



Cost and Resource Use Measures

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This document provides information about measure construction and measure reporting for cost and resource use measures. Developing specifications for cost and resource use measures requires a slightly different execution than developing specifications for traditional structure, process, and outcome measures. This document supplements the information found in the [Measure Specification](#) content on the [CMS MMS Hub](#).

1 INTRODUCTION TO COST AND RESOURCE USE MEASURES

The CMS strategic goals include providing better care and lower cost of care for all Americans. That strategy addresses affordable care by aiming to reduce the cost of quality health care for individuals, families, employers, and government. Measure developers can use measures of cost and resource use to assess variability in health care costs. Policy makers can, in turn, use these measures to direct efforts to make health care more affordable. Some terms related to measures addressing affordable care include

- **Resource use:** A resource use measure counts the frequency of defined health system resources. Some measure developers may monetize the health service or resource use units by applying a dollar amount (e.g., allowable charges, paid amounts, standardized prices) to each unit of resource use. Resource use measures can be valuable building blocks to drive efficiency and value.
- **Cost:** A cost measure addresses health care spending, by payer or consumer, for a health care service or group of health care services, associated with a specified patient population, time

period, and clinically accountable entities. A cost measure can assess cost in various ways, such as assessing total cost of care or assessing a specific set of costs.

- Efficiency: Efficiency refers to cost of care associated with a specified level of care. The [Measurement Framework: Evaluating Efficiency Across Patient-Focused Episodes of Care](#) defines efficiency as the resource use or cost associated with a specific level of performance with reference to the other five Institute of Medicine (IOM) domains of quality: safety, timeliness, effectiveness, equity, and patient-centeredness ([IOM, 2001](#)).
- Quality of care: Although cost and resource use measures are distinct from other quality measures⁽¹⁾, health care quality is still a crucial consideration. Quality is often the top of the ratio in the value equation (value = quality/cost), such that quality and cost go hand in hand when trying to assess value in the health care system.
- Value of care: Value of care takes into consideration a specified stakeholder's preference-weighted assessment of a combination of quality and cost of care performance. The stakeholder could be an individual patient, consumer organization, payer, provider, government, or society. The value of care would be the combination of quality and cost, weighted by the stakeholder's preference.

The United States has much higher health care costs than the rest of the Organisation for Economic Co-operation and Development (OECD) countries, but poorer than expected health outcomes ([OECD, 2021](#)). The challenge for CMS, the largest payor for health care in the country, is to identify the best, most efficient means by which to improve care, while ensuring care remains patient-centered and of equal quality for all populations. The CMS consensus-based entity (CBE) uses [Figure 1](#) (adapted) to illustrate the relationships among resource use, efficiency, and value.

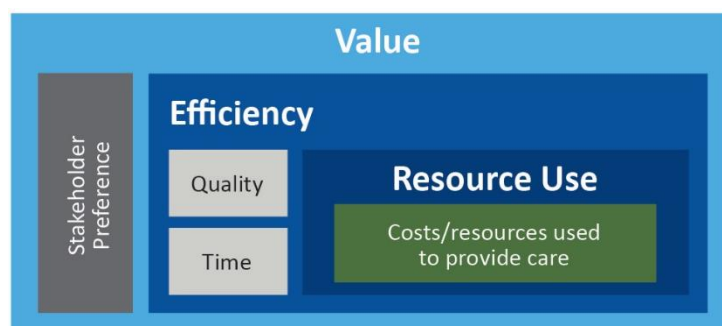


Figure 1. Relationship between Resource Use, Value, and Efficiency

Measure developers should weigh the relationships among resource use, efficiency, and value to develop meaningful measures that address efficiency while maintaining a focus on patient-centeredness and equity. In doing so, measure developers should

- Link cost and resource use measures to quality outcomes and to the required processes to achieve those outcomes. Examples of strong links are sharing a common patient cohort or care processes, or an observational period as an existing quality measure.
- Consider how to pair cost with resource use measures as cost measures incorporate resource use.

Methodologies for adding the stakeholder preference factors necessary to measure value are still in the definition stages. There also remain challenges to identify benchmarking cohorts for accountability comparisons accurately.

2 COST AND RESOURCE USE MEASURE SPECIFICATION

In the [National Voluntary Consensus Standards for Cost and Resource Use](#), the CMS CBE notes it is important to submit instructions and analytic steps for aggregating data when designing cost and resource use measures. Specifications should include the types of required data, the time periods relevant to the measures, and which patients, procedures, or conditions to include in the measurement. For example, if the measure carves out specific services from the claims for certain health plans and not for others, comparison of costs among the plans could be misleading. Most cost and resource use measures use claims data. Varying coding practices can compromise data [reliability](#) and [validity](#). It is best to try and address these issues during measure development and [maintenance](#).

To assess resource use in health care fully, it is important to consider measures with different [units of analysis](#):

- per capita-population and per capita-patient
- per encounter
- per admission
- per procedure
- per visit

Each unit of analysis provides a different lens for viewing resource use and helps determine where [measured entities](#) can make improvements and contributes to developing the clinical [logic](#).

2.1 MEASURE CLINICAL LOGIC

The measure developer should identify cost and resource use measures for acute conditions, chronic conditions, procedures, or preventive services. This identification often affects the clinical logic. The design of the analytic steps creates appropriately homogeneous units for measurement.

2.1.1 Measure Construction Logic

2.1.1.1 Time Intervals

The measure developer should specify when to start or end a measurement period for each measure. They identify these [time intervals](#) through clinical or evidence-based guidelines, expert opinion, or empirical data. Typically, the time interval for measure reporting is the calendar year.

2.1.1.2 Assigning and Triaging Claims

Some examples of considerations in the use of claims data include

- how to use different claims providing information for the same event—especially those resulting in an inflation of resource use amounts
- when and how to map or feed claims from different sources into the same measure
- when and which services trump other services
- how to identify units of resource use

The measure developer will identify and define the units of health services or resource use units. Measure specifications must clearly define and provide detailed instructions on how to identify a single health service unit, including the relevant codes, modifiers, or approaches to identify the amount.

2.1.2 Adjusting for Comparability

2.1.2.1 Define Risk Adjustment Approach

Risk adjustment^① reduces negative or positive consequences associated with caring for patients of higher or lower health risk or propensity to require health services. Resource use measures, including episode-based measures, generally risk-adjust as part of the steps to address differences in patient characteristics and disease severity or stage.

2.1.2.2 Define Stratification Approach

Another type of adjustment is stratification^①, which is important if known disparities^① exist or if there is a need to expose differences in results so that stakeholders can take appropriate action. In addition to exposing disparities, a measure may specify stratification of results within a major clinical category (e.g., diabetes) by severity or other clinical differences.

2.1.2.3 Define Costing Methodology

Measure developers should use different costing methods, depending on the intended perspective:

- count of services¹
- actual amount paid
- standardized prices

3 MEASURE REPORTING

3.1 ATTRIBUTING RESOURCE USE MEASURES

Resource use measures attribute the monetary value of the care provided as part of an episode of illness, care of a population, and event to a measured entity, in combination with quality or health outcome performance. The measure developer can attribute care to a single measured entity or multiple measured entities. Single attribution^① identifies the decision-maker, for example the primary care physician, and holds this individual responsible for all care rendered. Multiple attribution acknowledges cases where there are multiple decision makers who are playing a role in the care rendered.

As with all measures, the measure developer should consider the attribution model early in the measure development process and determine the attribution model based on the type of patient, clinical circumstance, and the measured entity providing the care. For more information, see the Attribution Model section of the [Develop Specifications](#) page on the *CMS MMS Hub*.

3.2 PEER GROUP IDENTIFICATION AND ASSIGNMENT

Unlike quality measures, which normally compare performance to an agreed-upon standard (e.g., providing flu vaccinations to a percentage of eligible patients) and direction for improvement (e.g., higher or lower score is better), preferred resource use amounts often are not standardized and it is not always clear whether higher or lower resource use is preferable. Instead, measure developers should apply resource use measures to compare one measured entity's performance to the average

¹ Depending on the intended use and requirement of each program, the classification of measures using this methodology may be as a quality measure.

performance of their peers. For this reason, it is essential to identify an appropriate peer group for comparison.

3.3 CALCULATING COMPARISONS

The observed-to-expected (O/E) ratio compares the value for each resource use measure attributed to a measured entity (i.e., observed amount) and divides it by the average resource use within the identified peer group (i.e., expected amount—the amount of resource use expected if the measured entity was performing at the mean).

Measure developers may use more sophisticated statistical approaches (e.g., multilevel regression).

3.4 SETTING THRESHOLDS

After estimating the value of a resource use measure, to provide more context for the values, the measure developer should determine whether to apply thresholds or remove outliers. Outliers can be the result of inappropriate treatment, rare or extremely complicated cases, or coding error. Users of the measure results often do not discard outliers, but instead examine them separately. Measure developers should document these actions so users can understand the full context.

3.5 PROVIDING DETAILED FEEDBACK

After completion of the analytic steps, users of resource use measures must decide which analytic results to report publicly or include in provider feedback.

3.6 REPORTING WITH DESCRIPTIVE STATISTICS

It is critical to choose the right statistics when reporting resource use measure results. Factors influencing this choice include whether to use the results for public reporting or for feedback to providers. Well-crafted, descriptive analytic results can provide the detailed information necessary to make feedback actionable for all stakeholders. However, it is important to balance detailed reporting with the possibility of information overload.




4 COST AND RESOURCE USE MEASURE EVALUATION

As with other types of measures, the resource use measure evaluation criteria use the criteria in [Measure Evaluation Criteria and Guidance for Evaluating Measures for Endorsement](#). Measure developers should keep the major evaluation criteria in place, but modify the subcriteria, as appropriate, to reflect the specific needs of resource use measure evaluation.

Resource use measures are broadly applicable and comparable measures of input counts (i.e., in terms of units or dollars) applied to a population or population sample. Resource use measures count the frequency of specific resources. The measure developer should monetize these resource units as appropriate. The approach to monetizing resources varies and often depends on the perspective of the measurer and the measured. Monetizing resource use permits aggregation across resources.

Considerations for evaluating resource use measures include

- Specifications for resource use measures should be well defined, complete, and precise.
- Specifications should include measure clinical logic and method, measure construction logic, and adjustments for comparability as relevant to the measure.

- Data protocol steps are critical to the reliability and validity of the measure.
- Examples of evidence that a numerator  and/or denominator exclusion  distorts measure results include, but not limited to, frequency or cost of occurrence, sensitivity , analyses with and without the exclusion, and variability of the exclusion across measured entities.
- Some measures may specify the exclusion of some patients, events, or episodes that are known or determined to be high cost. For example, a chronic obstructive pulmonary disease resource use measure may exclude a patient with active cancer because measure developers consider cancer the dominant medical condition with known high costs.
- Testing for resource use measure exclusions should address the appropriate specification steps (i.e., clinical logic, thresholds, and outliers).
- When the measure developer does not address exclusions, they must justify this decision and describe the corresponding implications.

5 KEY POINTS

Measure developers can use measures of cost and resource use to assess variability of the cost of health care. Policy makers may use cost and resource measures to direct efforts to make health care more affordable. When developing specifications for cost and resource measures, measure developers should consider the types of data required, the time periods relevant to the measures, and which patients, procedures, or conditions to include in the measurement. In the context of measure reporting, health care payors and program administrators use cost and resource measures to attribute the monetary value of care provided as part of an episode of illness, care of a population, and event to a measured entity, in combination with quality or health outcome performance. During the process of measure evaluation, measure developers must ensure measures are well defined, complete, and precisely specified.

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