



Optimizing Unilateral DIEP Flap Breast Reconstruction Leads To Decreased Hospitalization Time: A Quality Improvement Study

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Background

- DIEP flap patients are normally followed for 3 – 5 days following surgery to ensure close proximity to an operating room in the event of a complication.
- Data from MSKCC shows that 95% of complications following unilateral DIEP reconstruction occur within the first 24 hours postoperatively, prompting questions about whether length of stay can be shortened.
- The aim of this study was to determine the feasibility of decreasing length of stay to 48 hours following unilateral DIEP reconstruction.

Methods

- Our quality improvement initiatives functioned according to Six Sigma's Define, Measure, Analyze, Improve, Control (DMAIC) framework, which has been used by other quality improvement initiatives in plastic surgery.
- Inclusion criteria: patients undergoing unilateral DIEP surgery beginning in December 2020.
- DEFINE: We delineated stakeholders, their relationship to the operative process, and workgroups which would execute interventions.
- MEASURE: Via observational studies, process mapping, and stakeholder interviews, we measured operative times and patient satisfaction. SMART (specific, measurable, achievable, relevant, timebound) goals were used as performance measures.
- ANALYZE, IMPROVE, CONTROL: Workgroups analyzed data and used root cause analysis to identify inefficiencies. Improvements were made and run charts were constructed to capture data.

Results

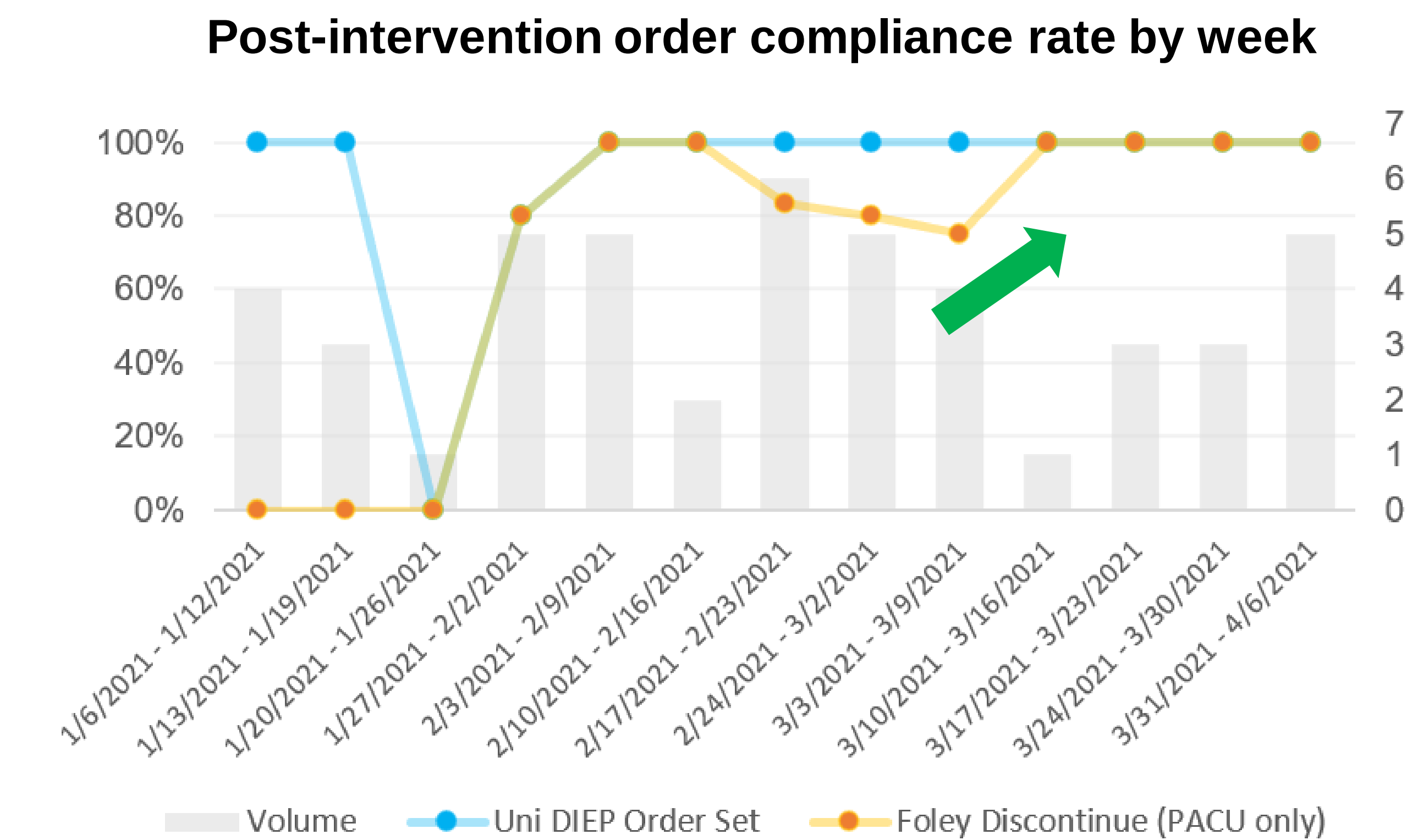


Figure 1. Compliance with new order forms that aimed to decrease length of stay following unilateral DIEP flap surgery. 100% compliance was achieved within three months (n=70).

Median of overall IP LOS in days (Admission Date – Discharge Date)

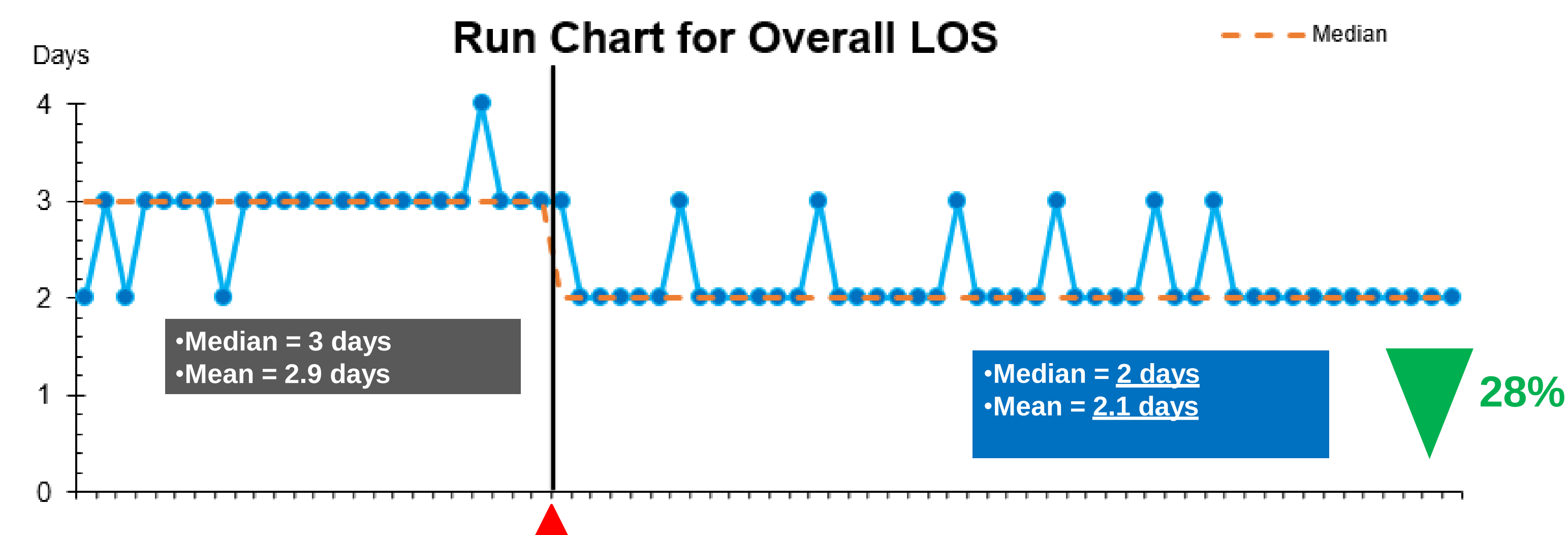


Figure 2. Mean and median inpatient stay lengths before and after initiation of our quality-improvement intervention. The red arrow indicates the beginning of our intervention. Total length of stay decreased 28% by the end of the study.

Time Between OR Setup and Toes-Out Time

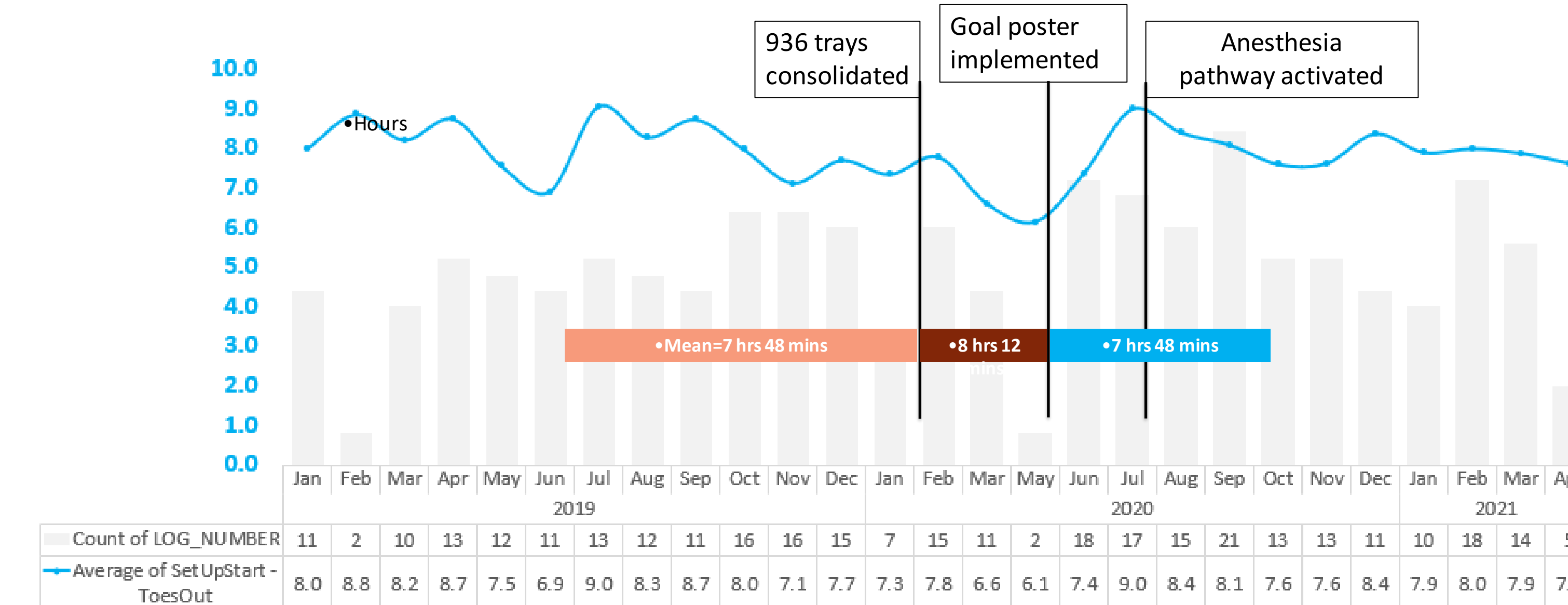


Figure 3. Through measuring and analyzing the influence of our interventions, our data showed that intraoperative times did not decrease.

Patient Satisfaction Metrics

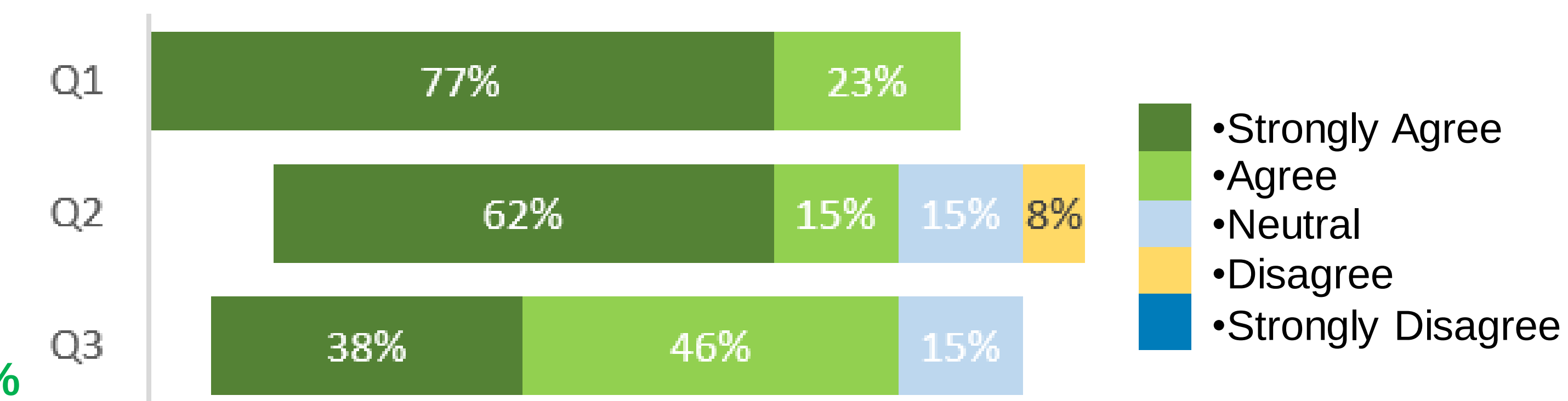


Figure 3. Patient satisfaction as measured via a three-part Likert scale: Q1) I feel ready to leave the hospital to continue my recovery. Q2) The healthcare providers I saw before and after my surgery told me I'd be in the hospital for the same number of days. Q3) I am satisfied with the care I received before my surgery, the day of my surgery, and after my surgery.

Conclusions

- We found that an interdisciplinary protocol incorporating all stakeholders involved in unilateral DIEP flap reconstruction safely reduced LOS to 2 days after surgery.
- The most helpful interventions occurred postoperatively and included significant collaboration between PACU and inpatient nursing teams to advance patients along their care.
- Intraoperative interventions did not contribute to meeting our goal of decreasing total free flap setup and procedure time.
- In comparison to other studies, our intervention lowers length of stay to a much greater extent.
- To date, we have covered the define, measure, analysis, and improvement steps of the Six Sigma model. In the control stage, we will attempt to achieve continuous improvement and include patients receiving bilateral DIEP flaps.

References

- Chen KT, Mardini S, Chuang DC, et al. Timing of presentation of the first signs of vascular compromise dictates the salvage outcome of free flap transfers. *Plast Reconstr Surg*. Jul 2007;120(1):187-195. doi:10.1097/01.prs.0000264077.07779.50
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