

Quality Measures: How They Are Developed, Used, & Maintained

Your guide to how measure developers build and maintain quality measures



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About This Guide

This document is intended to provide information about:

- The complexity of the quality measure development process, which is designed to ensure quality measures are appropriate for use.
- The role that measures play in helping the U.S. health care system improve the quality of care and reduce costs.

How to Use This Guide

This document was made to be read from start to finish. However, if you want to jump to certain parts, this PDF has several navigation features to help you:

- The table of contents is a clickable menu to help you find the information you need. Click on any of the bulleted items in the menu to skip forward to that section.
- There is also a Return to Main Menu button at the end of each section. When available, the button is located at the bottom of the page.
- Some text links to external webpages to help you find more information. For easy identification, we have underlined the text. Additionally, each section of the document includes a list of external links to resources that may be of interest to you.
- We have included call-out boxes throughout the document to present additional details on relevant, more technical topics.

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How Quality Measures Align with the Centers for Medicare & Medicaid Services (CMS) Priorities and the CMS National Quality Strategy (NQS)

Quality measurement is a key lever used to implement the priorities and goals of the CMS NQS. CMS uses quality measures to set national clinical priorities, publicly report quality data, and incentivize the provision of quality health care. As a longstanding leader in quality measurement and public reporting, CMS continues to drive value-based care through the use of quality measurement and reporting.

The Patient Protection and Affordable Care Act defined a quality measure as “a standard for measuring the performance and improvement of population health or of health plans, providers of services, and other clinicians in the delivery of health care services.” ([Pub. L. 111-148, 931](#)). Quality measures are tools to help improve the quality of health care through a consistent and accountable approach. The Institute of Medicine (1990) defined quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (p. 232). Each quality measure focuses on a different aspect of health care, such as processes, health outcomes, perceptions of the individual receiving care and services, and organizational structure and/or systems. Quality measures help by measuring these key aspects of health care, which CMS chooses because they are associated with the ability to

- Provide high-quality health care, and/or
- Relate to one or more health care quality goals: effective, safe, efficient, person-centered, equitable, and timely care.

Taken together, quality measures provide a comprehensive picture of the quality of health care. CMS uses quality measures in its quality improvement, public reporting, and value-based purchasing programs (see the “What are CMS quality programs?” call-out box for more information and examples of these programs) to improve the quality of health care and health outcomes for Medicare and Medicaid beneficiaries. When employed on a national scale, quality measures also become helpful in identifying disparities in health outcomes across socioeconomic groups, which also can promote equitable health care.



What are CMS quality programs?

CMS quality programs address care across the care continuum and encourage improvement of quality through use of payment incentives, payment reductions, and quality improvement activities, while also increasing transparency through public reporting of performance results. CMS implements quality measures into the health care system through one of many quality programs. Example programs include:

- [Quality Improvement Organizations \(QIO\)](#)
- [Quality Payment Program](#)
- [Hospital Inpatient Quality Reporting](#)

For a list of quality programs, visit the [Quality Reporting and Value-Based Programs & Initiatives](#) webpage.

Quality measures are a key component of CMS's larger priority to drive American health care toward payment for value, not volume. This priority also serves the financial sustainability needs of health care organizations and their clinicians, as quality health care can lead to reduced waste and positive return on investment, particularly when approached through a balanced portfolio of quality initiatives ([Swensen et al., 2013](#)).

CMS Principles and Priorities for Quality Measure Development

Quality measure development is guided by a series of core principles and priorities aligning with CMS's priorities to enhance the health care system. For example, quality measures need to:

- Address high-impact measure topics to safeguard public health and identify significant opportunities for improvement.
- Be person-centered and meaningful to individuals, caregivers, and measured entities. Measured entities are the implementers of quality measures. They include front-line clinicians and their organizations as well as health information technology managing the technology collecting quality measure data.
 - Be outcome-based when possible.
 - Minimize level of burden for measured entities to use.
 - Align across programs and/or with other payers.
 - Identify and eliminate disparities in the delivery of care.
 - Guard against unintended consequences of measure implementation, including overuse and underuse of care.
 - Engage interested parties early and often in the measure development process.
 - [Prioritize digital quality measurement](#).
 - Ensure scientific acceptability (e.g., validity and reliability).

Quality measures are one of many approaches CMS uses to ensure quality health care for beneficiaries. They are tools providing data about the important parts of health care for use to increase value for all participants in the health care system, including individuals, measured entities, and other key interested parties.

Purpose of CMS Quality Measures



To promote quality and reduce waste in health care by:

- Incentivizing good performance and disincentivizing poor performance through public reporting and pay-for-performance programs.
- Allowing CMS and participating measured entities to track performance over time.



To improve decision-making by:

- Providing data through public reporting (e.g., Star Rating) to help individuals, families, and caregivers make informed decisions about where to seek care that is not just based on cost.



Want more information about these topics?

Try these resources:

- [CMS MMS Hub](#)
- [Get Started with Quality Measures](#) on the CMS MMS Hub
- [Blueprint Measure Lifecycle Overview](#) on the CMS MMS Hub

About Quality Measures

In this section, you will learn about key aspects of quality measures. The topics include:

- Elements of a quality measure
- Types of quality measures
- Data sources used by measures
- Digital quality measures (dQMs) and electronic clinical quality measures (eCQMs)
- Measure evaluation
- How and why interested party input is used in quality measure development

Elements of a Quality Measure

A quality measure has several parts, including a title and description, numerator, denominator, and rationale (some measures also have denominator and/or numerator exclusions). The example of a quality measure in Table 1 identifies and describes each of these parts.

[The example measure](#) focuses on controlling blood pressure. The overall goal of this measure is to increase the number of people with controlled blood pressure, which can prevent the serious and costly health problems arising from uncontrolled blood pressure (e.g., heart attack and stroke). The measure promotes effective treatment of high blood pressure (HBP) by measuring the proportion of people with HBP with those whose blood pressure is in a healthy range, meaning lower than 140/90 mm/Hg.

The measure focuses on individuals between 18 and 84 years of age with a diagnosis of HBP during an outpatient visit during the measurement period, usually a calendar year.



Quality Measure for Controlling High Blood Pressure

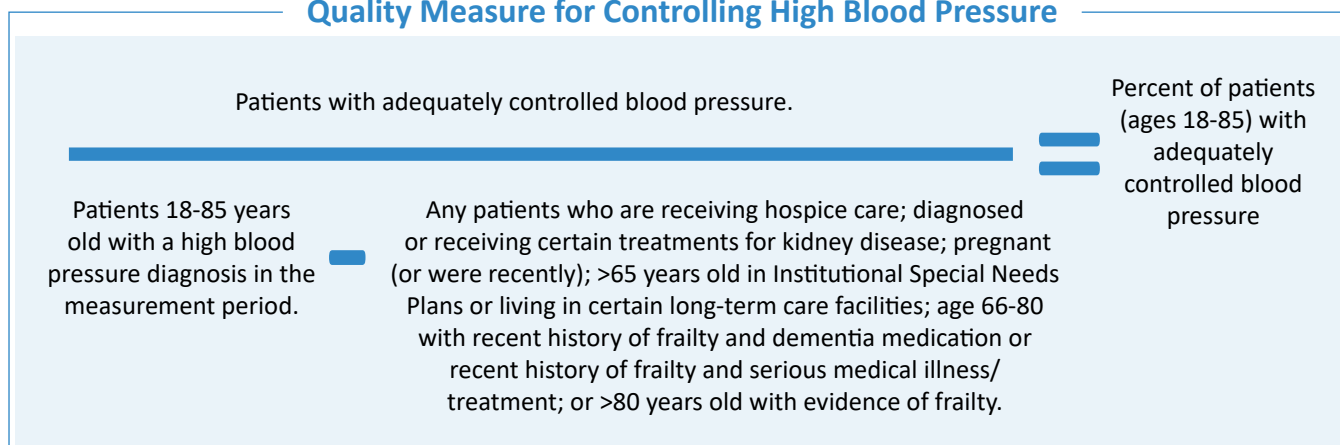
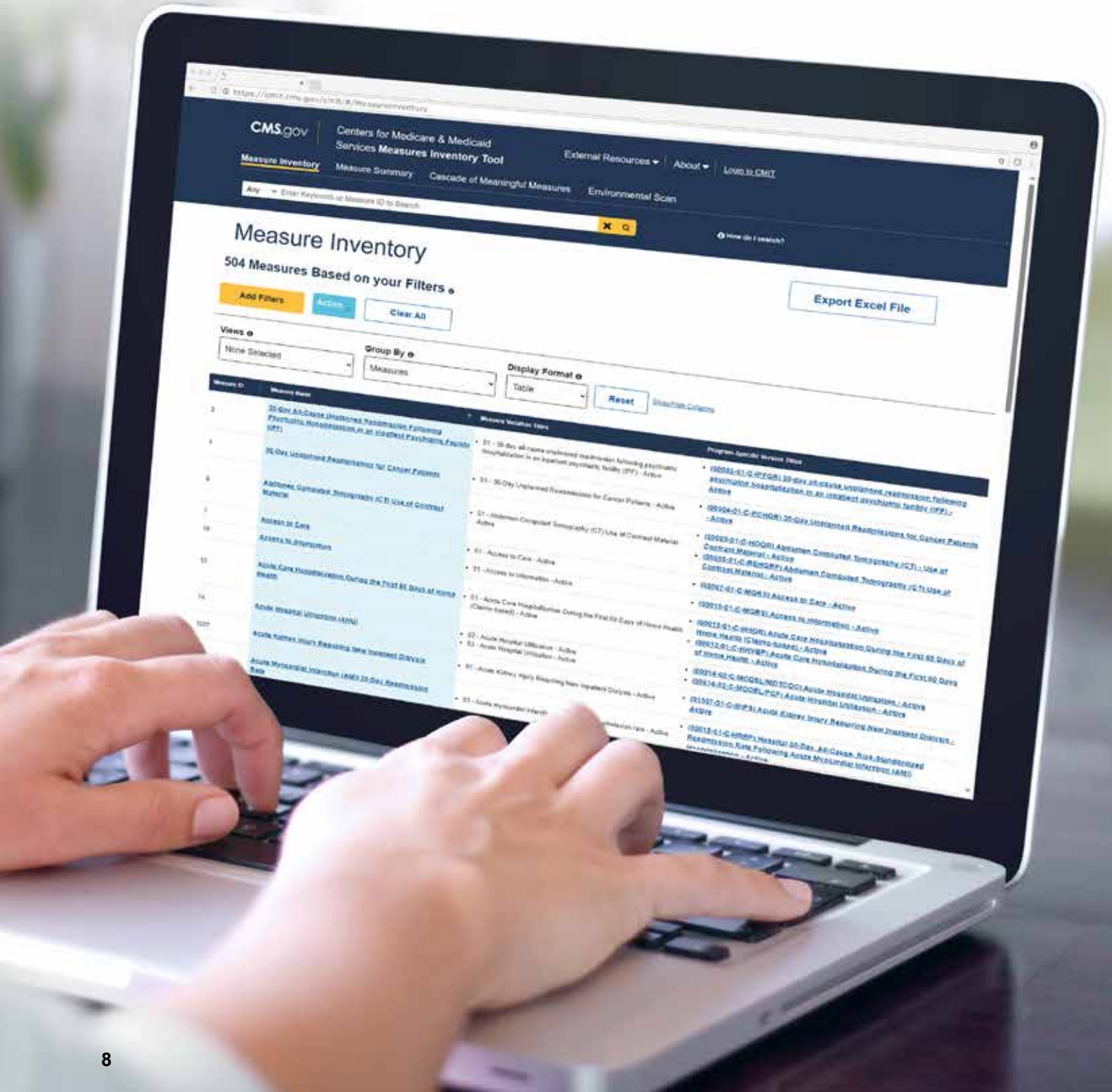


Table 1. Controlling High Blood Pressure

Controlling High Blood Pressure	
Description	Percentage of patients 18-85 years of age who had a diagnosis of high blood pressure and whose blood pressure (BP) was adequately controlled (< 140/90 mmHg) during the measurement period.
Numerator	Patients whose most recent blood pressure is adequately controlled (systolic blood pressure < 140 mmHg and diastolic blood pressure < 90 mmHg) during the measurement period.
Denominator	Patients 18-85 years of age who had a visit and a diagnosis of high blood pressure during the measurement period.
Denominator Exclusions	<ul style="list-style-type: none"> • Hospice services given to patient any time during the measurement period • Documentation of end stage renal disease (ESRD), dialysis, renal transplant before or during the measurement period or pregnancy during the measurement period • Patients aged 66 or older in Institutional Special Needs Plans or residing in long-term care with Place of Service code 32, 33, 34, 54, or 56 for more than 90 days during the measurement period • Patients 66-80 years of age with at least one claim/encounter for frailty during the measurement period AND a dispensed medication for dementia during the measurement period or the year prior to the measurement period • Patients 66-80 years of age with at least one claim/encounter for frailty during the measurement period AND either one acute inpatient encounter with a diagnosis of advanced illness or two outpatient, observation, emergency department, or nonacute inpatient encounters on different dates of service with an advanced illness diagnosis during the measurement period or the year prior to the measurement period • Patients 81 years of age and older with evidence of frailty during the measurement period • Palliative care services given to patient any time during the measurement period
Rationale	HBP, also known as hypertension, is when the pressure in blood vessels is higher than normal (Centers for Disease Control and Prevention, n.d.). The causes of hypertension are multiple and multifaceted and can be based on genetic predisposition, environmental risk factors, being overweight and obese, sodium intake, potassium intake, physical activity, and alcohol use. Read the rest of the measure rationale on CMS Measures Inventory Tool (CMIT) .
CMIT Measure ID	167 (Learn more about this measure on CMIT)

Where can I find a list of quality measures that CMS uses?









[CMIT](#) is the repository of record for information about the measures used by CMS to promote health care quality and quality improvement. The inventory contains information describing each of the measures, including title, numerator, denominator, exclusions, various identifiers, type, status, usage by program, steward, health care priorities, and other attributes.



Types of Quality Measures

Quality measurement accounts for complex aspects of health care quality, which involves assessing and addressing issues at many different levels of health care, such as health outcomes for individuals and hospitals' use of best practices. To accomplish this, CMS requires different types of quality measures. The table lists seven of the most common measure types and their purpose. CMS includes all of these measure types in CMS programs; however, CMS typically prioritizes measures assessing outcomes (i.e., outcome measures and patient-reported outcome-based performance measures) over other types of measures. The table provides examples of each measure type, which are linked to [CMIT](#) where you can learn more about each measure.

Table 2. Quality Measure Types

Quality Measure Type	Description/Purpose	Example
 Composite	A measure that contains two or more individual measures, resulting in a single measure and a single score.	CMS Patient Safety and Adverse Events Composite
 Cost/Resource (Use)	A cost/resource use measure is a measure of health services counts (in terms of units or dollars) applied to a population or event (including diagnoses, procedures, or encounters). A resource use measure counts the frequency of use of defined health system resources. Some may further apply a dollar amount (e.g., allowable charges, paid amounts, or standardized prices) to each unit of resource use.	Medicare Spending per Beneficiary (MSPB)
 Efficiency	Measures the cost of care (inputs to the health system in the form of expenditures and other resources) associated with a specified level of health outcome. Measures features of a health care organization or clinician relevant to its capacity to provide health care.	Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery
 Intermediate Outcome Measure	A measure that assesses the change produced by a health care intervention that leads to a long-term outcome.	Adherence to Antipsychotic Medications For Individuals with Schizophrenia
 Outcome	Measures the health status of an individual (or change in health status) resulting from health care—desirable or adverse.	Unplanned Hospital Readmission within 30 Days of Principal Procedure
 Patient-Reported Outcome-Based Performance Measure	A performance measure that is based on patient-reported outcome measure (PROM) data aggregated for an accountable health care entity. Using a PROM tool, individuals provide data directly. The PROM tool can be an instrument, scale, or single-item measure.	Functional Status Change for Patients with Neck Impairments
 Process	Measures steps measured entities should follow to provide good care. Note: there should be a scientific basis for believing the process, when executed well, will increase the probability of achieving a desired health outcome.	Child and Adolescent Major Depressive Disorder (MDD): Suicide Risk Assessment (eCQM)
 Structure	Measures features of a health care organization or clinician relevant to its capacity to provide health care.	Left Without Being Seen

Data Sources

Measures rely on different types of data sources, each of which has an impact on the scope, purpose, and generalizability of the measures using the data. In this case, “data source” refers to the primary source (often documents) used for data collection. For example, a claims-based measure relies on data elements captured in Medicare claims data (e.g., a diagnosis), and would not require data elements from the medical record (e.g., time between presentation of symptoms and initial diagnosis). Additionally, some measures are hybrid (i.e., use a combination of data sources). We provide descriptions of example data sources:

Learn more about data sources on the [CMS MMS Hub](#).



Administrative Data: Includes information originally collected for administrative purposes, such as program services provided to enrollees, organizational staffing, and organizational policies. Similar data elements may exist in the measured entity’s billing system. Other examples of administrative data sources are birth registries, tax records, individual-level demographics obtained from eligibility or enrollment information, crime reports, and census information.



Claims Data: Health care reimbursement or payment information from submitted and adjudicated claims or from the measured entity’s billing system. Claims include admission and discharge dates, diagnoses, procedures, and source of care.



Electronic Clinical Data: Includes individual-level information that can be extracted in a format for use in a measure, such as data from personal health devices, which may be uploaded to the EHR.



Standardized Assessments: Data collected from standardized instruments. Examples are the Long-term Care (LTC) Facility Resident Assessment Instrument (RAI), the Outcome and Assessment Information Set (OASIS), and the Minimum Data Set (MDS).



Patient Medical Records: A traditional source of clinical data for measures. Data may be documented on paper or electronically (e.g., EHR) and may include data from the clinical laboratory, imaging services, personal health records, and pharmacy.



Surveys: Often collected via surveys, questionnaires, or assessments. Many CMS programs use the different Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys. Individual- or caregiver-completed standardized instruments assessing things such as health-related quality of life, functional status, and symptoms are becoming more common.



Registries: Collections of information often used to collect disease-specific data for public health purposes, such as immunization registries. CMS is using data from qualified clinical data registries (QCDRs) and qualified registries in the Quality Payment Program.

Each type of data source presents unique strengths and limitations to quality measurement (Table 3), which the measure developer must take into consideration because they can affect how the measure is evaluated (see the “How are Quality Measures Evaluated?” section for details about evaluation).

Table 3: Data Source Strengths and Limitations

Type of Data Source	Strengths	Limitations
Claims	<ul style="list-style-type: none"> • Readily available • Uses standard coding system(s) • Offers information not usually found in a clinical database • Less burdensome to measured entities across settings for data collection • Drawn from large populations 	<ul style="list-style-type: none"> • Only includes information recorded for billing purposes and not specifically for quality measurement • Varying degrees of clinical detail • Often limited in content, completeness, timeliness, and accuracy
Electronic Clinical Data	<ul style="list-style-type: none"> • Reduced cost of accessing clinical information from the individuals' medical records or personal health devices (e.g., home blood glucose monitor) 	<ul style="list-style-type: none"> • Identifying test sites to serve as data sources can be difficult • Extracting the data requires expertise, time, and money • Continued use of paper notes for point-of-care documentation presents an obstacle • Device data may be external to the medical record • Still only partially implemented in some settings
Instruments/ Standardized Assessments	<ul style="list-style-type: none"> • Well validated and tested 	<ul style="list-style-type: none"> • Potential for bias because some have mixed use for determining reimbursement, meeting conditions of participation, and assessing quality • May be proprietary
Paper Patient Medical Records	<ul style="list-style-type: none"> • Detailed clinical data with a rich description of care • Includes clinically relevant information 	<ul style="list-style-type: none"> • Labor-intensive and expensive to abstract • Subjectivity and consistency concerns during abstraction • Difficult to identify test sites
Electronic Patient Medical Records	<ul style="list-style-type: none"> • Detailed clinical data with a rich description of care • Reduced cost of accessing clinical information 	<ul style="list-style-type: none"> • Difficult to identify test sites • Inconsistent adoption of EHRs across settings • Data extraction requires special expertise • Structured data fields and drop-downs can reduce the richness of the clinical data
Surveys	<ul style="list-style-type: none"> • Established way of collecting individual's perspective/experience • Structured data for reporting • Unique data source 	<ul style="list-style-type: none"> • Limited scope • May be labor-intensive and costly to implement • Need validated and reliable instruments, which may be proprietary
Registries	<ul style="list-style-type: none"> • Includes detailed clinical information in structured fields • Multiple data sources and care settings • Can be available for electronic upload 	<ul style="list-style-type: none"> • High cost of use • Typically limited to specific clinical areas • Unknown how registry requirements impact workflow • Feasibility of data collection is determined by the data requirements imposed by the registry

How is CMS incorporating digital quality measures (dQMs) into its programs?

Over the past decade, CMS has advanced the use of data from EHRs to enhance and expand quality measurement. However, there remains a need to streamline the approach to data standardization, collection, exchange, calculation, and reporting. CMS intends to address this and build upon its years of progress by incrementally transitioning to dQMs in CMS quality reporting and value-based purchasing programs. In 2022, CMS published the [dQM Strategic Roadmap](#), which outlines CMS's transition strategy. Visit the [eCQI Resource Center](#) to learn more about [dQMs](#).

Electronic Clinical Quality Measures (eCQMs)

Like all quality measures, eCQMs are tools to help improve health care quality by measuring health care processes or outcomes. eCQMs are a subset of dQMs, which originate from health information captured and transmitted electronically via interoperable systems. Measure developers develop eCQMs with EHRs as their data source (or some other health information technology [IT] systems source) but are distinct from other measures as the measures are specified electronically (note: specification is explained in the next paragraph). Ideally, measured entities capture the data in a structured form during the processes of individual care to help reduce burden on clinicians. CMS uses eCQMs in quality reporting and value-based purchasing programs, and health care organizations can use them to identify opportunities to improve the quality of the care they provide.

How does interoperability fit in?

An important aspect of health care is the extent to which individuals receive high quality care throughout the continuum—from primary care to acute care, to post-acute care, and back. Individuals are best served when their measured entities have current and accurate information about their history. To achieve this level of care coordination—and to measure it—health IT and EHR systems must be interoperable, allowing information to be shared safely and confidentially between measured entities. New standards and incentives are emerging to facilitate interoperability and help measure developers adapt to these changes.

The design of eCQMs is to pull data from the EHR and/or other health IT systems, they do not need a human abstractor to gather the data. To that end, the measure developer must draft the eCQM's technical specifications in a computable format. To do this, eCQM developers must rely on a series of standards to define the measure data elements and the relationships between those data elements to generate a measure score.

For example, for an eCQM to be reported from an EHR, the eCQM uses [Health Quality Measure Format \(HQMF\)](#) to format the eCQM content using [Clinical Quality Language \(CQL\)](#) and the [Quality Data Model \(QDM\)](#) to express the logic and to express the data elements needed to evaluate a measured entity's performance.

Measure developers draft eCQMs similarly to other measures but use additional tools in the development process. Select tool links to learn more:

- [Electronic Clinical Quality Improvement \(eCQI\) Resource Center](#): provides eCQI resources and connections with the community of professionals dedicated to electronic clinical quality improvement for better health.
- [Measure Authoring Development Integrated Environment \(MADiE\)](#): is a software tool that redefines the electronic clinical quality measure (eCQM) development and testing process by making it a self-contained process including dynamic authoring and testing within a single application. MADiE allows eCQM developers to author eCQMs using Quality Improvement-Core, transfer [Fast Healthcare Interoperability Resources](#)® measures from the sunseting [Measure Authoring Tool](#), and to test and verify eCQM behavior. MADiE helps eCQM developers execute eCQM logic against the constructed test cases and evaluates if the eCQM logic aligns with the intent of the eCQM.
- [Cypress](#): is an open source tool used by health IT vendors to test eCQMs to certify their EHRs and health IT modules for calculating eCQMs. Also used by eCQM developers to test their eCQM's ability to produce accurate and complete Quality Reporting Document Architecture files for submission to CMS or other organizations such as the Joint Commission.

How are Quality Measures Evaluated?

Quality measures drive health care quality. They also influence measured entity payments, reduce risks to individuals, and affect measured entity burden.

That is why it is so important to vet quality measures to verify that they do, in fact, indicate quality and drive quality in the health care system. The Measure Lifecycle uses four primary criteria to ensure a measure meets the applicable standards before moving to the next stage:

- **Importance:** Extent to which the specific measure focus is important to making significant gains in health care quality (e.g., safety, timeliness, effectiveness, efficiency, equity, person-centeredness) and improving health outcomes for a specific high-impact aspect of health care where there is variation in performance or poor overall performance.
- **Feasibility:** Extent to which the specifications, including measure logic, require data that are readily available or measured entities could capture without undue burden and implement for performance measurement.
- **Scientific Acceptability (validity and reliability):** Extent to which the measure, as specified, produces consistent (i.e., reliable) and credible (i.e., valid) results about the quality of care when implemented.
- **Usability and Use:** Extent to which potential audiences (e.g., consumers, purchasers, measured entities, policymakers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient health care for individuals or populations.

The evaluation process occurs throughout the Measure Lifecycle. For example, measure developers evaluate different aspects of their measure, produce documentation and evidence to demonstrate their measures meet each criterion. The measure developer may request public comment on draft specifications at different stages of the Measure Lifecycle. CMS measure developers submit documentation to CMS for evaluation, such as the Measure Evaluation Report throughout their contract. Measures submitted for CMS consideration go through evaluation for placement on the Measures Under Consideration (MUC) List. Those measures on the MUC List undergo evaluation by the CMS consensus-based entity's (CBE's) Pre-Rulemaking Review committees. Measure developers may also submit their measure to the CBE for endorsement consideration (see [What is Endorsement](#)), where evaluation again occurs. Evaluation continues while the measures are in use. The extent and rigor of the evaluation will vary, the most extensive and rigorous by CMS and the CBE.

What about reducing burden for measured entities?

CMS aims to limit the burden associated with adding new measures into their programs. They do this by asking measure developers to:

- Prioritize use of digital data sources.
- Carefully consider measure feasibility, specifically the extent to which measure information can be collected through normal documentation workflows.
- Review existing measures and harmonize as much as possible to limit the number of new data fields or additional programming required to calculate specific measure components.
- Focus on high-impact concepts that are important and meaningful to individuals and measured entities.

When preparing their quality measures for evaluation, measure developers produce documentation and evidence to demonstrate their measures meet each criterion. Table 4 provides some of the questions measure developers will answer to justify their measures.

Table 4: Evaluation Criterion and Questions

Evaluation Criterion	Questions to Consider When Addressing the Criterion
Importance	Is this measure meaningful and important to individuals? Does it address an aspect of health care where there is a gap in performance or measurement?
Feasibility	Do the benefits of this measure outweigh the potential burdens associated with collecting and reporting on it?
Scientific Acceptability	Reliability: Does the measure consistently measure the same thing? Validity: Is the measure actually measuring what it is supposed to measure?
Usability & Use	To what extent can individuals, measured entities, or other interested parties use information from the measure to inform performance improvement or improve accountability in care delivery?

Learn more about the measure evaluation criteria on the [CMS MMS Hub](#).



How Does CMS Gather Interested Party Input?

Quality measure input is most useful when it involves diverse perspectives, including individuals and caregivers, and representation from key interested parties relative to specific medical conditions, patient populations, and/or care delivery settings. During the development process, measure developers gather ideas and input from many different people with a vested interest or concern related to the quality measures under development. This work also aligns with CMS's aims to

- Conduct its measurement activities in a transparent manner
- Gather information about future measurement needs through various methods
- Have person-centered measurement

To achieve these aims, measure developers create a plan for how to solicit, gather, and meaningfully incorporate interested party input into the Measure Lifecycle processes.

Some of the ways that stakeholders are engaged include:

- **Technical Expert Panels (TEP):** These groups of interested parties and experts contribute direction and thoughtful input to the measure developer in every stage of the Measure Lifecycle. Since an important use of quality measures is to provide information to individuals and their caregivers on the quality of care provided, CMS requires their measure development contractors to include individuals and caregivers in TEPs to gather their vital perspective.
- **Public Comments:** By posting an open call for input from the public, measure developers have an opportunity for the widest array of interested parties to provide input on the measures under development and can provide critical suggestions not previously considered by the measure developer or the TEP. Public comment ensures measure development and maintenance use a transparent process with balanced input from relevant interested parties.
- **Other activities, such as interviews and workflow assessments:** In addition to TEP participation, measure developers may conduct informal conversations with individuals receiving care, structured one-on-one interviews, focus groups, or other means of sourcing input from their experiences. Interviews are key to getting in-depth feedback from key interested parties, such as point-of-care clinicians. Workflow assessments are a great way to understand how measured entities document patient information, which can inform feasibility and identify opportunities for performance improvement.

Want to get involved
in quality measure
development and
maintenance?

Visit the [CMS
MMS Hub](#).

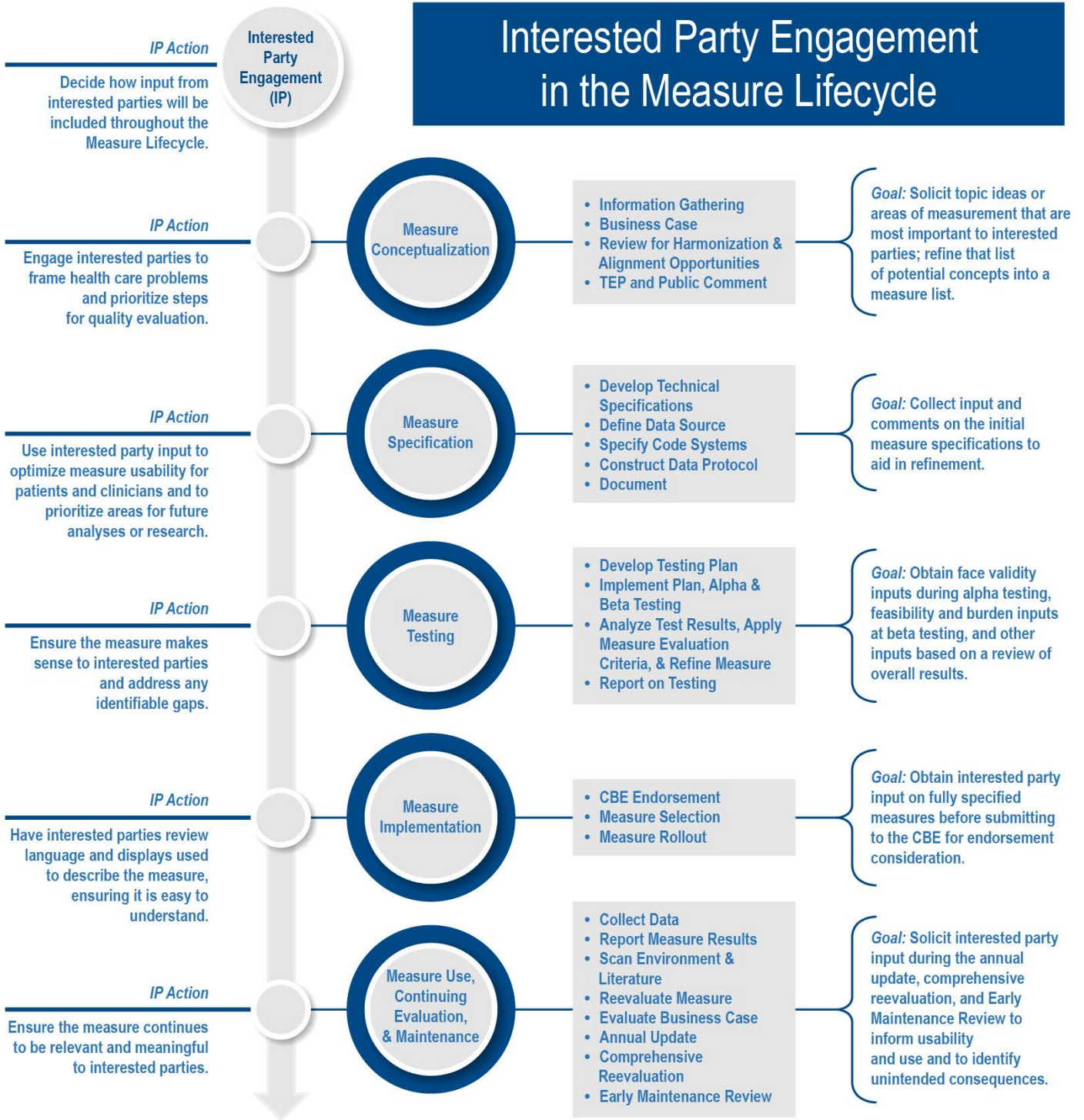


What interested party groups commonly give input on quality measures?

- Health care professionals
- Representatives of health care organizations (e.g., hospitals, nursing facilities, home health)
- Individuals and patient advocacy groups
- Family members and caregivers
- Other measure developers
- Subject matter experts
- Academic researchers
- Representatives from relevant organizations, such as specialty societies, health insurance companies, EHR companies, and local, state, and federal government agencies

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Interested Party Engagement in the Measure Lifecycle



Why does CMS prioritize individual, family, and caregiver engagement in measure development?

Family members, and caregivers can offer a unique perspective on what is important to their care and health care decisions based on their experience with the health care system. CMS has made it a top priority to get these interested parties involved in Technical Expert Panels (TEPs) and other interested party engagement activities, requiring its measure development contractors to:

- Include at least one individual, family member, or caregiver on TEPs who can share their experience related to the measure topic. CMS strongly encourages more than one.
- Get individuals, family members, and caregivers involved as early in the Measure Lifecycle as possible.
- Balance these interested parties' needs with those of other interested parties.

By sharing their experiences and health care needs, the individual, family, and caregiver help measure developers and CMS create relevant, useful, and easily understood measures to people experiencing care and services in the health care system.

Learn more about person and family engagement with resources on the CMS MMS Hub: the [Interested Party Engagement](#) webpage, the [Person and Family Engagement in Quality Measurement](#) supplemental material, the [Person and Family Engagement Toolkit: A Guide for Measure Developers](#).



Want more information about these topics?

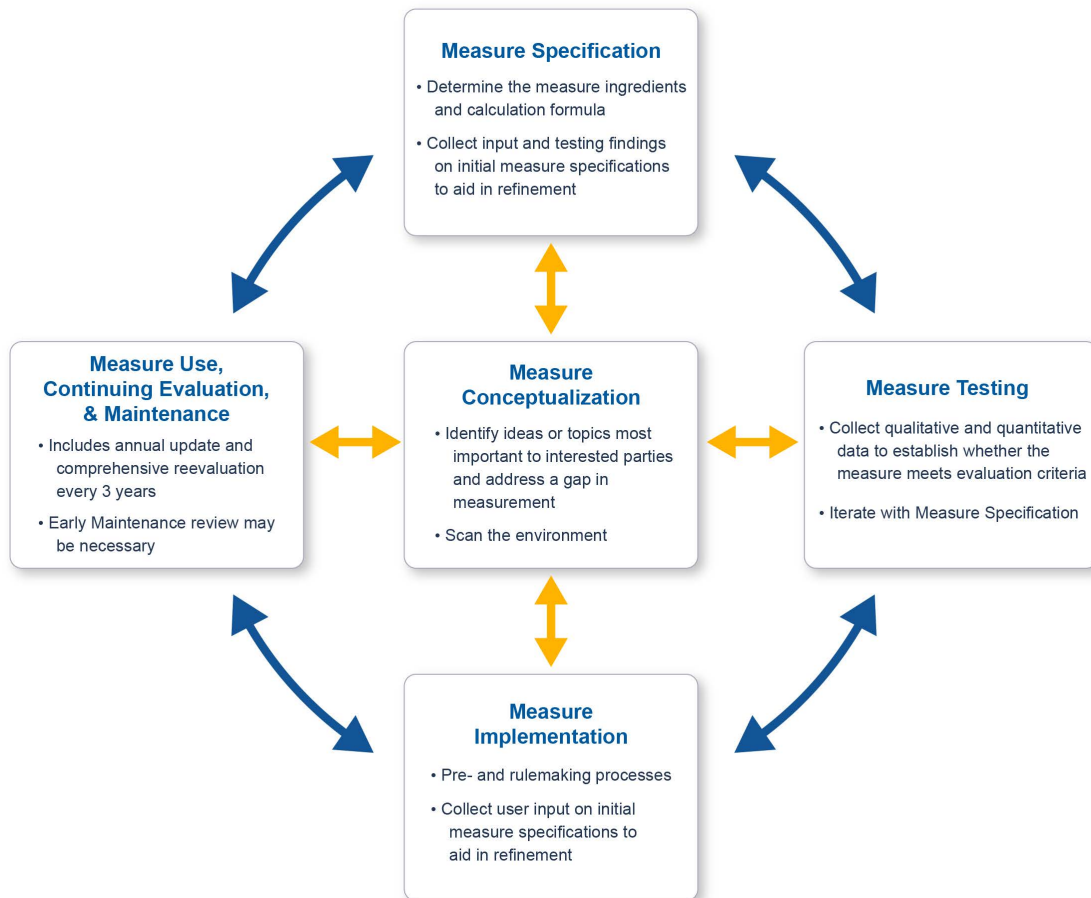
Try these resources:

- [CMS MMS Hub](#) website
- [CMS Measures Inventory Tool \(CMIT\)](#)
- [eCQI Resource Center](#)

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The Lifecycle of a Quality Measure

Quality measures undergo a rigorous development and implementation process to ensure every measure proposed for use in a CMS program meets the [evaluation criteria](#). Even after measured entities implement measures, work continues to ensure measures in use continue to be relevant, useful, and scientifically sound. CMS and measure developers constantly monitor, update, and retire as appropriate. It is how CMS ensures its measures are serving program goals without causing undue burden on the health care system.



CMS manages a standardized approach (as documented in the Blueprint content on the [CMS MMS Hub](#)) for developing and maintaining the quality measures used in its quality initiatives and programs. This approach comprises a set of business processes and decision criteria for CMS-funded measure developers to follow in the development, implementation, and maintenance of quality measures.

There are five stages in the Measure Lifecycle. See table 5 to learn more about a specific stage:

- **Conceptualization:** Develop measure concepts and then narrow down to specific measures. The measure developer conducts an environmental scan and requests input from a broad group of interested parties, including individuals and caregivers.
- **Specification:** Identify the population, the recommended practice, and the expected outcome, and measure calculation.
- **Testing:** Assess the feasibility and scientific acceptability of the quality measure’s technical specifications and gather empirical evidence to help assess the strengths and weaknesses of a measure.
- **Implementation:** Identify measures to submit for the CMS selection and rollout processes, adopt measures into CMS programs, and seek endorsement (optional) from the CMS CBE.
- **Use, Continuing Evaluation, and Maintenance:** Ensure the measure continues to add value to quality measurement programs and its construction continues to be sound.

Table 5. Stages of the Measure Lifecycle

Stage	Purpose	Key Activities
Conceptualization	Generate a list of concepts or ideas for measures meaningful and important to those who receive care and those who provide it.	<ul style="list-style-type: none"> • Conduct information gathering, including environmental scans • Develop a business case • Convene a TEP • Solicit public comments
Specification	Develop the technical instructions for how to collect the measure data and implement the measure consistently, reliably, and effectively.	<ul style="list-style-type: none"> • Develop a candidate measure list, considering public comments • Develop precise technical specifications, including harmonization of measure specifications • Define the data source(s) • Specify code systems • Construct the data protocol • Determine risk adjustment, if applicable • Document measures
Testing	Assess the feasibility of the measure’s technical specifications and gather empirical evidence to help assess its strengths and weaknesses in terms of the evaluation criteria.	<ul style="list-style-type: none"> • Develop the testing work plan • Implement the testing plan, including alpha and beta testing • Analyze the test results, considering measure evaluation criteria • Refine the measure, applying measure evaluation criteria; solicit public comments, if not obtained earlier • Report on measure testing
Implementation	Complete processes and activities needed to take the measure from a developmental state to an active, in-use state.	<ul style="list-style-type: none"> • Measure selection, including pre-rulemaking process and proposed and final rules, if appropriate • Measure rollout • CMS CBE endorsement
Measure Use, Continuing Evaluation, & Maintenance	Monitor and measure to ensure the measure continues to add value to the program and remains soundly constructed.	<ul style="list-style-type: none"> • Collect data • Report measure results • Scan environment and literature • Reevaluate measures • Evaluate the business case • Annual update • Comprehensive reevaluation • Early maintenance review



Want more information about these topics?

Try these resources:

- [CMS MMS Hub Blueprint Measure Lifecycle Overview](#)
- [CMS MMS Hub](#) – Select the Tools & Resources tab from the main navigation to view a suite of helpful resources

What is Risk Adjustment?

Risk adjustment is a method to adjust for factors outside a measured entity’s control. Clinical, social, and functional risk factors (e.g., the presence of multiple chronic conditions or advanced ages in the patient mix) impact outcome and cost measures. Therefore, these types of measures must include evidence supporting a risk adjustment or justify why the measure does not need to be risk adjusted. Learn more about [risk adjustment](#).

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What Happens After a Quality Measure is Created?

A considerable amount of research, technical development, evaluation, and refinement goes into the development of a quality measure. This section includes more information about what happens after creation of the quality measure, including:

- How quality measures are implemented
- How quality measures are maintained

How are Quality Measures Implemented?

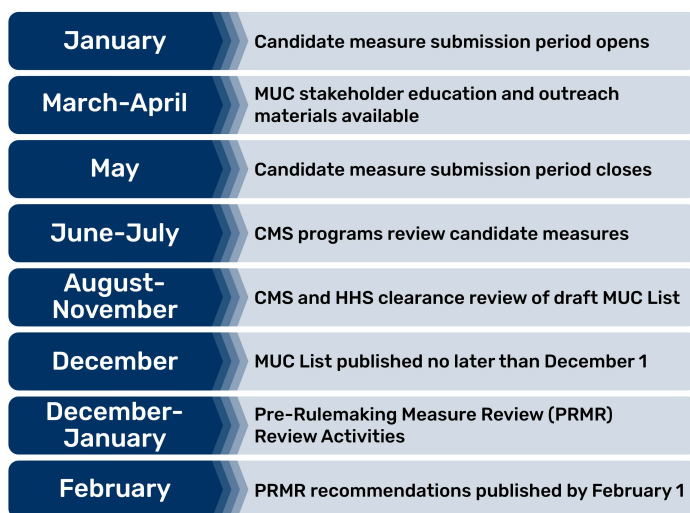
Once measures have undergone development (and, in some cases, endorsement; see call-out box at the end of this section), CMS and other organizations may consider for use in a program. This is the Measure Implementation stage. Implementation refers to the steps all fully specified measures undergo for incorporation into a CMS or other program, including measure selection, federal rulemaking (if appropriate), and rollout. Not every CMS program relies on the same process for implementation, but each one has steps in place to ensure all new measures meet certain criteria, fill a need in the program, and allow interested parties an opportunity to comment on new measures. There are different paths a measure can take for implementation depending on the program. As required for programs under Section 3014 of the Affordable Care Act, one path is through the pre-rulemaking and rulemaking process.

Pre-Rulemaking

One path measures can follow for implementation is through the [pre-rulemaking process](#) and the rulemaking process, which is required for quality programs falling under Section 3014 of the Affordable Care Act. The figure shows the process, which typically follows these steps:

1. From January through May each year, measure developers submit quality and efficiency measures for CMS to consider through the CMS MUC Entry/Review Information Tool ([CMS MERIT](#))
2. CMS reviews the submitted measures and creates a Measures Under Consideration (MUC) List. The MUC List is released publicly to request input from interested parties.
3. In January, multi-stakeholder groups review measures on the MUC List and provide feedback.
4. By February 1, the multi-stakeholder groups meet to provide recommendations for which measures they think specific CMS programs should use.
5. Lastly, selected measures enter the federal rulemaking process. Each CMS program proposes a rule describing which measures they are considering for adoption, and the public is invited to comment on them. CMS uses the feedback to finalize the rule and officially include new measure(s).

To learn more about this measure implementation process, visit the [Pre-Rulemaking](#) page on the MMS Hub.



Other Implementation Processes

Some quality measures or measure programs do not use the pre-rulemaking or rulemaking processes, but CMS still requires the same level of rigor in selecting measures for implementation. To maintain rigor, the steps differ only slightly from those used for measures requiring pre-rulemaking and rulemaking, and these quality measures still undergo the identification and finalization steps through a public process:

1. CMS issues a call letter or some other communication to solicit measures and/or identify measures considered for removal.
2. CMS considers public comments on the measures submissions, and then reviews the proposed changes to the program's measures.
3. Submission of measures for endorsement to the CMS CBE is optional.
4. Measure developers solicit public comments on all measures.
5. Once satisfied with the measures, CMS issues a final communication outlining the implementation of the measure set.

These measure programs have their own submission processes, so measure developers should check the relevant program's requirements for additional guidance.

Measure Rollout

Once CMS selects a measure for use in a CMS program, the rollout process begins because it is available for use to promote quality. However, this does not mean the measure developer will no longer work on the measure. Measure developers are responsible for ensuring a smooth transition to measure use by creating a coordination and rollout plan including

- Timeline for quality measure implementation
- Plan for interested party meetings and communication
- Anticipated business processes model
- Anticipated data management processes
- Audit and validation plan
- Plans for any necessary education

Measure developers also compile implementation guidance for measured entities.

This includes information about how to calculate the measure (e.g., the implementation algorithm) and any other guidance to ensure that measured entities are able to use the measure effectively and uniformly.

To learn more about measure implementation, visit the [Measure Implementation Overview](#) on the CMS MMS Hub.

How are Quality Measures Maintained?

Measure developers monitor their quality measures to ensure they continue to function as intended, and they look for ways to modify measures to improve reporting and increase the value of measurement results.

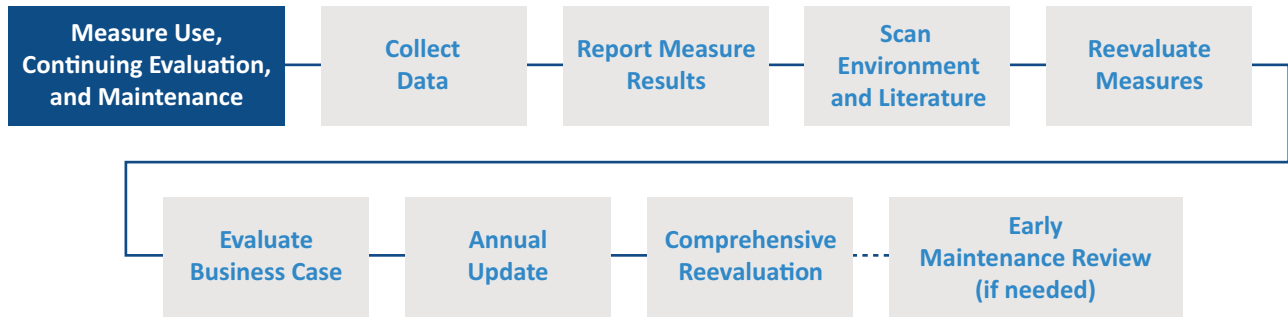
Measure developers monitor the performance of their quality measures in different ways depending on the type of measure. Some common methods include:

- Analyzing data collected, calculated, and reported for the measure
- Conducting environmental scans of the literature related to the measure to watch for new studies affecting the soundness of the measure
- Surveilling for unintended consequences the measure might have on clinical practice or outcomes
- Responding to questions about the measure
- Conducting maintenance reviews

What are maintenance reviews?

Maintenance reviews are conducted at least annually by measure developers to report on the activity related to the quality measures. There are three basic types of measure maintenance reviews: annual updates, comprehensive reevaluations, and early maintenance reviews, with interested party inputs being a critical component of this review process.

Steps in the Maintenance Process



To learn more about measure maintenance, visit the [Measure Use, Continuing Evaluation, & Maintenance Overview](#) on the CMS MMS Hub.

What is Endorsement?

For its public reporting and value-based purchasing programs, CMS may use measures endorsed by the CMS CBE. Because it is a recommended and preferred, but not required, part of the process, measure developers may submit applications for CMS CBE endorsement as a step in their efforts to have their measure accepted for use in a CMS quality program.

After measure developers submit their applications for endorsement, the CMS CBE initiates an in-depth evaluation process to assess the measures according to the five criteria: Importance, Feasibility, Scientific Acceptability, Use and Usability, and Equity (optional). To ensure and demonstrate the measure meets the evaluation criteria, measure developers gather relevant information about their measure, engage with interested parties, and test their measures quantitatively and qualitatively.

To provide thorough evaluation, the CMS CBE review committees include diverse experts, such as physicians, hospitals, other health care organizations, health plan representatives, individuals, public agency representatives, employers, and community group representatives. The committees review measures to ensure they address important aspects of care, are feasible to measure, provide consistent and credible information, and able support decision-making, as well as quality improvement efforts. As a result, CMS CBE-endorsed measures go through a thorough vetting process and considered high-quality. Learn more about the endorsement process in the Partnership for Quality Measurement [Endorsement and Maintenance \(E&M\) Guidebook](#).



Want more information about these topics?

Try these resources:

- [CMS MMS Hub Pre-Rulemaking](#)
- [CMS MMS Hub - Measure Implementation Overview](#) and [Measure Use, Continuing Evaluation & Maintenance Overview](#)
- [Partnership for Quality Measurement Endorsement & Maintenance](#)

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Conclusion

Quality measures are powerful tools for advancing quality in the health care system. CMS programs implement a wide range of measures serving quality priorities, such as promoting effective, safe, efficient, person-centered, equitable, and timely health care. To ensure quality measures can promote these benefits, they undergo a rigorous, time-intensive process helping align them with the critical evaluation criteria. The Measure Lifecycle, as described on the CMS MMS Hub, provides a standardized approach to measure development and maintenance based on known best practices. To ensure CMS programs can use the measures to promote quality health care for individuals and reduce waste in the health care system, measure developers use the resources of this standardized approach.

Where to Find More Information

- [CMS MMS Hub](#)
- [CMIT](#)
- [CMS NQS](#)
- [eCQI Resource Center](#)
- [Meaningful Measures 2.0](#)

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