W17 An Introduction to Lean Fundamentals and Six Sigma Operational Improvement

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After attending this presentation, attendees will better understand the common tools and techniques used in a Lean Six Sigma (LSS) project to increase productivity and efficiency of the laboratory without increasing employees or purchasing new equipment or software.

This presentation will impact the forensic science community by introducing participants to a logical, step-wise procedure to greatly improve the understanding (through actual data collection) of the current laboratory system and to provide a structured method to eliminate waste and make improvements for a more efficient and effective laboratory process.

Attendance at this full-day workshop will introduce the participants to the LSS philosophy of continuous improvement and its methodology to achieve rapid and lasting process improvements while producing a positive culture change. Attendees will receive lectures and take part in practical exercises that will demonstrate the principles of LSS and clarify how the adoption of this philosophy can have a marked improvement in laboratory throughput. Finally, attendees will be presented with the LSS projects of modern crime laboratories. Participants will learn by using the Define, Measure, Analyze, Improve, Control (DMAIC) process, a system the labs were able to develop that increased productivity and morale without compromising quality.

LSS methodologies are used globally to improve testing laboratory processes, reduce turnaround time, increase productivity, and enhance morale. This approach also upholds the highest regulatory compliance while actually increasing quality.

The term Lean has its origins in "lean production" or "lean manufacturing" and was widely developed, implemented, and disseminated by Toyota®, although Toyota® learned its roots from Henry Ford. Lean is more than a set of tools to improve efficiency. It is a philosophy that understands that value must be interpreted from the customer's viewpoint. In order to add value, waste — those activities that don't add value — must be eliminated or minimized. This is accomplished by creating continuous flow of value-adding activities to increasing throughput.

The DMAIC process is the Six Sigma methodology used to discover the current state of the laboratory, the location of its primary bottlenecks, and the waste inherent in the production system. It is used to create a process in which samples flow through the laboratory in an efficient and proficient manner. Six Sigma is a rigorous performance improvement approach that uses a customer-focused and data-driven understanding of process variation and process capability.

Both Lean and Six Sigma supports quality management systems, including accreditation programs by the American National Standards Institute-American Society of Quality (ANSI-ASQ) National Accreditation Board (ANAB), the American Association for Laboratory Accreditation (A2LA), the American Board of Forensic Toxicology (ABFB), the National Association of Medical Examiners (NAME), and others.

Concurrently, the organizational culture will change to one of identifying problems and finding solutions to those problems. The quality of the work product will increase by designing quality checks throughout the process and by having all scientists perform their work in a similar standard way. Finally, employee morale will increase by creating a positive teamwork atmosphere and having each employee perform at their designed level.

Lean, Six Sigma, Process Improvement

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