Language of Improvement: Metrics, Key Performance Indicators, Benchmarks, Analytics, Scorecards, and Dashboards

JOY DON BAKER, *PhD, RN-BC, CNOR, CNE, NEA-BC, EDITOR-IN-CHIEF*

Perioperative nurses must know what data to collect, how to interpret it, and how to select the best methods of analysis to make quality, action-oriented decisions, such as determining which product creates the best outcomes for a particular patient population (eg, elderly patients undergoing hip procedures) or how to improve staffing mix based on the surgical case load per day. The complexity of data that nurses manage continues to increase. Nurses generate simple forms to track procedure or supply information or show the progress of a quality improvement project. Rules develop out of continued use of the form to ensure consistency of the documentation. For example, all nurses use the same indicator to record the start of a patient procedure, such as "patient enters the OR." The consistency in recording the start times allows for accurate comparison to the scheduled start times for the patient procedures. There must be a system in place for storage and retrieval of the data for analysis purposes. Nurses know and understand the critical components of their practice. Therefore, it is important for nurses to clarify and determine the most important elements of complex data so they can generate reliable and valid reports that provide insights on which to base best-practice decisions.[1]

Turning massive amounts of data into useable information for improvement is key to improving patient care. Large databases can be helpful when evaluating patient care best practices and provide a business advantage when adequate storage and management of data systems are in place for maximizing the speed of translation of data, which increases the ability to "determine root causes of failures, issues, and defects, potentially saving billions of dollars annually"[2(p20)] and potentially improving patient care. Variable best-practice sources (ie, literature, hospital policies) should be incorporated to improve the integrity of the end report on which decisions are based, therefore making it "easier to separate the signal from the noise,"[2(p20)] or as the old adage suggests, the "trees from the forest."

Meaningful results produced from purposeful and accurate data are the foundation from which significant analysis for relevant change occurs.[2] Comparison information on a variety of improvement topics for exploration can be found in large data sources, such as the 11 Hospital Consumer Assessment of Healthcare Providers and Systems key topics or the Surgical Care Improvement Project core measures.[3,4]

METRICS, KEY PERFORMANCE INDICATORS, BENCHMARKS, AND ANALYTICS

Specific elements for collecting, monitoring, and analyzing results for quality decision making in the perioperative setting are defined in this section. This section clarifies the terms *metrics, key performance indicators* (KPIs), *benchmarks*, and *analytics* and weaves together organizational and perioperative nursing examples.

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Metrics

A metric is a specific measurement standard,[5] such as the start time (ie, when the patient entered the room) for the first procedure of the day. Savvy organizations select the best metrics to track that are appropriate to what the organizational staff members wish to measure (eg, patient satisfaction, instrument and equipment defects, percentage of on-time starts).[2] A set of metrics that nurses use often are vital signs (eg, blood pressure, pulse, respirations, temperature). However, simply having the metric for each vital sign does not provide complete information on which to base a decision; therefore, it is important to have additional information to support decision making, such as KPIs.

Key Performance Indicators

"A KPI is a metric that embeds performance targets so organizations can chart progress toward goals."[6(p10)] An example of an organizational target is the amount of revenue by year end, which can be tracked using minimum and maximum acceptable ranges and charted monthly to reflect progression toward that end goal.[6] A clinical KPI might be total cholesterol level for a patient. The patient Mr Jones is informed that his total cholesterol level is 220; however, knowing only the number does not help the patient or health care provider understand the relevance of the number. It is important to know that "less than 200 mg/dL is desirable, 200 to 239 mg/dL is borderline high, and 240 mg/dL and above is considered high."[7] Therefore, the target maximum for Mr Jones' cholesterol level would be any value less than 200 mg/dL. Tracking the value over time assists with understanding the progress made when taking various actions to manage a specific KPI.

Selecting the KPIs for an organization is based on the goals of the organization; the goals should relate to the stability of processes, the structure supporting the systems (eg, standards driving the practice), and outcomes (eg, patient satisfaction, employee effectiveness).[2] Best indicators assist in problem solving and lead to preventive actions (eg, prevention of patient falls) rather than corrective actions after an incident or episode has occurred.[2] Data retrieved from multiple sources as a part of the KPI set assist health care providers in finding preventive answers and solutions to: (1) "enable cost savings and time reductions," (2) "speed new product development," and (3) "make smarter business decisions."[2(p24)] It is important to focus on organizational priorities that create long-term value for patients, families, payers, and employees, as well as the organization.

Benchmarks

Benchmarks use the selected KPIs and expand on them to provide the means to evaluate similar items and determine if they are comparable. For example, a nurse takes the patient's vital signs and acquires these metrics: a blood pressure of 164/100 mm Hg, a pulse of 100 beats per minute, a respiration rate of 25 breaths per minute, and a temperature of 100° F (37.8° C). At a glance, the nurse recognizes there is a problem because of the set of benchmarks he or she has learned regarding normal human physiology: blood pressure should be 120/80 mm Hg, the pulse should be 50 to 80 beats per minute, the respiration rate should be 16 to 20 breaths per minute, and the temperature should be 98.6° F (37° C). Organizational benchmarking is similar in that it is a means of "comparing a metric with a gold standard or best practice, or other internal or external reference point"[5(p42)] for evaluation purposes. Lang[5] suggests a seven-step method to benchmark for improvement.

1. *Identify goals.*
2. *Identify the audience.*
3. *Identify the data sources.*
4. *Evaluate data quality: trustworthiness and validity.*
5. *Develop a plan for reporting: in person or in writing, background or contextual information required to explain any limitations.*
6. *Consider possible outcomes*: *decisions, action steps*, *additional investigation required to learn more about anomalous results.*
7. *Improve. Correct data to use, report, or benchmark usefulness, additional audiences that need included in reporting.*[5(p42-44)]

Analytics: Stages and Drivers

Davenport and Harris define analytics as "the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact based management to drive decisions and actions."[8(p7)] Analytics encompasses the transformation of data into actions following comprehensive examination that relates to the organization's needs or problems to be solved and supports decision making.[8] The four stages of analytics include

- *data,*
- *analysis,*
- *insights, and*
- *action.*[9(p314)]

Drivers of analytics relate specifically to resources available to acquire and maintain the data, as well as the people necessary to sustain the analytics processes. These drivers center on data, software, process, and people available for the development of sustainable and useful analytics.[9]