

Medical Intensive Care Unit Throughput: Optimizing the ED to ICU Transfer Process

Unified Quality Improvement Symposium
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Jennifer Stahl, MD
ECU Assistant Professor EM/PCCM
VMC MICU Co-Director

Christel Molnar, MS-3
ECU Brody School of Medicine
LINC Scholar

Background / Introduction

- Patient throughput from the Emergency Department (ED) to the Intensive Care Unit (ICU) can often be problematic due to:
 - Surplus of patients
 - Boarding of admitted patients due to lack of inpatient beds
 - Limitation of time and resources to care for patients, especially those that are critically ill
 - Occupied ICU beds with stable ICU patients awaiting transfer
- Delayed transfer of critically ill patients from the ED to the ICU has been associated with
 - Increased Hospital Length of Stay
 - Morbidity and Mortality
- ED throughput relies on effective inpatient patient flow and transfer processes



AIM Statement with Numerical Goals

To decrease the time from admission orders to patient occupancy of an ICU bed to ≤ 60 minutes for patients admitted from the ED during a 4-month period of time

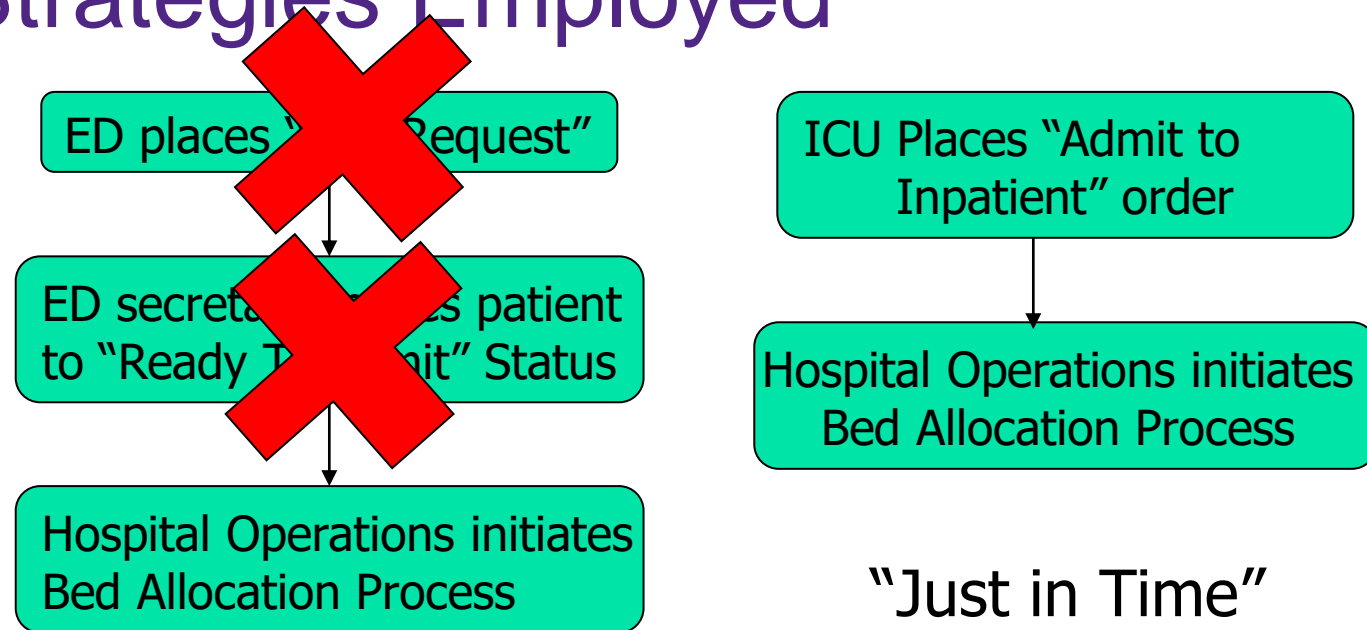
Collaborative Team Members

- **Jennifer Stahl:** Project Leader, organized meetings, created protocols for bed transfer process, collected data
- **Melanie Porter:** Assisted with implementation of protocol within the transfer center and bed control operations. In charge of gathering data from transfer center dashboard and bed assignments
- **Christel Molnar:** Medical Student LINC Scholar, assisted with data gathering and project organization
- **Wendy Lutgens:** Assisted with implementation of protocol within the transfer center and bed control operations. Provided resources and mentorship
- **Myra Thompson:** Help with initiation of protocols for bed allocation and transfer process within the MICU
- **Patty Gilleland:** Assisted with initiation of protocol implementation and staffing support
- **Doug Schiller:** Assisted with implementation of protocol in Cardiac ICU and collection of data

Improvement Strategies Employed

1. Initiation of Bed Request placement by accepting MICU team ("Admit to Inpatient")

- a) Previously, the ED was responsible for placing a "Bed Request" order
 - This started the admission process, but relied on a physical person (ED secretary) to move the patient to a "ready to admit" status.
- b) We changed this process to a "Just in Time"
 - On initial verbal ICU acceptance, the MICU team member places the "Admission to Inpatient" order which allows immediate bed allocation process.



2. Initiation of protocol to allocate the first two available step-down unit beds to stable MICU patients with transfer orders

- a) Beds were assigned at 7 AM
- b) Process was repeated at 7PM

"2 beds ahead"

3. Emphasis to MICU team for early initiation of transfer orders before 12 PM for stable patients

How Will We Know This Change Is An Improvement?

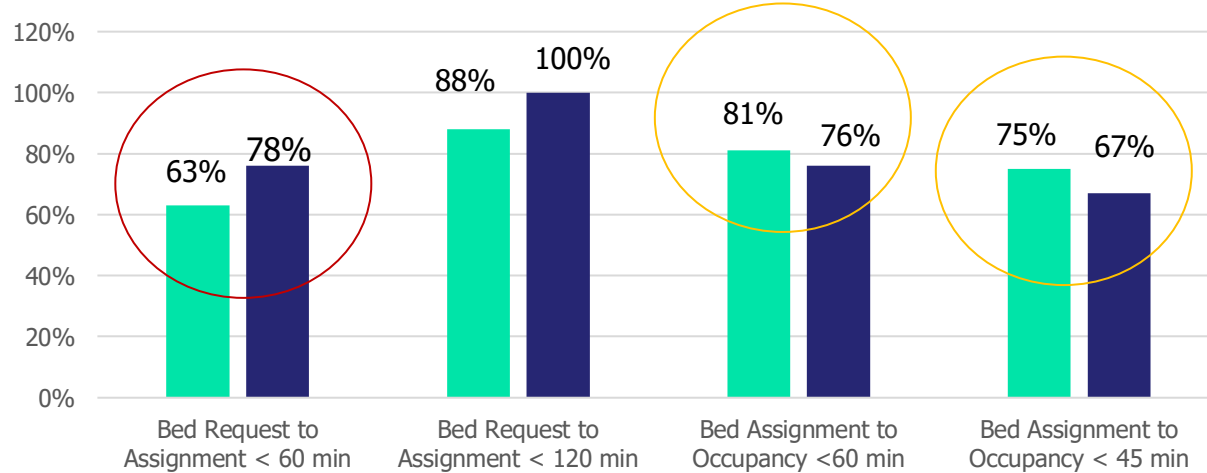
There will be a decrease in the time of MICU admission from the ED

1. We looked at the breakdown of ED admission time and collected:
 - a) Time from ICU admit order in the ED to Bed Assignment
 - b) Time from Bed Assignment to Bed Occupancy in the MICU

2. We followed the time for stable ICU patients to transfer out of the MICU to the step-down units.
 - a) Time from transfer order to bed assignment
 - b) Time of bed assignment to bed occupancy

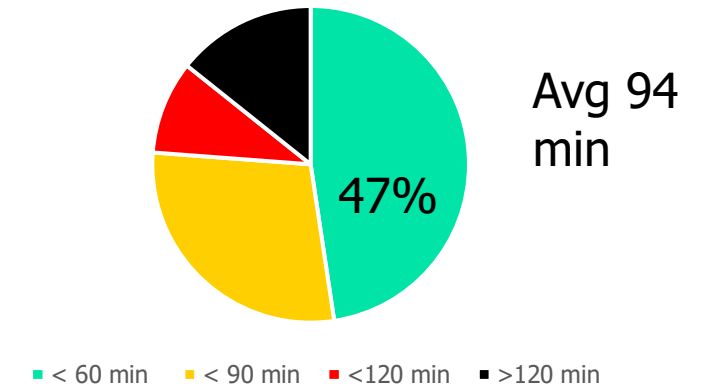
ED TO MICU TRANSFER TIME

ED to MICU Time From Bed Request to Bed Assignment and Occupancy: Control (Green) vs Pilot (Blue)



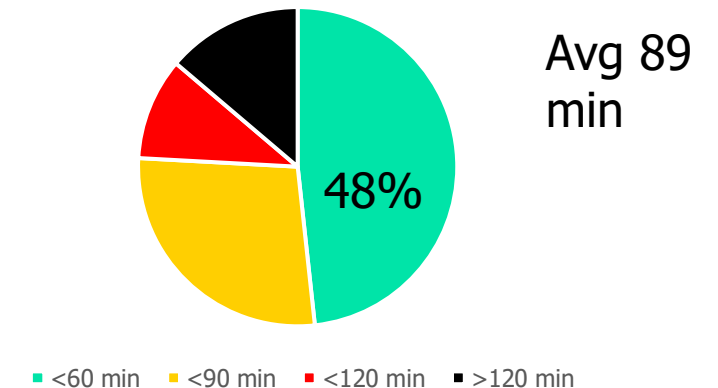
ED to MICU Request to Occupy – Control

Goal: <60 Mins. N=10 Met Goal: 47%



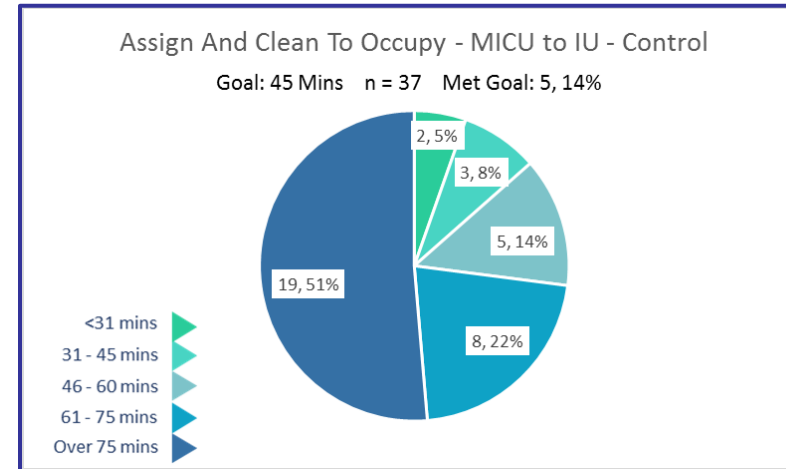
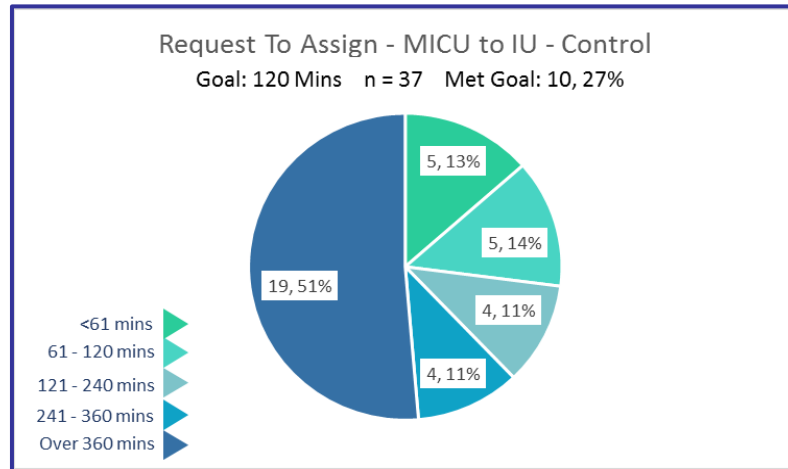
ED to MICU Admit to Occupancy – Pilot

Goal: <60 Mins. N=14 Met Goal: 48%



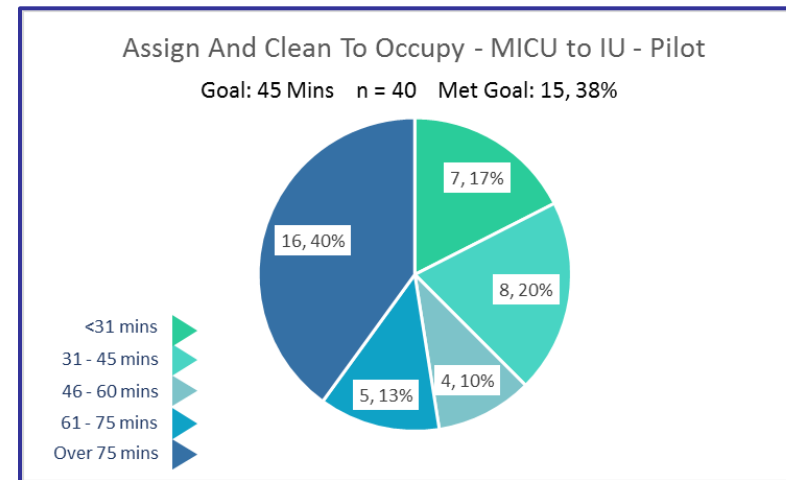
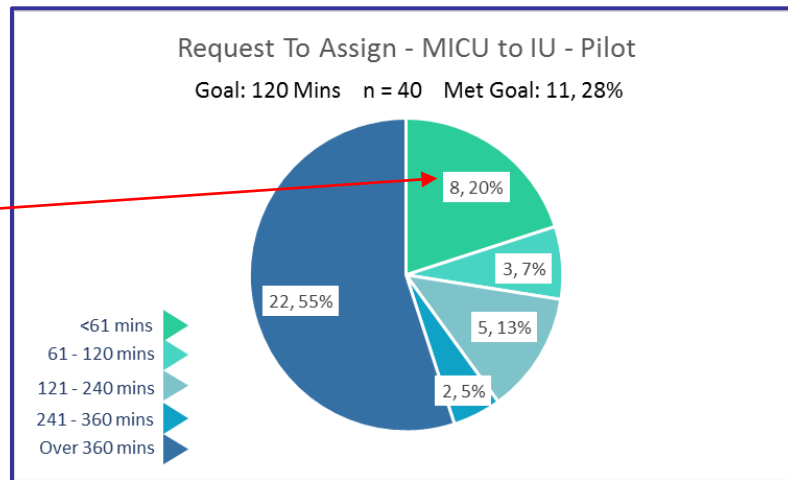
ED Bed Request to Occupancy < 60 min 47% → 48%
 ED Bed Request to Occupancy < 120 min 84% → 89%

MICU to IU Patient Transfer Time



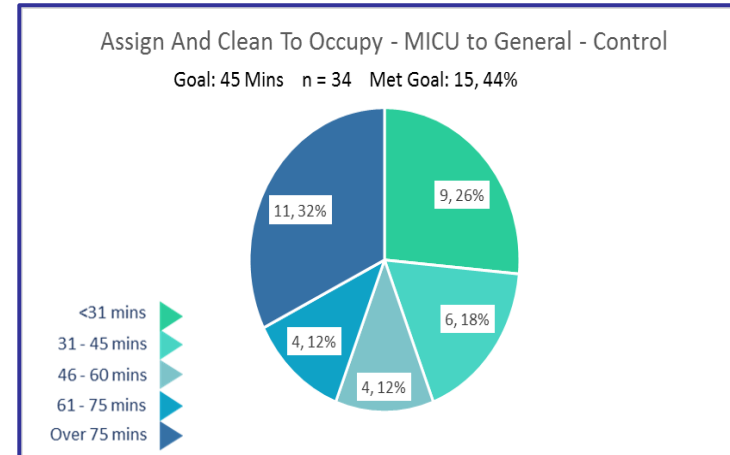
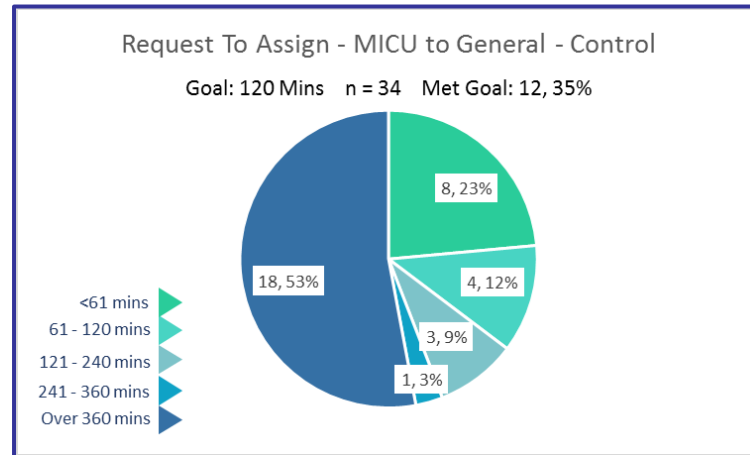
Time for Request to Bed Assignment < 120 min: 27% → 28%

Time for Bed Assignment to Occupy < 45 min: 14% → 38%



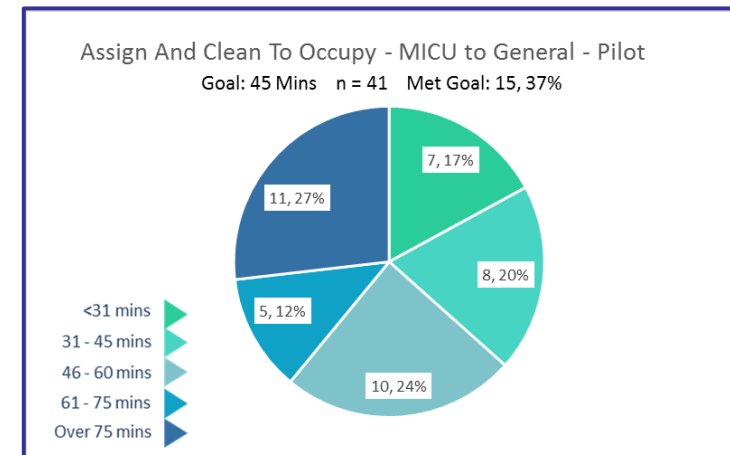
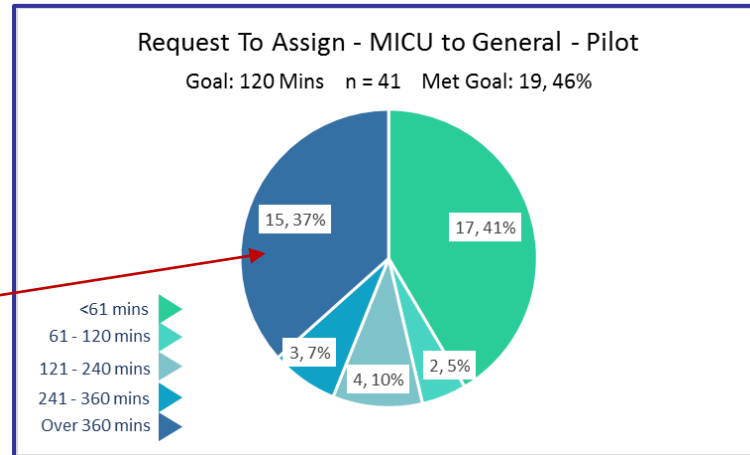
< 60 min inc from 13% → 20%

MICU to General Unit Transfer Time



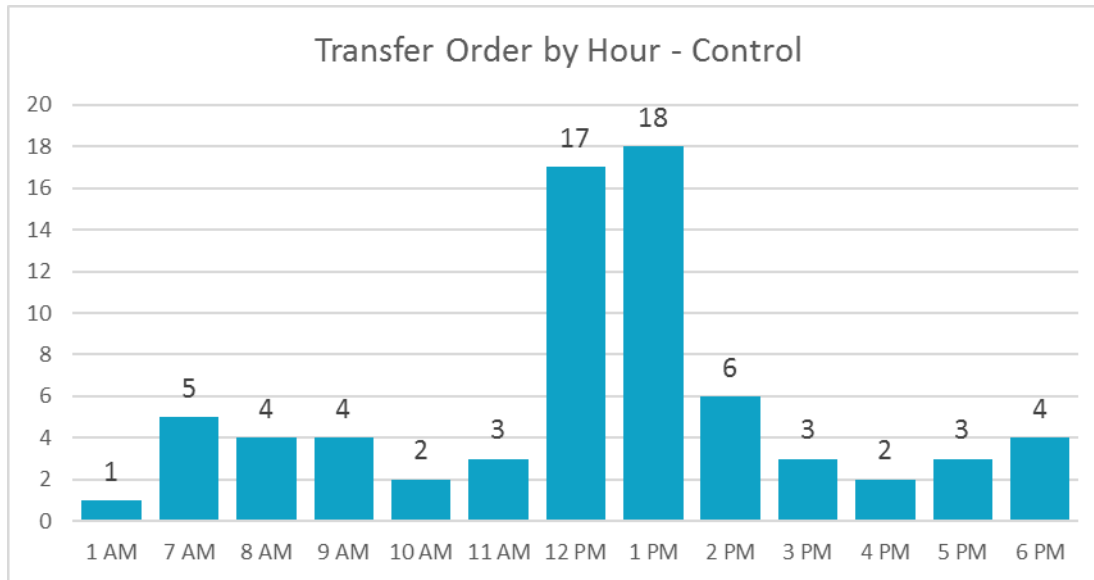
Time for Bed Request to Assignment < 120 min: 35% → 46%

Time for Bed Assignment to Occupy < 45 min: 44% → 37%

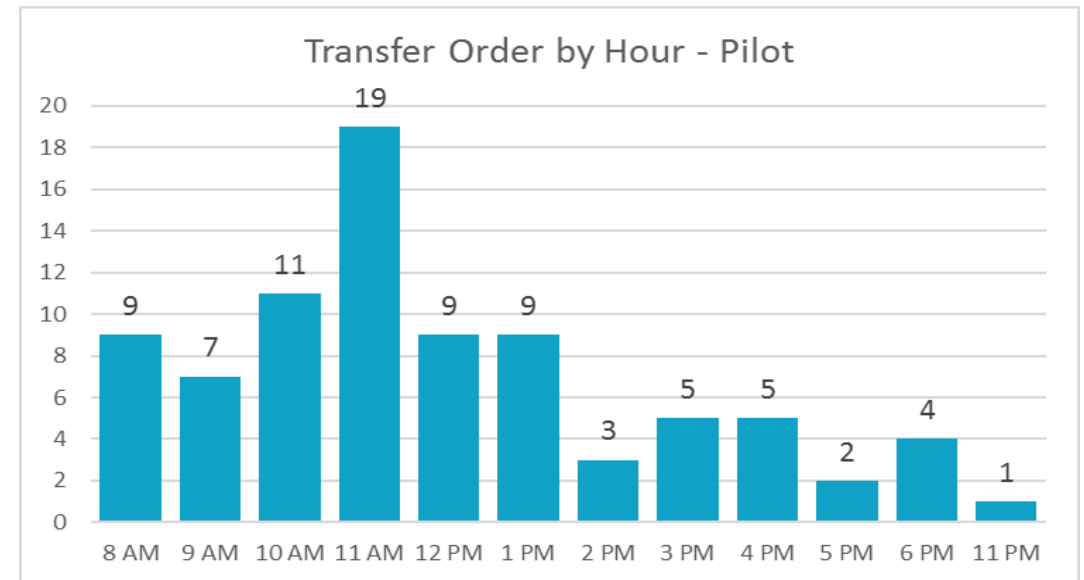


Time for Bed Request to Assignment 53% → 37% for > 360 min

Transfer Orders by Hour

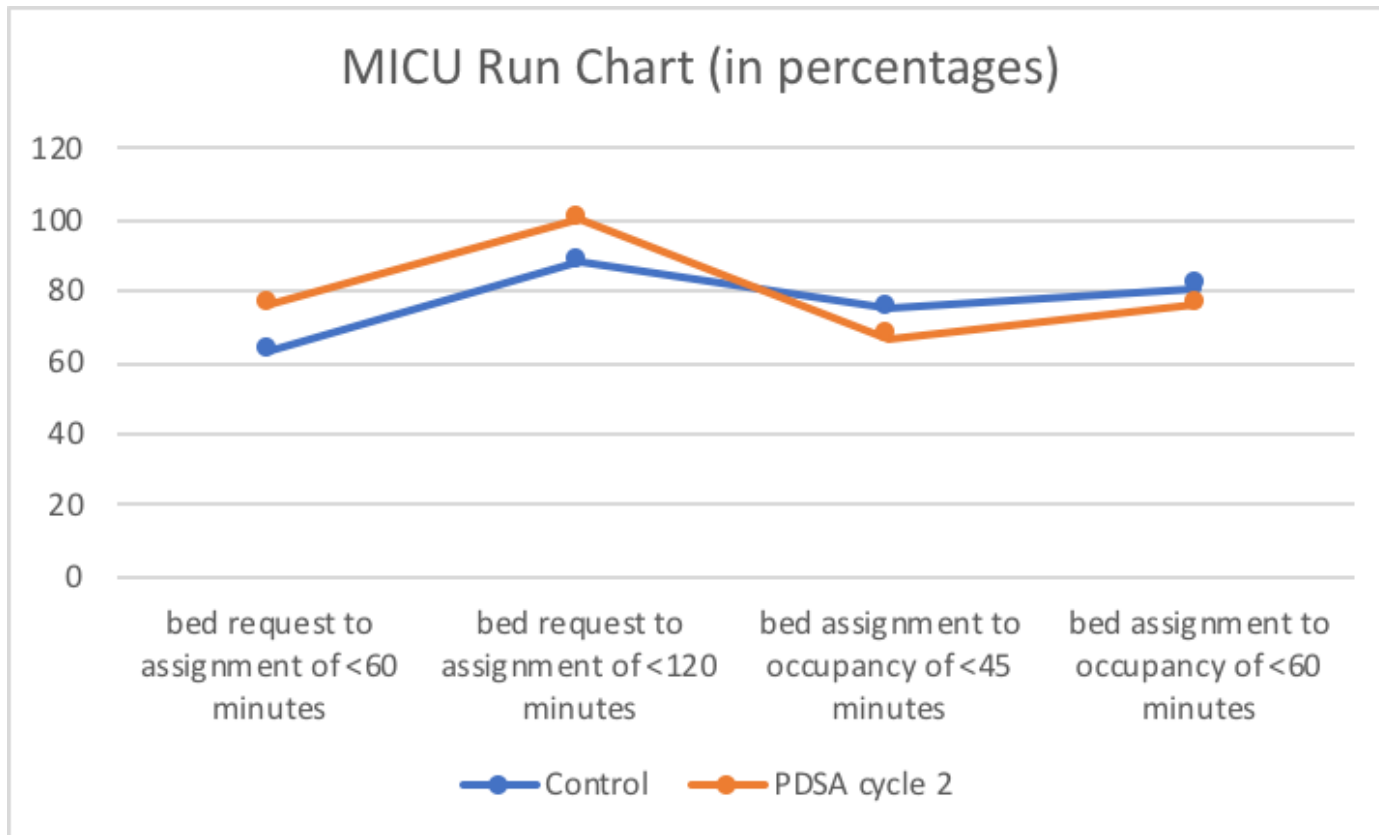


19/72 orders before
noon = 25%



46/84 orders before
noon = 50%

Outcomes



Comparison of baseline data prior to initiation of protocol (Control) and 2 months following protocol initiation (PDSA Cycle 2)

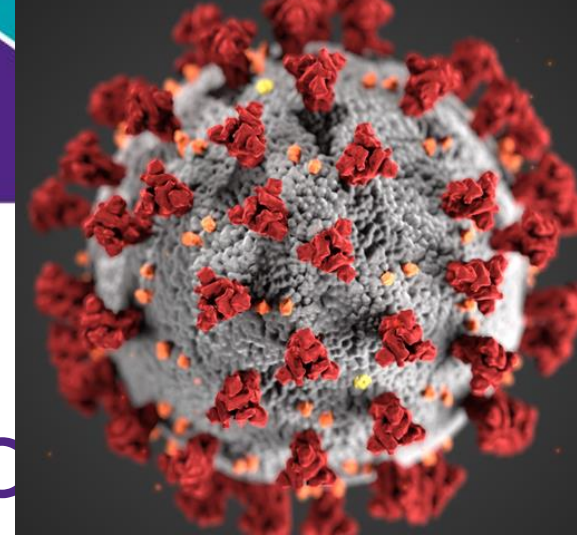
October 2019 – January 2020

While we found an improvement of bed request to bed assignment in the pilot group, the assignment to occupancy did not



Why?

1. Process of STAT Clean
2. Musical Beds?
3. Nursing Report/Hand Off



Challenges Encountered in QI Proo



COVID-19

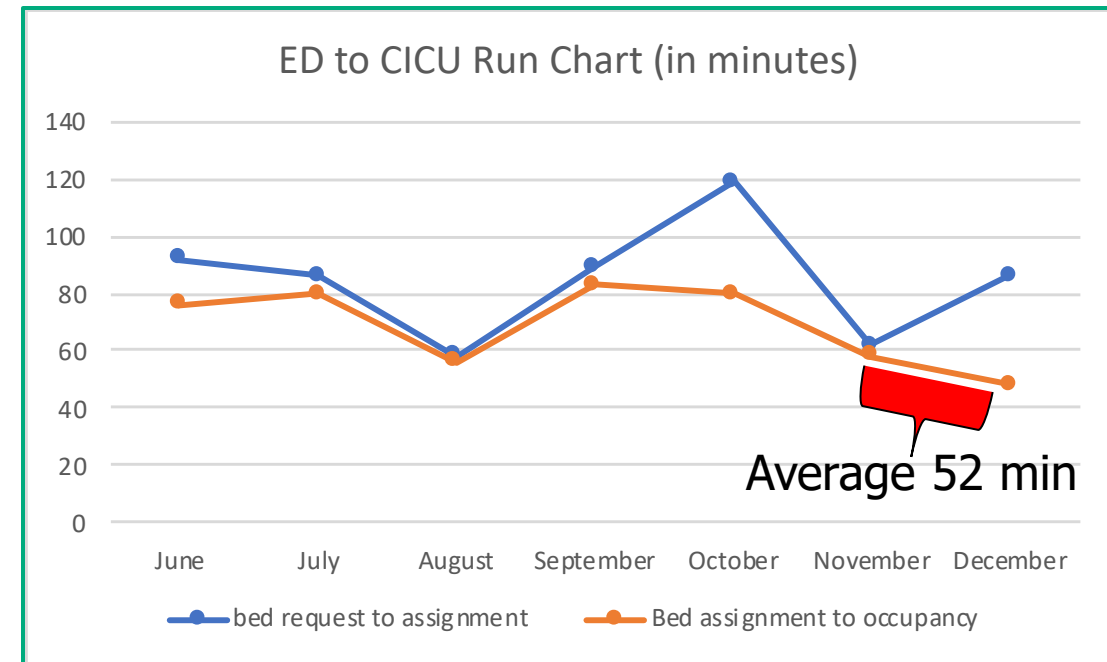


Lessons Learned Through QI Efforts

1. While we saw an improvement in the time from bed request to assignment, the time from bed assignment to occupancy did not drastically change during this pilot project.
2. If we are able to improve the "STAT clean" process with environmental services, this could improve our time from "Bed Assignment" to "Clean and Ready to Occupy"
3. If we can improve patient hand off from the ED to ICU we could improve the time from "Bed Assignment" to "Bed Occupied"

Next Steps

- While the COVID 19 pandemic halted our MICU admission process, the throughput issue became important in the CICU which serves as the overflow ICU
- Next steps to initiate same protocol to the CICU and continue to optimize the process
- Over the last 6 months (July 2020-December 2020) the CICU began implementing a protocol to bring ICU nurse to the ED for bedside report and patient hand off
 - In addition to "Admit to Inpatient" order protocol
- Bed Assignment to Occupancy: Average 68 min
 - Last 2 months down to Average 52 min
- Future efforts will be concentrated on bed cleaning process, nursing hand off, and patient transport.



Questions?

Presenter Contact Information
Jennifer Stahl, MD
stahlj@ecu.edu