# Reducing Length of Stay in a Community Hospital Setting Through Improvement Science

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## Description

A Process Improvement Initiative with the goal to decrease inpatient length of stay was performed at a 161-bed community hospital in Biddeford, Maine. Three interventions were developed, implemented, and monitored in order to achieve our goal:

1. Early Mobilization
2. Interprofessional Bedside Rounding
3. Discharge Plan Optimization

## Aim

Achieve a 10% or greater reduction in inpatient length of stay from baseline, measured with both unadjusted and risk-adjusted length of stay measures.

## Multi-Disciplinary Team

Hospital Medicine, Nursing, Pharmacy, Case Management, Rehab, Quality, Project Management, Chief Nursing Officer, Chief Medical Officer

## Methodology

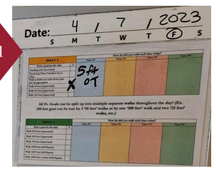
A multimodal intervention was designed by utilizing the Science of Improvement framework:

- **PLAN**: A multidisciplinary team participated in developing the intervention in the fall/winter of 2022;
- **DO**: Interdisciplinary workgroups were designed to support implementation of each intervention (Table 1);
- **STUDY**: Process- and outcome- measures were monitored regularly;
- **ACT**: Initiatives were modified in real-time based on results. Results were reported out weekly to the full Leadership Team to maintain organizational focus.

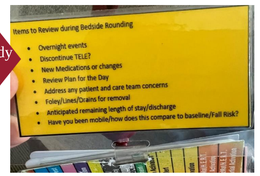
## Table 1. Primary Tactics for Length of Stay Interventions

| Early Mobilization | Interprofessional Bedside Rounding | Discharge Plan Optimization |
|---|---|---|
| 1. Baseline Mobility assessed with Standardized Tool (Bedside Mobility Assessment Tool: BMAT)<br>2. Daily mobility goals established for patients who were independent or minimal assist (BMAT 3&4)<br>3. Progress towards daily goal captured by nursing<br>4. Twice weekly audits & weekly report out of data to leadership<br>5. Goal documented on bedside whiteboard | 1. Nursing and Hospitalist assigned to geographically cohorted patients.<br>2. Optimal ratios of 15 patients supported by one Provider, three RNs, one Case Manager.<br>3. Bedside Rounds with Provider and Nurse (Modeled on iPACE)[2]. Nurses sign out to Case Manager.<br>4. Removal of hospitalists from discharge planning rounds to increase time spent on unit.<br>5. Badge Buddies with key topics and prompting. | 1. Identify Estimated Date of Discharge based on Expected Geometric Mean Length of Stay for the admitting diagnosis.<br>2. Interdisciplinary Discharge Rounds focus on barriers to discharge. Estimated Date of Discharge updated.<br>3. Implementation of an afternoon escalation huddle to address any remaining barriers. |

BMAT Tool



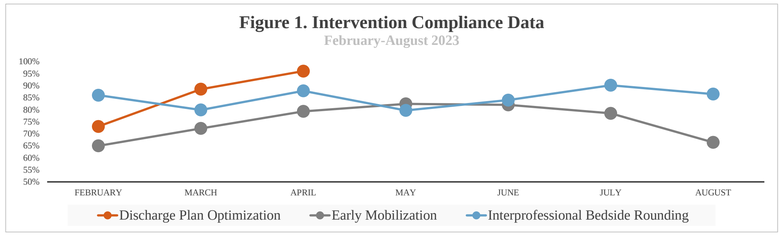

Badge Buddy Tool




## Length of Stay - Results

### Process Measures:

Compliance rates with our three interventions are reported below (Figure 1). Our goal was 80% compliance for each intervention. The Discharge Plan Optimization achieved target and audits were discontinued after three months. Bedside Rounding was observed to achieve the goal more frequently than Early Mobilization.

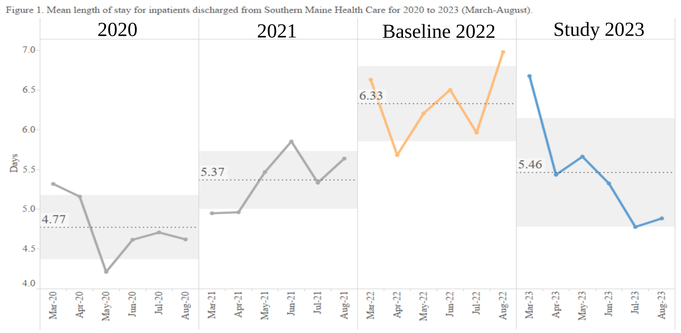



### Outcome Measures:

Length of Stay is reported as the unadjusted Average Length of Stay (ALOS) and as the Risk-Adjusted Geometric Length of Stay Overserved/Expected (GMLOS Index).

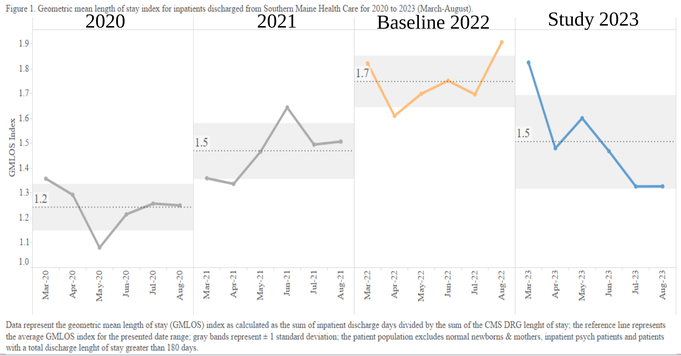
Our observed ALOS decreased from 6.33 in 2022 days to 5.46 days in 2023 ($p < 0.001$; Figure 2). The ALOS for the prior two years are included for reference. Reduction in the GMLOS Index was also observed (Figure 3).

**Figure 2. Inpatient Average Length of Stay (days) for Patients Discharged Between March and August (2020-2023)**




Data represent the arithmetic mean length of stay for discharged patients; the reference line represents the average length of stay for the presented date range; gray bands represent ± 1 standard deviation; the patient population excludes normal newborns & mothers, inpatient psych patients and patients with a total discharge length of stay greater than 180 days.

**Figure 3. Geometric Mean Length of Stay Index for Patients Discharged Between March and August (2020-2023)**




Data represent the geometric mean length of stay (GMLOS) index as calculated as the sum of inpatient discharge days divided by the sum of the CMS DRG lenght of stay; the reference line represents the average GMLOS index for the presented date range; gray bands represent ± 1 standard deviation; the patient population excludes normal newborns & mothers, inpatient psych patients and patients with a total discharge lenght of stay greater than 180 days.

## Other Benefits Observed:

**Financial Savings:** Estimated Annualized Savings of $3.5 Million from the LOS reduction

**Patient Placement:** 8.4% increase in the percentage of patients discharged home versus to a SNF/Rehab

**Patient Experience:** 5% increase to Overall Rating & 6% increase to the 'Doctors Listened' as measured by Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores

## Discussion

Following Susan Hannah's advice to "plan for scale from the start"[1] we designed our initiative to be hospital-wide from the outset. Preliminary data collected over six months showed a reduction in inpatient ALOS, as well as additional benefits that we believe are related to the interventions. Others have shown an improvement in Relational Coordination as a result of interprofessional bedside rounding.[2]

We believe that patients going home sooner can translate into less exposure to harm or injury while hospitalized, less loss of function, and an improvement in Patient Experience. We look forward to testing these hypotheses in future analyses.

Our team has learned the benefits of applying Science of Improvement methodology to a problem impacting our hospital and our patients. This fosters continued application of PDSA both to the current interventions and allows us to develop additional hypotheses for testing (e.g., what is impact of adding a Pharmacist to the Rounding team on our "Communication About Meds", as measured by the HCAHPS)

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## References

[1] Schall, M. 2018. "Do These 4 Things When you are Scaling up Improvement". Institute for Healthcare Improvement. Blog post April 17.
[2] Varaklis, K. et al., (2023). Let's Pick up the iPace: Leveraging Innovative Educational Research to Redesign Healthcare Delivery. Journal of Maine Medical Center, 5(1), Article 6.