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

<table>
<thead>
<tr>
<th>GRADE Certainty of the Evidence</th>
<th>GRADE Interpretation of Strength of Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td><strong>Implications</strong></td>
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<td></td>
<td><em>We are very confident that the true effect lies close to that of the estimated effect.</em></td>
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<tr>
<td>Moderate</td>
<td><strong>Strong Recommendations</strong></td>
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<td></td>
<td><em>We are moderately confident in the estimated effect. The true effect is likely to be close to the estimated effect.</em></td>
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<tr>
<td>Low</td>
<td><strong>Conditional Recommendations</strong></td>
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<td></td>
<td><em>Our confidence in the estimated effect is limited.</em></td>
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<tr>
<td>Very Low</td>
<td><em>We have very little confidence in the estimated effect.</em></td>
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**Clinical scenario** | **Expert Panel Recommendations and Good Practice Statement** | **Certainty of the Evidence** | **Strength of Recommendation** |
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<tbody>
<tr>
<td>Carious tissue removal approaches in primary teeth</td>
<td>To treat moderate(^1) 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)</td>
<td>Very low</td>
<td>Conditional</td>
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<tr>
<td>Direct restorative materials for primary teeth</td>
<td>For moderate(^1) and advanced(^2) caries lesions on vital, anterior, primary teeth requiring a Class III (approximal) restoration, regardless of carious tissue removal approach,(^9) and without pulp therapy, the guideline panel suggests the use of either nanocomposite or hybrid resin composite.(^10,12)</td>
<td>Very low</td>
<td>Conditional</td>
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<td>For moderate(^1) and advanced(^2) caries lesions on vital, anterior, primary teeth requiring a Class V (cervical third of facial or lingual) restoration, regardless of carious tissue removal approach,(^13) and without pulp therapy, the guideline panel suggests the use of either conventional glass ionomer cement (GIC), hybrid resin composite, or resin-modified GIC.(^13,15)</td>
<td>Very low</td>
<td>Conditional</td>
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<td>For moderate(^1) and advanced(^2) caries lesions on vital, posterior, primary teeth requiring a Class I (pit and fissure) restoration, regardless of carious tissue removal approach,(^17) 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)</td>
<td>Very low</td>
<td>Conditional</td>
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<td>For moderate(^1) and advanced(^2) caries lesions on vital, posterior, primary teeth requiring a Class II (approximal) restoration, regardless of carious tissue removal approach,(^19) 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.(^8,11,15,16)</td>
<td>Very low</td>
<td>Conditional</td>
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<tr>
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<td>For moderate(^1) and advanced(^2) caries lesions on vital, posterior, primary teeth requiring a Class V (cervical third of facial or lingual) restoration, regardless of carious tissue removal approach,(^13) and without pulp therapy, the guideline panel suggests the use of either conventional GIC, hybrid resin composite, or resin-modified GIC.(^6,13,15)</td>
<td>Very low</td>
<td>Conditional</td>
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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.\(^19\)
Evidence-Based Clinical Practice Guideline on Restorative Treatments for Caries Lesions: A Report from the American Dental Association

Caries removal approaches on primary teeth

**Moderate** caries lesion

- Selective carious tissue removal,
  - non-selective carious tissue removal,
  - or no carious tissue removal

**Advanced** caries lesion

- Selective carious tissue removal,
  - or no carious tissue removal

- If not feasible

  - Non-selective carious tissue removal,
  - or stepwise carious tissue removal

Direct restorative materials for primary teeth

**Coronal surface**

- **Anterior**
  - Approximal (Class III)
  - Cervical third of facial or lingual (Class V)
  - Nanocomposite or hybrid resin composite
  - Conventional GIC, hybrid resin composite, or resin-modified GIC

- **Posterior**
  - Cervical third of facial or lingual (Class V)
  - Approximal (Class II)

- Pit and fissure (Class I)
  - Resin-modified GIC, resin composites, conventional GIC, or preformed metal crowns

- If not feasible

  - Compomer, or amalgam

**Tooth location**

- **Anterior**
  - Approximal (Class III)
  - Cervical third of facial or lingual (Class V)
  - Nanocomposite or hybrid resin composite

- **Posterior**
  - Cervical third of facial or lingual (Class V)
  - Approximal (Class II)

- Pit and fissure (Class I)
  - Resin-modified GIC, resin composites, conventional GIC, or preformed metal crowns

- If not feasible

  - Compomer, or amalgam

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. Selective carious tissue removal approach is defined as the extent of carious tissue removed.
8. Advanced caries lesion is defined as ICDAS codes 5 and 6.
9. If not feasible
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. 