

Project Title

Reduce Average Length of Stay of Knee Arthroplasty

Project Lead and Members

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Organisation(s) Involved

Tan Tock Seng Hospital

Healthcare Family Group(s) Involved in this Project

Allied Health, Nursing, Medical

Applicable Specialty or Discipline

Physiotherapy, Anaesthesiology, Intensive Care & Pain Medicine, Occupational Therapy, Orthopaedic Surgery

Project Period

Start date: Dec-2018

Completed date: Feb-2022

Aims

To achieve a reduction of average length of stay (ALOS) in hospital after total knee arthroplasty (TKA) from 4.6 days to 3.9 days in 8 months by spreading the care model of uni-compartmental knee arthroplasty (UKA) and maintaining ALOS of UKA 2.5 days)

Background

See poster attached/ below

Methods

See poster attached/ below

Results

See poster attached/ below

Conclusion

See poster attached/ below

Additional Information

Accorded the NHG Quality Day 2022 (Category A: Improving and Sustaining Quality & Safety) Merit Award

Project Category

Care & Process Redesign

Quality Improvement, Clinical Practice Improvement, Value Base Care, Length of Stay

Keywords

Knee Arthroplasty, Post Operative

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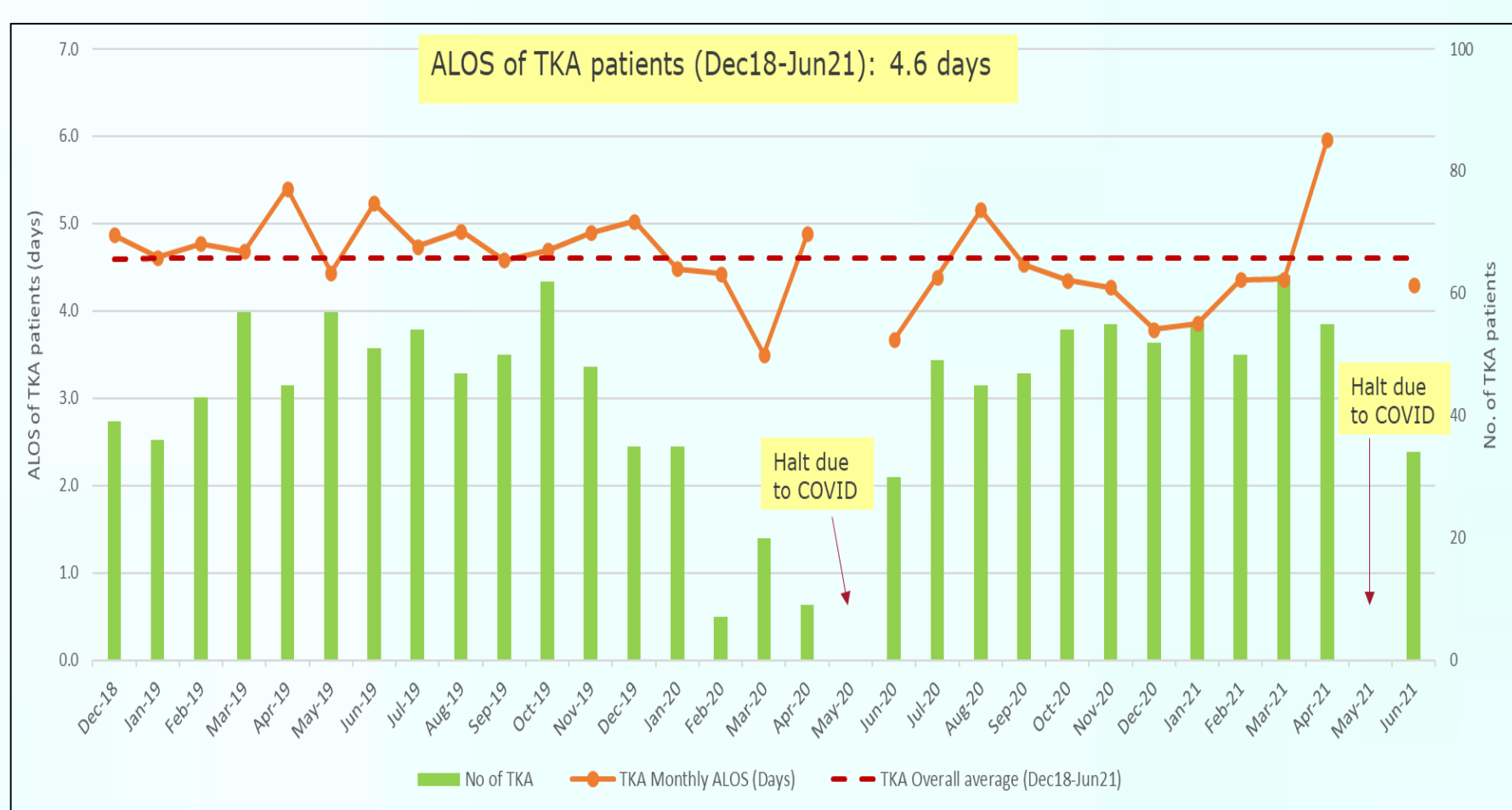
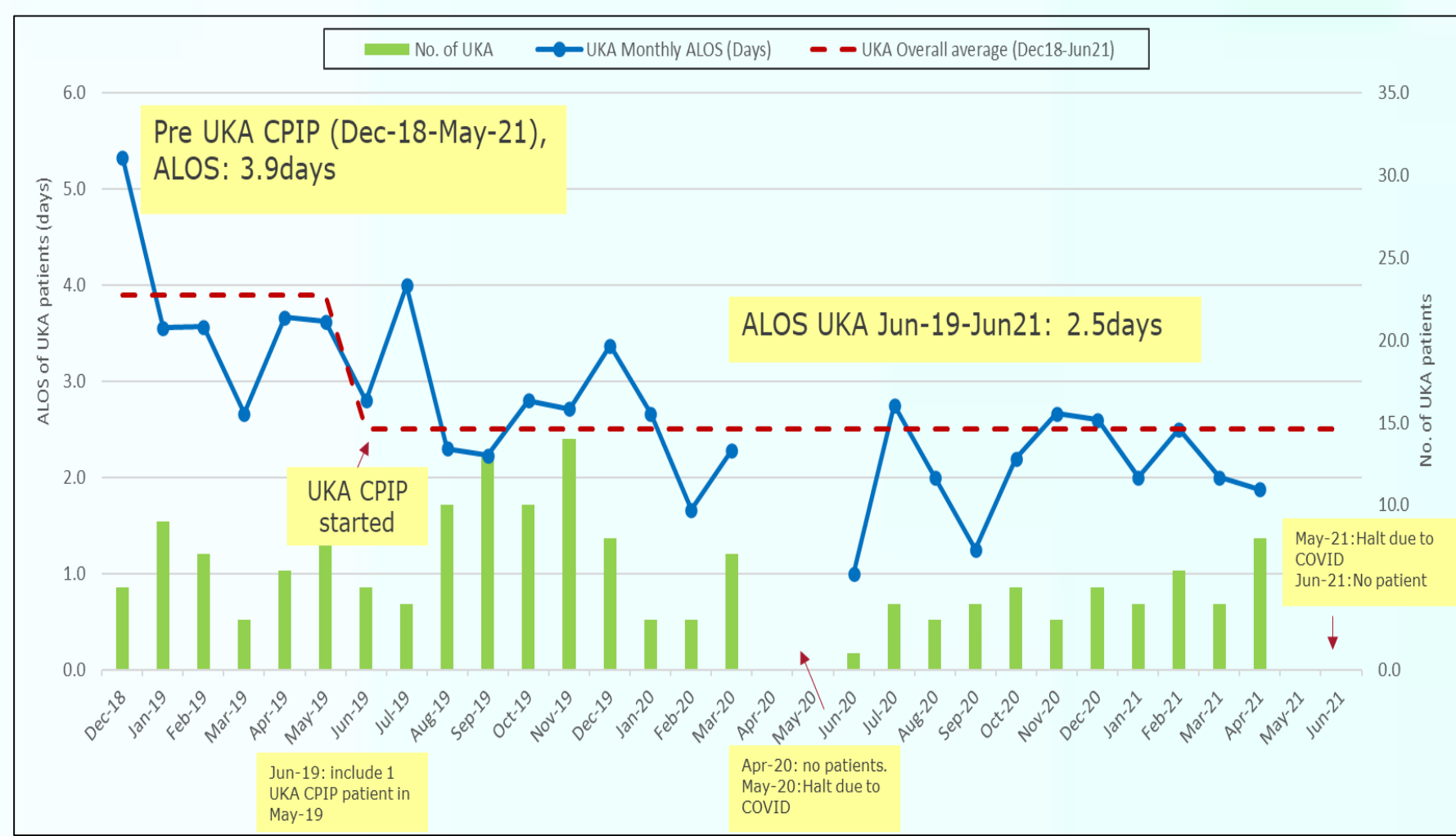
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Mission Statement

Achieve a reduction of average length of stay (ALOS) in hospital after total knee arthroplasty (TKA) from 4.6 days to 3.9 days in 8 months by spreading the care model of uni-compartmental knee arthroplasty (UKA), and maintaining ALOS of UKA (2.5 days).

- Outcomes to be achieved (stretch goals):
 - ALOS of UKA <2.5days
 - ALOS of TKA <3.9days
- Cohort patients: unilateral knee arthroplasty patients in TTSH
- Data collection: knee registry
- Balance measure: early readmission rates within 7 days.

Evidence for a Problem Worth Solving



Oxford University Hospital's Experience¹:

1. Accelerated recovery protocol for UKA patients implemented. ALOS improved 4.3 → 1.5 days

UKA CPIP: ALOS improved from 3.9 to 2.5 days.

USA²: ALOS of TKA patients with Enhanced Recovery After Surgery (ERAS): 56.1 hours (2.3 days).

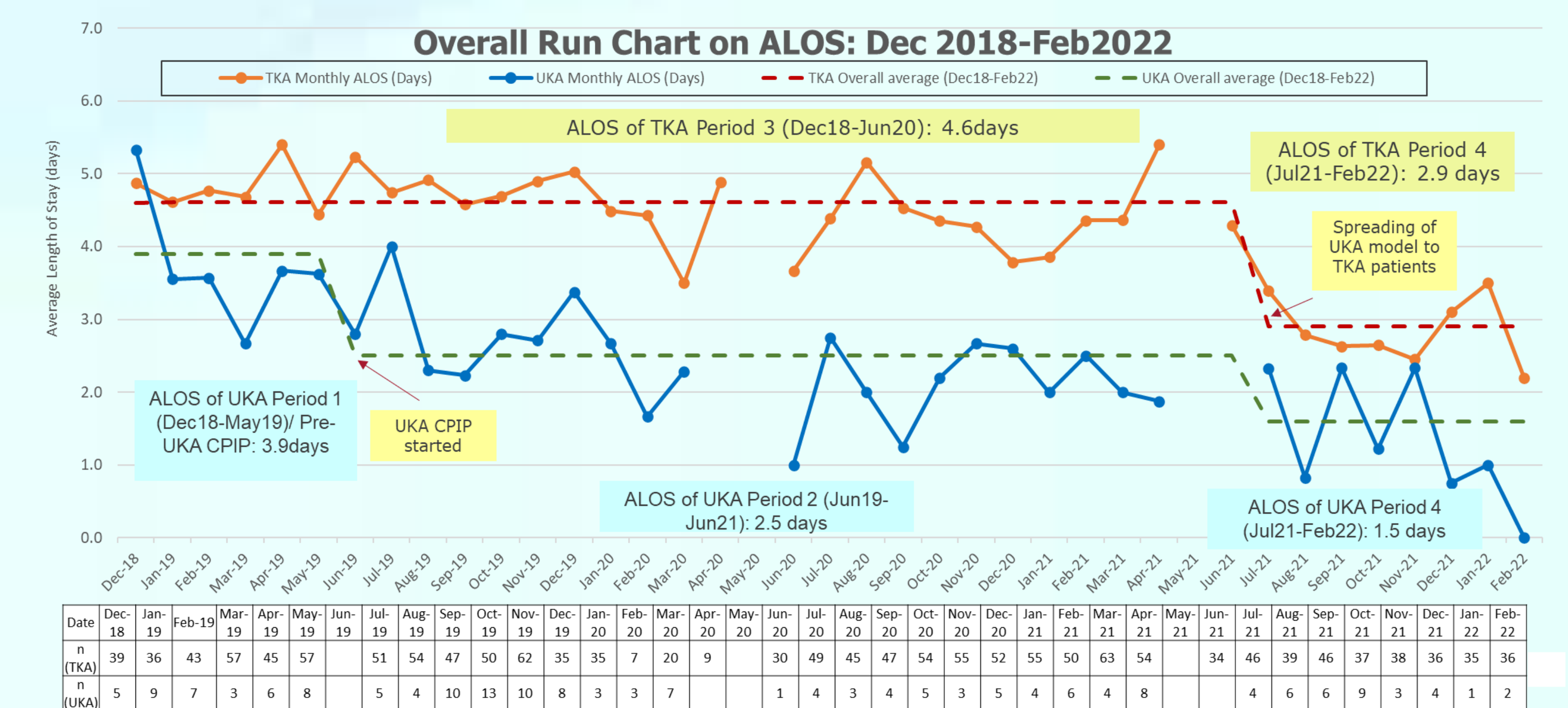
UK³: ALOS of TKA patients with enhanced recovery programmes: 3.9 days.

Implementation

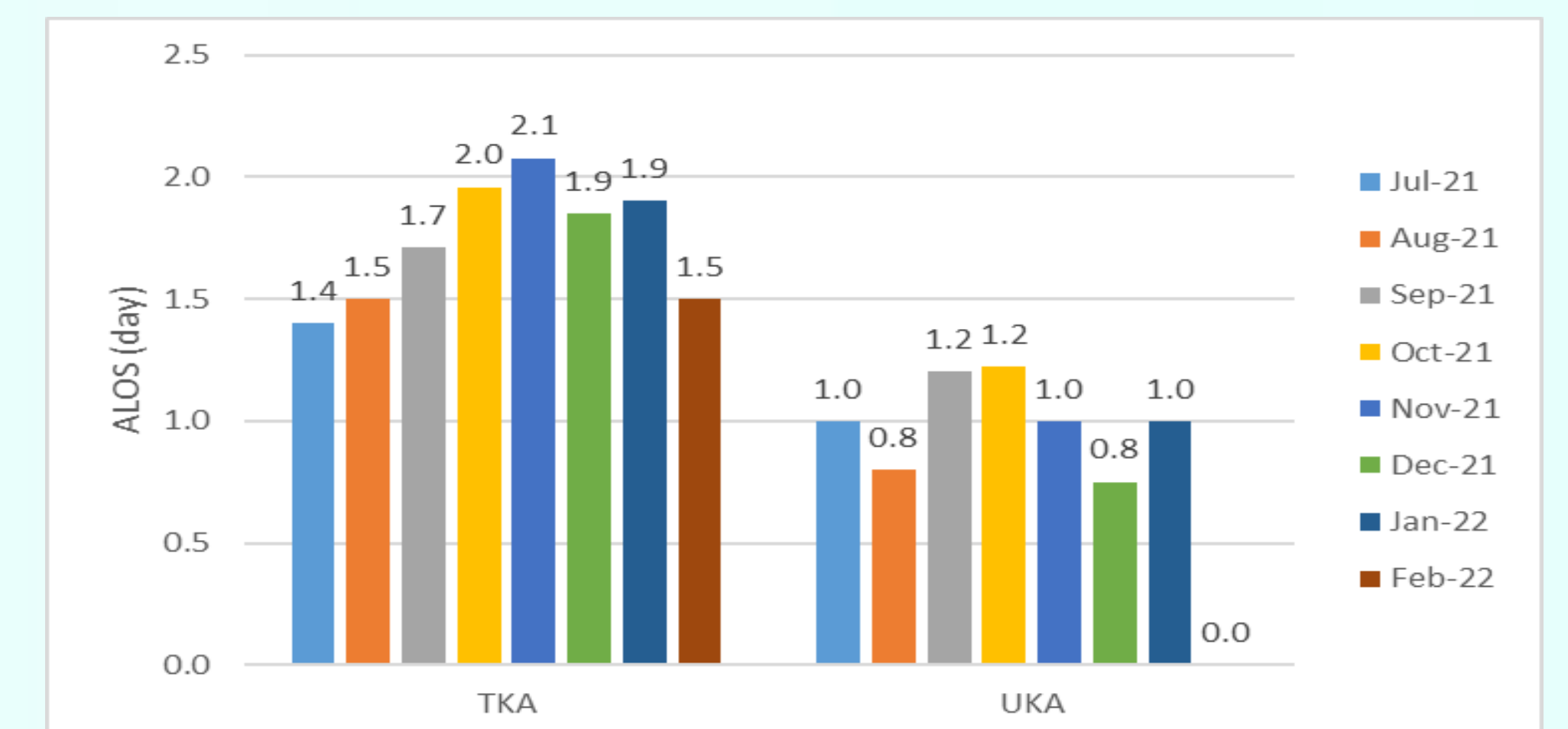
Root Cause	UKA CPIP Intervention	Implementation Date
Lack of defined discharge endpoint	Coordinated counselling of patients with discharge guidelines - Was enhanced to ASCC personalised counselling	16 May 2019
Lack of coordination of care for PT to review on POD0	Same Day Physiotherapy (PT) Protocol	1 Aug 2019
Patient has lack of practice in ward (Mobilisation/ADLs)	Increase practice in ward – Nurse-led mobilisation after PT review (DSW)	4 Nov 2019

July 2021: Spreading of UKA care model to TKA patients
- Admission of eligible TKA patients to Day Surgery Ward (DSW)

Results & Cost Savings



ALOS of DSW UKA and TKA (Jul-21 to Feb-22)



Cost Savings

UKA: Comparing Pre & Post	Period 1	Period 4
ALOS (days)	3.9	1.5
Annualized bed days saved		235 bed days saved
Annualized Savings in total bill size		\$120,100

TKA: Comparing Pre & Post	Period 3	Period 4
ALOS (days)	4.6	2.9
Average cost saved per patient		1006 bed days saved
Annualized Savings in total bill size		\$530,403

Other results	TKA	UKA
Attended pre-op counselling	78% (n=244)	70% (n=26)
Mobilised by PT on POD0 (eligible patients)	100% (n=162)	100% (n=28)
Mobilised by nurse in DSW	93% (n=125)	94% (n=31)

Readmission rates in Period 4 remains low with only 1% (n=4) readmissions within 7 days and only 2 were related to the TKA surgery.

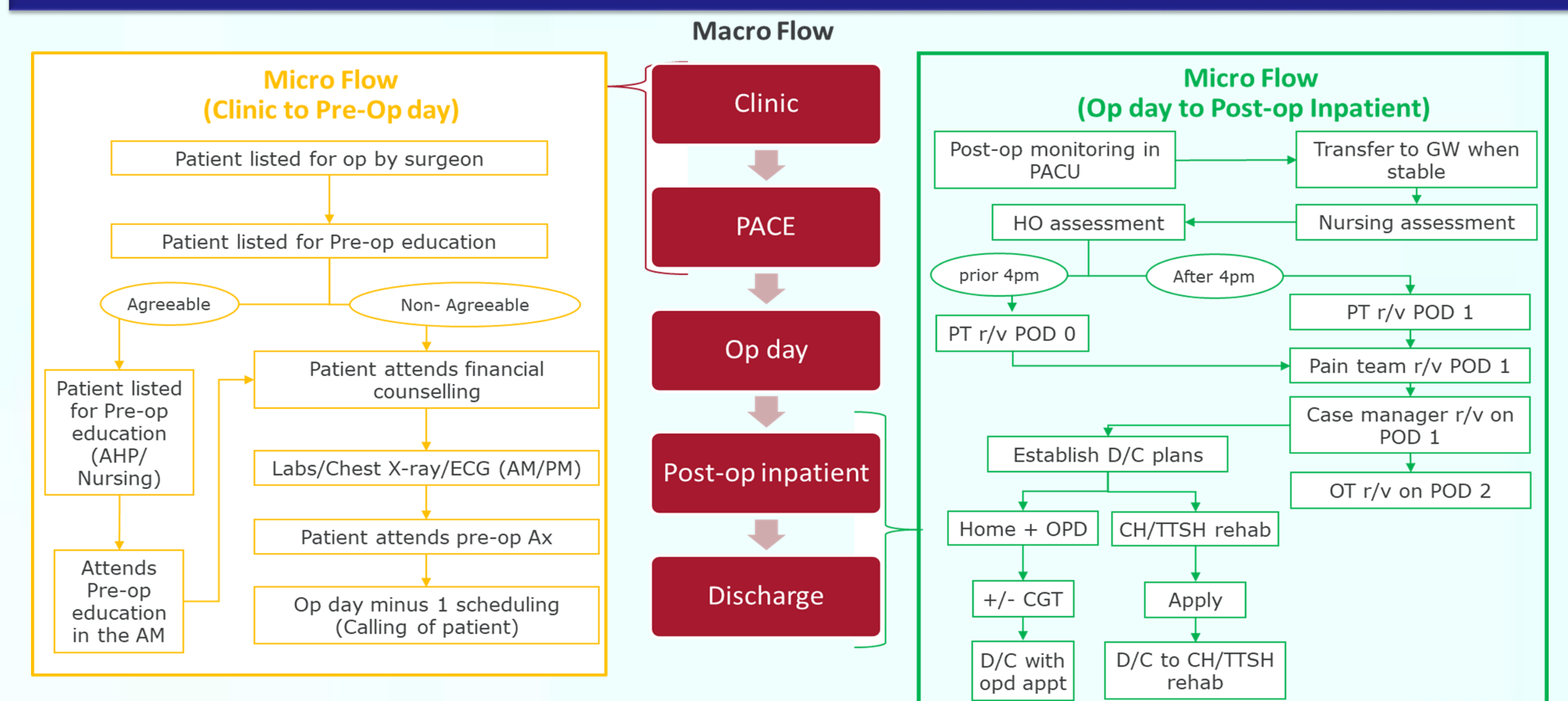
Problems Encountered

On Friday, eligible patients for DSW who needed more than 1 night stay would be admitted to GW instead as DSW closes on Sunday.

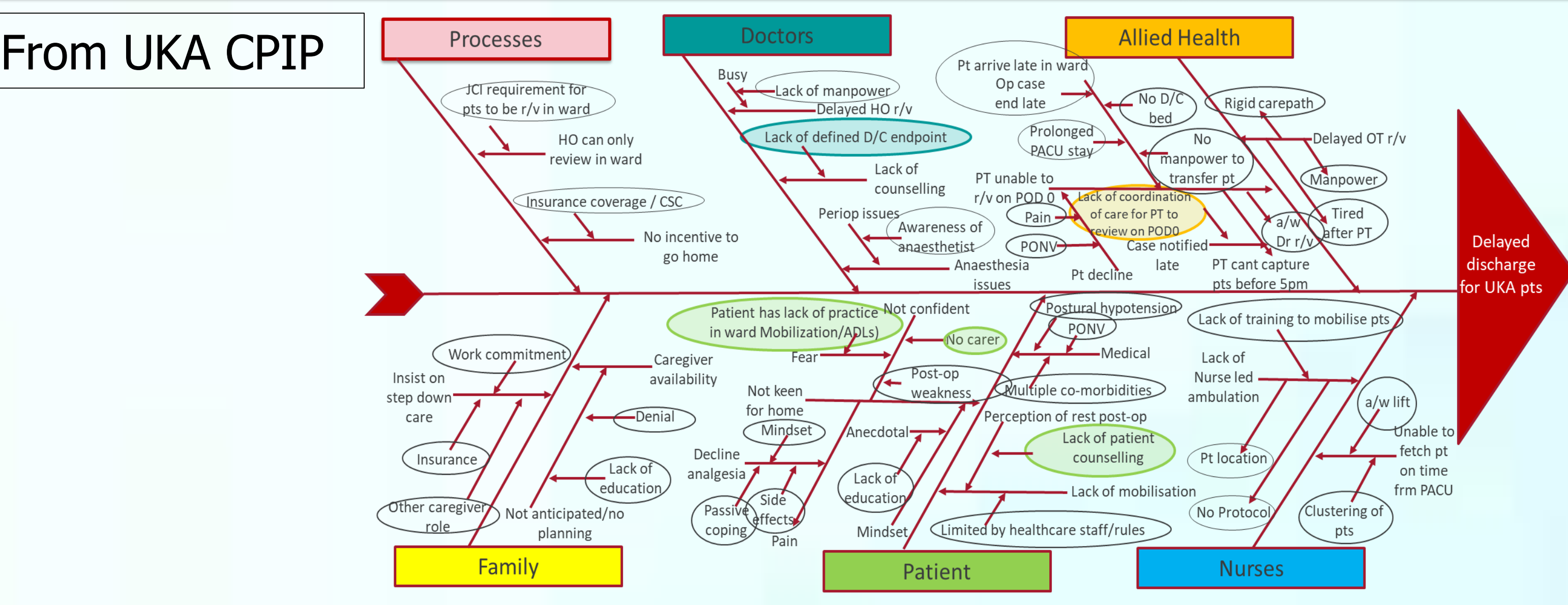
Strategies to Sustain & Conclusion

- Get buy-in from surgeons, nurses, allied health professionals, and also patients through education, sharing and updates.
 - Increase capacity in DSW to accommodate more patients.
- Conclusion:** The care model of UKA patients is sustainable and improved the UKA ALOS further. The spread of UKA care model has improved ALOS for TKA patients.

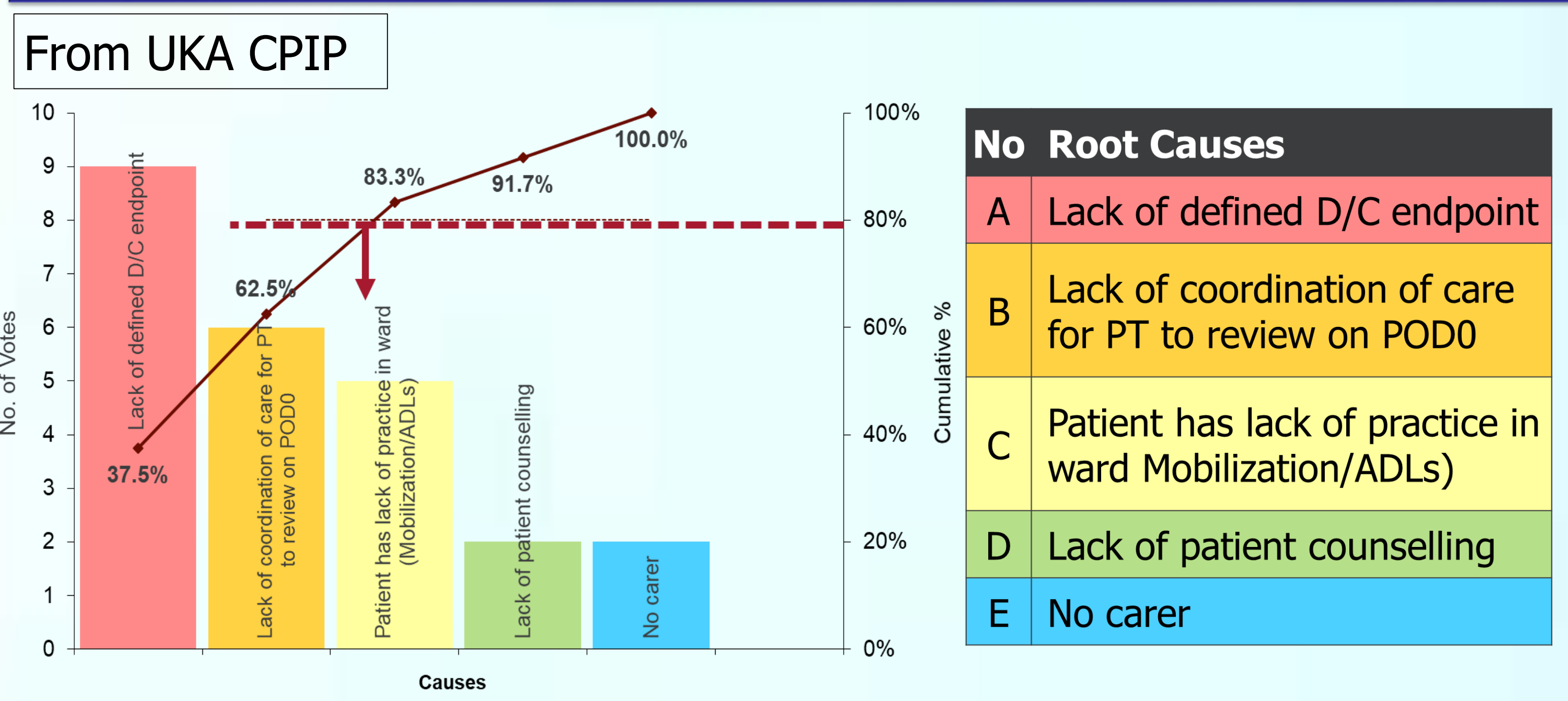
Flow Chart of Process



Cause and Effect Diagram



Pareto Chart



References: 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.
2. Auyong, D.B., et al., Reduced Length of Hospitalization in Primary Total Knee Arthroplasty Patients Using an Updated Enhanced Recovery After Orthopedic Surgery (ERAS) Pathway. *J Arthroplasty*, 2015.30(10):p.1705-9.
3. Nagra NS, Hamilton TW, Strickland L, Murray DW; BONE Collaborative, Pandit H. Enhanced recovery programmes for lower limb arthroplasty in the UK. *Ann R Coll Surg Engl*. 2017;99(8):631-636.