Using Six Sigma Principles to Improve Office Efficiency and Quality

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Disclosures

• Everything here is strictly my opinion only and does not reflect the opinion of my employer.

• Dr. Qaum and spouse own T&S Publishing Co, which publishes multiple ICD-10 coding forms on Amazon.

Objectives

1. Learn about the history of Six Sigma.
2. Learn about the underlying goals of Six Sigma.
3. Learn about the underlying principles of Six Sigma.
4. Learn about the Six Sigma Scale and the concept of DPMO.
6. Understand a hypothetical case scenario using the Six Sigma methodology.
Common Goals Practices Face

- Decrease patient transit times
- Decrease procedure turn-over times
- Decrease staff utilization ratios
- Decrease claims denial rates

The History of Six Sigma

- Six Sigma was originally coined by a Motorola engineer, Bill Smith, in 1986.
- Within two years of Six Sigma becoming a registered trademark by the U.S. Patent Office, Motorola received the inaugural and highly coveted Malcolm Baldrige National Quality Award.
- By the late 1990s, two-thirds of Fortune 500 companies had Six Sigma initiatives. This increases to 81% when looking at the Fortune 100 companies.
- As of 2007, Fortune 500 companies have saved approximately $427 billion from using Six Sigma.

Common Goals Practices Face

- Increase capacity
- Increase patient satisfaction scores
- Increase clinical quality
- Increase revenue

What Is Six Sigma?

- Data-driven, business management problem-solving methodology.
- Designed to improve business and organizational operations by reducing the causes of errors, variability, and waste, and improving quality and efficiency.
- Originally conceived in the manufacturing industry.
- Now used in transactional and service industries, including the healthcare industry.
What Is Six Sigma?

- Underlying goals: increase quality, decrease costs, and/or save time.

- A process that achieves Six Sigma is 99.99966% defect free, which corresponds to 3.4 defects per million opportunities (DPMO).

Six Sigma Underlying Principles

- Data are required to measure improvement.

- Decisions should be made on the basis of data and statistics, rather than on assumptions and guesswork.

- Process variability creates waste and errors and decreases consistent performance. It should be minimized.

Six Sigma Underlying Principles

- Outcomes are determined by inputs.

- To improve your outcomes you must modify or control your inputs.

- Focus on the critical few inputs that have a significant effect on the outcomes.

The Six Sigma Scale

- Compares performance of a critical feature to its requirements.

- A higher sigma level corresponds to a more efficient process.

- The numbers are mathematically generated and are based upon a normal bell-shaped distribution.

- There are six sigma units between the process mean (your average) and the specification limits (where you would like to be).
The Six Sigma Scale

<table>
<thead>
<tr>
<th>Sigma Level</th>
<th>Defects Per Million Opportunities (DPMO)</th>
<th>Percent Success (Yield %)</th>
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<td>5</td>
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<td>99.977</td>
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<tr>
<td>6</td>
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Why DPMO?

- By assessing each opportunity to make an error independently, you can more finely grade the efficiency of a process, instead of simply saying that it is defective.

Example: Why DPMO?

- A patient encounter has 10 steps, each of which needs to be done correctly.
- There are three defects.
- The defect rate would be 300,000 per million opportunities (DPMO).

DMAIC: A Formal, Structured Problem-Solving Methodology

- Define
- Measure
- Analyze
- Improve
- Control

- Five stages can be applied to existing business processes.
Hypothetical Case Scenario

• Decrease total patient transit times in the office while maintaining clinical quality.

DMAIC: Define

Define the problem.

• Establish the context and goals of your process improvement project.

• Stakeholders define project parameters, establish the scope, assign a budget, and identify customer requirements.

Hypothetical Case Scenario: Define

Define the problem.

Primary objective: Decrease patient transit times for Dr. Smith at the Main Street office by 20% within six months.

Secondary objectives:
• Decrease patient complaints regarding wait times.
• Reduce the number of patients leaving without being seen.
• Improve patient satisfaction scores.
• Increase capacity.

DMAIC: Measure

Measure your processes.

• Gather relevant data to compare against future results.

  – Pertinent baseline performance data
  – Capability of the current process
Hypothetical Case Scenario: Measure

Perform a time study. Record:

- Patient arrival times
- Technician start and end times
- Specialized testing start and end times
- Physician start and end times
- Surgical scheduler start and end times
- Patient departure times

Hypothetical Case Scenario: Analyze

Analysis might find:

- Excessive patient wait times for specialized testing.
- Multiple patients scheduled at the same time for the same testing services.
- Technician A spends 50% longer on new patients compared to other technicians.

DMAIC: Analyze

Analyze the data looking for causes.

- Use data and various tools to find and understand the root causes of quality or operational inefficiencies in your processes.
- Identify cause-and-effect relationships.
- Look for where the implementation of process changes is most likely to result in process improvements.

DMAIC: Improve

Improve the existing process by an intervention.

- Use your data analysis to design and test a modification or change that results in process improvement or optimization of the current process.
Hypothetical Case Scenario: Improve

- Redesign the patient scheduling template.
- Create a new patient checklist to ensure all technicians are following similar processes for new patients.
- Test and refine your changes/modifications until you achieve the desired 20% decrease in total patient transit times.

DMAIC: Control

Control by monitoring the results.

- Develop metrics and procedures to sustain process improvements.

Hypothetical Case Scenario: Control

- Institute random sampling of 25 patients per week to ensure that process improvements are sustained.
- If a deviation is noted, you can quickly identify it and take steps to mitigate it.

Conclusion

- You don’t have to adopt a full-blown Six Sigma initiative, but designing your processes so they can be performed reliably will save you time, decrease your costs, increase your quality, and increase your capacity in the long-run.
What Did I Learn Today?

1. Learned about the history of Six Sigma.

2. Learned about the underlying goals of Six Sigma (increase quality, decrease costs, and/or save time).

3. Learned about the underlying principles of Six Sigma (data-driven, utilizes statistics, focuses on decreasing process variability).

4. Learned about the Six Sigma Scale and the concept of DPMO.

5. Learned about the Six Sigma DMAIC problem-solving methodology.
   • (Define the problem; Measure your processes; Analyze the data looking for causes; Improve the existing process by an intervention; and Control by monitoring the results).

6. Understood a hypothetical case scenario using the Six Sigma methodology.