

Quality Measures: Types, Selection, and Application in Health Care Quality Improvement Projects

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Learning Objectives

1. Define quality measures and their different types
2. Discuss how to select the relevant measures of quality
3. Explain how to use the measures in quality improvement projects

1. WHAT ARE QUALITY MEASURES?

“If you cannot measure it, you cannot improve it.”

Peter Drucker

Although Peter Drucker’s statement may not be true in all situations, it does reflect the essence of quality improvement (QI) in health care, which is based on accurately measuring the magnitude of a problem encountered in a particular setting and measuring the impact of changes made toward solving the problem.

Quality measures are defined by the United States Centers for Medicare & Medicaid Services (CMS) as “tools that help us measure or quantify healthcare processes, outcomes, patient perceptions, and organizational structure and/or systems that are associated with the ability to provide high-quality health care and/or that relate to one or more quality goals for health care.”^[1]

There are different types of quality measures, and they are usually categorized into four categories: process, outcome, structural, and balancing measures.^[2,3]

These four categories are described as follows, with an example from a project designed to improve outcomes for patients with myocardial infarction (MI).

- **Process measures** reflect compliance with actions implemented to achieve the goals of a QI project. For example, administering thrombolytic therapy within

90 minutes from onset of symptoms or giving aspirin before arriving at the hospital, are processes that can be measured within the scope of a QI project for acute MI.

- **Outcome measures** are the patient’s health status. As such, these measures are usually the most pertinent. Examples of outcome measures include post-MI 30-day mortality, pre-hospital mortality, or incidence of severe chronic heart failure.
- **Structural measures** reflect the capacity of the organization including systems and processes (eg, number of board-certified cardiologists, patient-to-emergency nurse ratio, or availability of cardiac catheterization laboratory 24 hours a day).
- **Balancing measures** refer to consequences of implementing a QI project that were not necessarily intended. These consequences can have a negative impact, such as staff overload, dissatisfaction, or additional financial cost, or have a positive impact such as cost savings or improved patient satisfaction.

2. HOW TO SELECT RELEVANT MEASURES OF QUALITY

Quality measures are determined by the nature of the problem and the desired goal for improvement. The project should focus on at least one of the six domains of quality: safety, timeliness, equity, efficiency, effectiveness, and patient-centered care.^[4] The first step to develop a QI project is to understand the problem and estimate its magnitude in order to propose an effective solution. Therefore, it is critical to select the most appropriate quality measure to quantify the problem and monitor

Table 1.—Considerations for selection and application of measures for quality improvement projects

Selection Criteria	Considerations
What is the name of the quality measure?	State the name of the measure in the most used and recognizable way. Use internationally recognized terminology.
What is the source for the measure?	State where the measure is from (Library of measures, IHI, CMS, etc.) with appropriate reference(s).
What is the type of measure?	Is it a process, outcome, structural, or balancing measure?
Is it the best measure to serve the purpose of the project?	How does the measure reflect the goal of the project? Is there a better measure?
What is the purpose of the measure?	Is it accreditation, reimbursement, or something else?
What is the unit of measure?	Which unit is used for the measure: days, number of patients, incidence, 1 in 1000 admission days, other?
How is the measure calculated?	What is included in the calculation, what is the numerator and what is the denominator? What factors may influence the calculation?
How is the data collected?	Manually or electronically? How often? How are data compiled?
What is the source of data?	Patient records, survey, another database, etc.
Who will collect the data?	Make sure the right person collects the measure and that person is well oriented and aware of the task.
How will the data be reported and analyzed?	Decide on report format, and how data will be analyzed.
What do changes in the measured values mean?	Explain and interpret the results of the measures in relation to the set target.

IHI, Institute for Healthcare Improvement; CMS, U.S. Centers for Medicare & Medicaid

the impact of possible solutions during the project. It is best to select measures that are well defined and can be compared with other institutions or units. We recommended using internationally recognized quality measures from the National Quality Measures database, CMS Measures Inventory Tool, International Library of Mea-

asures from Joint Commission International, Agency for Health Research and Quality, and other professional societies related to the subject.^[5-7] Different quality measures will require different methodology, which is discussed in the next section. Considerations for selecting quality measures are given in Table 1.

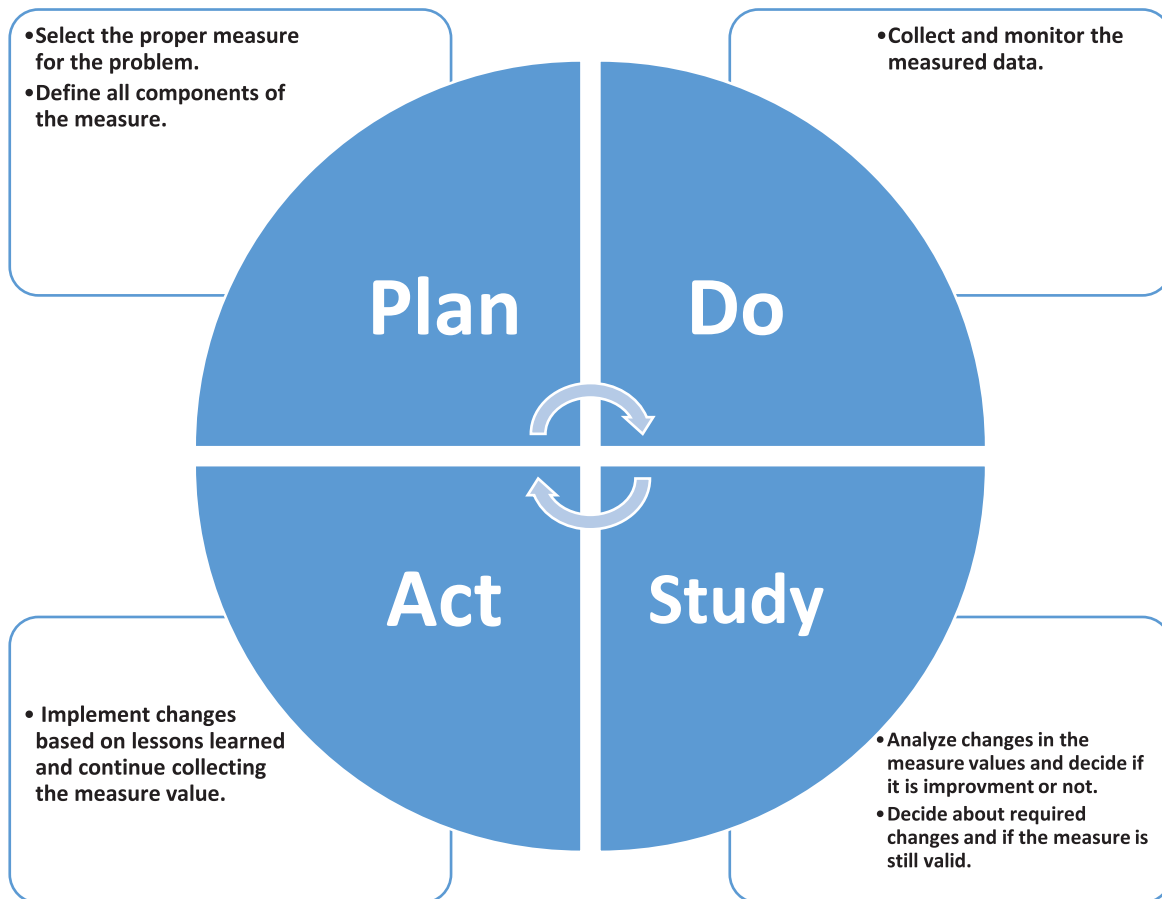


Figure 1.—How to use the measures in the plan-do-study-act approach for quality improvement projects.

3. HOW TO USE QUALITY MEASURES IN QI PROJECTS

The first step in a QI project is to define the problem by answering these questions: how was the problem identified, what does the problem affect, and what is the magnitude of those effects?^[7,8] The second step is to define the aim for the project in terms of one or more of the six quality domains. The third step is to select the appropriate quality measures and methodology that will be used to determine if the proposed solutions lead to an improvement in quality.

Acceptable methodology for QI projects generally involves a framework consisting of multiple cycles of testing interventions or changes over time. For example, the “Plan-Do-Study-Act” (PDSA) approach (or plan-do-check-act [PDCA])^[9,10] evaluates one intervention at a time. The results from each cycle are incorporated into the next intervention, and the PDSA process is repeated until the desired goal is achieved. See Figure 1.

- **Plan:** Determine the best measure to quantify the problem and identify the baseline value and the goal for improvement.
- **Do:** Collect and monitor the measured values meticulously.
- **Study:** Analyze the change in quality measures and determine if the changes are in the right direction and if there are any modifications required for the next cycle.
- **Act:** Implement the changes based on the lessons learned and continue collecting quality measures data for long-term sustainability of the improvement.

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