

Lean Emergency Department Patient Throughput

Problem: A Children’s Hospital determined that the current length of stay (LOS) in the Emergency Department (ED) needed to be decreased. In their original two-track process, acuity levels 4 and 5 made up the Fast Track (where the higher the acuity number represents a lower patient severity state). The Main ED track was composed of acuity levels 1, 2, and 3. Acuity level 5 patients experienced an average length of stay (ALOS) of 95 minutes. Those assigned acuity level 4 left the ED after an average of 133 minutes, while those patients assigned acuity levels 1, 2, and 3 experienced an ALOS of 216 minutes. In addition, based on observation data, 50% of the patients could expect to wait an average of over 60 minutes from triage to being seen by a provider.

Improve Process:

Define Value - The Define Phase established the foundation and direction of the improvement project. Team members validated the charter and set the target LOS goal:

- 40 minutes for acuity level 5
- 70 minutes for acuity level 4
- 180 minutes for acuity levels 1, 2, and 3
- Left Without Being Seen of less than 2%

Interviews and surveys were conducted to gather the patients’ and staff’s perspectives of the process (voice of the customer). One example included, “Improve wait times.”

Measure Value - A value stream map was created to help visualize the process steps patients experienced through the ED. The process began when the patient first arrived to the ED check-in window and ended when the patient stepped through the exit door. Data was captured both electronically through current data systems, as well as manually by following actual patients through the process. Examples of the data captured include the time spent in triage (cycle time) and the total time waiting to be seen by a provider after being triaged.

Analyze Flow - Once the data was collected, time was spent analyzing the information to determine where non-value added opportunities for improvement existed. Data revealed that over 60% of all patients entering the ED were assigned acuity levels 4 or 5. It was also discovered that acuity level 5 patients experienced an average of 63 minutes waiting for the provider to treat them after being triaged. For acuity level 4, the time increased to 71 minutes, while acuity levels 1, 2, and 3 experience the shortest amount of waiting of 18 minutes. Wait times were influenced by the severity of conditions when entering the ED.

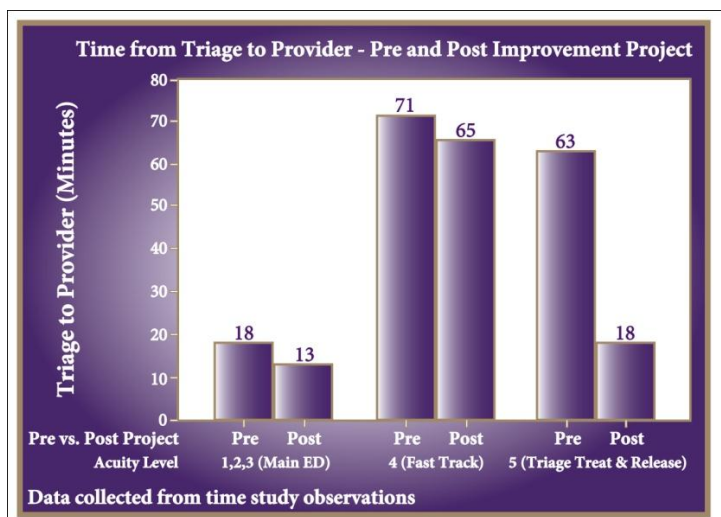
Improve Flow - The team created the future state value stream map while addressing the discovered issues and opportunities identified through the first three phases. Since the majority of the patients were acuity levels 4 and 5, the least severe conditions, the team decided to modify the current 2 track processes by incorporating a third track – Triage, Treat, and Release – to evaluate only the acuity level 5 patients during peak hours. Level 4 patients were assigned to the Fast Track rooms, while all other patients (levels 1, 2, and 3) were still seen in the main ED area. The original triage bays were converted to level 5 treatment areas which required modifying the triage processes

as well. To accommodate the process change, a Primary Triage Nurse was assigned to perform a quick triage and assign a patient track. The full triage was completed by the patient's nurse once they arrived to their care area. If all care areas were occupied and the patient needed to return to the waiting room, a full triage was performed to ensure patient safety. The project team alleviated the bottleneck at the front end of the process where all patients, regardless of severity, were previously registered, triaged, and treated through the value stream. The mighty river funneled through the ED was now broken down into 3 humble streams.

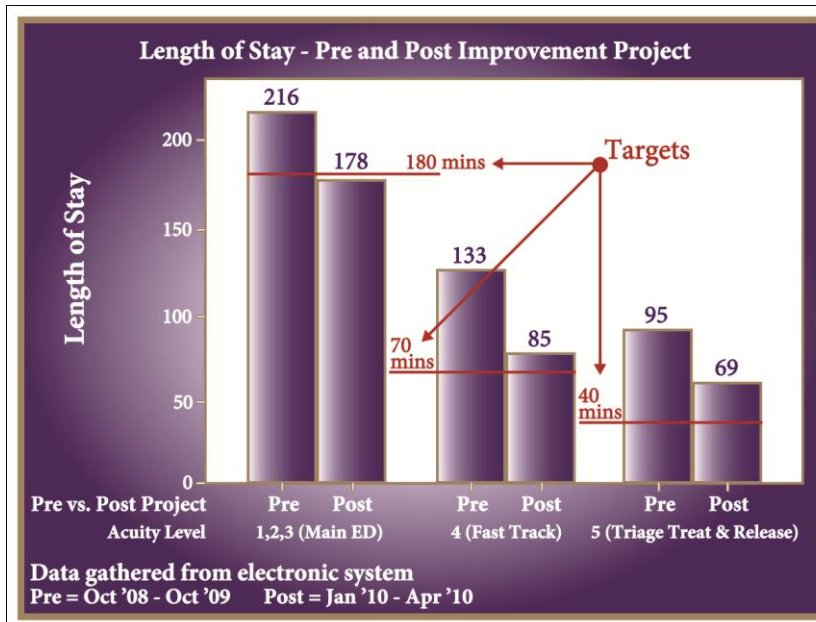
The improved process was piloted for three consecutive days for several weeks to give the ED staff time to implement the changes and to make refinements prior to full implementation. Data was collected and analyzed for each pilot period.

Control - To aid in the implementation of these changes, control tools are being used to monitor progress and verify the completion of process changes. Communication plans are tracking education and training schedules, in addition to when emails and formal letters are to be sent to employees. Audit plans are being used to hold staff accountable for minor adjustments to the processes. When the process stabilizes and scorecard measures are statistically valid, control charts will be used to help further sustain the improvements.

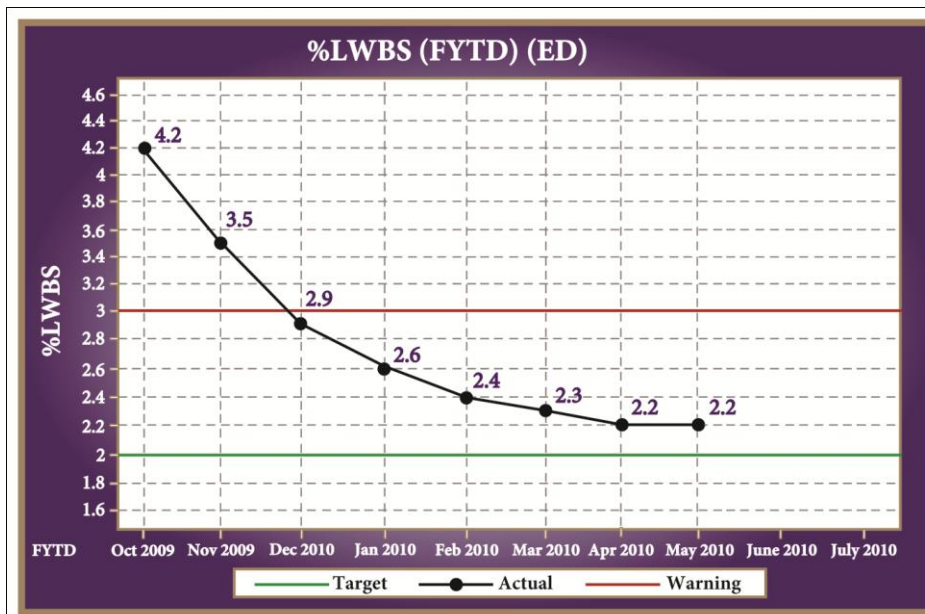
Results: Implementing the third track decreased the time from triage to being seen by a provider from 18 minutes to 13 minutes in the Main ED (acuity levels 1, 2, and 3), from 71 minutes to 65 minutes in the Fast Track (acuity level 4), and from 63 minutes to 18 minutes in the Triage, Treat, and Release Track (acuity level 5).



Length of stay also decreased from the initial mean of 216 to 178 minutes for patients treated through the Main ED track (acuity levels 1, 2, and 3), 133 to 85 minutes for the Fast Track patients (acuity level 4), and 95 to 69 minutes for Triage, Treat, and Release patients (acuity level 5).



Patients who were leaving without being seen are also trending downward from 4.2% in October 2009 to 2.2% in May 2010 as a moving average.



Although the Fast Track and Triage, Treat, and Release length of stay values have not yet reached their targets, the LOS outcomes continue to trend downward and the team continues to monitor their control plan and expects to achieve their goal in coming months.

Instituting large scale change in an organization requires proper planning, implementation, and control. Implementation requires time, resources, training, communication, patience, and commitment to work through the challenges. With a motivated and dedicated team such as this Children's Hospital Lean ED team, improving many complex processes can be realized and sustained.

FOR MORE INFORMATION:

For more information on how we can help your organization attain results, please contact us at 203.267.3445 or visit us on the web at www.juran.com.