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Maidstone and Tunbridge Wells NHS
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Management of inpatient hypokalaemia: a District General Hospital experience

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Background

Hypokalaemia (potassium below 3.5mmol/l) is a common electrolyte abnormality associated with cardiac instability and myopathies. Untreated hypokalaemia can lead to inpatient morbidity and mortality.[1] Despite clear evidence-based guidance for management of hypokalaemia, we found that the treatment provided in our District General Hospital (DGH) was inconsistent.

Aim

To review the management of hypokalaemia, in terms of potassium replacement therapy, potassium-level monitoring and cardiac monitoring in Maidstone hospital.

Methods

A cross-sectional study of 51 inpatients with hypokalaemia over three weeks. Clinical notes were used to compare management to trust guidelines.

Audit Standards

Trust guidelines

Mild hypokalaemia (K^+ 3.0-3.5mmol/l)
- K^+ 3.4mmol/l: monitor levels
- K^+ 3.0-3.3mmol/l: low dose oral potassium replacement

Exception: patient nil by mouth or intolerant of Sando-K

Moderate hypokalaemia (K^+ 2.5-2.9mmol/l)
- High dose oral potassium replacement

Exception: patient nil by mouth or intolerant of Sando-K

Severe hypokalaemia (K^+ < 2.5mmol/l)
- Intravenous potassium replacement 40mmol ≥ 4 hours

Evidence-based guidance[1-3]

Potassium < 3.0mmol/l
- ECG monitoring

Potassium < 2.5mmol/l
- Check magnesium levels

Any intravenous potassium therapy
- Check potassium level after every 40mmol administered
- ECG monitoring

Results

Total number K^+ 3.0-3.4mmol/l: 39
Total number K^+ 2.5-2.9mmol/l: 10
Total number K^+ < 2.5mmol/l: 2

Audit standard	Result
K^+ 3.4mmol/l: monitor levels K^+ 3.0-3.3mmol/l: low dose Sando-K	32%
K^+ 2.5-2.9mmol/l: high dose Sando-K	0%
K^+ < 2.5mmol/l: IV KCL 40mmol ≥ 4h	50%
K^+ < 3.0mmol/l: repeat ECG	17%
IV KCL: repeat K^+ level every 40mmol	47%
IV KCL: repeat ECG	0%
K^+ < 2.5mmol/l: check Mg^{2+} levels	100%

Further breakdown of results		
K^+ 3.0-3.3	Treated correctly	4%
	Untreated	64%
	Wrong-dose Sando-K	18%
	Inappropriate IV KCL	7%
	Exception	7%
K^+ 2.5-2.9	Treated correctly	0%
	Untreated	10%
	Wrong-dose Sando-K	0%
	Inappropriate IV KCL	90%
K^+ < 2.5	Treated	50%
	Untreated	50%
	Inappropriate Sando-K	0%

Conclusions

This audit demonstrates inadequate hypokalaemia management in our DGH – a malpractice that may be shared across other DGHs. Lack of education and consensus on hypokalaemia management amongst doctors was a main contributing factor to the poor practice. This highlights the need for society-led guidelines on the management of inpatient hypokalaemia at a national level.

References
[1]] Alfonzo AVM, Isles C, Geddes C, Deighan C. Potassium disorders- clinical spectrum and emergency treatment. Resuscitation 2006; 70:10-25; [2] Gennari FJ. Current concepts: hypokalaemia. NEJM 1998; 339:451-8; [3] Rastergar A, Soleimani M. Hypokalaemia and hyperkalaemia. Postgrad Med j 2001; 77:759-64