"Maintenance" IV fluids in euvoalaemic children

Index: Intravenous fluid therapy

Original article by: Michael Tam

This is for children:

- older than 4 weeks (see neonatal IV fluids)
- younger than 14-16 (at adult weight, use adult type fluids)

There is no "autopilot" method for children. Calculate it properly each time. The smaller the child, the more important it is for the rate to be correct. In larger children, you could probably round to the closest 5 mL/h for convenience. If the rate is > 100 mL/h (for maintenance), you should be using adult type fluids.

Usually in children we don't put them days on end on IV fluids. However, you should still think about sodium and potassium. In general compared to adults, children need greater requirements of sodium and potassium than adults. Just infusing with half normal saline gives quite a large (compared to adult regimens) sodium load. However, it is generally very unusual to precipitate hypernatraemia in children despite this (again, unlike adults).

<table>
<thead>
<tr>
<th>IV fluid type</th>
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</thead>
<tbody>
<tr>
<td>- 0.45% NaCl + 2.5% dextrose + 10 mmol KCl</td>
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<tr>
<td>- 500 mL bag</td>
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<table>
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<tr>
<th>IV fluid rate</th>
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<tr>
<td>4 mL/kg/hr for first 10 kg of body weight</td>
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<tr>
<td>+ 2 mL/kg/hr for next 10 kg</td>
</tr>
<tr>
<td>+ 1 mL/kg/hr for the remainder</td>
</tr>
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| Sodium: 3-4 mmol/kg/day |
| Potassium: 2-4 mmol/kg/day |

If a child needs prolonged intravenous fluids and is nil by mouth (so cannot take potassium in oral form), then you will need to add some potassium in the bags of fluid. Usual practice is to add 10 mmol of KCl in the 500 mL paediatric bags as needed (they usually come premixed).

Example 1:

8 week old baby - 5.5 kg
Fluid type:

- **0.45% NaCl + 2.5% dextrose** ("half normal saline")

Infusion rate:

- 4 mL/kg/hr x 5.5 kg
- = 22 mL/hr

Potassium:

- 2 to 4 mmol/kg/day x 5.5 kg
- = 11-22 mmol per day
- ~ adding **10 mmol of KCl to each bag of 0.45% NaCl + 2.5% dextrose**

**Further tips**

1. Does the child actually need IV fluids? Oral hydration, especially with breast milk for babies is best.
2. Does the child only need maintenance fluids? Usually children who require IV fluids are dehydrated - this is worked out differently.

Updated: Michael Tam (19 June 2006)

*Please read the disclaimer*