

## U.K. National Clinical Guidelines in Paediatric Dentistry\*

### Introduction

In 1994 the Department of Health requested the Royal College of Surgeons to produce National Clinical Guidelines. This task was delegated to the Paediatric Dentistry Clinical Audit Committee which is a subcommittee of the Consultants in Paediatric Dentistry Group of United Kingdom and Ireland.

The purpose of Clinical Guidelines is to improve the effectiveness and efficiency of clinical care through the identification of good clinical practice and desired clinical outcomes. Each Guideline is intended to assist clinicians in making decisions about appropriate management of specific conditions. The aim has been to choose commonly encountered clinical situations and make recommendations on their management. In many areas of practice there is a shortage of reliable research data, so that although some recommendations are supported by robust data, others are made with a lesser degree of confidence, and may represent only 'best current practice'. An anticipated benefit is that shortage of data will be highlighted, so stimulating research aimed at improving the scientific foundation of our clinical activity. It will be important to refine the existing Guidelines as further information becomes available, and also to add to the number of Guidelines in the future.

The production of a guideline follows a consistent and thorough method. Draft authors were asked to review the scientific literature on selected topics and produce a draft guideline which was then circulated to an 'Expert Panel' for comment and opinion. Expert panels varied according to the subject of the guideline and consisted of all Consultants, the British Society of Paediatric Dentistry and individuals from other disciplines who were identified as having a particular expertise in that subject. Where applicable each guideline consists of three broad sections. The first section is a series of recommendations for diagnosis and management, the second contains explanatory notes relating to the evolution of these

**Table 1.** Scottish Intercollegiate Guideline Network (SIGN) classification.

#### Levels of evidence

Level	Type of evidence
Ia	Evidence obtained from meta-analysis or randomized control trials
Ib	Evidence from at least one randomized control trial
IIa	Evidence obtained from at least one well-designed control study without randomization
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case-control studies
IV	Evidence from expert committee reports or opinions and/or clinical experience of respected authorities

#### Grading of recommendations

Grade	Recommendations
A (evidence levels Ia, Ib)	Requires at least one randomized controlled trial as part of the body of the literature of overall good quality and consistency addressing the specific recommendations
B (evidence levels IIa, IIb, III)	Requires availability of well-conducted clinical studies but no randomized clinical trials on the topic of recommendation
C (evidence level IV)	Requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities; indicates absence of directly applicable studies of good quality

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recommendations, and the third section contains references and comments to assist further research into the subject. A final Guideline was eventually produced which, if appropriate, was assessed, according to the Scottish Intercollegiate Guideline Network (SIGN) classification, as to whether it was based on proven scientific evidence or currently accepted good clinical practice with limited scientific evidence. The SIGN classification is shown in Table 1 together with the Grading system used in the text of each document. The first guideline is published below.

It should be understood that a Clinical Guideline is intended to assist the clinician in the management of patients in an effective and efficient way. It is not intended to restrict clinical freedom in the management of an individual case.

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## Prevention of dental caries in children

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Although children are at risk from conditions affecting both dental and soft-tissues, by far the commonest of these in childhood is dental caries, therefore these guidelines consider the prevention of dental caries which is a multifactorial disease. Prevention requires a multifactorial approach including dietary factors and eating habits, the use of appropriate fluoride therapy, the application of fissure sealants and the implementation of effective oral hygiene.

### Management

#### 1 Indications for preventive therapy

Preventive dental care is important for all children and adults but there are certain circumstances which are indicative of increased risks of disease or its consequences (see Table 1).

##### 1.1 General factors (Grade B)

- 1.1.1 Low socio-economic group [1].
- 1.1.2 Medically compromised patients [2], at risk from caries and its sequelae.
- 1.1.3 Children with special needs, including learning difficulties.
- 1.1.4 Children on long-term medication containing sugar [3].

##### 1.2 Local factors (Grade B)

- 1.2.1 Evidence of past caries experience.

- 1.2.2 Greater than three sugary intakes per day. Greater than 10% of energy from non-milk extrinsic sugar consumption [4].
- 1.2.3 Poor oral hygiene.
- 1.2.4 Lower salivary flow.
- 1.2.5 Orthodontic appliance therapy.

#### 2 Preventive therapy methods and techniques

##### 2.1 Dietary control (Grade B)

###### Recommendations:

- 2.1.1 For 'at risk' children, a 3–4-day dietary diary should be completed and discussed.
- 2.1.2 Give dietary counselling which is specific to the child and family, based on the dietary diary.
- 2.1.3 Set limited, obtainable targets initially.
- 2.1.4 Monitor compliance
- 2.1.5 Infants should not be left to sleep with a bottle containing sugary liquids or those with a low pH which may also cause erosion. Prolonged use of feeding bottles should be avoided. Fruit flavoured sugar containing drinks should be limited to meal-times. Thirsty children will drink water [8].
- 2.1.6 Educate the public, particularly through school health education programmes

**Table 1.** Factors that affect the level of caries risk in children.

	Low risk	High risk
General		
Social	Mother's education: secondary, tertiary Good attendance pattern Family: nuclear, social class I, II, IIINM, employment	Mother's education: secondary only Poor attendance pattern Family: single parent, social class IIM, IV, V, unemployment
General health	Good health No sugar-containing medication	Poor health/chronically sick Medication containing sugar
Local		
Oral hygiene	Good oral hygiene, regular brushing twice per day with assistance	Poor oral hygiene, irregular brushing without assistance
Diet	Three or more sugary intakes per day	Three or more sugary intakes per day
Fluoride experience	Regular brushing with fluoride toothpaste Optimally fluoridated water	Irregular use of fluoride toothpaste No fluoridated water supply
Past caries experience	$dmft \leq 1$ , $DMFT \leq 1$ , No initial lesions Caries free first permanent molars at 6–8 years of age 3-year caries increment $\leq 3$	$dmft \geq 5$ , $DMFT \geq 5$ $\geq 10$ initial lesions Caries in first permanent molars at 6 years of age 3-year caries increment $\geq 3$
Orthodontic treatment	No appliance therapy	Fixed appliance therapy

about the known association between frequent consumption of sugars and dental caries.

- 2.1.7 Support future research and education to promote balanced diets and the use of sugars in moderation.
- 2.1.8 Paediatric medicines should be sugar free.
- 2.1.9 Prolonged breast feeding should be discouraged.

## 2.2 Fluoride therapy

### Recommendations:

- 2.2.1 Water fluoridation (Grade A)  
Optimal fluoride in drinking water supplies remains the cornerstone of any preventive dentistry strategy.
- 2.2.2 Fluoride toothpaste (Grade A)  
All children should regularly use a correctly formulated fluoride toothpaste according to the manufacturers and dentists instruction. To reduce the risk of opacities, children under the age of 6 years and considered to be at low risk of developing dental caries should use a toothpaste containing no more than 600 ppm of fluoride. Those with a higher risk of developing caries should

use a standard (1000 ppm) paste [10]. Children over the age of 6 years should be encouraged to use a standard (1000 ppm) or higher (1450 ppm) fluoride level paste [11].

Toothpastes accredited by the British Dental Association should be recommended [11].

Children under 6 years should use an amount of toothpaste no greater than a small pea [11].

An adult should supervise the amount of toothpaste used and tooth brushing technique, up to at least 7 or 8 years [11]. Toothpaste packaging must include clear labelling to indicate the amount of fluoride present, expressed consistently as ppmF.

### 2.2.3 Fluoride supplements (Grade A)

For children at risk of dental caries (see Table 1) dietary fluoride supplements should be considered. The small potential risk of mild enamel opacities may be outweighed by the benefits of fluoride supplements [7].

When fluoride is given as tablets, these should be allowed to dissolve slowly in the mouth in order to give a topical as well as a systemic effect. They should preferably be given at a time separated

from toothbrushing to help to reduce the peaks of fluoride ingestion and to maximize the topical effect.

For children living in an area where there is no more than 0.3 ppm fluoride in the drinking water, the currently recommended dosage schedule should be used (as of 1996) [11].

#### 2.2.4 Professionally applied topical fluoride treatment (Grade A)

Topical fluoride varnishes are of proven benefit in preventing caries and in helping to arrest caries in children with 'nursing bottle caries' and cervical decalcification. These are highly concentrated vehicles for fluoride and the recommended dose must not be exceeded [9,12]

Other forms of professionally applied fluoride gels (1.23% acidulated phosphate fluoride APF) and solutions (8% stannous fluoride) are recommended by some authorities [6] but have been shown to be of poor cost benefit [9,12], although clinically beneficial.

Children at high caries risk should be considered for application of topical fluorides twice yearly.

#### 2.2.5 Self or parent-applied fluoride for children at high caries risk (Grade B)

Home fluoride treatments using mouthrinses can be recommended for daily use in children over 6 years.

If a high risk patient cannot comply with home fluoride therapy then frequent professional fluoride treatments should be substituted.

### 2.3 Fissure sealants

#### Recommendations

##### 2.3.1 Patient selection (Grade C)

Children with special needs are a priority for the use of fissure sealants. They should be considered for those who are medically compromised, physically or dentally disabled, together with those

having learning difficulties or those from socio-economically disadvantaged backgrounds.

Children with extensive caries in their primary teeth should have all permanent molars sealed as soon as possible after eruption.

Children with caries free primary dentitions and who do not fall into one of the categories above do *not* need to have first permanent molars sealed routinely.

##### 2.3.2 Tooth selection (Grade C)

Fissure sealants have greatest benefit on the occlusal surfaces of permanent molar teeth. However, other surfaces with pits, particularly the buccal pits in lower molars and cingulum pits in upper incisors, should also be considered. Fissure sealing of primary molars is not normally advised.

Sealants should usually be applied as soon as the teeth have erupted sufficiently to permit moisture control. Any child with occlusal caries in one first permanent molar should have the other molars sealed. Occlusal caries affecting one or more first molars indicates a need for the second permanent molars to be sealed.

##### 2.2.3 Clinical circumstances (Grade B)

When there is doubt about the integrity of an occlusal surface on clinical examination a bite-wing radiograph should be taken.

If early dentine involvement is suspected the fissure should be investigated using small burs. If minimal caries is discovered, a composite resin restoration should be placed and the whole surface sealed. If extensive caries is discovered a more conventional occlusal restoration should be placed.

##### 2.3.4 Long-term follow-up (Grade B)

Sealed teeth should be monitored clinically at appropriate intervals supported by radiographs.

Defective sealants should be investigated and re-sealed if appropriate.

Fissure sealants need to be maintained and this must be explained to parents.

## 2.4 Oral hygiene (Grade C)

### Recommendations

- 2.4.1 Toothbrushing skills should be taught to children of all ages. The precise technique is less important than the effectiveness of removal of plaque, the use of disclosing tablets or liquids is helpful.
- 2.4.2 Use of a fluoride toothpaste with effective toothbrushing is important (see 3.2.2).
- 2.4.3 Parents should supervise toothbrushing.

### Explanatory notes

#### 2.1 Dietary control

The Committee on Medical Aspects of Food policy has validated the relationship between sugar and dental caries in the clearest terms [5]. This has been reinforced by reports such as the Scientific Basis of Dental Health Education and the Oral Health Strategy for England [7].

Children who have already experienced dental caries or who are at risk from the consequences of dental caries should have a dietary diary completed over a 3–4-day period. Analysis of this should enable dietary counselling to be given which is specific and matched to the needs and circumstances of the child and family.

Non-sugar sweeteners are safe for teeth and useful substitutes for sugar when it is not possible to discourage a liking for sweetness. They are not permitted for use in foods and drinks for infants.

#### 2.2 Fluoride

The use of fluorides for prevention and control of dental caries is documented to be both safe and highly effective. Optimizing fluoride in water supplies is an ideal public health measure because it is effective, relatively inexpensive, not socially divisive, and does not require conscious daily co-operation from individuals [9]. In many areas of the U.K., however, failure to implement this measure means that fluoride needs to be supplied as a dietary

supplement, as fluoride toothpaste, and in children at risk of developing dental caries, as topical applications.

There has been some concern regarding enamel mottling and the ingestion of fluorides. It must be made clear that it is the misuse, rather than the use, of such fluoride agents as toothpastes and supplements which constitutes the main fluorosis risk.

#### 2.3 Fissure sealants

The British Society of Paediatric Dentistry published revised guidelines on the use of fissure sealants in 1993 [13]. First and second molar teeth continue to be the most caries-susceptible permanent teeth with the pattern of caries now principally involving the pits and fissures.

The decision to carry out fissure sealants should be made on clinical grounds, based on a thorough clinical examination of both the child and his/her teeth, supported by radiographs where appropriate and taking into consideration the patient's co-operation, medical history, past caries experience and the family environment.

#### 2.4 Oral hygiene

The achievement and maintenance of high levels of oral hygiene are particularly important as far as healthy periodontium is concerned. There is little scientific evidence to support the theory that toothbrushing *per se* will prevent dental caries, as normal brushing inevitably leaves some plaque in fissures and other stagnation sites where caries occurs. However, the use of a fluoride toothpaste with the toothbrush is obviously of benefit. Children cannot clean effectively until they are able to undertake such tasks as writing their own names legibly. Until this time parents should clean their child's teeth.

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