Project Title

A "Swift" Approach to Streamline Workflow for Intervention of Non-Functional or Thrombosed Dialysis Access

Project Lead and Members

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Facilitator:

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Advisors:

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Organisation(s) Involved

National University Hospital

Aims

Reduce the length of stay for End Stage Kidney Disease (ESKD) patients who are admitted to the hospital for vascular access malfunction from 7 days to $\leqslant$ 5 days

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Conclusion

See poster appended / below

Additional Information

Singapore Healthcare Management (SHM) Conference 2021 – 3rd Prize (Operations Category)

Project Category

Care & Process Redesign

Keywords

Care & Process Redesign, Workflow Redesign, Length of Stay, Turnaround Time, Quality Improvement, Improvement Tools, Value Stream Mapping, Operations, Nursing, Allied Health, Healthcare Administration, National University Hospital, End Stage Kidney Disease, Haemodialysis, Vascular Access Malfunction, Dialysis, Nephrology, Rapid Improvement Event

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Singapore Healthcare Management 2021

National University Hospital
A member of the NUHS

Team Leader: Dr Chua Horng Ruey
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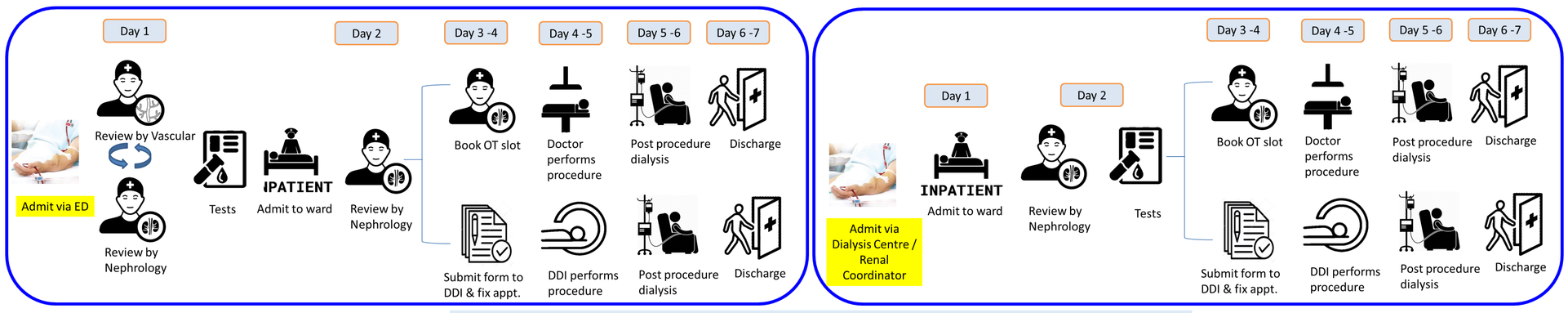
1. INTRODUCTION

- Vascular access malfunction is the leading cause for hospitalisation in patients with End Stage Kidney Disease (ESKD) on haemodialysis. Between Jan 2018 and Aug 2019, the average number of monthly cases was 20 and the median Length of Stay (LOS) was 7 days.
- These patients underwent many interim management steps along their inpatient journey from admission; each step with significant 1-2 day turnaround time, from initial Nephrology or Vascular surgery consult in Emergency Department (EMD), procedure listing for intervention, awaiting inpatient bed, interim non-tunnelled temporary catheter insertion, pre-procedural labs, appointment vetting and scheduling, awaiting OT, semi-urgent dialysis etc. Further waiting was required in post catheter care, before patients finally went home. Patients with vascular access malfunction are admitted either via EMD or referral from dialysis centres (Figure 1).
- We hypothesise that breaking down these processes and shortening the turn-around time could improve their LOS, and also reduce the need for interim temporary access use and expedite time to earlier tunnelled access if required.



PROJECT GOAL
Reduce the LOS for ESKD patients who are admitted to the hospital for vascular access malfunction from 7 days to ≤ 5 days

Figure 1. Overview of admission process for vascular access malfunction

2. METHOD

- A multidisciplinary team of doctors, nurses, allied health professionals and administrators collaborated during a 2.5 days Rapid Improvement Event (RIE) in July 2019 to optimise care of ESKD patients admitted for vascular access malfunction, to expedite their care processes and streamline workflows between EMD, Vascular surgery, Nephrology, Diagnostic Imaging (DDI), and Nursing (Figure 2)
- Lean management methodologies including Value Stream Mapping, 8 Wastes (DOWNTIME) and Paradigm Breaking identified gaps in processes that lengthen the LOS such as delay in index Nephrology & Vascular surgical consults to finalise plans for emergent access salvage or new dialysis catheter, poor visibility of slots for insertion of tunnelled catheters by DDI and Nephrology, challenges in coordinating pre-procedural consent and investigations which resulted in reworks and delayed procedures.
- Adopting the Plan – Do – Check - Act cycle, the team established ways to overcome these interim delays in care, further tweaks were made to the new workflow after implementation, monthly meetings were carried out post RIE to review results and ensure sustainability of project.

Figure 2. Discussion during the RIE

3. INTERVENTION STRATEGY

The team established interventions to overcome the interim delays in care (Figure 3).

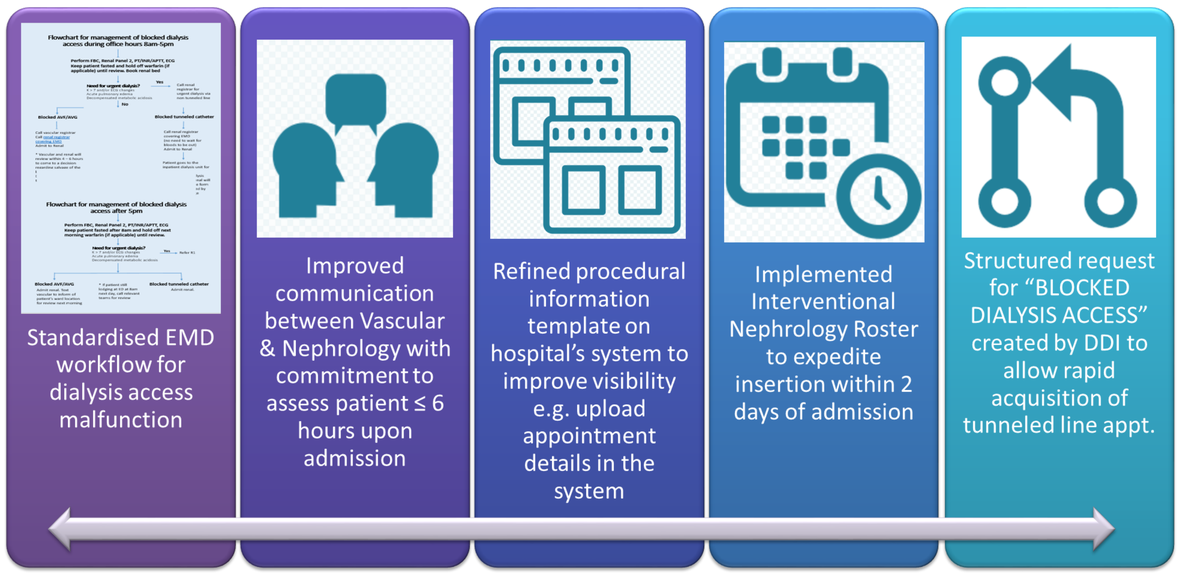


Figure 3. Interventions and Benefits

4. RESULTS

✓Median **bed days per patient reduced from 7 days to 5 days** (Figure 4).
✓Improved patient's care due to reduced need for interim temporary access use as **unnecessary delays are avoided**.
✓**Improved staff satisfaction** due to streamlined workflow and elimination of rework between EMD, Vascular surgery, Nephrology, DDI, and Nursing departments.

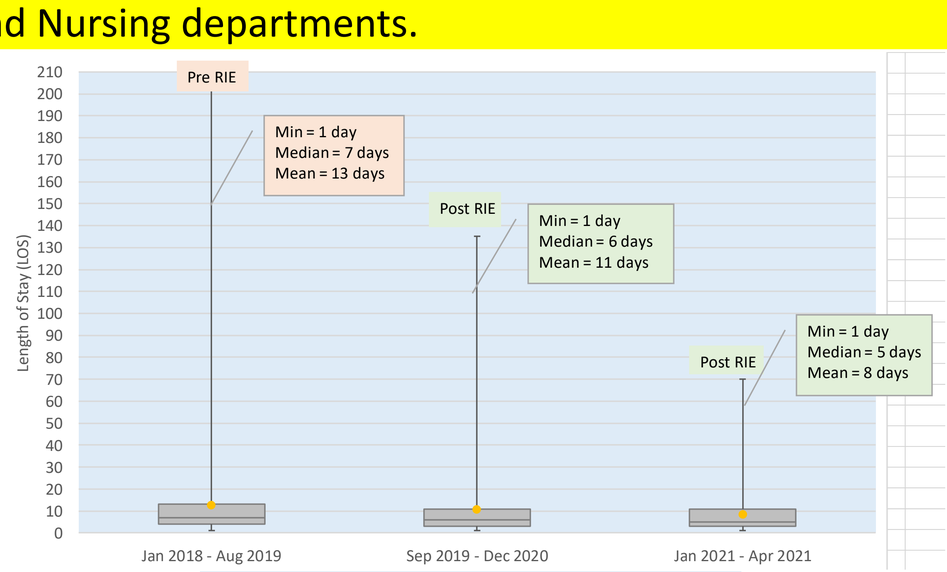


Figure 4. Pre and Post RIE LOS Comparison

5. CONCLUSION

- A multipronged approach by a multidisciplinary team to improve every step of the care process yields promising results. By eliminating wastes and closing gaps in the processes, more patients were discharged within 5 days and median LOS was reduced by 28.5% from 7 days to 5 days, leading to cost avoidance of $243K p.a.
- The team is also constantly exploring opportunities to improve turnaround time for patients with blocked arteriovenous access planned for salvage by facilitating direct admission from the dialysis centre and activating interventionists before patient's arrival to ensure a quick turnaround time and discharge within 24 hours.