**Using Metrics for Improvement XC 05**

How will we know a change is an improvement? Proper measurement provides an objective gauge of the project success (or failure)

**WHY**

* Evidence-based - Metrics (or measures) focus on objective evidence rather than feelings or opinions.
* To quantify the magnitude of the problem
* To assure that a change is actually an improvement - tracking progress over time.
* Outcome-oriented - Metrics focus on the outcome articulated in the project aim statement. As the saying goes, “What gets measured, gets fixed.”
* Visual - Metrics, when presented graphically, tell a powerful story. Visible data, displayed and tracked over time, is key to attracting and sustaining the engagement of the team and stakeholders in the improvement work.

**WHEN**

Throughout the Improvement process

* Define/Measure - to understand the magnitude of the problem
* Analyze - to assist in assessing the root cause
* Improve - to test & select the solution
* Control - to insure sustainability by monitoring the metric over time

**HOW TO**



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| **METRIC SELECTION** |
| **1.** | Select the most appropriate metrics* Refer to the fundamental questions in The Model for Improvement
* Brainstorm with the team to get the best ideas
* See Metric Primer below
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| **2.** | Clearly define the specifics for each selected metric. For example:* If measuring errors (or the lack thereof), specify the meaning of “error free.”
* If measuring whether or not the requirements are met, clarify if all of the requirements have to be met, or only a percentage of the requirements?
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| **METRIC PRIMER** |
| **Types of measures** | **What can you measure?** |
| Improvement relies on measuring the following aspects of the process:* ***Inputs*** – What is needed to execute the process & deliver the outputs?
* ***Process*** – Steps within the process
* ***Outcome*** – Big picture, high-level goals; What does this process do or produce?
* ***Balancing or Counterbalance*** – Side effects or unintended consequences in upstream or downstream steps or processes
 | Consider the following (not an exhaustive list):* Time – hours, minutes, days, months, length of stay, turn-around time, wait time, etc.
* Errors or defects
* Number of events, people, etc.
* Satisfaction
* Efficiency
* Productivity
* Cost
* Value
* Throughput / Flow
* Access
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| **What makes an ideal metric?** | **Key components of a metric** |
| The best metrics have the following characteristics:* Direct linkage to the desired outcome or process (or a closely linked proxy)
* Powerful enough to demonstrate the effects of the change
* Meaningful to the project and stakeholders
* Realistic to collect
 | A metric must have:* ***A numerator*** – The proportion of the study population that met the set requirements. *Example: # of patients with viral load testing ordered*
* ***A denominator*** – The entire study population, or all subjects reviewed in a selected sample. *Example: # of patients eligible for viral load testing according to country algorithm*
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| **DATA COLLECTION** |
| **1.** | Create a data collection logMake sure you include all data needed to calculate the metrics. Consider the following: * + The numerator (data to assure that the subjects meet the requirements of the study) and the denominator (data to assure all the eligible population is accounted for):
* If evidence is required for an eligibility determination, consider a descriptive subheading or including an additional column in the log to verify the presence of that evidence
	+ If the eligibility determination requires several steps, consider including a column in the log for each step required
* Any *demographic data* deemed important, such as sex, age, pregnancy status
* Any *medical record or national identification numbers* needed to trace back to the patients in the future
* Any *site identification or site-specific data* (e.g., a specific specialty clinic within the site)
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| **2.** | Collect Baseline DataUsing the data collection log, at the initiation of the project, collect baseline data to understand the magnitude of the issue * Collected before any changes are made in the current process
* Data Source – Specify source of data
	+ Depending on the process, data may be collected retrospectively (i.e., chart review) or prospectively
	+ Potentially may be abstracted from data already being collected
* At least 25 data points are needed
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| **Tips:*** Include definitions on the log so staff who may not be members of the team will be able to easily interpret and use the log
* Use small tests of change - Create a paper-based log first. Test the log through multiple iterations before finalizing or transferring to an electronic format.
* Make sure you have all the information needed to calculate the study metric
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| **3.** | Create a data collection plan |

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| **DATA DISPLAY** |
| **1.** | Create a run chart to track the metrics over time |
|  | * A run chart is a graphical representation of change over time
* It is one of the best ways to display Quality Improvement (QI) data
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|  | Steps to create a run chart:* + - Title the chart and label the axes
			* Place the selected metric on the vertical or y-axis
			* Place time on the horizontal or x-axis
		- Plot your metric over time
		- Include a goal line (frequently shown in red ink), indicating the team’s goal for the selected metric
		- Annotate the run chart, marking the tests of change along the timeline (See examples in PowerPoint presentation)
		- Keep the data up-to-date, posting weekly or as frequently as possible

Microsoft Excel Workbook: Insert 🡪 Chart 🡪 Line Chart |  |
| **2.** | Display the data on a bulletin board in an easily accessible place (e.g., break room) |
| **3.** | Review and update the data regularly (daily, weekly or monthly) with the staff & the QI team* When reviewing the data, assess the trend and determine what additional “tests of change” need to be conducted to continue a desired trend or reverse an undesired trend. (See Model for Improvement – PDSA)
* Obtain input from the front-line workers. What is working well? What is not working well?
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