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Using the DMAIC Process to Improve Discharge Process and Readmission Rates in Acute Care

Purpose: Acute Care Surgery (ACS) is a 28 bed unit with 12 progressive care beds. The unit has 7 services; Vascular, Surgical Oncology, General Surgery, Bariatric, Plastics, Microsurgery and Urology. Each service has several interdisciplinary members making it difficult to maintain effective inter disciplinary rounds (IDR's). Vascular surgery is the largest customer for Acute Care Surgery and they currently have our highest readmission rate. Length of stay and readmission rates are directly impacted by the discharge process. Staff nurses remain the front-line patient care manager and discharge coordinator, providing the last opportunity to correct inadequacies before discharge.[14] An Admission and Discharge (A&D) Registered Nurse was needed to improve the discharge process and decrease readmission rates for Vascular Surgery.

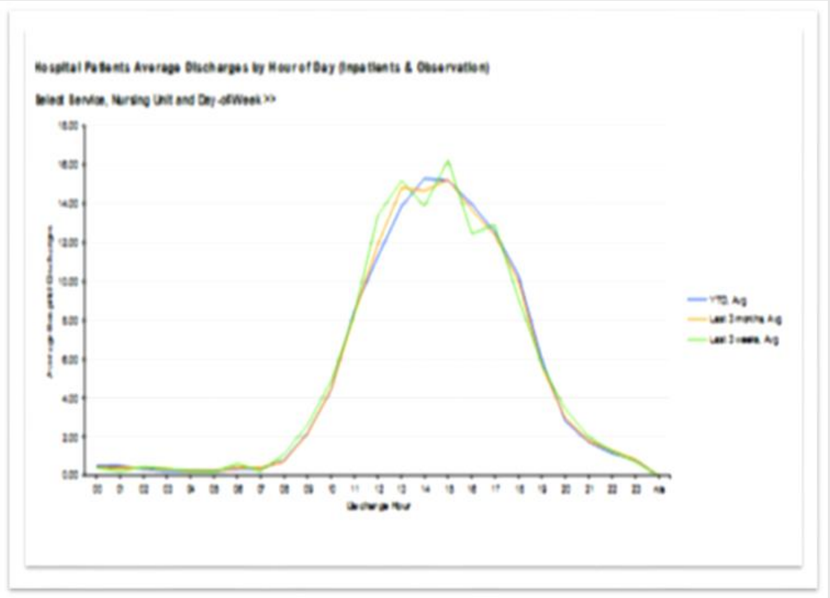

Figure 1 Time of Patient Departure Prior to Pilot

Background: Evidence repeatedly shows that a decrease in communication leads to errors and poor patient outcomes. Multiple studies show patients are unable to verbalize their discharge diagnosis or discharge instructions.[2] One study that looked at 720 vascular procedures showed a significantly higher rate of post-op infections in patients with peripheral versus central procedures.[9] The quality of staff nurses' communication during patient interactions addressing discharge learning needs is a significant predictor of the patient's perception of their readiness to go home.[8] Lean Six Sigma uses a DMAIC approach which involves defining a problem, measuring, analyzing, improving and controlling the change. Patients and their caregivers often perceive they are not adequately prepared for discharge and attribute post discharge problems to their unmet informational needs.[5] Lean Six Sigma was used on Acute Care Surgery to evaluate the current discharge process and look for opportunities to improve the process.

Methods:

- The Lean Six Sigma DMAIC model was used to evaluate 169 discharges by date and time
- 25 patients were excluded due to disposition or transfer
- Literature search performed using CINAHL and key terms "Nurses," "Organizational Efficiency," "Time Factors," "Turnaround Time," "Length of Stay," "Bed Occupancy," "Vascular" and "Throughput"
- Literature search limited to English and years 2007 to 2015
- Literature evaluation found the following methods used; randomized clinical trial, qualitative studies, simulation based optimization, prospective longitudinal designs, quantitative studies, observational design, retrospective studies, integrated review and pre-post design studies

Implementation:

- A job description was created for Admission and Discharge role based on literature review
- Key points established collaboration with Social Work, Care Coordination, Physical Therapy and Physicians
- Approval for a pilot was requested using a executive summary
- Staff meetings were held to explain the expectations of the position and the measurable outcomes centered around safe and efficient discharges
- A pilot discharge RN was scheduled to work specific days based on the data
- Pilot conducted between 1/2/15 and 2/26/15
- The A&D Registered Nurse was to focus on discharge instructions and patient discharge education

Findings and Conclusions:

- Highest volume of discharges occurred on Mon., Wed., Thur., Fri., and Sat., unchanged during pilot
- Majority of discharges occurred between 9 AM and 5 PM, unchanged during the pilot
- ACS averaged 4.5 discharges per day during 2 month pilot
- ACS averaged 32 discharges per week during 2 month pilot
- Average amount of time between order for discharge being placed and patient leaving unit was 2:57 hours during pilot
- Projected discharges for year is 1664 based on pilot
- Patient departures occurring one hour prior could create 69.3 more patient days
- 69.3 patient days could generate $207,900 in additional room charges

Measurable Outcomes:

- Readmission rates decreased from 15% in Dec. 2014 to 13% in Jan. 2015
- Discharges by noon increased to 20% in Mar. 2015 from 15% in Jan. and Feb. 2015
- Length of Stay decreased to 6.1 days in Mar. 2015 from 8.3 days in Feb. 2015
- Admission times were unchanged
- Average amount of time between order for discharge and patient leaving unit decreased by 30 minutes
- Question 27 from HCAHPs: And, how would you rate the efficiency of the DISCHARGE process has improved from Dec. 2014, 62.1% to 89.9% in Jan. 15 and 91.7% in Feb. 15
- Average discharge time was 14:27 hours during pilot decreasing from 16:04 hours during data analysis

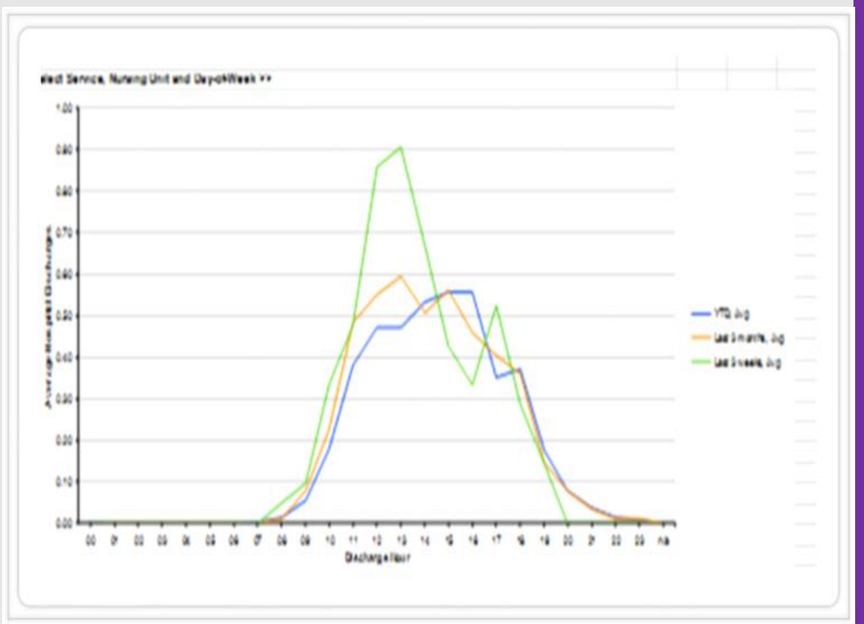

Figure 2 Time of Patient Departure During Pilot

Recommendations:

- Adapt pilot into normal work flow by refocusing the Clinical Coordinator to meet original intent of capacity and throughput
- Validate success in a second like unit
- Disseminate this practice throughout the hospital to like units
- Adapt role to account for admissions in a more effective manner
- Expand responsibility of role to include leading IDR's and daily staffing calls

References Upon Request: