PAEDIATRICS

DEHYDRATION

Dehydration is a lack of water content in the body.

The intravascular volume in a child is approximately 80ml/kg. Loss of 25 % of the circulating volume (20ml/kg) will result in clinically apparent shock, but remember most causes of dehydration result in losses from all fluid compartments and severe dehydration may exist without shock.

Causes of Dehydration

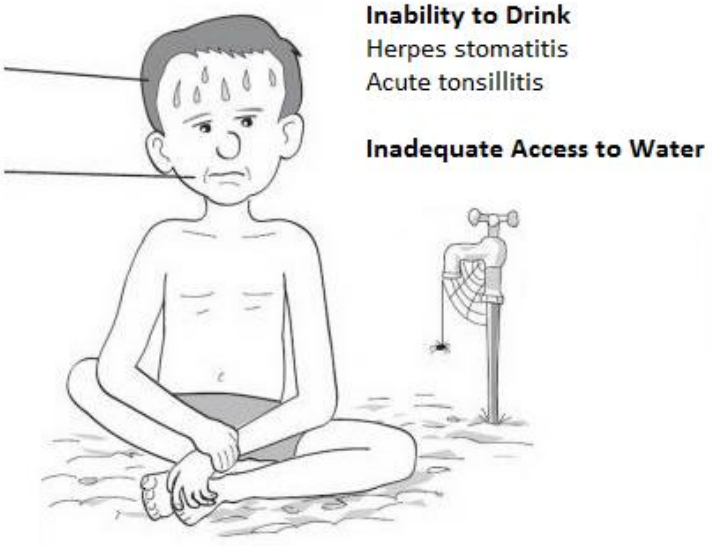
Excessive Fluid Loss

Excessive Sweating
Fever, hot climate, CF

Vomiting
Pyloric stenosis, viral infections, gastroenteritis

Diarrhoea
Viral gastroenteritis
Bacterial gastroenteritis
Antibiotic-induced
Other acute infections

Other
Burns, DKA

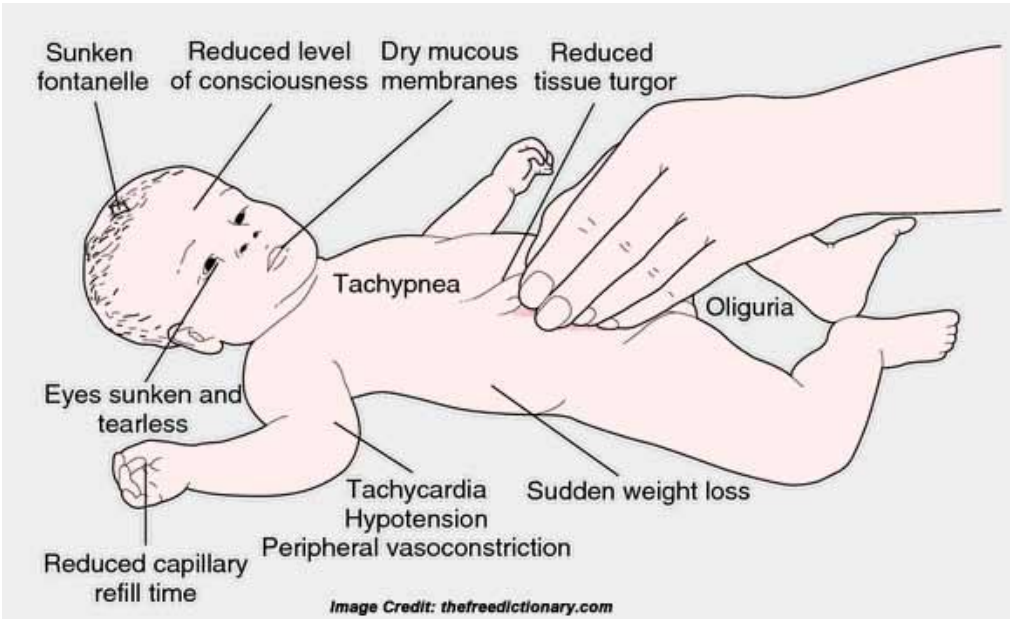


Inadequate Intake

Inability to Drink
Herpes stomatitis
Acute tonsillitis

Inadequate Access to Water

Clinical Features



Assessing Dehydration (percentages as body weight)

Clinical Feature	Mild <5%	Moderate 5-10%	Severe >10%
Approximate volume deficit	50ml/kg	100ml/kg	150ml/kg
Decreased urine output	Yes	Yes	Yes
Dry mouth	Maybe	Yes	Yes
Decreased skin turgor	No	Maybe	Yes
Sunken anterior fontanelle	No	Yes	Yes
Sunken eyes	No	Yes	Yes

Clinical signs of dehydration are individually unreliable and have poor reproducibility between observers. However taken together they provide a reasonable assessment.

Signs of Hypovolaemic Shock:

- Tachycardia, thready pulse
- Cool peripheries, prolonged CRT
- Hypotension
- Increased respiratory rate
- Altered mental status
- Oliguria/anuria

Treatment of Shock:

- Support airway and breathing.
- Give IV 20ml/kg Hartmann's or 0.9% saline.
- Repeat if inadequate clinical response.

Treatment

Mild dehydration is best managed at home with oral fluids. Trial oral fluid with a 5ml syringe water every 5 minutes. If the child tolerates this, is alert, passes urine and is physiologically normal then they are likely fit for discharge with worsening advice.

Those who do not tolerate this or are more dehydrated will need admission for fluid replacement. Calculate 24 hour requirements by combining **maintenance fluids, replacement fluids** and **ongoing losses**. Avoid K+ until passing urine or bloods are available.

Maintenance fluid requirements for 24 hours is as follows:

Body Weight	Fluid Requirement/Day
First 10kg	**100ml/kg**
Second 10kg	**50ml/kg**
Subsequent kg	**20ml/kg**

For example, a 29kg child requires:
1000ml for the first 10kg
500ml for the second 10kg
180ml for the remaining 9kg
1680 / 24 = 70ml/hour infusion

Replacement fluids: calculate by estimating percentage dehydration (see above).

Ongoing losses: estimate volume of diarrhoea/vomit.