



**BlueCross BlueShield** of Oklahoma



Physician Efficiency, Appropriateness, & Quality<sup>SM</sup>

PEAQ<sup>SM</sup>

Program Methodology

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# Overview of Physician Efficiency, Appropriateness, & Quality Program

At Blue Cross and Blue Shield of Oklahoma, we take the quality and affordability of the care provided to our members very seriously. One of our core objectives is to maximize and improve the **value of care** our members receive.

To further this commitment, our PEAQ program evaluates physician performance in a transparent and multidimensional way. A goal of PEAQ is to work with the physician community to maximize physician efficiency, appropriateness, and quality of care. We are developing the PEAQ program with input from physicians currently in practice.

The guiding principles of our PEAQ program include:

- **Metrics** – Selecting meaningful measures of health care efficiency, appropriateness, and quality
- **Collaboration** – Sharing with physicians to ensure measurement transparency and clinical relevance
- **Insights** – Providing physician-level insights on improving overall patient care
- **Transparency** – Equipping physicians with meaningful information about efficiency, appropriateness, and quality
- **Continuous Improvement** – Reevaluating our methodology and measures regularly based on feedback and recent clinical evidence

## Composite Results

The PEAQ composite result is an overall look at the provider's Efficiency, Appropriateness, and Quality performance during the reporting period. A composite result allows BCBSOK to fairly compare providers within the same peer group who may have been scored in different PEAQ components. The results are included in Provider Performance Insights reports.

BCBSOK uses a weighted average to calculate the composite result based on which PEAQ components the provider is scored on during the reporting period. The calculated results are normalized between 0 and 10. Extreme outliers are removed.

## Composite Scenario #1 – Efficiency, Quality, Appropriateness

Efficiency Result (60%) + Quality Result (20%) + Appropriateness (20%) = Composite Result

## Composite Scenario #2 – Efficiency, Quality

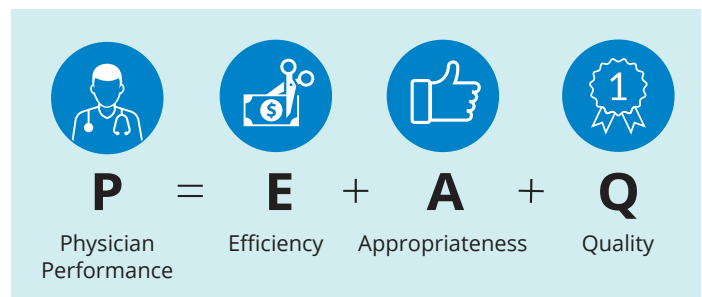
Efficiency Result (60%) + Quality Result (40%) = Composite Result

## Composite Scenario #3 – Efficiency, Appropriateness

Efficiency Result (60%) + Appropriateness (40%) = Composite Result

## Composite Scenario #4 – Efficiency Only

Efficiency Result (100%) = Composite Result



## Summary Overview

The three key components of our PEAQ program are described below.

### Efficiency

To evaluate physicians for cost efficiency, we use BCBSOK's proprietary efficiency model. This is a comprehensive data analysis and reporting tool with financial and utilization metrics. It allows users to identify **potential efficiency improvements**.

Our efficiency program compares physicians and provider groups to their Oklahoma peers in the same working specialty. It drills down within the episode of care level in order to compare physicians and provider groups with similar patients at similar disease stages. The model applies comorbidity and demographic adjustments to account for other factors influencing care delivery outcomes.

## Appropriateness

The appropriateness measures reflect whether care provided is evidence-based and/or meets generally accepted standards of practice based on **peer-reviewed evidence and clinical best practices**. Motive Medical Intelligence (Practicing Wisely Solutions™) produces the methodology and statistically valid results for the PEAQ program. Expert physicians review the results to ensure clinical appropriateness.

## Quality

Quality measures from Motive Medical Intelligence focus on the individual physician's role within the care team in managing conditions, performing procedures and following up with recommended care. Through claims evaluation, we gain insights into how physician practice patterns align with the **clinical practice guideline recommendations** from the major specialty and subspecialty societies.

## Current Specialties Measured

The PEAQ program measures physicians across primary care, medical, and surgical specialties where there is sufficient share of practice. Measured specialties are listed below:

Medical	Surgical	Primary Care
Allergy-Immunology <sup>1</sup>	Cardiothoracic Surgery	Family Practice
Cardiology	Colon-Rectal Surgery <sup>1</sup>	General Practice <sup>1</sup>
Cardiac Electrophysiology <sup>1</sup>	General Surgery	Geriatric Medicine <sup>1</sup>
Dermatology <sup>1</sup>	Hand Surgery <sup>1</sup>	Internal Medicine
Endocrinology	Neurological Surgery <sup>1</sup>	Pediatrics
Gastroenterology	Ophthalmology	Sleep Medicine <sup>1</sup>
Infectious Diseases <sup>1</sup>	Orthopedic Surgery	Sports Medicine <sup>1</sup>
Nephrology	Otolaryngology	
Neurology	Pediatric Surgery <sup>1</sup>	
Obstetrics and Gynecology	Pediatric Urology <sup>1</sup>	
Oncology <sup>1</sup>	Plastic Surgery <sup>1</sup>	
Pediatric Cardiology <sup>1</sup>	Surgery of the Spine <sup>1</sup>	
Pediatric Endocrinology <sup>1</sup>	Urology	
Pediatric Hematology-Oncology <sup>1</sup>	Vascular Surgery	
Pediatric Nephrology <sup>1</sup>		
Pediatric Pulmonology <sup>1</sup>		
Pediatric Rheumatology <sup>1</sup>		
Physical Medicine & Rehabilitation <sup>1</sup>		
Pulmonary Disease		
Rheumatology		

1. These specialties are evaluated only through the Efficiency component.

## Continuous Improvement

We continually reevaluate our methodology for accuracy and statistical rigor in each of the three components of the PEAQ program. Improvements are made based on feedback and future development. We notify physicians of any major methodological changes.

## Physicians Not Evaluated

For a variety of reasons, not all physicians are evaluated by the PEAQ program. These reasons may include:

- Specialty not included in current measurement
- Non-MD/DO physician
- Inadequate peer group information
- Not meeting data thresholds for credible results



## Efficiency Measurement Details

### Key Components for Fair Comparisons

The proprietary efficiency model is an award-winning<sup>2</sup>, data-driven approach to efficiency measurement. A team of data scientists and clinicians at BCBSOK developed it with input from physicians. The model accounts for physicians, patients and attributed benefits to ensure fair comparisons.

We use the latest **machine learning methodologies and statistical controls** to minimize outlier impact, align physicians to peer groups and remove anomalous patient episodes.

Our efficiency methodology breaks down the impact of site of service, type of service, volume of service and price of various services to determine total cost. Total costs for scoring are calculated by summing care costs across different diseases treated and networks practiced on a working specialty and state level for each provider.

2. Honoree of the 2019 Digital Edge 50 Award from IDG (the publisher of CIO magazine) and one of Drexel University LeBow College of Business' 2016 Analytics 50 honorees.

Fair Comparison Component	Description and Application
Episode Condition and Disease Stage	The efficiency model matches patients to other patients with the same clinical condition using episodes of care. Episode categories are further segmented by severity and disease stage progression and grouped as acute or chronic. Only episodes marked as complete are utilized in efficiency results.
Working Specialty	Physicians are matched to other physicians within the same Working Specialty. The WS represents a physician's specialty and/or sub-specialty and is determined using information from BCBSOK's physician demographics database as well as claims submitted by the physician. The WS may be more specific than a physician's self-declared specialty. For example, the WS may distinguish an interventional cardiologist from a non-interventional cardiologist based on claims submitted by the physician.
Contracted Network	Physicians are matched to other physicians practicing in the same network model type, such as a Preferred Provider Organization, with similarly aligned BCBSOK network products grouped to model type.
Patient Risk	The model employs the latest machine learning and predictive modeling techniques to accurately adjust for patient population differences related to comorbidities and demographics.
Pharmacy Coverage	Comparative groups are defined separately depending on whether or not patients are enrolled in a prescription program with a Pharmacy Benefits Manager that reports financial data to BCBSOK. Patients in PBM programs that do not include such prescription financial data are evaluated on medical cost only.
Outliers	Outlier patient episodes and their associated costs can positively or negatively skew physicians' results. In order to control for such anomalous data, episodes' total allowed costs are truncated for each episode group and disease stage combination. In addition, machine learning methods identify remaining outliers in further analysis.

For physicians who are unscored due to minimum thresholds, PEAQ may score the physician with a combination of their data and the data from other physicians within their associated medical group(s).



## Methodology

A physician's overall efficiency is a weighted average of efficiencies across their episodes of care. Our model combines all related claims to form an episode of care to identify treatment teams.

Episodes are **diagnosis-based** rather than procedure-based. For example, if a patient had a procedure, the episode of care would include all related care provided before and after the procedure, across working specialties. This model captures the impact of site of service, type of service, volume of services and price points for each service. It includes all types of services, such as inpatient, outpatient, professional, ancillary and pharmacy.

The total cost for each of a physician's episodes of care is compared to the total expected cost of the episode. This expected cost is an average across episodes of the same type / stage, treated by the same type of physician, in the same area and network. The expected cost of the episode is also adjusted for patient comorbidities and demographic risks.

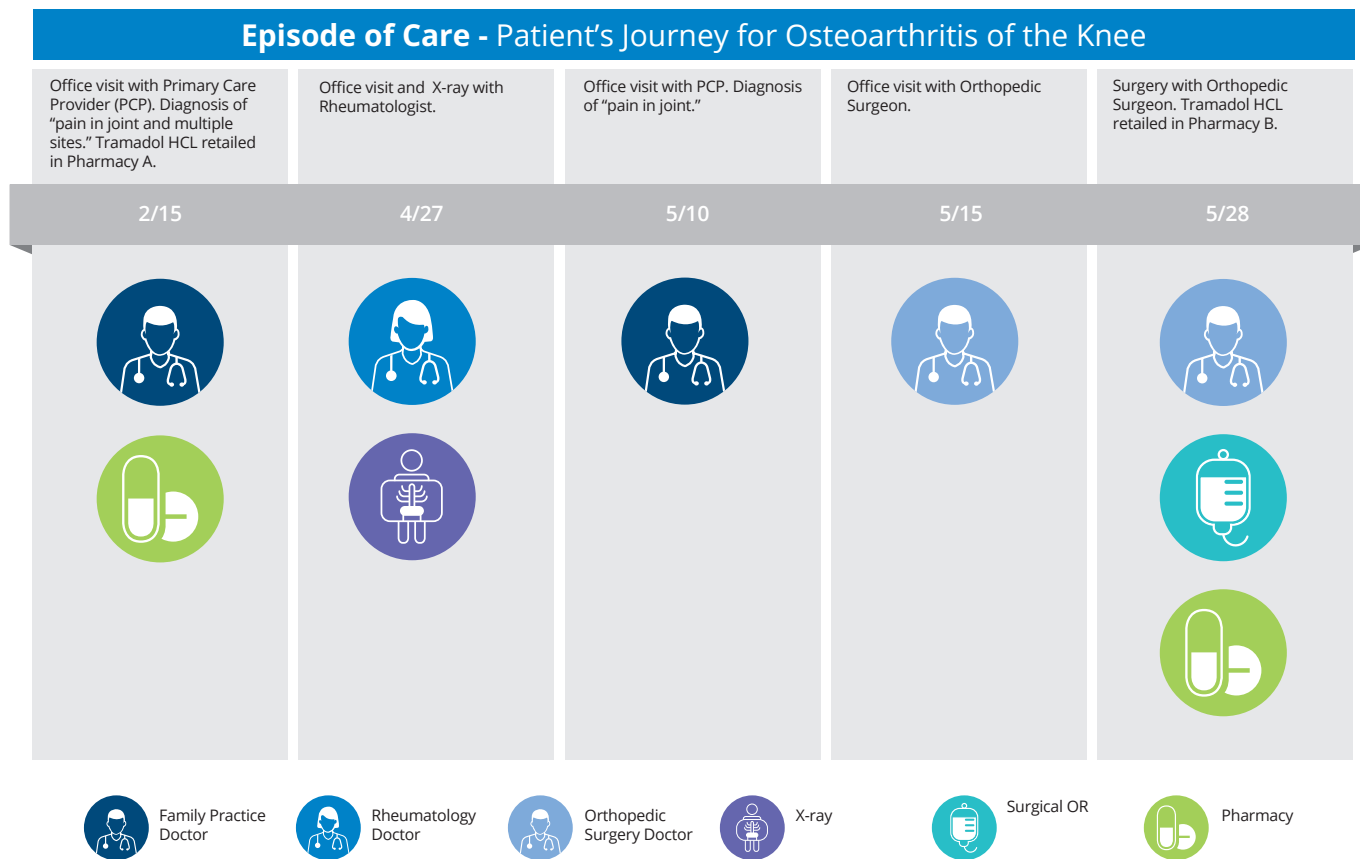
A physician's episode measurement result is the ratio of the episode's actual cost to its expected cost.

**A lower ratio provides a more favorable cost-efficiency result.** A physician's overall efficiency is equal to the weighted average of the episode measurement results across episodes for all included networks, weighted based on the size of the episode and proportion of care provided.



## Time Period and Frequency

Our efficiency model considers episodic data during up to 24 months of incurred services. See the graphic for an example of services that are combined into a clinically coherent episode of care. The services displayed are for demonstration only. Actual episodes may include additional services based on actual care delivery.



## Minimum Thresholds for Credible Results

For a condition to be included in the efficiency measurement, the following criteria must be met:

- A minimum number of episodes treated for the condition by a physician
- A minimum number of episodes across all physicians in the same working specialty treating the condition

Only episodes that meet cost thresholds and are marked as complete are included in the measurement.

Credibility thresholds are continually evaluated and are subject to change.



# Appropriateness Measurement Details

Appropriateness of care is another important dimension of physician performance. Our appropriateness metrics evaluate the extent to which physicians make decisions about patient care that are **consistent with current evidence-based guidelines**. We have partnered with Motive Medical Intelligence to deliver these measures using the Practicing Wisely Solutions appropriateness of care measurement methodology. See Appendix A for a list of appropriateness of care measures for each specialty.

## Measure Details

Appropriateness of care measures physician practice patterns that have potential for patient harm and wasteful spending, and/or for which significant variations in care exist among different physicians. The purpose of evaluating appropriateness is to help physicians practice within current evidence-based guidelines. Appropriateness of care measures are determined through a systematic examination of data, evidence, and clinical opinion.

- **Data** are abstracted from claims data from BCBSOK
- Motive Medical Intelligence culls **evidence from peer-reviewed literature**, which is analyzed with quantitative bibliometrics
- **Opinion** is derived from subject matter experts who are in active clinical practice in the areas measured, and who are identified by quantitative indices of expertise

The resultant measure topics are developed with regard

for the realities of clinical practice. The measures leverage a range of better practice (ROBP) to allow for clinical variables that cannot be gleaned from claims data.

## Measure Construction

Appropriateness measure rates are formulated as numerator–denominator statements. They use a standardized denominator, exclusion, attribution, and numerator (DEAN) methodology. Each component of the DEAN methodology is subject to the data, evidence, and opinion process outlined above.

Cases meeting inclusion criteria and exclusion criteria are identified within claims datasets. Numerator–denominator measures are analyzed to identify **potentially inappropriate episodes of care**.

Cases that warrant intensive treatment are excluded. Attention instead is focused on areas of known inappropriate care based on current evidence and guided by Motive Medical Intelligence’s clinical experts. These practices avoid misrepresentation of physician performance and ensure accurate measurement of performance among peers.

Measures are attributed to the physician responsible for the care decision. Cases that cannot be definitively attributed to a physician are excluded. Several considerations are involved in proper attribution, depending on the measure:

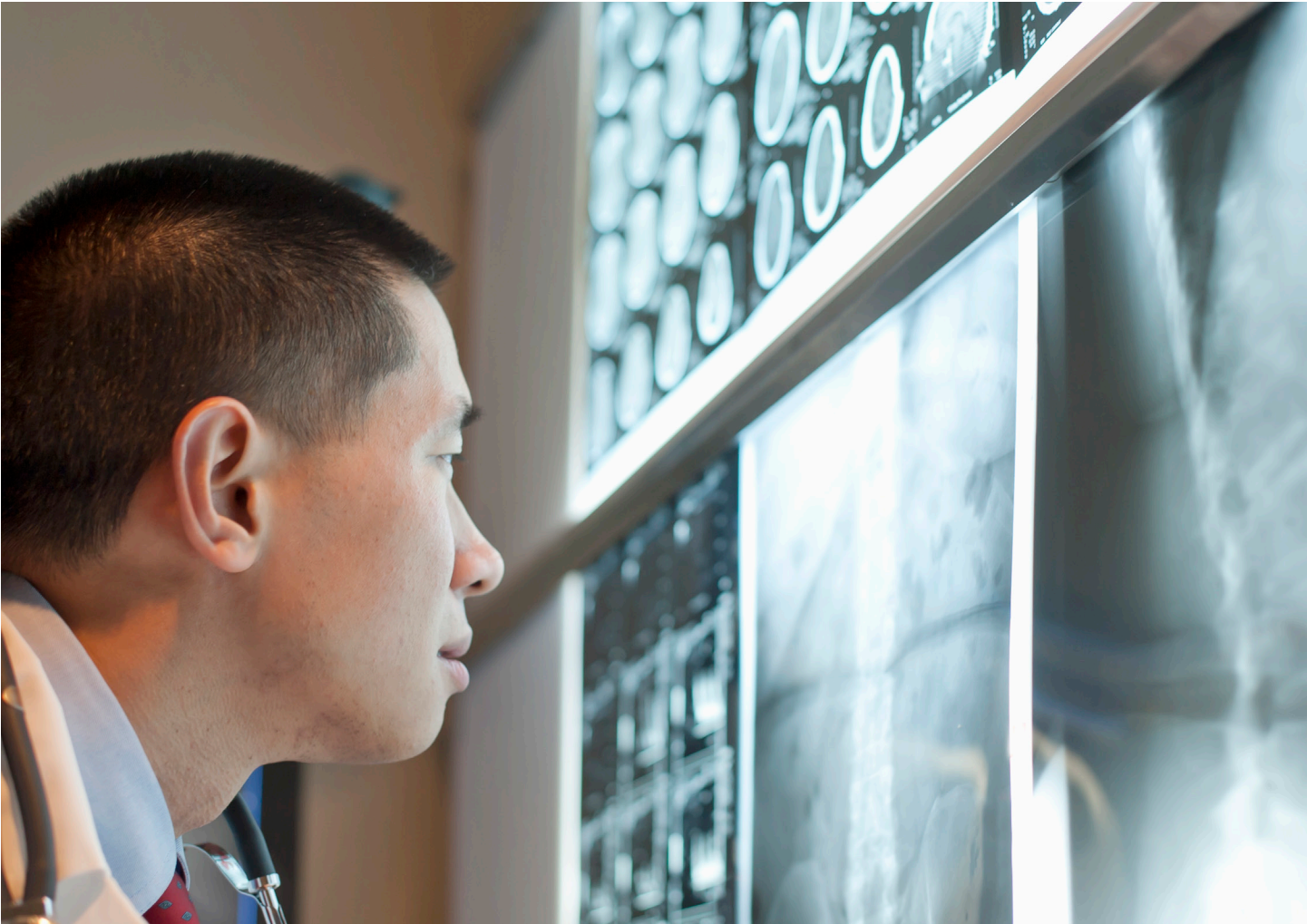
Consideration	Example
Specialty procedures are attributed only to physicians within the specialty of interest.	Inappropriate cardiac catheterization is attributed to the cardiologist rather than the primary care provider.
The timing of interventions relative to physician visits may be a factor in determining attribution.	Magnetic resonance imaging of the spine is generally attributed to the physician who saw the patient most recently. This means that the MRI may be attributed to the PCP if it was performed after the PCP visit but before the subsequent spine surgeon visit.  Conversely, the MRI may be attributed to the spine surgeon if it is performed after the spine surgeon visit.
For episodes of care in which the physician rendering the service is responsible for the decision to deliver that service (e.g., percutaneous coronary intervention with or without measurement of fractional flow reserve), the event of interest is attributed to the physician identified on the claim as the rendering National Provider Identifier.	In measuring physician performance on PCI without prior measurement of fractional flow reserve, the decision to perform PCI is attributed to the physician on the PCI procedure claim.

Consideration	Example
For evaluation and management measures, the event of interest is attributed to the presumptive ordering physician at a prior E&M visit instead of the rendering NPI. This approach is used because the physician rendering the service may be different from the physician responsible for the decision to deliver that service.	In a measure of MRI for neck pain, the MRI is presumed to have been ordered by the physician at the prior E&M visit, rather than the radiologist performing the procedure. Correct attribution in E&M measures requires additional nuance. For example, a PCP who saw a patient twice before ordering an MRI of the neck on the third visit will get credit for conservative care on the two visits that did not lead to imaging.

The model establishes an ROBP to account for variation in practice patterns based on clinical evidence and expert oversight. The ROBP also acknowledges the variation in medical coding practices, gaps in claims data, and the realities of clinical medicine. This may include regional resource limitations, reliance on tertiary referral, and individual patient factors. A minimum threshold number of cases is established to generate statistically significant analyses, while ensuring that physicians are evaluated based on the **care decisions they make regularly**.

**Attribution/Assignment**

A patient's primary care attribution is derived from their historic claims data. For a physician or specialist to be evaluated, they must meet a minimum patient volume threshold. Patients are attributed to specialists based on claims data.



## Quality Measurement Details

Our quality of care measures determine the extent to which the care physicians provide is aligned with **evidence-based clinical practice guidelines** for the management of conditions and their procedural complication rates. We have partnered with Motive Medical Intelligence to deliver these measures using the Practicing Wisely Solutions quality of care measurement methodology. See Appendix A for a list of quality measures for each specialty.

### Measure Details

The purpose of quality of care measures attributed to individual physicians is to help **ensure that our members receive consistently excellent care** over time. The measures focus on aspects of the care delivery process that are within the physician's direct control.

Quality of care measures are developed through a systematic examination of data and clinical practice guidelines and their underlying evidence, guided by clinical opinion.

- **Data** are abstracted from claims data
- **Guideline recommendations** are identified
- Motive Medical Intelligence culls the underlying **evidence from peer-reviewed literature**, which is analyzed with quantitative bibliometrics
- **Clinical opinion** is provided by subject matter experts who are in active clinical practice in the areas measured, and who are identified by quantitative indices of expertise

The resultant measure topics are developed with regard for the realities of clinical practice. They use an ROBP to allow for clinical variables that can't be gleaned from claims data, ensuring that each measure is reasonable and fair to physicians.

### Measure Construction

**Condition-based quality measures** are constructed as composites of multiple individual indicators of alignment with guideline-directed care. **Procedure-based quality measures** are constructed as individual measures of complication rates. Both condition- and procedure-based quality measures are formulated as numerator–denominator statements, using a standardized DEAN methodology.

Cases meeting inclusion criteria and exclusion criteria are identified within national claims datasets. Numerator and denominator cases are analyzed to identify opportunities to **provide care that is aligned with clinical practice guideline recommendations and high-quality clinical evidence**.

Each quality measure is attributed to the physician responsible for delivering the care. Attribution is carefully evaluated so that a given physician's scores are not biased by the actions of others, using the same attribution methodology Motive Medical Intelligence uses for its appropriateness measures. Cases that can't definitively be attributed to a physician are excluded.

### Quality Practice Score

Physicians who meet the minimum denominator thresholds for each specialty area receive a quality practice score for that specialty.

The QPS is a composite score derived from a physician's performance against all the indicators and measures, in a given specialty area, for which the physician has a sufficient case count to qualify for measurement.

The QPS is **a single score that ranks all physicians nationwide**, according to specialty. The QPS provides a summary view of the overall quality of a physician's practice patterns, with respect to evidence-based standards of care and clinical practice guidelines, as well as avoidance of procedural complications. The score can help our members identify providers who are right for them.

## Physician Review and Inquiry Process

Physicians receive information about their PEAQ designations via [Availity® Essentials](#). BCBSOK will notify physicians when results are available. If you don't yet have an Availity account, [register here](#). Registration is free.

Physicians may request additional details about their PEAQ designation. Submit requests and questions about reports to [PEAQ\\_inquiries@bcbsok.com](mailto:PEAQ_inquiries@bcbsok.com).

## Comments and Feedback

Comments and feedback are welcome. Submit them to your BCBSOK Network Representative or email [PEAQ\\_inquiries@bcbsok.com](mailto:PEAQ_inquiries@bcbsok.com).

## Appendix A: Measures

### Set 1: Quality Measures

Specialty	Description
Cardiology	Measures in the Cardiology domain evaluate the alignment of cardiovascular disease physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for Thoracic Surgery, American College of Cardiology Foundation, American College of Physicians, Heart Rhythm Society, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, Society for Clinical Vascular Surgery, Society of Thoracic Surgeons, and Surgical Infection Society; 2) Clinical guidance from the Centers for Disease Control and Prevention; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Cardiothoracic Surgery	Measures in the Cardiothoracic Surgery domain evaluate the alignment of cardiothoracic surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for Thoracic Surgery, American Association of Cardiovascular and Pulmonary Rehabilitation, American Board of Internal Medicine Foundation, American College of Cardiology, American College of Cardiology Foundation, American College of Radiology, American Society of Anesthesiologists, American Society of Echocardiography, Council on Clinical Cardiology, National Comprehensive Cancer Network, Society of Cardiovascular Anesthesiologists, Society of Thoracic Surgeons, and Surgical Infection Society; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Endocrinology	Measures in the Endocrinology domain evaluate the alignment of endocrinology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association of Endocrine Surgeons, American Board of Internal Medicine Foundation, American Diabetes Association, American Heart Association, American Hepato-Pancreato-Biliary Association, American Society for Metabolic and Bariatric Surgery, American Society of Transplant Surgeons, CDC, Endocrine Society, Kidney Disease: Improving Global Outcomes, Surgical Infection Society, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.



Specialty	Description
Family Medicine, Internal Medicine	Measures in the Family Medicine and Internal Medicine domains evaluate the alignment of primary care physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from Alzheimer's Association, American Academy of Neurology, American Academy of Ophthalmology, American Association of Clinical Endocrinologists, American Board of Internal Medicine Foundation, American College of Cardiology, American College of Physicians, American College of Radiology, American Diabetes Association, American Geriatrics Society, American Heart Association, American Society of Clinical Oncology, American Society of Nephrology, American Stroke Association, American Thoracic Society, CDC, Centers for Medicare & Medicaid Services, Global Initiative for Asthma, Infectious Diseases Society of America, Kidney Disease: Improving Global Outcomes, National Committee for Quality Assurance, U.S. Food and Drug Administration, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Gastroenterology	Measures in the Gastroenterology domain evaluate the alignment of gastroenterology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for the Study of Liver Diseases, American Board of Internal Medicine Foundation, American College of Gastroenterology, American Gastroenterological Association, American Society for Gastrointestinal Endoscopy, American Society for Metabolic and Bariatric Surgery, American Society of Colon and Rectal Surgeons, Society of American Gastrointestinal and Endoscopic Surgeons, Surgical Infection Society, and U.S. Multi-Society Task Force on Colorectal Cancer; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
General Surgery	Measures in the Surgery domain evaluate the alignment of surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American College of Radiology, American Heart Association, American Society for Metabolic and Bariatric Surgery, American Society of Breast Surgeons, American Society of Clinical Oncology, American Society of Colon and Rectal Surgeons, European Association for Endoscopic Surgery, Society of American Gastrointestinal and Endoscopic Surgeons, and Surgical Infection Society; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Nephrology	Measures in the Nephrology domain evaluate the alignment of nephrology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for the Study of Liver Diseases, American Society of Transplant Surgeons, CDC, Infectious Diseases Society of America, Kidney Disease: Improving Global Outcomes, Surgical Infection Society, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.

Specialty	Description
Neurology	Measures in the Neurology domain evaluate the alignment of neurology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Neurology, American Academy of Physical Medicine and Rehabilitation, American Association of Neuromuscular and Electrodiagnostic Medicine, American Board of Internal Medicine, American College of Cardiology, American College of Radiology, American Heart Association, American Heart Association Stroke Council, American Stroke Association, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Obstetrics and Gynecology	Measures in the Obstetrics and Gynecology domain evaluate the alignment of obstetrics and gynecology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from Advisory Committee on Immunization Practices, Agency for Healthcare Research and Quality, American Association of Gynecologic Laparoscopists, American Cancer Society, American College of Obstetricians and Gynecologists, American College of Physicians, American College of Radiology, American Diabetes Association, American Geriatrics Society, American Society for Clinical Pathology, American Society for Colposcopy and Cervical Pathology, American Society for Microbiology, American Society of Nephrology, American Urogynecologic Society, American Urological Association, CDC, Committee on Obstetric Practice, Immunization and Emerging Infections Expert Work Group, Infectious Diseases Society of America, National Comprehensive Cancer Network, National Quality Forum, Society for Maternal-Fetal Medicine, Society of Breast Imaging, Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction, Surgical Infection Society, The Joint Commission, U.S. Department of Health & Human Services, U.S. Food and Drug Administration, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Ophthalmology	Measures in the Ophthalmology domain evaluate the alignment of ophthalmology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Ophthalmology, American Board of Internal Medicine Foundation, American College of Radiology, American Optometric Association, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Orthopedic Surgery	Measures in the Orthopedics domain evaluate the alignment of orthopedic surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Neurological Surgeons, American Academy of Orthopaedic Surgeons, American Association for Hand Surgery, American Association of Hip and Knee Surgeons, American College of Radiology, American Geriatrics Society, American Medical Society for Sports Medicine, American Orthopaedic Foot and Ankle Society, American Orthopaedic Society for Sports Medicine, American Podiatric Medical Association, American Shoulder and Elbow Surgeons, American Society for Surgery of the Hand, Arthritis Foundation, European Academy of Neurology, International Society for the Advancement of Spine Surgery, North American Spine Society, Society of Minimally Invasive Spine Surgery, Spine Intervention Society, and Surgical Infection Society; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.

Specialty	Description
Otolaryngology	Measures in the Otolaryngology domain evaluate the alignment of otolaryngology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Otolaryngology—Head and Neck Surgery Foundation, American Academy of Sleep Medicine, American College of Physicians, CDC, Surgical Infection Society, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Pediatrics	Measures in the Pediatrics domain evaluate the alignment of pediatric physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Neurology, American Academy of Pediatrics, American Association of Clinical Endocrinologists, American Board of Internal Medicine Foundation, American Diabetes Association, CDC, Global Initiative for Asthma, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Pulmonary Disease	Measures in the Pulmonary Disease domain evaluate the alignment of pulmonology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Sleep Medicine, American College of Chest Physicians, American College of Physicians, American College of Radiology, American Thoracic Society, Canadian Thoracic Society, European Respiratory Society, Global Initiative for Asthma, Global Initiative for Chronic Obstructive Lung Disease, Infectious Diseases Society of America, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Rheumatology	Measures in the Rheumatology domain evaluate the alignment of rheumatology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Board of Internal Medicine Foundation, American College of Radiology, American College of Rheumatology, Spondylitis Association of America, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Urology	Measures in the Urology domain evaluate the alignment of urology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Board of Internal Medicine Foundation, American College of Obstetricians and Gynecologists, American Urogynecologic Society, American Urological Association, Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction, Surgical Infection Society, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.

Specialty	Description
Vascular Surgery	Measures in the Vascular Surgery domain evaluate the alignment of vascular surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American College of Cardiology, American Heart Association, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, Society for Vascular Surgery, Society of Interventional Radiology, Surgical Infection Society, and Vascular and Endovascular Surgery Society; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.

## Set 2: Appropriateness Measures

Specialty	Description
Cardiology	Measures in the Cardiology domain evaluate the alignment of cardiovascular disease physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for Thoracic Surgery, American College of Cardiology Foundation, American College of Physicians, Heart Rhythm Society, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Cardiothoracic Surgery	Measures in the Cardiothoracic Surgery domain evaluate the alignment of cardiothoracic surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association of Cardiovascular and Pulmonary Rehabilitation, American Board of Internal Medicine Foundation, American College of Cardiology, American College of Cardiology Foundation, American College of Radiology, American Society of Anesthesiologists, American Society of Echocardiography, Council on Clinical Cardiology, National Comprehensive Cancer Network, Society of Cardiovascular Anesthesiologists, and Society of Thoracic Surgeons; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Endocrinology	Measures in the Endocrinology domain evaluate the alignment of endocrinology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Board of Internal Medicine Foundation, American Diabetes Association, American Heart Association, CDC, Endocrine Society, Kidney Disease: Improving Global Outcomes, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Family Medicine, Internal Medicine	Measures in the Family Medicine and Internal Medicine domains evaluate the alignment of primary care physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from Alzheimer's Association, American Academy of Neurology, American Academy of Ophthalmology, American Association of Clinical Endocrinologists, American Board of Internal Medicine Foundation, American College of Cardiology, American College of Physicians, American College of Radiology, American Diabetes Association, American Geriatrics Society, American Heart Association, American Society of Clinical Oncology, American Society of Nephrology, American Stroke Association, American Thoracic Society, CDC, Centers for Medicare & Medicaid Services, Global Initiative for Asthma, Infectious Diseases Society of America, Kidney Disease: Improving Global Outcomes, National Committee for Quality Assurance, U.S. Food and Drug Administration, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.

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Gastroenterology	Measures in the Gastroenterology domain evaluate the alignment of gastroenterology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for the Study of Liver Diseases, American Board of Internal Medicine Foundation, American College of Gastroenterology, American Gastroenterological Association, American Society for Gastrointestinal Endoscopy, and U.S. Multi-Society Task Force on Colorectal Cancer; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
General Surgery	Measures in the Surgery domain evaluate the alignment of surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American College of Radiology, American Heart Association, American Society of Breast Surgeons, American Society of Clinical Oncology, American Society of Colon and Rectal Surgeons, European Association for Endoscopic Surgery, and Society of American Gastrointestinal and Endoscopic Surgeons; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Nephrology	Measures in the Nephrology domain evaluate the alignment of nephrology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Association for the Study of Liver Diseases, CDC, Infectious Diseases Society of America, Kidney Disease: Improving Global Outcomes, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Neurology	Measures in the Neurology domain evaluate the alignment of neurology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Neurology, American Academy of Physical Medicine and Rehabilitation, American Association of Neuromuscular and Electrodiagnostic Medicine, American Board of Internal Medicine, American College of Cardiology, American College of Radiology, American Heart Association, American Heart Association Stroke Council, American Stroke Association, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.



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Obstetrics and Gynecology	Measures in the Obstetrics and Gynecology domain evaluate the alignment of obstetrics and gynecology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from Advisory Committee on Immunization Practices, Agency for Healthcare Research and Quality, American Cancer Society, American College of Obstetricians and Gynecologists, American College of Physicians, American College of Radiology, American Diabetes Association, American Geriatrics Society, American Society for Clinical Pathology, American Society for Colposcopy and Cervical Pathology, American Society for Microbiology, American Society of Nephrology, American Urological Association, CDC, Committee on Obstetric Practice, Immunization and Emerging Infections Expert Work Group, Infectious Diseases Society of America, National Comprehensive Cancer Network, National Quality Forum, Society for Maternal-Fetal Medicine, Society of Breast Imaging, Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction, The Joint Commission, U.S. Department of Health & Human Services, U.S. Food and Drug Administration, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Ophthalmology	Measures in the Ophthalmology domain evaluate the alignment of ophthalmology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Ophthalmology, American Board of Internal Medicine Foundation, American College of Radiology, American Optometric Association, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Orthopedic Surgery	Measures in the Orthopedics domain evaluate the alignment of orthopedic surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Neurological Surgeons, American Academy of Orthopaedic Surgeons, American College of Radiology, American Geriatrics Society, American Medical Society for Sports Medicine, Arthritis Foundation, European Academy of Neurology, and North American Spine Society; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Otolaryngology	Measures in the Otolaryngology domain evaluate the alignment of otolaryngology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Otolaryngology—Head and Neck Surgery Foundation, American College of Physicians, CDC, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.



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Pediatrics	Measures in the Pediatrics domain evaluate the alignment of pediatric physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Neurology, American Academy of Pediatrics, American Association of Clinical Endocrinologists, American Board of Internal Medicine Foundation, American Diabetes Association, CDC, Global Initiative for Asthma, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Pulmonary Disease	Measures in the Pulmonary Disease domain evaluate the alignment of pulmonology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Academy of Sleep Medicine, American College of Chest Physicians, American College of Physicians, American College of Radiology, American Thoracic Society, Canadian Thoracic Society, European Respiratory Society, Global Initiative for Asthma, Global Initiative for Chronic Obstructive Lung Disease, Infectious Diseases Society of America, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Rheumatology	Measures in the Rheumatology domain evaluate the alignment of rheumatology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Board of Internal Medicine Foundation, American College of Radiology, American College of Rheumatology, Spondylitis Association of America, and U.S. Food and Drug Administration; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Urology	Measures in the Urology domain evaluate the alignment of urology physician decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American Board of Internal Medicine Foundation, American College of Obstetricians and Gynecologists, American Urogynecologic Society, American Urological Association, Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction, and U.S. Preventive Services Task Force; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.
Vascular Surgery	Measures in the Vascular Surgery domain evaluate the alignment of vascular surgeon decision-making with evidence-based best practices based on relevant medical literature published prior to the start of the current measurement period in a minimum of one of the following sources: 1) Clinical practice guidelines or similar guidance from American College of Cardiology, American Heart Association, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, Society for Vascular Surgery, and Society of Interventional Radiology; 2) Clinical guidance from the CDC; 3) FDA-approved prescribing information or relevant guidance from FDA; or Original articles published in the top 100 clinical medicine journals as ranked by Journal Impact Factor.



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