

“If You’re Not Keeping Score, You’re Just Practising”:^{*} A Lean Healthcare Program Evaluation Framework

Appendix A

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Appendix A: Lean Evaluation Case Study

As an example of how to apply the evaluation strategy described in our article, we describe a study (that predated imPROVE) in which the objective was to reduce outpatient wait times for computed tomography (CT) scans at Vancouver General Hospital in Vancouver, British Columbia. Although Lean was not explicitly used, portions of this study would have been well suited to Lean methods. After developing the value stream map (process flow diagram) for the CT scheduling and delivery process, one source of waste or inefficiency identified was starved or blocked CT machines. The consequence of this was low machine utilization and queues for outpatient CT scans. This was caused by (1) not having a next patient available for scanning and (2) leaving a patient whose scan was finished in the CT room. One root cause for these delays was a shortage of porters. To this end, the study focus shifted to improving the performance of the porter service at the hospital (Odegaard et al. 2007a, 2007b). Here, we use concepts from the porter system improvement study to illustrate our recommendations.

Developing Performance Metrics

If we regard the porter system as the value stream under consideration, then system-level performance measures should be related to the times from job request to job completion. One potential system-level metric is the average time for completion of a task. Overall, averages do not tell the whole story because of considerable between-task variability and different-task urgency levels (stat, ASAP, or routine) with different target completion times. We chose the system-level metric to be the service level that we defined as the percentage of jobs of each category that were completed in the target time. One potential intervention, which could have been the subject of a rapid process improvement workshop if the Lean methodology were being used, would have been to improve the communication between the porter and the requesting unit so that unit was aware of the forecasted time at which the porter would arrive. This forecasted time could be determined with some degree of accuracy since once an available porter was assigned to a job, the only source of variability was travel time. This would allow unit personnel ample time to get the patient ready for the move, thus avoiding delays in preparing the patient, obtaining documentation and having all necessary equipment ready for the move, such as

wheelchairs or poles. Another potential metric could be based on the time from the porter’s arrival to the unit to pick up a patient to the time the porter leaves the unit with the patient and all equipment and documentation needed for the move.

The above metric, time from arrival to the unit to time of departure from the unit, needed to be made precise, and a process to collect these data was required. Since such time stamps were rarely available from administrative systems, either the porter or an analyst needed to record this information. At baseline, a porter was “shadowed” by a study analyst (in this case, a student) and precise time epochs for recording were determined. These times were when the porter informed the unit clerk that he or she had arrived at the unit and when the patient and all equipment were obtained and the porter departed from the ward. In such a case, if forms or an automated data collection system were available, all data should be collected; otherwise sampling should be used.

To determine the impact of all porter system improvement interventions, all data on time of request, time of job completion with indicators of urgency, the origin of the move, the destination of the move and equipment required had to be recorded. In these situations, one hopes that adequate baseline (pre-intervention) data are available. The system-level performance metric was chosen to be the percentage of jobs of each time that met the target each month. Alternatively, the average time per request type could instead have been analyzed. In this study, no obvious control was available; but if the porter system had undergone Lean analysis at one hospital and not at a comparable hospital, the second hospital could have served as a control. In the absence of a control, a formal statistical model could be used to assess the magnitude and significance of changes in services levels.

References

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