

# Lean six sigma methodologies improve clinical laboratory efficiency and reduce turnaround times

## Authors

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## Abstract

### Background

Organizing work flow is a major task of laboratory management. Recently, clinical laboratories have started to adopt methodologies such as Lean Six Sigma and some successful implementations have been reported. This study used Lean Six Sigma to simplify the laboratory work process and decrease the turnaround time by eliminating non-value-adding steps.

### Methods

The five-stage Six Sigma system known as define, measure, analyze, improve, and control (DMAIC) is used to identify and solve problems. The laboratory turnaround time for individual tests, total delay time in the sample reception area, and percentage of steps involving risks of medical errors and biological hazards in the overall process are measured.

### Results

The pre-analytical process in the reception area was improved by eliminating 3 h and 22.5 min of non-value-adding work. Turnaround time also improved for stat samples from 68 to 59 min after applying Lean. Steps prone to medical errors and posing potential biological hazards to receptionists were reduced from 30% to 3%.

### Conclusion

Successful implementation of Lean Six Sigma significantly improved all of the selected performance metrics. This quality-improvement methodology has the potential to significantly improve clinical laboratories.