Quality Performance Charts: Target Initiatives to Improve Quality Outcomes

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LEARNING OBJECTIVES
1. Identify customer needs
2. Create key performance indicators
3. Use charts to analyze Sterile Processing data

The phone rings. It's the Operating Room (OR) manager. She found another set with a dirty or missing instrument. The conversation quickly escalates to include mentions of the incompetency of the Sterile Processing department (SPD) and other failures to meet the surgical team's needs. After apologies, quick action and reassurance that the team Sterile Processing (SP) team will work to prevent future errors, the SP leader must then determine what led to the negative incident. Poring through existing spreadsheets and handwritten notes from earlier investigations may offer no significant help—and the SP leader may begin to question whether the problem is really as bad as the customer expressed. The better question for the leader to ask is, "Do we really know what the OR needs, and have we been successful meeting those needs?" There is only one way to know the answer: ask the OR (or other healthcare customer department) what they need and then measure the SP team's performance against it.

Objective 1: Identify customer needs

All people and departments that receive items from SP are customers of the SPD. From case carts to intravenous pumps, every cleaned, disinfected or sterilized item leaving the SPD is a product. The first step in knowing what the customer needs from the products SP delivers is to ask, and this requires a face-to-face meeting. The meeting should accomplish two goals: First, it should define the products and services required by the customer. Second, it should initiate an ongoing discussion between SP and all customers; this two-way communication is vital for building a positive, productive, long-term relationship.

When meeting with a customer, some general guidelines should be followed, including:

- Focus the discussion on the customer's needs. This is a time to constructively listen and document what customers need, not to rehash old problems.
- Listen more than talk. Even if a request seems unrealistic, it's important to understand why the customer is

making the request. Often, an added need or a repeated failure to deliver can lead the customer to make an unrealistic request.
- Ask clarifying questions. Openly state the purpose for asking the question(s). SP professionals must understand why the customer needs something.
- Ask what is most important to the customer. What they value most may be somewhat surprising to those in the SPD, so opening this dialogue is important.
- Aim to understand the customer's requirements. SP professionals should ask how their team's failure to deliver affects the customer, procedure and patient.

Remember, this is an opportunity to gather information on the customer's requirements and learn how the SP team can better meet their needs. Often, customers have not previously articulated their requirements, and they may still be unable to clearly state what is needed in a way that helps define expectations with the SPD. For example, the OR manager might say, "I need the case cart delivered to the room in time for the procedure." A vague statement such as this leaves a lot of room for interpretation, so follow-up questions are needed: Should the case cart be left outside the room 10 minutes prior to the scheduled start time or a full hour beforehand? Where, exactly, should the case cart be delivered? Upon conclusion of the conversation, the SP leader should make a list of measurable and actionable needs, but there is still more work to be done to ensure seamless customer service.

Some expectations are understood but never (or rarely) stated. The OR needs clean, functional and sterile instrumentation; but the OR manager may never verbalize that need, because it is already understood that they cannot ensure patient safety in the absence of safe, well-functioning instruments that are ready when needed for patient care. During conversations between the customer department and SPD, it is important to begin by addressing these understood truths. It can be surprising how often unspoken truths and assumptions may differ between departments and team members.

Next, the SP leader must work with the customer to rate the relative importance of each need. Only the customer can rate relative importance. This is not the time to discuss departmental constraints or performance capabilities. Instead, the goal is to learn what the customer believes is most important. Doing so helps the SPD focus improvement activities and performance goals.

An OR customer, for example, may rate the following needs for instrumentation. Note that #1 is an *understood* expectation.
1. All instruments must be clean, functional and sterile.
2. All instruments must arrive one hour before the procedure.
3. Each set should have all instruments included on the count sheet.
4. All items should be delivered in a rigid sterilization container system.

Objective 2: Create key performance indicators

Key performance indicators (KPIs) help define and measure progress toward meeting customers' needs. KPIs are quantifiable measurements (also known as metrics) that are agreed upon beforehand and reflect the success of the department. KPIs typically include measures of quality, dependability, productivity and customer satisfaction.

KPIs track performance and encourage progress toward critical departmental goals. Typical SPD KPIs include productivity, complete instrument trays, tray backlogs and error rates. Selected KPIs must reflect the department's goals, be key to the department's success, and be measurable and quantifiable. KPIs are typically long-term considerations; therefore, the definition of what and how they are measured does not change frequently. The goal for a particular KPI, however, may change as the organization's goals change or as the SPD gets closer to achieving a goal.

When launching a KPI program, start simple. Begin with items identified as customer needs (e.g., tracking the percentage of trays that include all items on the count sheet or the number of instruments that are delivered clean and functional). The program can later expand to include KPIs that lead to successful completion of customer needs. Measuring washer-disinfector performance could find trends leading to dirty instruments, for example. Another KPI may be meeting a predetermined number of trays processed per hour. Completing processing within a specified time is essential to meet the need of delivering trays to the OR within an hour of a procedure.

Once KPIs have been defined, it is important that the SP team know how to use them as a performance management tool. Performance management is the comparison of actual performance against predefined goals. Such goals are set by the customer's expectations, the risk of harm from failure to meet each expectation, and current departmental capabilities. Let's revisit the previous example from Objective 1:

The OR needs to have all of the instruments in each set, so the SPD may decide to have a KPI for the number of complete sets sent to the OR. The OR also stated that all instruments must arrive one hour before the start of the

procedure. Unfortunately, instrument inventory constraints and processing time requirements prevent the SP team from delivering complete instrument sets within the one-hour timeframe. When this happens, it is time to have a conversation with the customer. The SP leader's questions may include: Which is more important—having a complete set or having the instruments a full hour before the procedure's start time? Are there critical items in the set that must be included, but other instruments that are not as vital to the procedure? Is it possible to have a safety stock of pouched items? What happens if the case cart arrives 30 minutes before the procedure due to a late set? Can the OR wait for the set?

After working through these questions with the customer, it is then time to set a realistic goal for the KPI. The discussion may lead to the conclusion, for example, that having items available one hour before the procedure is most important. In this case, maintaining pouched inventory of critical set items could allow the SP team to pull replacements for missing items within a set during the case cart build; this will allow delivery of all items within the one-hour timeframe. It is expensive to keep pouched inventory, however, and limiting the number of pouched backup instrumentation means controlling the number of sets that can have missing instrumentation. The final agreed upon KPI goal for a complete set might be that 95% of sets placed on carts each day will have all instrumentation. This means that 5% of trays may be missing instrumentation, and pouched inventory will be pulled during the build of the case cart. The expectation set with the customer is that 100% of the case carts will have all necessary procedural instrumentation, but some instruments will be in sterilization pouches instead of sets.

Once all KPIs are identified and expectations agreed upon between the departments, it is time to gather the data and use the results to improve the SPD's performance.

Objective 3: Usecharts to analyze Sterile Processing data

A table full of numbers can be difficult to interpret. Showing data in the form of graphs and charts helps SP managers understand and communicate the meaning of the data. The specific type of graph or chart used will depend upon the nature of the data and the purpose of the analysis. There are several types of charts that show data in different ways. The following are a few that have proven effective in helping SP teams and their customers:

Line charts: Line charts, such as **Figure 1**, are an effective way of looking at data over time (or in batches). The timeframe is placed on the x axis (horizontal line) and the measurement is placed on the y axis (vertical line). The resulting graph can show trends: straight lines show stability whereas lines going up or down reflect changes in performance over time.

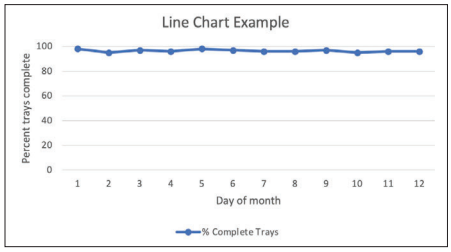

Figure 1

Control charts: Control charts are like line charts in that they illustrate data over time or in batches, but they include control limits (parameters) that look at variability in processes. The upper limit serves as the goal or desired outcome, and the lower limit represents the lowest acceptable achievement point. The lower limit in **Figure 2**, for example, shows the percentage of complete instrument sets that the SP team will not want to fall below. If the data points consistently fall within the control limits, the process is assumed to be stable. This type of chart makes it easy to see variability and determine whether performance meets expectations for a certain KPI.

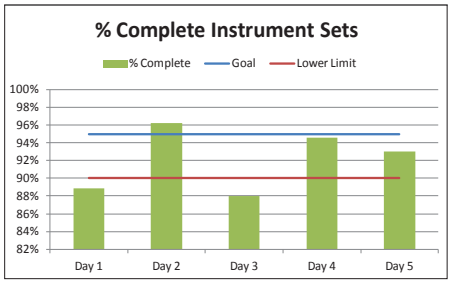

Figure 2

Histogram charts: Histogram charts are bar charts that look at both frequency distributions (the occurrence of each value in a set of data) and the distribution of the data. Histogram charts help understand the expected performance within a population. **Figure 3** shows the number of cases performed per day over a specific length of time along the x axis. The y axis shows how many times that daily volume of cases occurred. Looking at this figure, the SP team could see that there were 12 days that 26 cases were completed and four days that 33 cases were completed. Histograms can be used to determine averages, plan labor needs or examine the variability of a given process to perform within specifications.

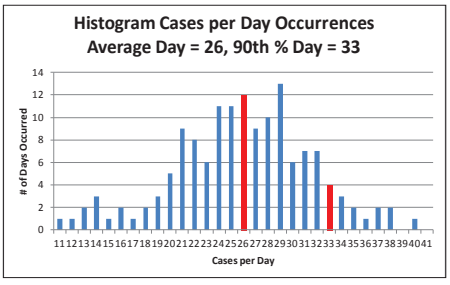

Figure 3

Histograms are the graphs most frequently used in SP. Common histogram topics include the number of trays processed per individual and the number of trays per procedure type. Histograms can also combine data sets, enabling SP leaders to gather more meaning from their data. For example, SP leaders can compare the number of trays waiting with the number of trays processed at a given interval; this information can be further enhanced by including a control limit line of the number of trays that can be processed by the staffing level. This kind of complex graph gives insight into staffing needs or, perhaps, equipment when bottlenecks occur.

Pareto charts: Often more than one cause contributes to a problem. How do SP leaders determine which cause to address first? A Pareto chart and analysis are tools that can help separate the "vital few" from the many. These tools are based on the Pareto Principle (also known as the 80-20 rule) that states that a few causes (20%) are responsible for most of the problems (80%) and focuses improvement efforts on the most common cause(s).

An example of an SP-related Pareto analysis could involve missing instruments. The first step in the analysis is to track when instruments are missing and the reasons why they are missing. In **Figure 4**, instruments were missing because they were not returned, were malfunctioning, the technician did not note the missing instrument, and so on. The data is collected over a specified period of time.

Cause	Talley	Total
Not returned from previous case	𝍸	5
Not working, no replacement available	//	2
Missing not noted by Assembler	𝍸 𝍸 ///	13
Instrument not listed on Count Sheet	///	3
OR tech unfamiliar with instrument	//	2
Unknown cause	𝍸 //	7

Figure 4

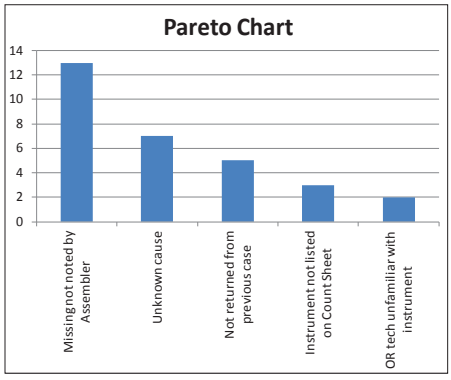

Figure 5

Once all of the causes are collected and tallied, the total sum of each cause is placed in a bar chart, listed from most common to least common. (See **Figure 5**) Analyzing the results, it is clear that the "Missing, not noted by assembler" reason contributed to the highest number of defects. Correcting this error would eliminate 44% of the missing instrumentation. This helps SP leaders and team members target the particular problem that results in the biggest, most positive change.

Conclusion

Communicating customer expectations and using data and charts to identify trends and areas in need of improvement can provide clear expectations and goals for everyone within the SP environment. With every activity focused on achieving the goals outlined in the KPI expectations, SP professionals can meet or exceed customer needs and expectations.

RESOURCES

Duffy, L. & Furterer, L. (2020). *The ASQ Certified Quality Improvement Associate Handbook* (4th ed.). ASQExcellence.

Kimsey, J. (2022). *LEAN SPD: Creating and Sustaining Lean Sterile Processing Departments.*

Mann, D. (2010). *Creating a Lean Culture* (2nd ed.). Taylor and Francis Group, LLC.