

****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 1st Molars

Description: Percentage of enrolled children, who have ever received sealants on permanent **first** molar teeth: (1) at least one sealant and (2) all four molars sealed by the 10th birthdate

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

Denominator: Unduplicated number of enrolled children with their 10th birthdate in the measurement year

Exclusions: Children who have received treatment (restorations, extractions, endodontic, prosthodontic, and other dental treatments) on **all four** permanent first molars in the 48 months prior to the 10th 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).

- (1) Centers for Disease Control and Prevention. Oral Health Conditions: Cavities (Tooth Decay). Available at: <https://www.cdc.gov/oralhealth/conditions/index.html>. Accessed August 29, 2022.
- (2) Fleming E, Afful J. Prevalence of total and untreated dental caries among youth: United States, 2015–2016. NCHS Data Brief, no 307. Hyattsville, MD: National Center for Health Statistics. 2018.
- (3) Nasseh K, Vujcic M. Dental care utilization steady among working-age adults and children, up slightly among the elderly. Health Policy Institute Research Brief. American Dental Association. October 2016. Available from: https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/hpi/hpibrief_1016_1.pdf. Accessed August 29, 2022.
- (4) Wright, John T. et al. Evidence-based clinical practice guideline for the use of pit-and-fissure sealants. 2016. The Journal of the American Dental Association, Volume 147, Issue 8, 672 - 682.e12

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 1st Molars Measure Calculation

1. Check if the subject meets age criterion:¹
 - a. If child has his/her 10th 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 does not get counted.
2. Check if subject meets enrollment criteria:
 - a. If child is enrolled on his/her 10th birthdate, AND
 - b. If child is continuously enrolled for 12 months prior to the child’s 10th 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 his/her 10th birthday and allow no more than a 1-month gap in enrollment.²
 - c. If a and b are met, then proceed to next step.
 - d. If a and b are NOT met, then STOP processing. This subject will not be included in the measure calculation.

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

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 first molars in the **48 months prior to the 10th birthdate:**

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.

- a. On permanent first molar maxillary left [TOOTH NUMBER=14 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] and 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

- b. On permanent first molar maxillary right [TOOTH NUMBER=3 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] and 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

- c. On permanent first molar mandibular left [TOOTH NUMBER=19 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] and 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]

³ All surface combinations including **the occlusal surface alone and in combination with other surface codes** should be included

- OR
 - iv. Subject has any ENDODONTIC CODE [D31 10- D3999]
OR
 - v. Subject has any EXTRACTION CODE [D71 11- D7250]
OR
 - vi. Subject has any PROSTHODONTIC CODE [D6205- D6793]
- AND
- d. On permanent first molar mandibular right [TOOTH NUMBER=30 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] and 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 [D31 10- D3999]
OR
 - iv. Subject has any RESTORATIVE CODE [D2410 – D2999]
OR
 - v. Subject has any EXTRACTION CODE [D71 11- D7250]
OR
 - vi. Subject has any PROSTHODONTIC CODE [D6205-D6793]

If **ALL** permanent first 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 first molars previously treated (i.e., have at least one permanent first molar that is a candidate for a sealant)

FOR STEPS 4 – 6 below, for each child in the denominator, look back within claims history in the 12 months prior to the 10th birthdate AND for 3 additional prior years (48 months in total). Enrollment in prior years is not necessary. Programs/plans that do not have a 4-year look-back claims history prior to the 10th birthdate must include information on the data limitation and the number of available years of claims history.

- 4. Check if subject ever received a sealant on at least one permanent first molar in the 48 months prior to the 10th birthdate:
 - a. If [CDT CODE] = D1351 in the 48 months prior to the 10th birthdate, AND
 - b. If [TOOTH-NUMBER] = 3 OR 14 OR 19 OR 30, using the Universal Numbering System, then include in [numerator 1](#); proceed to next step.
 - c. If both a AND b are not met, then STOP processing. This enrollee is already included in the denominator but will not be included in the numerator.

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

5. Check if sealants were placed on all four permanent first molars in the 48 months prior to the 10th birthdate:
 - a. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 3, using the Universal Numbering System, in the 48 months prior to the 10th birthdate, AND
 - b. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 14, using the Universal Numbering System, in the 48 months prior to the 10th birthdate, AND
 - c. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 19, using the Universal Numbering System, in the 48 months prior to the 10th birthdate, AND
 - d. If [CDT CODE] = D1351 AND [TOOTH-NUMBER] = 30, using the Universal Numbering System, in the 48 months prior to the 10th birthdate, then include in [numerator 2](#); STOP processing.
 - e. If a AND b AND c AND d are not all met, then STOP processing. This enrollee is not included in numerator 2.

YOU NOW HAVE NUMERATOR (NUM2) COUNT: Enrollees who have received sealants on ALL FOUR permanent first 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 ($NUM2/DEN$)

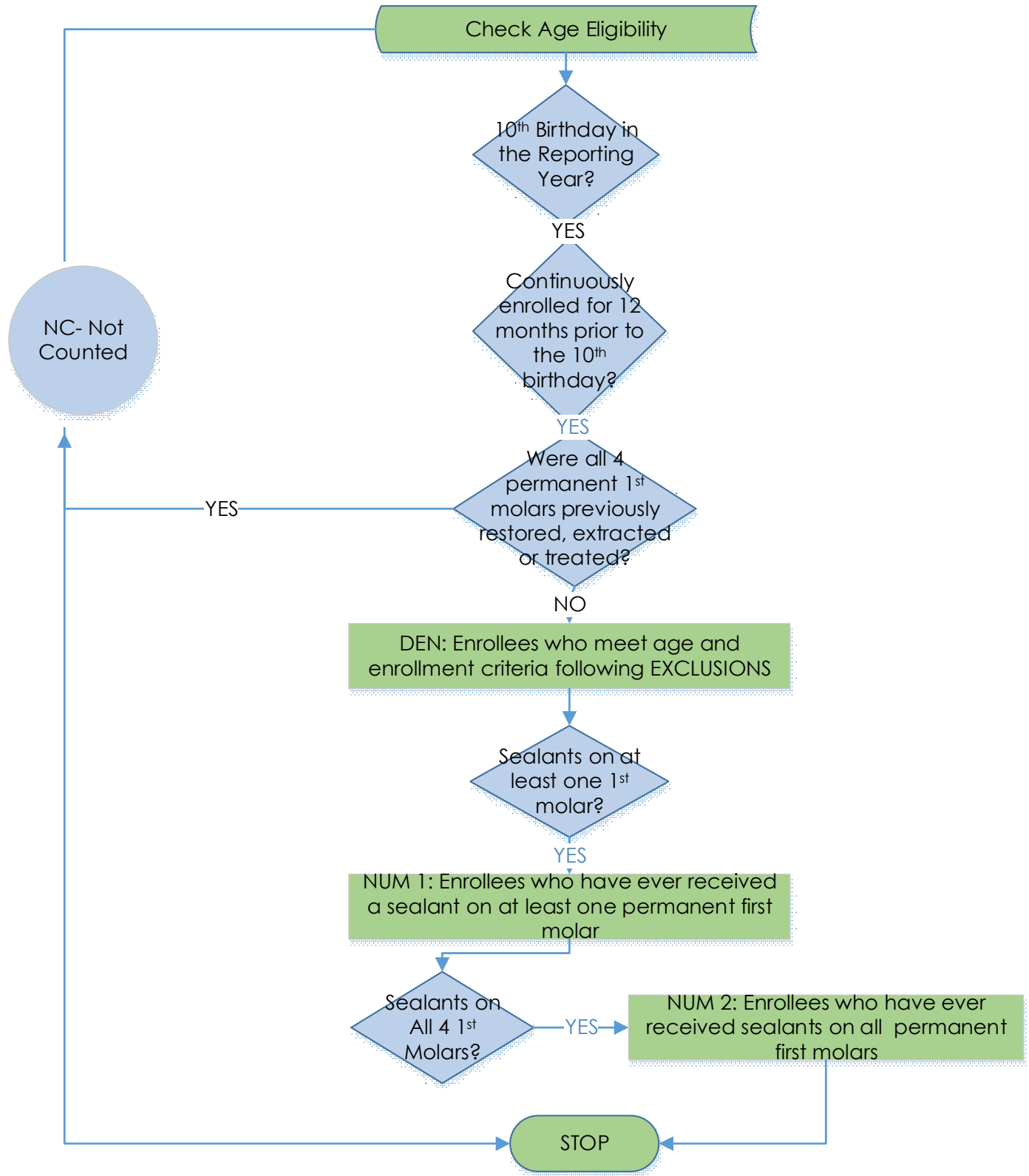
*** Note: Reliability of the measure score depends on the quality of the data that are used to calculate the measure. The percentages of missing and invalid data for these data elements must be investigated prior to measurement. Data elements with high rates of missing or invalid data will adversely affect the subsequent counts that are recorded. For example, 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 low measure score and 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.



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