Oral Health Research Review

Making Education Easy

Issue 2 – 2009

In this issue:

Independent commentary by Jonathan Leichter DMD, Cert Perio (Harvard). Dr Leichter is currently Senior Lecturer in the Department of Oral Sciences at the University of Otago. Dr Leichter joined the faculty after 20 years in fulltime private practice in New York and Boston, 18 of which were spent in specialist practice limited to periodontology and implant dentistry. Trained at Tufts University and obtaining his specialist training at Harvard University, he has been actively involved in clinical dental implant practice since 1984. Since 2002, he has supervised and mentored postgraduate students in periodontology, endodontics and prosthodontics. His research interests and publications are in the field of periodontology, dental trauma and laser applications in dentistry.

Welcome

to the second edition of Oral Health Research Review, a unique New Zealand publication designed to make life easier for oral health practitioners.

We aim to save you time by regularly summarising what we think are the most significant new papers from around the world, and include local commentary on why they are important and how they can potentially affect practice. The selection of this edition's papers and independent commentary have been carried out by Dr Jonathan Leichter (JL) and Susan Moffat (SM) from the University of Otago. Links to the abstract or fully published papers are provided wherever possible so you can form your own judgement.

We hope you enjoy reading the Review, and we welcome your feedback.

Kind regards,

Jonathan Leichter D.M.D

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Restoration of posterior teeth in clinical practice: evidence base for choosing amalgam versus composite

Authors: Kovarik RE

Summary: This review of the evidence base for amalgam versus resin composite in posterior restorations found that although equivalence between the two materials is supported in much of the literature, RCTs indicate that amalgam restorations last longer and posterior composite failures are more likely to be associated with recurrent caries. The author commented that to help patients make informed decisions, clinicians need to be aware of the evidence level when assessing literature.

Comment (JL): A cultural shift in dental consumers that has placed a higher value on aesthetics, an increased awareness of potential health issues associated with mercury and concerns about the environmental impact of mercury waste have resulted in an increased demand for composite restorations. Today resin composite is more commonly placed than amalgam for posterior restorations, but is there a real evidence base for this drastic swing? A comprehensive electronic and hard copy search found that the vast majority of available literature is very low-level evidence. Retrospective case reports are prone to bias, 'university-based' research is seen as 'not realistic' and, in some studies, sample size was very small. RCTs provide a stronger evidentiary basis on which to make decisions, but only two RCTs that directly compared posterior amalgams and composites were found. The study populations in both were children, which limits their generalisability with regards to adults. Both studies demonstrated that amalgam has higher survival (2–3 times longer) and much less secondary decay than resin composite in posterior restorations. Taking into account that these studies are the strongest evidence now available, as well as recent concerns regarding potential health effects of bisphenol A, a component of some composite resins, dentists should carefully consider their recommendations to patients.

Comment (SM): In terms of restorations for posterior teeth, there has been an increased demand for composite by those who are concerned about aesthetics or amalgam toxicity. The author questions whether dentists base clinical decisions on these concerns or research evidence. The author notes that many studies indicate that composite performs equally to or better than amalgam; however, the majority of these studies are low-level evidence. Two high-level RCTs were identified that directly compared amalgam with composite. These RCTs demonstrated clearly that amalgam restorations have the higher survival rate and there is less secondary decay with amalgam. As both trials were carried out in children, the article is of particular interest to those treating children. Parents of children must consent for their children's treatment and many make decisions about filling materials based on concerns about appearance or amalgam toxicity. Oral health professionals need to give research-based information so that parents make informed decisions about their children's treatment. The findings of this article are similar to the conclusions reached by Lyons, in a 2003 Ministry of Health paper that provided guidelines for the restoration of posterior teeth in adolescents in NZ.

Reference: Dent Clin North Am 2009; 53(1): 71–6

http://www.dental.theclinics.com/article/S0011-8532(08)00085-2/abstract

Independent commentary by Susan Moffat, University of Otago. Susan is employed as a lecturer with the Bachelor of Oral Health programme at the School of Dentistry, University of Otago, and is Head of Discipline for dental therapy. Before joining the University staff, Susan worked as a dental therapist in Otago and Southland, and completed a Bachelor of Arts (Anthropology) while working as a therapist. She also has a Postgraduate Diploma in Public Health and is now carrying out research towards a PhD (Public Health).

Effect of a 10% carbamide peroxide on wear resistance of enamel and dentine: *In situ* study

Authors: Faraoni-Romano JJ et al

Summary: The effects of 10% carbamide peroxide on enamel and root dentine wear resistance was investigated in 30 slabs of each substrate bonded to volunteers' upper second premolars, and randomised to 10% carbamide peroxide or placebo for 2 weeks. The between-group difference for enamel wear was not significant, but the root dentine wear depth was greater with the bleaching agent than with placebo (p=0.0346).

Comment (JL): Tooth bleaching represents a noninvasive and relatively simple option for improving aesthetics related to dental discolouration. At-home bleaching using a 10% carbamide peroxide bleaching agent is considered a safe and effective treatment, and is increasingly being requested by patients and recommended by practitioners. This triple-blind *in situ* study was carried out to determine if bleaching would affect the wear resistance of enamel and root dentine. Slabs of bovine enamel and dentine were bonded to the upper second premolars of the 30 volunteers. Half of the group bleached their maxillary arch with a 10% carbamide peroxide bleaching agent for 2 weeks, while the rest of the group used a placebo. A profilometer measured the resistance of the specimens to wear following the trial. No significant difference was found with enamel, but the root dentine specimens exposed to the bleaching gel exhibited a higher wear rate. This may be due to the higher organic content, porosity and solubility, as well as the critical pH for root dentine (6.2–6.7). When recommending at-home bleaching in those patients with gingival recession and exposed root dentine, I would advise precautionary measures – avoid brushing after removal of the trays until the dentine has had a chance to remineralise and use tooth mousse and/or fluoride during and after the period of treatment.

Comment (SM): Appearance of teeth has become increasingly important to patients. Tooth bleaching has become popular as it is noninvasive, relatively simple to carry out and can be done at home. This article looks at whether 10% carbamide peroxide, the bleaching agent most used for home bleaching, alters the wear resistance of enamel and root dentine. The authors found that while bleaching caused no change in the wear resistance of enamel, root dentine did show tissue loss. This tissue loss, combined with toothbrushing, may increase dentine surface wear. Although not all studies have the same results, oral health professionals should be aware of the potential risks involved with home-bleaching kits. Although they may not be specifically recommending home-bleaching kits, oral health professionals may find that they are increasingly being asked for advice on their use.

Reference: J Dent 2009; 37(4): 273–8

http://tinyurl.com/JDent-37-273

A healthy weight intervention for children in a dental setting: a pilot study

Authors: Tavares M & Chomitz V

Summary: This study showed that implementation of a healthy weight intervention (HWI) in the paediatric dental care setting was feasible and well accepted by the children. The authors pointed out that such a programme could not only improve dental health, but could also have wider ranging systemic health benefits.

Comment (JL): Healthy eating effects not only oral health, but has a positive effect on systemic health with the prevention of obesity-related systemic diseases such as diabetes, sleep apnoea, hypertension and other cardiovascular risk factors. Overweight children are also at risk of the long-term psychological effects resulting from teasing and discrimination. In this pilot study, an HWI protocol was developed for the dental setting. Information was collected about food, physical activity, screen time and meal habits, height and weight were measured and the child's BMI calculated. An individualised health report card with recommendations for healthy behaviour modifications was completed. Children with a BMI-for-age percentile of ≥85% were referred. Preliminary results showed that the HWI is feasible and well accepted in a dental setting. Healthy eating and lifestyle messages, and better food choices can reduce dental caries and prevent obesity-related systemic diseases, which in turn help maintain oral health. Dentists and dental therapists, who perhaps see children on a more regular basis than the family doctor and who routinely record weight and height as part of their records, are well positioned to counsel their paediatric patients about bodyweight. The positive results may be numerous!

Comment (SM): The author of this paper believes that dental settings offer opportunities for oral health professionals to talk to patients about both oral health and preventing bodyweight problems. A study was conducted to determine whether it was possible for dental hygienists to talk to children and parents about healthy bodyweight options. The study involved calculating the child's BMI, completing an individualised health report card and recommending healthy behaviour modifications, in addition to setting goals for the next 6 months. Caregivers and oral health professionals considered the programme useful and it was accepted well by children. Oral health professionals in NZ, including dental therapists, are aware of the issues surrounding increasing obesity in children. They would have no problem in pointing out that limiting sweets and refined carbohydrates not only reduces caries, but also helps control bodyweight. However, they would perhaps be more concerned about the time involved in carrying out a programme, such as the one mentioned in this article, and may believe that counselling on weight issues is more the role of general practice doctors and nurses, Plunket nurses and public health nurses.

Reference: J Am Dent Assoc 2009; 140(3): 313–6

http://jada.ada.org/cgi/content/abstract/140/3/313

Occupational burnout and work engagement: a national survey of dentists in the United Kingdom

Authors: Denton DA et al

Summary: Burnout, as indicated by scores on all three scales of the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), affected approximately 8% of respondents to a questionnaire sent to 500 UK dentists, and an additional 18.5% had high scores for two of the MBI-HSS scales. Utrecht Work Engagement Scale (UWES-17) scores indicated moderate-to-high work engagement in 83% of the respondents. Dentists were more likely to have lower burnout and higher work engagement scores if they had postgraduate qualifications or worked in larger teams, while those working in NHS practice had higher burnout and lower work engagement scores.

Comment (JL): It has been suggested that dentists are prone to burnout due to the nature of our work. This study was carried out to assess the current levels of burnout (a persistent, negative work-related state of mind associated with exhaustion, cynicism and inefficiency) and work engagement (associated with a positive attitude, increased job satisfaction and improved job performance) in dentists in the UK. A cross-sectional postal questionnaire survey was conducted on a random sample of 500 dentists with 335 questionnaires available for statistical analysis. The 39-item questionnaire was entitled 'Work and well being of dentists 2006' so that respondents were unaware of what was being measured. The results showed that significant burnout in the three domains of emotional exhaustion, depersonalisation and personal accomplishment, was experienced by a small proportion (8%) of UK dentists. However, unfavourable scores in two domains only placed an additional 18.5% of dentists 'at risk'. 42% of the dentists surveyed were in the highest category of emotional exhaustion. With regards to work engagement, 15% had high levels of work engagement, 68% were average and 17% low. Postgraduate qualifications and working in a larger team were significantly associated with more positive work engagement and lower burnout scores. So, how are you feeling today?

Comment (SM): The results of this research suggest that a small, but significant, proportion of dentists in the UK are affected by burnout, with an even larger proportion showing low work engagement. Those without postgraduate qualifications, those who work in small teams, and those who spend most of their time in NHS practice were more likely to experience work burnout and have lower work engagement scores. Some of the findings of this research may be relevant to the dental therapy workforce in NZ. Until recent years, dental therapists have traditionally worked alone in school clinics and the public health system, and have been professionally isolated. In the past, there has also been a lack of a definite career pathway or postgraduate options for therapists. However, recent changes in legislation mean that therapists must now take part in continuing professional development, including peer-contact activities, in order to gain an annual practising certificate. They are now also more likely to work in teams and have dental assistants. In addition, the Government is presently funding the redevelopment of the School Dental Service to a more community-based dental service, which will also involve building new clinics. These changes will improve the working conditions for dental therapists, which, in turn, will hopefully reduce stress and burnout problems.

Reference: Br Dent J 2008; 205(7): E13

http://www.nature.com/bdj/journal/v205/n7/abs/sj.bdj.2008.654.html

Research Review publications are intended for New Zealand health professionals.

Mouthwashes and preventive oral home care: a natural alternative

Authors: Galgut P

Summary: This article discusses the use of mouthwashes as an adjunct to mechanical tooth cleaning methods, with particular emphasis on the increasing demand for natural products due to public wariness associated with the use of powerful medicaments (e.g. antiseptics). The author concludes that dental therapists need to be able to advise patients who request information on the use of such products.

Comment (JL): Three rather alarming facts provide a very strong case for the adjunctive use of mouthwashes in oral health management. It has been shown that the average person only spends 46 seconds brushing their teeth. Only between 2 and 10% of patients use dental floss regularly and effectively. Teeth only make up 24% of the surface area of the mouth. Mouthwashes can be divided into three categories: 1) 'social' aimed at 'fresh breath'; 2) 'special', which are designed to manage specific conditions such as xerostomia or excessive caries; and 3) 'antiseptic', which are effective against oral pathogens. An increase in consumers who prefer 'natural' products has led to an increase in organic and natural mouthwashes and toothpastes. These contain herbs such as aloe vera, tea tree oil, calendula, thyme, sandalwood and clove oil, which have well-known healing and antimicrobial properties against a wide range of pathogenic organisms. It is important for us to be aware of what 'natural' products are available, as well as any research published, so that we can advise our patients in this regard.

Comment (SM): Galgut identifies that many homecare oral hygiene maintenance programmes for adults are inadequate, with a high percentage of the population having visible dental plaque deposits remaining on their teeth after brushing. A very short time is spent brushing, and only a minority purchase and use dental floss. The author makes a case for the adjunctive use of mouthwashes to maintain good oral health. Research shows that antiseptic mouthwashes (such as chlorhexidine and essential oil-based mouthwashes) are effective in reducing plaque biofilm and controlling gingivitis. However, the author also notes that the public is becoming increasingly wary of products that contain 'chemicals', alcohol, colourants and artificial flavourings. He discusses the importance of oral health professionals being aware of the benefits of the many natural and herbal products on the market, and being able to advise patients on their use. Although the article is aimed at adult oral health, it is also relevant for those involved in the care of children. Dental therapists often suggest fluoride mouthwashes as part of a homecare maintenance programme, but should also be aware of the antiseptic mouthwashes available, as well as any natural or herbal mouthwashes and toothpastes, that could improve oral health through home use.

Reference: Dental Health 2009; 49(2): 14–6

Child protection through dental awareness

Authors: Singh G

Summary: Although dental practitioners are well positioned to identify and report signs of abuse in children, cases are under-reported by dentists. This article outlined signs of child abuse and neglect and provided guidelines for how to approach suspected cases, including obtaining advice and support from social services and other health professionals. The author concludes that child abuse issues should be included in curricula for all dental students, and completion of a 'Child Protection' course should be mandatory for all health professionals.

Comment (JL): Lack of knowledge in recognising child abuse is given as the reason that dental health professionals under-report child abuse. This article tables and defines the types of child abuse (physical, emotional, sexual and neglect), and lists possible injuries with their associated differential diagnoses. It has been documented that 65–75% of all abuse injuries involve the head, face and mouth. We are therefore in a unique position to observe these symptoms. A thorough history and examination, detailed documentation, including positive and negative findings, actual comments and behaviours, and photographs, if possible, are needed. Concerns should be discussed with an appropriate colleague and a referral to the local social services made if deemed necessary. Accusations should not be made, but it is the duty of a dental professional to report a suspected case to the appropriate agencies. Child protection, to protect children who are suffering or at the risk of suffering, is part of our responsibilities as healthcare professionals. It may not be a comfortable part of the job, but it is our duty to stay informed and act when necessary.

Comment (SM): Singh observes that, as members of the dental profession, we are well-placed to observe symptoms of child abuse, particularly as 65–70% of injuries resulting from child abuse involve the head, face and neck. Singh's article is particularly relevant for dental therapists, as they provide dental care for the majority of preschool and primary school children in NZ. Dental therapists are school-based, and may be first to detect signs of physical abuse. However, Singh expresses concern that abuse cases are actually under-reported by dental professionals, so provides details of how the oral health professional can recognise potential signs of abuse. The information provided on distinguishing between accidental and nonaccidental injuries is particularly useful. Information on documenting abuse is also helpful; however, information provided on management and reporting of abuse is less relevant, as NZ DHBs and dental practices will have their own protocols for managing and reporting abuse.

Reference: Dental Health 2009; 48(1): 20–4

An overview of oral health promotion in adolescents

Authors: Brukienė V & Aleksejūnienė J

Summary: This overview of 31 studies designed to evaluate oral health-related lifestyle modifications in adolescents found that all evaluated studies were associated with cognitive gains, but improvements in attitude were slight or absent. Decreases in plaque scores ranged from 30 to 50%, but typically regressed to baseline, while the effects on gingival health ranged from 0 to 50%. Reductions in the incidence on caries were only seen in studies that used professionally applied preventive measures combined with educational activities.

Comment (JL): This study was carried out to overview the effectiveness of different oral health promotion strategies used in adolescents. Health promotion in dentistry targets both dental caries and periodontal disease, these common behavioural diseases both having a multifactorial aetiology. Puberty is reported as the most difficult period for health education, as teenagers underestimate risks and see dental health as a low priority. It is, however, a critical period as behaviours established during adolescence are difficult to change during adulthood. Thirty-one studies were reviewed, the majority of which used conventional lectures and instructions in brushing and flossing. Self assessment of oral hygiene status was used in a few studies. Unfortunately, the majority of the studies reported only short-term results. Results regarding the influence of behavioural interventions on caries were contradictory, and changes in gingival health showed substantial variation. It remains unclear which type of educational intervention is the most effective. This leaves us with the challenges of not only finding effective ways to change behaviour, but also sustaining any improvements in oral health by preventing relapses in behaviour that will undoubtedly occur without ongoing reinforcement.

Comment (SM): Adolescence is considered an ideal time to promote good oral health, as this is the time when stable patterns of health-related behaviours are established. However, adolescence is also a time when a child may oppose parents, teachers and health professionals, which may make this a difficult time for health education. The authors of this article reviewed studies that aimed to modify oral health-related lifestyle in adolescents. Their findings may disappoint those oral health professionals involved in the oral healthcare and education of adolescents! Although adolescents gained in cognitive knowledge after oral health education, there tended to be only a slight or no improvement in attitude. Oral hygiene generally improved; however, this was usually only short term and oral hygiene deteriorated again over time. In NZ, in recent years, the emphasis for adolescent oral healthcare has been on increasing access and attendance. This article shows that further research also needs to be done on how to promote and maintain good oral health for adolescents. The authors suggest that very few studies have been done on theory-based approaches to oral health promotion, and these should be explored as an alternative to traditional strategies.

Reference: Int J Paediatr Dent 2009; 19(3): 163–71

http://www3.interscience.wiley.com/journal/121509514/abstract

Space maintenance

Authors: Laing E et al

Summary: This review of 16 papers on space maintainer appliances found little evidence for or against the use of such appliances for preventing or ameliorating the severity of permanent dentition malocclusion. The authors concluded that dental practitioners need to balance the potential for plaque accumulation and caries against the possibility of occlusal disturbance when deciding whether a space maintainer is indicated.

Comment (JL): The advantages of space maintainers need to be weighed against the disadvantages before making the decision to place one in a patient's mouth. All space maintainers are plaque retentive, and are contraindicated in children with poor oral hygiene and a high caries rate or irregular attendance. This article examined available literature to assist us with making this decision. Pubmed and Ovid Medline were scanned for all relevant papers. The authors then presented the clinically relevant evidence. In summary, the review showed that there is poor evidence both for and against the use of space maintainers to prevent or reduce the severity of a malocclusion. The highlight of this article for me is the useful and succinct summary of space maintainers. It lists the various types, a description of each and their advantages and disadvantages – a very handy table to use when one's memory needs refreshing!

Comment (SM): Space maintainer appliances are used to preserve arch length in cases of premature extractions of primary molars. They may prevent the need for more complex orthodontic treatment at a later stage. However, the authors note that space maintainers are also plaque retentive, may cause gingival irritation, and also increase the risk of caries. The authors review previously published papers on the use of space maintenance and come to the conclusion that there is poor evidence to recommend either for or against the use of space maintainers. Oral health professionals involved with treating children should make decisions on an individual-needs basis on whether space maintenance is required. Dental therapists should refer as necessary those children whom they consider would benefit from an assessment for space maintenance after an extraction. However, therapists should also remember that another important form of space maintenance is to maintain the primary teeth for as long as possible. Pulpotomies and stainless steel crowns are, therefore, becoming increasingly relevant for retaining primary teeth. These procedures have high success rates, and help to avoid filling replacements, abscessed teeth, extractions, space loss and eventual orthodontic problems. More dental therapists each year are gaining these scopes of practice; however, unfortunately not all DHBs offer these procedures.

Reference: Int J Paediatr Dent 2009; 19(3): 155–62

http://www3.interscience.wiley.com/journal/122309018/abstract

The effect of casein phosphopeptide-amorphous calcium phosphate and a cola soft drink on *in vitro* enamel hardness

Authors: Panich M & Poolthong S

Summary: This study compared the hardness of normal enamel with enamel eroded by a cola soft drink and enamel remineralised by casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) alone and in combination with artificial saliva in 40 extracted teeth *in vitro*. Enamel hardness was significantly reduced by the cola soft drink. CPP-ACP alone and in combination with artificial saliva increased the hardness of the eroded enamel significantly more than artificial saliva alone.

Comment (JL): Erosion is a common problem and is said to occur in 30% of 26–30 year olds and 42.6% of patients aged 45–50 years. Extrinsic factors, such as acidic drinks, are some of the main factors responsible for erosion and are commonly drunk on a regular basis by a large percentage of our patients. It has been estimated that soft drink consumption increases at a rate of 2–3% per year! The authors conducted this study to compare the hardness of normal enamel with enamel eroded by a cola soft drink and enamel remineralised by CPP-ACP and by CPP-ACP and artificial saliva. Because mineral gain/loss as a result of demineralisation and remineralisation can be measured as a hardness change, the microhardness of the teeth after erosion by a cola drink and remineralisation by CPP-ACP, or CPP-ACP and saliva, was measured using a Vickers indenter. They found that the cola soft drink ('Coca-Cola') reduced mean microhardness by 14.3%, but that the microhardness increased significantly after remineralisation by CPP-ACP or CPP-ACP and artificial saliva. This article provides us with a good reason for adding tooth mousse to our preventive armamentarium for our at-risk patients.

Comment (SM): Soft drinks contribute in a major way to tooth erosion, due to their acidic nature and high sugar content. Unfortunately, soft drink consumption has increased dramatically over the last few years and tooth erosion is becoming more common. The authors conducted an *in vitro* study and determined that CPP-ACP increased the microhardness of enamel eroded by a cola soft drink. This finding is particularly relevant for those oral health professionals who treat children and adolescents. Products containing CPP-ACP can be recommended to those patients whose teeth show signs of erosion. Dental therapists often recommend tooth mousse as a product that can be used at home. CPP-ACP-containing chewing gums are also an option. Unfortunately, while dental care is free for children in NZ, parents need to pay for products such as these. This may preclude some high-needs children, e.g. children from low socio-economic groups, from obtaining the extra homecare they need between dental visits.

Reference: J Am Dent Assoc 2009; 140(4): 455–60

http://jada.ada.org/cgi/content/abstract/140/4/455

Caries risk in formerly sealed teeth

Authors: Griffin SO et al

Summary: This review of 7 studies found that the relative risks for caries in formerly sealed teeth 1 and 4 years after placement were 0.998 (95% CI 0.817, 1.220) and 0.936 (0.896, 0.978), respectively. The authors commented that the lack of increased caries in these teeth indicates that the potential for loss of follow-up (and consequent inability to provide retention-check examinations) should not preclude children from participating in school sealant programmes.

Comment (JL): About 90% of carious lesions are found in the pits and fissures of permanent posterior teeth, in particular the molars. Although it has been shown that sealants are highly effective from 2 to 5 years after placement, I have been concerned about those patients with fissure sealants who, for whatever reason, are lost to my care. Will the sealed teeth be at a higher caries risk if there is a partially lost sealant than they would have been if they had been left unsealed? Seven studies were included in this review. The overall quality of these studies, considering the Cochrane inclusion/exclusion criteria for study design as the gold standard, was good. Six of the studies were published in the 1970s when fluoride exposure was lower. The authors' conclusion was that teeth with fully or partially lost sealants were not at a higher risk of developing caries than were unsealed teeth. However, this does not mean that we should be less meticulous when placing sealants or should discontinue the practice of regular follow-up. It does mean though, that we should not decide against their placement because future attendance cannot be ensured.

Comment (SM): In NZ, fissure sealants have been effective in reducing caries in children. Fissure sealants are checked at recall examinations and repaired where necessary. The authors of this article note that one potential barrier to sealing teeth is that a tooth with a partially-lost sealant may be at a higher risk of developing caries than one that has never been sealed. The authors reviewed studies on sealant effectiveness and found that the caries rate in these teeth was equal to, or less than, the caries rate in nonsealed teeth. This article also recognises that children from lower income areas in the US are 50% less likely to have received fissure sealants and recommends school-based programmes for providing sealants. In NZ, although fissure sealants are readily available, children and dental therapists are becoming increasingly mobile (between schools) and there are also dental workforce shortages in some areas. Children may be less likely to access regular dental services. Therefore, oral health professionals can be reassured that when sealants cannot be repaired, these teeth may be no more at risk for caries than a nonsealed tooth.

Reference: J Am Dent Assoc 2009; 140(4): 415–23

http://jada.ada.org/cgi/content/full/140/4/415

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