Pulling Patients from the PACU: The Uphill Push That Became the Effortless Pull

Heidi Childs, BSN, RN, CPAN, CPN and Sarah Derieg, DNP, RN, CPAN, CPN

Children's Hospital Colorado

Children's Hospital Colorado

Affiliated with
University of Colorado
Anschutz Medical Campus

MAGNET RECOGNIZED
AMERICAN NURSES CREDENTIALING CENTER

Background

- Timely placement of patients from the PACU has been a long standing concern
- Analysis of boarding times showed:
  - Variability and delays in the placement of patients
  - No standardized process or operational definitions
- Literature review revealed patient safety and overall length of stay negatively impacted by long boarding time in sending unit
- Lack of communication and teamwork between PACU, Transfer Center, and Inpatient Unit
- Process lacked transparency

Methods

- Lean Methodology (DMAIC – Define, Measure, Analyze, Improve Control) was utilized to identify barriers in the patient boarding process and generate solutions
- 3-day rapid improvement event with multi-disciplinary team of key stakeholders
- Tools used: Process Map, Value-Add Analysis, Fishbone, Effort/ Impact Matrix, Push vs Pull Simulation
- Prioritized top solutions:
  - Standardized operational definitions in Epic bed management
  - Informatics team automated pages using Epic Foundations
  - Created service level agreements for each step of process
  - Implemented "pull" system
- Refining of the process through 3 PDSA cycles

Results

Pre-Improvement Data
Median Boarding Time of 85 minutes
Standard Deviation of 38 minutes
Process Capability of 50%

Goal
< 90 minutes
34.2 minutes
45%

Post-Improvement Data
Median Boarding Time of 80 minutes
Standard Deviation of 34 minutes
Process Capability of 44.5%

Bed Request → Pre-Assign → Assign → Approve → Ready to Move → Hand-off → Transfer

Hospital Boarding Time

✓ Increased PACU capacity by over 1,100 hours

✓ ~$2.64 million in financial opportunity for PACU in potential billable charges

✓ 54.5% increase in employee satisfaction around communication between PACU and Inpatient Unit

Communication between PACU and Inpatient Unit
— Pre-Improvement — Post-Improvement

Very Dissatisfied | Somewhat Dissatisfied | Neutral | Somewhat Satisfied | Very Satisfied
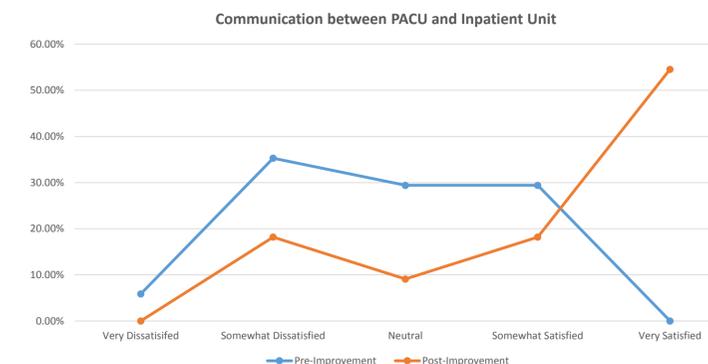
Baseline (10/1/2015 - 9/30/2016) Bed Request to Transfer
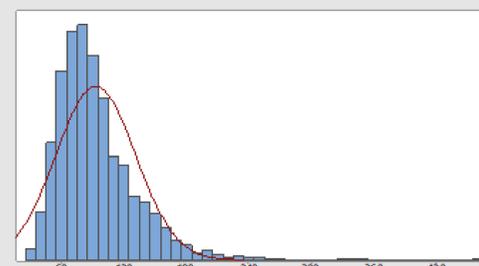
Anderson-Darling Normality Test
A-Squared 45.65
P-Value <0.005

Mean 92.707
StDev 38.366
Variance 1471.914
Skewness 1.86952
Kurtosis 8.00931
N 2114

Minimum 25.000
1st Quartile 67.000
Median 85.000
3rd Quartile 110.000
Maximum 461.000

95% Confidence Interval for Mean
91.071   94.344
95% Confidence Interval for Median
83.000   87.000
95% Confidence Interval for StDev
37.243   39.558

Final Results (6/19/2017 - 10/20/2017) Bed Request to Transfer
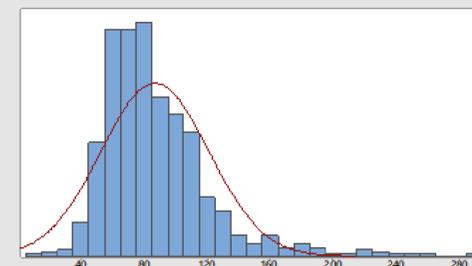
Anderson-Darling Normality Test
A-Squared 18.03
P-Value <0.005

Mean 86.916
StDev 34.270
Variance 1174.400
Skewness 1.77064
Kurtosis 5.25246
N 706

Minimum 12.000
1st Quartile 64.000
Median 80.000
3rd Quartile 102.250
Maximum 293.000

95% Confidence Interval for Mean
84.384   89.449
95% Confidence Interval for Median
78.000   82.520
95% Confidence Interval for StDev
32.570   36.157

Outcomes

- Decreased overall PACU boarding times by 5 minutes (statistically significant difference proven by Mann-Whitney test)
- Decreased standard deviation by 4 minutes (reduced variation)
- Standardized operational definitions
- Created clear roles and defined expectations with target goals for each process step (Transparency)
- Improved teamwork and communication between PACU, Transfer Center, and Inpatient Unit
- Inpatient nurse now empowered to "pull" their patient to the right level of care at the right time (shifted from a "push" system)

Implications

- Patient safety and satisfaction improved through reduced waiting
- Timely follow up of delayed patient placements
- Measurement of time data standardized
- Ongoing reevaluation and discussion of process
- Implement practice with all Inpatient Units receiving patients from the PACU

Co-Investigators

Rebecca Colley, MBA, Maryam El-Bakry, MBA, Regina Hoefner-Notz, MS, RN CPAN, CPN, Erica Gutierrez, BSN, RN, Cynthia Knapp, Sheri Neu, BSN, RN, Meghan Rach MS, RN James Ray, Christine Silva BSN, RN, Jesse Tuohy, Nicole Widmer, BSN, RN