

Ms Yap Yan Mei¹, Mr Eng Chuan Neoh², Ms Clara Xiu Qing Wong², Ms Adeline Lai San Tang³, Ms Xue Hui Tok⁴, Ms Justina Luak Pak Wong⁵, Ms Joelle Xinni Yong⁶, Adj Asst Prof Kelvin Guoping Tan⁷

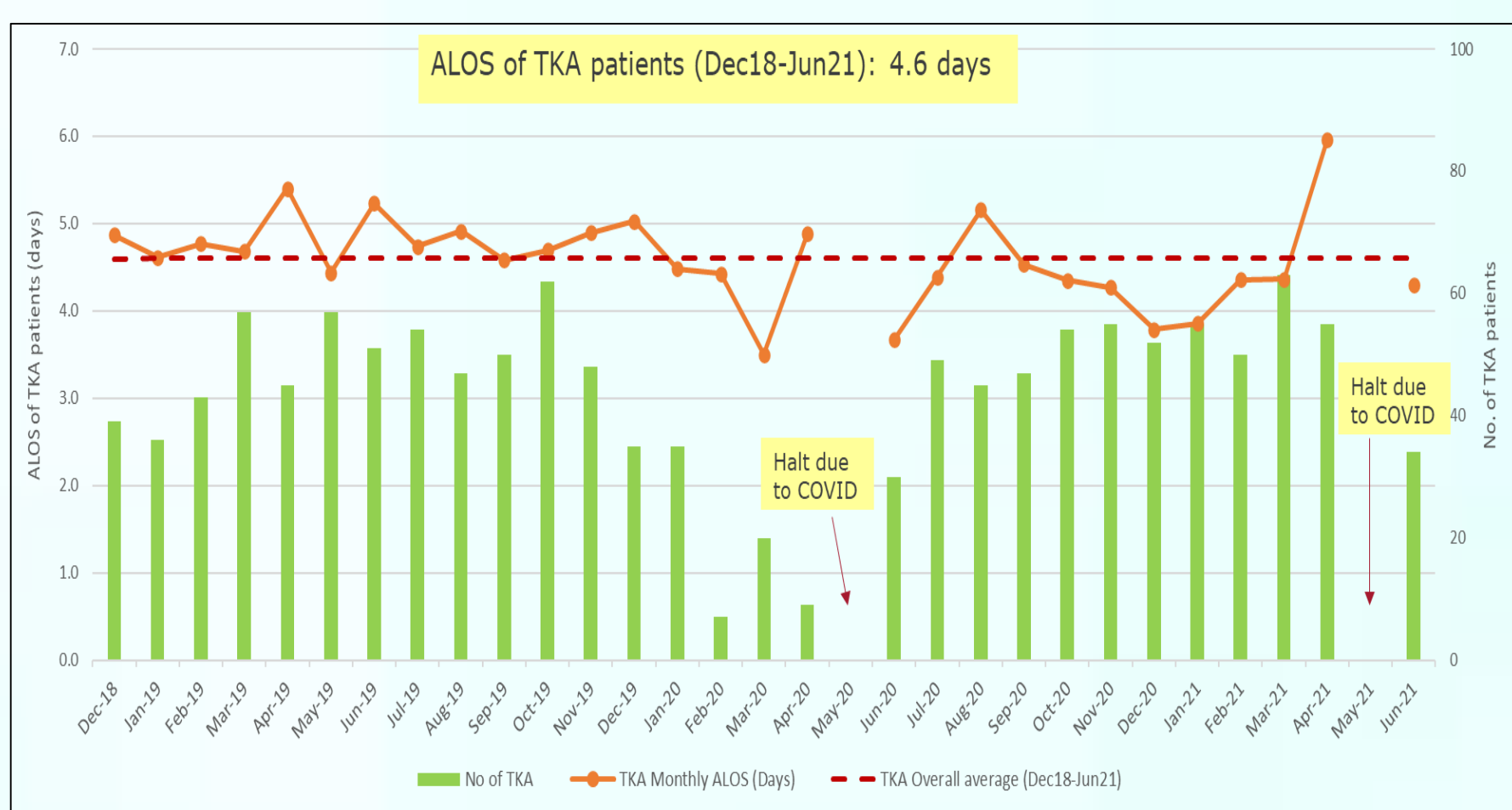
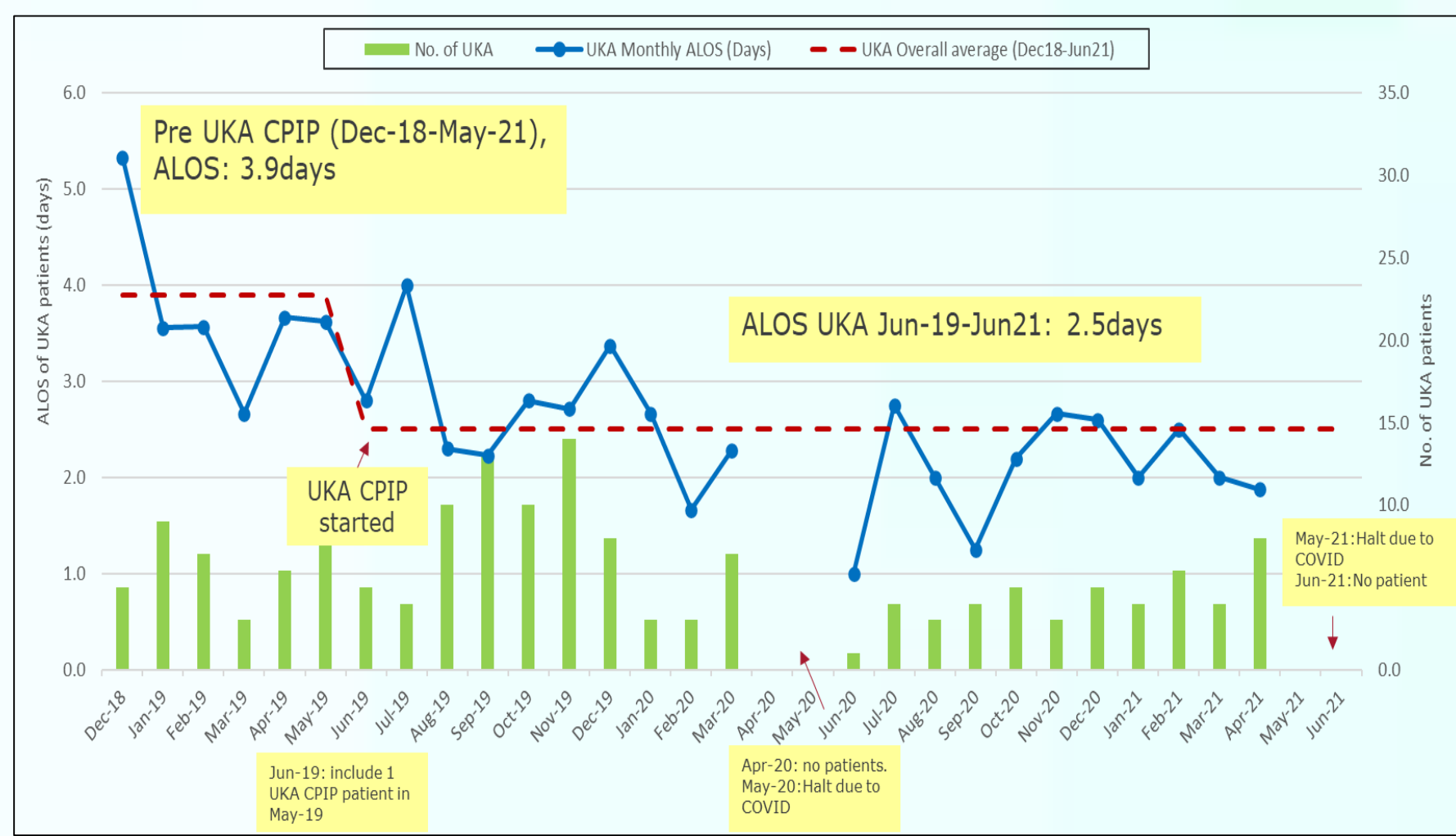
¹Senior Physiotherapist, Physiotherapy Department, ²Principal Physiotherapist, Physiotherapy Department, ³Nurse Manager, Anaesthesiology, Intensive Care & Pain Medicine Department, ⁴Senior Occupational Therapist, Occupational Therapy Department, ⁵Nurse Clinician I, Nursing Speciality Department, ⁶Advanced Scope Care Coordinator (ASCC), Physiotherapy Department, ⁷Senior Consultant, Orthopaedic Surgery Department

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:

- 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).

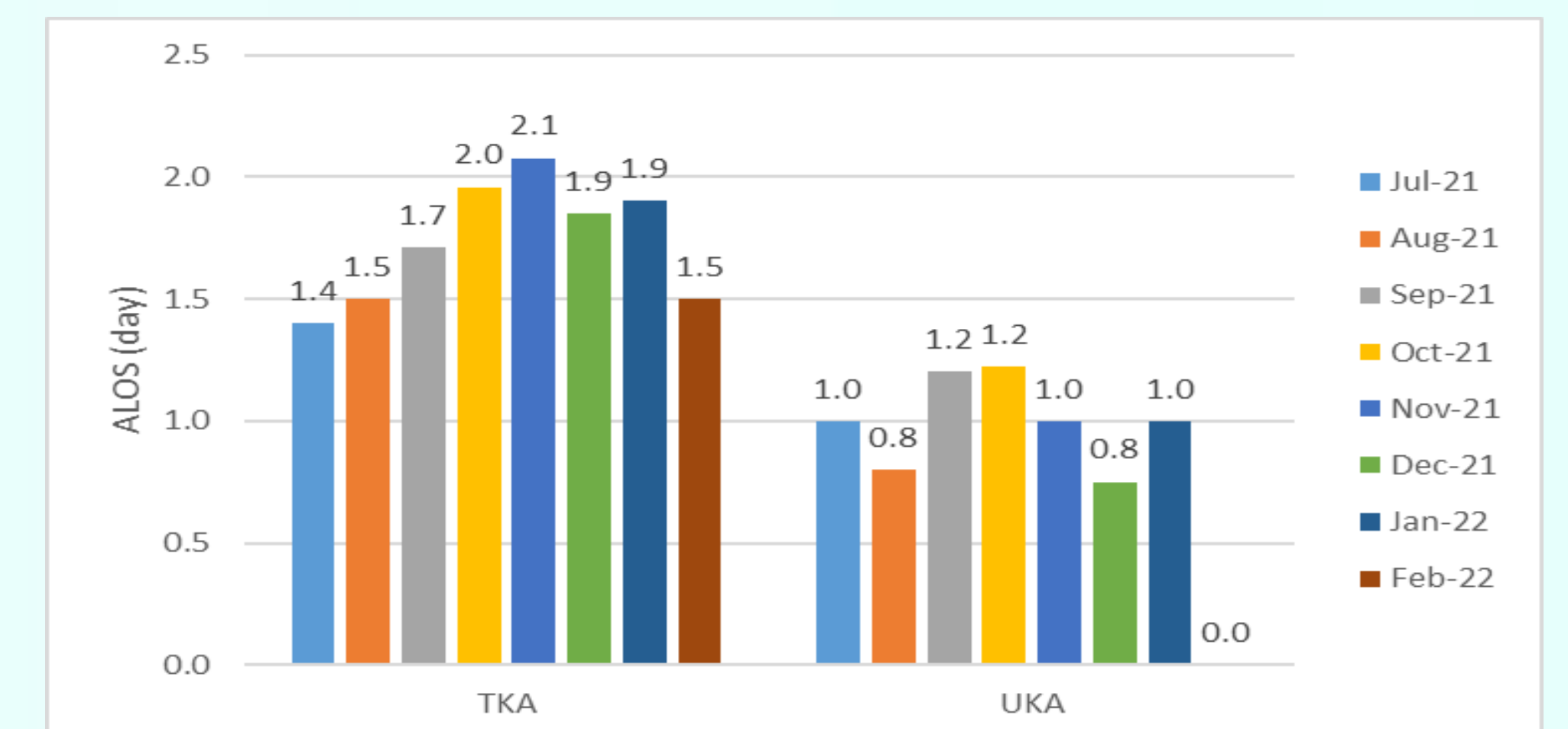
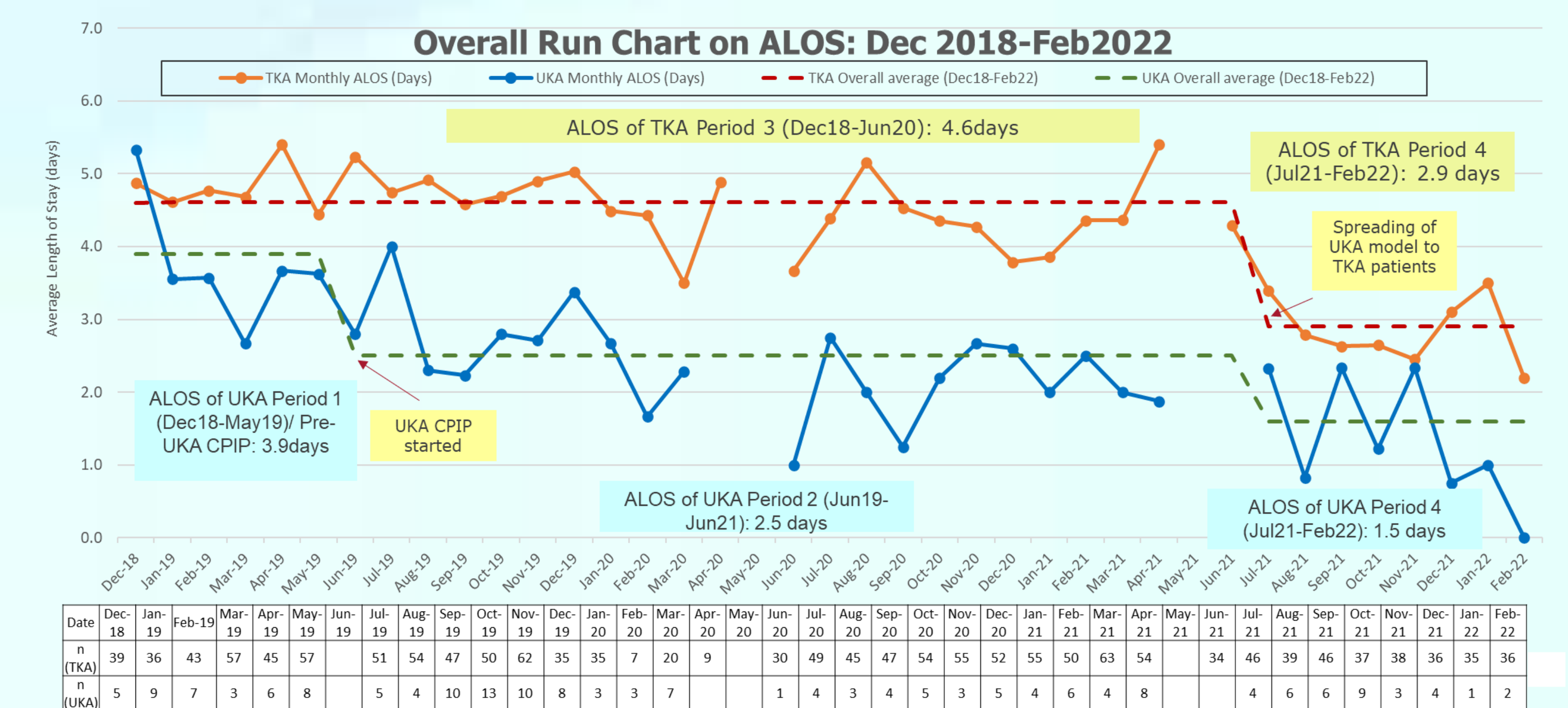
UK³: ALOS of TKA patients with enhanced recovery programmes: 3.9 days.

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

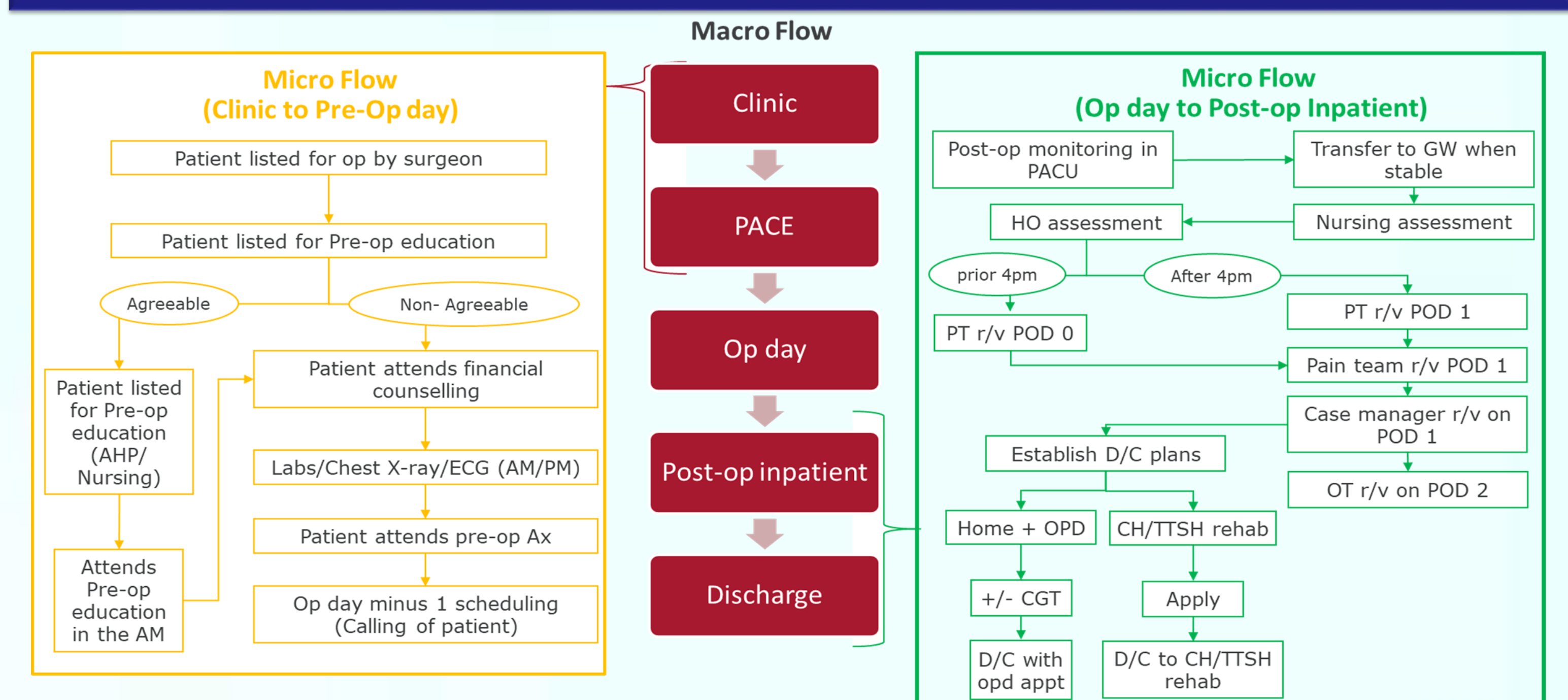
On Friday, eligible patients for DSW who needed more than 1 night stay would be admitted to GW instead as DSW closes on Sunday.

Strategies to Sustain & Conclusion

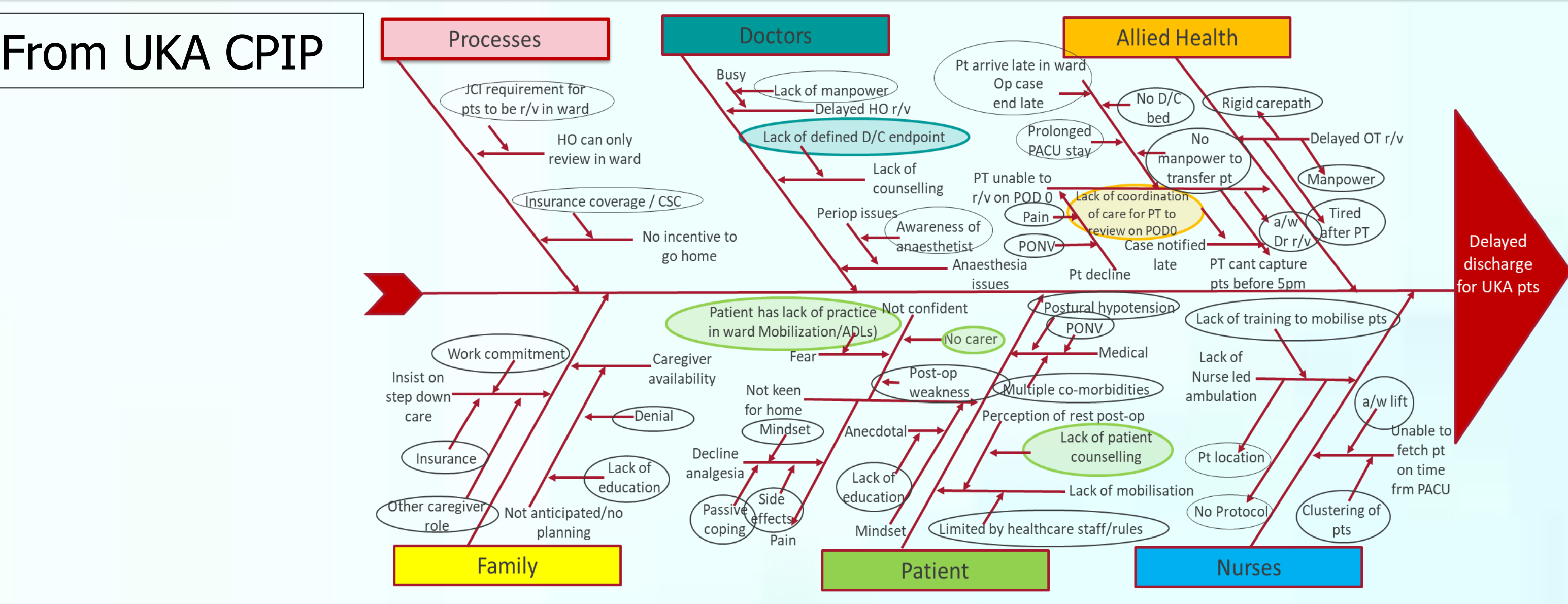
- Get buy-in from surgeons, nurses, allied health professionals, and also patients through education, sharing and updates.
- Increase capacity in DSW to accommodate more patients.

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.

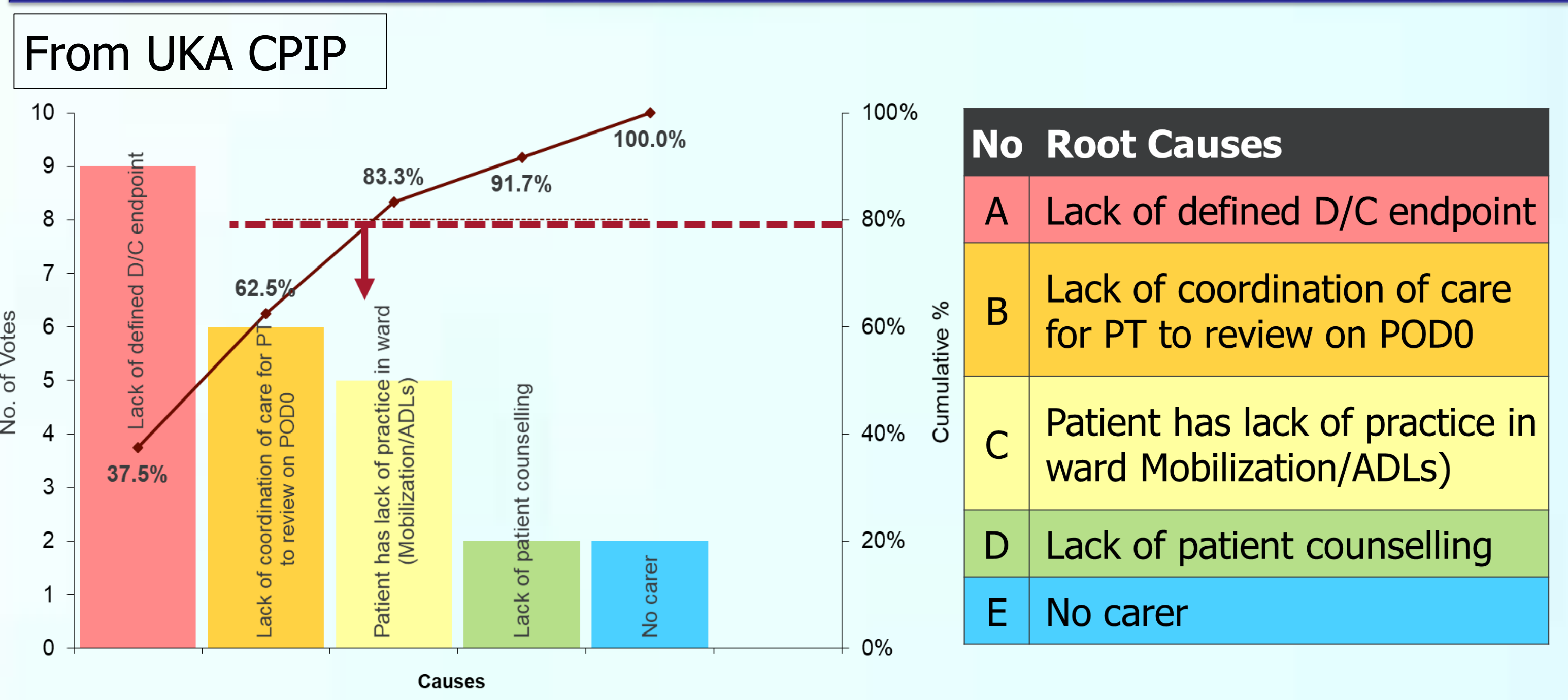
Flow Chart of Process



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.