

The Measurement Family
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Solberg and colleagues (1997) described the measurement family to clarify the differences between measurement used for research, accountability (also called evaluation) and quality improvement. *Quality improvement data* encourages further innovation and effort to enhance the patient experience and achieve functional and clinical outcomes. *Accountability data* is used by systems and policy makers to drive innovation through decision-making based on a return on investment. The purpose of *measurement for research* is the development of new knowledge. Table 1 describes the measurement family.

Measurement for quality improvement seeks to inform ongoing efforts and provide immediate and continuous feedback to refine and improve the process or system that is the focus of the improvement effort. The measures are kept to a minimum and are collected by staff involved in the process.

Accountability measures are the most familiar, as they are traditionally used for program administration and evaluation and typically follow a before-and-after design. These measures are essential to determine the value of the investment in a program or service. There is a temptation to use accountability measures for quality improvement, but the complexity of data collection methods and delay in measurement makes them inadequate for this purpose. There are also limitations on what can be measured due to cost and privacy constraints. Evaluation is often limited to the data that is readily available, not what is ideal.

Research measurement is needed when developing new knowledge. This type of measurement is more complex and exacting, with further delays in the availability of the information and increased confidence in the data.

All three kinds of measurement often co-exist in one area that needs improvement. For example, a physician practice may be interested in improving control of high blood pressure. They may look to the research for an understanding of the results of different types of interventions and use the research measurement to build an evidence-informed approach in their setting. They may have access to data from local population health assessments that provide a snapshot of the prevalence of high blood pressure in their community, or the number of people who are undiagnosed or who are experiencing heart failure or strokes due to high blood pressure. This may be what actually inspired the improvement project. While they are working on their improvement project, the practice team will monitor (measure) their results. They may decide to count the number of patients with high blood pressure, record the clinical goal of each patient (tailored by comorbidity and age) and count how many patients are meeting their goals. The practice team will measure frequently, so that they can see if their ideas are working, and they will try new ideas if they aren't getting the results they want. For a complete picture of their improvement, they may also track treatment burden and patient and staff experience. It is unlikely they will be able to track strokes or heart failure that may develop over the years, but the research evidence informs them that their efforts locally will contribute to population health, and a repeated population health assessment in the future may show improvements.

Table 1. *The Measurement Family adapted from Solberg, et al.,1997.*

	Improvement	Accountability or Evaluation	Research
Aim	Improve care	Comparison, choice, reassurance, spur change	New knowledge
Timeline	Often very brief, hours or weeks to months	Varies	Often takes years
Test observability	Test observable	Test observable or no test	Test may be blinded
Bias	Accept consistent bias	Measure and adjust to reduce bias	Design to eliminate bias
Sample size	"Just enough" data--work into routine, low or no budget	Obtain all relevant available data.	"Just in case" data. Major budget expense. Based on power calculations
Hypothesis	Flexible, changes as learn, part of work process	May not be a hypothesis	Fixed hypothesis
Testing strategy	Sequential tests	One test or no test	One large test
Confidentiality of data	Data used by improvers	Data available to public	Protected data and restricted access
Who measures?	Improvers	External	Highly skilled external team
Numerator and denominator	Determined by improvers to be relevant to clinical practice and the improvement process.	Determined by evaluators, may not be relevant to improvers.	Specifically described by inclusion/exclusion criteria and measurement tools.

Using mismatched measurement strategies can create frustration and confusion. The measurement family provides guidance on what type of measurement to use in different circumstances.

Reference:

Solberg LI, Mosser G, McDonald S. The three faces of performance measurement: Improvement, accountability and research. *Jt Comm J Qual Improv.* 1997;23(3):135-147.