Every Minute Matters! Pediatric Trauma Transfer Time: Emergency Department (ED) to Pediatric Intensive Care Unit (PICU)

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Introduction:

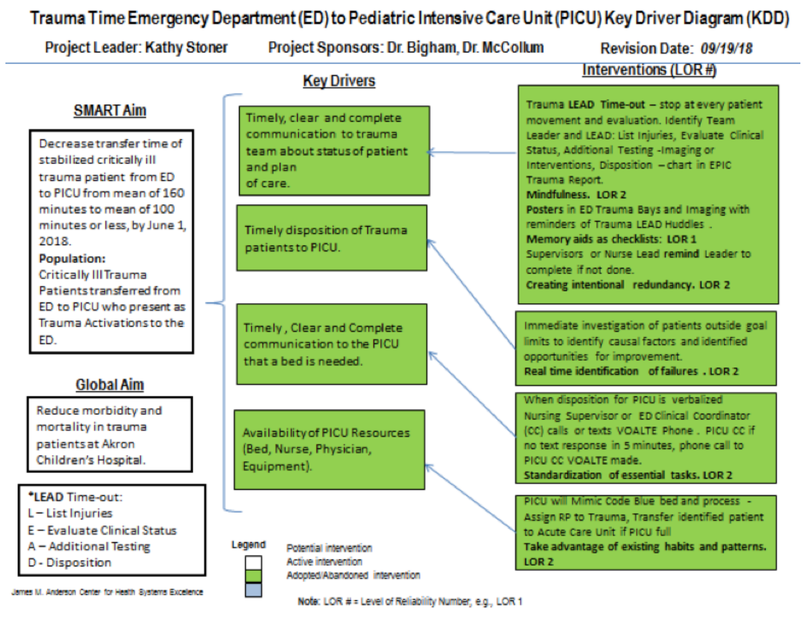
Prolonged emergency room stays for critically ill trauma patients are associated with increased morbidity and mortality. Additionally, procedures in the emergency department for critically ill patients have a lower success and higher complication rate. Locally, we recognized prolonged emergency department stays for critically ill trauma patients requiring ICU admission and sought to improve the quality of care by improving throughput to the intensive care unit for critically ill trauma patients after initial evaluation and stabilization in the emergency department.

Smart Aim:

The average time in minutes from ED arrival to ICU disposition for critically ill trauma patients was 160 minutes. Using 100 minutes as a target threshold, the multidisciplinary improvement team's SMART AIM was to "Decrease transfer time of stabilized critically ill trauma patient from ED to PICU from mean of 160 minutes to mean of 100 minutes or less, by June 1, 2018." Population for this project included all Critically Ill Trauma Patients transferred from ED to PICU who presented as Trauma Activations to the ED. The Global Aim was to reduce morbidity and mortality in trauma patients at Akron Children's Hospital.

Methods:

This multidisciplinary quality improvement project was set at a freestanding Children's Hospital level II Trauma Center seeing approximately 1,200 trauma patients annually, in a tertiary emergency department with 65,000 annual visits and the intensive care unit with 23 beds and 1800 annual admissions. Using the Institute of Medicine model for improvement, a multidisciplinary improvement team was convened to develop a primary and secondary aims, process mapping including failure modes effect analysis, primary/secondary/balancing measures, and PDSAs, which resulted in three impactful initiatives: Lead Time-Out, PICU notification, and PICU readiness. The primary metric was measurement of time in minutes from emergency department arrival to intensive care unit disposition among critically ill trauma patients. This includes the highest level trauma activation and any other level of trauma.



Novel Intervention: Lead Time-Out

ED/Trauma Team utilizes the LEAD Trauma Time-Out developed by the team's Trauma Surgeon and ED Attending in response to concerns that the trauma leader was not regularly and consistently sharing information, including disposition, out loud.

LEAD Trauma Time-Out

- Upon **Entry, Exit, Evaluation**

LEAD – Clearly IDENTIFY leader

- **L**ist Injuries
- **E**valuate Clinical Status
- **A**dditional Testing – Imaging, Interventions and Consultation
- **D**isposition

PICU Notification – Standardized Communication:

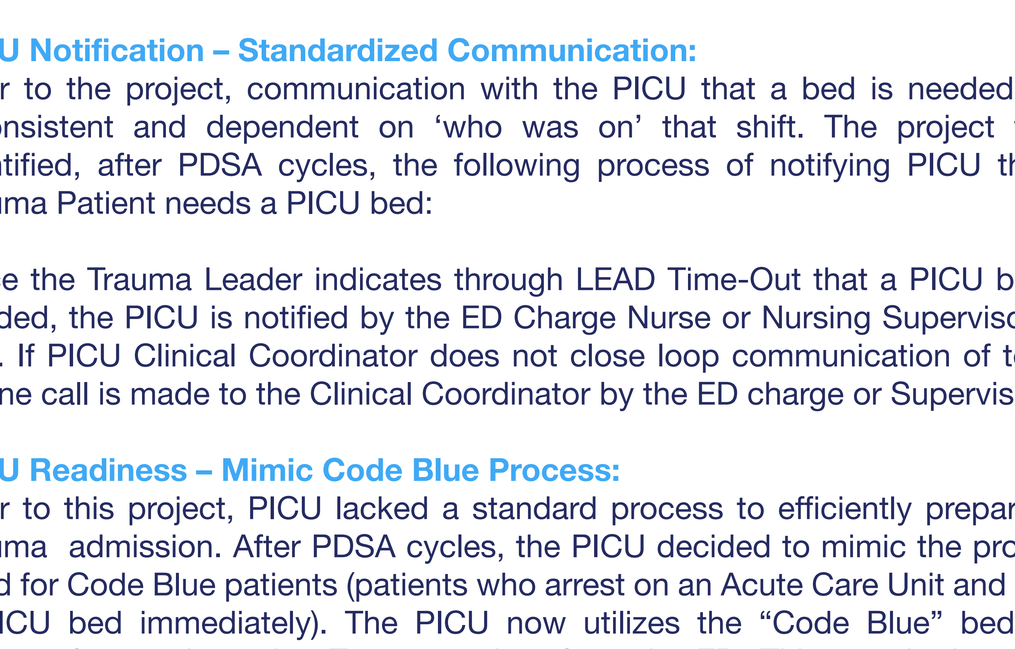
Prior to the project, communication with the PICU that a bed is needed was inconsistent and dependent on 'who was on' that shift. The project team identified, after PDSA cycles, the following process of notifying PICU that a Trauma Patient needs a PICU bed:

Once the Trauma Leader indicates through LEAD Time-Out that a PICU bed is needed, the PICU is notified by the ED Charge Nurse or Nursing Supervisor via text. If PICU Clinical Coordinator does not close loop communication of text a phone call is made to the Clinical Coordinator by the ED charge or Supervisor.

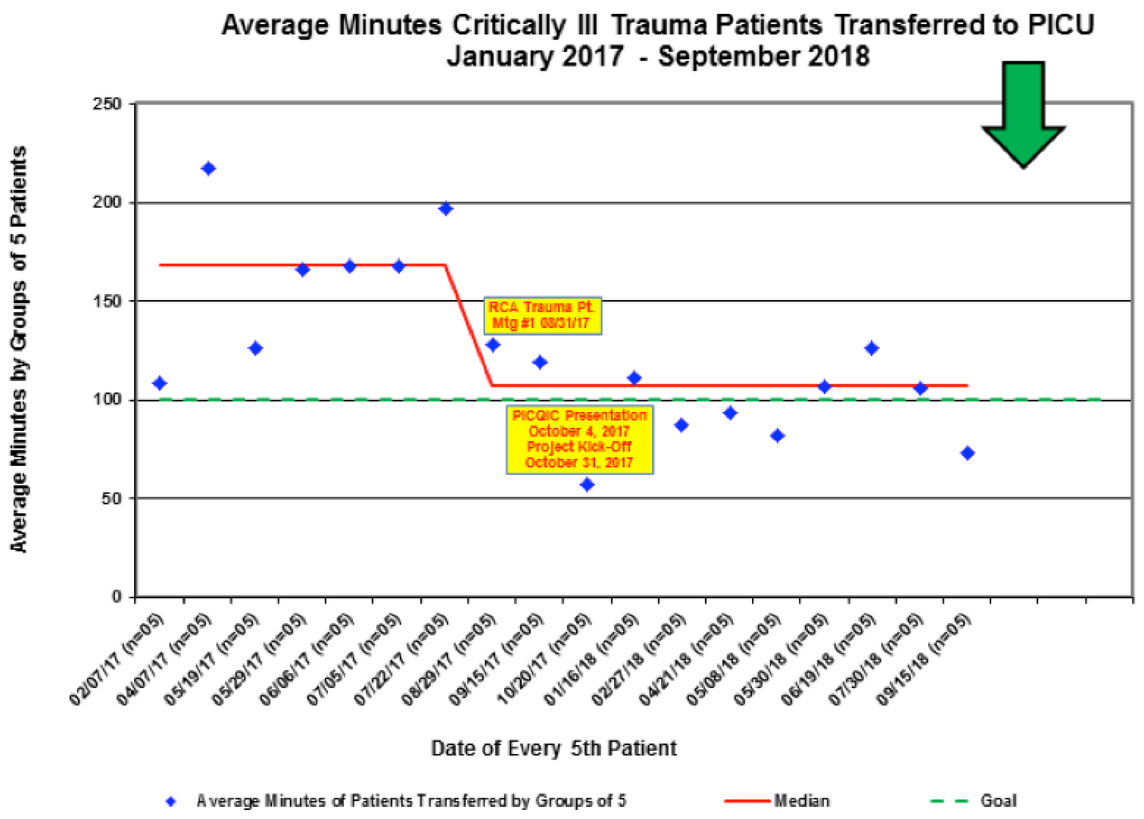
PICU Readiness – Mimic Code Blue Process:

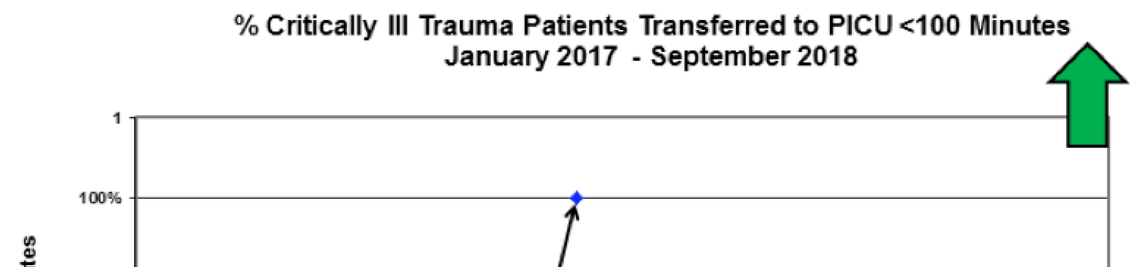
Prior to this project, PICU lacked a standard process to efficiently prepare for Trauma admission. After PDSA cycles, the PICU decided to mimic the process used for Code Blue patients (patients who arrest on an Acute Care Unit and need a PICU bed immediately). The PICU now utilizes the "Code Blue" bed and process for any incoming Trauma patient from the ED. This standard process includes assigning the Trauma Patient to the second Resource Nurse so that staffing delays are minimized.

Results:



- Mean "Time in Minutes" decreased from 160 Minutes to 84 Minutes





The average time in minutes from ED arrival to ICU disposition for critically ill trauma patients was 160 minutes. Using 100 minutes as a target threshold, the multidisciplinary improvement team's SMART AIM was to "Decrease transfer time of stabilized critically ill trauma patient from ED to PICU from mean of 160 minutes to mean of 100 minutes or less, by June 1, 2018." Interventions in the emergency department included standardized leadership roles and standardize priority around disposition decisions using a newly adapted LEAD Time-Out. Interventions in the intensive care unit included an immediate room readiness program for all trauma alerts at the time of trauma activation. As a result, adherence to interventions using process measures resulted in an overall reduction in disposition of critically ill trauma patients to a mean of 84 minutes. Improvement from 29 percent of trauma patients dispositioned to the ICU in 120 minutes or less before intervention, to 77 percent after intervention. No inappropriate or missed assignment of patient disposition was noted. There were no patient harm events noted in response to the interventions.

Conclusion:

Success! We exceeded the goal and have sustained the improvement! This teams' efforts cut the average time it takes to stabilize and transfer a critically ill trauma patient from the ED to the PICU almost in HALF! No surprise, most of the improvement was related to enhanced and standardized communication among and between teams.

A multidisciplinary quality improvement strategy to improve the disposition of critically ill trauma patients from the emergency department to the intensive care unit is feasible. Future steps include a more granular morbidity and mortality evaluation locally, and expansion of the disposition improvement efforts to critically ill patients requiring surgical interventions urgently or emergently.

Team:

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