National Quality Improvement Conference

Timely Dialysis for Haemodialysis Patients with Severe Hyperkalemia in Emergency Department

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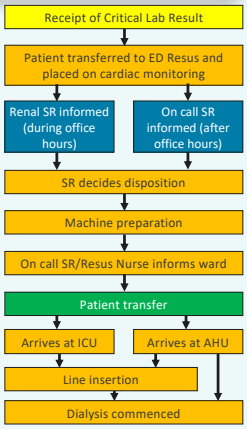
Problem Statement

- Patients with end-stage renal disease (ESRD) and hyperkalemia are generally accepted to require urgent dialysis
- If dialysis is delayed, cardiovascular collapse and demise may result
- Many process steps and often delays between recognition of hyperkalemia and initiation of dialysis



Legend: ED: Emergency Department; SR: Senior Resident; ICU: Intensive Care Unit; AHU: Acute Haemodialysis Unit

Project Aim

Initiation of dialysis <u>within 3 hours from receipt of critical lab result</u> to increase from 48% to 90% of ESRD patients on haemodialysis who present to Emergency Department (ED) with Severe Hyperkalemia (K ≥ 6.5 or with physician defined hyperkalemic ECG changes) within 6 months

Lessons Learnt

- Analysis and refinement of the process workflow required expertise from medical and nursing representatives from various departments working together.
- Challenging to manage change among stakeholders – support from department heads was crucial to successful implementation.
- For effective communications, we had to simplify our message depending on the target audience.

Potential Solutions

CAUSE / PROBLEM	INTERVENTION	DATE IMPLEMENTED
No standardised criteria for dialysis Lack of knowledge of indication for urgent dialysis	PDSA #1A: Standardised criteria sent out to ED + Renal (doctors and nurses)	16 Sep 2022
	PDSA #1B: Optimal transfer of patients between ED and AHU/ICU	5 Oct 2022
	PDSA #1C: Standardised criteria disseminated to medical SRs via email	10 Oct 2022
Lack of available empty AHU bed	PDSA #2A: Prompt decantment of patients who completed dialysis in AHU	17 Oct 2022
	PDSA #2B: Decantment of machines for disinfection in isolation room to free up AHU space for dialysis	14 Nov 2022

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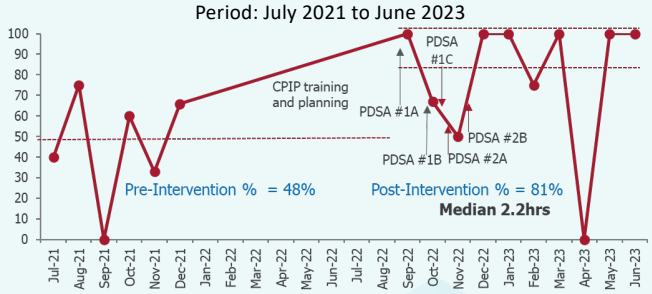
Outcomes & Impacts

Percentage of Patients Dialysed within 3 Hours or Less

Period: July 2021 to June 2023



Period	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
No. of Patient	5	4	0	6	3	3	1	3	2	4	4	4	1	2	2	3
Median time (h)	6.3	2.3	N/A	3.3	3.6	2.7	0.9	2.4	3.4	2.1	1.4	2.6	3	4.0	2.1	1.8

- Reduced average length of stay in ED Resuscitation (3h > 2.2h).
- Reducing patient morbidity through timely care.
- 'Why didn't we think of this earlier', Nursing Manager on PDSA #2B.
- Potential to spread to other conditions requiring urgent dialysis and leveraging on electronic health record to drive compliance.