

Project Title

Day Surgery Unicompartmental Knee Arthroplasty (UKA) – The Paradigm in Enhanced Recovery

Project Lead and Members

Project lead:

- Adj Asst Prof Wee Liang Hao James, Consultant
- Ms Wong Xiu Qing Clara, Principal Physiotherapist

Project members:

- Ms Yap Yan Mei, Senior Physiotherapist
- Dr Tan Tong Leng, Consultant
- Dr Terence Quek Jinlin, Consultant
- Ms Adeline Tang Lai San, Nursing Officer
- Mr David Zhang Jiancai, Principal Occupational Therapist
- Ms Tok Xue Hui, Senior Occupational Therapist
- Ms Justina Wong, Care Coordinator

Organisation(s) Involved

Tan Tock Seng Hospital

Project Period

Start date: May 2019

Completed date: Dec 2020

Aims

To safely reduce the average length of stay (ALOS) post Unicompartmental Knee Arthroplasty (UKA), improve inpatient bed availability, reduce costs, and improve patient outcomes.

Background

See poster attached/ below

Methods

See poster attached/ below

Results

See poster attached/ below

Lessons Learnt

We learnt the importance of harnessing the expertise of a multidisciplinary team to exhaustively identify the root causes of delayed discharge post-UKA, select the main root causes for intervention, and then brainstorm practical solutions. We found the CPIP methodology, particularly the PDSA cycles, to be crucial. We consistently gathered patient and staff feedback to continually improve the work processes. Communication amongst team members was also vital in identifying and closing gaps on the ground and allow swift corrective interventions to be made. The use of simple technology such as the Tigerconnect chat group allows for secure and effective communication.

If starting over again, we would include a patient who had undergone UKA surgery in our team early on in the brainstorming process, which would have aided in identifying root causes and providing another important perspective for planning interventions.

Conclusion

See poster attached/ below

Project Category

Care & Process Redesign

Keywords

Care & Process Redesign, Workflow Redesign, Effective Care, Length of Stay, Efficient Care, Discharge Planning, Quality Improvement, Root Cause Analysis, Plan Do Check Act, Clinical Practice Improvement, Pareto Chart, Cost Savings, Multi-Disciplinary, Orthopaedics, Allied Health, Physiotherapy, Occupational Health, Anaesthesiology, Surgery, Nursing, Tan Tock Seng Hospital, Unicompartmental Knee Arthroplasty Surgery, Pre-Operative Care, Post-Operative Care, Elective Surgery

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Day surgery unicompartmental knee arthroplasty – The paradigm in enhanced recovery.



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Adding years of healthy life

BACKGROUND

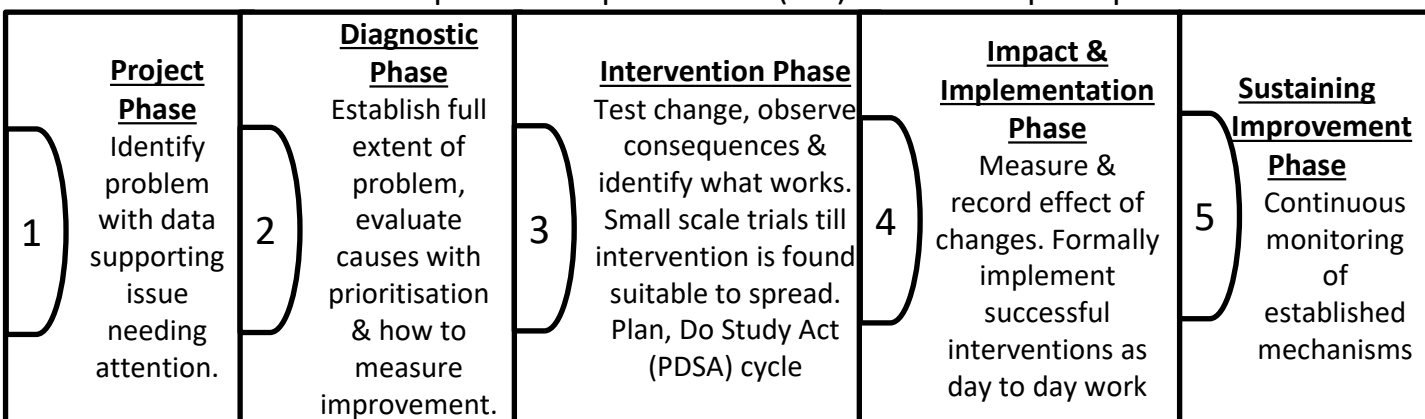
Data from 2018-2019 revealed that patients undergoing Unilateral Knee Arthroplasty (UKA) in TTSH had an average length of stay (ALOS) of 3.9 days. In contrast, Oxford University Hospital in the UK reported ALOS of 1.5 days with an accelerated recovery protocol post-UKA, with no negative effects¹. The authors reported improved bed occupancy rates and cost savings. Therefore, our team decided to review our practices and redesign the model of care to bring about systemic change in managing patients undergoing UKA. We aim to safely reduce the ALOS post UKA, improve inpatient bed availability, reduce costs, and improve patient outcomes.

IMPETUS FOR CHANGE

TTSH is one of Singapore's largest multi-disciplinary hospitals with high bed occupancy rates. To improve bed availability for emergency admissions, it is crucial to facilitate safe and timely discharge of patients following elective surgery. With evidence from overseas practice illustrating good outcomes from an accelerated program, the team decided to embark on this project.

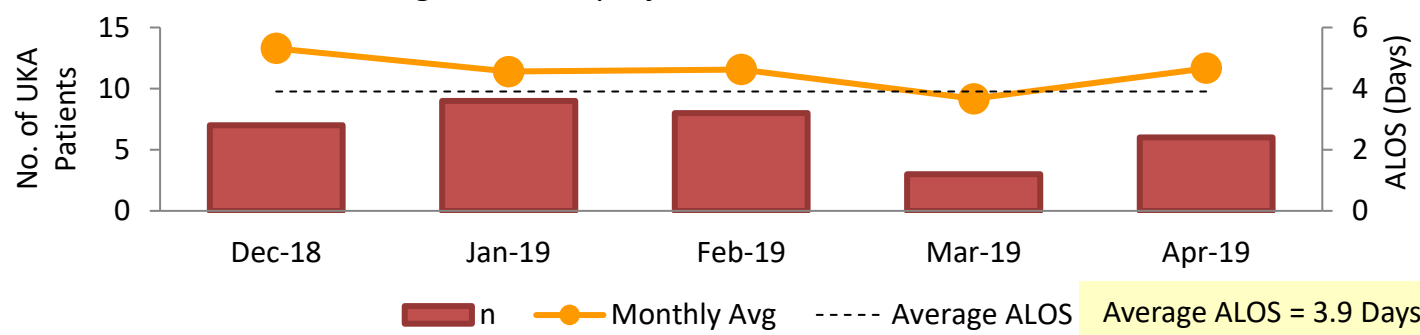
Strategy

Our team utilize the clinical practice improvement (CPI) model and principles:



1) Project Phase

Diagram 1. Pre project ALOS for UKA Patients in TTSH



2) Diagnostic Phase

Diagram 2. Pre intervention workflow

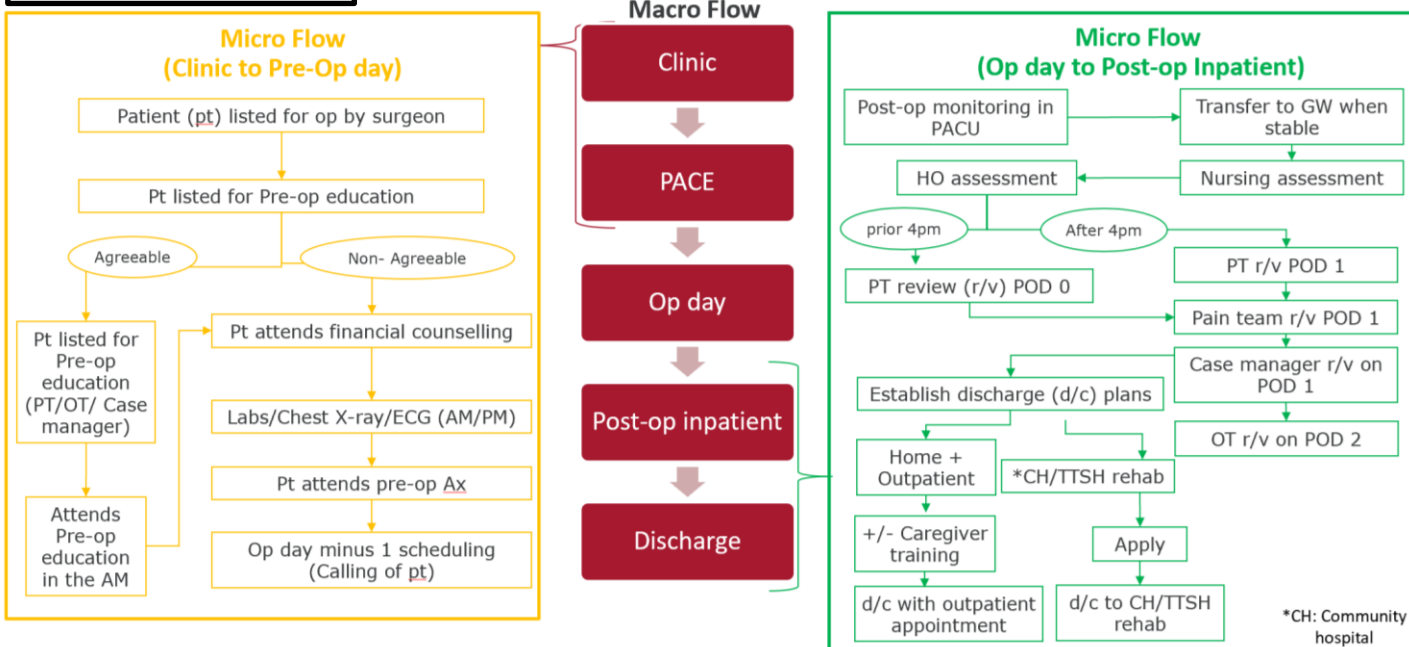


Diagram 3. Root Cause Analysis

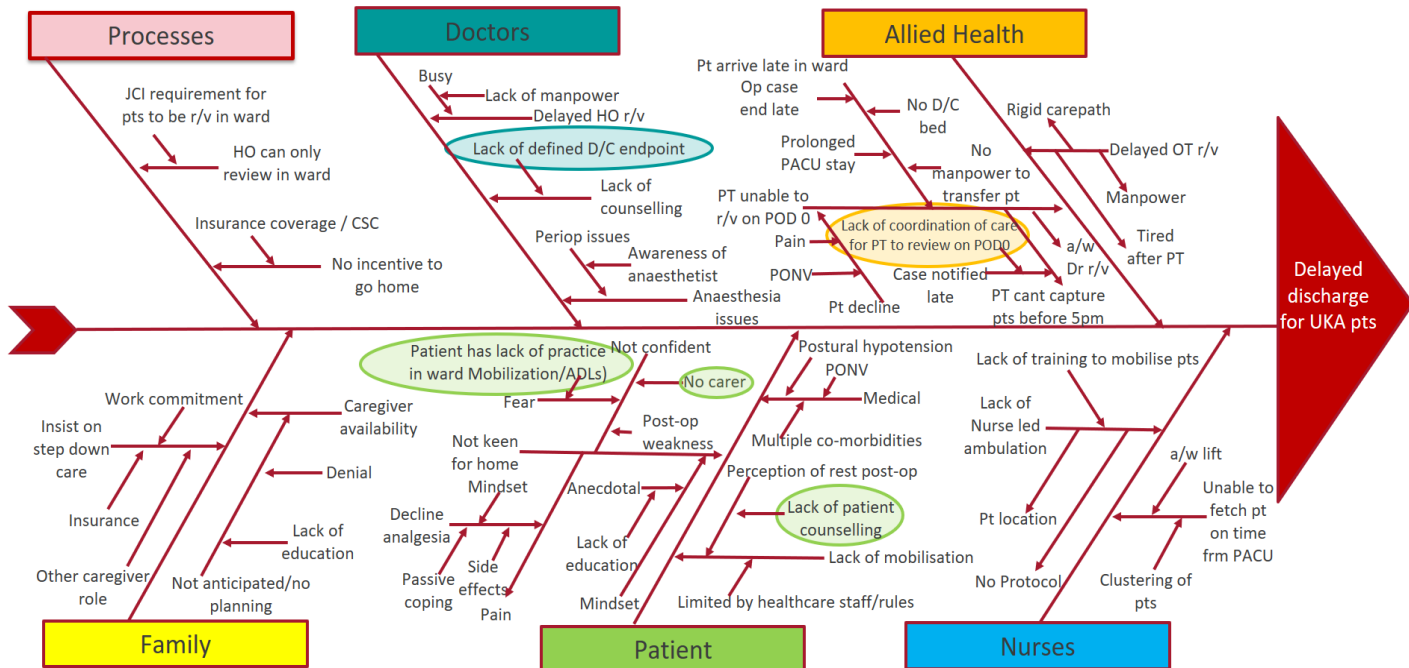
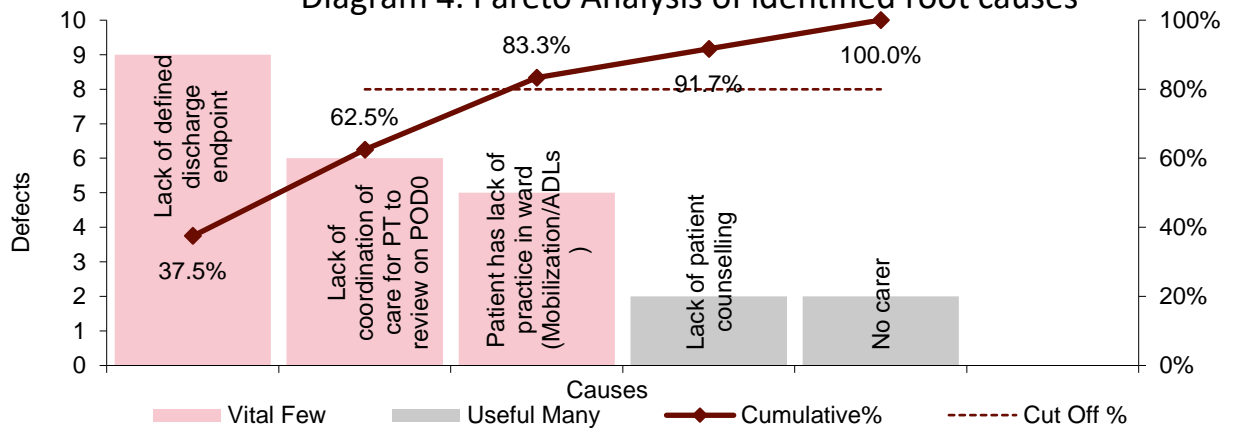
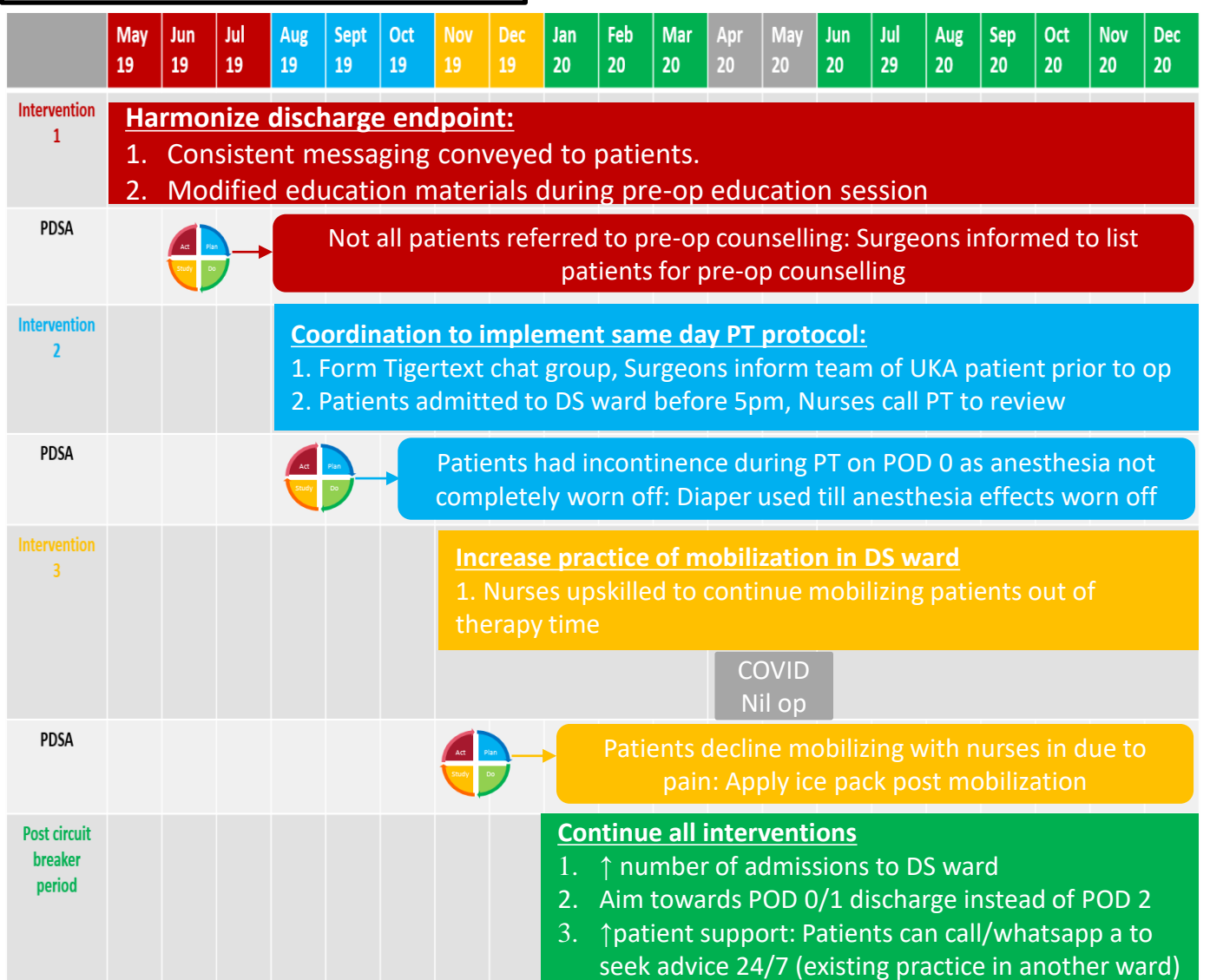


Diagram 4. Pareto Analysis of identified root causes



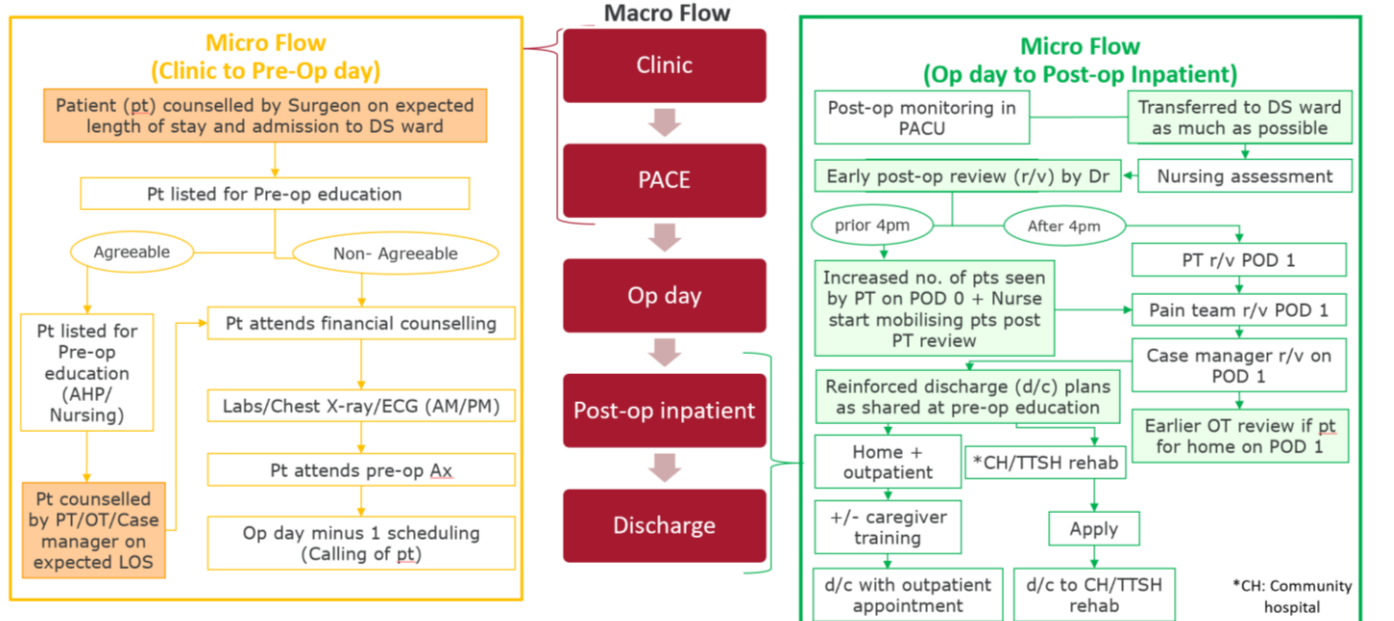
REDESIGNING THE SYSTEM & IMPEMENTING

3) Intervention Phase + Timeline



4) Impact & Implementation Phase

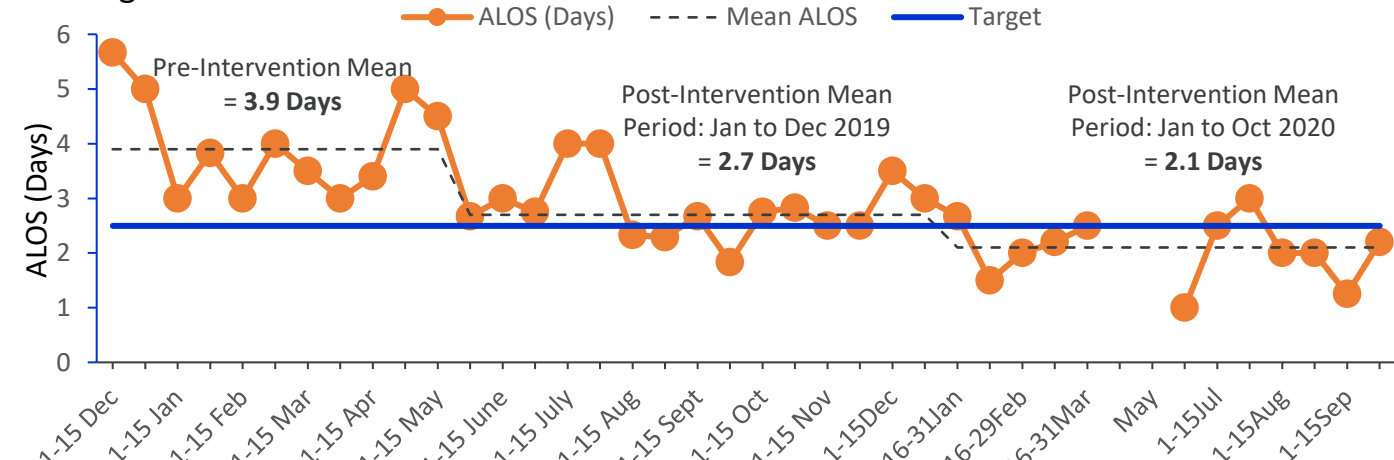
Diagram 5. Post intervention workflow



EVALUATION AND MEASUREMENT OF IMPROVEMENT

5) Sustaining Improvement Phase

Diagram 5. Run chart on ALOS for UKA Patients in TTSH from Pre to Post Intervention



- Systemic change across the multi-disciplinary healthcare team has become the standard procedure for patients undergoing UKA surgery in TTSH
- Patients now routinely discharge on POD 1/2 with improved ALOS from 3.9 to 2.1 days
- Use of DS wards and reduction in ALOS has freed up valuable inpatient beds for emergency admissions
- On average, patients undergoing DS UKA saved \$4276.73 compared to those admitted to inpatient wards
- Patients undergoing DS UKA had the shortest ALOS of 1.87 days compared to those who went to an Orthopedic ward (ALOS of 2.58days) or general ward (ALOS 3.48 days)

CONCLUSION

Achieving primary and stretch goal is possible with a well-coordinated multi-disciplinary team effort. Working on one intervention at a time allows accurate evaluation of effectiveness of each intervention. Applying the PDSA cycle identifies and addresses practical issues faced by staff on the ground during implementation of change, and this improves work processes and efficacy of interventions. UKA patients admitted to the DS ward benefitted from this as there were notable cost savings. Early mobilization helps to improve patient confidence in self-care post-UKA. Well-coordinated pre and post-operative care ensure that patients were discharged earlier. DS UKA allows the hospital to reap benefits from freeing up bed space in the inpatient wards for acutely ill patients.

Reference: 1. Reilly KA, Beard DJ, Barker KL, Dodd CA, Price AJ, Murray DW. Efficacy of an accelerated recovery protocol for Oxford unicompartmental knee arthroplasty--a randomised controlled trial. Knee. 2005 Oct;12(5):351-7.