

Guidelines relevant to paediatric dentistry – do foundation dentists and general dental practitioners follow them? Part 2: Treatment and recall

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Key points

Encourages general dental practitioners to follow guidelines.

Encourages general dental practitioners to improve child dental health.

Encourages general dental practitioners to improve record keeping.

Reviews guidelines relevant to paediatric dentistry.

Aim This study investigated whether guidelines relevant to treatment of caries and recall for patients aged one to 15 years old had been followed by foundation dentists and other general dental practitioners. **Method** A total of 661 dental records were reviewed retrospectively. **Results** A total of 198 primary teeth had single surface cavities, 153 primary teeth had multiple surface cavities. Glass ionomer was the most frequently used restoration (132/198 and 50/153 respectively). No restoration (31/198 and 45/153) was a frequent choice. Only 12 preformed metal crowns were placed, and all were placed by foundation dentists. Eighty-three percent of patients were on a six month recall and 12% were on a three month recall. **Discussion** The manuscript discusses guidelines relevant to paediatric dentistry and a retrospective record review suggests treatment and recall guidelines are not always followed in general dental practice.

Introduction

In England, the most recent Child Dental Health Survey found that almost half of 5-year-olds have experienced clinical decay affecting primary teeth.^{1,2} For permanent teeth, one in seven children have experienced caries by eight years of age, and this increases to one in three children by the age of 12 and increases again to just under half of 15-year-olds. If dental caries occurs in the primary dentition, management is required. Guidelines make recommendations for the management of carious molars, and include advice on restorative techniques and

planned extractions. The Scottish Dental Clinical Effectiveness Programme (SDCEP) is widely supported in the UK, and is explicit in their guidelines; 'Do not leave active caries in primary teeth unmanaged'.³ Management may mean complete or partial caries removal, obtaining a seal around caries and restoration, or non-restorative management with prevention and monitoring.^{3,4} SDCEP guidelines recommend how to manage primary molars without caries removal, as well as partial and full caries removal with restoration techniques to include plastic adhesive restorations or preformed metal crowns.³ One study of 93 general dental practitioners (GDPs) in England reported that the majority considered these crowns unsuitable for most children and an impractical restorative technique in busy daily practice.⁵ Subsequently, the use of preformed metal crowns without the need for tooth preparation and local anaesthetic was described by Hall, who successfully used them in general dental practice, and current evidence supports their use.⁶⁻⁸

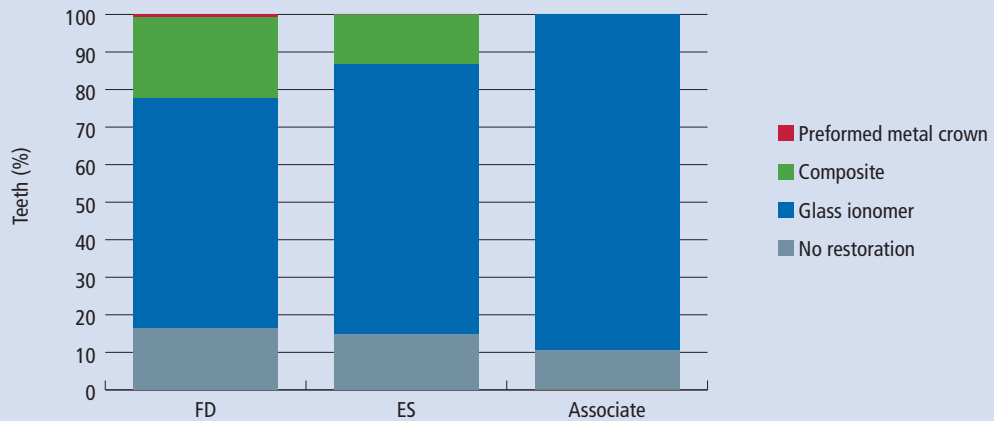
In healthcare, production and distribution of guidelines and evidence-based publications alone does not always result in a

change in clinical practice that reflects the recommendations.⁹⁻¹² Another example of this was a postal survey of Scottish GDPs exploring their attitudes and treatment tendencies. The study suggested that a significant proportion of the GDPs had not followed the SDCEP 'Prevention and management of dental caries in children' guidance produced nine months earlier.¹³ The dentists surveyed acknowledged that caries risk assessment and prevention behaviours were important and not difficult to do, yet almost half of the dentists surveyed said they sometimes choose to do nothing with a Class II cavity. Furthermore, a study of 133 general dental practitioners in Wales found that only 28% 'always' comply with NICE recall guidelines, yet 98% were familiar with them.¹⁴ NICE guidance indicates a recall interval of between three and 12 months is appropriate for children, with the frequency of intervals dependent on the child's caries risk status and oral health needs.¹⁵ What should be undertaken at each interval is advised by the SDCEP in their 'Prevention and management of dental caries in children' guidelines, and the Department of Health Guidelines.^{3,16}

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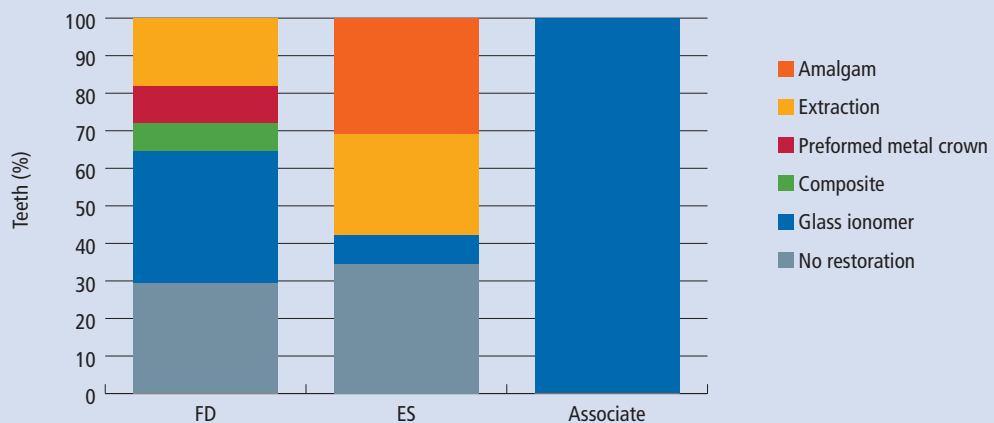
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Fig. 1 Primary single-surface cavity treatments



Treatment	FD	ES	Associate
Preformed metal crown	1	0	0
Composite	27	7	0
Glass ionomer	77	38	17
No restoration	21	8	2

Fig. 2 Primary multiple-surface cavity treatments



Treatment	FD	ES	Associate
Amalgam	0	8	0
Extraction	22	7	0
Preformed metal crown	12	0	0
Composite	9	0	0
Glass ionomer	43	2	5
No restoration	36	9	0

This paper presents results related to restoration of cavities and the documented recall interval following a retrospective review of 661 records of child patients in general dental practice.

Methods

Thirteen foundation dentists (FDs) based in the South West of England were recruited to take part in the retrospective record review. Educational supervisors (ESs) and associates

within the FDs practice were also asked to participate. Only those practitioners that agreed to participate were included. An excel data capture sheet was constructed to collect data anonymously, confidentially and comprehensively for patients aged 15 and under. Data collection for the record review was conducted by the FDs. Each FD collected data from their own patients and their participating colleagues' with distinction being made between patients that had been treated by an FD, by an associate and by the FDs' ESs. They assessed the records of

patients that attended the practice within a four week period. A maximum of 30 patient records were assessed per practitioner. Each record was assessed retrospectively, looking at the status of the dentition during the last full course of treatment (regardless of whether it was a Band 1, 2 or 3 NHS course of treatment or private treatment, but not including any visit on the day of the record review). Data captured included the patient's age, the recording of caries risk, recall interval advised and whether a referral was made. The status of each of the primary

molars at the start of the course of treatment was also recorded, including the tooth type, presence/absence of the tooth, presence/absence of caries, and what treatment was done.

The data capture sheets were then collected by a training programme director in the south west of England and the results pooled and analysed using excel.

After collection of the data, a short survey of the FDs and ESs through surveymonkey.co.uk questioned how often carious primary molars were restored, the materials used, whether preformed metal crowns were used, and perceived barriers to their use.

Results

Data for 661 patients, with an age range from one to 15 years old was captured. A total of 340 patients were FD patients, 231 were ES patients and 90 were patients of an associate. Of the 661 patients, 566 had at least one primary molar tooth, and 141 patients presented with one or more cavity in their primary molars. Seventeen patients were referred for specialist treatment.

There were 198 primary teeth with single surface cavities. The number of primary teeth with cavities affecting multiple surfaces was 153. For both categories, glass ionomer was the most frequently used restoration (132/198 and 50/153 respectively). No restoration (31/198 and 45/153) was a frequent choice. Preformed metal crowns were seldom the treatment chosen; one was placed on a tooth with a single surface cavity and 12 placed on teeth with multiple surface cavities. Figures 1 and 2 summarise the treatments provided to single and multi-surface cavities. When treating multiple surface cavities, FDs were more likely to use preformed metal crowns than ESs and associates (10%, 0% and 0%).

Eighty-three percent (550/661) of patients were on a six month recall and 12% (81) were on a three month recall (Fig. 3).

A total of 344 patients (52%) had no record of their caries risk. Seventy-one patients were recorded as being at high risk of caries. Of those high-risk patients, 31 were not on a three month recall (Fig. 4), and various treatments were used to manage the teeth with cavities (Fig. 5).

Seven ESs (54%) and eight FDs (62%) responded to the short survey (Fig. 6). Three said they 'always' restore carious primary molars, ten said 'usually' and two said 'sometimes.' When asked what they consider to be the best restorative material for interproximal Class 2 lesions in primary molars, five said preformed metal

Fig. 3 Recall interval

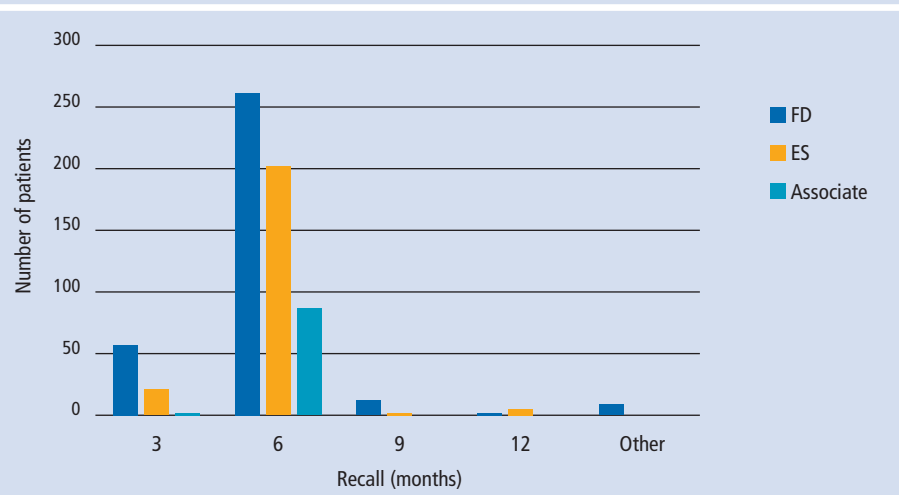
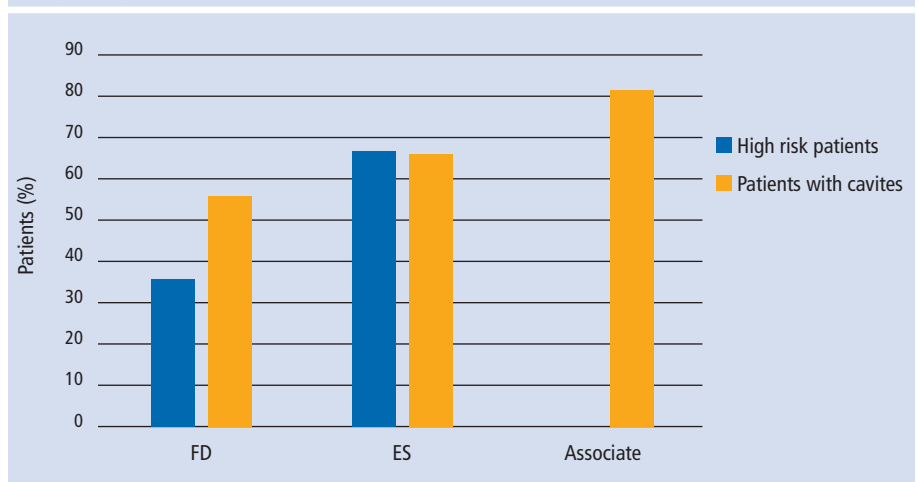


Fig. 4 High risk, or patients with cavities, that are not on a three-month recall



crowns, five said glass ionomer, three said resin modified glass ionomer, one said amalgam and one said composite. When asked what material they most frequently use in this situation, one said preformed metal crowns, ten said glass ionomer, and three said resin modified glass ionomer. Regarding preformed metal crowns, one person often uses them, four never use them and ten use them occasionally. Barriers to their use included cost, preference of the child or parent, lack of training or equipment and difficulty of the technique.

Discussion

In this study, 24.9% of children that had at least one primary molar tooth had a cavity in at least one primary tooth. Of the 351 teeth with cavities, 76 teeth had no recorded treatment. There has been debate about whether it is worthwhile to restore primary teeth. Some research seems to show no

difference in outcomes for restored or unrestored primary teeth in general practice.¹⁷⁻²⁰ In some parts of the UK there is little parental support for the restoration of asymptomatic carious primary teeth.²¹ One study has shown that 80% of carious primary teeth (restored or not) exfoliate without causing pain.¹⁷ One interpretation of this finding is that restorations provided by GDPs are no better than providing no restoration at all. Another subtly different interpretation is that despite restorative intervention, the outcome for a carious molar is the same. Regardless, 20% of carious molars did cause pain, and the studies raise the possibility of poor restorative management and lack of early diagnosis in general dental practice.¹⁷ The 'filling childrens teeth: indicated or not' (FiCTION) multi-centre primary dental care randomised controlled trial results due in 2017 are eagerly awaited by many in the profession.^{22,23} In this current study no differentiation was made between active and

arrested caries or carious teeth which may be very close to exfoliation. However, differences between practice and guidelines are clearly evident. GDPs may take different approaches to paediatric dentists in the management and restoration of primary molars. FDs were more likely to have patients where preformed metal crowns were used. According to literature, teaching and guidelines they are considered to be the treatment of choice for primary teeth with multiple surface cavities in most circumstances.^{3,7,24} They are a fundamental part of theory and practical undergraduate teaching, under the guidance of paediatric dentists. Results here demonstrate that preformed metal crowns were seldom placed in general dental practice, even by recent graduates. Undergraduates have positive experiences of using preformed metal crowns, although they may have apprehensions about providing them in general dental practice.²⁵ All the practices participating in this study were FD training practices, and were required to have preformed metal crowns for primary molars available for use. Despite this only 13 crowns were placed by FDs, none by associates and none by ESs. Barriers related to their use included resistance from patients and parents, although high levels of patient and parent acceptance of the use of preformed metal crowns has been documented.^{26,27} Other barriers include cost (and possibly remuneration), a lack of practical teaching to GDPs, and a lack of equipment.

The most frequently used restoration by practitioners in this study was glass ionomer— 74% of restored primary teeth. It was used as the material of choice for 132 single surface cavities (from a total of 167 single surface restorations) and 50 multiple surface cavities (from a total of 79 multiple surface restorations). The

SDCEP guidelines indicate that obtaining a complete marginal seal is necessary to slow or arrest caries progression and therefore plastic adhesive restorations are likely to be most successful on Class I lesions, and preformed metal crowns are the preferred restoration for Class II lesions, a view which is also supported by ‘Guidelines for paediatric dentistry’.^{3,24,28}

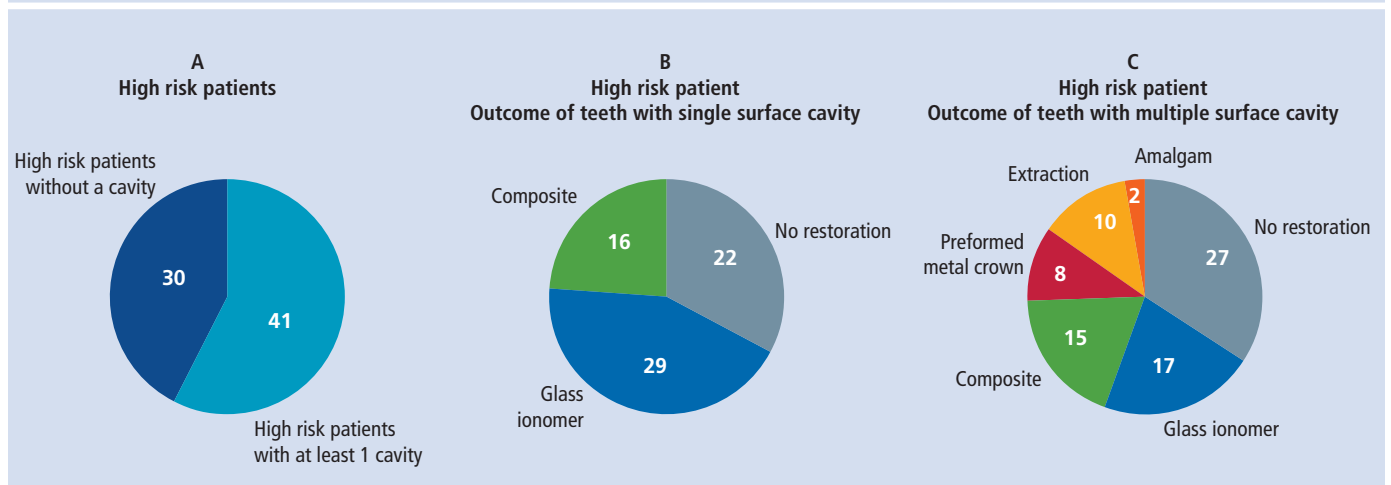
Approximately half of the patients in the study had no caries risk recorded. A large proportion of those patients recorded as high risk were not placed on a three month recall. Also, of those 141 patients with cavities, 87 were not on a three month recall. Most patients (83% of all patients) were on a six-month recall. Guidelines are not necessarily mandatory. NICE states that ‘the guideline (on patient recall) does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.’ This applies in all circumstances, not just patient recall, and justification for deviation from the guidelines should always be recorded in the records.¹⁵ The results presented here demonstrate that caries risk is not routinely recorded for children. When caries risk is recorded, the caries risk category assigned and the recorded recall interval may not be appropriate.

Around 95% of dental care in the UK is provided in the primary dental care setting.²⁹ It would be easy to make the conclusion that guidelines should always be followed and that experienced GDPs are remiss for failing to do so, however, it is often not clear to practitioners whether guidelines are aspirational, or whether they are a reasonable and appropriate standard that the law expects of us.³⁰ Guidelines are usually based on evidence, and that evidence

is usually produced from an academic, hospital or specialist setting rather than general dental practice. Sometimes their value is questioned, for example because the patient base is not comparable to those in primary care. When guidelines are produced, they are considered to be standards that GDPs should adhere to, and if not followed they run the risk of litigation from patients and castigation from the professional regulators. Practitioners may base decisions on their wealth of experience and knowledge of individual patients, combined with the wishes of the patient. This is something that takes a considerable amount of time to become comfortable with, and maybe an explanation for the differences between FDs and ESs. Experiential learning over a GDP’s career influences a GDP’s approach to patient care over time.³¹ However, even when GDPs can see the value and agree with guidelines there are multiple and complex barriers to their implementation. There is increasing interest in the field of translation of evidence into practice and it is now understood that simply publishing guidance does not change practice.¹³

It has been shown that GDPs feel frustrated and isolated in their efforts to promote oral health for high risk children. Challenges include poor cooperation, high treatment need, parental skills, NHS remuneration and failure in national policy to grasp the size of the problem.³² The FGDP (UK) believes that the dental profession can make a major contribution towards addressing the current inequalities in children’s oral health. ‘The constraints of the current care delivery arrangements place significant limitations on the profession in achieving these improvements. The ongoing programme of dental contract reform is key in facilitating improvements in children’s oral

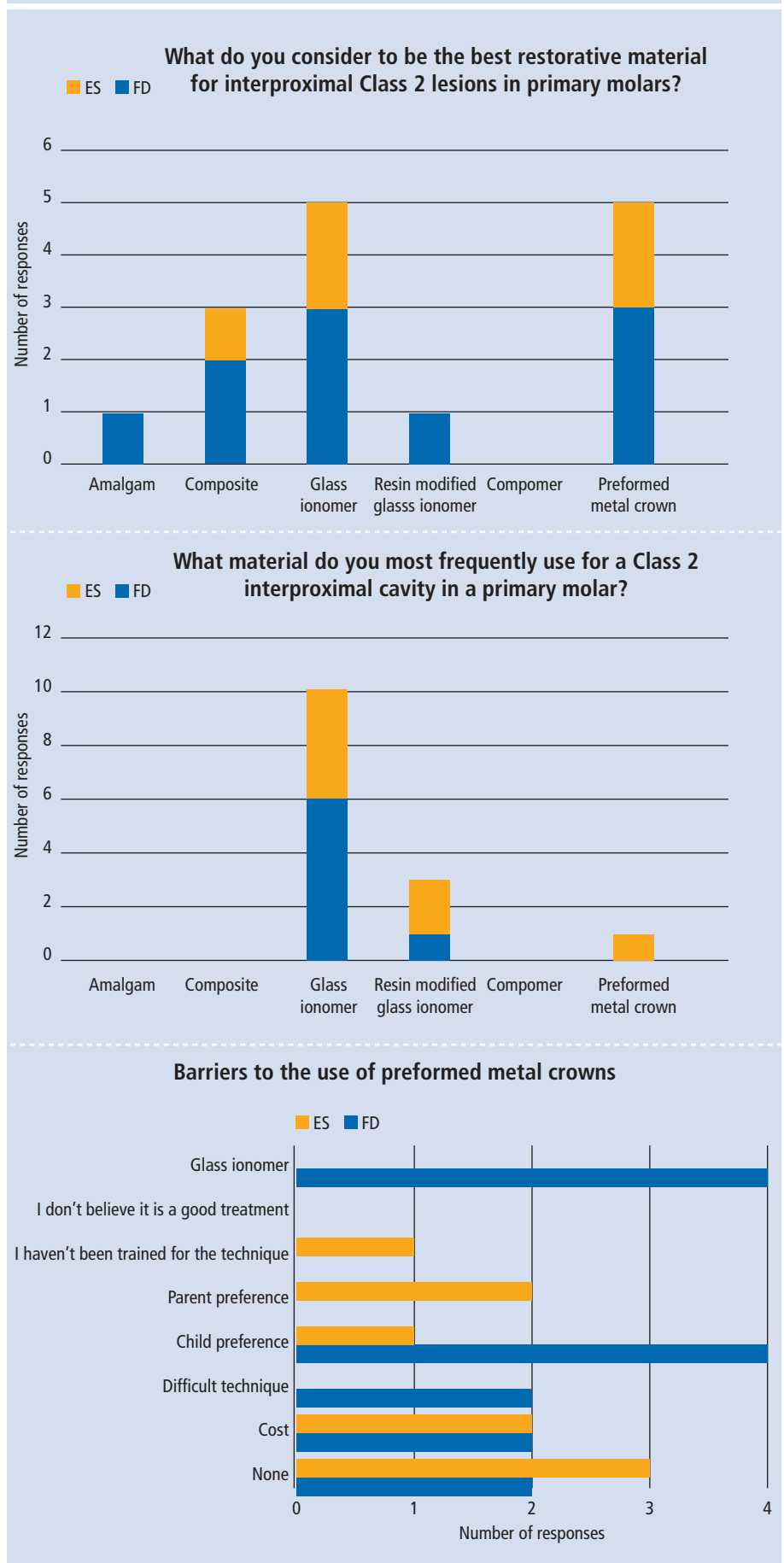
Fig. 5 High risk patients



health by the dental profession.²⁹ The profession sometimes criticises the NHS dental contract. The NHS currently remunerates all four pillars of prevention (OHI, fluoride, diet advice and fissure sealants) as part of a Band 1 course of treatment. Within each course it is necessary to complete an examination,³³ and it should include bitewing radiographs, fluoride application and fissure sealants when required. If a child is at high risk of caries, guidelines suggest they should be seen more frequently than a low risk patient, and therefore the need for more frequent preventive advice is remunerated with each new course of treatment. A restoration would mean the course of treatment would be upgraded to a Band 2 and attract three times the remuneration of a Band 1.³⁴ It was interesting to see that in this survey of the GDPs there was a difference between the materials thought to be the best, and the one most frequently used for interproximal Class 2 lesions in primary molars (Fig. 6). Furthermore, glass ionomer cement was the material that most GDPs reported using the most frequently for Class 2 lesions, perhaps because it is easy to use, yet research suggests that glass ionomer cement cannot be recommended for these lesions.²⁶ Amalgam was used by some GDPs in this study. The BDA has made a statement regarding the European Parliament regulation on mercury, which will take effect on 1 July 2018, which states that amalgam is not to be used for children under 15 years of age, unless deemed strictly necessary by the practitioner on the grounds of medical needs of the patient.^{35,36} Policy change influences a GDPs approach to patient care over time,³¹ and hopefully any future dental contract changes can be carefully considered to encourage GDPs to follow current teaching and help them work towards meeting guidelines related to paediatric dentistry, for the benefit of paediatric patients. One limitation of this study was that no attempt was made to measure the quality of treatment provided, such as the longevity of a restoration, outcome for a tooth, any improvement in a patients oral health, patient experience and willingness to reattend. These are all important considerations when judging patient care. Guidelines are devised with the intention of optimising patient care, and failure to follow them may place patients at increased risk of experiencing adverse outcomes.

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Fig. 6 Survey results



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