



Clinical Signs of Dehydration



Degree of Dehydration <i>Infant/Young Child</i> <i>Older Child/Adolescent</i>	Mild 5% 3%	Moderate 10% 6%	Severe ≥15% ≥9%
Heart Rate	Normal	Rapid	Rapid
Blood Pressure	Normal	Normal	Decreased
Urine Output	Mildly Decreased	Markedly Decreased	Anuria
Mucous Membranes	Moist	Tacky	Dry
Fontanelles	Normal	Sunken	Markedly Sunken
Capillary Refill	Normal (<3s)	Normal to Increased (>3s)	Increased (>3s)



Management of Dehydration*

Mild and Moderate



Oral Rehydration

- **Fluid:** dilute juice or oral rehydration solutions.
- Continue **age-appropriate diet** as tolerated.
- Children ≥6mo can receive a 0.15mg/kg dose (max dose 8mg) of **Ondansetron for vomiting**.
- If ineffective, move to IV hydration.

Severe



Calculating IV Fluids

- **STEP 1:** Bolus = NS 10-20mL/kg or 5-10mL/kg if worried about myocardial or renal dysfunction.
- **STEP 2:** Calculate deficit= % dehydrated x weight in kg.
- **STEP 3:** Calculate maintenance fluids in mL/hr with 4-2-1 rule.
- **STEP 4:** Calculate Total Fluid Replacement Over 24h = deficit + maintenance – bolus.
- **STEP 5:** Divide volume over 24 hours.
- **STEP 6:** Measure ongoing losses (i.e. vomit, diarrhea, sweat etc.) and replace as needed.
- **STEP 7:** IV Fluid Selection – Typically D5NS +/- 20mEq/L KCl depending on kidney function and electrolytes.

4-2-1 Rule



Up to 10 kg	4mL/kg
10-20 kg	40mL + 2mL/kg above 10 kg
>20 kg	60mL + 1mL/kg above 20 kg

Example

A 18kg child is 9% dehydrated

- ✓ **Bolus** = 20mL/kg x 18kg = 360mL
- ✓ **Deficit** = 0.09 x 18 = 1.62L
- ✓ **Maintenance fluid** = 40mL + 2(8kg) = 56mL/h
- ✓ **24h Total Fluid Replacement Required** = 1620 + (56 x 24) - 360 = 2604mL
- ✓ **Divide over 24 hours** = 2604/24 hr = 108.5 mL/hr
- ✓ **Replace losses** as needed
- ✓ **IV Fluid** = D5NS +/- 20mEq/L KCl

* Refer to different references for fluid management in infants <28 days old

March, 2022