The Lean approach to optimize quality indicator testing in a food microbiological laboratory

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INTRODUCTION

With the development of innovative and automated solutions for food microbiological laboratories, it becomes increasingly important to integrate them in the best and most efficient way in order to optimize the workflow and improve the laboratory's productivity.

Created in 1999, ControlVet is a large private food laboratory performing the microbiological analysis for an increasing number of industries and retailers in Portugal. The laboratory is strongly focused on performance improvements, and the most efficient use of lab space.

PURPOSE

Lean is a systematic approach to optimize workflow in the laboratory. A Lean design has been completed to implement the automated quality indicator system, **TEMPO®** with the objective of eliminating non-added value tasks, reorganizing the current workflow and reducing turn-around-time for results to final customers.

METHODS

A laboratory assessment based on the Lean approach was performed over a 3-day period. The first day was dedicated to defining and observing the current workflow (physical layout and sample processing). The second day focused on the analyzes and opportunities to improve laboratory efficiency. The last day led to the establishment of a roadmap giving recommendations, including a new workflow organization for the full integration of traditional and automated methods.

RESULTS

Currently, routine analysis is performed within 540 working hours per week with the existing dedicated resources (13.5 Full Time Equivalent Employees). The full integration of the automated test system in the heart of the laboratory, coupled to the set-up of an aliquot tube for managing traditional methods and **TEMPO®**, showed a **saving of 224 working hours** which are equivalent to either **41% of productivity gained**, and, the **reallocation of 5.6 FTE** to high-value activities.

The work accomplished helped ControlVet to rethink resources organization and the ease-of-use of workspace. The new microbiology lab layout permits to optimize space (otherwise, a relocation to a larger site would have been necessary) easily, efficiently handle peaks of workload (see below):

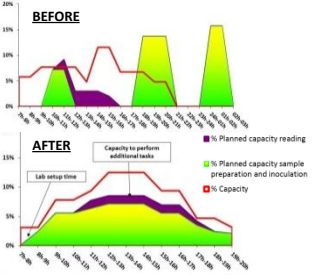

Figure 1: Coordination between existing workload and current capacity (FTE) for a single day.

These improvements also enabled an increase of activity, achieving a target of **15 samples per working hour** instead of only managing **9 samples per working hour (**~ 2 tests/sample).

CONCLUSION

TEMPO® implementation at ControlVet coupled to the Lean approach allowed a gain of 41% of productivity, and, the reallocation of 5.6 FTE. The workflow has been greatly improved by an optimized process and a redesigned layout. The laboratory is now able to match staff resources in line with workload variations and smoothly absorb extra work coming from the increased activity.