Intravenous Fluid Guidelines: Adults

Before Prescribing
Is my patient euvaemic? Hypovolaemic? Hypervolaemic?
Can my patient have fluid enterally?
Why does my patient need IV fluids?
How much fluid does my patient need?
What type of fluid does my patient need?

Fluid Status Assessment
History: Limited oral intake, abnormal losses, co-morbidities
Clinical examination: Pulse, BP, capillary refill, JVP, oedema, postural hypotension, lung fields
Clinical monitoring: NEWS, fluid balance, weight, CXR
Laboratory investigations: FBC, U&E

Special Considerations
Obesity: Use ideal body weight. Seek senior advice if BMI>40
Frail, Elderly, CCF or Renal impairment: consider smaller volumes of maintenance fluid (20-25mL/kg/day)
Bleeding: Replace with blood products if required
Diabetes or patient on VRII

Fluid Resuscitation
Patients with physiological abnormalities due to presumed hypovolaemia/abnormal distribution of fluid
Refer to resuscitation flow chart.
ABCDE approach. Early senior input
Give 500mL sodium chloride 0.9% or Hartmann’s over 15 mins (250mL if CCF/IHD/elderly)
Re-assess
Repeat as indicated up to 2 Litres (1 Litre if CCF/IHD)
Seek advice from Critical Care if the patient has not responded to a maximum of 2 Litres of fluid on the ward

Replacement & Redistribution
Patients with ongoing losses or abnormal distribution of fluids (e.g. vomiting, diarrhoea, high output stoma, sepsis)
Give sodium chloride 0.9% (+/- KCl) or Hartmann’s in addition to routine maintenance fluids
Adjust rate of IV fluids for current and ongoing deficits
Seek senior advice for complex patients

Routine Maintenance
The fluid of choice for patients unable to take enteral fluids but with no abnormal losses is:
Sodium Chloride 0.18% + Dextrose 4% + 20-40mmol/Litre of Potassium Chloride.
Omit the potassium if the patient is hyperkalaemic.
Sodium Chloride 0.18% + Dextrose 4% is not suitable for hyponatraemic patients, neurosurgical patients or patients with high GI losses. Use Sodium Chloride 0.9% or Hartmann’s for these patients.

<table>
<thead>
<tr>
<th>Fluid (1 Litre)</th>
<th>Na</th>
<th>K</th>
<th>Cl</th>
<th>Ca</th>
<th>Glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl 0.18% + Dextrose 4% + KCl 40mmol</td>
<td>31</td>
<td>40</td>
<td>71</td>
<td>0</td>
<td>40g</td>
</tr>
<tr>
<td>NaCl 0.18% + Dextrose 4%</td>
<td>31</td>
<td>0</td>
<td>31</td>
<td>0</td>
<td>40g</td>
</tr>
<tr>
<td>Hartmann’s</td>
<td>131</td>
<td>5</td>
<td>111</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>NaCl 0.9%</td>
<td>154</td>
<td>0</td>
<td>154</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dextrose 5%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50g</td>
</tr>
</tbody>
</table>

Maintenance Requirements
<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>25-30mL/kg/day</td>
</tr>
<tr>
<td></td>
<td>20-25mL/kg/day in the elderly, frail, or those with CCF or renal impairment. Round the daily requirement to the nearest 500mL bag.</td>
</tr>
<tr>
<td>Na⁺, K⁺ and Cl⁻</td>
<td>1mmol/kg/day of each</td>
</tr>
<tr>
<td>Glucose</td>
<td>50—100g/day</td>
</tr>
</tbody>
</table>

Avoid more than 2500mL of Sodium Chloride 0.18% + Dextrose 4% per day as this may cause hyponatraemia.
If the patient requires a larger volume than this, refer to Fluid Resuscitation or Replacement & Redistribution.
Plan to deliver the daily routine maintenance volume over 12 to 16 hours.

Reassessment
Reassess patients regularly and adjust the fluid prescription as required.
Seek senior advice if a patient is not responding to IV fluids as expected.
Stop routine maintenance fluids when the enteral route is available.