KK Women's and Children's Hospital
SingHealth

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An Evaluation of Adherence to Hyperkalaemia Guidelines with a Revised Sodium Polystyrene Sulfonate Dosing

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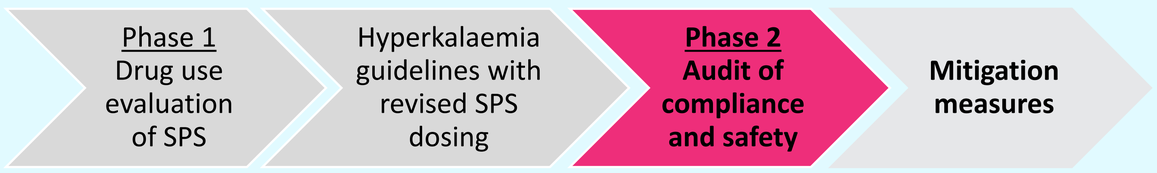
Background

The dosing regimen of Sodium Polystyrene Sulfonate (SPS) in the treatment of hyperkalaemia is not well established [1-3]. The diversity in dosing regimen had led to the overcorrection of hyperkalaemia in our adult patients in KK Women's and Children's Hospital. To circumvent the risk, drug use evaluation (DUE) was carried out and the average potassium reduction achieved with SPS was established. This was used to optimise SPS dosing and the revised regimen was incorporated into the hospital's hyperkalaemia management guidelines

Revised SPS dosing regimen	
Inpatient setting	PO 15g or PR 30g stat, repeat every 6 hours if rechecked K level > 5.1mmol/L
Outpatient setting	PO 15g or PR 30g BD to TDS x 1 day

One year on, to ensure patient safety, an audit on the compliance, efficacy and safety of the revised SPS dosing regimen was carried out.



Aim and objectives

Aim:
- Assess the compliance with the revised SPS dosing regimen

Secondary objectives:
- Assess the efficacy of the revised SPS dosing regimen
- Assess the safety of the revised SPS dosing regimen

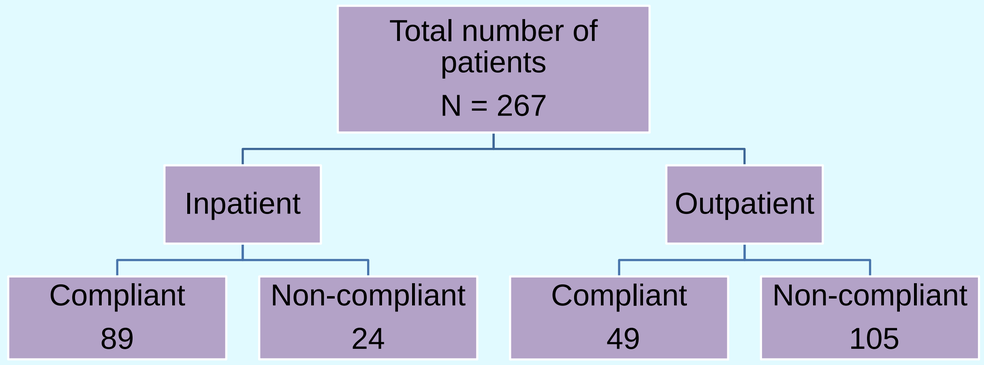
Methods

- Retrospective audit of compliance with revised SPS dosing
  - ➢ Review of medical records from March 2023 to March 2024
    - ✓ For all patients aged > 18 years old who received SPS
    - ✓ Both inpatient and outpatient settings
  - ➢ Clinical audit approved by the institutional patient data governing board and was exempted from institutional review board review
- For efficacy and safety analysis, the following patients were excluded:
  - ➢ K^+ level before SPS < 5.1 mmol/L
  - ➢ Chronic renal disease on haemodialysis or peritoneal dialysis
  - ➢ Chronic SPS use
  - ➢ Subsequent hyperkalaemia episodes within the same admission

Results

Compliance

Overall compliance to revised SPS dosing regimen



Reasons of non-compliance:
i. Deviation from revised SPS dosing
ii. Lack of follow-up K level
iii. Initiation or continuation of SPS despite normokalaemia achieved

Efficacy

- Only 211 patients were included in the efficacy and safety analysis
- 56 patients were excluded, due to reasons stated in methods and other reasons such as omission of SPS dosing and normalisation of K levels before delayed initiation of SPS

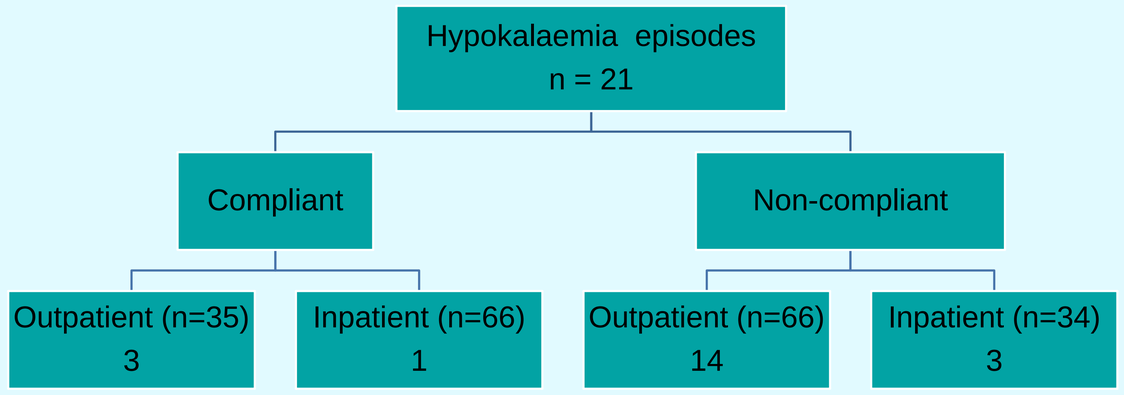
Efficacy of revised SPS dosing regimen*

Setting	Hyperkalaemia Classification	Patients who achieved normokalaemia after 1 course	Patients who achieved normokalaemia after 2 courses	Patients who achieved normokalemia after 3 courses
Inpatient	Mild	56 (70.0%)	10 (12.5%)	3 (3.75%)
	Moderate	7 (8.75%)	1 (1.25%)	0
	Severe	2 (2.5%)	0	0
Outpatient	Mild	31 (73.8%)	1 (2.4%)	0
	Moderate	5 (11.9%)	0	0

* Only patients who received SPS dosing following the revised guideline were analysed and patients who had hypokalaemia (n=4) were excluded from the analysis

Safety

Hypokalaemia episodes after revised SPS dosing regimen



Number of SPS doses given to patients who developed hypokalaemia

Hyperkalaemia Classification	Inpatient		Outpatient	
	SPS doses given	n	SPS doses given	n
Mild	1	1	3	2
	2	1	4	5
	4	1	8	1
	-	-	12	2
Moderate	-	-	3	1
	-	-	4	1
	-	-	8	5
Severe	6	1	-	-

Discussion

- 81.3% of inpatient and 85.7% of outpatient patients achieved normokalaemia within the first course of SPS
- Compliance to the revised SPS dosing demonstrated a reduction in the incidence of hypokalemia
- Higher incidence of hypokalaemia observed in the outpatient setting
  - ➢ This could be attributable to the increased non-compliance with the revised SPS dosing regimen.
- Limitations:
  - ➢ Unable to assess patient's compliance to SPS in the outpatient setting

Conclusion and future steps

- The audit demonstrated that the revised SPS dosing regimen has lesser incidence of hyperkalaemia overcorrection.
- Emphasizing adherence to these updated dosing guidelines is essential for enhancing patient safety among physicians.
- Subsequent mitigation steps as part of continual improvement includes:
  - Refining existing prescribing order sets may also support compliance with the revised SPS dosing regimen.
  - Timely reminders and educational resources on the proper use of SPS.

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Both authors have nothing to disclose