

# Gastroenteritis

Gastroenteritis is a common disease, usually of viral origin, that inflames both the stomach and small intestine. It is characterized by diarrhea, vomiting, +/- fever. The majority of children seeking emergency department care have none-to-minimal dehydration and the focus should be on promoting oral rehydration therapy and minimizing the use of intravenous rehydration.

## Diagnostic Considerations

- » Although pathogen identification is not routinely required, up to 80% of children can have a bacteria or virus identified when comprehensive testing is done.
- » Nearly 40% of cases present with isolated vomiting<sup>1</sup> with norovirus being the most common etiology. Carefully consider other causes of vomiting (e.g., surgical, infectious, CNS disorders) in these children.
- » Send stool for bacterial testing (molecular or culture) in children with bloody diarrhea, diarrhea lasting >5 days, and in returning travelers. Children with isolated diarrhea (i.e., absence of vomiting) are more likely to have a bacterial etiology. Send stool for parasite testing in returning travelers.

## Assessing Dehydration

- » 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, use it as the gold standard to calculate % weight loss.
- » Practitioners with limited experience assessing dehydration in children should consider using a clinical scale such as the Gorelick Score<sup>2</sup> or Clinical Dehydration Scale Score<sup>3</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 yellow, 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 and allow children to drink their preferred fluids & continue an age-appropriate diet as tolerated.
- » If vomiting is present, taking small amounts of fluid frequently can usually lead to successful oral intake.
- » If vomiting is absent, children should also be encouraged to eat a relatively normal diet.

### 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 months – 5 years:	30 mL per 10 minutes
>5-10 years:	60 mL per 10 minutes
>10 years:	90 mL per 10 minutes
- » Offer alternative fluid options (e.g., electrolyte sports drinks, diluted apple juice) based on taste preference if child refuses ORS.

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- » 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 and does not improve outcomes.

## SEVERE DEHYDRATION

- » Requires immediate intravenous (or intraosseous) rehydration with an isotonic solution (0.9% NaCl) or balanced crystalloid solution (e.g., Ringer's Lactate or PlasmaLyte) administered as rapidly as possible to restore hemodynamic stability.
  - **Often requires  $\geq 60$  mL/kg, administered as 20 mL/kg boluses, over the first hour**
- » Measure glucose, electrolytes, and renal function. Treat hypoglycemia if present.
- » Reassess vital signs and hydration status before each bolus.

## 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, cost-effective, and enhances the success of oral rehydration in children with "some" dehydration.
- » Weight-based ondansetron dosing regimen:
 

8 - 15 kg:	2 mg PO once
>15 - 30 kg:	4 mg PO once
>30 kg:	8 mg PO once
- » Current recommendations include providing only a single dose as multiple doses is associated with increased diarrhea frequency and potentially increased ED revisits without evidence of benefit; research is ongoing.
- » **Do not** use IV ondansetron due to the risk of QTc prolongation and lack of benefit over the oral route.
- » **Do not** use dimenhydrinate due to lack of support in clinical trial evidence.

## 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, start maintenance IV fluids with isotonic/balanced crystalloid including adequate dextrose and potassium as required (e.g., D5NS + 20-40 mmol/L KCl).
  - Consult Pediatrics/Pediatric Referral Centre for children with significant hypo/hypernatremia.
- » Parent resources related to gastroenteritis can be accessed at <https://trekk.ca/patientsandfamilies>.

## Criteria for Hospital Admission

- » Caregivers cannot provide adequate care at home.
- » Mild – moderate 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 fluid.
- » Severe dehydration.
- » Social or logistical concerns exist that might prevent return to emergency department if needed.
- » Young age, persistent irritability or drowsiness, progressive symptoms.

**For a full list of references and development team members, please see the following page.**

The purpose of this document is to provide healthcare professionals with key facts and recommendations for the diagnosis and treatment of gastroenteritis in children in the emergency department. This summary uses the best available knowledge at the time of publication. However, healthcare professionals should continue to use their own judgment and take into consideration context, resources and other relevant factors. The TREKK Network is 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 Network also assumes no responsibility or liability for changes made to this document without its consent.

### Bottom Line Recommendations

Bottom Line Recommendations are short summaries for healthcare providers of the latest knowledge related to the diagnosis and management of pediatric emergency conditions. This resource is not intended to be used as a step-by-step guide. It is ideal for educational purposes and to summarize existing evidence on gastroenteritis in pediatric emergency care. Development of this resource involved a rigorous and iterative process, bringing together experts from a variety of specialties (nursing, simulation, emergency medicine, intensive care, and pharmacy). For a complete list of the evidence that informed the creation of this resource visit our website [here](#). To learn more about the development, see the References & Development Team sections below.

### References

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### Development Team

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To see our resource development process please visit our website [here](#).

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