Open School

IHI Open School Course Summary Sheet

QI 103: Testing and Measuring Changes with PDSA Cycles

Lesson 1: How to Define Measures and Collect Data

- Measuring for improvement requires selecting and tracking a **family of measures,** consisting of outcome, process, and balancing measures.

- These questions will help you establish an appropriate family of measures:
    - What do you want to learn about and improve?
    - What measures will be most helpful for this purpose?
    - What is the **operational definition** for each measure?
    - What's your **baseline** measurement?
    - What are your targets or goals for the measures?

- You also need a **data collection plan**; here are some questions to ask:
    - Who is responsible for collecting the data?
    - How often will the data be collected, e.g., hourly, daily, or weekly?
    - What is to be included or excluded, e.g., include only inpatients or include inpatients and outpatients?
    - How will these data be collected, e.g., manually on a data collection form or by an automated system?

- **Sampling** helps teams quickly understand how a process is performing.
    - **Simple random sampling** uses a random process to select data from a small sample of the population.
    - **Proportional stratified random sampling** divides the population into separate categories then takes a random sample for each.
    - **Judgment sampling** relies on the judgment of those with knowledge of the process to select useful samples for learning about the process performance.

Lesson 2: How to Use Data for Improvement

- The purpose of measuring for improvement is to:

- o Keep track of what you're learning during Plan-Do-Study-Act (PDSA) testing.
- o Answer the second question in the Model for Improvement, "How will we know that a change is an improvement?"
- Because improvement happens over time, static displays of data are not helpful; you need a **dynamic** way to display the data, such as a run chart.
- A **run chart** is a graph that helps teams effectively interpret and communicate variation in data by showing change over time.
- Classifying and separating data according to specific variables, a practice called **stratification**, is another helpful way to understand the story the data is telling.

Lesson 3: How to Build Your Degree of Belief over Time

- We use "scale" and "scope" to talk about how large and how extensive a test will be.
  - o **Scale** refers to the timespan or number of events included in a test cycle — such as a specific number of patient encounters.
  - o **Scope** refers to the variety of conditions under which your tests occur — such as different combinations of patients, staff, and environmental conditions.
- The size of PDSA cycles should be based upon two things:
  - o The **degree of belief** that the change will lead to improvement
  - o The consequences if the change is not an improvement.
- Iterative test cycles allow teams to build a stronger degree of belief over time.
  - o A **1:1:1 test** (e.g., "1 provider, 1 patient, 1 encounter") is a useful rule for early PDSA cycles.
  - o The **Five Times Rule** says to multiply the number of encounters or events used in the last cycle by five when scaling up a test of change.
  - o Conducting more than one test at the same time (i.e., **concurrent test cycles)** allows teams to explore more than one set of conditions in parallel.
- A test that does not achieve the desired results is an opportunity to learn that can mean one of three things:
  - o The test was not conducted as planned.
  - o There was a problem with the data collection.
  - o The change is not an improvement.