



DENTAL QUALITY ALLIANCE: Practice- and Clinician-Level Quality Measure Development Reports

Report 4: Claims-Based Starter Set Measure *Care Continuity for Children* Interim Report for Public Comment

JUNE 2024

FEEDBACK REQUESTED:

The purpose of this report is to inform and seek feedback. **The DQA urges all interested parties to carefully review this report and provide feedback.** Please send comments to dqa@ada.org **by September 20, 2024.**

**FOR COMMENT: DO NOT REFERENCE OR CITE IN ANY MANNER
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Background

The Dental Quality Alliance (DQA) approved a resolution that a workgroup be formed to explore the development of practice- and clinician-level dental quality measures. This workgroup reports to the DQA's Measure Development and Maintenance Committee (MDMC). This report is the fourth in a series of reports providing updates on measure development activities and findings. Previous reports are published on the [DQA website](#).

Report Purpose

The purpose of this report is to **present the results of testing the measure *Care Continuity for Children at the practice and clinician levels* and recommendations for inclusion in a starter set of claims-based measures for reporting at the practice and clinician levels.**

Measuring Entities and Data Sources for Practice and Clinician Level Measures

The practice/clinician level measure specifications for *Care Continuity for Children* was derived from and designed to align with the [DQA's program- and plan-level Care Continuity specifications](#). Because practice-level measurement is often driven vertically (from program to plan to practice), practice-level measures are most effective when aligned with program- and plan-level measurement. Program- and plan-level measures are most commonly reported by the program (e.g., Medicaid or CHIP) or plan (e.g., managed care organization or dental benefits administrator) using enrollment and claims data, which are the most readily available aggregated data at the population level.

Measurement at the practice and clinician levels may be reported by different entities using different data sources. Table 1 illustrates the different entities that may report practice and clinician level quality measures, the data sources used, and implementation examples.

The Workgroup determined that it would **first identify a starter set of measures calculated by using claims data**, because they have the highest feasibility for near-term implementation. Broadly, "claims data" are available (1) directly from the payer database, (2) from a third-party claims aggregator, and (3) from the local practice management system billing data. Typically, the first two data sources are used when a payer or third-party entity measures performance of a practice or clinician either for external reporting such as rating systems or for payment programs. A practice would use the billing data within the local practice management system to understand its own performance from the perspective of the payer and for quality improvement projects.

This analysis focused on validating the care continuity measure using only claims data directly from payer databases and claims data from third-party claims data aggregators.

Table 1: Data Sources and Implementation Applications for Practice and Clinician Level Quality Measurement

Measuring Entity	Program/ Plan	Third-Party Claims Aggregator	Billing Data from Local Practice Management System	EDR Data
Data source	Claims and enrollment data directly from administrative database	Aggregated claims submitted by multiple payers	Practice management billing data typically included on a dental claim form	All patient record data including history, findings and diagnoses
Implementation example	State Medicaid program or plan (e.g., MCO, DBA) reports scores (as ratings or in payment models) for specific dental practices/clinicians in their network. Commercial carriers report scores (as ratings or in payment models) for specific dental practices/clinicians in their network.	Third-party claims aggregator reports scores (as ratings or in payment models) for practices/clinicians within a client's (e.g., payer's) network.	Practice computes practice/clinician scores to understand performance as viewed by the payer and for quality improvement.	Practice computes its own scores for quality improvement.

Measure Specifications and Testing Overview

Population. Children ≥ 1 to < 19 years

Data Type. Enrollment and claims data for use by payers or other entities that have access to enrollment and dental claims data to assess dental care quality at the practice/clinician levels.

Data Sources. Data partners for testing included practice- and clinician-level claims data from: (1) a large payer's commercial database (multiple states), (2) a claims aggregator's large commercial database (multiple states), (3) data housed by a third-party representing a single commercial payer, (4) data housed by a third-party representing payer data within a single Medicaid program.

Time Frame. Data from 2019 (reporting year) and 2018 (year prior to the reporting year) were used to calculate the measure scores. Because some starter set measures require multiple years of data, 2019 was selected as the most recent reporting year to include in the analyses to avoid confounding by COVID-19 related impacts on service use.

Level of Analysis. Separate analyses were conducted at the **practice** level and at the **clinician** level.

Sample Size. Data partners were requested to provide data for **practices and clinicians that had at least 100 patients in the denominator**. Inclusion of at least 100 patients in the denominator was based on prior reliability assessments of practice-level measurement.¹ Data partners also were asked to provide data for at least 100 practices and 100 clinicians, respectively.

Specifications. Detailed practice- and clinician-level specifications were developed, guided by and aligned with the [DQA's program- and plan-level Care Continuity specifications](#). The measure description that was tested is in Figure 1 below and the finalized detailed specifications are in [Appendix 1](#).

Figure 1: Care Continuity for Children Measure Description

<p>Description: Percentage of pediatric patients enrolled in two consecutive years who received a comprehensive or periodic oral evaluation with the practice/clinician during the year prior to the reporting year and who returned to the same practice/clinician to receive a comprehensive or periodic oral evaluation during the reporting year</p> <p>Numerator: Subset of children in the denominator who returned to the same practice/clinician to receive a comprehensive or periodic oral evaluation during the reporting year</p> <p>Denominator: Unduplicated number of pediatric patients enrolled in two consecutive years who received a comprehensive or periodic oral evaluation with the practice/clinician during the year prior to the reporting year</p> <p>Rate: NUM/DEN</p>

Note: Measure testing evaluated both practice and clinician level measurement. The final specifications are for reporting at the practice level only.

Denominator considerations

- **Enrollment.** Children were required to be enrolled at least 6 months (183 days) continuously each in the prior year and in the reporting year. One data partner did not have enrollment information to assess this requirement. As a proxy, the first and last date of service for each patient within each calendar year was used, retaining only those with a difference of at least 183 days. This modification was anticipated to bias the measure score upward.
- **Attribution to practice/clinician.** To assign children to a specific practice's denominator, each child was assigned to the practice (identified by Taxpayer Identification Number (TIN)) that provided the most recent comprehensive or periodic oral evaluation during the year prior to the reporting year. Similarly, children were assigned to a specific clinician's denominator based on the clinician (identified by rendering National Provider Identifier (NPI)) who provided the most recent comprehensive or periodic oral evaluation during the year prior to the reporting year.

Numerator considerations

- To qualify for numerator inclusion, the comprehensive or periodic oral evaluation in the reporting year is with the same practice (or clinician) that provided the most recent comprehensive or periodic oral evaluation in the year prior to the reporting year.

Testing Feasibility, Reliability and Validity

Feasibility, reliability, and validity using claims data were evaluated in depth during the development of the program- and plan-level measure. The measure relies on standard data elements captured within enrollment and claims databases, and evaluations of these data elements within program- and plan-level databases demonstrated low rates of missing or invalid critical data elements. Measure reliability and validity at the program and plan level were established by validation of the critical data elements through patient record reviews.²

Current testing focused on the feasibility of calculating the measures at the practice and clinician levels within the different types of claims databases available, the ability to detect variations in performance, and identification of opportunities for improvement at the practice and clinician levels. The data partners implemented the measures within their systems using detailed specifications developed by the Dental Quality Alliance. They submitted the measure denominators and numerators. The data partners also provided feedback on the specifications, which were refined during testing to improve accuracy and clarity.

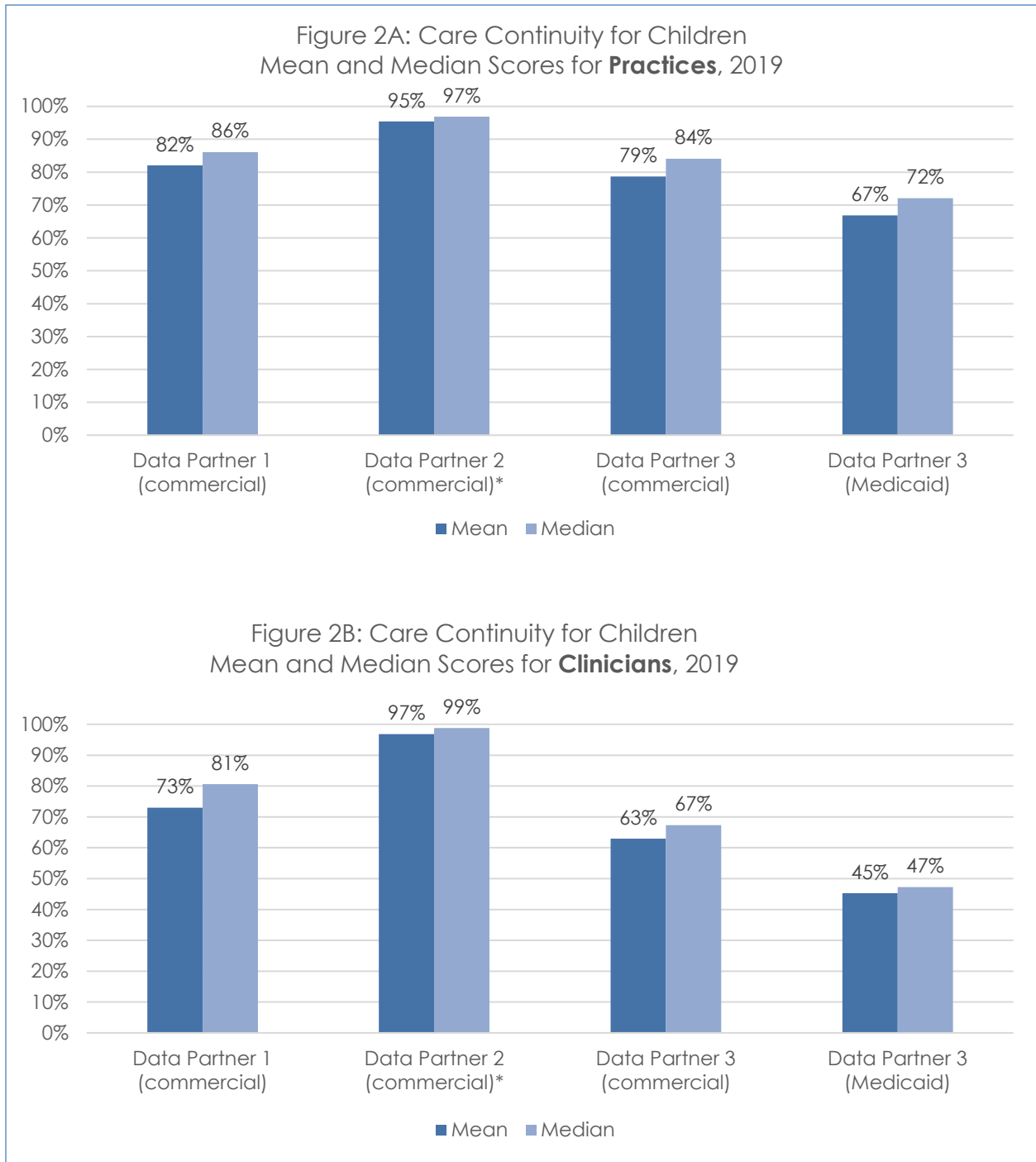
A key consideration when implementing claims-based measures at the practice and clinician levels is whether there is sufficient denominator size for reliable measurement. Prior practice level measurement assessment by the DQA identified at least 100 patients in the denominator to have reliable practice-level measurement when using claims data for dental quality measures.¹ Reliability at a denominator of 100 patients was re-confirmed during the current testing project. Reliability estimates were calculated as the ratio of the practice-to-practice variance divided by the sum of the practice-to-practice variance plus the measurement variance using the statistical methodology described in Adams (2009) and Scholle et al. (2008).^{3,4}

Results

Measure Scores

Figure 2 shows the mean and median scores for each data partner across practices (Figure 2A) and clinicians (Figure 2B). Table 2 provides more detailed measure score statistics for each of the data partners at the practice and clinician levels. Histograms that depict the distribution of scores and the extent of variation in performance are contained in [Appendix 2](#).

Figure 2. Mean and Median Measure Scores at the Practice and Clinician Levels by Data Partner



***Note:** Data Partner 2 did not have enrollment information available. As a proxy, it required two dates of service within each year at least 183 days apart. This modification was expected to inflate the measure scores.

Table 2. Practice and Clinician Measure Score Statistics

PRACTICE	Data Partner 1, Commercial (n=3,892 practices)	Data Partner 2, Commercial* (n=100 practices)	Data Partner 3, Commercial (n=608 practices)	Data Partner 3, Medicaid (n=4,457 practices)
Mean	0.82	0.95	0.79	0.67
Standard deviation	0.15	0.09	0.16	0.19
Median	0.86	0.97	0.84	0.72
Minimum	0.00	0.18	0.00	0.00
Maximum	0.99	1.00	0.97	0.97
10th percentile	0.69	0.91	0.58	0.41
25th percentile	0.79	0.94	0.73	0.59
75th percentile	0.90	0.99	0.90	0.80
90th percentile	0.93	1.00	0.92	0.85
Interquartile range	0.11	0.05	0.16	0.21
CLINICIAN	Data Partner 1, Commercial (n=3,816 clinicians)	Data Partner 2, Commercial* (n=100 clinicians)	Data Partner 3, Commercial (n=492 clinicians)	Data Partner 3, Medicaid (n=6,486 clinicians)
Mean	0.73	0.97	0.63	0.45
Standard deviation	0.21	0.06	0.24	0.26
Median	0.81	0.99	0.67	0.47
Minimum	0.00	0.65	0.00	0.00
Maximum	0.99	1.00	0.97	0.97
10th percentile	0.41	0.93	0.29	0.06
25th percentile	0.64	0.97	0.45	0.23
75th percentile	0.88	1.00	0.84	0.68
90th percentile	0.92	1.00	0.90	0.79
Interquartile range	0.24	0.03	0.39	0.44

*Note: Data Partner 2 did not have enrollment information available. As a proxy, it required two dates of service within each year at least 183 days apart. This modification was expected to inflate the measure scores.

Practices and Clinicians Represented in Commercial Claims Data

For practices represented in commercial claims data, the mean and median measure scores for Data Partner 1 practices were 82% and 86%, respectively (Figure 2). The interquartile range (difference between the 25th and 75th percentiles) was 11 percentage points (Table 2), indicating some measure dispersion, or variation in performance, among practices. The mean and median measure scores at the clinician level were somewhat lower at 73% and 81%, respectively. The interquartile range was 24 percentage points, indicating greater variation in performance at the clinician level compared with the practice level. The mean and median scores for Data Partner 3 were similar to Data Partner 1 at 79% and 84%, respectively. Also, consistent with Data Partner 1, the mean and median scores at the clinician level were lower than those at the practice level, and the interquartile range was greater for clinicians than for practices.

As noted above, Data Partner 2 did not have enrollment information available. As a proxy, it required two dates of service within each year at least 183 days apart. This modification was expected to inflate the measure scores given that children in the denominator would have at least two dental visits during the year. As expected, the reported measure scores were quite high: practice-level mean and median measure scores were 95% and 97%, respectively, and clinician-level mean and median scores were 97% and 99%, respectively.

Practices and Clinicians Represented in Medicaid Claims

Data Partner 3 also provided data for practices and clinicians represented in Medicaid claims data. The mean and median scores at both the practice (67% mean score) and clinician (45% mean score) levels were lower than those for practices represented in commercial claims. In addition, the interquartile range was 21 percentage points at the practice level and 44 percentage points at the clinician level, indicating greater variation in performance among practices and clinicians represented in Medicaid claims data compared with commercial.

Reliability Assessments

Reliability estimates can range from 0 to 1, where 0 indicates that all variability is due to measurement error and 1 indicates that all variability reflects real differences in performance. A reliability of 0.70 or greater is considered acceptable for drawing conclusions about groups, and reliability of 0.90 or greater is recommended for drawing conclusions about individuals.³ For practices with at least 100 patients in the denominator represented in commercial claims, reliability was 0.95 for both Data Partner 1 and Data Partner 3. For practices with at least 100 patients in the denominator represented in Medicaid claims, reliability was 0.96 for Data Partner 3. Thus, reliability of the measure scores for practices with at least 100 patients in the denominator was confirmed.

Workgroup Determinations

Performance gap and opportunity for improvement

The workgroup found the measure scores for Data Partner 1 and Data Partner 3 to be consistent with expectations based on the collective expert opinion. The workgroup noted that the commercial plan databases reflect privately insured patients, for whom we would expect to see the highest performance. Even among these practices, there was variation in performance and opportunities for improvement.

Measure score results for practices represented in Medicaid claims data were lower than those represented in commercial data with approximately 1/3 of patients, on average, not returning to the same practice for a comprehensive or periodic oral evaluation. In addition, there was greater variation in performance among practices represented in Medicaid claims compared with those represented in commercial claims. Thus, there are opportunities both for improving performance overall as well as for identifying and focusing improvement efforts on lower-performing practices.

Importance of data element completeness and following specifications

Data Partner 2 did not have access to enrollment information to assess whether children were enrolled at least 6 months in each year. It instead used a proxy of looking for two dates of service at least six months apart. However, this had the effect of biasing the measure scores upward because all children in the denominator necessarily had at least two dental visits in each year. **The workgroup notes that this finding illustrates the importance of having all critical data elements required for the measure and following the measure specifications as written in order to have reliable and valid measurement.**

Practice- and clinician- level reporting

The workgroup reviewed measure scores calculated at both the practice and clinician levels. The measure score data demonstrated significantly greater measure variation at the clinician level and lower overall performance compared with the practice level, suggesting that patients who have an oral evaluation with the same practice in two consecutive years are less likely to have an oral evaluation with the same clinician within that practice in two consecutive years.

The workgroup determined that Care Continuity for Children should be reported only at the practice level. Although the workgroup recognized value in patients seeing the same clinician, there also were concerns about unintended consequences such as hindering the promotion of team-based care within a practice. The workgroup also noted there could be various reasons why a patient may see a different clinician within the same practice that may be out of an

individual clinician's control. Consequently, there were concerns about use of this measure at the clinician level in such applications as ratings programs, incentive-based programs, and value-based payment programs. The workgroup noted that guidance for reporting at the clinician level could be offered to entities that wish to use clinician-level measurement for internal quality improvement purposes.

Limitations of claims-based practice and clinician level reporting

Practice and clinician level measurement using claims data within a payer's or third-party claims aggregator's database often represents a subset of a practice's or clinician's patients.

Consequently, **when reporting measure scores using such claims data, it should be recognized that the payer subset of the practice's or clinician's patients may not reflect the overall performance of the practice or clinician, particularly when the payer covers a small percentage of the practice's or clinician's patients.**

Workgroup Conclusions

The Workgroup determined that the measure *Care Continuity for Children* is a feasible, reliable, and valid measure that can be used to identify performance gaps, detect variations in performance between practices, and guide improvement efforts. The workgroup recommends this measure for **practice-level reporting**.

References

1. Dental Quality Alliance. Guidance on Practice-Based Measures Implementation. Accessed May 2, 2024, https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/dqa/educational-resources/2018_pbm_guidance_implementation_final20181108t102945.pdf?rev=289b0ec96aaf4e6184b068cddbdf59f5&hash=4555254C42EAA4FDABBD94D6B87B58AC
2. Herndon JB, Crall JJ, Aravamudhan K, et al. Developing and testing pediatric oral healthcare quality measures. *J Public Health Dent*. 2015;75(3):191-201. doi:10.1111/jphd.12087
3. Adams J. The Reliability of Provider Profiling: A Tutorial. RAND Corporation. Accessed April 29, 2016, http://www.rand.org/pubs/technical_reports/TR653.html
4. Scholle SH, Roski J, Adams JL, et al. Benchmarking physician performance: reliability of individual and composite measures. *Am J Manag Care*. 2008;14(12):833-8.

Appendix 1: Measure Specifications

DQA Practice/Clinician Level Measure Specifications: Claims-Based Measures

CARE CONTINUITY FOR CHILDREN

DRAFT DQA Measure Specification Sheet

Description: Percentage of pediatric patients enrolled in two consecutive years who received a comprehensive or periodic oral evaluation with the practice during the year prior to the reporting year and returned to the same practice to receive a comprehensive or periodic oral evaluation during the reporting year

Numerator: Subset of children in the denominator who returned to the same practice to receive a comprehensive or periodic oral evaluation during the reporting year

Denominator: Unduplicated number of pediatric patients enrolled in two consecutive years who received a comprehensive or periodic oral evaluation with the practice during the year prior to the reporting year

Rate: NUM/DEN

Applicable reporting levels: Practice only

Guiding DQA Program-Plan Level Measure Specification: [2024 DQA Pediatric Care Continuity Measure](#)

Age: Children ≥ 1 and < 19 years.

Measuring Entity: Payer or third party with payer claims data.

Data Sources: Enrollment and claims data; two consecutive years. When using claims data to determine service receipt, include both paid and unpaid claims (including pending, suspended, and denied claims).

Months to Days Conversion: To accommodate months ranging from 28 to 31 days, the following standards apply:

Years	Months	Days
	1 month	30 days
	2 months	61 days
	3 months	91 days
	4 months	122 days
	5 months	152 days
	6 months	183 days
	7 months	213 days

	11 months	334 days
1 year	12 months	365 days
	13 months	395 days
3 years	36 months	1095 days
5 years	60 months	1826 days

Level of Reporting: Practice only

- **Practice** (identified by TIN)

Note: When a single TIN is used across multiple locations within a group practice, the resulting measure score will reflect a single weighted average score across locations. Conversely, if one group practice uses individual TINs for each of its locations, then the measure will result in a score specific to each location. When reporting measure scores, it is helpful to note whether TINs reflect multiple locations or single locations. Such contextual information will be useful in interpreting scores when used for comparisons.

MEASURE CALCULATION

DENOMINATOR

1. Check if the subject meets age criteria at the last day of the reporting year:
 - a. If child is ≥ 1 and < 19 , then proceed to next step.
 - b. If age criteria are not met or there are missing or invalid field codes (e.g., date of birth), then STOP processing. This subject is not included in the denominator.
2. Check if subject has an oral evaluation in the year prior to the beginning of the reporting year:
 - a. If [SERVICE CODE] = [D0120 OR D0145 OR D0150] **AND**
 - b. If [ORAL EVAL DATE OF SERVICE] is in the year prior to the reporting year (i.e., > 12 months **AND** ≤ 24 months prior to end of reporting year), then proceed to next step.
 - c. If either SERVICE CODE or DATE OF SERVICE is not met, or there are missing or invalid field codes (e.g., date of service), then STOP processing. This subject is not included in the denominator.
3. Check if subject is enrolled at least 6 months continuously (183 days) in each the reporting year and the year prior to the reporting year:
 - a. If subject is enrolled at least 183 days continuously in the year prior to the reporting year

AND

 - b. If subject is enrolled at least 183 days continuously in the reporting year, then proceed to next step.
 - c. If subject does not meet enrollment criteria in (a) or (b), then STOP processing. This subject is not included in the denominator.

4. Attribute subjects to **practice**:

- a. Select most recent [SERVICE CODE] = [D0120 OR D0145 OR D0150] during the year prior to the reporting year (i.e., >12 months AND <=24 months prior to end of reporting year).
- b. Assign subject to the *unique TIN* associated with that service.
- c. Include in **Denominator 1 for the practice**.

Note: In this step, all **claims** with missing or invalid CDT CODE, missing or invalid billing provider TIN should not be included in the denominator.

YOU NOW HAVE THE PRACTICE-SPECIFIC DENOMINATOR (DEN)

NUMERATOR

5. Among the subjects in the practice denominator: check if subject received a periodic or comprehensive oral evaluation during the reporting year from the same practice as in the prior year.

- a. If [SERVICE CODE] = [D0120 OR D0145 OR D0150]

AND

- b. If [ORAL EVAL DATE OF SERVICE] during the reporting year (i.e., <=365 days prior to and including end of reporting year), then proceed to next step.
- c. If either SERVICE CODE or DATE OF SERVICE is not met, or there are missing or invalid field codes (e.g., date of service), then STOP processing. This subject is not included in the denominator.

YOU NOW HAVE THE PRACTICE-SPECIFIC NUMERATOR (NUM)

6. Report:

- a. Number of patients in practice-specific denominator
- b. Number of patients in practice-specific numerator
- c. Measure rate specific to each practice (NUM/DEN)

Appendix 2: Practice and Clinician Level Measure Score Histograms

This appendix visually represents the distribution of the measure scores for each data partner at the practice and clinician levels using histograms. The horizontal axis is the same in the figures and represents the measure score ranges in 10% increments. The vertical axis is the same in the figures and represents the number of practices (or clinicians) falling within each measure score range. Thus, the first column in each chart shows the number and percent of practices with rates of 10% or less, the second column shows the number and percent of practices with rates in the range 10%-20%, and so forth. To illustrate the interpretation, 73% of Data Partner 1 practices had rates of 80% or greater (47% + 26%), and 27% had rates less than 80% (Figure A2-1).

Practice-Level Histograms

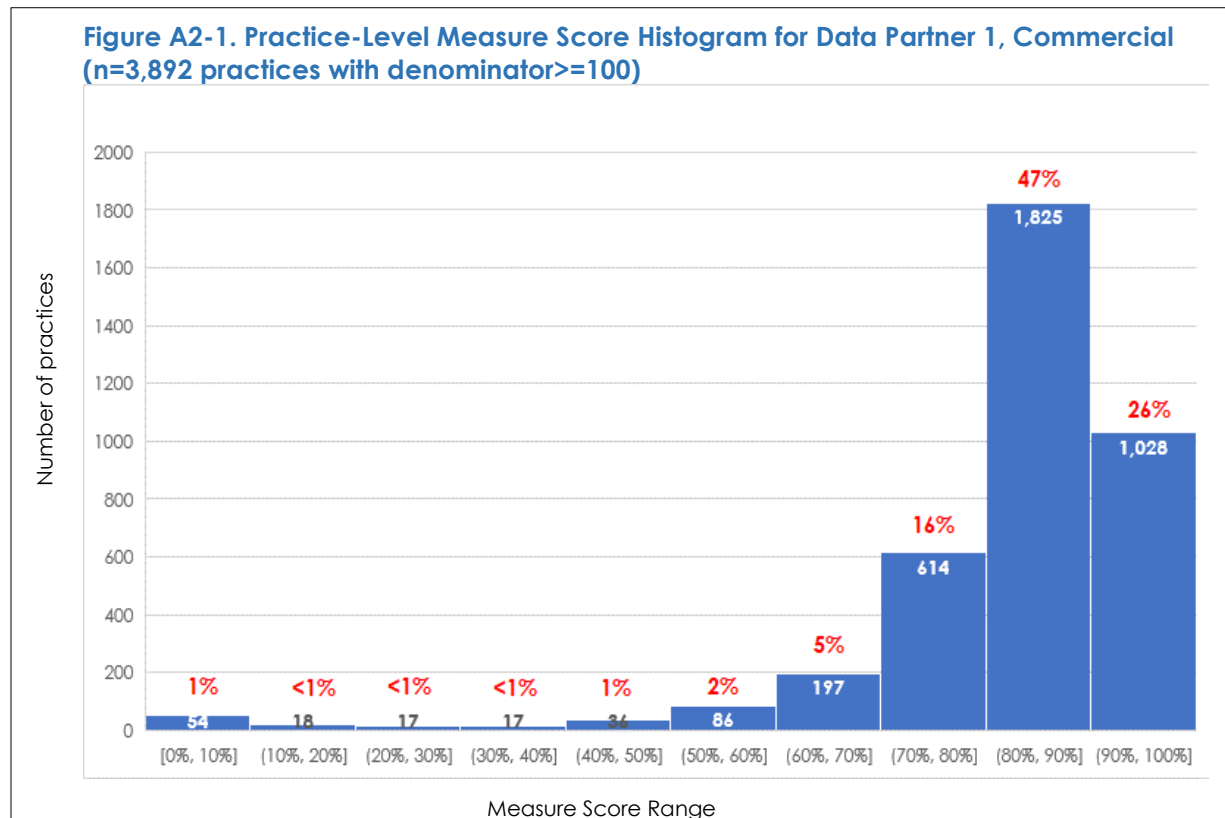
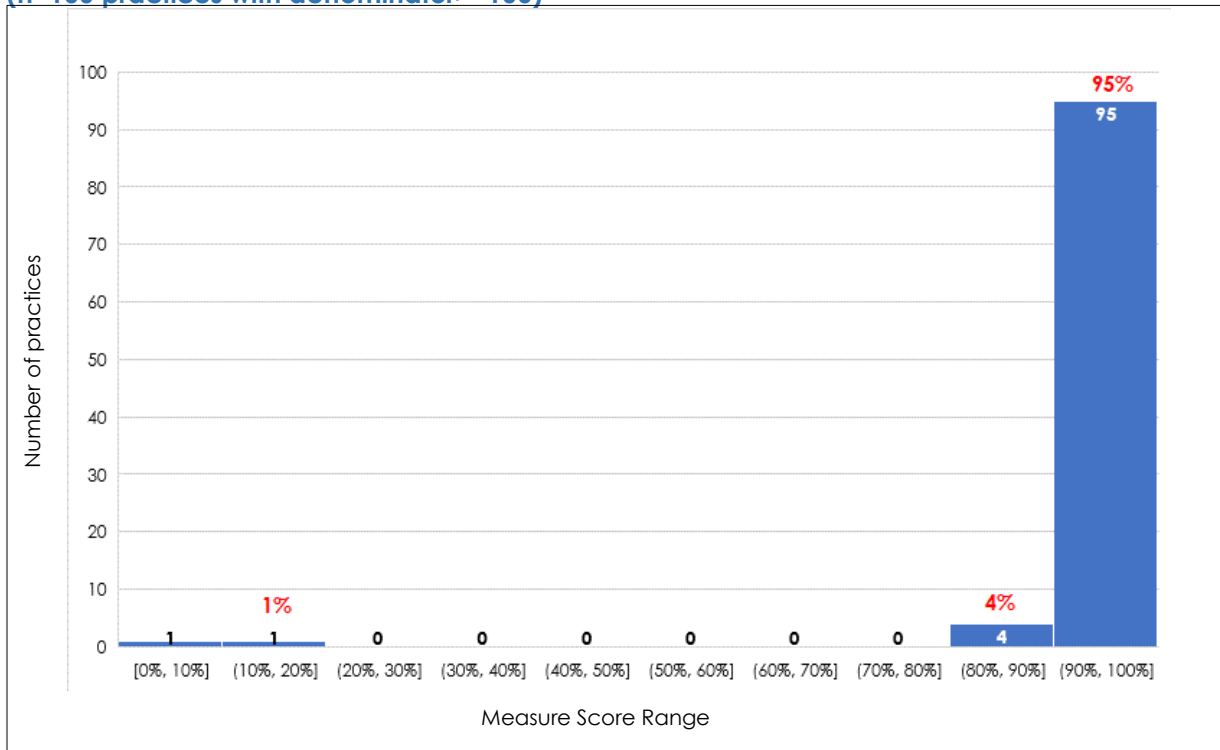


Figure A2-2. Practice-Level Measure Score Histogram for Data Partner 2, Commercial (n=100 practices with denominator>=100)



Note: Data Partner 2 did not have enrollment information available. As a proxy, it required two dates of service within each year at least 183 days apart. This modification was expected to inflate the measure scores.

Figure A2-3. Practice-Level Measure Score Histogram for Data Partner 3, Commercial (n=608 practices with denominator>=100)

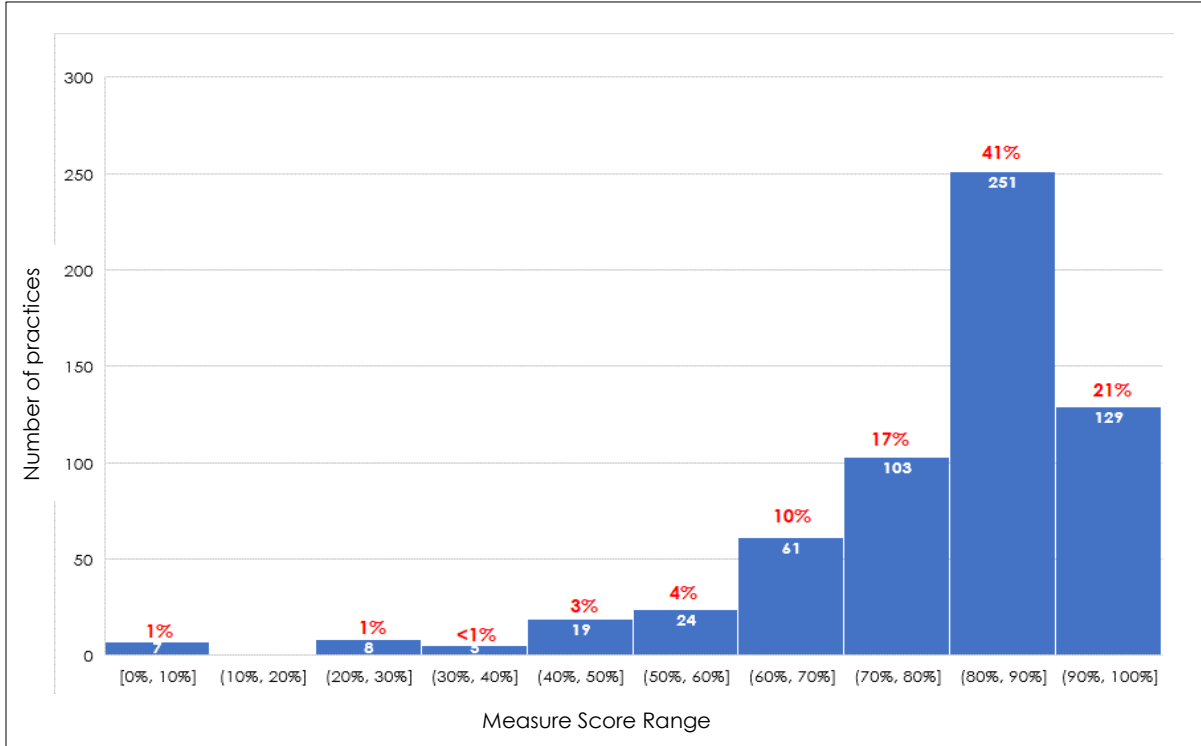
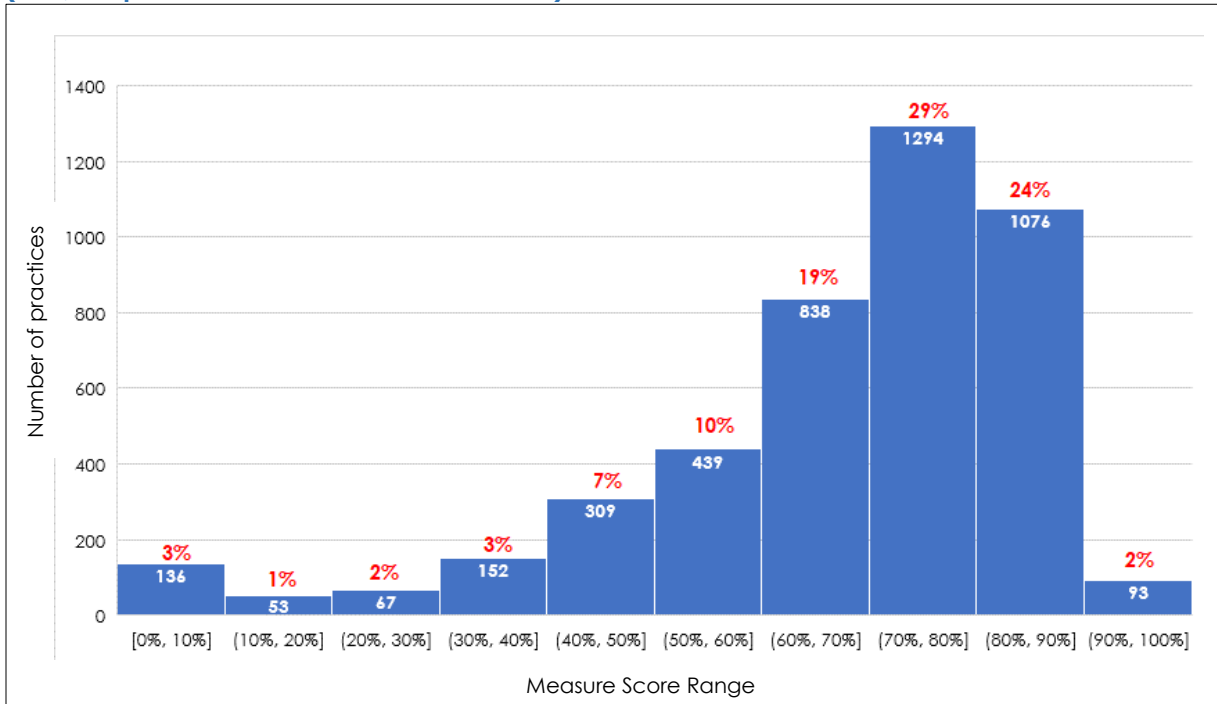


Figure A2-4. Practice-Level Measure Score Histogram for Data Partner 3, Medicaid (n=4,457 practices with denominator>=100)



Clinician-Level Histograms

Figure A2-5. Clinician-Level Measure Score Histogram for Data Partner 1, Commercial (n=3,816 clinicians with denominator>=100)

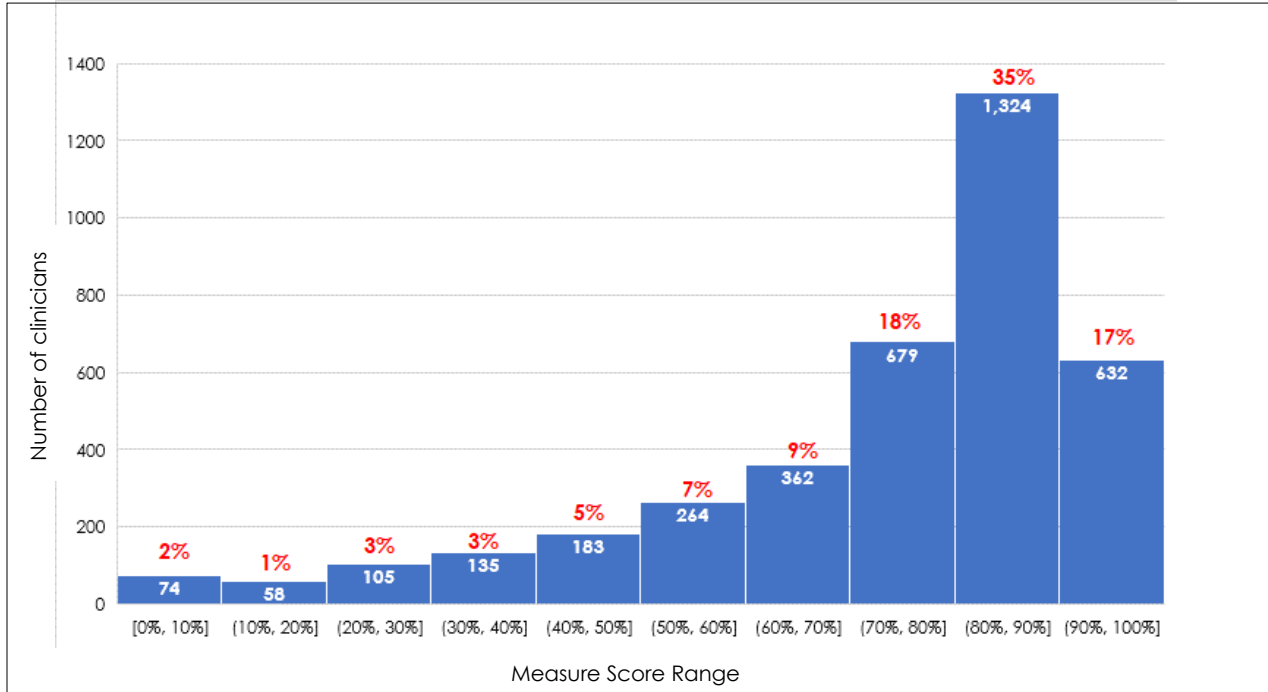
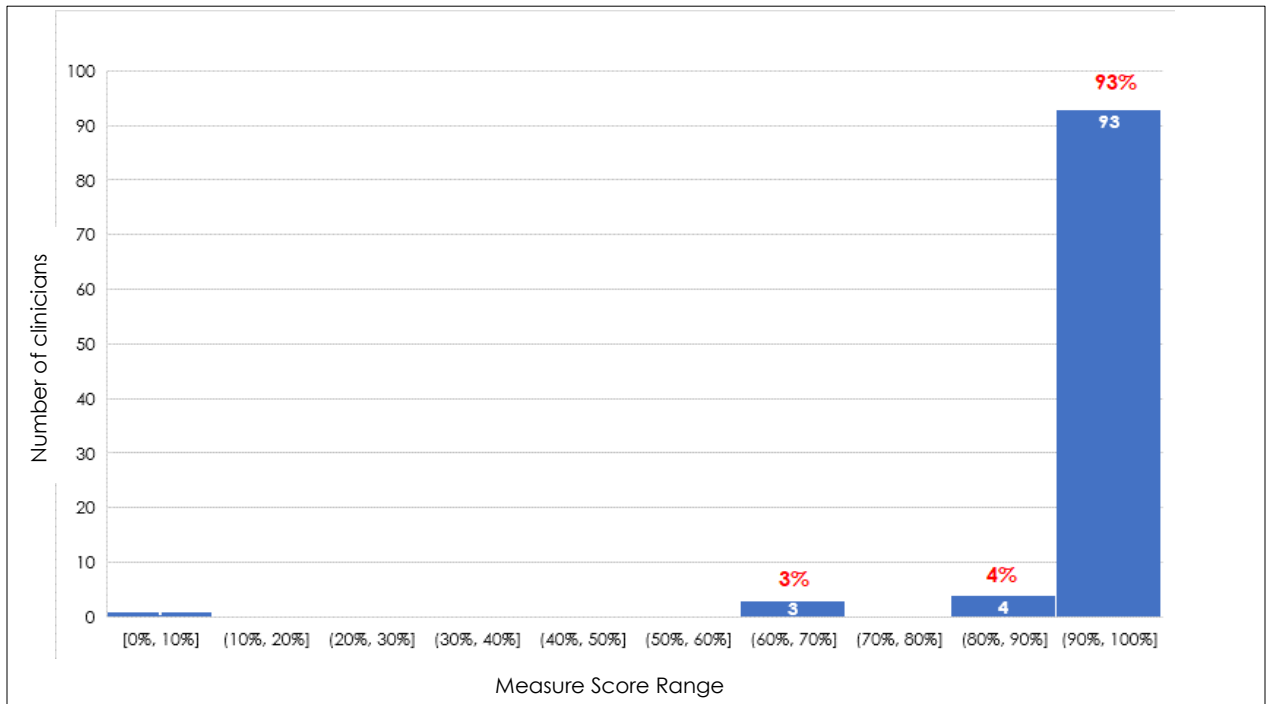


Figure A2-6. Clinician-Level Measure Score Histogram for Data Partner 2, Commercial (n=100 clinicians with denominator>=100)



Note: Data Partner 2 did not have enrollment information available. As a proxy, it required two dates of service within each year at least 183 days apart. This modification was expected to inflate the measure scores.

Figure A2-7. Clinician-Level Measure Score Histogram for Data Partner 3, Commercial (n=492 clinicians with denominator>=100)

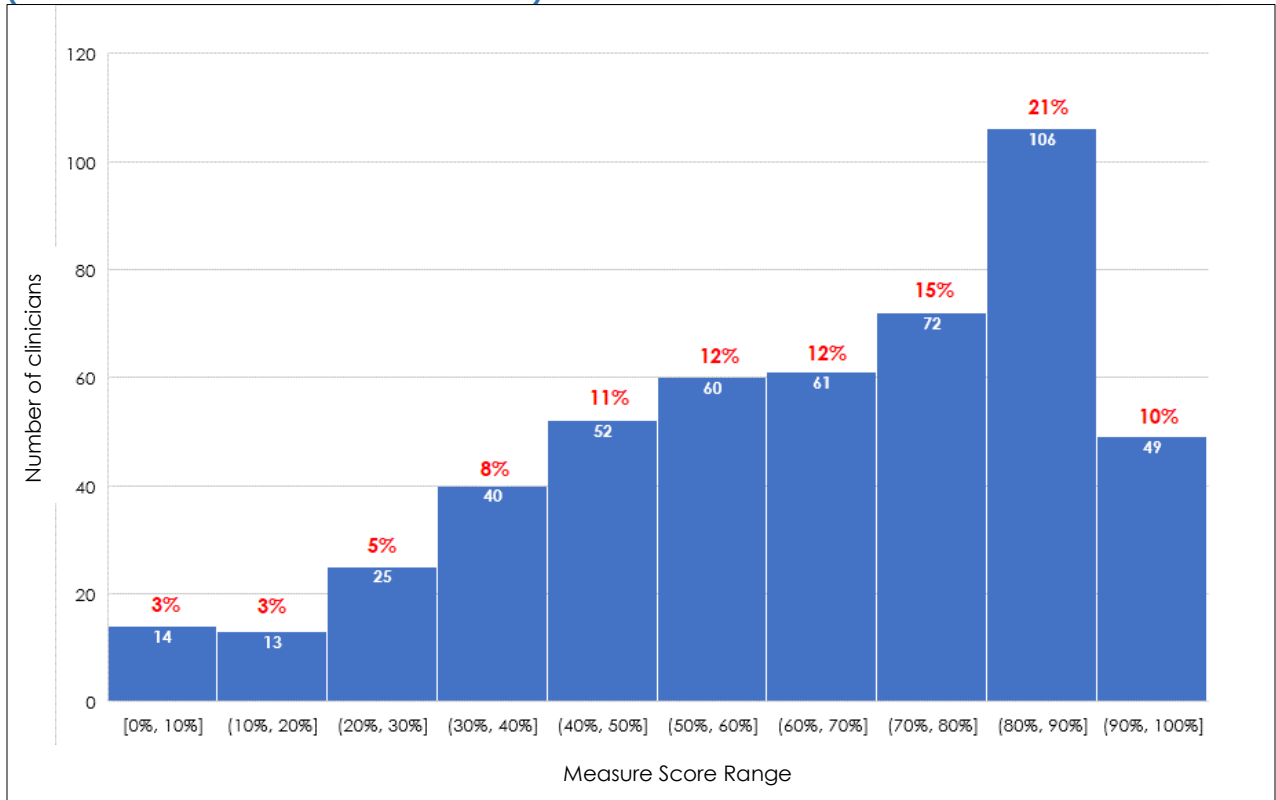


Figure A2-8. Clinician-Level Measure Score Histogram for Data Partner 3, Medicaid (n=6,486 clinicians with denominator>=100)

