Learning System: Improvement and Measurement

by Capella Healthcare

WHAT'S COVERED

In this lesson, you will learn about the third component of learning systems: improvement and measurement. Specifically, this lesson will cover:

1. Definition
2. Model for Improvement
   a. What Are We Trying to Accomplish? (Aim)
   b. How Will We Know that a Change Is an Improvement? (Measures)
   c. What Change Can We Make that Will Result in Improvement? (Change Ideas)
   d. Testing Changes: Plan-Do-Study-Act

1. Definition

Improvement and measurement is focused on improving work processes and patient outcomes using standard tools and models for improvement, including longitudinal measurement. It involves using improvement science, which is similar to the scientific method, in which you develop a theory, test it, implement it, and widely distribute changes that result in better outcomes.

Improvement opportunities can arise because someone finds defects in the system or process, or simply because someone finds a better way to do something. As discussed in human factors engineering, by understanding the system we can identify potential risks or threats where we can prevent a systems failure. Improvements can also be initiated in response to clinical, cultural, and operational defects, such as high infection rates or falls with injury.

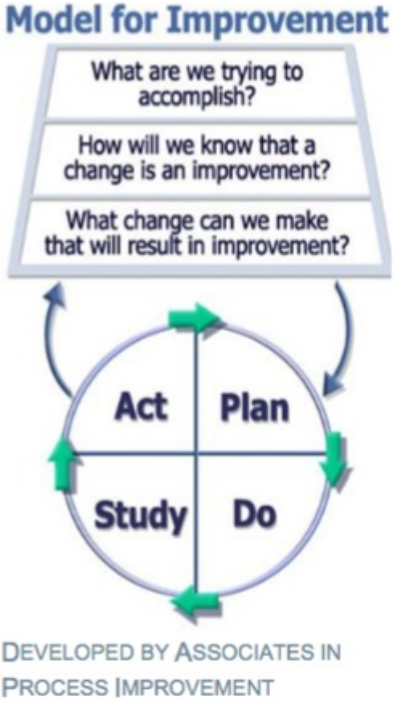
It is important to understand the system you want to improve before starting an improvement project. This can be accomplished by going to the frontline and following the process from beginning to end and mapping it on a flowchart. Staff can provide details about the process and identify what works and what doesn't. Combining learning from the flowcharts, data, and user experience will quickly identify where defects (for example, waste or inefficiencies) are occurring and highlight opportunities for improvement.

TERM TO KNOW

Improvement and Measurement
Improving work processes and patient outcomes using standard improvement tools, including measurements over time

2. Model for Improvement

After identifying the defects, a team can use a methodical approach like the Model for Improvement to redesign systems and processes to achieve outcomes that matter to patients, families, and staff.



Model for Improvement
Source: Frankel, at al. A Framework for Safe, Reliable, Care (2017)

The Model for Improvement combines subject-matter expertise with a systematic methodology to create the desired improvements. The model is made up of three questions and a Plan-Do-Study-Act (PDSA) cycle for testing changes to determine whether the changes have made an improvement.

2a. What Are We Trying to Accomplish? (Aim)

An aim statement is a clear, explicit summary of what your team hopes to achieve over a specific amount of time including the magnitude of change you will achieve. The aim statement guides your work by establishing what success looks like.
It is written like a SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goal. It should state specifically how much improvement is expected and by when. It is clear, concise, and measurable, and specifies time boundaries.

> EXAMPLE "We will increase the percentage of eligible patients getting a screening mammogram by 15 percent over prior year-end by October 1, 2021."

2b. How Will We Know that a Change Is an Improvement? (Measures)

Initially, a team should focus on whether the test of change it implements has produced the results they anticipated—yes or no? or “Was it easy to do—yes or no?”
Selecting measures to determine if an improvement works can be increasingly complex as improvement work expands. In order to achieve the ultimate outcome (getting the mammogram in the above example), it is essential to look at the processes, which are the steps necessary to achieve the outcome. Once an organization has a reliable process, then we can see if it produces the desired result.

Balancing measures are important as well to detect unintended negative impacts on the system that result from improvements made to one part of the system.

EXAMPLE For the mammogram example:

- The process step could be an outreach email to encourage patients to schedule a mammogram.
- The process measure would be the percentage of people who open the email.
- The second process measure could be the percentage of people included in the outreach email who schedule the test.
- The outcome measure would be the percentage of people included in the outreach email who complete the test.
- The balancing measure would be an access measure to determine if the outreach overwhelmed the system; a second could be the percentage increase in call volume for schedulers.

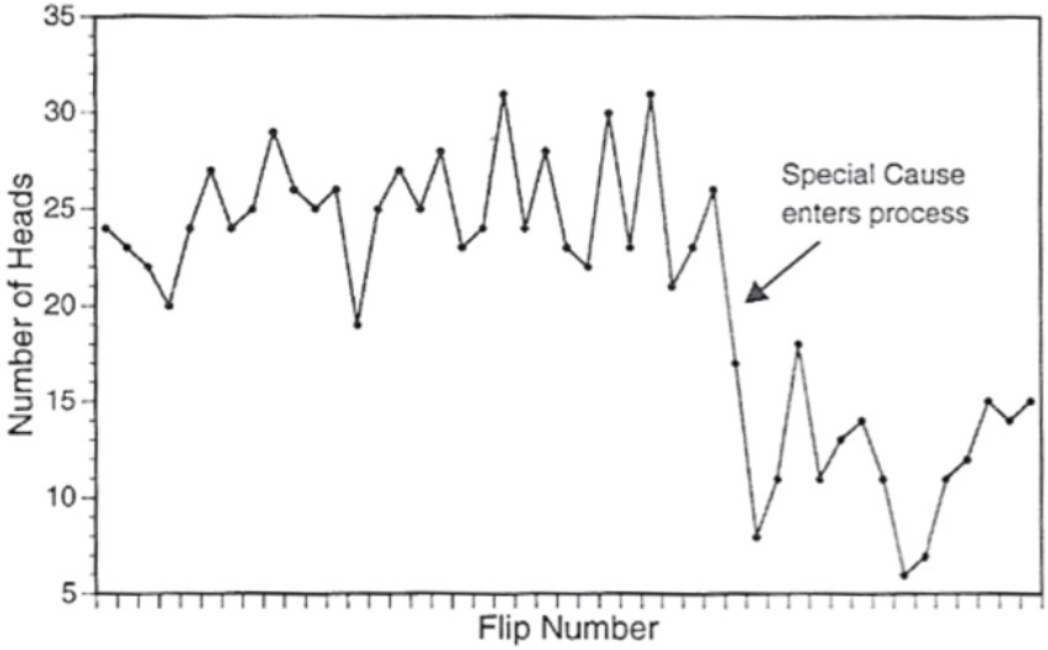
Measures are displayed over time in either run charts or statistical process control charts to determine if changes produced the desired effect. This also allows the team to distinguish between special and common cause variation in the process being improved. All processes vary. These are two types of variation:

- **Common cause variation:** Where numbers can differ for whatever reason in the data, apparently at random
- **Special cause variation:** Comes from outside the system and causes conspicuous shifts or trends in the data

IN CONTEXT

Let’s take the process of having 50 people all flip a coin at the same time and recording how many come up heads. The average should be 25, but successive flips of the coin do not always yield 25 each time. It is random and therefore is a common cause variation that is naturally occurring in the process. It is considered a stable process and will continue to have variation unless we change something in the process.

Now let's say we change the process and have people flip the coin twice and only tally the results showing heads twice. In this process, the numbers would range from 4 to 21. The change might not be readily visible since the data may overlap some at first.



Plot of a Flip of a Coin Before and After Process Change.
Source: Balestracci, D., & Barlow, J. L. (1996). Chapter 4 Statistical Thinking and the Use of Data. In Quality improvement: Practical applications for medical group practice. Englewood, CO: Center for Research in Ambulatory Health Care Administration.

BIG IDEA

This is just a quick introduction to variation. Distinguishing between common cause and special cause variation is critical to statistical thinking. The strategy for process improvement is very different for special causes than common causes of variation.

2c. What Change Can We Make that Will Result in Improvement? (Change Ideas)

This is the portion of the process where ideas are generated for testing. The brain trust for this venture should come from those who are involved in the process to be improved, including patients for whom the process is designed. Broaden your thinking to include other organizations and industries; this is your chance to be creative and innovative. Remember to keep it simple; complexity can lead to mistakes. When you are trying to make changes, follow the aforementioned concepts around change management.

2d. Testing Changes: Plan-Do-Study-Act

You have arrived at putting your theory to the test using PDSA:

- **Plan:** Determine how the test or observation will be done, including how you will collect data, which can be as simple as a handwritten tally sheet.
- **Do:** Choose a small population on whom to test the change. This way, you can write the new process down (try to keep it to 5 or fewer steps) and have one willing volunteer try it for one patient and then ask them how it worked. Then expand so that the same person works with 5 to 10 patients. If you see the intended result, ask for another volunteer to try it using the same methodology.
- **Study:** Gather the data and analyze the results against the intended goal or expected outcome with the team.
- **Act:** Based on what you learned from the data, refine the process change, and test again.

PDSA cycles are iterative until you achieve the desired result. The next step is to try the process on a larger group of patients to determine if you achieve similar results. If the answer is yes, the process should become standard work/practice that is documented and communicated to all who are involved in the process. Teams should include subject matter experts, including clinicians and staff. They should be coached by quality improvement personnel who are experts in improvement science and change management to achieve optimal results.

Additional methods for improvement such as Lean, Toyota Production System, and Six Sigma are all used to some degree in healthcare. The Model for Improvement is simple to use so unit-based teams can conduct it on their own once they have been trained and have gained some experience.

Authored by Cindy Ebner, MSN, RN, CPHRM, FASHRM

Support

If you are struggling with a concept or terminology in the course, you may contact **RiskManagementSupport@capella.edu** for assistance.

If you are having technical issues, please contact **learningcoach@sophia.org**.

TERMS TO KNOW

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