# Navigating in the Turbulent Sea of Data: The Quality Measurement Journey

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**KEYWORDS**

- Quality measurement • Statistical process control
- Improvement sequence

## WHERE AWAY AND WHY ALONE?

In 1892, Captain Eben Pierce offered his friend Joshua Slocum (1844–1909) a ship that "wants some repairs." Slocum went to Fairhaven, Massachusetts, to find that the ship was a rotting, old, 37-foot, oyster sloop propped up in a field. It was known as the *Spray*. Slocum spent 13 months repairing this vessel and on April 24, 1895, at the age of 51 years, he cast off from Gloucester, Massachusetts, in the *Spray*. As he was about to set off on his voyage a group of people called out to him, "Where away and why alone?"

Slocum covered 46,000 miles during his solo journey and landed back in Newport, Rhode Island, on June 27, 1898. His account of this journey, *Sailing alone around the world,* was published by the Century Co in 1900.[1] On November 14, 1909, at the age of 65 years, he set out from Martha's Vineyard on another lone voyage to South America, but was never heard from again.

Like Joshua Slocum, we are also on a journey. We are not battling 30-foot waves, howling winds, or pirates. But we are facing pressures and challenges that test our knowledge, experience, and our abilities. The primary question is this: Do you have a plan to guide your quality journey? Or are you adrift in a turbulent sea of data, hoping that your numbers meet the internal and external demands that are constantly testing your navigational skills? Or are you headed in the wrong direction and feeling a little like Joshua Slocum, adrift alone in a turbulent sea? "Where away and why alone?"

## WHY ARE YOU MEASURING?

In 1997, Solberg and colleagues[2] described what they called the 3 faces of performance measurement. They wrote:

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*We are increasingly realizing not only how critical measurement is to the quality improvement we seek but also how counterproductive it can be to mix measurement for accountability or research with measurement for improvement.*

The investigators describe in detail various characteristics of performance measurement for accountability (what many today call data for judgment), research, and improvement. These characteristics are summarized in **Table 1**. The authors' distinctions between the various aspects of the measurement journey help us quickly realize that not all measurement is the same. Yet many health care professionals do not think about why they are actually measuring. You will hear managers or frontline workers say, for example, "Look, we need to submit some data on our progress related to ventilator-associated pneumonias in the neonatal intensive care unit, so find some recent numbers and send them in." Frequently this means the data submitted may not be the most recent data, defined in the same way they were defined when they were first submitted or stratified according to the same criteria used the previous year. Furthermore, the data may be presented in a manner that works when accountability questions are driving the inquiry, but they may be inadequate for questions related to quality and safety or conducting randomized control trials (RCTs).

Brook and colleagues[3] have also helped to clarify the performance measurement journey. They point out that research (ie, RCTs) designed to determine the efficacy

**Table 1**
**The 3 faces of performance measurement**

| Aspect | Improvement | Accountability | Research |
|---|---|---|---|
| Aim | Improvement of care | Comparison, choice, reassurance, spur for change | New knowledge |
| Methods | | | |
| • Test observability | Test observable | No test, evaluate current performance | Test blinded or controlled |
| • Bias | Accept consistent bias | Measure and adjust to reduce bias | Design to eliminate bias |
| • Sample size | Just enough data, small sequential samples | Obtain 100% of available, relevant data | Just in case data |
| • Flexibility of hypothesis | Hypothesis flexible, changes as learning takes place | No hypothesis | Fixed hypothesis |
| • Testing strategy | Sequential tests | No tests | One large test |
| • Determining if a change is an improvement | Run charts or Shewhart control charts | No change focus | Hypothesis, statistical tests (*t* test, F test, $\chi^2$), *P* values |
| • Confidentiality of the data | Data used only by those involved with improvement | Data available for public consumption and review | Research subjects identities protected |