

Letters to the Editor

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LETTERS

STEPWISE REMOVAL

Sir, we read with interest the paper entitled *Oral diagnosis and treatment planning: part 5* by K. Yip and R. Smales (*BDJ* 2012; 213: 211–220). We have entered an age where dentistry is rightly shaped by evidence-based practice. We feel the paper's literature review did not reflect current best evidence and the treatment philosophy outlined was unnecessarily destructive of tooth tissue. With regard to treatment planning, the Scottish Intercollegiate Network have produced excellent guidance on caries risk assessment.¹ In relation to prevention, the UK Department of Health in association with the British Association for the Study of Community Dentistry have formulated *Delivering better oral health: an evidence-based toolkit for prevention*² which has become the cornerstone for prevention in dentistry in the UK. Cochrane Systematic Reviews such as that by Marinho also confirm the benefits of fluoride as a caries preventative agent in both dentitions.³

Previously, it was thought the complete removal of all carious tissue was the best course of treatment for an affected tooth. However, current research into pulp biology has confirmed the remarkable capability of the pulp to withstand and in many cases, regenerate in the face of bacterial insult once the bacteria have been isolated from their substrate. In light of this, Ricketts *et al.* have produced conclusive evidence that conservative or stepwise removal of affected tissue is preferable to complete removal.⁴ The Hall Technique is also based on the same principle of isolating a carious lesion from the biofilm, thereby arresting

caries and maintaining the tooth's vitality and position within the arch.⁵

Furthermore, caries in enamel should not be investigated with a bur but sealed with a fissure sealant to prevent further progression into dentine. This should be confirmed visually and radiographically and not investigated with a probe as this will damage the architecture of the enamel. The American Dental Association's guidance based on an excellent systematic review can be paraphrased as 'if in doubt seal'.⁶

In order to maintain for life the dentition of our patients it is vital that clinicians practise preventively centred and as non-destructive an approach to operative care as possible based on the best current evidence.

G. Yesudain, C. Deery
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1. Scottish Intercollegiate Guidelines Network. *Preventing dental caries in children at high caries risk. Targeted prevention of dental caries in the permanent teeth of 6–16 year olds presenting for dental care*. Sign Publication No. 47. Healthcare Improvement Scotland, 2000. www.sign.ac.uk/guidelines/fulltext/47
2. Department of Health and the British Association for the Study of Community Dentistry. 2009. *Delivering better oral health: an evidence-based toolkit for prevention*. 2nd ed. London: DoH, 2009. www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_102331
3. Marinho V C. Cochrane reviews of randomized trials of fluoride therapies for preventing dental caries. *Eur Arch Paediatr Dent* 2009; **10**: 183–191.
4. Ricketts D, Kidd E, Innes N P T, Clarkson J E. Complete or ultraconservative removal of decayed tissue in unfilled teeth. *Cochrane Database Syst Rev* 2006; CD003808.
5. Innes N P, Evans D J, Stirrups D R. Sealing caries in primary molars: randomized control trial, 5-year results. *J Dent Res* 2011; **90**: 1405–1410.
6. Beauchamp J, Caufield P W, Crall J J *et al.* Evidence-based clinical recommendations for the use of pit-and-fissure sealants: a report of the American Dental Association Council on Scientific Affairs. *J Am Dent Assoc* 2008; **139**: 257–268.

Professor Roger Smales and Dr Kevin Yip respond: We appreciate the interest and comments of Drs Yesudain

and Deery and would again state that the reading lists in the series are not intended to be literature reviews of the numerous topics included (first paragraph of response to the letter from Dr Y. Maidment published in *BDJ* 2012; 213: 489). However, we do not agree that the treatment philosophy outlined in the present article for the management of dental caries in general practice is unnecessarily destructive of tooth tissue. We would have thought by now that readers would be well aware of the preventive and minimally invasive philosophy of the series. Regarding caries risk assessment, we would direct readers to the recently published Part 2 of the series.¹

We have no disagreement with the well-established general benefits of fluoride as a caries preventative agent in both dentitions. However, we stand by our statement that repeated topical applications of fluorides and other agents to occlusal pits and fissures appear to have had limited cost-effective benefits in preventing long-term caries progression at these sites, particularly as the Preface to the textbook states that it is intended primarily for treatment planning for the adult patient in general dental practices. The quoted review² of topical fluoride therapies for preventing dental caries usually involved studies in children and adolescents only, did not generally distinguish between smooth surface and fissure caries, did not identify studies from general dental practices, and there was only one medium-term randomised trial involving occlusal fissures referred to,³ which compared sealant with fluoride varnish placed on sound occlusal fissures, and where the

sealants were significantly more effective.⁴ Replacements of sealant because of partial or total losses, as well as re-applications of varnish, were undertaken at the six-monthly recall periods during the study in order to maintain effective protection. A recent commentary⁵ concluded that a systematic review⁶ was unable to show conclusive evidence of the benefit of fluoride varnish for preschool children. There appear to be no cost-effective analyses from general dental practices of various fluoride treatments for occlusal fissures in adults, and scant information for such treatments in preschool and older children and adolescents.⁷ Earlier studies of pit and fissure sealant use were also unable to demonstrate their cost-effectiveness, which only became possible following sealant placement in targeted high-risk to caries child and adolescent populations, individuals, teeth and fissures soon after complete tooth eruption.⁸ Recommendations for the placement of sealants in adults are based on very low-quality evidence and are largely extrapolated from studies in children and adolescents.^{8,9} Because of the problems identified in our article in adequately sealing fissures and maintaining sealants in adults, we have stated our general preference in adults for minimally invasive narrow fissure fillings employing a suitable flowable resin-based composite.

Initially, pit and fissure sealants were only advocated as a preventive treatment, but dentists have been inadvertently sealing in active caries as a therapeutic measure since sealants were first introduced. This usage has now gained research acceptance for the deliberate sealing in of small non-cavitated carious lesions (supposedly) confined to enamel.⁹ Higher kVp X-ray machines, faster analogue film speeds and digital radiography with reduced image contrast have increased the difficulty in detecting occlusal lesions extending into dentine, and which may be far more extensive than visualised either radiographically or clinically. Concerns by dental practitioners regarding sealants continue to be expressed¹⁰ and, in a recent survey, very few general and paediatric dentists would place

an occlusal sealant in a non-cavitated premolar or molar when, radiographically, caries extended into dentine.¹¹

Dental practitioners have also been either inadvertently or deliberately leaving residual caries in prepared teeth ever since restorations were first placed. Readers are referred to indirect pulp capping (preventive endodontics) and the stepwise removal of infected carious tissue included in Chapter 12 of the textbook, and which is not part of the current series of articles. The procedure relies on the maintenance of the cavity seal, and has been used and taught by us since the early 1970s following the pioneering research of Maury Massler (1967).¹² We concur with the sentiments expressed in the final sentence of the letter.

1. Yip K, Smales R. Oral diagnosis and treatment planning; part 2. Dental caries and assessment of risk. *Br Dent J* 2012; **213**: 59–66.
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3. Hiiri A, Ahovuo-Saloranta A, Nordblad A, Mäkelä M. Pit and fissure sealants versus fluoride varnishes for preventing dental decay in children and adolescents. *Cochrane Database Syst Rev* 2006; **CD0-003067**.
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7. Arrow P. Cost minimisation analysis of two occlusal caries preventive programmes. *Community Dent Health* 2000; **17**: 85–91.
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11. Tellez M, Gray S L, Gray S, Lim S, Ismail A I. Sealants and dental caries. *J Am Dent Assoc* 2011; **142**: 1033–1040.
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GENERAL AND VAGUE

Sir, we were interested to read the paper by K. Yip and R. Smales (*BDJ* 2012; **213**: 211–220), in particular, the section on prevention of primary caries, and would like to make a comment on its findings.

We acknowledge the *British Dental Journal* has an international readership, but it is worth pointing out that in the UK, we are more specific about the level of fluoride that should be added to water when fluoridation schemes are being considered. Yip and Smales say domestic water supplies should be fluoridated at 0.5+ ppm, however, in the UK, the Water Act of 2003 refers to a 'general target concentration of one milligram per litre',¹ or one part per million of fluoride.

It is disappointing that Yip and Smales have presented very general and rather vague recommendations on caries prevention. In particular, it is surprising they fail to reference any of the Cochrane reviews on the effectiveness of various fluoride measures.^{2–5}

There is also no mention of *Delivering better oral health* – a publication which was commissioned by the Department of Health. This provides dentists and their teams with evidence-based guidance on the prevention of dental caries.⁶

A copy of this document has been given to all English NHS dentists. It clearly sets out the preventive advice that should be given to patients as well as the effective preventive interventions that should be delivered in the surgery.

The guidance has been very well received. A third edition is currently being developed and will be available in the near future. In the meantime, the second edition of this evidence-based toolkit for prevention is providing the UK dental profession with contemporary, scientifically rigorous guidance on caries prevention. This is something the Yip and Smales paper fails to do.

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B. Cockcroft, S. Makhani, T. Dyer, G. Davies,
D. Richards, D. Thomas, K. Milsom
By email

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