

Project Title

Reduce length of stay (LOS) for Low Risk Acute ST Elevation Myocardial Infarction (AMI) patient

Project Lead and Members

Project leads: Dr. Devinder Singh, Fu Yongxin

Project members: Dr. Lim Yoke Ching, Dr. Khaing Thet, Tan Chai Eng, E. Navasri, Chua Yi Ling, Khoo Shan Nee, Asnah Binte Ikhsan, Aloysius Lai, Eric Wie, Brandon Lum, Donna Penanueva

Organisation(s) Involved

National University Hospital

Project Period

Start date: Oct 2017

Completed date: Dec 2017

Aims

To reduce the LOS of low risk AMI patient by 25% from 4 to 3 days at the 50th percentile because keeping patients beyond the required stay is not cost effective.

Project Category

Clinical Improvement, Process Improvement, Care Redesign

Keywords

Clinical Improvement, Process Improvement, Care Redesign, Safe Care, Workflow Improvement, Cardiology, Nursing, Acute ST Elevation Myocardial Infarction, Low Risk Acute Myocardial Infarction, Early Discharge, Discharge Planning, Post-Discharge Care, Risk Stratification Tool, Echo Report, Lean Management Methodology, Reduce Length of Stay, Reduce Waiting Time, Standardized Telemetry Monitoring, Cost Saving, Cost

Effectiveness, National University Hospital, Percutaneous Coronary Intervention, Coronary Care Unit, Rapid Improvement Event, Value Stream Mapping, Waste Identification, Gap Analysis, Paradigm Breaking, Carehub Team

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Facilitators: Eric Wie, Brandon Lum, Donna Penanueva

INTRODUCTION

- Between January 2017 and December 2017, 450 AMI patients were admitted to NUH for percutaneous coronary intervention (PCI) and these patients stayed in the hospital for 4 days at the 50th percentile.
- Recent studies have shown the possibility of early discharge of low risk AMI patients is safe and feasible and have outcomes similar to patients with length of stay (LOS) from 4 to 5 days.
- The goal is to reduce the LOS of low risk AMI patient by 25% from 4 to 3 days at the 50th percentile because keeping patients beyond the required stay is not cost effective.

METHODOLOGY

A team of doctors, nurses and administrators came together during a 2.5 days **Rapid Improvement Event (RIE)** in October 2017 to review, brainstorm and address the challenges. Lean management methodologies including Value Stream Mapping (VSM), 8 Wastes (DOWNTIME), Gap Analysis and Paradigm Breaking were applied to understand the process, identify wastes and root causes. VSM and Gap Analysis revealed inconsistent discharge planning process, long wait time for bed in general ward and delayed Echo report had contributed to longer LOS. Lack of discharge criteria and unclear guidelines also led to excessive telemetry monitoring and variations in clinical practices. Further tweak to the new workflow was made post RIE to include post discharge follow-up by the CareHub Team to address the need for safe and appropriate early discharge. Review meetings were conducted to monitor the implementation status, identify and resolve new actionable items as well as to share the post implementation data.

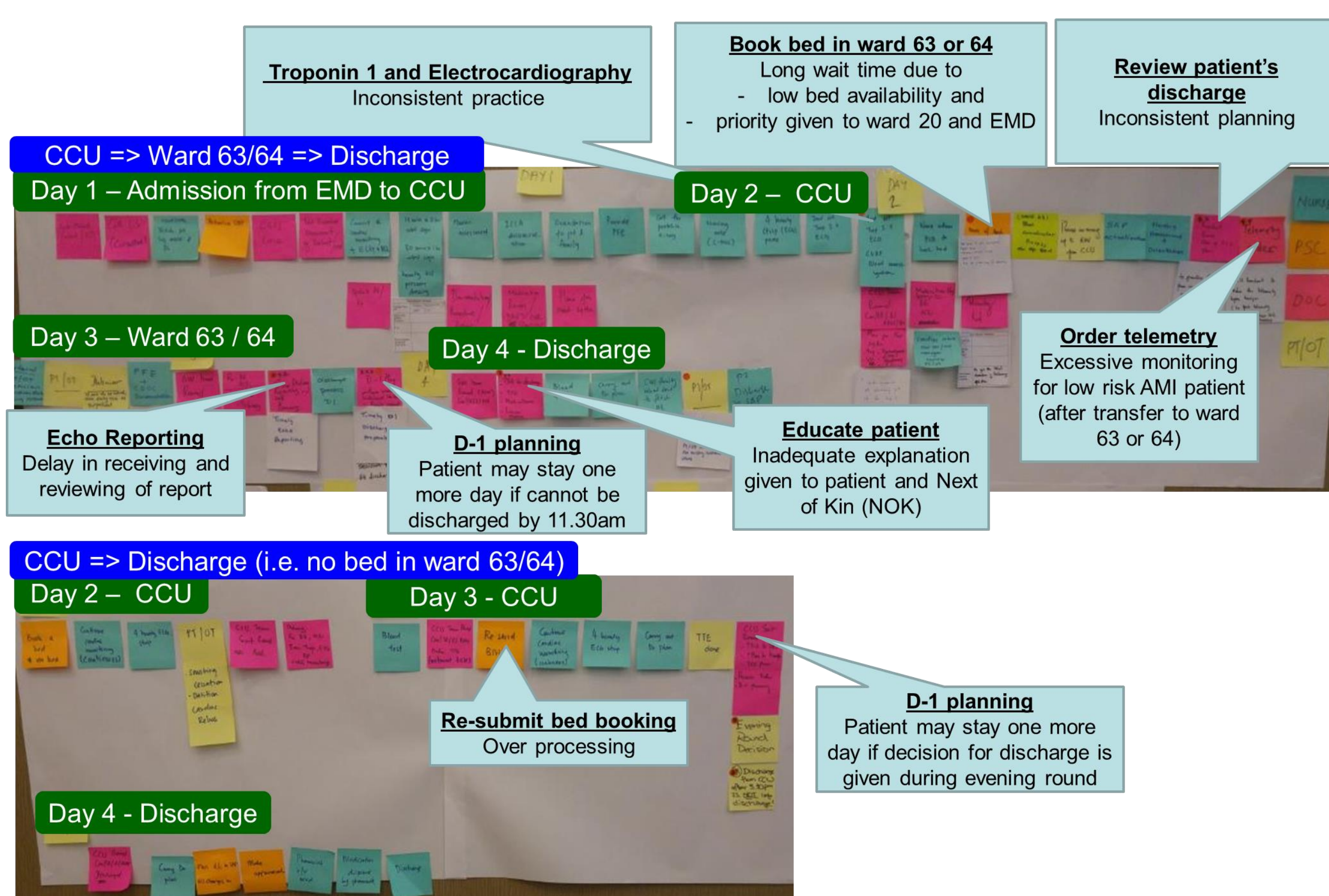


Figure 1. "As-Is" process and identified problems

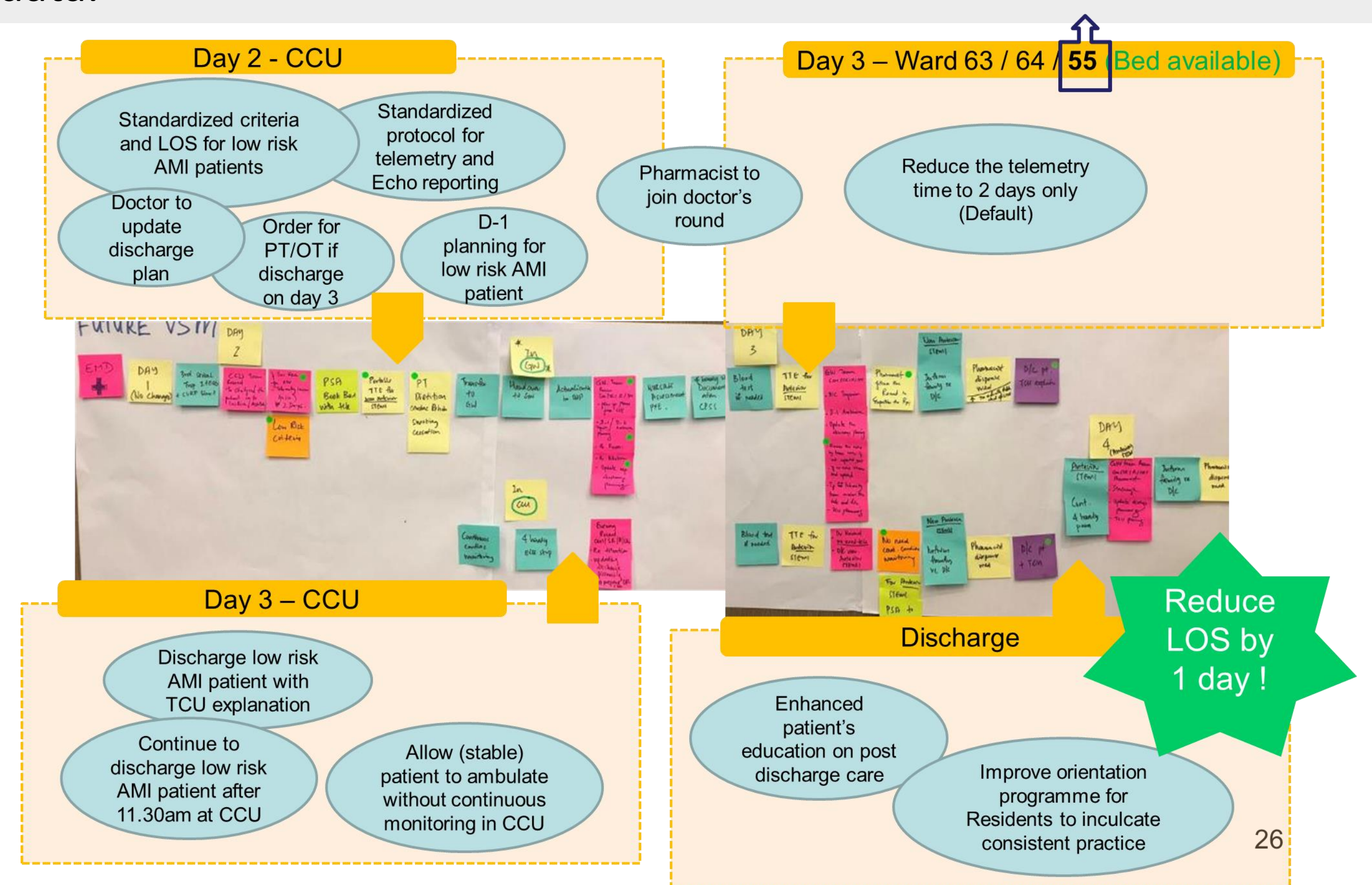
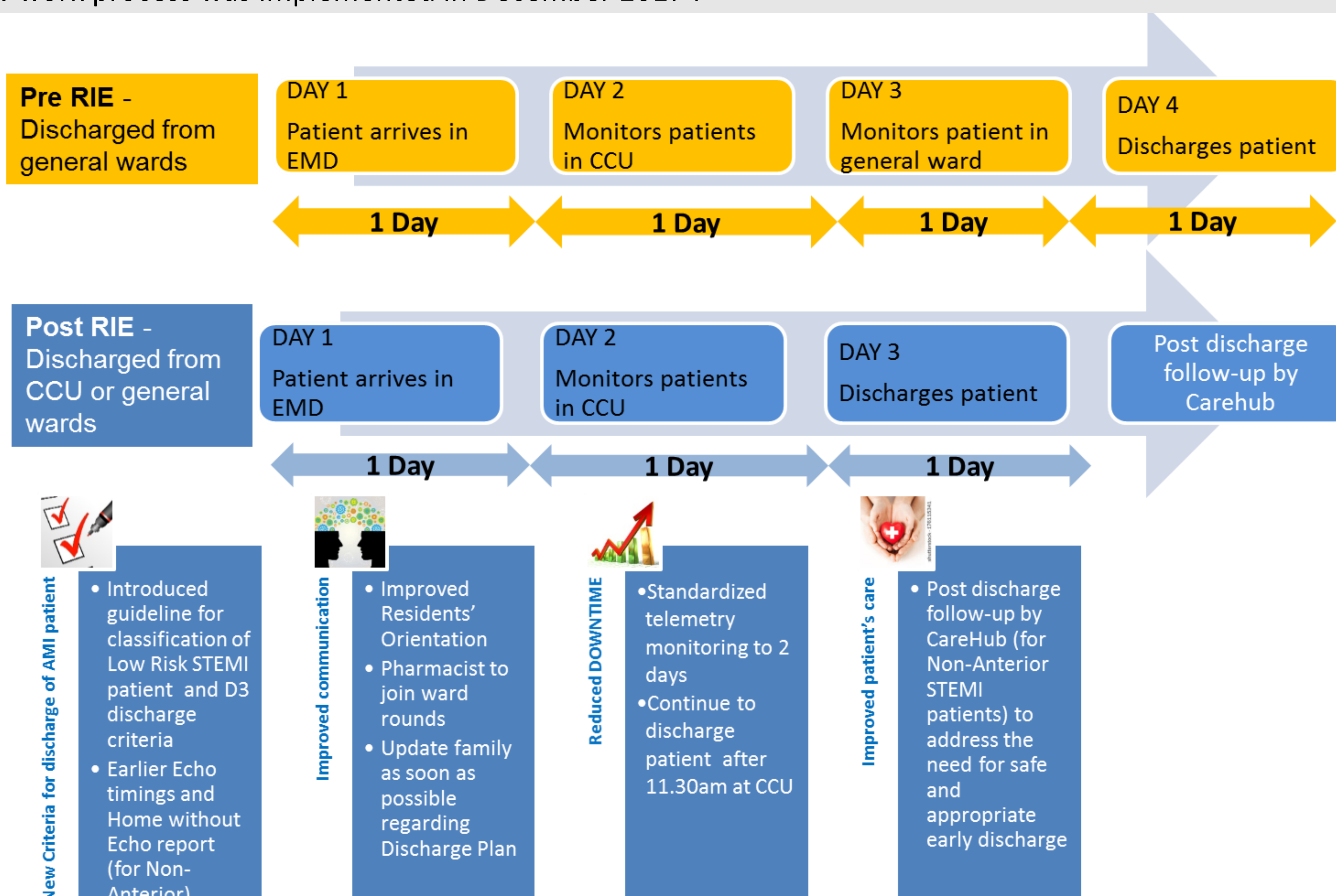


Figure 2. "To-be" process and proposed changes

INTERVENTION STRATEGY

New work process was implemented in December 2017.



RESULTS

- LOS at the 50th percentile **reduced by 25%** from 4 days to **3 days**.
- Estimated savings of **S\$1.5K per patient** or **S\$675K p.a..**



CONCLUSION

- Tighter coordination between CCU and general wards ensure timely discharge of low risk AMI patient is sustainable.
- The team continues to monitor the LOS and target for 100% compliance rate.
- The team also monitor the rate of readmission within 30 days to ascertain that there is no sudden spike in readmission due to the early discharge of low risk AMI patient.