Streamlining Intervention for Tunneled Catheters on Haemodialysis

*"A **STITCH** in time saves nine"*

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Dr Julian Wong / Dr Hersharan Kuar Sran
National University Hospital

INTRODUCTION

Background

Long dialysis catheter dwell times are associated with complications such as infections, frequent admissions and higher mortality.

- 81% and 73.3% of patients commenced haemodialysis with tunneled catheter in our centres in 2013 and 2014 respectively.
- At any one time, about 230 patients have a tunneled catheter in situ, 70% (160) are awaiting access creation / maturation, while the remainder are acute kidney injury patients on dialysis, planning for peritoneal dialysis or deemed not suitable for access creation.

Objectives

To reduce the dwelling time and the need for tunneled catheters in patients with end-stage-renal failure.

- Main focus: To streamline workflows from both Nephrology and Vascular Divisions affecting the turnaround time from the insertion of tunneled catheter to access creation in both operating theatres i.e. MCOT (Day Surgery) and MOT (Major OT)

METHODOLOGY

Lean management methodologies including Value Stream Mapping, 8 Wastes (DOWNTIME), Gap Analysis and Paradigm Breaking were applied to understand the process, identity wastes and root causes during the 4.5 days Rapid Improvement Event (RIE).

Value Stream Map and Gap Analysis showed multiple areas of delay in the workflow for definitive access creation.

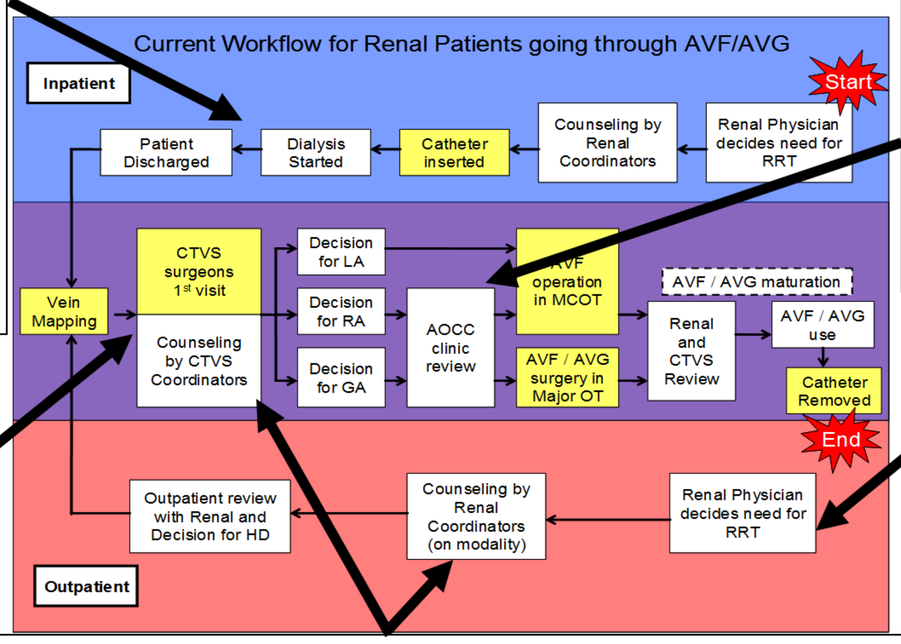
- ✘ Waiting for outpatient vein mapping appointments
- ✘ Inefficient processes in obtaining inpatient vein mapping
- ✘ Unnecessary bilateral vein mapping (waste of resources)
- ✘ Waiting for subsequent Vascular appointments
- ✘ Patients defaulting appointments due to multiple other issues (medical & non-medical) after commencing haemodialysis
- ✘ Late assessment of anaesthetic issues resulting in cancelled surgeries

The team conducted a "Rapid Experiment" to test the functionality of the new workflow. It was done in the actual inpatient renal ward setting with the support of the operational staff to test run the new workflow. A workgroup made up of Nephrology and Vascular team were formed to sustain their good works.

INTERVENTIONS

Inpatient stay for Renal patients will be more fruitful

- ✓9.30am inpatient Vein mapping slot.
- ✓Refer to CTVS (blue letter) next day after vein mapping done.
- ✓Listing for Operation once blue letter review done



Optimisation of Operating Theatres

- ✓Early AOCC referral
- ✓CTVS case manager will call patient within 1 week before operation date

One-stop outpatient visit

- ✓ Direct access to CTVS FV appointment with same day vein mapping appointment

Increased focus on elective starts

Standardization of processes in Renal and CTVS for Renal patients

- ✓Standardized patient and family education leaflet for AVF/AVG creation
- ✓Introduce usage of wristbands in Vascular Lab, CTVS and Renal outpatient clinics.
- ✓Shared Renal Vascular Access Database (accessible by Renal and Vascular)

RESULTS

Catheter Insertion from Apr-2015 to Nov-2016 (n=241) *Op Status Census Date: 28 Feb 2017*	Turnaround Time (TAT) from Tunneled Catheter In to Access Creation					
	MCOT (Day Surgery)			MOT (Majority Inpatient)		
	Pre RIE Apr-Oct'14	**Apr'15-Nov'16**	Target	Pre RIE Apr-Oct'14	**Apr'15-Nov'16**	Target
50th Percentile	70 days	27 days ↓61%	35 days	69 days	35 days ↓49%	58 days
75th Percentile	108 days	65.5 days ↓39%	74 days	134.5 days	65 days ↓52%	86 days

The need for tunneled catheters at 90 days after haemodialysis initiation was significantly reduced from 73.9% in 2014 to **51.6%** in the April 2015 to November 2016 period.

CONCLUSION

- ✓ Tunneled catheters are a major source of morbidity and mortality in newly initiated haemodialysis patients. Reducing dwell time for catheters therefore is a crucial aim in improving clinical care for this cohort of patients, and we have achieved this with our RIE.
- ✓ Sustained improvements have been demonstrated over the last 2 years with the new workflows.