

ADA Evidence-Based Clinical Practice Guideline on Restorative Treatments for Caries Lesions

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.

GRADE Certainty in 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.

Scenario	Clinical Question	Recommendation
<p style="text-align: center;">Direct restorative materials for primary teeth</p>	<p>1.1.1 In vital, primary teeth requiring restorative treatment, regardless of caries removal approach and without pulp therapy, which direct restorative material should we recommend to restore moderate (i.e., “visible signs of enamel breakdown or signs [that] the dentin is moderately demineralized” (Young et al., 2015)) or advanced [i.e., “enamel is fully cavitated and dentin is exposed” (Young et al, 2015)] caries lesions on anterior teeth?</p>	<p>For moderate to advanced caries lesions on vital, primary, anterior teeth requiring a Class III (approximal) restoration, the guideline panel suggests the use of either nanocomposite or hybrid resin composite (conditional recommendation, very low certainty).</p>
	<p>1.1.2 In vital, primary teeth requiring restorative treatment, regardless of caries removal approach and without pulp therapy, which direct restorative material should we recommend to restore moderate or advanced caries lesions on posterior teeth?</p>	<p>For moderate to advanced caries lesions on vital, posterior, primary teeth requiring a Class I (pit and fissure) restoration, the guideline panel suggests prioritizing the use of resin-modified glass ionomer cement (GIC), resin composites, conventional GIC, and preformed metal crowns (PMCs) (Hall Technique) over the use of compomer and amalgam (conditional recommendation, very low certainty).¹⁻⁶</p> <p>For moderate to advanced caries lesions on vital, posterior, primary teeth requiring a Class II (approximal) restoration, the guideline panel suggests prioritizing the use of resin-modified GIC, resin composites, and PMCs (Hall Technique) over the use of compomer, conventional GIC, and amalgam (conditional recommendation, very low certainty).^{1, 2, 4, 6, 7, 9}</p>
	<p>1.1.3 In vital, primary teeth requiring restorative treatment, regardless of caries removal approach and without pulp therapy, which direct restorative material should we recommend to restore moderate or advanced caries lesions on anterior and posterior teeth combined?</p>	<p>For moderate to advanced caries lesions on vital, anterior and posterior, primary teeth requiring a Class V (cervical third of facial or lingual) restoration, the guideline panel suggests the use of either conventional GIC, hybrid resin composite, or resin-modified GIC (conditional recommendation, very low certainty).^{3, 4, 8}</p>

Footnotes

1. The prioritization of direct restorative materials in this recommendation is a ranking determined by the panel due to their effectiveness, patient values and preferences, resource use, acceptability, and feasibility.
2. Resin composites refer to hybrid resin composite, macrofilled resin composite, and nanocomposite.
3. Conventional and resin-modified GIC may be preferable “in situations in which dry [field] isolation [cannot be achieved], such as a tooth that is not fully erupted and has soft tissue impinging on the area to be [restored] (Wright et al., 2016),” in patients with special healthcare needs, or in patients lacking predictable access to care.
4. Conventional GIC may be preferable when light-curing is not available.
5. Clinicians should only reserve PMCs (Hall Technique) 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 surface direct restoration or placement of a PMC.
6. The FDA recommends not using 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) (FDA, 2020)” wherever possible.
7. Clinicians should only reserve PMCs (Hall Technique) for lesions where indicated. Clinicians should consider caries risk and activity, moisture control, patient behavior, patient/caregiver preferences, and anticipated time to exfoliation when deciding whether to perform a multi-surface restoration or place a PMC.
8. The guideline panel assigned no prioritization among the recommended materials.
9. Resin-modified GIC may be preferable “in situations in which dry [field] isolation [cannot be achieved], such as a tooth that is not fully erupted and has soft tissue impinging on the area to be [restored] (Wright et al., 2016),” in patients with special healthcare needs, or in patients lacking predictable access to care.

Scenario	Clinical Question	Recommendation
<p style="text-align: center;">Direct restorative materials for permanent teeth</p>	<p>1.2.1 In vital, permanent teeth requiring restorative treatment, regardless of caries removal approach and without pulp therapy, which direct restorative material should we recommend to restore moderate or advanced caries lesions on anterior teeth?</p>	<p>For moderate to advanced caries lesions on vital, anterior, permanent teeth requiring a Class I (pit and fissure) restoration, the guideline panel suggests the use of either conventional GIC, hybrid resin composite, or resin-modified GIC (conditional recommendation, very low certainty).¹⁻³</p> <p>For moderate to advanced caries lesions on vital, anterior, permanent teeth requiring a Class III (approximal) restoration, the guideline panel suggests the use of either nanocomposite or hybrid resin composite (conditional recommendation, very low certainty).</p>
	<p>1.2.2 In vital, permanent teeth requiring restorative treatment, regardless of caries removal approach and without pulp therapy, which direct restorative material should we recommend to restore moderate or advanced caries lesions on posterior teeth?</p>	<p>For moderate to advanced caries lesions on vital, posterior, permanent teeth requiring a Class I (pit and fissure) restoration, the guideline panel suggests the use of amalgam, conventional GIC, resin composite, and resin-modified GIC over the use of compomer (conditional recommendation, very low certainty).¹⁻⁵</p> <p>For moderate to advanced caries lesions on vital, posterior, permanent teeth requiring a Class II (approximal) restoration, the guideline panel suggests the use of amalgam, resin composite, or resin-modified GIC over the use of conventional GIC (conditional recommendation, very low certainty).^{1, 3-6}</p>
	<p>1.2.3 In vital, permanent teeth requiring restorative treatment, regardless of caries removal approach and without pulp therapy, which direct restorative material should we recommend to restore moderate or advanced caries lesions on anterior and posterior teeth?</p>	<p>For moderate to advanced caries lesions on vital, anterior and posterior, permanent teeth requiring a Class V (cervical third of facial or lingual) restoration, the guideline panel suggests the use of either conventional GIC, hybrid resin composite, or resin-modified GIC (conditional recommendation, very low certainty).¹⁻³</p>

Footnotes

1. The guideline panel assigned no prioritization among the recommended materials.
2. Conventional or resin-modified GIC may be preferable “in situations in which dry [field] isolation [cannot be achieved], such as a tooth that is not fully erupted and has soft tissue impinging on the area to be [restored] (Wright et al., 2016),” in patients with special healthcare needs, or in patients lacking predictable access to care.
3. Conventional GIC may be preferable when light-curing is not available.
4. Resin composites refer to hybrid resin composite, macrofilled resin composite, and nanocomposite.
5. The FDA recommends not using amalgam in “pregnant women and their developing fetuses; women who are planning to become pregnant; nursing women and their newborns and infants;...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) (FDA, 2020)” wherever possible.
6. Resin-modified GIC may be preferable “in situations in which dry [field] isolation [cannot be achieved], such as a tooth that is not fully erupted and has soft tissue impinging on the area to be [restored] (Wright et al., 2016),” in patients with special healthcare needs, or in patients lacking predictable access to care.

Scenario	Clinical Question	Recommendation
Caries removal approaches (i.e., the extent of carious tissue removed) for primary teeth	2.1.1 In patients with vital, primary teeth requiring restorative treatment, regardless of direct restorative material and means to remove carious tissue (i.e., mechanical or chemical), and without pulp therapy, which caries removal approach (i.e., the extent of carious tissue removed) should we recommend to treat moderate caries lesions?	To treat moderate caries lesions on vital, primary teeth requiring a restoration, the guideline panel suggests the use of selective caries removal, non-selective caries removal and no carious tissue removal (i.e., sealing lesions with a preformed metal crown using the Hall technique) (conditional recommendation, very low certainty). ^{1,2}
	2.1.2 In patients with vital, primary teeth requiring restorative treatment, regardless of direct restorative material and means to remove carious tissue, and without pulp therapy, which caries removal approach should we recommend to treat advanced caries lesions?	To treat advanced caries lesions on vital, primary teeth requiring a restoration, the guideline panel suggests the use of selective caries removal or no carious tissue removal (i.e., sealing with a preformed metal crown using the Hall technique) over the use of non-selective caries removal or stepwise caries removal (conditional recommendation, very low certainty). ^{2,3}
Caries removal approaches (i.e., the extent of carious tissue removed) for permanent teeth	2.2.1 In patients with vital, permanent teeth requiring restorative treatment, regardless of direct restorative material and means to remove carious tissue, and without pulp therapy, which caries removal approach should we recommend to treat moderate caries lesions?	To treat moderate caries lesions on vital, permanent teeth requiring a restoration, the guideline panel suggests the use of selective caries removal over the use of non-selective caries removal (conditional recommendation, very low certainty). ³
	2.2.2 In patients with vital, permanent teeth requiring restorative treatment, regardless of direct restorative material and means to remove carious tissue, and without pulp therapy, which caries removal approach should we recommend to treat advanced caries lesions?	To treat advanced caries lesions on vital, permanent teeth requiring a restoration, the guideline panel suggests the use of selective caries removal over the use of stepwise caries removal or non-selective caries removal (conditional recommendation, very low certainty). ³

Footnotes

1. The guideline panel assigned no prioritization among the recommended caries removal approaches.
2. Clinicians should only perform no carious tissue removal for lesions where a PMC 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 PMC using Hall technique.
3. The prioritization of caries removal approaches in this recommendation is a ranking determined by the panel due to their effectiveness, patient values and preferences, resources use, acceptability, and feasibility.