Electrolyte abnormalities are recognised cause of cardiac arrhythmia, cardiac arrest and sudden death. The disturbance associated with the most immediately life threatening consequences is hyperkalemia. The incidence of hyperkalemia in hospital patients has been reported to be between 1.1% and 10%. National guidelines are published, but clinical practice often varies considerably.

This audit was carried out to compare our current practice in the treatment of Acute Hyperkalemia against the standards published in recent UK Renal Association Guidelines.

**Background**

Hyperkalaemia stratified as:
- Mild (5.5–5.9 mmol/L)
- Moderate (6.0–6.4 mmol/L)
- Severe (≥6.5 mmol/L).

A high proportion of patients with potassium > 6.5 mmol/L, had no Continuous ECG monitoring (84%).

Calcium resinium and sodium bicarbonate were used in patients with severe hyperkalemia. National guidelines do not recommend these treatments for acute severe hyperkalemia.

**Objective**

This audit was carried out to compare our current practice in the treatment of Acute Hyperkalemia against the standards published in recent UK Renal Association Guidelines.

**Audit Criteria**

- Proportion of patients with a blood potassium value ≥ 6.0 mmol/L who had a 12-lead ECG performed prior to treatment. (Audit Standard: 100%).
- Proportion of patients with a blood potassium value ≥ 6.0 mmol/L and an ECG showing features of hyperkalaemia who had their 12-lead ECG repeated following treatment. (Audit Standards: 100%).
- Proportion of patients with a blood potassium value ≥6.5 mmol/L who have documented evidence of continuous ECG monitoring. (Audit Standards: 100%).
- Intravenous calcium salts should be given to patients with hyperkalaemia in the presence of ECG changes indicative of hyperkalaemia.
- The proportion of patients with severe hyperkalaemia (K+ ≥ 6.5 mmol/L) treated with insulin–glucose infusion. (Audit Standards: 100%)
- Salbutamol 10–20mg via nebuliser should be used as adjuvant therapy for severe (K+ ≥ 6.5 mmol/L) hyperkalaemia.
- There is insufficient evidence to justify the routine use of intravenous sodium bicarbonate infusion for the acute treatment of hyperkalaemia.
- The proportion of patients with severe hyperkalaemia treated with resins. (Audit Standard: 0%).

**Patient and Methods**

This retrospective audit included all the patient presenting with moderate to severe hyperkalemia (K > 6mmol/L) between September 2012 to November 2012.

All aged above 14 years and presented with acute hyperkalemia either in A&E or in AMU. Patient on dialysis were excluded.

By reviewing doctors and nursing notes and drug charts for the treatment given for Hyperkalemia, data was recorded on specially designed Performa, as per audit criteria.

**Results**

Our audit highlighted several pitfalls in our management of hyperkalemia: (as shown in tables below)

<table>
<thead>
<tr>
<th>K&gt;6.0 (n)</th>
<th>ECG before treatment</th>
<th>ECG after treatment</th>
<th>Calcium Gluconate used</th>
<th>Calcium Gluconate used without ECG changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>37</td>
<td>14</td>
<td>32</td>
<td>19</td>
</tr>
<tr>
<td>%</td>
<td>88%</td>
<td>33%</td>
<td>76%</td>
<td>45%</td>
</tr>
</tbody>
</table>

A high proportion of patients with potassium > 6.5 mmol/L, had no Continuous ECG monitoring (84%).

**Contributing factors identified for hyperkalemia**

![Chart showing contributing factors](chart.png)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKI</td>
<td>69%</td>
</tr>
<tr>
<td>ACE and ARB</td>
<td>21%</td>
</tr>
<tr>
<td>Hyperglycemia and dehydration</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Recommendations**

- To update our local hospital guidelines in accordance with national guidelines for the management of hyperkalaemia (New pathway, in progress ).
- Dedicated teaching for medical students, junior doctors, and nurses on prevention, recognition, treatment and potential hazards of hyperkalaemia.
- Re audit to establish change in practice, after implementing new guidelines.

**Reference**