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

Your guide to what goes into building quality measures and what happens after they are built

CMS

CENTERS FOR MEDICARE & MEDICAID SERVICES

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. healthcare 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 in the upper right-hand corner of the page.
- Some text links to external webpages to help you find more information. This text is underlined to show that you can click on it. Additionally, each section of the document includes a list of links to resources that may be of interest if you want to learn more.
- Call-out boxes are included throughout the document to present additional details on relevant topics that are more technical in nature.

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How Quality Measures Align with CMS Priorities

> CMS supports healthcare priorities by developing quality measures that address these priorities and goals, and implements them through measured entity feedback, public reporting, and links to payment incentives. CMS has long played a leadership role in quality measurement and public reporting.... CMS is also transforming from a passive payor to an active value purchaser by implementing payment mechanisms that reward measured entities who achieve better quality or improve the quality of care they provide.
>
> —*CMS Measures Management System (MMS) Hub*

Quality measures are tools that help improve the quality of healthcare through an approach that is consistent and accountable. Quality is defined 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" (Lohr, 1990, as cited in Institute of Medicine, 2001, p. 232). Each quality measure focuses on a different aspect of healthcare, 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 healthcare, which are chosen because they:

- Are associated with the ability to provide high-quality healthcare, and/or
- Relate to one or more quality goals for healthcare: effective, safe, efficient, person-centered, equitable, and timely care.

Taken together, quality measures provide a more comprehensive picture of the quality of healthcare. The Centers for Medicare & Medicaid Services (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 healthcare 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 can be addressed to promote equitable healthcare.

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 expanded public reporting of performance results. Quality measures are implemented into the healthcare system through one of these quality programs. Example programs include:

- Quality Improvement Organizations (QIO)
- Care Compare
- 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 healthcare toward payment for value, not volume. This priority also serves the financial sustainability needs of healthcare organizations and their clinicians, as quality healthcare 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 that align with CMS's priorities to enhance the healthcare system. For example, quality measures need to:

- Address high-impact measure areas that 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 that collects quality measure data.
- Be outcome-based where 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 stakeholders 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 that CMS uses to ensure quality healthcare for beneficiaries. They are tools that provide data about the important parts of healthcare that can be used to increase value for all participants in the healthcare system, including individuals, measured entities, and other key stakeholders.

Purpose of CMS Quality Measures

To promote quality and reduce waste in healthcare by:

- Incentivizing good performance and disincentivizing poor performance through public reporting and pay for-performance programs.
- Allowing CMS and participating clinicians/hospitals 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 more about key aspects of quality measures. The topics include:
- Elements of a quality measure

- Types of quality measures

- Data sources used by measures

- Electronic clinical quality measures (eCQMs)

- Measure evaluation

- How and why stakeholder input is used in quality measure development

Elements of a Quality Measure

A quality measure is made up of several parts, including a title and description, numerator, denominator, and rationale (some measures also have denominator and/or numerator exclusions). Each of these parts is described and identified on the example of a quality measure on the next page.

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 that arise 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 an HBP diagnosis whose blood pressure is reduced to a healthy range. The measure focuses on individuals between the ages of 18 and 85 who had a diagnosis of HBP during an outpatient visit and whose most recent blood pressure was adequately controlled (i.e., lower than 140/90 mmHg) during the measurement period, usually a calendar year.

Quality Measure for Controlling High Blood Pressure

Patients with adequately controlled blood pressure.

_____

Patients 18-85 years old with a high blood pressure diagnosis in the measurement period.

─ Any patients who are receiving hospice care; diagnosed or receiving certain treatments for kidney disease; pregnant (or were recently); >65 years old and living in certain types of special needs or long-term care facilities; age 66-80 with recent history of frailty and dementia medication or recent history of frailty and serious medical illness/ treatment; or >80 years old with evidence of frailty.

= % of patients (ages 18-85) with adequately controlled 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 overlapping the measurement period.
Denominator Exclusions	• 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 age 66 or older in Institutional Special Needs Plans (I-SNP) or residing in long-term care with Place of Service (POS) 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
Rationale	HBP, also known as hypertension, is when the pressure in blood vessels is higher than normal (Centers for Disease Control and Prevention [CDC], 2016). The causes of hypertension are 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 ID	1246 (Learn more about this measure on (CMIT)

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

The CMS Measures Inventory Tool (CMIT) is the repository of record for information about the measures that CMS uses to promote healthcare 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, healthcare priorities, and other attributes.
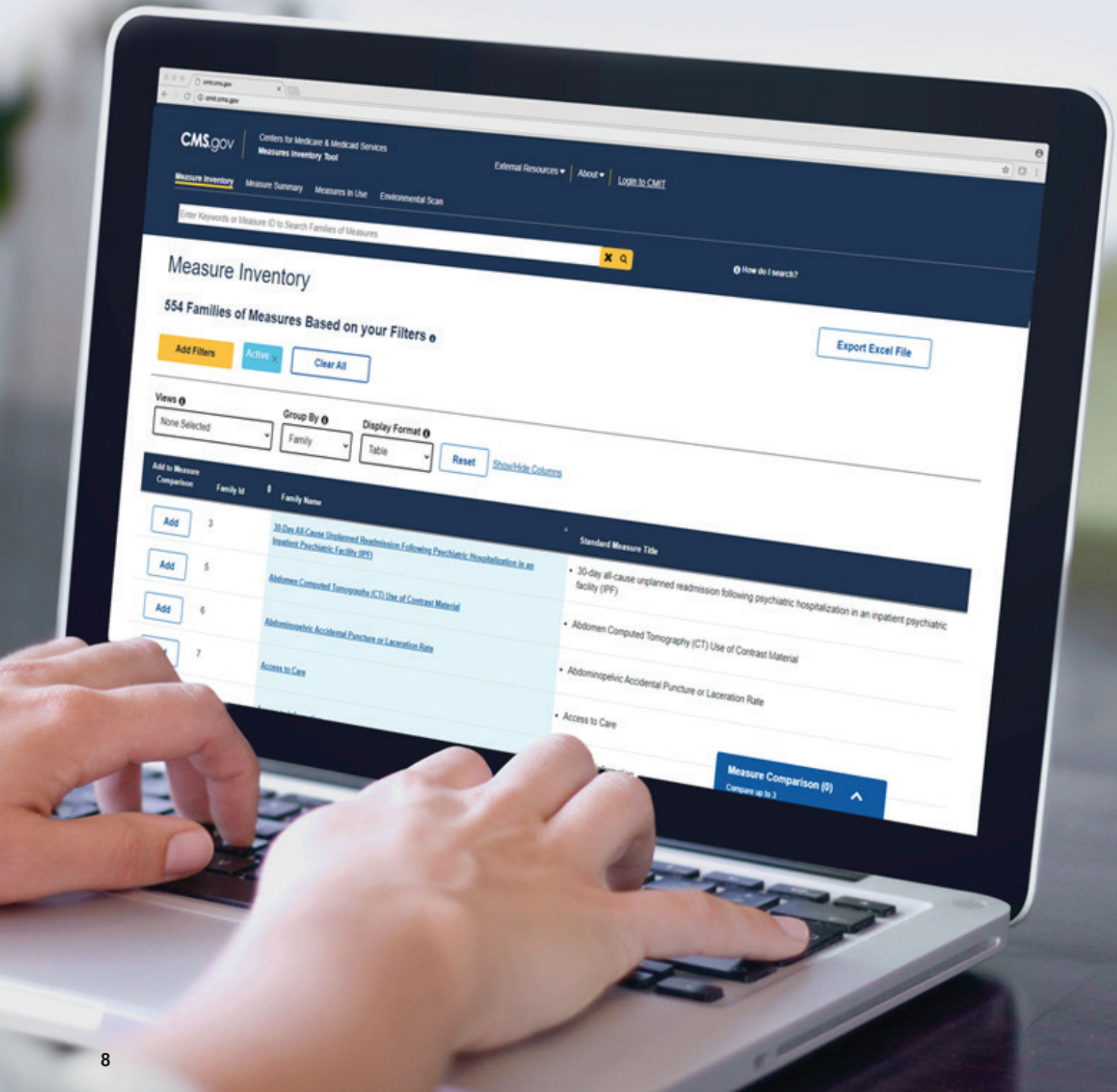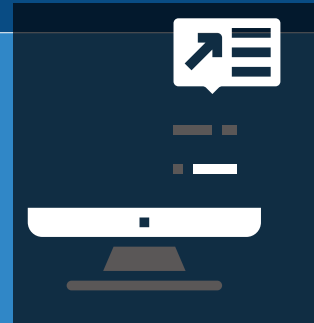
Types of Quality Measures

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

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 healthcare organization or clinician relevant to its capacity to provide healthcare.	Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery
Intermediate Outcome Measure	A measure that assesses the change produced by a healthcare 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 healthcare—desirable or adverse.	30-Day Unplanned Readmissions for Cancer Patients
Patient Reported Outcome-Based Performance Measure	A performance measure that is based on patient-reported outcome measure (PROM) data aggregated for an accountable healthcare entity. The data are collected directly from individuals using the PROM tool, which can be an instrument, scale, or single-item measure.	Functional Status Change for Patients with Neck Impairments
Process	Measures steps that should be followed to provide good care. Note: there should be a scientific basis for believing that the process, when executed well, will increase the probability of achieving a desired health outcome.	Adult Major Depressive Disorder (MDD): Suicide Risk Assessment (eCQM)
Structure	Measures features of a healthcare organization or clinician relevant to its capacity to provide healthcare.	Radiology: Reminder System for Screening Mammograms

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 type of data used to calculate the measure. For example, a claims-based measure relies on data elements that are 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., a combination of data sources). Descriptions of key data sources are provided here:

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: Healthcare 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 that can be used 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 (i.e., EHR) and may include data from the clinical laboratory, imaging services, personal health records, and pharmacy.

Surveys: Often collected via surveys, questionnaires, or assessments. The different Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys are used in many CMS programs. 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, 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).

Type of Data Source	Strengths	Limitations
Claims	• Readily available • Uses standard coding system(s) • Offers information not usually found in a clinical database • Less burdensome to measured entities or data collection • Drawn from large populations	• 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	• Reduced cost of accessing clinical information from the individuals' medical records or personal health devices (e.g., home blood glucose monitor)	• 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 most settings
Instruments/ Standardized Assessments	• Well validated and tested	• 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	• Detailed clinical data with a rich description of care • Includes clinically relevant information	• Labor-intensive and expensive to abstract • Subjectivity and consistency concerns during abstraction • Difficult to identify test sites
Electronic Patient Medical Records	• Detailed clinical data with a rich description of care • Reduced cost of accessing clinical information	• Difficult to identify test sites • Inconsistent adoption of EHRs • Data extraction requires special expertise • Structured data fields and drop-downs can reduce the richness of the clinical data
Surveys	• Established way of collecting individual's perspective/experience • Structured data for reporting • Unique data source	• Limited scope • May be labor-intensive and costly to implement • Need validated and reliable instruments, which may be proprietary
Registries	• Includes detailed clinical information in structured fields • Multiple data sources and care settings • Can be available for electronic upload	• 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

Electronic Clinical Quality Measures (eCQMs)

Like all quality measures, electronic clinical quality measures (eCQMs) are tools that help improve healthcare quality by measuring healthcare processes or outcomes. eCQMs are a subset of digital quality measures, which originate from health information captured and transmitted electronically via interoperable systems. They are developed using EHRs as their data source (or some other health information technology [IT] systems source) but are distinct from other measures in that the measures are specified electronically (note: specification is explained more in the next paragraph). Ideally, the data are captured 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 healthcare 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 healthcare 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.

Because eCQMs are designed 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, an eCQM's technical specifications must be drafted in a format that can be processed by computers. 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 Health Quality Measure Format (HQMF) is used 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.

eCQMs are developed similarly to other measures, but additional tools are used in the development process. Click on the following links to learn more about these tools:

- eCQI Resource Center: provides eCQI resources and connections with the community of professionals who are dedicated to electronic clinical quality improvement for better health.
- Measure Authoring Tool (MAT): web-based tool that allows measure developers to author eCQMs using CQL and the Quality Data Model (QDM) or FHIR® (Fast Healthcare Interoperability Resources®).
- Bonnie: software tool that allows eCQM developers to test and verify the behavior of their eCQM logic.
- Cypress: open source testing tool used by vendors to certify their EHRs and health IT modules for calculating eCQMs.

How is CMS incorporating 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 Electronic Clinical Quality Improvement (eCQI) Resource Center to learn more about dQMs.

How are Quality Measures Evaluated?

Quality measures are designed to drive healthcare quality, and they also influence measured entity payments, reduce risks to individuals, and affect measured entity burden.

That is why it is so important that quality measures be vetted to verify that they do, in fact, indicate quality and drive quality in the healthcare system. Five primary criteria are used throughout the Measure Lifecycle 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 healthcare quality (e.g., safety, timeliness, effectiveness, efficiency, equity, person-centeredness) and improving health outcomes for a specific high-impact aspect of healthcare 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 that could be captured without undue burden and can be implemented for performance measurement.

> ## 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 clinical 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 alike.

- **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 healthcare for individuals or populations.
- **Comparison to related or competing measures (harmonization):** The standardization of specifications for related measures with the same measure focus (e.g., influenza immunization of individuals in hospitals or nursing homes); related measures for the same target population (e.g., eye exam and HbA1c for individuals with diabetes); or definitions applicable to many measures (e.g., acceptable range for adult blood pressure) so that they are uniform or compatible, unless differences are justified (i.e., dictated by the evidence). The dimensions of harmonization can include numerator, denominator, exclusion, calculation, and data source and collection instructions. The extent of harmonization depends on the relationship of the measures, the evidence for the specific measure focus, and differences in data sources.

When preparing their quality measures for evaluation, measure developers produce documentation and evidence to demonstrate that their measures meet each criterion. Below are some of the questions they will answer to justify their measures.

Evaluation Criterion	Questions to Consider When Addressing the Criterion
Importance	Is this measure meaningful and important to individuals Does it address an aspect of healthcare 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 stakeholders use informationfrom the measure to inform performance improvement or improve accountability in care delivery?
Comparison to related or competing measures (Harmonization)	Are there existing measures that have elements in common with this measure? To what extent can this measure leverage those elements to reduce the burden associated with implementation and reporting?

Learn more about the measure evaluation criteria on the CMS MMS Hub.

How is Stakeholder Input Gathered?

Quality measure input is most useful when it involves diverse perspectives, including individuals and caregivers, and representation from key stakeholders 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 being developed. 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 this, measure developers make a plan for how to solicit, gather, and meaningfully incorporate stakeholder input into the Measure Lifecycle and maintenance processes.

Some of the ways that stakeholders are engaged include:

- **Technical Expert Panels (TEP):** Sometimes called a working group or committee, these groups of stakeholders 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 these groups to gather their vital perspective.

- **Individual feedback:** In addition to TEP participation, this may involve informal conversations with individuals receiving care, structured one-on-one interviews, focus groups, or other means of sourcing input from their experiences. Sometimes, family members or caregivers are invited to provide their perspective as well.

- **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 that measures are developed and maintained using a transparent process with balanced input from relevant stakeholders and other interested parties.

- **Other activities, such as interviews and workflow assessments:** Interviews are key to getting in-depth feedback from key stakeholders, 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 stakeholder groups commonly give input on quality measures?

- Healthcare professionals
- Representatives of healthcare organizations (e.g., hospitals, nursing facilities, home health, etc.)
- 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

Stakeholder Engagement in the Measure Lifecycle

Stakeholder Engagement (SE) Action

Decide how input from stakeholders will be included throughout the Measure Lifecycle.

Stakeholder Engagement

SE Action

Engage stakeholders to frame healthcare problems and prioritize steps for quality evaluation.

Measure Conceptualization

- Information Gathering
- Business Case
- Review for Harmonization & Alignment Opportunities
- TEP and Public Comment

Goal: Solicit topic ideas or areas of measurement that are most important to stakeholders; refine that list of potential concepts into a measure list.

SE Action

Use stakeholder input to optimize measure usability for parents and clinicians and to prioritize areas for future analyses or research.

Measure Specification

- Develop Technical Specifications
- Define Data Source
- Specify Code Systems
- Construct Data Protocol
- Document

Goal: Collect input and comments on the initial measure specifications to aid in refinement.

SE Action

Ensure the measure makes sense to stakeholders and address any identifiable gaps.

Measure Testing

- Develop Testing Plan
- Implement Plan, Alpha & Beta Testing
- Analyze Test Results, Apply Measure Evaluation Criteria, & Refine Measure
- Report on Testing

Goal: Obtain face validity inputs during alpha testing, feasibility and burden inputs at beta testing, and other inputs based on a review of overall results.

SE Action

Have stakeholders review the language and displays used to describe the measure, ensuring it is easy to understand.

Measure Implementation

- Measure Selection
- Measure Rollout
- NQF Endorsement
- CMS Consensus-Based Entity

Goal: Obtain stakeholder input on fully specified measures during the Pre-Rulemaking and Rulemaking processes.

SE Action

Ensure the measure continues to be relevant and meaningful to stakeholders.

Measure Use, Continuing Evaluation, & Maintenance

- Collect Data
- Report Measure Results
- Scan Environment & Literature
- Reevaluate Measure
- Evaluate Business Case
- Annual Update
- Comprehensive Reevaluation
- Ad Hoc Review

Goal: Solicit stakeholder input during the annual update, comprehensive reevaluation, and ad hoc review to inform usability and use and to identify unintended consequences

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 healthcare decisions thanks to their experience with the healthcare system. CMS has made it a top priority to get these stakeholders involved in Technical Expert Panels (TEPs) and other stakeholder engagement activities, requiring its measure development contractors to:

- Include at least one individuals, family member, or caregiver on TEPs who can share their experience related to the measure topic. More than one is strongly encouraged.
- Get individuals, family members, and caregivers involved as soon as possible.
- Balance these stakeholders' needs with those of other stakeholders.

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

Learn more about person and family engagement with resources on the CMS MMS Hub: the Stakeholder 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
- National Quality Forum's "Measurement Unpacked" e-learning
- CMS Measures Inventory Tool (CMIT)
- eCQI Resource Center
- CMS Electronic Clinical Quality Measures Basics webpage

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The Lifecycle of a Quality Measure

Quality measures undergo a rigorous development and implementation process to ensure that every measure proposed for use in a CMS program meets the evaluation criteria. Even after measures are implemented, work continues to ensure measures that are in use are continuing to be relevant, useful, and scientifically sound. Measures are constantly monitored, updated, and retired. It is how CMS ensures that its measures are serving program goals without causing undue burden on the healthcare system.

Measure Specification
- Collect input on initial measure specifications to aid refinement
- Define technical details based on testing findings

Measure Use, Continuing Evaluation, & Maintenance
- Include annual update, comprehensive reevaluation, and ad hoc reviews

Measure Conceptualization
- Identify ideas or topics that are most important to stakeholders and address a gap in measurement
- Scan the environment

Measure Testing
- Collect qualitative and quantitative data to establish whether the measure meets evaluation criteria

Measure Implementation
- Collect input on initial measure specifications to aid in refinement
- Define technical details based on testing findings

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 that CMS-funded measure developers follow in the development, implementation, and maintenance of quality measures.

There are five stages in the Measure Lifecycle, which are described in the following list and in the table on the next page. To learn more about a specific stage, you can also click on the hyperlinks:

- **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 stakeholders, including individuals and caregivers.

- **Specification**: Identify the population, the recommended practice, and the expected outcome, as well as how it will be measured.

- **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 consensus-based entity (CBE).

- **Use, Continuing Evaluation, and Maintenance**: Ensure that the measure continues to add value to quality measurement programs and that its construction continues to be sound.

Stage	Purpose	Key Activities
Conceptualization	Generate a list of concepts or ideas for measures that are meaningful and important to those who receive care and those who provide it.	• Conduct information gathering, including environmental scans • Develop a business case • Convene a TEP • Solicit public comments
Specification	Develop the technical instructions for how the measure is to be collected and implemented consistently, reliably, and effectively.	• 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.	• 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.	• Measure selection, including pre-rulemaking process and proposed and final rules • Measure rollout • CBE endorsement
Measure Use, Continuing Evaluation, & Maintenance	Monitor and measure to ensure the measure continues to add value to the CMS program and continues to be soundly constructed.	• 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 Resources webpage

What is Risk Adjustment?

Risk adjustment is a method to adjust for factors outside a measured entity's control. Because outcomes are often impacted by such factors (e.g., the presence of multiple chronic conditions or advanced ages in the patient mix) these types of measures must include evidence supporting a risk adjustment model. 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 the quality measure has been created, including the following topics:

- How quality measures are implemented
- How quality measures are maintained
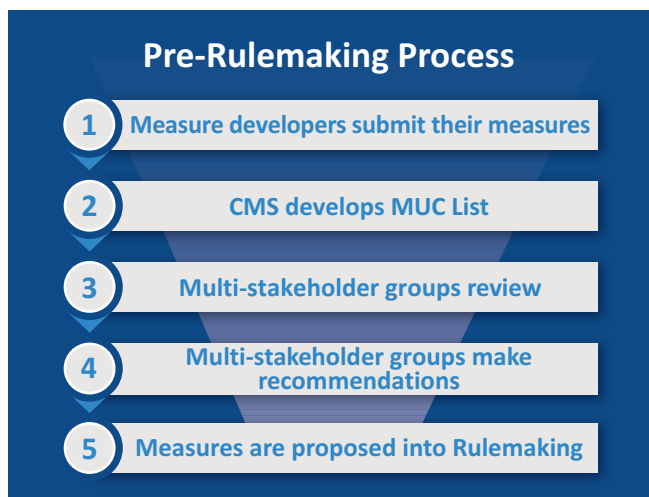
How are Quality Measures Implemented?

Once measures have undergone development (and, in some cases, endorsement; see call-out box at the end of this section), they may be considered for use in a CMS program. This stage of the lifecycle is known as Measure Implementation. Implementation refers to the steps that fully specified measures undergo to be incorporated into a CMS program, including measure selection, federal rulemaking, and rollout. Not every CMS program relies on the same process for implementation, but each one has steps in place to ensure that new measures meet certain criteria, fill a need in the program, and allow stakeholders an opportunity to comment on new measures. There are different paths that 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 that measures can follow to be implemented is through the pre-rulemaking process and the rulemaking process, which is required for measure programs falling under Section 3014 of the Affordable Care Act. The figure below shows the process, which typically follows these steps:

1. From February through May each year, measure developers submit quality and efficiency measures through the CMS MUC Entry/Review Information Tool (CMS MERIT) for CMS to consider.

2. CMS reviews the submitted measures and creates a Measures Under Consideration (MUC) List. The MUC List is released publicly to request input from stakeholders.

3. In December, 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 that describes which measures are being considered for inclusion, 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 CMS website.

Pre-Rulemaking Process

1 Measure developers submit their measures
2 CMS develops MUC List
3 Multi-stakeholder groups review
4 Multi-stakeholder groups make recommendations
5 Measures are proposed into Rulemaking

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 that require 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 to solicit measures and/or identify measures considered for removal.

2. Public comments and measures submissions are taken into consideration, and the proposed changes to the program's measures set are reviewed by CMS and Health and Human Services (HHS).

3. Cleared measures may go through a consensus development process (note: this step is not required for all programs).

4. Measure developers solicit public comments on all measures.

5. Once satisfied with the measures, CMS issues a final letter of implementation for the selected measures.

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

Measure Rollout

Once a measure has been selected for use in a CMS program, the rollout process begins because it is available for use to promote quality. However, this does not mean that work on the measure is finished. Measure developers are responsible for ensuring a smooth transition to measure use by creating a coordination and rollout plan that includes:

- Timeline for quality measure implementation
- Plan for stakeholder 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 MMS hub.

How are Quality Measures Maintained?

Measure developers monitor their quality measures to ensure that they continue to function as intended, and they look for ways to modify measures to improve reporting and increase the value of measurement results.
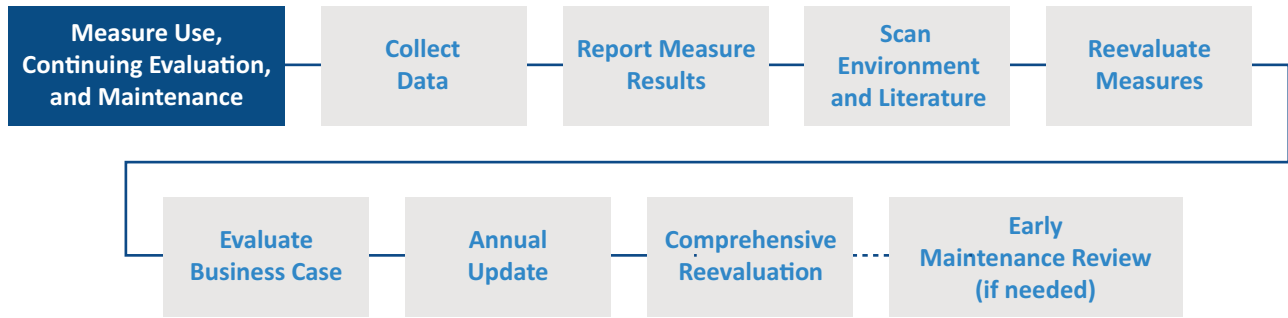
Measure developers monitor the performance of their quality measures in different ways depending on the type of measure. Some common methods include:

- Analyzing data that are collected, calculated, and reported for the measure
- Conducting environmental scans of the literature related to the measure to watch for new studies that affect the soundness of the measure
- Surveilling for unintended consequences that 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 stakeholder inputs being a critical component of this review process.

Steps in the Maintenance Process

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┌─────────────────┐   ┌──────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│ Measure Use,    │   │ Collect  │   │ Report Measure│  │ Scan         │   │ Reevaluate   │
│ Continuing      │──▶│ Data     │──▶│ Results      │──▶│ Environment  │──▶│ Measures     │
│ Evaluation,     │   │          │   │              │   │ and Literature│  │              │
│ and Maintenance │   │          │   │              │   │              │   │              │
└─────────────────┘   └──────────┘   └──────────────┘   └──────────────┘   └──────────────┘
          ┌──────────────┐   ┌──────────┐   ┌──────────────┐   ┌──────────────────┐
          │ Evaluate     │   │ Annual   │   │ Comprehensive│   │ Early            │
          │ Business Case│◀──│ Update   │◀──│ Reevaluation │···│ Maintenance Review│
          │              │   │          │   │              │   │ (if needed)      │
          └──────────────┘   └──────────┘   └──────────────┘   └──────────────────┘
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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 primarily uses measures that are endorsed by a CMS. Because it is a recommended, but not required, part of the process, measure developers often 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, Usability & Use, and Comparison to related or competing measures (harmonization). To ensure and demonstrate that these criteria are met, measure developers gather relevant information about their measure, engage with stakeholders, and test their measures quantitatively and qualitatively.

To provide thorough evaluation, the CMS CBE review committees include diverse experts, such as physicians, hospitals, other healthcare providers, health plan representatives, individuals, public agency representatives, employers, and community group representatives. The committees review measures to make sure they address important aspects of care, are feasible to measure, provide information that is consistent and credible, and can be used to support decision-making as well as quality improvement efforts. As a result, measures that are endorsed by CMS CBE have been thoroughly vetted and are considered high-quality. Learn more about the endorsement process in the CMS Consensus-Based Entity (CBE) Endorsement and Maintenance Supplemental Material.

Want more information about these topics?

Try these resources:

- CMS Pre-Rulemaking webpage
- CMS MMS Hub - Measure Implementation Overview and Measure Use, Continuing Evaluation & Maintenance Overview
- NQF Maintenance of NQF-Endorsed Performance Measures webpage

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Conclusion

Quality measures are powerful tools for advancing quality in the healthcare system. CMS programs implement a wide range of measures that serve quality priorities, such as promoting healthcare that is effective, safe, efficient, person-centered, equitable, and timely. To ensure that quality goals are capable of promoting these benefits, measures undergo a rigorous, time-intensive process that helps 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. Measure developers use these resources to ensure that the measures they develop and maintain can be used in a CMS program to promote quality healthcare for individuals and reduce waste in the healthcare system.

Where to Find More Information

- CMS MMS Hub
- CMIT
- eCQI Resource Center

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