behaviour change, individual approaches (PH49). NICE www.nice.org.uk/ph49

Rollnick S, Mason P, Butler C, (1999). Health behaviour change: a guide for practitioners. Churchill Livingstone, London.

Rollnick S, Miller W, Butler C, (2008). Motivational interviewing in health care: helping patients to change behaviour. Guildford Press, New York.

Section 11 Supporting references

Caries in children 0-6 years		
All children aged 0-3 years		**Type of evidence**
Breast feeding provides the best nutrition for babies	Kramer MS, Kakuma R. Optimal duration of exclusive breastfeeding. Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD003517. DOI: 10.1002/14651858.CD003517 Valaitis R, Hesch R, Passarelli C et al., (2000). A systematic review of the relationship between breastfeeding and early childhood caries. Can J Public Health. 91(6):411-417	Systematic Review Systematic review
From six months of age infants should be introduced to drinking from a free flow cup, and from age one year feeding from a bottle should be discouraged	Department of Health, (1994). Weaning and the weaning diet. Report on health and social subjects, 45. HMSO, London	Expert review
Sugar should not be added to weaning foods or drinks	Department of Health, (1994). Weaning and the weaning diet. Report on health and social subjects, 45. HMSO, London	Expert review
Parents should brush or supervise toothbrushing	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review

As soon as teeth erupt in the mouth brush them twice daily with fluoridated toothpaste last thing at night and on one other occasion	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review
	Hinds K, Gregory JR., (1995). National diet and nutrition survey: children aged 1.5 to 4.5 years. Volume 2: Report of the dental survey. London: HMSO	Observational study
	Duckworth RM, Moore SS., (2001). Salivary fluoride concentrations after overnight use of toothpastes. Caries Res. 35: 285.	Clinical measurement study
	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review
Use only a smear of toothpaste	Bentley EM, Ellwood RP, Davies RM., (1999). Fluoride ingestion from toothpaste by young children Br Dent J. May 8;186(9):460-2.	Observational study
	DenBesten P, Ko HS, (1996). Fluoride levels in whole saliva of preschool children after brushing with 0.25 g (pea-sized) as compared to 1.0g (full-brush) of a fluoride dentifrice. Pediatr Dent. 18 (4): 277-280	Clinical measurement study
Use toothpaste containing no less than 1,000 ppm fluoride	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 0.1002/14651858. CD007868.pub2.	Systematic review
	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review

The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes.	Moynihan PJ, Kelly S.A.M, (2013). Effect on Caries of restricting sugar intake: systematic review to inform WHO guidelines, Journal of Dental Research 93 (1) 8-18	Systematic review
Sugars should not be consumed more than four times per day	WHO, (2003). Diet nutrition and the prevention of chronic diseases. Report of a joint WHO / FAO Expert consultation Geneva: WHO. Committee on Medical Aspects of Food Policy (COMA), (1989). Dietary sugars and human disease. Report of the Panel on Dietary Sugars of the Committee on Medical Aspects of Food Policy. (Report No 37.). London: HMSO. Holbrook WP, Kristinsson MJ, Gunnarsdottir S, Birem B, (1989). Caries prevalence, streptococcus mutans and sugar intake among 4 year old urban children in Iceland. Community Dent Oral Epidemiol 17 292-5 Holt RD, (1991). Foods and drinks at four daily time intervals in a group of young children. British Dental Journal 170; 137-143	Expert review Expert review Cohort study Cohort study
Sugar free medicines should be recommended	Shaw, L and Glenwright, H.D, (1989), The role of medicines in dental caries formation: need for sugar-free medication for children. Pediatrician, 16: 153-155 Hobson P., (1985). Sugar based medicines and dental disease. Community Dental Health; 2:57-62	 Expert Review
All children aged 3-6 years		**Type of evidence**
Brush at least twice daily, with fluoridated toothpaste	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review
Brush last thing at night and at least on one other occasion	Duckworth RM, Moore SS, (2001). Salivary fluoride concentrations after overnight use of toothpastes. Caries Res. 35: 285.	Clinical measurement study

Brushing should be supervised by an adult	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review
Use a pea size amount of fluoridated toothpaste	Bentley EM, Ellwood RP, Davies RM., (1999). Fluoride ingestion from toothpaste by young children Br Dent J. May 8;186(9):460-2.	Observation study
Use fluoridated toothpaste containing more than 1,000 ppm fluoride	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 10.1002/14651858. CD007868.pub2.	Systematic review
	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review
Spit out after brushing and do not rinse	Chestnutt IG, Schafer F, Jacobson AP, Stephen KW., (1998). The influence of toothbrushing frequency and post-brushing rinsing on caries experience in a caries clinical trial. Community Dent Oral Epidemiol. 26 (6): 406-411.	Association based on reported behaviour of clinical trial volunteers
The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes.	Moynihan PJ, Kelly S.A.M, (2013). Effect on Caries of restricting sugar intake: systematic review to inform WHO guidelines, Journal of Dental Research 93 (1) 8-18	Systematic review
	WHO, (2003). Diet nutrition and the prevention of chronic diseases. Report of a joint WHO / FAO Expert consultation Geneva: WHO, 2003	Expert review
	Committee on Medical Aspects of Food Policy (COMA), (1989). Dietary sugars and human disease. Report of the Panel on Dietary Sugars of the Committee on Medical Aspects of Food Policy. (Report No 37). London: HMSO.	Expert review

Sugars should not be consumed more than four times per day	Holbrook WP, Kristinsson MJ, Gunnarsdottir S, Birem B., (1989). Caries prevalence, streptococcus mutans and sugar intake among 4 year old urban children in Iceland. Community Dental Oral Epidemiology 17 292-5 Holt RD., (1991). Foods and drinks at four daily time intervals in a group of young children. British Dental Journal 170; 137-143	Cohort study Cohort study
Apply fluoride varnish to teeth twice yearly	Marinho VCC, Worthington HV, Walsh T, Clarkson JE. Fluoride varnishes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2013, Issue 7. Art. No.: CD002279. DOI: 10.1002/14651858.CD002279.pub2	Systematic review
Sugar free medicines should be recommended	Shaw, L and Glenwright, H.D., (1989). The role of medicines in dental caries formation: need for sugar-free medication for children. Pediatrician, 16: 153-155 Hobson P., (1985). Sugar based medicines and dental disease. Community Dental Health; 2:57-62	 Expert review
All children aged 0-6 years giving concern		**Type of evidence**
Use fluoridated toothpaste containing 1,350 -1,500 ppm fluoride	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 10.1002/14651858. CD007868.pub2.	Systematic review
Use a smear or pea size amount	Bentley EM, Ellwood RP, Davies RM., (1999). Fluoride ingestion from toothpaste by young children Br Dent J. May 8;186(9):460-2.	Observational study
Reduce recall interval	National Collaborating Centre for Acute Care, (2004). Dental Recall: Recall interval between routine dental examinations. National Institute of Clinical Excellence, London.	Expert opinion

Investigate diet and assist to adopt good dietary practice	Harris R, Gamboa A, Dailey Y, Ashcroft A. One-to-one dietary interventions undertaken in a dental setting to change dietary behaviour. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD006540. DOI: 10.1002/14651858.CD006540.pub2.	Systematic review
Prevention of caries in children aged from 7 years and young adults		**Type of evidence**
Brush at least twice daily, with a fluoridated toothpaste	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858.CD002278.	Systematic review
Brush last thing at night and at least on one other occasion	Duckworth RM, Moore SS., (2001). Salivary fluoride concentrations after overnight use of toothpastes. Caries Res. 35: 285.	Clinical measurement study
Use fluoridated toothpaste (1,350 – 1,500 ppm fluoride)	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 10.1002/14651858.CD007868.pub2. Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858.CD002278.	Systematic review Systematic review
Spit out after brushing and do not rinse	Chestnutt IG, Schafer F, Jacobson AP, Stephen KW., (1998). The influence of toothbrushing frequency and post-brushing rinsing on caries experience in a caries clinical trial. Community Dent Oral Epidemiol 26 (6): 406-411.	Association based on reported behaviour among clinical trial volunteers

The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes.	Moynihan PJ, Kelly S.A.M., (2013). Effect on Caries of restricting sugar intake: systematic review to inform WHO guidelines, Journal of Dental Research 93 (1) 8-18 WHO, (2003). Diet nutrition and the prevention of chronic diseases. Report of a joint WHO / FAO Expert consultation Geneva: WHO, 2003	Systematic review Expert guidance
Sugars should not be consumed more than four times per day	Committee on Medical Aspects of Food Policy (COMA), (1989). Dietary sugars and human disease. Report of the Panel on Dietary Sugars of the Committee on Medical Aspects of Food Policy. (Report No 37.). London: HMSO. Holbrook WP, Kristinsson MJ, Gunnarsdottir S, Birem B., (1989), Caries prevalence, streptococcus mutans and sugar intake among 4 year old urban children in Iceland. Community Dental Oral Epidemiology 17 292-5 Holt RD., (1991). Foods and drinks at four daily time intervals in a group of young children. British Dental Journal 170; 137 -143	Expert review Cohort study Cohort study
Apply fluoride varnish to teeth twice yearly (2.2% NaF)	Marinho VCC, Worthington HV, Walsh T, Clarkson JE. Fluoride varnishes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2013, Issue 7. Art. No.: CD002279. DOI: 10.1002/14651858.CD002279.pub2 American Dental Association, (2006). Professionally applied topical fluoride: evidence-based clinical recommendations. J Am Dent Assoc. 137: 1151–1159.	Systematic review Expert guidance
Children aged from 7 years and young adults giving concern		**Type of evidence**
Use a fluoride mouth rinse daily (0.05% NaF) at a different time to brushing	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride mouth rinses for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 3. Art. No.: CD002284. DOI: 10.1002/14651858. CD002284. Revised 2009 – no change to conclusions	Systematic review

Fissure seal permanent molars with resin sealant	Ahovuo-Saloranta A, Hiiri A, Nordblad A, Worthington H, Mäkelä M.. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. Cochrane Database of Systematic Reviews. 2007, Issue 2. Art. No.: CD001830. DOI: 10.1002/14651858 CD001830 pub 2	Systematic review
Apply fluoride varnish to teeth two or more times a year (2.2% NaF-)	Marinho VCC, Worthington HV, Walsh T, Clarkson JE. Fluoride varnishes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2013, Issue 7. Art. No.: CD002279. DOI: 10.1002/14651858.CD002279.pub2	Systematic review
For those 8+ years with active caries prescribe daily fluoride rinse	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride mouthrinses for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 3. Art. No.: CD002284. DOI: 10.1002/14651858. CD002284. Revised 2009 – no change to conclusions Twetman S, Petersson L, Axelsson S et al., (2004). Caries-preventive effect of sodium fluoride mouth rinses: a systematic review of controlled clinical trials. Acta Odontol Scand. 62(4): 223-230.	Systematic review Systematic review
For those 10+ years with active caries prescribe 2,800 ppm toothpaste	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 10.1002/14651858. CD007868.pub2. Bartizek RD, Gerlach RW, Faller RV et al., (2001). Reduction in dental caries with four concentrations of sodium fluoride in a dentifrice: a meta-analysis evaluation. J Clin Dent. 12 (3): 57-62.	Systematic review Systemic review

For those 16+ years with active disease consider prescription of 5,000 ppm toothpaste	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 10.1002/14651858. CD007868.pub2. Baysan A, Lynch E, Ellwood R et al., (2001). Reversal of Primary Root Caries Using Dentifrices Containing 5,000 and 1,100 ppm Fluoride. Caries Res 35: 41-46.	Systematic review Clinical trial
Investigate diet and assistance to adopt good dietary practice	Harris R, Gamboa A, Dailey Y, Ashcroft A. One-to-one dietary interventions undertaken in a dental setting to change dietary behaviour. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD006540. DOI: 10.1002/14651858.CD006540.pub2.	Systematic review
Prevention of caries in adults		**Type of evidence**
Brush at least twice daily, with a fluoridated toothpaste	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride toothpastes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 1. Art. No.: CD002278. DOI: 10.1002/14651858. CD002278.	Systematic review
Brush last thing at night and at least on one other occasion	Duckworth RM, Moore SS., (2001). Salivary fluoride concentrations after overnight use of toothpastes. Caries Res. 35: 285.	Clinical measurement study
Use fluoridated toothpaste (1,350-1,500 ppm fluoride)	Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VCC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007868. DOI: 10.1002/14651858. CD007868.pub2.	Systematic review
Spit out after brushing and do not rinse	Chestnutt IG, Schafer F, Jacobson AP, Stephen KW., (1998). The influence of toothbrushing frequency and post-brushing rinsing on caries experience in a caries clinical trial. Community Dent Oral Epidemiol 26 (6): 406-411.	Reported behaviour among clinical trial participants

The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes.	Moynihan PJ, Kelly S.A.M (2013) Effect on Caries of restricting sugar intake: systematic review to inform WHO guidelines, Journal of Dental Research 93 (1) 8-18 WHO, 2003 Diet nutrition and the prevention of chronic diseases. Report of a joint WHO / FAO Expert consultation Geneva: WHO, 2003	Systematic review Expert guidance
Sugars should not be consumed more than four times per day	Committee on Medical Aspects of Food Policy (COMA). Dietary sugars and human disease. Report of the Panel on Dietary Sugars of the Committee on Medical Aspects of Food Policy. (Report No 37.). London: HMSO; 1989. Holbrook WP, Kristinsson MJ, Gunnarsdottir S, Birem B. (1989) Caries prevalence, streptococcus mutans and sugar intake among 4 year old urban children in Iceland. Community Dental Oral Eipdemiol 17 292-5 Holt RD. (1991) Foods and drinks at four daily time intervals in a group of young children. British Dental Journal 170; 137 -143	Expert review Cohort study Cohort study
Adults giving concern		**Type of evidence**
Use a fluoride mouthrinse daily (0.05% NaF) at a different time to brushing	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride mouthrinses for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 3. Art. No.: CD002284. DOI: 10.1002/14651858. CD002284. Revised 2009 – no change to conclusions	Systematic review
Apply fluoride varnish to teeth twice yearly (2.2% NaF)	Marinho VCC, Worthington HV, Walsh T, Clarkson JE. Fluoride varnishes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2013, Issue 7. Art. No.: CD002279. DOI: 10.1002/14651858.CD002279.pub2	Extrapolated evidence from systematic review

For those with active coronal or root caries prescribe daily fluoride rinse	Marinho VCC, Higgins JPT, Logan S, Sheiham A. Fluoride mouthrinses for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews 2003, Issue 3. Art. No.: CD002284. DOI: 10.1002/14651858. CD002284. Revised 2009 – no change to conclusions	Systematic review
For those with obvious active coronal or root caries prescribe 2,800 or 5,000 ppm fluoride toothpaste	Tavss EA, Mellberg JR, Joziak M, Gambogi RJ, Fisher SW., (2003). Relationship between dentifrice fluoride concentration and clinical caries reduction Am J Dent. Dec;16(6):369-74.	Randomised controlled clinical trial
Investigate diet and assist to adopt good dietary practice	Harris R, Gamboa A, Dailey Y, Ashcroft A. One-to-one dietary interventions undertaken in a dental setting to change dietary behaviour. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD006540. DOI: 10.1002/14651858.CD006540.pub2.	Systematic review
Prevention of periodontal disease		**Type of evidence**
Self-care plaque removal – all adults and children		
Remove plaque effectively using methods shown by the dental team	Needleman, I., Suvan, J., Moles, D.R. & Pimlott, J., (2005). A systematic review of professional mechanical plaque removal for prevention of periodontal diseases. Journal of Clinical Periodontology 32, 229-282 Axelsson,P, Nystrom B and Lindhe, J., (2004). The long-term effect of a plaque control program on toothth mortality, caries and periodontal disease in adults. J Clin Periodontol 31, 749-757	Systematic review of randomised and non-randomised studies Observational study of single cohort
This will prevent gingivitis (gum bleeding/redness) and reduces the risk of periodontal disease	Lang, N.P., Schatzle, M.A. & Loe, H., (2009). Gingivitis as a risk factor in periodontal disease. Journal of Clinical Periodontology 36, 3-8	Observational studies

Daily, effective plaque removal is more important to periodontal health than tooth scaling and polishing by the clinical team	Needleman, I., Suvan, J., Moles, D.R. & Pimlott, J. (2005) A systematic review of professional mechanical plaque removal for prevention of periodontal diseases. Journal of Clinical Periodontology 32, 229-282	Systematic review of randomised and non-randomised studies
Advise best methods of plaque removal to prevent gingivitis, achieve lowest risk of periodontitis and tooth loss	Needleman, I., Suvan, J., Moles, D.R. & Pimlott, J. (2005) A systematic review of professional mechanical plaque removal for prevention of periodontal diseases. Journal of Clinical Periodontology 32, 229-282	Systematic review of randomised and non-randomised studies
Use behaviour change methods with oral hygiene instruction	Renz A, Ide M, Newton T, Robinson P, Smith D. Psychological interventions to improve adherence to oral hygiene instructions in adults with periodontal diseases. Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD005097. DOI: 10.1002/14651858.CD005097.pub2.	Systematic review of randomised controlled trials
Brush gum line AND each tooth twice daily (before bed and on one other occasion)	Echeverria, J. J. & Sanz, M. (2003) Mechanical supra-gingival plaque control. In: Lindhe, J., Karring, T. & Lang, N. P. (eds). Clinical Periodontology and Implant Dentistry, pp. 449–463. Oxford: Blackwell Munksgaard Publishing Company.	Expert recom-mendation
Use either: • Manual or powered toothbrush as appropriate • Small toothbrush head, medium texture	Deacon, S.A., Glenny, A.M., Deery, C., Robinson, P.G., Heanue, M., Walmsley, A.D. & Shaw, W.C. (2010) Different powered toothbrushes for plaque control and gingival health. SO: Cochrane Database of Systematic Reviews Robinson, P., Deacon, S.A., Deery, C., Heanue, M., Walmsley, A.D., Worthington, H., V, Glenny, A.M. & Shaw, B.C. (2005) Manual versus powered toothbrushing for oral health. SO: Cochrane Database of Systematic Reviews – revised review to be oublished April / May 2014	Systematic review of randomised controlled trials Systematic review of RCTs Good practice point

Assess patient's/parent/ carer's preferences for plaque control Decide on manual or powered toothbrush		Good practice point
Demonstrate methods and types of brushes	Clarkson JE, Young L, Ramsay CR, Bonner BC, Bonetti D. (2009) How to influence patient oral hygiene behaviour effectively. J Dent Res, 88:933-937.	RCT
Assess plaque removal abilities and confidence with brush Patient sets target for toothbrushing for next visit	Renz A, Ide M, Newton T, Robinson P, Smith D. Psychological interventions to improve adherence to oral hygiene instructions in adults with periodontal diseases. Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD005097. DOI: 10.1002/14651858.CD005097. pub2.	Systematic review of RCTs
For small spaces between teeth: use dental floss or tape	Sambunjak, D., Nickerson, J.W., Poklepovic, T., Johnson, T.M., Imai, P., Tugwell, P. & Worthington, H., V (2011) Flossing for the management of periodontal diseases and dental caries in adults. SO: Cochrane Database of Systematic Reviews doi:10.1002/14651858. CD008829.pub2.	Systematic review of RCTs
For larger spaces: use interdental or single-tufted brushes	Poklepovic T, Worthington HV, Johnson TM, Sambunjak D, Imai P, Clarkson JE, Tugwell P. Interdental brushing for the prevention and control of periodontal diseases and dental caries in adults. Cochrane Database of Systematic Reviews 2013, Issue 12. Art. No.: CD009857. DOI: 10.1002/14651858.CD009857. pub2	Systematic review of RCTs
Around orthodontic appliances and bridges: use kit suggested by the dental professional	Christou, V., Timmerman, M.F., Van der Velden, U. & Van der Weijden, F.A. (1998) Comparison of Different Approaches of Interdental Oral Hygiene: Interdental Brushes Versus Dental Floss. Journal of Periodontology 69, 759-764	RCT

Assess patient's preferences for interdental plaque control • Decide on appropriate interdental kit	Clarkson JE, Young L, Ramsay CR, Bonner BC, Bonetti D, (2009). How to influence patient oral hygiene behaviour effectively. J Dent Res, 88:933-937.	RCT
Demonstrate methods and types of kit • Assess plaque removal abilities and confidence with kit • Patient sets target for interdental plaque control	Renz A, Ide M, Newton T, Robinson P, Smith D. Psychological interventions to improve adherence to oral hygiene instructions in adults with periodontal diseases. Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD005097. DOI: 10.1002/14651858.CD005097.pub2.	Systematic review of RCTs
Risk-factor control		
Do not smoke Smoking increases the risk of periodontal disease, reduces benefits of treatment and increases the chance of losing teeth	Chambrone L, Chambrone D, Lima LA & Chambrone LA., (2010). Predictors of tooth loss during long-term periodontal maintenance: a systematic review of observational studies. J Clin Periodontol 37:675-84 Krall EA, Dietrich T, Nunn ME, Garcia RI., (2006). Risk of tooth loss after cigarette smoking cessation. Prev Chronic Dis. Oct; 3(4): A115. Epub 2006 Sep Labriola, A., Needleman, I. & Moles, D.R.. (2005). Systematic review of the effect of smoking on nonsurgical periodontal therapy. Periodontology 2000 37, 124-137	Systematic review of observational studies Observational study Systematic review of randomised and non-randomised studies
Ask, Advise, Act: take a history of tobacco use, give brief advice to users to quit and sign post to local stop smoking service	Aveyard P, R. Begh, A. Parsons, and R. West, (2012). Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. Addiction, 107(6): p. 1066-73.	Systematic review

Patients with diabetes should try to maintain good diabetes control as they are • At greater risk of developing serious periodontal disease	Gatke, D., Holtfreter, B., Biffar, R. & Kocher, T., (2012), Five-year change of periodontal diseases in the Study of Health in Pomerania (SHIP). Journal of Clinical Periodontology 39, 357-367	Observational study
• Less likely to benefit from periodontal treatment if the diabetes is not well controlled	Demmer, R. T., Holtfreter, B., Desvarieux, M., Jacobs, D. R. Jr, Kerner, W., Nauck, M., Volzke, H. & Kocher, T., (2012). The influence of type 1 and type 2 diabetes on periodontal disease progression: prospective results from the Study of Health in Pomerania (SHIP). Diabetes Care 35, 2036–2042	Observational study
Some medications can affect gingival health	Ciancio, S.G., (2005). Medications: a risk factor for periodontal disease diagnosis and treatment. Journal of Periodontology 76, Suppl: 2061-2065	Expert review
Prevention of peri-implant disease		
Dental implants require the same level of oral hygiene and maintenance as natural teeth.	Heitz-Mayfield, L.J.A., (2008). Peri-implant diseases: diagnosis and risk indicators. Journal of Clinical Periodontology 35, 292-304	Expert review
Clean both between and around implants carefully with interdental kit and toothbrushes.	Heitz-Mayfield, L.J.A,. (2008). Peri-implant diseases: diagnosis and risk indicators. Journal of Clinical Periodontology 35, 292-304	Expert review
Attend for regular checks of the health of gum and bone around implants	Heittz-Mayfiedl, L J A., Needleman I, Salvi GE, Pjetursson, Bjarni E, (2014). International Journal of Oral and Maxillofacial Implants. Supplement Vol 29, p346-350. 5p. DOI : 10.11607/jomi.2013.g5.	Expert recom-mendations
Advise best methods for self-care plaque control, both toothbrushing and interdental cleaning	Heitz-Mayfield, L.J.A., (2008). Peri-implant diseases: diagnosis and risk indicators. Journal of Clinical Periodontology 35, 292-304	Expert review

Prevention of oral cancer		Type of evidence
Do not smoke	Warnakulasuriya. KA, Sutherland. G, and Scully. C, (2005). Tobacco, oral cancer and treatment dependence. Oral Oncology, 2005. 41: p. 244-260.	Review paper
	Macfarlane GJ, Zheng T, Marshall et al., (1995). Alcohol, tobacco, diet and the risk of oral cancer: a pooled analysis of three case-control studies, Eur.J.Cancer B Oral Oncol. 31B: 181-187.	Case control study
	Zeka A, Gore R, Kriebel D., (2003). Effects of alcohol and tobacco on aerodigestive cancer risks: a meta-regression analysis. Cancer Causes Control. 14(9): 897-906.	Meta analysis
Do not use smokeless tobacco eg Pan, chewing tobacco	Carr AB and J. Ebbert, (2012). Interventions for tobacco cessation in the dental setting. Cochrane Database of Systematic Reviews, 2012. 6: p. CD005084.	Systematic review
	Critchley JA. Unal B., (2003). Health effects associated with smokeless tobacco: a systematic review. Thorax. 58: 435-443.	Systematic review
	Rahman M, Sakamoto J, Fukui T., (2003). Bidi smoking and oral cancer: a meta-analysis. Int J Cancer. 106 (4): 600-604.	Meta analysis
Reduce alcohol consumption to moderate (recommended) levels	Kaner E et al., (2007). Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database of Systematic Reviews. CD004148.	Systematic review of trials conducted in primary care settings, not in dental practices
Increase intake of non-starchy vegetables and fruit	WCRF/AICR's Second Expert Report, Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective, 2007 http://www.dietandcancerreport.org/expert_report/#sthash.grsTYRub.dpuf	Expert review

Take a history of tobacco use, give brief advice and signpost to smoking cessation service	Aveyard P, R. Begh, A. Parsons, and R. West, (2012). Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. Addiction, 107(6): p. 1066-73.	Systematic Review
Establish if the patient is drinking above low risk (recommended) levels. If appropriate signpost to alcohol misuse support services if available	Kaner E et al., (2007). Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database of Systematic Reviews. CD004148. Fiellin D et al., (2000). Screening for alcohol problems in primary care. Archives of Internal Medicine; 160: 1977-1989.	Systematic review of trials conducted in primary care settings, not in dental practices Systematic review
Evidence-based advise and professional intervention about smoking and other tobacco use		**Type of evidence**
Tobacco use, both smoking and chewing tobacco seriously affects general and oral health. The most significant effect on the mouth is oral cancers and pre-cancers.	Warnakulasuriya. KA, Sutherland. G, and Scully. (2005). C, Tobacco, oral cancer and treatment dependence. Oral Oncology, 41: p. 244-260.	Review paper
Do not smoke	Carr AB and J. Ebbert, (2012). Interventions for tobacco cessation in the dental setting. Cochrane Database of Systematic Reviews, 6: p. CD005084.	Systematic review
Do not use shisha pipes	Akl EA, Gaddam S, Gunukula SK, Honeine R, Jaoude PA, and Irani J, (2010). The effects of waterpipe tobacco smoking on health outcomes: a systematic review. International Journal of Epidemiology. 39(3): p. 834-57.	Systematic review
Do not use smokeless tobacco (eg paan, chewing tobacco, gutkha)	Carr AB and J. Ebbert, (2012). Interventions for tobacco cessation in the dental setting. Cochrane Database of Systematic Reviews, 2012. 6: p. CD005084.	Systematic review

If the patient is not ready or willing to stop they may wish to consider reducing how much they smoke using a licensed nicotine containing product to help reduce smoking. The health benefits to reducing are unclear but they will be more likely to stop smoking in the future	National Institute for Health and Clinical Excellence, (2013). Tobacco: harm-reduction approaches to smoking: Public Health Intervention Guidance no.45, 2013, National Institute for Health and Clinical Excellence: London.	Expert review
Ask, Advise, Act : Take a history of tobacco use, give brief advice to users and signpost to local Stop Smoking Service	Aveyard P, R. Begh, A. Parsons, and R. West, (2012). Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. Addiction. 107(6): p. 1066-73.	Systematic review
Evidence-based advise and professional intervention about alcohol and oral health		**Type of evidence**
Drinking alcohol above recommended levels adversely affects general and oral health with the most significant oral health impact being the increased risk of oral cancer.	La Vecchia C et al., (1997). Epidemiology and prevention of oral cancer. Oral Oncology; 33: 302-312.	Review paper based on descriptive evidence
Reduce alcohol consumption to low risk recommended) levels.	Kaner E et al., (2007). Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database of Systematic Reviews. CD004148.	Systematic review of trials conducted in primary care settings, not in dental practices

For all patients: Ask – Establish and record if the patient is drinking above low risk (recommended) levels Advise – offer brief advice to those drinking above recommended levels Act – refer or signpost high risk drinkers to their GP or local alcohol support services	Fiellin D et al., (2000). Screening for alcohol problems in primary care. Archives of Internal Medicine; 160: 1977-1989.	Systematic review
Evidence-based advise and professional intervention about healthy eating		**Type of evidence**
The amount and frequency of consumption of sugars should be reduced	Moynihan PJ, Kelly S.A.M., (2014). Effect on Caries of restricting sugar intake: systematic review to inform WHO guidelines, Journal of Dental Research 93 (1) 8-18	Systematic review
	WHO Diet nutrition and the prevention of chronic diseases, (2003). Report of a joint WHO/FAO Expert consultation (WHO technical report series 916) Geneva: WHO	Expert review
	Moynihan P. and Petersen PE, (2004). Diet, nutrition and the prevention of dental diseases. Public Health Nutrition 7 (1A) 201-226	Expert review
	Committee on Medical Aspects of Food Policy (COMA), (1989). Dietary sugars and human disease. Report of the Panel on Dietary Sugars of the Committee on Medical Aspects of Food Policy. (Report No 37.). London: HMSO.	Expert review
	Rugg-Gunn AJ et al., (1984). Relationship between dietary habits and caries increment assessed over two years in 405 English adolescent schoolchildren. Archives of Oral Biology, 29:983-992.	Cohort study

Avoid sugar containing foods and drinks at bedtime	Moynihan PJ and Holt RD, (1996). The National diet and nutrition survey of 1.5-4.5 year old children: summary of the findings of the dental survey. British Dental Journal, 181(9), 328-332. Levine, R.S., (2001). Caries experience and bedtime consumption of sugar-sweetened foods and drinks-a survey of 600 children. Community Dental Health 18: 228-231	Observational study Cohort study
	WHO Diet nutrition and the prevention of chronic diseases, (2003). Report of a joint WHO/FAO Expert consultation (WHO technical report series 916) Geneva: WHO	Expert review
To aid dietary modification advice consider using a diet diary over 3 days one weekend day and 2 weekdays	Watt,R., McGlone, Kay, E., (2003). Prevention Part 2: Dietary advice in the dental surgery. British Dental Journal 195, 27-31. Rugg-Gunn, A. and Nunn, J., (1999). Nutrition, diet and oral health. Oxford; Oxford University Press	Good practice

Acknowledgements

We would like to acknowledge the expert advice received from the Cochrane Oral Health Group and for their review of the draft document.

Membership of the working group

Chairs:	Sue Gregory	Head of dental public health, PHE
	Jenny Godson	Lead for oral health improvement, PHE
Secretary:	Amit Bose	Department of Health
Collator:	Gill Davies	Specialist in dental public health, PHE
	Jan Clarkson	Professor, co-director, dental health services research unit, University of Dundee School of Dentistry
	Julia Csikar	Senior public health manager, PHE
	Barry Cockcroft	Chief dental officer, NHS England
	Nigel Carter	Chief executive, British Dental Health Foundation
	Jenny Gallagher	BASCD president (2011-12)
	Semina Makhani	Consultant in dental public health, PHE
	John Milne	Chairman of BDA General Dental Practice Committee, general dental practitioner
	Keith Milsom	Consultant in dental public health, PHE
	Paula Moynihan	Professor of nutrition and oral health, University of Newcastle
	Ian Needleman	Professor of restorative dentistry and evidence-based healthcare, University College London, Eastman Dental Institute
	Derek Richards	Director, Centre for Evidence Based Dentistry
	Susie Sanderson	British Dental Association, general dental practitioner
	David Thomas	Chief dental officer, Wales
	Richard Watt	Professor of dental public health, UCL

We wish to acknowledge the original work carried out by:
Mrs J T Duxbury Miss M A Catleugh
Prof R M Davies Dr G M Davies

And on section 9 by:
David Bartlett Kathy Harley