

Single Tooth Direct Restorations (For Ohio Only)

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[➔ Instructions for Use](#)

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Related Dental Policies

- Core Buildup, Post and Core and Pin Retention
- Non-Surgical Endodontics

Application

This Dental Policy only applies to the state of Ohio. Any requests for services that are stated as unproven or services for which there is a coverage or quantity limit will be evaluated for medical necessity using Ohio Administrative Code 5160-1-01.

Coverage Rationale

Direct Restorations

[Direct Restorations](#) are indicated for the following:

- To replace tooth structure lost to caries or trauma
- To replace restorative material lost in the course of accessing pulp chamber for endodontic therapy
- To replace existing restorations that exhibit recurrent decay, fracture or marginal defects

In addition to the above, [Glass Ionomer](#) restorations are indicated for the following:

- When teeth cannot be isolated properly to allow placement of resin restorations
- As an alternative to resin sealants when the teeth cannot be properly isolated (patient cooperation, partially erupted teeth)
- [Class I, II, III and V](#) restorations on primary teeth
- Class III and V restorations on permanent teeth that cannot be isolated in high risk patients
- As a caries control plan for high risk patients using atraumatic techniques

Direct Restorations are not indicated for the following:

- Teeth with a hopeless prognosis ([McGuire's Classification](#))
- Incipient enamel only lesions extending less than halfway to the dentinoenamel junction (DEJ)
- Primary teeth that are near exfoliation or less than 50% of the tooth root remains
- Composite resin restorations are not indicated for patients with heavy bruxism
- Composite resin restorations are not indicated for patients with extensive active caries, or high caries risk

- [Amalgam](#) restorations are not indicated for placement on teeth in which they will have contact with gold restorations

Protective Restoration

A [protective restoration](#) is the direct placement of a restorative material to protect tooth and/or tissue form, and is indicated for the following:

- To relieve pain
- To promote healing
- To prevent further deterioration
- To retain tissue form

A protective restoration is not indicated for the following:

- As a liner or base for a definitive restoration
- For endodontic access closure
- As a pulp cap
- As a definitive restoration

Interim Therapeutic Restoration - Primary Dentition

[Interim](#) Therapeutic restoration is the placement of an adhesive restorative material following caries debridement for the management of early childhood caries and is indicated for the following:

- For very young, uncooperative, or special needs patients
- When traditional tooth preparation for an Amalgam or Composite restoration is not feasible or must be postponed
- As a caries control plan for high risk patients using atraumatic techniques

Definitions

Amalgam: An alloy used in direct dental restorations. It is typically composed of mercury, silver, tin and copper along with other metallic elements added to improve physical and mechanical properties. (ADA)

Composite: A dental restorative material made up of disparate or separate parts (e.g., resin and quartz particles). (ADA)

Direct Restoration: A restoration fabricated inside the mouth. (ADA)

Glass Ionomer: Polyelectrolyte cement in which the solid powder phase is a fluoride-containing aluminosilicate glass powder to be mixed with polymeric carboxylic acid. The cement can be used to restore teeth, fill pits and fissures, lute and line cavities. It is also known as glass polyalkenoate cement, ionic polymer cement, polyelectrolyte cement. (ADA)

G.V. Black's Classification of Dental Caries and Restorations (Boushell, Roberson, Walter 2013):

- Class I: All pit-and-fissure preparations, these include preparations on occlusal surfaces of premolars and molars, occlusal two-thirds of the facial and lingual surfaces of molars, and the lingual surfaces of maxillary incisors
- Class II: Preparations involving the proximal surfaces of posterior teeth
- Class III: Preparations involving the proximal surfaces of anterior teeth that do not include the incisal angle
- Class IV: Preparations involving the proximal surfaces of anterior teeth that include the incisal edge
- Class V: Preparations on the gingival third of the facial or lingual surfaces of all teeth
- Class VI: Preparations on the incisal edges of anterior teeth or the occlusal cusp tips of posterior teeth

Interim: Belonging to, serving during, or taking place during an intermediate interval of time; temporary.

Interim Therapeutic Restoration-Primary Dentition: Placement of an adhesive restorative material following caries debridement by hand or other method for the management of early childhood caries. Not considered a definitive restoration. (ADA)

McGuire Classification of Tooth Prognosis (Levi 2016):

- Good: Teeth with adequate periodontal support where the etiologic factors can be controlled, including systemic factors
- Fair: No more than 25% attachment loss with Grade 1 furcation invasion which can be maintained. Plaque control and systemic factors can be maintained
- Poor: As much as 50% bone loss with Grade II furcation invasions, poor crown: root ratio; mobility greater than Miller Class I; systemic factors; poor patient participation in treatment
- Questionable: Teeth with greater than 50% attachment loss; Grade II or III furcation involvements; the tooth is not easily maintained either with professional hygiene or by the patient
- Hopeless: Inadequate attachment loss to support the tooth; Class III or IV furcation involvement; Miller Class III mobility; the tooth cannot be maintained with adequate plaque control by the clinician or by the patient

Protective Restoration: Direct placement of a restorative material to protect tooth and/ or tissue form. This procedure may be used to relieve pain, promote healing, or prevent further deterioration. Not to be used for endodontic access closure, or as a base or liner under restoration (ADA)

Therapeutic: Of or pertaining to therapy or treatment; beneficial. Therapy has as its goal the elimination or control of a disease or other abnormal state. (ADA)

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this guideline does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CDT Code	Description
D2140	Amalgam – one surface, primary or permanent
D2150	Amalgam – two surface, primary or permanent
D2160	Amalgam – three surface, primary or permanent
D2161	Amalgam – for or more surfaces, primary or permanent
D2330	Resin-based composite – one surface, anterior
D2331	Resin-based composite – two surface, anterior
D2332	Resin-based composite – three surface, anterior
D2335	Resin-based composite – four or more surfaces or involving incisal angle (anterior)
D2390	Resin-based composite crown, anterior
D2391	Resin-based composite – one surface, posterior
D2392	Resin-based composite – two surface, posterior
D2393	Resin-based composite – three surface, posterior
D2394	Resin-based composite – four or more surfaces, posterior
D2410	Gold foil – one surface
D2420	Gold foil – two surface
D2430	Gold foil – three surface
D2940	Protective restoration
D2941	Interim therapeutic restoration – primary dentition
D2999	Unspecified restorative procedure, by report

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Description of Services

Direct restoration procedures are the placement of restorative material directly into the defective, injured, or diseased tooth to re-establish normal form and function. Tooth preparation, all liners or bases, etching and curing, as well as occlusal adjustments are inclusive. For non- amalgam restorations, resin-based composite is the material of choice. When conditions do not allow for complete isolation of the tooth, and salivary contamination is likely, a glass ionomer is considered an acceptable substitute. Preventive resin restorations are a conservative approach to restore a tooth that has active caries in pits and fissures that has not extended into the dentin. Protective restorations are placed to relieve pain, prevent further deterioration and promote healing.

Clinical Evidence

In a 2020 systematic review, Bakdach et al. evaluated the current evidence on the management of orthodontically induced white spot lesions (OIWSLs). Thirteen articles were evaluated and reported interventions, and 1 included resin infiltration. Although this study indicated resin infiltration to be effective, there is a lack of available evidence to support this intervention for treating of OIWSLs and further research is needed.

Amin et al (2016). The purpose of this study was to assess the success rate of various treatments provided under general anesthesia for early childhood caries (ECC) over three-year follow-up period. ECC children no older than 72 months at the time of dental surgery, who had completed a three-year follow-up, were included. The success rate of every treatment was evaluated. The longevity of each treatment and significant factors associated with failures were assessed. A total of 818 children were included. Of these, 32.9 percent had restored teeth that required further treatment during the three-year follow-up. Amalgam restorations and stainless-steel crowns (SSCs) showed significantly longer survival than composite restorations in all types of restorations. The authors concluded that SSCs and amalgam restorations were clinically more successful and had better survival times than composite restorations.

Naghipur et al (2016). The purpose of this retrospective study was to determine the survival and reasons for failure of directly placed 2-surface composite resin restorations and directly placed 2-surface amalgam restorations on premolars placed by Canadian dental students. Using The University of Manitoba's dental management software and paper charts, all 2-surface composite resin and 2-surface amalgam restorations placed on premolars between January 1, 2002, and May 30, 2014, were included. Short-term failure (within 2 years), long-term failure, and reasons for failure were collected. A Kaplan-Meier survival estimate with an associated P value comparing composite resin to amalgam restoration curves was performed using SPSS statistical software. Over 12 years, 1695 composite resin and 1125 amalgam 2-surface premolar restorations were placed. Of these restorations, 134 composite resins (7.9%) and 66 amalgams (5.9%) failed. Short-term failures (2 years or less) consisted of 57 composite resin (4%) and 23 amalgam (2.3%) restorations. Long-term failures (greater than 2 years) consisted of 77 composite resin (4.5%) and 43 amalgam (3.8%) restorations. After 12 years of service, the survival probability of composite resin restorations was 86% and that of amalgam restorations 91.5%. The differences in composite resin and amalgam survival curves were also found to be statistically significant ($P=.009$ for Log-rank test). The main reasons for failure were recurrent caries and fracture of the tooth being restored. The authors concluded that within the limitations of this study, both composite resin and amalgam restorations had acceptable success rates and similar failure modes. Recurrent caries was still the most common reason for failure.

Moraschini et al (2015) conducted a systematic review and meta-analysis to test the hypothesis that there is no difference in failure rates between amalgam and composite resin posterior restorations. Randomized controlled trials, controlled clinical trials and prospective and retrospective cohort studies were included in this review. The eligibility criteria included clinical trials in humans with at least 12 months of follow-up comparing the failures rates between occlusal and occlusoproximal amalgam and composite resin restorations. A total of 8 studies published between 1992 and 2013 were included in this review, and according to the risk of bias evaluation, all were classified as high quality. The results showed that the mean survival of amalgam and composite resin varied from 76.320 to 100% and 56 to 100% with a mean annual failure of 1.71 and 3.17%, respectively. The authors concluded that based on the results of this systematic review and meta-analysis, composite resin restorations in posterior teeth still have less longevity and a higher number of secondary caries when compared to amalgam restorations. In relation to fractures, there was no statistically significant difference between the two restorative materials regarding the time of follow-up.

Kwang et al. (2014) conducted a study to investigate the time-lapse of endodontic intervention subsequent to various restorations and tooth surfaces and to assess and compare the associated risk factors. A comprehensive computerized analysis of all dental school patients at the Case Western Reserve University School of Dental Medicine who received restorations from 2008-2013 was obtained. Data collected included restoration type, restored tooth surfaces, tooth type, and the dates of restoration and subsequent endodontic treatment. The mean time between restoration placement and resultant endodontic intervention was 270 days, and further analysis revealed composite resin was 1.91 times more likely than amalgam and 5.69 times more likely than crowns to cause resultant endodontic intervention. Of the patients who required endodontic treatment after restoration placement, the critical time-lapse was 9 months, and composite restorations and teeth with 2 or more restorative surfaces were significantly associated with the need for endodontic treatment.

Rasines et al (2014) conducted a Cochrane database systemic review to examine the effects of direct composite resin fillings versus amalgam fillings for permanent posterior teeth, primarily on restoration failure. Of the 2205 retrieved references, seven trials (10 articles) were included in the systematic review. Two trials were parallel group studies involving 1645 composite restorations and 1365 amalgam restorations (921 children) in the analysis. The other five trials were split-mouth studies involving 1620 composite restorations and 570 amalgam restorations in an unclear number of children. (Due to major problems with the reporting of the data for the five split-mouth trials, the primary analysis is based on the two parallel group trials). All seven trials were judged to be at high risk of bias. There were 3265 composite restorations and 1935 amalgam restorations analyzed. The parallel group trials indicated that resin restorations had a significantly higher risk of failure and increased risk of secondary caries than amalgam restorations but no evidence of an increased risk of restoration fracture. The authors concluded that while there is low-quality evidence to suggest that resin composites lead to higher failure rates and risk of secondary caries than amalgam restorations, the benefits of amalgam restorations are particularly useful in parts of the world where amalgam is still the material of choice to restore posterior teeth with proximal caries.

Kovarik (2009) reviewed the current evidence regarding choosing amalgam versus composite material for posterior direct restorations. The review addresses the limitations of most of the current studies, most of which are non-randomized, and/or university based rather than practice based. The restorative material decision is most often based on patient request or provider perception of composite over amalgam despite evidence to suggest higher failure rates. The author's goal was to find high level evidence to make evidence based decisions regarding restorative material choice. Only two studies met this criteria and both were conducted on children, with longevity a secondary outcome measured (the primary outcome measured was exposure to mercury from amalgams). In the New England Children's Amalgam Trial, 534 children randomly received composite or amalgam posterior restorations. Results showed a statistically insignificant survival rate between the two materials, however composites demonstrated more recurrent caries and required repair more frequently. The second study had the neurobehavioral effects of dental amalgam in children as the primary outcome measure, with survival of restorations secondary. This study randomly assigned 472 children (ages 8–12) to receive either amalgam or composite restorations in their posterior teeth. It was shown that recurrent caries is much more common in composite restorations compared to amalgam. The authors concluded that the two highest quality evidence studies show amalgam as superior to composite for posterior restorations with significantly less recurrent caries.

References

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American Academy of Pediatric Dentistry Guideline on Restorative Dentistry. Revised 2022.

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Policy History/Revision Information

Date	Summary of Changes
12/01/2023	New dental policy

Instructions for Use

This Dental Policy provides assistance in interpreting the UnitedHealthcare Community Plan of Ohio dental benefit plans. When deciding coverage, the member specific benefit plan document must be referenced as the terms of the member specific benefit plans may differ. In the event of a conflict, the member specific benefit plan document governs. Before using this policy, please check the member specific benefit plan document and any applicable federal or state mandates. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Dental Policy is provided for informational purposes. It does not constitute the practice of medicine or medical advice.

Archived Policy Versions

Effective Date	Guideline Number	Guideline Title
N/A	N/A	N/A