

WHO CHARTS FOR EVERYONE CARING FOR CHILDREN IN HOSPITAL

Charts 7 and 8. How to give IV fluids to children without and with severe malnutrition from 'Pocket Book of Hospital Care for Children - Guidelines for the Management of Common Illnesses with Limited Resources' WHO 2005. See the whole book at <http://www.ichrc.org/>. Charts 1 – 6 were reproduced in previous issues of this journal.

You can use these charts in different ways. For example, you can print them and display them in relevant wards or clinics (laminated if possible), or use them as a 'memory aid' in your pocket, as handouts or as training aids.

We thank the WHO for permission to reproduce these charts, and Dr O'Hare who gave us the idea of making the charts more widely available.

CHART 7. How to give IV fluids rapidly for shock in a child without severe malnutrition

- ▶ If the child is severely malnourished the fluid volume and rate are different, so check that the child is not severely malnourished
Shock in child without severe malnutrition—Chart 7
Shock in child with severe malnutrition—Chart 8 (and section 1.3, page 18)
- ▶ Insert an intravenous line (and draw blood for emergency laboratory investigations).
- ▶ Attach Ringer's lactate or normal saline—make sure the infusion is running well.
- ▶ Infuse 20 ml/kg as rapidly as possible.

Age/weight	Volume of Ringer's lactate or normal saline solution (20 ml/kg)
2 months (<4 kg)	75 ml
2–4 months (4–6 kg)	100 ml
4–12 months (6–10 kg)	150 ml
1–3 years (10–14 kg)	250 ml
3–5 years (14–19 kg)	350 ml

Reassess child after appropriate volume has run in

- Reassess after first infusion: If no improvement, repeat 20 ml/kg as rapidly as possible.
- Reassess after second infusion: If no improvement, repeat 20 ml/kg as rapidly as possible.
- Reassess after third infusion: If no improvement, give blood 20 ml/kg over 30 minutes (if shock is not caused by profuse diarrhoea, in this case repeat Ringer's lactate or normal saline).
- Reassess after fourth infusion: If no improvement, see disease-specific treatment guidelines. You should have established a provisional diagnosis by now.

After improvement at any stage (pulse slows, faster capillary refill), go to Chart 11, page 16.

CHART 8. How to give IV fluids for shock in a child with severe malnutrition

Give this treatment only if the child has signs of shock *and is lethargic or has lost consciousness*:

- ▶ Insert an IV line (and draw blood for emergency laboratory investigations)
- ▶ Weigh the child (or estimate the weight) to calculate the volume of fluid to be given
- ▶ Give IV fluid 15 ml/kg over 1 hour. Use one of the following solutions (in order of preference), according to availability:
 - Ringer's lactate with 5% glucose (dextrose); or
 - half-normal saline with 5% glucose (dextrose); or
 - half-strength Darrow's solution with 5% glucose (dextrose); or, if these are unavailable,
 - Ringer's lactate.

Weight	Volume IV fluid Give over 1 hour (15 ml/kg)	Weight	Volume IV fluid Give over 1 hour (15 ml/kg)
4 kg	60 ml	12 kg	180 ml
6 kg	90 ml	14 kg	210 ml
8 kg	120 ml	16 kg	240 ml
10 kg	150 ml	18 kg	270 ml

- ▶ Measure the pulse and breathing rate at the start and every 5–10 minutes.

If there are signs of improvement (pulse and respiratory rates fall):

- give repeat IV 15 ml/kg over 1 hour; then
- switch to oral or nasogastric rehydration with ReSoMal (see page 179), 10 ml/kg/h up to 10 hours;
- initiate refeeding with starter F-75 (see page 184).

If the child fails to improve after the first 15ml/kg IV, assume the child has septic shock:

- give maintenance IV fluid (4 ml/kg/h) while waiting for blood;
- when blood is available, transfuse fresh whole blood at 10 ml/kg slowly over 3 hours (use packed cells if in cardiac failure); then
- initiate refeeding with starter F-75 (see page 184);
- start antibiotic treatment (see page 182).

If the child deteriorates during the IV rehydration (breathing increases by 5 breaths/min or pulse by 15 beats/min), stop the infusion because IV fluid can worsen the child's condition.

Every effort has been made to ensure that the information and the drug names and doses quoted in this Journal are correct. However readers are advised to check information and doses before making prescriptions. Unless otherwise stated the doses quoted are for adults.