

Introduction

- ED overcrowding is a widespread issue, which affects safety and quality due to prolonged wait times, diagnosis, and treatment (Erenler et al., 2014).
- Length of stay (LOS) and left without being seen (LWBS) rates are key indicators of ED efficiency and quality. High LOS and LWBS rates signal overcrowding and a gap for improvement, apparent at the project site.
- This quality improvement (QI) project aimed to address overcrowding and high LOS and LWBS rates by implementing an advanced triage protocol consisting of nurse-initiated standing order sets for stable adult patients with abdominal pain complaints.

Background

- The project site's average LOS was 272 minutes and LWBS rate was 10%, which is significantly higher than local and nationwide ED averages (CMS, n.d.).
- One strategy to address overcrowding is triage standing orders, which are pre-approved orders that a RN can initiate before the patient is seen by a provider (Hwang et al., 2016).
- This serves to streamline throughput by expediting diagnostic testing and medical decision making, decreasing LOS and time to time-sensitive interventions, and increasing satisfaction (Hwang et al., 2016).

Significance

- Abdominal pain is one of the most common complaints in the ED, accounting for 7–10% of all visits (Cervellini et al., 2016).
- LOS is prolonged in these patients because diagnosis takes significant time to work up and then treat (Cleveland Clinic, 2017).
- An advanced triage protocol can expedite the initiation of diagnostic testing, thus reducing time till medical-decision making and treatment, ultimately reducing LOS.
- This is also predicted to reduce LWBS occurrences since patients may be more likely to stay for treatment when they perceive they are being cared for, not just aimlessly sitting in the waiting room.

Methodology

- **Design:** QI project with a retrospective chart review approach pre and post 1-month of advanced triage protocol implementation
- **Sample:** all stable adults with abdominal pain complaints that are pending ED bed assignment, excluding pregnant patients
- **Setting:** ED triage area in an urban academic medical center in northern New Jersey
- **Project Interventions:**
 - **Policy-** advanced triage protocol clinical procedure and policy approval
 - **IT Input-** standing order sets into EHR
 - **Education-** educational handout
 - **Pre-Implementation Chart Review-** retrospective chart review of 1 month from 12/01/2020 to 12/31/2020
 - **Abdominal Pain Protocol-** intervention implemented for 1 month between 01/20/2021 to 2/20/2021, standing order sets included a lower abdominal pain order set (CBC, CMP, lipase, urinalysis, pregnancy test for women) and upper abdominal pain order set (same tests as lower abdominal pain order set and a troponin level and EKG)
 - **Post-Implementation Chart Review-** retrospective chart review post 1 month of implementation
- **Outcome Measures:**
 - **LOS-** decrease average LOS in eligible patients by 15%
 - **LWBS Rates-** decrease LWBS rate in eligible patients down to 2%
- **Evaluation:**
 - **Data Collection-** report of stable adult patients with abdominal pain complaints generated and screened from EHR for pre-implementation sample; report of standing order set usage generated and screened for post-implementation sample. Demographics, chief complaint, ESI level, LOS, and disposition collected.
 - **Data Analysis-** demographics analyzed with descriptive statistics; LOS and LWBS analyzed with means, standard deviation, and Mann-Whitney U tests.

Results

Demographics:

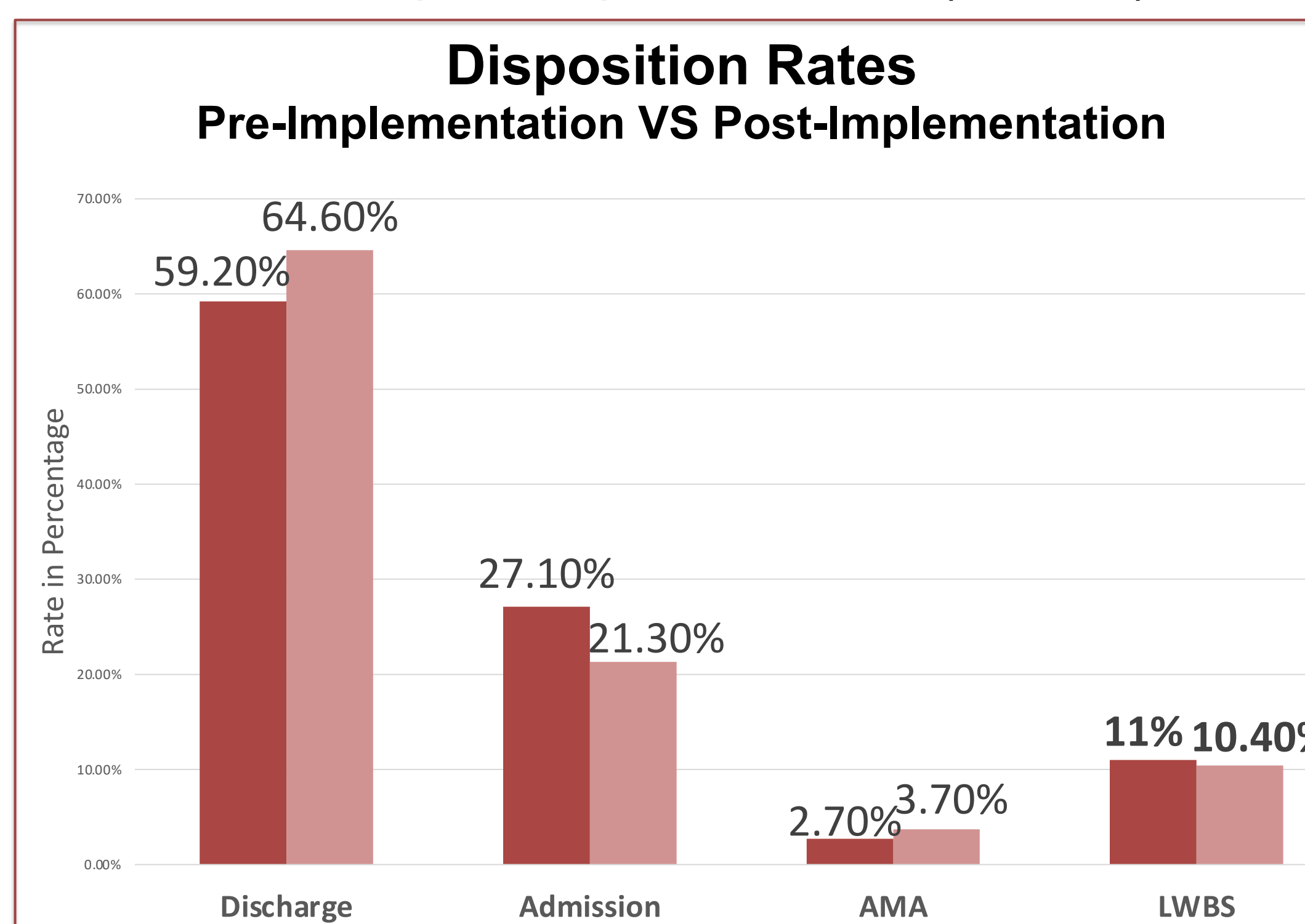
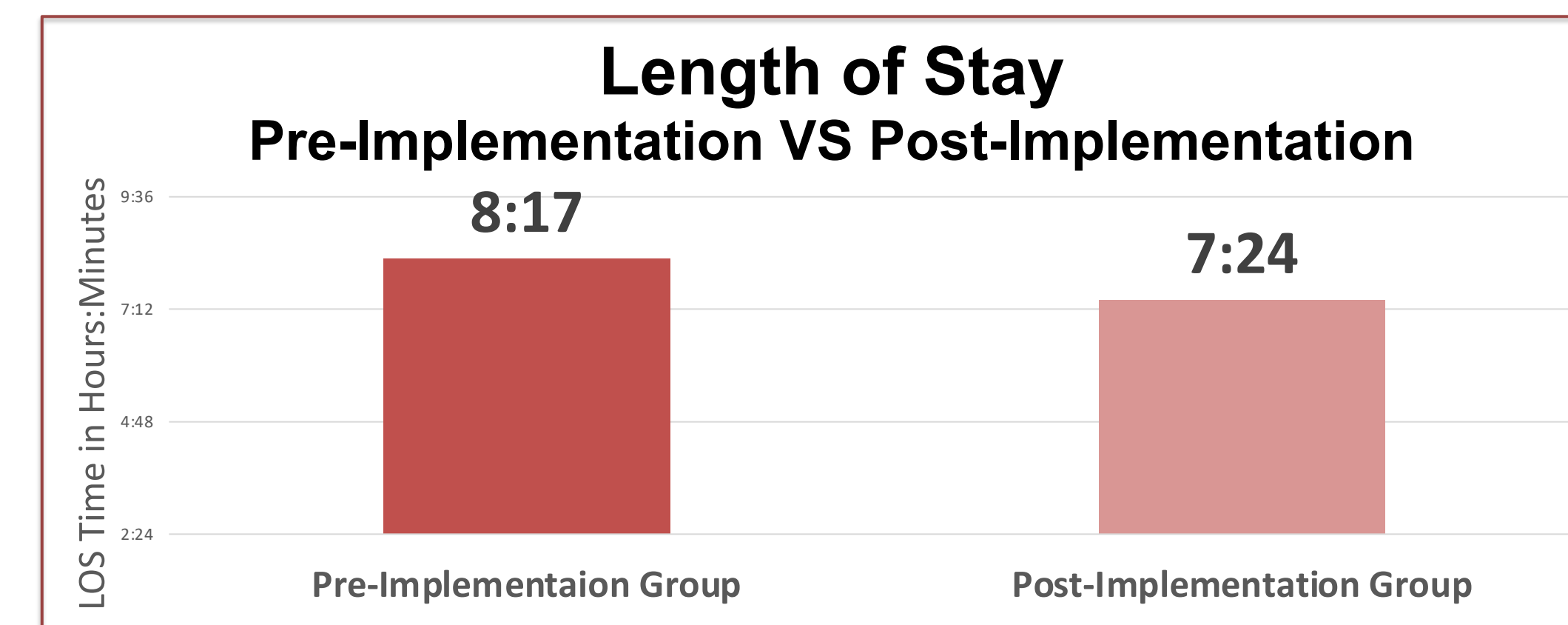
Category	Pre	Post
Total (N)	292	164
Age (M)	39 years	38 years
Gender (N, %)	Female	183 (62.7%)
	Male	109 (37.3%)
Race (N, %)	African American	155 (53.1%)
	White	11 (3.8%)
	Other	126 (43.2%)
Chief Complaint (N, %)	Abdominal Pain and Related Symptoms	188 (64.4%)
	Abdominal Pain and Other Symptoms	104 (35.6%)
ESI Acuity Level (N, %)	ESI 3 Urgent	281 (96.2%)
	ESI 4 Less Urgent	11 (3.8%)

Outcome Measures:

Category	Pre	Post
ED LOS (M, SD)	8:17 (5:11)	7:24 (4:56)
ED LWBS (N, %)	32 (11%)	17 (10.4%)

Statistical Analysis:

- **LOS-** Mann Whitney U test revealed a **statistically significant 53-minute reduction** in LOS post-implementation ($p=.012$)
- **LWBS-** Mann Whitney U test revealed a **non-statistically significant 0.6% reduction** in LWBS rates post-implementation ($p=.344$)



Discussion

- The results were comparable to the findings in the literature. This project resulted in a reduced mean LOS in eligible patients by 53 minutes, an approximate 10.7% decrease, which is statistically and clinically significant in that it aids the project site ED in addressing the overcrowding crisis.
- The LWBS rate decreased from 11% to 10.4% post-intervention, which was not statistically significant and is far from the national benchmark goal of 2%, however the slight improvement in LWBS rates may still be clinically significant in improving the safety and quality of care.
- By effectively reducing LOS and mildly reducing LWBS rates, residual improvements in patient flow, throughput, safety, quality, and satisfaction are expected.
- Limitations existed, including time constraints, short implementation timeframe, small post-intervention sample size, potential selection bias, inadequate staffing, and non-readily apparent differences in the groups which may have confounded findings.

Implications

- **Clinical Practice:** advanced triage clinical practices by introducing standing orders
- **Policy:** a new policy was created and approved for advanced triage protocols
- **Quality and Safety:** by reducing LOS and LWBS rates, ED quality and safety is improved while overcrowding is addressed
- **Education:** staff educated and competent in new practice change, can be incorporated in new staff orientation
- **Economic:** project may generate increased revenue from higher patient turnaround, increased patient flow, and improved bed utilization efficiency

References

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