# 9- Six Sigma

**As per Joseph M. Juran:**

Quality is the final product being in 'conformance to specifications' or 'conformance to standards'. Conformance to specification is only one of the many means to reach at end product that is 100% defect free.

**Definition of Six Sigma**:

Is a process of management methodology that provides a systematic means of developing and improving processes by Eliminate waste, rework, and mistakes. Increase customer satisfaction and Increase profitability and competitiveness

**The Six sigma was founded by Motorola in the 1970s.**

• **Bill Smith, "Father of six sigma"** introduces this quality improvement Methodology to Motorola. They founded a connection between increases in quality and decreases in costs of production.

• **Six sigma** focuses on understanding the voice of the customer and using data-driven techniques.

## Six Sigma + Lean Manufacturing

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| **Six Sigma**: | **Lean:** |
|---|---|
| Improve quality<br>Focus on part of Process<br>Reduce defects,<br>Increase Capability &<br>Productivity. | Reduced waste Holistic view of process<br>Reduce lead Time, Increase Capacity & Lower Inventory |

Lean six sigma is reducing the defect of the process and eliminate the wast in time, effort and resources.

**Six sigma is a business statistical Strategy.**

 Is to identifying defects and removing them from the process of products to improve quality.

 A defect is defined as any process output that does not meet customer specifications.

 Statistical measure used to objectively evaluate process.

**2. Six Sigma DMAIC Process:**

- **Define:** Define who your customers are, and what their requirements are for your products and services – Their expectations.

Define your team goals, project boundaries, what you will focus on and what you won't. Define the process you are striving to improve by mapping the process.

- **Measure:** Eliminate guesswork and assumptions about what customers need and expect and how well processes are working.

Collect data from many sources to determine speed in responding to customer requests, defect types and how frequently they occur, client feedback on how processes fit their needs, how clients rate us over time, etc. The data collection may suggest charter revision

**Analyze:** Grounded in the context of the customer and competitive environment, analyze is used to organize data and look for process problems and opportunities. This step helps to identify gaps between current and goal performance, prioritize opportunities to improve, identify sources of variation and root causes of problems in the process.

 **Improve:** Generate both obvious and creative solutions to fix and prevent problems. Finding creative solutions by correcting root causes requires innovation, technology and discipline. Control: Insure that the process improvements, once implemented, will "hold the gains" rather than revert to the same problems again. Various control tools such as statistical process control can be used. Other tool such as procedure documentation helps institutionalize the improvement.

 **Design:** Develop detailed design for new process. Determine and evaluate enabling elements. *Create control and testing plan for new design. Use tools such as simulation, benchmarking and cost/benefit analysis.*

 **Validate:** Test detailed design with a pilot implementation. If successful, develop and execute a full-scale implementation. *Tools in this step include: planning tools, flowcharts/other process management techniques, and work documentation.*

**The nursing role in quality management.**

**1. The coordinator:**

 Responsible for planning, organizing, developing, implementing and evaluating quality program on cooperation with nursing and medical staff in the organization.

 Share in organization and nursing committees.

 Share in developing nursing standard & criteria.

 Recommend for change to improve quality.

**2. The director of nursing service:**

 Make commitment for implementing quality program.

 Share in evaluating institutional effectiveness & efficiency.