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How to Design and Implement a Quality Improvement Project
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What is Quality Improvement (QI)?

QI is a framework used to systematically improve healthcare delivery and entails continuous efforts to reduce process variation and improve outcomes. One commonly used approach for QI in healthcare is the **Model for Improvement** (MFI).[1] The first step in any project is always to engage with key "**stakeholders**," relevant parties affected by or interested in the project.

The Model for Improvement

At its core, MFI involves 3 questions, and a rapid cycle process called a **Plan-Do-Study-Act (PDSA)** cycle.

Q1. What are we trying to accomplish?

The answer will become your project's **Aim statement**. SMART (specific, measurable, achievable, relevant, time-based) goals should be used to answer these questions: How good? By when? For whom?[1,2]
Aim Statement Examples:

Bad: I'm going to exercise more.

Good: I'm going to run 10 miles a week by July 1st.
Aim statements work best when they are meaningful to you, trackable, and have a reasonable scope.

Q2. How will we know if a change is an improvement?

QI measures are different than research. The focus is on gathering enough data to inform improvement without an effort to control bias. QI uses several measures[2]:
Outcome: Where are we ultimately trying to go?

e.g., number of surgical site infections
Process: Are we doing the right things to get there?

e.g., handwashing metrics, antibiotic compliance
Balancing: Are our changes introducing problems?

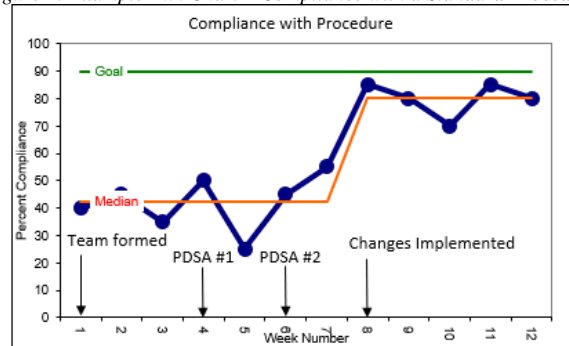e.g., delay in case start, increased time in OR

The measures used depends on the project. A **run chart** is an effective way of displaying these measures over time to see if a change is leading to improvement[3]. The X-axis is a time measure, and the Y-axis is the dependent variable. The chart can be annotated with goals and specific interventions to inform improvement efforts.
Rules for interpreting run charts may be found here.

Figure 1: Example Run Chart – Compliance with a Standard Procedure

Q3. What change will result in an improvement?

Ideas for change may come from several places. It is especially helpful to include **frontline workers**, as they often have the best understanding of a process.

Other techniques include:
- Process Mapping to identify variation or inefficiency
- Ishikawa (fishbone) or Cause/Effect diagrams
- Key Driver diagram
- Benchmarking
- Change Concepts

PDSA Cycle

Once you have these 3 questions answered, you're ready to rapidly test changes in the form of a PDSA cycle.[2]

Plan: Plan the test, including a plan to collect data. Develop a hypothesis about what will happen.

Do: Run the test on a small, controllable scale. Note problems or unexpected observations. Note steps skipped or altered.

Study: Analyze data and compare it to your hypothesis.

Act: Decide which of the "3 A's" to pursue:
Adapt – Make modifications and run another test.
Adopt – Test the change on a much larger scale.
Abandon – Do not do another test on this idea.

Several PDSA cycles can help ensure the test is translatable to other areas before adopting. Achieving and sustaining improvement often requires multiple changes and ongoing improvement efforts. With the MFI, you can quickly run several tests of change!

References:

1. Langley GL, et al. *The Improvement Guide: A practical approach to enhancing organizational performance*. 2nd ed. San Francisco, CA Jossey-Bass Publishers; 2009.
2. Provost L, Lloyd R, Murray M. *QI 102: How to Improve with the Model for Improvement.* J. Roessner and L. Fink (Eds). Retrieved from www.ihi.org; 2015.
3. Perla R, Provost L, Murray S. *The run chart: a simple analytical tool for learning from variation in healthcare processes.* BMJ Qual Saf 2011; 20: 46-51.