

# Gastroenteritis

**Gastroenteritis is a common disease, usually of viral origin, that inflames both the stomach and small intestine. It is characterized by diarrhea and vomiting, +/- fever.** Dehydration assessment is the cornerstone of management. The degree of dehydration is described as a percentage decrease in total body water/body weight. If a recent (i.e. < 48 hours) weight is available, that should serve as your gold-standard to calculate % weight loss. Practitioners with limited experience assessing dehydration in children should consider employing a clinical dehydration scale such as the [Gorelick Score<sup>1</sup>](#) or [Clinical Dehydration Scale Score<sup>2</sup>](#) to rule out dehydration (they have high sensitivity but low specificity).

## NO DEHYDRATION

- » First signs of dehydration might not be evident until **3% dehydration**. Usually no signs of dehydration are present and urine output, while dark, is only slightly reduced.

## SOME (MILD – MODERATE) DEHYDRATION

- » More numerous clinical signs are evident at **5% dehydration**. These may include less frequent urination, mild tachycardia and tachypnea, sunken eyes, dry oral mucosa and decreased activity.

## SEVERE DEHYDRATION

- » Signs not evident until fluid loss reaches **9% dehydration**. These include oliguria/anuria and more significant lethargy, sunken eyes, tachypnea, tachycardia and dry oral mucosa.

## Treatment depends on hydration status

### NO/MINIMAL DEHYDRATION – CAN BE MANAGED AT HOME

- » Encourage child to drink their preferred fluids & continue an age-appropriate diet as tolerated.
- » Allow child to consume their preferred fluids to replace ongoing losses (vomiting and/or diarrhea).

### SOME (MILD – MODERATE) DEHYDRATION – TREATED IN THE EMERGENCY DEPARTMENT

- » Rapidly replace fluid deficit by giving **50 – 100 mL of oral rehydration solution (ORS)/kg body weight by mouth within 2 - 4 hours of presentation to the ED.**
- » Aim to administer “1-2-3 ounces” method as follows:
  - 6 mths – 5 yrs: 30 sips per 10 mins
  - >5-10 yrs: 60 sips per 10 mins
  - >10 yrs: 90 sips per 10 mins
- » Offer alternative fluid options based on taste preference if child refuses ORS.
- » Administer additional fluids to replace ongoing losses (vomiting and/or diarrhea).
- » Administer small amounts of fluid frequently if the child is vomiting.
- » Intravenous hydration is rarely needed.

### SEVERE DEHYDRATION

- » Requires immediate intravenous (or intraosseous) rehydration with an isotonic solution (**0.9% normal saline**) administered as rapidly as possible to restore hemodynamic stability (**often requires  $\geq 60$  mL/kg over the first hour**).
- » Monitor glucose and electrolytes.

## Patients who fail oral rehydration and IV access unobtainable

- » Administer nasogastric rehydration with ORS **50 mL/kg divided over 3 hours**.

## Ondansetron

- » **Single oral** dose administration is extremely safe and cost-effective.
- » Weight-based dosing regimen:
  - 8 - 15 kg: 2 mg PO once
  - >15 - 30 kg: 4 mg PO once
  - >30 kg: 8 mg PO once
- » Enhances the success of oral rehydration in children with "some" dehydration.
- » No evidence to support use of multiple doses or in children without evidence of dehydration (e.g. following discharge).
- » Clinical trial evidence does **not** support the use of dimenhydrinate.

## Additional considerations

- » **Glucose:** If lethargy present, especially in children < 2 years of age, perform point-of-care glucose assessment. If glucose  $\leq 2.6$  mmol/L, treat with 5 mL/kg D10W IV push and recheck glucose in 5-10 minutes.
- » **Maintenance Fluids:** Once child is hemodynamically stable, oral fluids should be reintroduced and IV discontinued. If unable to adequately perform oral rehydration therapy, isotonic maintenance fluids including adequate amounts of glucose and potassium (based on baseline electrolytes) are required. For children with significant hypo/hyponatremia, consultation with Pediatric Referral Centre is recommended.
- » Parent resources related to gastroenteritis can be accessed at <https://trekk.ca/patientsandfamilies>.

## Criteria for hospital admission

- » Caregivers cannot provide adequate care at home.
- » "Some" dehydration and intractable vomiting, ORS refusal, or inadequate ORS intake.
- » Concern exists for other possible illnesses complicating the clinical course.
- » Worsening diarrhea or dehydration despite adequate volumes of fluids.
- » Severe dehydration.
- » Social or logistical concerns exist that might prevent return to emergency department if needed.
- » Young age, unusual irritability or drowsiness, progressive symptoms.

**The purpose of this document is to provide health care professionals with key facts and recommendations for the diagnosis and treatment of gastroenteritis in children.** This summary was produced by the Pediatric Emergency Research Canada (PERC) Gastroenteritis Study Group, led by Dr. Stephen Freedman\* of the Alberta Children's Hospital Research Institute, at the request of the TREKK Network; it uses the best available knowledge at the time of publication. However, health care professionals should continue to use their own judgment and take into consideration context, resources and other relevant factors. The TREKK & PERC Networks are not liable for any damages, claims, liabilities, costs or obligations arising from the use of this document including loss or damages arising from any claims made by a third party. The TREKK & PERC Networks also assume no responsibility or liability for changes made to this document without its consent. This summary is based on:

1. Gorelick MH, Shaw KN, Murphy KO. [Validity and reliability of clinical signs in the diagnosis of dehydration in children](#). *Pediatr.* 1997;99:e6.
2. Freedman SB, Vandermeer B, Milne A, Hartling L; Pediatric Emergency Research Canada Gastroenteritis Study Group. [Diagnosing clinically significant dehydration in children with acute gastroenteritis using noninvasive methods: A meta-analysis](#). *Pediatr.* 2015 Apr;166(4):908-16. Epub 2015 Jan 29.
3. Freedman SB, Ali S, Oleszczuk M, Gouin S, Hartling L. [Treatment of acute gastroenteritis in children: An overview of systematic reviews of interventions commonly used in developed countries](#). *Evidence-based Child Health: A Cochrane Review Journal.* 8 (4): 1123-1137 (2013).
4. King CK, Glass, R, Bresee JS, Duggan C, Centers for Disease Control and Prevention. [Managing acute gastroenteritis among children: Oral rehydration, maintenance and nutritional therapy](#). *MMWR Recomm Rep.* 52 (RR-16): 1-16 (2003).

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