Improve Efficiency and Effectiveness of Nurse Call System Using LEAN Methods

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

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Introduction

Nurse call alert fatigue has a negative impact on patient safety, patient satisfaction, and staff engagement.[1] Increasing the number of alerts to staff causes alarm fatigue and slower response times.[3] Nursing staff's perceived levels of alert fatigue and teamwork among colleagues are significant determinants of staff call-light response time.[3] When average response time to call lights is longer, patient satisfaction is negatively impacted.[2] This organization implemented a new Nurse Call System in 2017-2018. Staff feedback indicates increasing dissatisfaction with the high number of alerts and inappropriately "urgent" sounding call tones, while data shows response time goals with the new system are not being met.

Aim

Create a more effective and efficient nurse call system that safely reduces non-valued added process steps and total nurse call alerts, to improve staff engagement and patient satisfaction.

Project Team & Oversight Group

Project Team roles included Nurse, Patient Care Associate, and Unit Clerical Associate:

Susan Shoaf, Mona Patel, Sydneigh McConnell, Jessica Jordan, Megan Wiley, Yollannda Allen

Oversight Group roles included Chief Nursing Officer, Associate Chief Nursing Officer, Nurse Manager and Assistant Nurse Manager:

Traci Mignery, Jackie Buck, Margaret Robert, Gregory Segelhorst, Kristina Layton, Kelly Miller

Project Leader: Jackie Lamendola, Sr. Quality Manager
Lean Six Sigma Black Belt
Quality Intern: Riley Skinner

Define the Problem: Voice of the Staff

Nurse Call System Staff Survey March 2018

- 941 nurses, patient care associates, and unit clerical associates, across the units where new nurse call system was implemented, received the electronic survey
- 269 responded to our survey, for a response rate of just below 30%

- Key areas identified for opportunities to improve nurse call system:
  - ***Too many alerts that are not helpful (alarm fatigue)***
  - Complexity/functionality of system
  - Lack of staff and patient education
  - Accountability and team work

Project Methods and Goals

Project Methods

D Define | M Measure | A Analyze | I Improve | C Control

- Leadership and management champions
- Project team of front line staff – "subject matter experts"
- Utilize and teach LEAN Six Sigma methods to improve efficiency and effectiveness of nurse call system (reduce non-value added alarms), and improve quality and safety
- Implement pilot for 6 weeks in 2 inpatient medical - surgical units

Project Goals

- ***Improve staff satisfaction:***
  - Reduce alarm fatigue with multiple alerts
  - Remove non-value added process steps and time
  - Improve system functionality and change call tones
  - Encourage teamwork and accountability
  - Increase communication with call in feature
- ***Positively impact patient satisfaction and safety***
  - Create standard patient education

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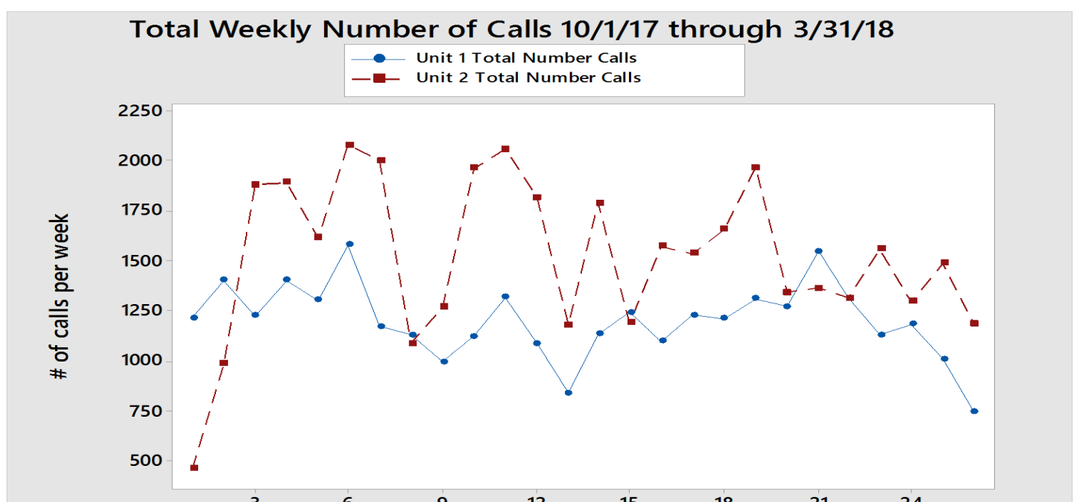
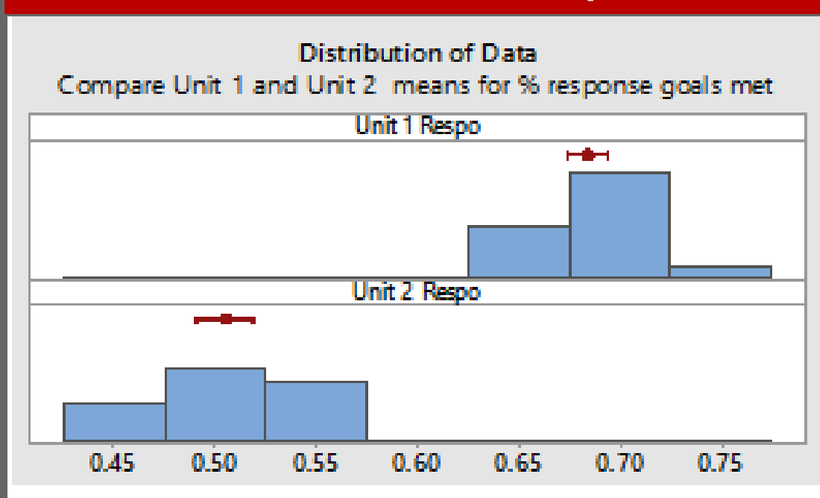
Measure: Number of Patient Calls



Measure: % Response Goals Met



Individual Samples

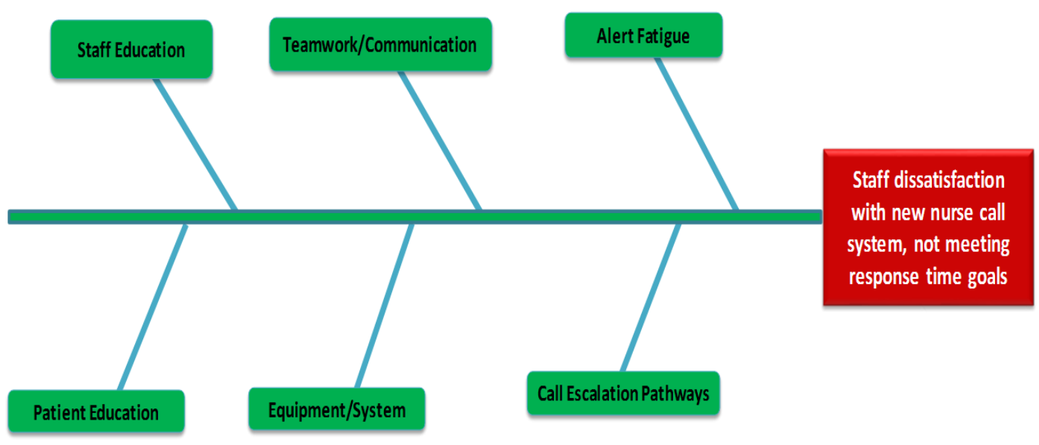
Statistics	Unit 1 Respo	Unit 2 Respo
Sample size	26	26
Mean	0.68372	0.50527
95% CI	(0.6734, 0.6941)	(0.49151, 0.51904)
Standard deviation	0.025641	0.034074

Baseline Performance

Unit 1 weekly response time goals met = **68.3%**

Unit 2 weekly response time goals met = **50.5%**

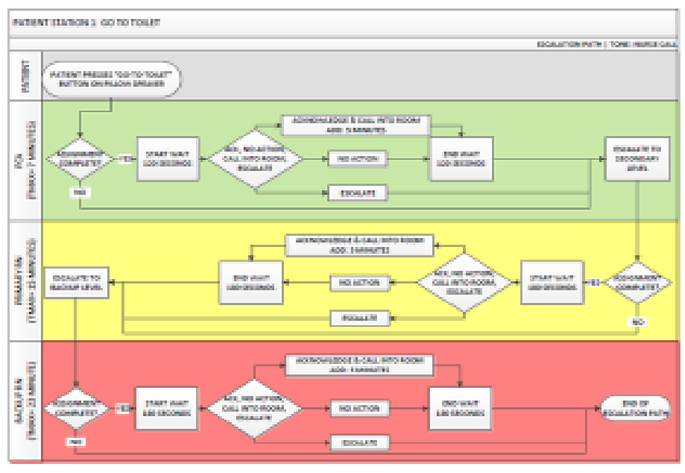
Analyze: Cause & Effect

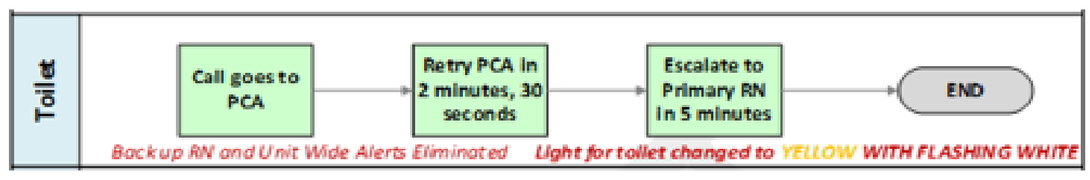


Improve: Nurse Call Pathway Changes

Original Pathway
12 steps
23 minutes total

NEW PATHWAY
3 steps
5 minutes
total





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Improve: Non-Value Added

Nurse Call Communication Pathway	Current Pathway Total Steps	Current Total Time	Pilot Pathway Total Steps	Pilot Pathway Total Time	Steps Eliminated	Time Eliminated
Toilet	12	23 min	3	5 min	9	18 min
Water	12	23 min	2	5 min	10	18 min
Pain	12 (unit wide)	9 min	2	5 min	10	4 min
Patient Normal (with UCA coverage)	4	5 min	2	5 min	2	0 min
Bath Assist	11 (unit wide)	5.5 min	3	5 min	8	.5 min
Bed/Chair Exit	8 (unit wide)	3.5 min	2	2 min	6	1.5 min
For Above Patient Calls All Backup RN and Unit Wide Alerts Eliminated (CODE BLUE/STAFF ASSIST ARE STILL UNIT WIDE ALERTS)						
Total	59	69 min	14	27 min	45	42 min
% Steps/Time Eliminated					**76%**	**61%**

Other Improvements and Next Steps

1. Staff feedback during pilot has been positive noting significantly less nurse call alerts coming to their phones.
2. There is increased clarity and accountability for who receives and responds to each alert.
3. New **"word"** tones for" water, bathroom and pain" have been implemented to be more informative and helpful to staff.
4. User friendly staff and patient education tools were developed.
5. Upon pilot period completion (Oct. 2018), next steps are to re-measure the pilot response time and % response goals met data, and re-survey staff.
6. Additional measures for staff engagement, patient satisfaction and falls occurrences data will be included.
7. Implement improvements across the health system.

References

1. The Joint Commissions Sentinel Event Alert. Medical device alarm safety in hospitals. Available at https://www.jointcommission.org/assets/1/6/SEA_50_alarms_4_26_16.pdf
2. Tzeng: Perspectives of staff nurses of the reasons for and the nature of patient-initiated call lights: an exploratory survey study in four USA hospitals. BMC Health Services Research 2010 10:52
3. Tzeng H-M, Larson JL. Exploring the relationship between patient call-light use rate and nurse call-light response time in acute care settings. Comput Inform Nurs. 2011;29(3):138–143.