Introduction of a protocol and daily endocrine specialist nurse ward visits in the management of hyponatraemia

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1. Aims
Hyponatraemia is associated with an increase in morbidity and mortality, prolonged hospital stays and poor assessment and management. It affects 10-25% of all inpatients and has a clear associated mortality; patients >65 with hyponatraemia are twice as likely to die as those who do not. It is thought that resolution during hospital stay may attenuate the increased mortality rate. A protocol for clinical staff was devised with daily specialist nurse ward visits to meet the following aims:

- To ensure that hyponatraemia is investigated appropriately
- That low sodium is corrected promptly and at the correct rate
- To investigate the effect of hyponatraemia on length of stay

Two audits analysed Acute Medical Unit admissions with sodium <130mmol/l, pre-and post-protocol, in April and July 2013 (58 patients in April 2013; 99 in July 2013).

2. Summarised Protocol
Doctors to investigate with the following:

- paired osmolalities, urinary sodium, random cortisol, TFTs, CXR
- estimation of patient’s normal fluid intake at home

Management:

**Interventions**

- Daily intravenous fluid calculation
- Fluid restriction in 500ml below normal fluid intake
- Close observation of patient
- Early recognition if Na <120mmol/l
- Early recognition if Na <120-124mmol/l
- Early recognition if Na <110mmol/l
- Early recognition if Na <100mmol/l

**Reasons**

- fluid restriction in 500ml below normal fluid intake
- close observation of patient
- early recognition if Na <120mmol/l
- early recognition if Na <120-124mmol/l
- early recognition if Na <110mmol/l
- early recognition if Na <100mmol/l

Nurses to ensure accurate fluid balance is recorded with daily weights.

3. Audit
Inclusion criteria: All admissions to AMU with sodium <130mmol/l in 1 month period pre and post-protocol with the same cohort of junior doctors

Assessment criteria:

1. Sodium on admission, at 24 hours and on discharge
2. Length of stay
3. Speciality at discharge
4. Appropriately investigations ordered
5. Fluid status assessment and completion of fluid chart
6. Mention of hyponatraemia on the post-take ward round and appropriate coding

In addition, rate of readmission and previous episodes of hyponatraemia were recorded.

4. Results

<table>
<thead>
<tr>
<th></th>
<th>AMU Average (%)</th>
<th>April Patients (n)</th>
<th>July Patients (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Of Patients</td>
<td></td>
<td></td>
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<tr>
<td>Over age of 65</td>
<td>62.22</td>
<td>58</td>
<td>50</td>
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<tr>
<td>Over age of 80</td>
<td>92.32</td>
<td>29 (50%)</td>
<td>41 (46%)</td>
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5. Length of stay & Readmission

<table>
<thead>
<tr>
<th></th>
<th>AMU (days)</th>
<th>Na &lt; April (days)</th>
<th>Na &lt; July (days)</th>
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<tbody>
<tr>
<td>Mean length of stay</td>
<td>6.47</td>
<td>10.57</td>
<td>9.47</td>
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<tr>
<td>LOS Na &lt; 127</td>
<td>8.09</td>
<td>12.64</td>
<td>11.58</td>
</tr>
<tr>
<td>Patients &gt;65</td>
<td>9.16</td>
<td>12.55</td>
<td>11.83</td>
</tr>
<tr>
<td>Number RIP</td>
<td>5.6% (April)</td>
<td>6 (10.2%)</td>
<td>8 (8.13%)</td>
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<tr>
<td>Readmission within 30 days (%)</td>
<td>13.28</td>
<td>21.15</td>
<td>30.77</td>
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6. Conclusions

Highlighting hyponatraemia led to better documentation, closer monitoring, improved resolution at 24 hours and at discharge and earlier specialist opinion if not improving. Accreditably, junior doctors and nurses found the protocol and intervention useful. Assessment of fluid intake and urinary sodium, however, remained poor.

Coding (and income) is improved by appropriate documentation on the post-take ward round. European Society Clinical Practice Guidelines rely on optimising urinary sodium and osmolality (prior to initiation of treatment). Introduction of the protocol and nurse support, along with paired samples and early biochemical evaluation are vital to achieve this. Links on the pathology system to the protocol also aim to prioritise this.

Although no evidence that correction changes mortality, it could be hypothesised that improving hyponatraemia might improve confusion and muscle strength and therefore lead to earlier discharge and reduced readmission. Early recognition of hyponatraemia also acts as a ‘red flag’ for those with potentially worse outcomes.

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