

## Fissure Sealants

---

### Purpose

Clinical Practice Guidelines (CPG's) are systematic developed statements intended to support clinicians in providing high quality, best practice evidence-based care. They are there to provide guidance, and are not a standard of care, requirement, or regulation. However, the application of clinical guidelines in publicly-provided oral health services allows for consistency to occur across large patient cohorts with a variety of oral health providers. DHSV recognizes and supports appropriate professional provision of fissure sealants in the prevention of dental caries for at-risk individuals.

This Clinical Guideline aims to:

- Describe the criteria and placement of these treatments, with emphasis around the assessment of at-risk individuals and teeth.

---

### Guideline

#### **Background**

Despite the fact that the overall caries rate is declining, first and second permanent molars continue to be the most caries-susceptible permanent teeth. There is some evidence on the superiority of pit and fissure sealants over fluoride varnish application in the prevention of occlusal caries<sup>1</sup>. Sealing the occlusal surfaces of permanent molars in children and adolescents reduces caries up to 48 months when compared to no sealant and are effective in **high risk** children<sup>2</sup>. There seems to be a benefit in placing sealants within **4** years after eruption. However there is no body of knowledge advocating the use of sealants beyond adolescence (level of evidence I, grade of recommendation A)<sup>3</sup>. The literature also supports the placement of sealants on primary molars although the supporting evidence is more limited (level of evidence I, grade of recommendation A)<sup>3</sup>

#### **Resin Fissure Sealants**

Proven under the scrutiny of multiple meta-analyses, the use of resin (composite) fissure sealants shows significant capacity to reduce caries experience. Estimates of the percentage of caries prevented range from 78<sup>4</sup>-87%<sup>5</sup> over a 12 month period. Retention of these sealants, and subsequently clinical outcomes, show no relation to mechanical surface preparation technique (toothbrushing, bur preparation, professional prophylaxis or use of an air-water syringe),<sup>6,7,8</sup> though

some improvement in retention may be afforded by use of bonding agents when ideal isolation cannot be achieved.<sup>9</sup> Use of resin-based materials containing fluoride have been suggested as a method to further reduce the caries-preventive benefits of fissure sealants, though to date no studies using these products have shown an influence on clinical outcomes.<sup>10</sup>

### **Glass Ionomer Sealants**

Considerable debate has been presented regarding the use of glass ionomer (GIC) materials as an alternative to resin-based fissure sealants. On the basis of poor retention – with 18% of sealants reported to be completely retained over 3 years<sup>11</sup> – the American Dental Association Council on Scientific Affairs<sup>12</sup> has advised: *“glass-ionomer cement may be used as an interim preventive agent where there are indications for placement of a resin-based sealant but [where] concerns about moisture control may compromise such placement”*

### **Safety**

While Bisphenol A (BPA) may not be a direct ingredient in composite resin materials, it can be a by-product of the degradation by salivary enzymes of other monomers used in these materials. The placement of resin-based composite restorations has been associated with detectable increases in saliva and urine of BPA within 1 hour after placement<sup>13</sup>. To reduce the potential risk (if any) it has been suggested that dental providers use a mild abrasive, such as pumice, either on a cotton applicator or in a prophylaxis cup; or wash the restoration/sealant surface for 30 seconds with an air-water syringe while suctioning fluids and debris from the mouth<sup>3</sup>.

### **Patient selection**

- Children with caries in their primary teeth should have all permanent molars sealed as soon as possible after their eruption.  
  
Fissure sealing of all occlusal surfaces of permanent teeth should be considered for those who are medically compromised, physically disabled or having learning difficulties, or at high risk for caries for any other reason. .
- Children with caries-free primary dentitions do not need to have first permanent molars routinely sealed: rather these teeth should be reviewed on recall.

### **Tooth selection**

- Fissure sealants have the greatest benefit on the occlusal surfaces of permanent molar teeth. Other surfaces should not be neglected, in particular the cingulum pits of upper incisors. The sealing of primary molars is not normally advised.
- Sealants should normally be applied as soon as the selected tooth has erupted sufficiently to permit moisture control.
- Any child with occlusal caries in one first permanent molar should have the fissures of the sound first permanent molars sealed
- Occlusal caries affecting one or more first permanent molars indicates a need to seal the second permanent molars as soon as they have erupted sufficiently.

### **Long-term follow-up**

- Sealed teeth should be monitored clinically at appropriate recall intervals supported by radiographs if indicated.
- Defective sealants should be investigated and fresh sealant applied as part of routine maintenance

### **Key Conclusions & Recommendations**

Fissure sealant application for high risk children already captured under the public dental system should be standardised. Given it has a claimable value and is an effective preventive measure, mandatory targets for fissure sealant application should be encouraged, improving access to this preventive strategy for high risk children.

---

## **Definitions**

---

Nil

---

**Revision date**

November 2020

---

**Approved by**

Clinical Leadership in Practice Committee

---

---

**Policy owner**

Chief Oral Health advisor

---

**Date approved**

November 2017

---

---

## Reference

---

1. 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 of Systematic Reviews* 2010, Issue 3.
2. Ahovuo-Saloranta A, Forss H, Walsh T, Hiiri A, Nordblad A, Mäkelä M, Worthington HV. Sealants for preventing dental decay in the permanent teeth. *Cochrane Database of Systematic Reviews* 2013, Issue 3.
3. Azarpazhooh A, Main PA. Pit and fissure sealants in the prevention of dental caries in children and adolescents: a systematic review. *J Can Dent Assoc.* 2008 Mar;74(2):171-7.
4. Llodra JC, Bravo M, Delgado-Rodriguez M, Baca P, Galvez R. Factors influencing the effectiveness of sealants – a meta-analysis. *Comm Dent Oral Epidemiol.* 1993; 21(5):261-268
5. Ahovuo-Saloranta A, Hiiri A, Nordblad A, Makela M, Worthington HV. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. *Cochrane Database Syst Rev.* 2008(4): CD001830
6. Muller-Bolla M, Lupi-Pe'gerier L, Tardieu C, Velly AM, Antomarchi C. Retention of resin-based pit and fissure sealants: a systematic review. *Community Dent Oral Epidemiol* 2006; 34:321–336
7. Gray KS, Griffin SO, Malvitz DM, Gooch BF. A comparison of the effects of toothbrushing and handpiece prophylaxis on retention of sealants. *J Am Dent Assoc* 2009; 140:38–46
8. Shapira J, Eidelman E. Six-year clinical evaluation of fissure sealants placed after mechanical preparation: a matched pair study. *Pediatr Dent* 1986; 8(3):204-205
9. Feigal RJ, Musherure P, Gillespie B, Levy-Polack M, Quelhas I, Hebling J. Improved sealant retention with bonding agents: a clinical study of two-bottle and single-bottle systems. *J Dent Res* 2000; 79(11):1850-1856
10. Simonsen RJ, Neal RC. Pit and fissure sealants. *Aust Dent J.* 2011; 56(1 Suppl):45-58
11. Karlzen-Reuterving G, van Dijken JW. A three-year follow-up of glass ionomer cement and resin fissure sealants. *ASDC J Dent Child* 1995;62:108–110.
12. Beauchamp J, Caufield PW, Crall JJ, Donly K, Feigal R, Gooch B, Ismail A, Kohn W, Siegal M, Simonsen R. 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(3):257-268
13. Kingman A, Hyman J, Masten SA, Jayaram B, Smith C, Eichmiller F, Arnold MC, Wong PA, Schaeffer JM, Solanki S, Dunn WJ. Bisphenol A and Other Compounds in Human Saliva and Urine Associated With the Placement of Composite Restorations. *J Am Dent Assoc.* 2012; 143(12): 1292-1302



## Clinical Guidelines

Answer the following questions about what you have just read.  
1 Scientific CPD point is available on completion.

## QUESTIONNAIRE

**YourName:**

**Email Address:**

**Title of Clinical Guideline:**

---

### Question 1

List 3 key issues this Clinical Guideline reinforced for you?

### Question 2

Were there areas of the Clinical Guideline you were previously unaware of? If yes, please list them.

### Question 3

How will you share this information with your peers?

---

Click the button below to submit your answers for verification.