DENTAL QUALITY ALLIANCE™
*Improving Oral Health Through Measurement*

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

# DQA Measure Technical Specifications: Administrative Claims-Based Measures: Ambulatory Care Sensitive Emergency Department Visits for Dental Caries in Children

**Description:** Number of emergency department (ED) visits for caries-related reasons per 100,000 member months for children
**Numerator:** Number of ED visits with a caries-related diagnosis code among children 0 through 20 years
**Denominator:** All member months for children 0 through 20 years during the reporting year
**Rate:** (NUM/DEN)x100,000

**Rationale**: There are approximately 1 million ED visits per year for non-traumatic dental conditions in the United States and more than 200,000 visits are made by children (1, 2, 3). Untreated dental caries (tooth decay) and its sequelae (e.g., dental infections) account for almost 80% of these visits (2, 3). Dental caries is preventable, and use of the ED for dental caries related conditions results in substantial costs (1, 3) with 70% of ED visits for dental conditions among children in the United States being paid for by Medicaid (4). Because dental caries can be reduced and managed through outpatient care processes, caries-related ED visits represent "ambulatory care sensitive" visits - visits that are potentially avoidable through timely and effective use of the ambulatory health care system. Moreover, ED care for dental caries-related conditions is generally not definitive compared to that provided in primary care dental settings and often results in referral to primary care dental sites (5, 6, 7).

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2. Seu K, Hall KK, Moy E. Emergency Department Visits for Dental-Related Conditions, 2009. Healthcare Cost and Utilization Project Statistical Brief #143. Rockville, MD: Agency for Healthcare Research and Quality; November 2012. URL: http://www.hcup-us.ahrq.gov/reports/statbriefs/sb143.pdf [accessed on May 25, 2021].
3. Allareddy V, Nalliah RP, Haque M, Johnson BS, Rampa SB, Lee MK. Hospital-based emergency department visits with dental conditions among children in the United States: nationwide epidemiological data. Pediatr Dent 2014;37(5):393-9.
4. Wall T, Nasseh K, Vujicic M. Majority of dental-related emergency department visits lack urgency and can be diverted to dental offices. Health Policy Institute Research Brief. American Dental Association.
5. Cohen LA, Bonito AJ, Eicheldinger C, Manski RJ, Macek MD, Edwards RR, Khanna N. Comparison of patient visits to emergency departments, physician offices, and dental offices for dental problems and injuries. J Public Health Dent. 2011;71(1):13-22.
6. Hocker MB, Villani JJ, Borawski JB, Evans CS, Nelson SM, Gerardo CJ, Limkaken AT. Dental visits to a North Carolina emergency department: a painful problem. N C Med J. 2012; 73(5):346-51.
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**National Quality Measures Clearing House Domain:** Outcome[1]

**National Quality Forum Domain:** Outcome[2]

**Institute of Medicine Aim:** Equity, Safety, Timeliness

**National Quality Strategy Priority:** Health and Wellbeing

**Level of Aggregation:** Program *(NOTE: This measure requires claims data from medical encounters. Consequently, this measure only applies to programs, such as Medicaid, or plans that provide both medical and dental benefits. Use of this measure for stand-alone dental benefit plans may result in feasibility issues due to lack of access to necessary data. Use by health plans that provide both medical and dental benefits may be considered after assessment of data element feasibility within the plans' databases.)*

**Improvement Noted As:** A lower rate indicates better quality.

**Data Required**: Administrative enrollment and claims data (medical); single year. When using claims data to determine service receipt, include only paid claims.

**Measure Purpose:** Examples of questions that can be answered through this measure at each level of aggregation:

1. What is the rate of emergency department visits for caries-related reasons in the enrolled population during the reporting period?
2. Over time, does the rate of emergency department visits by children for caries-related reasons stay stable, increase, or decrease?

**Applicable Stratification Variables**

1. Age: <1; 1-2; 3-5; 6-7; 8-9; 10-11; 12-14; 15-18; 19-20
2. ED Disposition Stratification: Discharged from ED; Inpatient Admissions

[1] **Outcome:** An outcome of care is a health state of a patient resulting from health care. Outcome measures are supported by evidence that the measure has been used to detect the impact of one or more clinical interventions. Measures in this domain are attributable to antecedent health care and should include provisions for risk-adjustment. Accessed from: https://www.ahrq.gov/gam/summaries/domain-definitions/index.html. Accessed August 29, 2022.
[2] **Outcome**: "The health state of a patient (or change in health status) resulting from healthcare— desirable or adverse." National Quality Forum. "NQF Glossary." Available at: http://www.qualityforum.org/Measuring_Performance/Measuring_Performance.aspx**.** Accessed August 29, 2022.

**Ambulatory Care Sensitive Emergency Department Visits for Dental Caries Calculation**

1. Calculate total eligible member months as the sum of all member months for subjects age 0 through 20 years (<21 years) as of the 15th or 30th day of the month as appropriate for when eligibility determinations are made. Either the 15th or the 30th should be selected and used consistently across all member months during the reporting year.

**Reporting notes for age stratifications:**

- Member months will be attributed to each age stratum based on the member's age as of the 15th or 30th day of the month. Either the 15th or the 30th should be selected and used consistently across all member months during the reporting year.
- One member can contribute member months to more than one age stratum.

**YOU NOW HAVE DENOMINATOR (DEN) COUNT: Total member months**

2. Identify all emergency department visits for caries-related reasons occurring during eligible member months within the reporting year:

   a. Identify a health care encounter as an ED visit if ANY of the following are met:

      - CPT codes 99281-99285 (ED visit for patient evaluation/management); **OR**
      - Revenue codes 0450-0459 (Emergency Room) or 0981 (professional fees for ER services); **OR**
      - CMS place of service code for professional claims - 23 (Emergency Room)

   b. Member must be <21 years on date of visit.

   c. Identify an ED visit as being caries related if:

      i. any of the ICD-10-CM diagnosis codes in Table 1 is listed as a FIRST-LISTED diagnosis code associated with the visit

      OR

      ii. (a) any of the ICD-10-CM diagnosis codes in Table 2 is listed as a FIRST-LISTED diagnosis **AND** (b) any of the ICD-10-CM diagnosis codes in Table 1 is listed as an ADDITIONAL LISTED diagnosis. (Codes from Table 2 must be accompanied by a code from Table 1 to qualify.)

   d. Count only one visit per member per day.

   e. Sum the number of ED visits for caries-related reasons.

   **Reporting note for age stratifications:** Numerator cases are stratified based on age on date of ED visit.

**YOU NOW HAVE NUMERATOR (NUM) COUNT: Number of ED visits for caries-related reasons**

3. Stratify the numerator by whether visit resulted in an inpatient admission or did not result in an inpatient admission:

    a. Identify a caries-related ED visit as resulting in an inpatient admission if:

        (i) the patient has an inpatient admission defined by UB Type of Bill = 11x OR 12x OR 41x

    AND

        (ii) that admission occurred within 48 hours:

            [inpatient admit date] – [ED admit date] >= 0 days AND <= 2 days

    b. Sum the number of caries-related ED visits that resulted in an inpatient admission.

    **Note:** If there are 2 or more dental ED visits that occurred within 2 days of the same inpatient admission, **only one** of those ED visits should be counted as resulting in an inpatient admission. [Example: If there is one dental-related ED visit on Saturday and a second dental-related ED visit on Sunday with an inpatient admission also occurring on Sunday, then this would be counted as 2 ED visits with only one being counted as an inpatient admission.]

    **You now have the numerator stratum: caries-related ED visits that resulted in an inpatient admission**

    c. Identify caries-related ED visits not resulting in an inpatient admission:

    [total caries-related ED visits]–[caries-related ED visits resulting in inpatient admission]

    **You have the numerator stratum: caries-related ED visits that did not result in an inpatient admission**

4. Report
    a. Unduplicated number of ED visits in the numerator
    b. Unduplicated number of member months in denominator
    c. Rate per 100,000 member months: (NUM/DEN) x 100,000
    d. Rates for ED visits resulting in an inpatient admission and those not resulting in an inpatient admission

*** Note: Reliability of the measure score depends on 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 accuracy and reliability of the measure rate.***

**Table 1. Caries-Related ICD-10-CM Diagnosis Codes**

| ICD-10-CM CODE | DESCRIPTION |
|---|---|
| KØ2.3 | Arrested dental caries |
| KØ2.51 | Dental caries on pit and fissure surface limited to enamel |
| KØ2.52 | Dental caries on pit and fissure surface penetrating into dentin |
| KØ2.53 | Dental caries on pit and fissure surface penetrating into pulp |
| KØ2.61 | Dental caries on smooth surface limited to enamel |
| KØ2.62 | Dental caries on smooth surface penetrating into dentin |
| KØ2.63 | Dental caries on smooth surface penetrating into pulp |
| KØ2.7 | Dental root caries |
| KØ2.9 | Dental caries, unspecified |
| KØ3.89 | Other specified diseases of hard tissues of teeth |
| KØ4.Ø | Pulpitis |
| KØ4.Ø1 | Reversible Pulpitis |
| KØ4.Ø2 | Irreversible pulpitis |
| KØ4.1 | Necrosis of pulp |
| KØ4.2 | Pulp degeneration |
| KØ4.3 | Abnormal hard tissue formation in pulp |
| KØ4.4 | Acute apical periodontitis of pulpal origin |
| KØ4.5 | Chronic apical periodontitis |
| KØ4.6 | Periapical abscess with sinus |
| KØ4.7 | Periapical abscess without sinus |
| KØ4.8 | Radicular cyst |
| KØ4.9Ø | Unspecified diseases of pulp and periapical tissues |
| KØ4.99 | Other diseases of pulp and periapical tissues |
| KØ8.131 | Complete loss of teeth due to caries, class I |
| KØ8.132 | Complete loss of teeth due to caries, class II |
| KØ8.133 | Complete loss of teeth due to caries, class III |
| KØ8.134 | Complete loss of teeth due to caries, class IV |
| KØ8.139 | Complete loss of teeth due to caries, unspecified class |
| KØ8.3 | Retained dental root |
| KØ8.431 | Partial loss of teeth due to caries, class I |
| KØ8.432 | Partial loss of teeth due to caries, class II |
| KØ8.433 | Partial loss of teeth due to caries, class III |
| KØ8.434 | Partial loss of teeth due to caries, class IV |
| KØ8.439 | Partial loss of teeth due to caries, unspecified class |
| KØ8.5Ø | Unsatisfactory restoration of tooth, unspecified |
| KØ8.51 | Open restoration margins of tooth |
| KØ8.53Ø | Fractured dental restorative material without loss of material |
| KØ8.531 | Fractured dental restorative material with loss of material |
| KØ8.539 | Fracture dental restorative material, unspecified |
| KØ8.8 | Other specified disorders of teeth and supporting structures |
| KØ8.89 | Other specified disorders of teeth and supporting structures |

| | |
|---|---|
| KØ8.9 | Disorder of teeth and supporting structures, unspecified |
| K12.2 | Cellulitis and abscess of mouth |
| M26.79 | Other specified alveolar anomalies |
| M27.2 | Inflammatory conditions of jaws |
| M27.3 | Alveolitis of jaws |
| M27.51 | Perforation of root canal space due to endodontic treatment |
| M27.52 | Endodontic overfill |
| M27.53 | Endodontic underfill |
| M27.59 | Other periradicular pathology associated with previous endodontic treatment |

**Table 2. Additional First-Listed ICD-10-CM Diagnosis Codes to Identify Caries-Related Visits when Paired with an Additional Listed Diagnosis Code from the Caries-Related ICD-10-CM Codes in Table 1**

| ICD-10-CM CODE | DESCRIPTION |
|---|---|
| LØ3.211 | Cellulitis of face |
| LØ3.212 | Acute lymphangitis of face |
| LØ3.213 | Periorbital cellulitis |
| LØ3.221 | Cellulitis of neck |
| LØ3.222 | Acute lymphangitis of neck |
| LØ3.9Ø | Cellulitis, unspecified |
| LØ3.91 | Acute lymphangitis, unspecified |
| R22.Ø | Localized swelling, mass and lump, head |
| R22.1 | Localized swelling, mass and lump, neck |
| R6Ø.Ø | Localized edema |
| R6Ø.1 | Generalized edema |
| R6Ø.9 | Edema, unspecified |