

Intravenous (IV) Fluids in Children and Infants

Key Points

- For previously well children aged 1 month - 16 years
- **Excluding** renal, cardiac, diabetic ketoacidosis and acute burns patients
- <1 month prescribe 10% dextrose plus NaCl/KCl as appropriate
- If a patient is shocked, administer 10-20mls/kg 0.9% NaCl as a fast bolus and ensure senior help is summoned
- Always reassess a patient when a fluid bolus has been given.
- Choice of fluid to use initially should be an isotonic crystalloid, e.g., 0.9% NaCl.
- Always weigh a child at the start of IV fluids and ensure that they are monitored with
 - Fluid Balance Chart
 - Daily electrolytes as a minimum
 - Regular review of hydration status and ongoing need for IV Fluids 12 hourly
 - Consider regular weights
- For maintenance fluids use isotonic crystalloid fluids, 0.9% NaCl with dextrose.
- Be aware that hyponatraemia can develop during IV fluid therapy and is associated with:
 - Headache
 - Nausea & Vomiting
 - Confusion
 - Irritability in younger children
 - Lethargy
 - Seizures
 - Reduced level of consciousness/coma
 - Apnoea
- Acute symptomatic hyponatraemia should be treated with 2mls/kg 2.7% NaCl (maximum single dose 100mls)

Hyponatraemia may develop as a complication of any fluid regime

If shock is present administer 20ml/kg Sodium chloride 0.9%
Repeat if necessary and call for senior help

Symptomatic Hyponatraemia is a medical emergency

Check plasma electrolytes & weigh child
Estimate any fluid deficit – to be replaced over 48 hours
Deficit (ml) = weight x %dehydration x 10

Intravenous maintenance and replacement fluids - Calculate volume of fluid and select fluid type

Volume of intravenous maintenance fluid

Calculate as follows (Holliday- Segar Formula)

100mls/kg for the first 10kg

50mls/kg for the next 10kg

20mls/kg for the subsequent weight above 20kg

Remembering that over a 24 hour period males rarely need > 2500mls and females > 2000mls of fluid

On-going fluid losses, e.g., NG/stoma losses, severe diarrhoea

Sodium chloride 0.9% or Sodium chloride 0.9% / glucose 5%
(+/- added KCl 10 mmol /500 ml)

Run alongside maintenance, varying hourly rate to match losses

The choice of intravenous maintenance and replacement fluid should be Isotonic crystalloid as per NG29.

The majority of children may be safely administered **Sodium chloride 0.9% with additional glucose 5% or 10%** (If serum K⁺ <4.5, use bags with pre-added KCl 10 mmol/500ml)

If there is a risk of water retention associated with SIADH, consider restricting fluids to 50-80% maintenance.

Monitoring

Take a sample for plasma electrolytes before commencing the infusion (not necessary prior to routine elective surgery)

All children on intravenous fluids should be weighed prior to the commencement of therapy.

Check plasma electrolytes every 24 hours as a minimum.

Ensure you use potassium containing fluid if K⁺ < 4.5 mmol/L

If plasma electrolytes are abnormal, recheck every 6-8 hours, especially if serum sodium < 132 mmol/L or >145mmol/L

References

NICE Guidance (2009): [CG84 - Diarrhoea and Vomiting in children under five](#)

NICE Guidance (2020): [NG29 - IV Fluid therapy in children and young people](#)

Full version control record

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Version History

Version	Date	Guideline Lead(s)	Status	Comment
1-5	2007-2023	Dr R Jones, Dr J Aspel, Dr S Bell	Final	WPH only.
1.0	2024	Dr J Aspel, Dr S Bell	Final	Adopted trust-wide.