



BOTTOM LINE RECOMMENDATIONS:

Gastroenteritis

Gastroenteritis is a common disease, usually of viral origin that inflames both the stomach and small intestine. It is characterized by fever, diarrhea and vomiting.

Dehydration assessment is the cornerstone of management and is measured through estimating the degree of dehydration:

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%**. These include lethargy, significantly reduced urine output, sunken eyes, tachypnea, tachycardia and dry oral mucosa. The above are more significant than is seen in children with “some” dehydration.

Practitioners with limited experience assessing dehydration in children should consider employing a clinical dehydration scale such as the Gorelick Score¹ or Clinical Dehydration Scale Score².

TREATMENT DEPENDS ON HYDRATION STATUS:

NO DEHYDRATION – CAN BE MANAGED AT HOME

- » Provide adequate fluids & continue age-appropriate diet
- » Children should be permitted to consume their preferred fluids to replace ongoing losses

SOME DEHYDRATION

- » Fluid deficit should rapidly be replaced
- » **50 – 100 mL of oral rehydration solutions (ORS)/kg body weight within 2 - 4 hours of presentation**. If child refuses ORS, alternative options, based on taste preferences may be offered.
- » Additional fluids should be administered to replace ongoing losses
- » Small amounts frequently if the child is vomiting
- » Aim to administer **child’s weight (in kg) every 5 minutes (e.g. 20 ml/5 min for 20 kg child)**
- » Intravenous hydration is rarely needed

SEVERE DEHYDRATION

- » Requires immediate intravenous (or intraosseous) rehydration with isotonic (**0.9% normal saline or lactated ringers**) solutions administered as rapidly as possible to restore hemodynamic stability (**often requires 60 or more ml/kg over the initial hour**).

ONDANSETRON

- » Selective serotonin receptor antagonist
- » **Single oral** dose administration is extremely safe and cost-effective
- » Suggested dosing regimen:
 - » child weight 8 - 15 kg: 2 mg
 - » child weight 15 - 30 kg: 4 mg
 - » child weight >30 kg: 8 mg
- » Enhances the success of oral rehydration in children with "some" dehydration
- » No evidence to support use of multiple doses (e.g. following discharge)
- » Clinical trial evidence does not support the use of dimenhydrinate

IF DEHYDRATION IS DEEMED SUFFICIENT TO REQUIRE REHYDRATION AND FAIL ORAL REHYDRATION AND IV ACCESS UNOBTAINABLE OR DEEMED TOO DIFFICULT

- » Administer nasogastric rehydration with oral rehydration solution **50 ml/kg over 3 hours**

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.

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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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