- Results of patient satisfaction surveys, staff culture of safety surveys, and other areas related to safety and quality of care
- All other hospital departments and programs, as all of these must be integrated into the overall quality and patient safety program.

It is critical to analyze the performance data to identify where the hospital is performing well and where a need for improvement exists. Simply collecting data alone is not adequate. When data are analyzed and turned into information, this process helps hospitals see patterns and trends and understand the reasons for their performance. Many types of data are used to evaluate performance on safety and quality initiatives. This should include performance indicator data and outcome data.

The quality and patient safety program identifies, collects, aggregates, and analyzes data to support patient care, treatment, and services and hospital management. The hospital must define a method of data collection and aggregation based on the type of records used, such as paper or electronic, and the nature of its data collected in accordance with laws and regulations, national health care industry standards, and its performance goals. All departments and services of the hospital must be integrated into the program. Analysis of aggregate data provides a profile of the hospital's performance over time and allows the comparison of the hospital's performance with other hospitals, particularly on the hospitalwide measures selected by leaders. Aggregate data are an important part of the hospital's performance improvement activities to help the hospital understand its current performance and identify opportunities for improvement.

By participating in external databases, a hospital can compare itself to that of other similar hospitals locally, nationally, and internationally. Comparison is an effective tool for identifying opportunities for improvement and documenting the hospital's performance level. Health care networks and those purchasing or paying for health care often ask for such information. External databases vary widely from insurance databases to those maintained by professional societies. Hospitals may be required by laws or regulations to contribute to external databases. In all cases, the security and confidentiality of data and information must be maintained.

Measurable Elements of QPS.03.00

1. The quality and patient safety program has a process to aggregate data from multiple sources.
2. Aggregate data and information support patient care, treatment, and services; hospital management; professional practice review; and the overall quality and patient safety program. (*See also* PCC.02.02, ME 2; QPS.03.02, ME 1)
3. Ⓓ The hospital provides aggregate data and information to agencies outside the hospital when required by laws and regulations.
4. The hospital implements a process to contribute to and learn from external databases for comparison purposes.
5. The hospital maintains security and confidentiality when contributing to or using external databases.

Standard QPS.03.01

The hospital uses an established, statistically sound process to validate data as a component of its quality and patient safety program.

Intent of QPS.03.01

Data validation is an important tool for understanding the quality of the data and for establishing the level of confidence decision-makers can have in the data. A quality improvement program is only as valid as the data that are collected. If the data are flawed, quality improvement efforts will be ineffective. The reliability and validity of measurements are thus at the core of all improvements. To ensure that good, useful data have been collected, an internal data validation process must be implemented. Data validation becomes one step in setting priorities for measurement, selecting what is to be measured, extracting or collecting the data, analyzing it, and using the findings for improvement.

When a hospital publishes data on clinical outcomes, patient safety, or other areas, or in other ways makes data public, such as on the hospital's website, the hospital has an ethical obligation to provide the public with accurate information. Hospital leaders are accountable for ensuring that the data are valid. Data should be validated using an evidence-based process appropriate for data collection (for example, electronic health records with automated processing vs. paper records that require manual data mining). Reliability and validity of measurement and quality of data can be established through the hospital's internal data validation process or, alternatively, can be judged by an independent third party, such as an external company contracted by the hospital. Resources such as the World Health Organization's *Data Quality Assurance* toolkit is an example of a tool to assist with data validation. The process can consist of simple measures to validate data, such as a two-person review process to ensure inter-rater reliability.

Measurable Elements of QPS.03.01

1. The hospital validates data when any of the following conditions are noted, at minimum:
   - A new measure is implemented (in particular, those clinical measures that are intended to help a hospital evaluate and improve an important clinical process or outcome).
   - Data will be made public on the hospital's website or in other ways.
   - A change has been made to an existing measure, such as the data collection methods have changed, or the data abstraction process or abstractor has changed.
   - The data resulting from an existing measure have changed in an unexplainable way.
   - The data source has changed, such as when part of the patient health care record has been turned into an electronic format and thus the data source is now both electronic and paper.
   - The subject of the data collection has changed, such as changes in average age of patients, comorbidities, research protocol alterations, new practice guidelines implemented, or new technologies and treatment methodologies introduced.
   - When the data collection method is manual, and data collection staff have changed mid-cycle.
2. The hospital uses an evidence-based methodology for data validation.
3. Hospital leaders assume accountability for the validity of the quality and outcome data made public.

Standard QPS.03.02

Individuals with specialized experience, knowledge, and skills systematically aggregate, validate, and analyze data in the hospital.

Intent of QPS.03.02

Specialized expertise is required to accurately aggregate, analyze, and transform data into useful information. Data aggregation and analysis requires qualified individuals who meet the following criteria:

- Understand information management.
- Have skills in data aggregation methods.
- Know how to use various statistical tools to analyze data.

Results of data analysis must be transformed into reports that are easily understood by those individuals responsible for the process or outcome being measured and who can act on the results. These individuals may be clinical, managerial, or a combination. Data analysis provides continuous feedback of continuous quality improvement information to help those individuals make decisions and continuously improve clinical and managerial processes.

Understanding statistical techniques is critical in data analysis, particularly in interpreting variation and deciding where improvement needs to occur. Run charts, control charts, histograms, and Pareto charts are examples of statistical tools useful in understanding trends and variation in health care.