

## Process Improvement and Redesign of the Immuno Histology (IHC) Lab at MSKCC: A Lean and Ergonomic Study

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**Abstract :** MSKCC offers patients cutting edge cancer care with the highest quality standards. However, many patients and industry members do not realize that the operations of the Immunology Histology Lab (IHC) are the backbone for carrying out this mission. The IHC lab manufactures blocks and slides containing critical tissue samples that will be read by a Pathologist to diagnose and dictate a patient's treatment course. The lab processes 200 requests daily, leading to the generation of approximately 2,000 slides and 1,100 blocks each day. Lab material is transported through labeling, cutting, staining and sorting manufacturing stations, while being managed by multiple techs throughout the space. The quality of the stain as well as wait times associated with processing requests, is directly associated with patients receiving rapid treatments and having a wider range of care options. This project aims to improve slide request turnaround time for rush and non-rush cases, while increasing the quality of each request filled (no missing slides or poorly stained items). Rush cases are to be filled in less than 24 hours, while standard cases are allotted a 48 hour time period. Reducing turnaround times enable patients to communicate sooner with their clinical team regarding their diagnosis, ultimately leading faster treatments and potentially better outcomes. Additional project goals included streamlining tech and material workflow, while reducing waste and increasing efficiency. This project followed a DMAIC structure with emphasis on lean and ergonomic principles that could be integrated into an evolving lab culture. Load times and batching processes were analyzed using process mapping, FMEA analysis, waste analysis, engineering observation, 5S and spaghetti diagramming. Reduction of lab technician movement as well as their body position at each workstation was of top concern to pathology leadership. With new equipment being brought into the lab to carry out workflow improvements, screen and tool placement was discussed with the techs in focus groups, to reduce variation and increase comfort throughout the workspace. 5S analysis was completed in two phases in the IHC lab, helping to drive solutions that reduced rework and tech motion. The IHC lab plans to continue utilizing these techniques to further reduce the time gap between tissue analysis and cancer care.

**Keywords :** engineering, ergonomics, healthcare, lean

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