

Evidence-Based Clinical Practice Guideline on Restorative Treatments for Caries Lesions: A Report from the American Dental Association

Summary of clinical recommendations for carious tissue removal and direct restorative materials for caries lesions on vital, non-endodontically treated primary teeth

GRADE Certainty of the Evidence

High	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate	We are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect.
Low	Our confidence in the effect estimate is limited.
Very Low	We have very little confidence in the effect estimate.

GRADE Interpretation of Strength of Recommendations

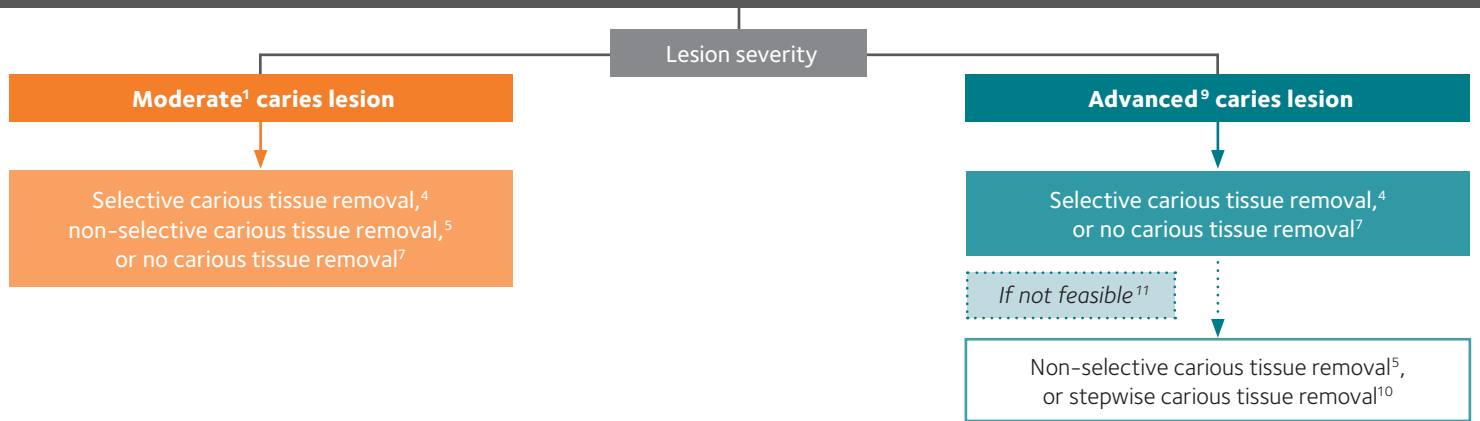
Implications	Strong Recommendations	Conditional Recommendations
For Patients	Most individuals in this situation would want the recommended course of action and only a small proportion would not.	The majority of individuals in this situation would want the suggested course of action, but many would not.
For Clinicians	Most individuals should receive the intervention.	Recognize that different choices will be appropriate for individual patients and that you must help each patient arrive at a management decision consistent with his or her values and preferences.
For Policy Makers	The recommendation can be adapted as policy in most situations.	Policy making will require substantial debate and involvement of various stakeholders.

Clinical scenario	Expert Panel Recommendations and Good Practice Statement	Certainty of the Evidence	Strength of Recommendation
Carious tissue removal approaches in primary teeth	To treat moderate¹ caries lesions on vital, primary teeth requiring a restoration, regardless of direct restorative material ² and means to remove carious tissue, ³ and without pulp therapy, the guideline panel suggests the use of selective carious tissue removal,⁴ non-selective carious tissue removal,⁵ or no carious tissue removal (i.e., sealing lesions with a preformed crown). ⁶⁻⁸	Very low	Conditional
	To treat advanced⁹ caries lesions on vital, primary teeth requiring a restoration, regardless of direct restorative material ² and means to remove carious tissue, ³ and without pulp therapy, the guideline panel suggests prioritizing the use of selective carious tissue removal⁴ or no carious tissue removal (i.e., sealing with a preformed crown) over non-selective carious tissue removal⁵ or stepwise caries removal. ^{7, 8, 10, 11}	Very low	Conditional
Direct restorative materials for primary teeth	For moderate ¹ and advanced ⁹ caries lesions on vital, anterior, primary teeth requiring a Class III (approximal) restoration, regardless of carious tissue removal approach, ¹² and without pulp therapy, the guideline panel suggests the use of either nanocomposite or hybrid resin composite. ^{6, 13}	Very low	Conditional
	For moderate ¹ and advanced ⁹ caries lesions on vital, anterior, primary teeth requiring a Class V (cervical third of facial or lingual) restoration, regardless of carious tissue removal approach, ¹² and without pulp therapy, the guideline panel suggests the use of either conventional glass ionomer cement (GIC), hybrid resin composite, or resin-modified GIC. ^{6, 13-15}	Very low	Conditional
	For moderate ¹ and advanced ⁹ caries lesions on vital, posterior, primary teeth requiring a Class I (pit and fissure) restoration, regardless of carious tissue removal approach, ¹² and without pulp therapy, the guideline panel suggests prioritizing the use of resin-modified GIC, resin composites, conventional GIC, or preformed crowns over compomer or dental amalgam. ^{8, 11, 14-17}	Very low	Conditional
	For moderate ¹ and advanced ⁹ caries lesions on vital, posterior, primary teeth requiring a Class II (approximal) restoration, regardless of carious tissue removal approach, ¹² and without pulp therapy, the guideline panel suggests prioritizing the use of resin-modified GIC, resin composites, or preformed crowns over compomer, conventional GIC, or dental amalgam. ^{8, 11, 15-18}	Very low	Conditional
	For moderate ¹ and advanced ⁹ caries lesions on vital, posterior, primary teeth requiring a Class V (cervical third of facial or lingual) restoration, regardless of carious tissue removal approach, ¹² and without pulp therapy, the guideline panel suggests the use of either conventional GIC, hybrid resin composite, or resin-modified GIC. ^{6, 13-15}	Very low	Conditional

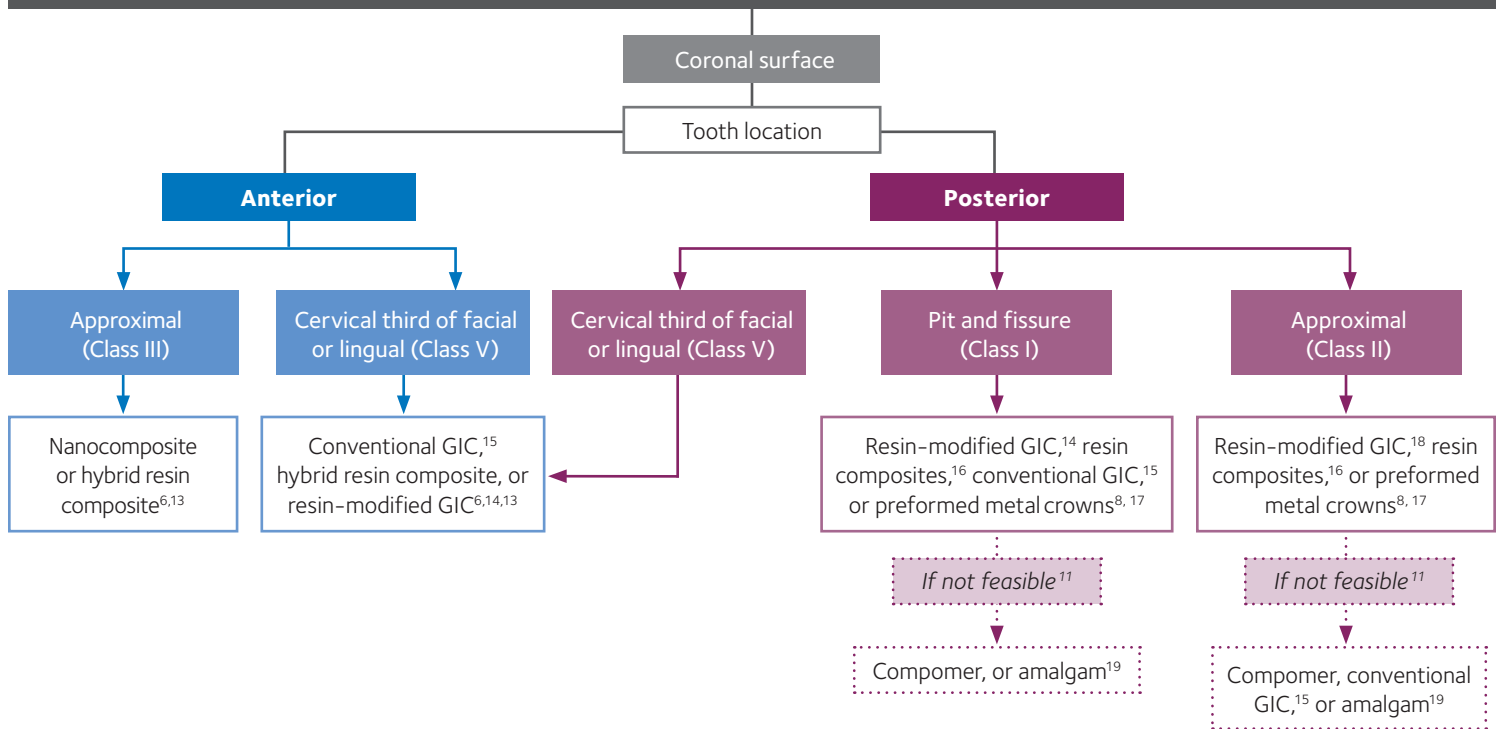
Good practice statement: The U.S. Food and Drug Administration recommends **not using dental amalgam in “children, especially those younger than six years of age; people with pre-existing neurological disease; people with impaired kidney function; [and] people with known heightened sensitivity (allergy) to mercury or other components (silver, copper, tin)”** wherever possible.¹⁹

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Caries removal approaches¹² on primary teeth



Direct restorative materials² for primary teeth



1 Moderate caries lesion is defined as International Caries Detection and Assessment System (ICDAS) codes 3 and 4.

2 Direct restorative materials are limited to the use of dental amalgam, compomer, conventional GIC, preformed crowns, resin composites (i.e., hybrid resin composite, macrofilled resin composite, and nanocomposite), and resin-modified GIC.

3 Means to remove carious tissue is defined as mechanical or chemo-mechanical.

4 Selective carious tissue removal is defined as carious tissue being removed until soft or firm dentin is reached. Also known as partial or incomplete caries removal.

5 Non-selective carious tissue removal is defined as carious tissue being removed until hard dentin is reached. Also known as complete caries removal.

6 The guideline panel assigned no prioritization among the recommended interventions.

7 Clinicians may perform no carious tissue removal for lesions where a preformed metal crown is indicated. Clinicians should consider the number of involved surfaces, caries risk and activity, moisture control, patient behavior, patient/caregiver preferences, and anticipated time to exfoliation when deciding whether to place a preformed metal crown using the Hall technique.

8 Preformed crowns include the use of stainless steel or esthetic crowns.

9 Advanced caries lesion is defined as ICDAS codes 5 and 6.

10 Stepwise carious tissue removal is defined as carious tissue being first removed until soft dentin is reached and then a temporary restoration is placed. Months later, the restoration and carious tissue are removed until firm dentin is reached and a permanent restoration is then placed. Also known as two-step caries removal.

11 The prioritization of interventions in this recommendation is a ranking determined by the panel due to their effectiveness, patients' values and preferences, resources required, acceptability, and feasibility.

12 Carious tissue removal approach is defined as the extent of carious tissue removed.

13 Resin composite and resin-modified GIC materials may be used as a conventional or strip crown restoration.

14 Conventional and resin-modified GIC may be preferable when tooth isolation cannot be achieved, in patients with special healthcare needs, or in patients lacking predictable access to care.

15 Conventional GIC may be preferable when light-curing is not feasible.

16 Resin composites refer to hybrid resin composite, macrofilled resin composite, and nanocomposite.

17 Clinicians should reserve preformed crowns for lesions where indicated. Clinicians should consider the extent of the lesion, caries risk and activity, moisture control, patient behavior, patient/caregiver preferences, and anticipated time to exfoliation when deciding whether to perform a single or multi-surface direct restoration or place a preformed crown.

18 Resin-modified GIC may be preferable when tooth isolation cannot be achieved, in patients with special healthcare needs, or in patients lacking predictable access to care.

19 FDA Issues Recommendations for Certain High-Risk Groups Regarding Mercury-Containing Dental Amalgam. <https://www.fda.gov/news-events/press-announcements/fda-issues-recommendations-certain-high-risk-groups-regarding-mercury-containing-dental-amalgam>. [Accessed 18 May 2023].