



**NATIONWIDE
CHILDREN'S**

When your child needs a hospital, everything matters.

Acute Gastroenteritis/ Dehydration Inpatient

**Center for
Clinical Excellence**

Diagnostic Timeout

Definition & Diagnosis

Differential Diagnoses & Red Flags

- Order set: AGE Dehydration Clinical Pathway Admission
- [Reassess for dehydration](#)

Recommended Treatments

Treatments NOT Recommended

Severe/Extreme Dehydration? >10% or >7 findings

Yes

- Consider ACT
- Go to "IV Fluid Therapy-Bolus" Clinical Pathway

No

Testing

- POC blood glucose - if moderate/severe dehydration or signs of deterioration
- BMP - at the time of IV placement, if moderate/severe dehydration or q48h while on IVFs
- GI film array and stool studies - **not** recommended in previously healthy children with uncomplicated gastroenteritis

No

Minimal to No Dehydration (<5%) or <3 Findings

- Pedialyte via NG or LR (or NS) IV at maintenance rate
- See "IV Fluid Therapy" Clinical Pathway

Moderate Dehydration (5-9%) or 3-6 Findings

- NG Pedialyte bolus or IV LR (or NS) bolus.
- Reassess hydration status and repeat as indicated
- See "IV Fluid Therapy" Clinical Pathway

Assess readiness for Oral Challenge at
minimum every 4 hours

Continue maintenance
IV/NG fluids
Consider Ondansetron

Ready for oral challenge?

No

Yes

Oral Challenge

- Change IVF to KVO at 5mL/hr
- Start oral challenge. Use [SIP Sheet](#)

Tolerates PO?

No

Yes

Discharge Home when meeting criteria:

- Sufficient rehydration based on weight gain and clinical signs
- Tolerating ORT or regular diet
- AGE and ORT education has been completed
- Follow-up established; ORT Helping Hands and SIP sheet provided

Continued emesis ≥ 48 hours?

No

Yes

- Repeat Oral Challenge after 20 min.
- Restart ORT Phase 1 ([SIP Sheet](#))
- Consider Ondanestron.

Signs of Deterioration

- Vital sign instability
- AMS/somnolence/lethargy
- Severe abdominal pain
- Bilious emesis
- Bloody diarrhea
- Hypoglycemia
- Fluid overload

Off Pathway

- Individualized management
- Consider other diagnoses

Diagnostic Timeout

Definition & Diagnosis

- Acute gastroenteritis is a **diarrheal disease** of rapid onset, with or without accompanying symptoms and signs, such as nausea, vomiting, fever, or abdominal pain.
- Acute gastroenteritis is a clinical diagnosis based on history and exam.

Differential Diagnoses

- Inflammatory bowel disease
- Increased intracranial pressure (especially with vomiting only)
- Bowel obstruction
- Intussusception
- Extra-intestinal infection
- Appendicitis
- Food-borne illness
- Urinary tract infection
- Ingestion
- Allergic reaction

Red Flags

- Recurrent oral ulcers
- Bloody diarrhea
 - Red currant jelly stools
- Frequent urination
- Urine discoloration
- Constipation
- Abdominal distention
- Sudden pain in lower right side of abdomen
- Blurred vision
- Headache (and/or confusion)
- Petechial rash

[Return to Algorithm](#)

Dehydration Assessment

Percent Fluid Deficit: The gold standard for determining severity of dehydration should be determined by calculating percent fluid deficit (*Evidence Quality: Moderate; Recommendation Strength: Strong*):

$$\frac{\text{Pre - illness weight} - \text{Current weight}}{\text{Pre - illness weight}} \times 100$$

Clinical Findings: If an accurate pre-illness weight is unavailable, the level of dehydration needs to be based on clinical findings. *Evidence Quality: Moderate; Recommendation Strength: Strong*

1. Poor overall appearance
2. Capillary refill >2 seconds
3. Abnormal respirations
4. Decreased skin elasticity
5. Absent tears
6. Dry mucous membranes
7. Sunken eyes
8. Abnormal radial pulse
9. Tachycardia
10. Decreased urine output

Severity	Fluid Deficit	Estimated # of Clinical Findings
No Dehydration	0%	0
Mild Dehydration	<5%	<3
Moderate Dehydration	5-9%	3-6
Severe Dehydration	≥10%	≥7

[Return to Algorithm](#)

Testing

- **Point of care blood glucose level** is recommended during initial assessment and if patient with moderate dehydration. *Evidence Quality: Moderate; Recommendation strength: Weak*
- **Basic metabolic panel** is recommended at the time of IV placement, if moderate dehydration by clinical assessment. *Evidence Quality: Moderate; Recommendation strength: Weak*
- **EKG or laboratory testing** is not recommended prior to administration of a single dose of ondansetron in a previously healthy patient with mild to moderate dehydration due to gastroenteritis. *Evidence Quality: Moderate; Recommendation Strength: Strong*
- **GI film array and stool studies** are not recommended in previously healthy children with uncomplicated gastroenteritis. *Based on Consensus decision. Agree with ESPGHAN/ESID Guidelines.*

[Return to Algorithm](#)

Oral Challenge

Oral Challenge Readiness

No strict criteria has to be met

Potential indicators for readiness for oral challenge:

- Interested in PO
- Awake
- ≤ 1 episode of vomiting in last 4 hours
- Intake > Output

ED/UC

Patients should be evaluated after ondansetron administration and/or after fluid bolus administration.

Inpatient

Patients should be evaluated at a minimum of every 4 hours.

How to Use Satisfactory Intake Plan (SIP) sheet

1. Identify what volumes are indicated for Phase 1 and 2 based off of age of patient.
2. Write in the volumes in the blank spaces for phase 1 and 2.
3. Provide tool, syringe/cup, and desired fluid to families.
4. Instruct families on how to use the tracking tool.

[Return to Algorithm](#)

Satisfactory Intake Plan (SIP) Sheet

Your child is getting a plan for taking fluids by mouth. A satisfactory intake plan (SIP) is designed to help your child take enough fluids to treat and prevent dehydration. Your child will drink fluids that contain small amounts of sugar and salts.

How to Use the SIP Sheet

- Using the chart below, your provider will tell you how much fluid is needed for Phase 1 and 2 of SIP. This is decided based on the age of your child.
- Your provider will write in the mL volume your child needs to drink in the blank spaces for phase 1 and 2.
- Your provider will direct you to use a syringe or cup and provide the fluid for you to use.
- They will explain how to use the tracking tool. Ask if you have any questions.

Age	Phase 1	Phase 2
6 – 12 months	5 mL	10 mL
12 months – 3 years	10 mL	20 mL
>3 years	15 mL	30 mL

Recommended Fluids: Half-strength apple juice, Gatorade™/Powerade®, formula, electrolyte solution (example: Pedialyte®), water, breast milk.
Note that a 4 fl. oz. Popsicle® = 120mL.



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[Return to Algorithm](#)



- Phase 1:**
- Fill a syringe/cup to the ____ mL mark with fluid.
 - Give your child ____ mL of fluid every 5 minutes.
 - Draw an 'X' in the box each time your child drinks without throwing up.
 - Repeat 3 more times.
 - If your child successfully completes phase 1, move onto phase 2.

Phase 1	5 minutes	5 minutes	5 minutes	5 minutes
Record the Time				
____mL every 5 minutes				

- Phase 2:**
- Fill a syringe/cup to the ____ mL mark with fluid.
 - Give your child ____mL of fluid every 5 minutes.
 - Draw an 'X' in the box each time your child drinks without throwing up.
 - Repeat 3 more times.

Phase 2	5 minutes	5 minutes	5 minutes	5 minutes
Record the Time				
____mL every 5 minutes				



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[Return to Algorithm](#)

Recommended Treatments

Triage dose of Ondansetron

Ondansetron can be considered to be given in triage to a patient with active vomiting who meets the inclusion criteria* and based on discussion with nurse and provider.

Evidence Quality: Weak; Recommendation Strength: Weak

Ondansetron

Oral or IV Ondansetron, on a weight-based regimen of 0.1-0.15 mg/kg/dose (up to a max of 8mg) is recommended for management of vomiting associated with gastroenteritis in previously healthy patients with no underlying medical problem. Ondansetron can be given in patients ≥ 6 months or ≥ 8 kg.

Evidence Quality: Moderate; Recommendation Strength: Strong

Oral Rehydration Therapy

Oral rehydration therapy (ORT) should be attempted for all patients with mild to moderate dehydration due to acute gastroenteritis. The Satisfactory Intake Plan (SIP) sheet (appendix A*) should be used to guide oral rehydration challenge. Instructions for nursing staff to assess for readiness for PO and how to initiate oral rehydration challenge found in appendix B*. Hypo-osmolar ORT solution achieves a quicker resolution of dehydration than iso-osmolar solution. Palatability needs to be taken into consideration when fluid is given PO.

Evidence Quality: Moderate; Recommendation Strength: Strong

Intravenous fluid

Intravenous (IV) fluid is recommended for patients with acute gastroenteritis who do not tolerate oral rehydration challenge.

- In the ED: A bolus of 20 ml/kg (max 1000 mL) of isotonic fluid should be administered for patients who do not tolerate rehydration challenge. An additional bolus may be given if no clinical improvement with first bolus.
- In the Hospital: After initial clinical assessment on admission, an additional isotonic fluid bolus may be administered if indicated. If bolus is not indicated, give IV dextrose containing isotonic fluids at maintenance rate. Once patient is ready for oral challenge reduce fluids to KVO (keep vein open) @ 5mL/hour.

Evidence Quality: Weak; Recommendation Strength: Moderate

Choice of Nasogastric (NG) Route for Rehydration

NG rehydration is a safe and effective way to provide hydration to patients who do not tolerate oral challenge. Evidence shows that NG placement is less labor intensive and associated with less complications compared to IV fluids. Parents and patients should be involved in the decision making of how to rehydrate their child. If decision is made to move forward with NG placement, placement should be confirmed per hospital policy.

- In the ED: A bolus of 20 ml/kg (max 600 mL) of Pedialyte may be administered over 60 minutes for patients who do not tolerate oral rehydration challenge. An additional bolus may be given if no clinical improvement with first bolus.
- In the Hospital: After initial clinical assessment on admission, an additional Pedialyte fluid bolus may be administered if indicated. If bolus is not indicated, give Pedialyte at maintenance rate.

Evidence Quality: Strong; Recommendation Strength: Strong

[**Return to Algorithm**](#)

Treatments Not Recommended

- **Use of anti-motility agents** is not recommended for routine management of acute diarrhea. They do not appreciably decrease stool volume in young children and may cause paralytic ileus and prolong infection by delaying elimination of the causative organisms. *Agree with ESPGHAN/ESID Guidelines.*
- **Lactobacillus** is not routinely recommended in acute gastroenteritis as current evidence is inconclusive. Two large randomized control trials failed to demonstrate benefit or harm compared to placebo. *Evidence Quality: Moderate; Recommendation: Weak*
- **Antibiotics** are not recommended for children with acute gastroenteritis. The cases for which antimicrobials should be considered include serious bacterial infection or evidence of infection with *Giardia lamblia* or *Cryptosporidium*. *Agree with ESPGHAN/ESID Guidelines.*
- **Change in diet** such as restrictive or progressive diets (example: BRAT diet), a clear liquid diet, or a lactose-free formula (unless previously-known lactose intolerance) is not recommended. *Agree with ESPGHAN/ESID Guidelines.*

[Return to Algorithm](#)

References

1. Guarino A, Ashkenazi S, Gendrel D, et al. European Society for Pediatric Gastroenterology, Hepatology, and Nutrition/European Society for Pediatric Infectious Diseases evidence-based guidelines for the management of acute gastroenteritis in children in Europe: update 2014. J Pediatr Gastroenterol Nutr. 2014;59(1):132-152. doi:10.1097/MPG.0000000000000375

[**Return to Algorithm**](#)

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Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associated with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.

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[Return to Algorithm](#)