**Please read the DQA Measures User Guide prior to implementing this measure.**

DQA Measure Technical Specifications: Administrative Claims-Based Measures

**Prevention: Sealant Receipt on Permanent 2nd Molars**

**Description:** Percentage of enrolled children, who have ever received sealants on permanent second molar teeth: (1) at least one sealant and (2) all four molars sealed by the 15th birthdate

**Numerator:** Unduplicated number of enrolled children who ever received sealants on a permanent second molar tooth: (1) at least one sealant and (2) all four molars sealed

**Denominator:** Unduplicated number of enrolled children with their 15th birthdate in the reporting year

**Exclusions:** Children who have received treatment (restorations, extractions, endodontic, prosthodontic, and other dental treatments) on all four permanent second molars in the 48 months prior to the 15th birthdate

**Rate:** NUM/DEN (after exclusions)

**Rationale:** Dental caries is one of the most common chronic diseases in children in the United States (1). For 2015–2016, prevalence of total caries (untreated and treated) was 45.8% and untreated caries was 13.0% among youth aged 2–19 years (2). Identifying caries early is important to reverse the disease process, prevent progression of caries, and reduce incidence of future lesions. In 2014, 52% of all children and 60% of poor children (FPL<100%) did not have a dental visit during the year (3). Evidence-based Clinical Recommendations recommend that sealants are effective intervention for reducing the incidence of carious lesions in the occlusal surfaces of primary and permanent molars in children and adolescents (4).


**Level of Aggregation:** Health Plan/Program

**Improvement Noted As:** A higher score indicates better quality.

**Data Required:** Administrative enrollment and claims data; data for reporting year and 4 years prior. When using claims data to determine service receipt, include both paid and unpaid claims (including pending, suspended, and denied claims).
Measure Limitations due to Limitations of Administrative Data

(1) Claims data cannot identify (a) teeth with active decay, (b) sealants not billed to the program/plan, or (c) treatment (e.g., restorations/extractions) not billed to the program/plan, thus impacting the precision of both the numerator and denominator.

(2) Comparisons would be biased if programs being compared have significant differences in enrollment duration resulting in differences in the availability of complete treatment history for enrollees, which reduces the ability to consistently identify children to be included in the numerator or excluded from the denominator. However, this is not unique to dental measures.

(3) The 12-month enrollment criterion, with the allowed single gap in coverage, may result in a significantly reduced population that is eligible for inclusion in the denominator in programs with shorter enrollment durations (greater “churn”) and, therefore, may be less representative of the population that is the focus of measurement.

Sealant Receipt on Permanent 2nd Molars Measure Calculation

1. Check if the subject meets age criterion:
   a. If child has the 15th birthdate during the reporting year, then proceed to next step.
   b. If age criterion is not met or there are missing or invalid field codes (e.g., date of birth), then STOP processing. This subject is not counted in the denominator.

2. Check if subject meets enrollment criteria:
   a. If child is enrolled on the 15th birthdate, AND
   b. If child is continuously enrolled for 12 months prior to the child’s 15th birthdate with an allowable single gap in continuous enrollment of no more 45 days. For programs/plans that verify enrollment on a monthly basis, the continuous enrollment criteria should be assessed for the 12 months prior to the month in which the child has the 15th birthday and allow no more than a 1-month gap in enrollment.2
   c. If both a AND b are met, then proceed to next step.
   d. If either a OR b is NOT met, then STOP processing. This subject is not counted in the denominator.

YOU NOW HAVE THE INITIAL POPULATION (IP) OF ALL CHILDREN WHO MEET THE AGE AND THE ENROLLMENT CRITERIA

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1 Medicaid/CHIP programs should remove those individuals who do not qualify for dental benefits. The qualifying criteria should be reported.

2 Enrollment in “same” plan vs. “any” plan: At the state program level (e.g., Medicaid/CHIP) a criterion of “any” plan applies versus at the health plan (e.g., MCO) level a criterion of “same” plan applies. The criterion used should be reported with the measure score. While this prevents direct aggregation of results from plan to program, each entity is given due credit for the population it serves. Thus, states with multiple MCOs should not merely “add up” the plan level scores but should calculate the state score from their database to allow inclusion of individuals who may be continuously enrolled but might have switched plans in the interim.
3. **EXCLUSION**: Check if subject qualifies for an exclusion from the denominator because child has received treatment (restorations, extractions, endodontic, prosthodontic and other dental treatments) on all four permanent second molars in the 48 months prior to the 15th birthdate:

a. On permanent second molar maxillary left [TOOTH NUMBER=15 using the Universal Numbering System]: check if subject meets any of the criteria:
   i. Subject has **PREVENTIVE RESIN RESTORATION CODE [D1352]**
   OR
   ii. Subject has **any RESTORATIVE CODE [D2140, D2150, D2160, D2161, D2391, D2392, D2393 or D2394] that includes OCCLUSAL TOOTH SURFACE alone [O] or in combination with any other surface codes [examples: MO or DO or MOD or MODL or MODBL or MOL or DOL or MOB or MODB or DOB or BO or LO]**
   OR
   iii. Subject has **any RESTORATIVE CODE [D2410 – D2999]**
   OR
   iv. Subject has **any ENDODONTIC CODE [D3110- D3999]**
   OR
   v. Subject has **any EXTRACTION CODE [D7111- D7250]**
   OR
   vi. Subject has **any PROSTHODONTIC CODE [D6205- D6793]**

AND

b. On permanent second molar maxillary right [TOOTH NUMBER=2 using the Universal Numbering System]: check if subject meets any of the criteria:
   i. Subject has **PREVENTIVE RESIN RESTORATION CODE [D1352]**
   OR
   ii. Subject has **any RESTORATIVE CODE [D2140, D2150, D2160, D2161, D2391, D2392, D2393 or D2394] that includes OCCLUSAL TOOTH SURFACE alone [O] or in combination with any other surface codes [examples: MO or DO or MOD or MODL or MODBL or MOL or DOL or MOB or MODB or DOB or BO or LO]**
   OR
   iii. Subject has **any RESTORATIVE CODE [D2410 – D2999]**
   OR
   iv. Subject has **any ENDODONTIC CODE [D3110- D3999]**
   OR
   v. Subject has **any EXTRACTION CODE [D7111- D7250]**
   OR
   vi. Subject has **any PROSTHODONTIC CODE [D6205- D6793]**

AND

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3 All surface combinations including the occlusal surface alone and in combination with other surface codes should be included
c. On permanent second molar mandibular left [TOOTH NUMBER=18 using the Universal Numbering System]; check if subject meets any of the criteria:
   i. Subject has **PREVENTIVE RESIN RESTORATION CODE [D1352]**
   OR
   ii. Subject has **any RESTORATIVE CODE [D2140, D2150, D2160, D2161, D2391, D2392, D2393 or D2394]** that includes OCCLUSAL TOOTH SURFACE alone [O] or in combination with any other surface codes [examples: MO or DO or MOD or MODL or MODBL or MOL or DOL or MOB or MODB or DOB or BO or LO]³
   OR
   iii. Subject has **any RESTORATIVE CODE [D2410 – D2999]**
   OR
   iv. Subject has **any ENDODONTIC CODE [D3110- D3999]**
   OR
   v. Subject has **any EXTRACTION CODE [D7111- D7250]**
   OR
   vi. Subject has **any PROSTHODONTIC CODE [D6205- D6793]**

AND

d. On permanent second molar mandibular right [TOOTH NUMBER=31 using the Universal Numbering System]; check if subject meets any of the criteria:
   i. Subject has **PREVENTIVE RESIN RESTORATION CODE [D1352]**
   OR
   ii. Subject has **any RESTORATIVE CODE [D2140, D2150, D2160, D2161, D2391, D2392, D2393 or D2394]** that includes OCCLUSAL TOOTH SURFACE alone [O] or in combination with any other surface codes [examples: MO or DO or MOD or MODL or MODBL or MOL or DOL or MOB or MODB or DOB or BO or LO]³
   OR
   iii. Subject has **any ENDODONTIC CODE [D3110- D3999]**
   OR
   iv. Subject has **any RESTORATIVE CODE [D2410 – D2999]**
   OR
   v. Subject has **any EXTRACTION CODE [D7111- D7250]**
   OR
   vi. Subject has **any PROSTHODONTIC CODE [D6205-D6793]**

If **ALL** permanent second molars were previously treated (a AND b AND c AND d), then the subject *does not* have at least one sealable molar; remove this enrollee from the denominator; STOP processing.

**YOU NOW HAVE DENOMINATOR (DEN) FOLLOWING EXCLUSIONS FOR TREATMENT:**
Enrollees who meet the age and enrollment criteria who have NOT had all permanent second molars previously treated (i.e., have at least one permanent second molar that is a candidate for a sealant)
4. Check if subject ever received a sealant on at least one permanent second molar in the 48 months prior to the 15th birthdate:
   a. If [CDT CODE] = D1351 in the 48 months prior to the 15th birthdate, AND
   b. If [TOOTH-NUMBER] = 2 OR 15 OR 18 OR 31, using the Universal Numbering System.
   c. If both a AND b are met, then include in numerator 1; proceed to next step.
   d. If either a OR b is NOT met, then STOP processing. This subject is already included in the denominator but is not included in numerator 1.

YOU NOW HAVE NUMERATOR (NUM1) COUNT: Enrollees who have ever received a sealant on at least one permanent second molar

5. Check if sealants were placed on all four permanent second molars in the 48 months prior to the 15th birthdate:
   a. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 2, using the Universal Numbering System, in the 48 months prior to the 15th birthdate, AND
   b. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 15, using the Universal Numbering System, in the 48 months prior to the 15th birthdate, AND
   c. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 18, using the Universal Numbering System, in the 48 months prior to the 15th birthdate, AND
   e. If ALL a AND b AND c AND d are met, then include in numerator 2; proceed to next step.
   f. If ANY of a OR b OR c OR d is NOT met, then STOP processing. This subject is already included in the denominator but is not included in numerator 2.

YOU NOW HAVE NUMERATOR (NUM2) COUNT: Enrollees who have received sealants on ALL FOUR permanent second molars

6. When reporting the measure score, report:
   a. Number of enrollees meeting age and enrollment criteria (before exclusion) (IP)
   b. Number of enrollees excluded (EXC)
   c. Percentage of enrollees excluded (%EXC=EXC/IP)
   d. Number of enrollees in denominator after exclusions (DEN=IP-EXC)
   e. Number of enrollees in numerator 1 (NUM1)
   f. Number of enrollees in numerator 2 (NUM2)
   g. Measure score rate 1: at least one sealant (NUM1/DEN)
   h. Measure score rate 2: all four molars sealed (NUM2/DEN)

*** Note: Reliability of the measure score depends on the quality of the data elements that are used to calculate the measure. The percentages of missing or invalid data for each data element used to calculate the measure must be investigated prior to measurement. Data elements with high rates of missing or invalid data will adversely affect the subsequent
counts that are recorded. For example, subjects who have records with missing or invalid TOOTH-NUMBER CODE may be counted in the denominator but not in the numerator. These records are assumed to not have had a qualifying service. In this case, a low-quality data set will result in a measure score that will not be reliable.***

**Reporting Guidance (Please refer to the User Guide for detailed implementation considerations and reporting guidance.)**

1. Programs adopting this measure should note the measure purpose and limitations indicated above.
2. If programs are interested in understanding the rate of sealant application by risk status, the measure score denominator may be stratified by elevated risk for dental caries:
   - Elevated risk
   - Not at elevated risk
   For details on the elevated risk methodology, please refer the DQA Pediatric User Guide.
3. Consideration should be given to evaluation of the impact of exclusions on the measure scores, particularly when using the measure to compare scores between reporting entities. Such consideration may assist in allowing users to understand the impact of access or other factors on the measure scores and the potential for measurement bias.
Check Age Eligibility

15th Birthday in the Reporting Year?

YES

Continuously enrolled for 12 months prior to the 15th birthday?

YES

Were all 4 permanent 2nd molars previously restored, extracted or treated?

NO

NC- Not Counted

YES

DEN: Enrollees who meet age and enrollment criteria following EXCLUSIONS

Sealants on at least one 2nd molar?

YES

NUM 1: Enrollees who have ever received a sealant on at least one permanent second molar

Sealants on All 4 2nd Molars?

YES

NUM 2: Enrollees who have ever received sealants on all permanent second molars

STOP
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