PAEDIATRIC IV FLUID

BOOKLET

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Background:

Whenever possible the enteral route should be used for fluids. The safe use of IV fluid therapy in children requires accurate prescribing of fluid and careful monitoring

Always check orders that you have written, and ensure that you double check on orders written by other staff when you take over the child's care

Incorrectly prescribed or administered fluids are potentially very dangerous. More adverse events are described from fluid administration than for any other individual drug.

**If you have any doubt about a child's fluid orders - ask a senior doctor.**

**Assessment of fluid requirements:**

Unwell children (+/- abnormal hydration)

**How much Fluid?**

Hypovolemic /Shock-contact senior as soon as possible.

Give boluses of 10-20ml/kg of normal (0.9%) saline, which may be repeated.

**Do not include this fluid volume in any subsequent calculations**

Maintenance + Deficit (dehydration guidelines), + Ongoing losses (dehydration guidelines)

### Calculation of maintenance fluid requirements

The daily fluid requirement may be estimated from the child's weight using the following formula:

|  |  |  |
| --- | --- | --- |
| **1st 10kg of weight** | **100mls/kg** | **4mls/kg/hr** |
| **2nd 10kg of weight** | **50mls/kg** | **2mls/kg/hr** |
| **All additional kg of weight** | **20mls/kg** | **1ml/kg/hr** |

**For infants under 4 weeks of age (>3kg)**

|  |  |
| --- | --- |
| **Age** | **Fluid Volume** |
| Day 1 | 60ml/kg/day |
| Day2 | 80 ml/kg/day |
| Day3 | 90ml/kg/day |
| Day4-28 | 100ml/kg/day |

**Which fluid?**

The recommended fluid - 0.45% NaCl and 5% glucose with potassium

o For children under 20kg, 10mmol potassium chloride per 500ml bag

o For children over 20kg, 20mmol potassium chloride per 500ml bag

(This booklet was written according to the Trust guidelines)

**Example 1:**

**An infant weighs 4 kg. What is the required amount of fluid per hour ?**

4 kg x 100 mL/kg = 400 mL

Fluid rate of infusion per hour = 400/24

= 16.6ml/hr

**By 4-2-1 rule**

4 x4= 16 ml/hour

**Example2:**

**Calculate fluid requirement of 3 year old weighing 16 Kg.**

100mls/kg for the first 10kg = 1000mls

50mls/kg for the second 10kg = 300mls

Total fluid for 24 hrs = 1300 mls

IV fluid infusion rate /hour =1300/24

=54ml/hr

**By 4-2-1 rule**

For first 10 kg (4ml/hr) =40 ml/hr.

Next 10 kg (2ml/hr) = 12ml/hr

Total =52ml/hr

**Example 3:**

**What is the fluid requirement of child weighing 33 Kg.?**

100mls/kg for the first 10kg = 1000mls

50mls/kg for the second 10kg = 500mls

20mls/kg for all additional Kg = 260 mls

Total = 1860mls

Rate = 1860/24 = 77.5 mls/hr

**By 4-2-1 rule**

For first 10 kg (4ml/hr ) =40 ml/hr.

Next 10 kg (2ml/hr) = 20ml/hr

Next 10 kg onwards (1ml/hr) = 13ml/hr

Total = 73ml/hr

**How to calculate dehydration correction:**

**Fluid deficit in ml = % dehydration x weight (Kg) x 10**

The deficit is usually replaced over 24 hours and so can be added to the total daily maintenance volume before dividing by 24 to determine the hourly rate.

**Example:**

A 33 kg child who has been assessed as being moderately dehydrated can be estimated to be 5% dehydrated.

Total maintenance per day = 1860mls

Dehydration correction = 5X 33 x 10 = 1650mls

Total fluids/day =1860+1650

=3510 mls

IV fluid infusion rate =3510/24

= 146.2 ml/hr( 146ml/hr)

**If somebody is on dehydration correction, fluids should ideally be reviewed every 4-6 hours.**

Exercise

1. A 9 month old child presented to CED with gastroenteritis. He is not dehydrated but not tolerating oral feeds. It was decided to commence him on full IV maintenance fluid. His current weight is 8Kg.Prescribe his fluids.
2. You were asked to prescribe fluids for a child in sunflower ward who had appendicectomy . He is 10 years old and he weighs 45 kg.
3. 5 year old girl is admitted on puffin ward with vomiting. On clinical assessment she is moderately dehydrated (5%).You were bleeped to prescribe the fluids for her. Her weight is 28Kg. .
4. A 1 year old girl admitted to dolphin ward with bronchiolitis. During the ward

rounds it was decided to start on 2/3rd iv maintenance fluids. Please prescribe it. Her weight is 9kg.