Executive Statement of Support – Michael Ricks, COO

With more than 300 patients accessing our Emergency Department (ED) on a daily basis, throughput is critical to our patient’s overall experience. Our Throughput team, consisting of front line staff, physicians and performance improvement experts, redesigned a process lacking in consistency and patient centeredness. Through direct observation, the use of lean tools, and a Kaizen event, our team dramatically improved patient flow in the ED and elevated the care and experience of the community we serve.
Table of Contents

1. Executive Summary .........................................................................................................................2
2. Background and Relevance ..............................................................................................................2
3. Project Specifics ...............................................................................................................................2
   3.1 Scope ...........................................................................................................................................2
   3.2 Process, Strategies & Tactics .......................................................................................................3
   3.3 Challenges ...................................................................................................................................4
4. Results ..............................................................................................................................................4
5. Significance .......................................................................................................................................7
6. Sustainability and Scaling ..................................................................................................................7
7. Lessons Learned ...............................................................................................................................7


1. Executive Summary

At the intersection of diagnosis, treatment, and surging patient census, the ED is arguably the most operationally complex clinical setting of the modern hospital. Since the majority of patients enter the hospital through the ED, patient flow processes must work in concert with patient care to improve an excellent patient experience and reduce wait times and prevent overcrowding. Like many EDs, Hoag has suffered from patient flow challenges. In an effort to alleviate the resulting bottleneck, Hoag embarked on a hospital-wide journey improving processes and sustaining gains. The ED Throughput Program had the dual objective of reducing door-to-provider time and optimizing the discharge process.

Data analysis of patients entering the hospital through the ED indicated that not all patients require an inpatient stay. For those patients who are treated and discharged from the ED, discharge efficiency plays a major role in wait times for patients in need of treatment. Similarly, reducing the time to be evaluated by a provider increases patient satisfaction and reduces the number of patients who leave without treatment. This effort, led to a 29% improvement in the discharge metric and a 44% improvement in door-to-provider time.

2. Background and Relevance

EDs are high-risk, high-stress and fast-paced environments. When capacity in the ED is exceeded, patients often wait hours before seeing a physician and even longer before being moved to a hospital bed. This has the downstream effect of congesting patient movement. Root cause analyses of medical events suggest that when overcrowding occurs in the ED, there are increased opportunities for errors as staff experience pressure to move patients through the system. Overcrowding contributes to poor care, frustrated patients, increased costs and stress for both patients and staff.

The relevance of patient throughput in today’s emergency departments continues to grow. With the expansion of insurance coverage under the Affordable Care Act, the expectation is that the country’s emergency departments will experience spikes in patient demand as newly insured patients consume a higher amount of healthcare. Hoag is no exception to this reality as visits have grown annually in the ED by 5% year after year putting pressure on an already stressed system. To ensure patient safety and reliability in this wave of increasing demand, ED throughput must be improved.

3. Project Specifics

3.1 Scope

To combat the pressures of excess demand in the Hoag ED, two major projects were championed. The first project focused on decreasing the door-to-provider time. By addressing door-to-provider time, Hoag could improve patient satisfaction while reducing deterioration by having patients seen sooner in order to jumpstart their laboratory test, radiology tests, etc. This not only reduces the perceived wait time but also gives the emergency department the opportunity to assess low acuity patients sooner and address their needs immediately, leading to a discharge without unnecessary bedding of that patient. The objectives of the Door-to-Provider Project were to evaluate, make, and implement recommendations to reduce the time from when the patient arrives in the ED lobby to the time they are seen by a provider (physician, nurse practitioner, or
The second effort addressed throughput by improving discharge efficiency. An analysis of the discharge-time to patient-leave data suggested that substantial variation exists in the amount of time it takes for patients to leave the ED once the physician determines that they can be safely discharged. As discharged patients linger in their beds, dependent processes such as cleaning rooms and transitioning patients from the waiting room to ED beds cannot move forward. The data indicates that approximately 80% of the patients entering the ED are treated and discharged in the ED. The objectives of the discharge optimization project were to evaluate the process from discharge order to leave, remove non-value added steps and standardize the process.

The ED Throughput projects used different approaches to outline the scope and strategies to be tested but the commonality was reliance on the multi-disciplinary teams of ED staff. Involving key stakeholders from the beginning of each project ensured buy-in and a continued momentum from all involved. Focusing on the processes that the ED has direct control over allowed the scope to be manageable. The Chief Operations Officer was very involved in selecting success criteria and helped guide the teams towards the end goal of implementation.

### 3.2 Process, Strategies & Tactics

For the Door-to-Provider Project, it was recognized that there are limited protocols relating to the tests that can be ordered during triage without a provider present (physician, nurse practitioner, or physician’s assistant). For example, when a patient arrives at the ED complaining of stomach pain, the standard test would include a laboratory draw, etc. The patient will wait in the waiting room until a bed is available in the ED, and then the physician will order these tests once in place. If a provider is able to see the patient sooner by being located in triage, these tests could be ordered while the patient was in the waiting area, thereby reducing the overall ED Length of Stay (LOS). The team determined that placing a provider in triage was a promising solution that should be piloted. Other considerations included ED lobby layout/flow, signage, triage process evaluation, and provider order fulfillment (e.g. labs, x-ray).

The Door-to-Provider Project was conducted from January through June 2016. The team included the Chief Operating Officer, Chief Nursing Officer, two ED Physician Champions, the ED Nurse Director, an ED Throughput Project Champion (RN), a Project Manager, and a Performance Improvement Program Manager. Our patient management system provided the data needed to assess and create a baseline using the previous year’s data (2015). Flow studies were conducted by the PI Program Manager over a three week period to assess triage process, layout efficiency, and signage effectiveness. A current state analysis and future-state process mapping session were conducted prior to assigning a provider to triage. Provider hours were determined by reviewing historic demand and assigned to cover peak demand times during the nine hours of provider coverage (12pm-9pm).

To optimize the ED discharge efficiency, a focused weeklong rapid improvement event was executed known as a Kaizen event. A Kaizen event is a Lean tactic focused on speeding up the change process to finalize solutions to problems in a standard manner. This benefits the organization by testing process improvements quickly and adjusting as necessary until optimized. The Kaizen rapid improvement approach, allowed the team to realize gains expeditiously in a highly structured fashion, without the time required to complete a traditional project.

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Hoag Memorial Hospital Presbyterian
As with any Kaizen event, the days and weeks leading up to the event are crucial and should be managed appropriately to ensure a success. During this time, observations of the discharge process were carried out and data was analyzed. Historical data and observations allowed the team to choose performance targets that were challenging yet achievable. The team was also given an education in the Lean principles that are used to identify and remove process waste. The Kaizen event took place over a four day period and contained the following activities:

- Day 1 – Current state observations by team members
- Day 2 – Failure Mode & Effect Analysis, Brainstorm solutions, Plan pilot implementations
- Day 3 – Pilot improvements and modify if necessary
- Day 4 – Review data from pilot improvements and plan for long-term implementation

The team, consisting of front-line experts from a range of areas including Physicians, Physician Assistant, Medical Scribe, Nurses, Emergency Care Technician, Registration, Information Technology, Project Manager and Performance Improvement. The team identified six process improvements that when implemented and sustained, had the effect of reducing the ED discharge time. The nature of the improvements centered on improving communication between physicians, medical scribes and nurses on patient discharge status; requiring a 30-second huddle between the physician and nurse if any discharge delay was expected; collecting information regarding ride status and medication requirements from the patient earlier in their visit; and modifying the use of the electronic medical record system to standardize the discharge instructions that the patient takes home.

3.3 Challenges

The main challenge was transitioning project sustainment from the Performance Improvement team to the Operational Leaders, especially around continued metric monitoring. One way we overcame this challenge was identifying an ED staff member who had natural strengths in data analysis and was easily coachable.

Another challenge was finding the time for frontline staff members to participate in the Kaizen event and be away from their normal daily tasks. To mitigate this challenge, the multi-disciplinary team should work together very early in the planning stages to work around staff schedules.

4. Results

Through the use and refinement of the standard protocols, and with a provider in triage on a daily basis, the door-to-provider time was drastically reduced from a baseline median of 36 minutes down to below 20 minutes. This also allowed for a continued trend of patients Leaving Without Treatment (LWOT) to be below the mandated 2% threshold (~1.41%).
In addition to the results listed above, Hoag also experienced a decrease in paramedic diversions relative to census from a baseline of 0.18 hours down to zero hours in 2016 year to date. This plays a role in significant revenue saving impacts combined with other initiatives. Patients discharged from the lobby increased from a baseline of 0 to an average of 245 discharges per month and patient experience scores showed positive trends as displayed in the table below:
Regarding other areas that the team assessed, the triage process, provider order fulfillment methods, and ED lobby layout/flow were found to be satisfactory. However, the signage was improved by enlarging the sign size to be clearer to patients entering the lobby and ensure they queue correctly.

From the Kaizen event, the ED discharge process was improved and more importantly, enhancements were sustained. The metric used as a barometer for project success was the percentage of patients who had a discharge order to leave time of under 30 min. The baseline data, taken from CY 2015, indicated that 62% of patients discharged from the ED had an order to leave time of under 30 minutes. From process capability studies, a target goal of 75% of patients leaving in less than 30 min was adopted. The data below shows that the since the completion of the Kaizen event in early March, the percentage of patient discharges in the ED meeting the target has steadily improved (baseline 62% in green, target 75% in red).
5. Significance

The Door-to-Provider Project had a strong impact on patient care and satisfaction. By reducing the median time for door-to-provider (i.e. arrival to provider) from 36 minutes to less than 20 minutes, low acuity patients (~27% of total volume) now experience a 44% decrease in their wait time to see a provider. This has significantly improved overall patient throughput because those patients are no longer being bedded which requires RN assistance to set the room up, environmental services to clean the room, provider time to assess the patient further, etc.

Going from an average of zero to 245 discharges from the lobby directly increases available beds and provider care time in the medical and fast track areas, increasing patient throughput dramatically. In addition, the increase in patient satisfaction is a great demonstration of the direct impact this project had on patients. Even a 1% change in patient satisfaction scores is substantial and we have seen scores increase from 3%-12%.

In the wake of changes to the overall healthcare landscape, Hoag continues to see a significant increase in patients visiting the ED. Because approximately 80% of patients who enter the ED will not be admitted, an efficient discharge process is essential to prevent a backlog of patients waiting for treatment. The results displayed by the data show that the process shifted from a baseline of 62% to a post-Kaizen of approximately 78%. This improvement helped facilitate a decrease in LWOTs as more timely discharges allowed patients in the waiting area to move through the system without delays. Furthermore, the stability and steady growth of the metric post-Kaizen indicates that variation has been removed and the gains have been sustained.

6. Sustainability and Scaling

We expect to see a continued downward trend in door-to-provider times and an increase in patients discharged from the lobby as the process continues to be refined. The project was so successful we have already started a follow up project to expand the PIT process and provide specific beds for vertical patients (length of stay less than 30 minutes). As volume continues to grow at Hoag’s other locations, we will seek out opportunities to scale this solution and ensure future ED designs incorporate a dedicated space for a provider in triage. Regardless of ED design, this project could easily be implemented at other facilities by testing the use of a provider during the triage process.

In the months following the Discharge Optimization Project, and associated Kaizen event, discharge efficiency has continued to improve and variation has largely been removed. To maintain control of the process, the outcome metric, the percent of patients meeting the 30 minute goal, will be continue to be monitored but so will process metrics that are not as apparent. In the ED, the nursing staff has committed to performing random audits of staff processes and documentation in the electronic medical record to ensure that the process improvements implemented from the Kaizen event are still being followed. The level of effort required to perform manual audits is not prohibitive as long as they are not too frequent and evenly distributed among staff members.

7. Lessons Learned

A major lesson learned during the Door to Provider project was the need to clarify project scope early with the stakeholders because the ED processes are so closely interwoven. It was a challenge to ensure everyone agreed to the provider hours and it would be best to address this prior to project launch by aligning with peak demand
times. We also recognize the need for a clear sustainment plan with the operational leaders to ensure a smooth transition from project management and performance improvement back to the process owners.

The ED discharge process is a foundational element to the ED workflow. Virtually all other processes in the ED are impacted by its efficiency or lack thereof. The discharge process is an ideal candidate for a Kaizen event because the volume of discharges is large enough to pilot improvements and make changes quickly if unintended consequences should arise. When running a Kaizen event, it is critical to ensure that front-line experts are the majority of the team members and they are empowered to make change. Executive level leadership was instrumental in freeing up time for the staff to participate in the Kaizen and ensuring that the team had the resources they needed to make change.

Discharge efficiency is mostly about timely communication with the staff involved and the patient. Addressing points in the process where communication needs to occur and looking for creative methods to ensure that it happens will lead to a successful and scalable discharge improvement effort. Our advice to other acute care hospitals looking to improve door-to-provider times, and improve patient throughput overall, is to take the time to gain executive support and build a program structure before starting the project. This will help with continued momentum and mid-level leadership buy-in for improved chances of success.