



Reviewed by Queensland Health Medicines Regulation and Quality
Fluid and Electrolyte Guideline Working Party
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DO NOT USE IN PAEDIATRIC PATIENTS. Refer to local guidelines or if not available refer to <http://qheps.health.qld.gov.au/childrenshealth/resources/guidelines/gdl-01025.pdf> or **Guidelines for Prescribing Intravenous Fluids for Paediatrics**

To remain in
end-of-bed folder

Is the patient hypovolaemic and in need of fluid resuscitation?

Review:

- Clinical examination (BP, pulse, capillary refill, JVP)
- Clinical history for signs and symptoms of fluid deficit or overload (thirst, previous intake, abnormal losses)
- Clinical records (laboratory results e.g. urea and creatinine, fluid balance charts, urine output and daily weight)

YES

Give RESUSCITATION fluids and vasoactive agents as appropriate

- Refer to local guidelines OR if unavailable: *Intravenous Fluid Therapy in Adults in Hospital | Guidance and Guidelines | NICE* (<https://www.nice.org.uk/guidance/cg174>)

NO

Can patient meet needs orally or enterally?

YES

Ensure nutrition and fluid needs are met
Consider dietitian review

NO

Does the patient have complex fluid or electrolyte replacement requirements or abnormal distribution issues such as being post-operative, ongoing losses, sepsis, renal, liver or cardiac impairment?

NO

YES

REPLACEMENT and REDISTRIBUTION fluids are most appropriate

Patients typically require ISOTONIC fluids such as:

- Sodium chloride 0.9%
- Hartmanns
- Plasma-lyte

SEE OVER for details

Maintenance fluids are most appropriate

Normal daily fluid and electrolyte requirements for HEALTHY adults:

- 25–30mL/kg/day (based on ideal body weight) of water
- 1mmol/kg/day sodium, potassium, chloride
- 50–100g/day glucose

e.g. for an average 70kg adult this could be met with two 1L bags of 0.3% sodium chloride and 3.3% glucose with 40mmol of potassium at 83mL/hr (1L 12 hourly)

WHEN TO REVIEW

- Unstable patients need to be reviewed at least every 2–4 HOURS. All patients should be reassessed at least DAILY.
- Ensure you have requested a strict fluid balance chart during period of IV fluid therapy.
- Consider slowing rate of fluid infusion overnight in patients at risk of overload.
- Switch to an enteral route (oral, NG, PEG etc.) as soon as possible.

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REPLACEMENT and REDISTRIBUTION

1. Fluid Replacement

Fluid deficit

- **Intravascular hypovolaemia:** Replace with fluids such as 0.9% sodium chloride or compound sodium lactate (Hartmanns). In selected clinical situations appropriate colloids (4% albumin or succinylated gelatin) could be considered. Seek advice if unsure when colloids appropriate. If haemoglobin low, consider blood products.
- **Extracellular deficit:** Correct with replacement fluid, based on type of fluid lost (see diagram). If serum sodium is low, avoid 5% glucose or glucose saline combinations. Administer half required volume over 8 hours and second half over next 16 hours. If poor cardiac reserve reduce rate to half required volume over 12 hours and second half over next 24 hours. Reassess frequently.

Fluid overload

- Review all fluid administration including "To Keep Vein Open (TKVO)" orders and for drug administration. Minimise sodium and fluid volume given. Consider diuretic.

Electrolyte derangements

- See *Prescribing Guidelines for Electrolyte Disturbances in Adults*.

2. Ongoing Abnormal Fluid Losses

- Check ongoing volumes and composition of losses using diagram provided.
- Replace with appropriate fluid. Use *Table 1* to aid in fluid choice.

Table 1: Properties of Some Common Fluids

Type of fluid	Sodium mmol/L	Potassium mmol/L	Chloride mmol/L	Glucose g/L
Sodium chloride 0.9%*	154	0	154	0
Compound sodium lactate (Hartmanns)#	129	5	109	0
Plasma-lyte 148 in water#	140	5	98	0
0.3% sodium chloride and 3.3% glucose*	51	0	51	33
5% glucose	0	0	0	50

* Available as pre-mix with 20mmol or 40mmol/L of potassium.

Compatibility with some medications may be an issue. Check product information for further advice.

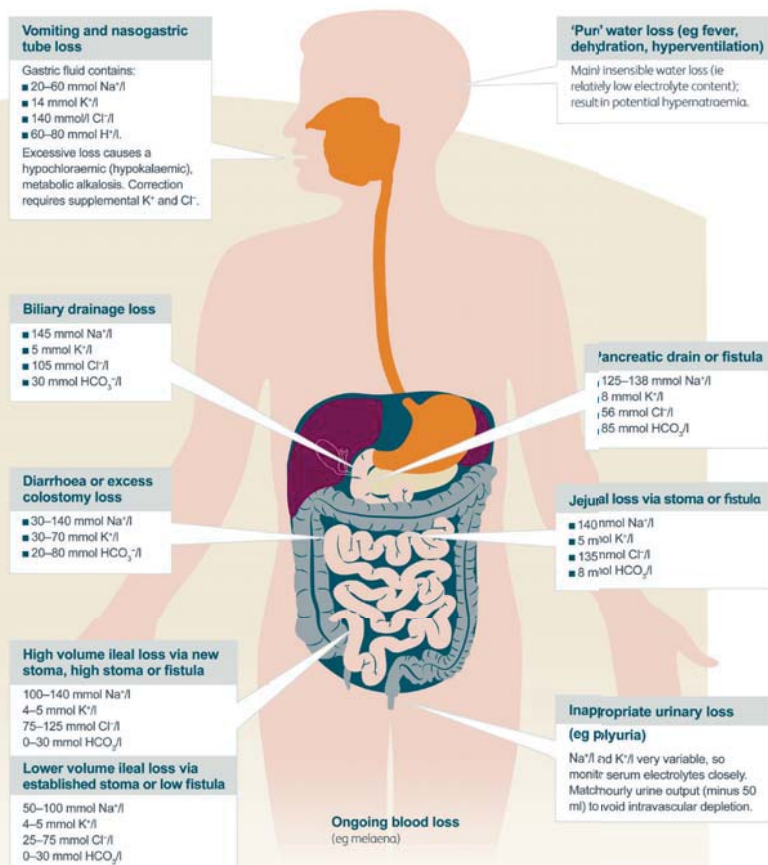


Diagram source: National Guideline Centre (2013) Intravenous fluid therapy in adults in hospital. Clinical guideline 174. Published by the National Clinical Guideline Centre at The Royal College of Physicians, 11 St Andrews Place, Regent's Park, London, NW1 4LE. Copyright © NGC. Reproduced by permission. A larger diagram is available at: <https://www.nice.org.uk/guidance/cg174/resources/diagram-of-ongoing-losses-191664109>

3. Redistribution and Other Complex Issues

- **Post-op fluid retention and redistribution:** Fluids with a higher sodium concentration at reduced volumes are indicated (e.g. 0.9% sodium chloride at 40–50mL/hr in a euvoalaemic patient). Consider adding potassium 20mmol/L from day 2 or 3.
- **Impaired cardiac function:** Patients are at increased risk of fluid overload. Reduce volume given and monitor frequently.
- **Impaired renal function:** Patients may be at increased risk of overload/hyperkalaemia. **If oliguric, do not use potassium.** For **hypovolaemia** correct as per fluid deficit above. For **euvoalaemia** limit volume to, urine vol + other losses + 500mL per day.
- **Septic patients:** Have variable increased fluid requirements. Vasopressor support in ICU may be required. **Seek advice.**
- **Obese:** Adjust estimated fluid requirements and electrolyte doses based on ideal body weight. If BMI is greater than 40kg/m² seek expert advice.
- **Smaller/Geriatric patients:** Proportionate reductions indicated. **Do not use these guidelines in paediatrics.**
- **Specific fluid requirements:** Patients on dialysis, with burns, liver disease, transplants, acute neurological conditions (meningitis, encephalitis and stroke), diabetic ketoacidosis or hyperosmolar hyperglycaemic state, have very specific fluid requirements. **Seek advice.**