



## INFORMATION FOR HEALTHCARE PROVIDERS

### Guidelines for the Management of Acute Diarrhea

Increased incidence of acute diarrhea may occur in post-disaster situations where access to electricity, clean water, and sanitary facilities are limited. In addition, usual hygiene practices may be disrupted and healthcare seeking behaviors may be altered.

The primary goal of treating any form of diarrhea—viral, bacterial, parasitic, or non-infectious—is preventing dehydration or appropriately rehydrating persons presenting with dehydration. The following are general guidelines for healthcare providers for the evaluation and treatment of patients presenting with acute diarrhea in these situations. However, specific patient treatment should be determined on the basis of the healthcare provider's clinical judgment. Any questions should be directed to the local health department.

#### Infants and Toddlers

***Refer infants and toddlers with acute diarrhea for medical evaluation if any of the following are present:***

- Young age (e.g., aged <6 months) or weight <18 lbs
- Premature birth, history of chronic medical conditions or concurrent illness
- Fever  $\geq 38$  °C (100.4 °F) for infants aged <3 months or  $\geq 39$  °C (102.2 °F) for children aged 3–36 months
- Visible blood in stool
- High output diarrhea, including frequent and substantial volumes of stool
- Persistent vomiting
- Caregiver's report of signs consistent with dehydration (e.g., sunken eyes or decreased tears, dry mucous membranes, or decreased urine output)
- Change in mental status (e.g., irritability, apathy, or lethargy)
- Suboptimal response to oral rehydration therapy already administered or inability of the caregiver to administer oral rehydration therapy

#### ***Principles of appropriate treatment for INFANTS AND TODDLERS with diarrhea and dehydration***

- Oral rehydration solutions (ORS) such as Pedialyte® (Abbott Laboratories)\* or Gastrolyte® (Aventis Pharmaceuticals)\* or similar commercially available solutions containing appropriate amounts of sodium, potassium and glucose should be used for rehydration whenever patient can drink the required volumes; otherwise appropriate intravenous fluids may be used.
- Oral rehydration should be taken by patient in small, frequent volumes (spoonfuls or small sips for toddlers; small volumes in bottles for infants, paced to mimic sipping); see attached table for recommended volumes and time period.
- For rapid realimentation, an age-appropriate, unrestricted diet is recommended as soon as dehydration is corrected
- For breastfed infants, nursing should be continued
- Additional ORS or other rehydration solutions should be administered for ongoing diarrheal losses

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- No routine laboratory tests or medications are recommended
  - However, if a patient is living in conditions that are crowded or otherwise conducive to outbreaks of gastrointestinal disease, providers should consider testing for bacterial, viral or parasitic pathogens ([www.cdc.gov/foodborneoutbreaks/guide\\_sc.htm](http://www.cdc.gov/foodborneoutbreaks/guide_sc.htm)). If an outbreak is suspected, testing a subset of patients may be sufficient to confirm of the outbreak (e.g., 10 stool specimens for norovirus)
- The decision to treat with antimicrobial therapy should be made on a patient-by-patient basis (<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5304a1.htm>). Even when a bacterial cause is suspected in an outpatient setting, antimicrobial therapy is not usually indicated among children because most cases of acute diarrhea are self-limited and their duration is not shortened by the use of antimicrobial agents. Exceptions to these rules may involve:
  - Special needs of individual children (e.g., premature infants, children who are immune-compromised or have underlying disorders)
  - Suspicion of sepsis
  - In the context of an outbreak of shigellosis, cryptosporidiosis, or giardiasis. Although hand hygiene is the mainstay of prevention, antibiotic treatment can eliminate carriage and help to control an outbreak if rigorous hand hygiene measures are also observed.
- Care-takers should be counseled in appropriate hand hygiene practices ([www.bt.cdc.gov/disasters/hurricanes/handwashing.asp](http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp))
- Anti-emetic medications and antimotility agents should generally be avoided

### Older Children and Adults

***Refer children > 3 years old and adults with acute diarrhea for medical evaluation if any of the following are present:***

- Elderly age
- History of chronic medical conditions or concurrent illness
- Fever  $\geq 39$  °C (102.2 °F)
- Visible blood in stool
- High output of diarrhea, including frequent and substantial volumes of stool
- Persistent vomiting
- Signs consistent with dehydration (e.g., sunken eyes or decreased tears, dry mucous membranes, orthostatic hypotension or decreased urine output)
- Change in mental status (e.g., irritability, apathy, or lethargy)
- Suboptimal response to oral rehydration therapy already administered or inability to administer oral rehydration therapy

### ***Principles of appropriate treatment for CHILDREN >3 YEARS OLD AND ADULTS with diarrhea and dehydration***

- While sports drinks are fine for maintaining hydration in well persons, they are inappropriate for treatment of persons with diarrhea. In settings of diarrheal illness, oral rehydration solutions (ORS) such as Pedialyte® (Abbott Laboratories)\*, Gastrolyte® (Aventis Pharmaceuticals)\* or similar commercially available solutions containing appropriate amounts of sodium, potassium and glucose should be used for rehydration whenever patient can drink the required volumes; otherwise appropriate intravenous fluids may be used.
- Oral rehydration should be taken by patient in small, frequent volumes (spoonfuls or small sips); see attached table for recommended volume and time period.
- For rapid realimentation, unrestricted diet is recommended as soon as dehydration is corrected

## Guidelines for the Management of Acute Diarrhea

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- Additional ORS or other rehydration solutions should be administered for ongoing diarrheal losses
- No routine laboratory tests or medications are recommended
  - However, if a patient is living in conditions that are crowded or otherwise conducive to outbreaks of gastrointestinal disease, providers should consider testing for bacterial viral or parasitic pathogens ([www.cdc.gov/foodborneoutbreaks/guide\\_sc.htm](http://www.cdc.gov/foodborneoutbreaks/guide_sc.htm)). If an outbreak is suspected, testing a subset of patients may be sufficient to confirm the outbreak (e.g., 10 stool specimens for norovirus)
- Antimotility agents such as Lomotil® (Pfizer) or Immodium® (McNeil Consumer) should be considered only in adult patients who are NOT febrile or having bloody/mucoid diarrhea. Antimotility agents may reduce diarrheal output and cramps, but do not accelerate cure. Antimotility agents are generally contraindicated for children
- The decision to treat with antimicrobial therapy should be made on a patient-by-patient basis, and may differ by age group (<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5304a1.htm>):
  - Children: may consider treatment based on:
    - Special needs of individual children (e.g., immune-compromised hosts or children with underlying disorders)
    - Clinical suspicion of sepsis
    - In the context of an outbreak of shigellosis, cryptosporidiosis, or giardiasis. Although hand hygiene is the mainstay of prevention, antimicrobial treatment can eliminate carriage and help to control an outbreak if rigorous hand hygiene measures are also observed. Nitazoxanide can be used to treat cryptosporidiosis or giardiasis in immunocompetent persons (<http://www.cdc.gov/crypto/treatment.html>).
  - Adults: may consider treatment based on:
    - Fever
    - Bloody or mucoid stool
    - Suspicion of sepsis
    - In the context of an outbreak of shigellosis, cryptosporidiosis, or giardiasis. Although hand hygiene is the mainstay of prevention, antimicrobial treatment can eliminate carriage and help to control an outbreak if rigorous hand hygiene measures are also observed. Nitazoxanide can be used to treat cryptosporidiosis or giardiasis in immunocompetent persons (<http://www.cdc.gov/crypto/treatment.html>).
- Care-takers should be counseled in appropriate hand hygiene practices ([www.bt.cdc.gov/disasters/hurricanes/handwashing.asp](http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp))

Symptoms	Degree of dehydration		
	Minimal or none (<3% loss of body weight)	Mild to moderate (3–9% loss of body weight)	Severe (>9% loss of body weight)
Mental status	Well; alert	Normal, fatigued or restless, irritable	Apathetic, lethargic, unconscious
Thirst	Drinks normally; might refuse liquids	Thirsty; eager to drink	Drinks poorly; unable to drink
Heart rate	Normal	Normal to increased	Tachycardic; bradycardic in severe cases
Quality of pulses	Normal	Normal to decreased	Weak, thready, or impalpable
Breathing	Normal	Normal; fast	deep
Eyes	Normal	Slightly sunken	Deeply sunken
Tears	Present	Decreased	Absent
Mouth and tongue	Moist	Dry	Parched
Skin fold	Instant recoil	Recoil in <2 seconds	Recoil in >2 seconds
Capillary refill	Normal	Prolonged	Prolonged; minimal
Extremities	Warm	Cool	Cold; mottled; cyanotic
Urine output	Normal to decreased	Decreased	Minimal

**Guidelines for the Management of Acute Diarrhea**  
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Sources: Adapted from Duggan C, Santosham M, Glass RI. The management of acute diarrhea in children: oral rehydration, maintenance, and nutritional therapy. MMWR 1992; 41:1-20; and World Health Organization. The treatment of diarrhea: a manual for physicians and other senior health workers. Geneva, Switzerland: World Health Organization, 1995. Available at [www.who.int/child-adolescent-health/New\\_Publications/CHILD\\_HEALTH/WHO.CDR.95.3.htm](http://www.who.int/child-adolescent-health/New_Publications/CHILD_HEALTH/WHO.CDR.95.3.htm).

**Treatment based on degree of dehydration**

Degree of dehydration	Rehydration therapy	Replacement of ongoing losses	Nutrition
<b>Minimal or none</b>	Not applicable	<10 kg body wt.: 60-120 mL oral rehydration solution (ORS) for each diarrheal stool or vomiting episode >10 kg body weight: 120-240 mL ORS for each diarrheal stool or vomiting episode	Continue breastfeeding or resume age-appropriate normal diet after initial rehydration, including adequate caloric intake for maintenance
<b>Mild to moderate</b>	ORS, 50-100 mL/kg body weight over 3-4 hours	Same	Same
<b>Severe</b>	Lactated Ringers solution or normal saline* intravenously in boluses of 20 mL/kg body weight until perfusion and mental status improve, then administer 100 mL/kg body weight ORS over 4 hours or 5% dextrose ½ normal saline intravenously at twice maintenance fluid rates	Same: if unable to drink, administer through nasogastric tube or administer 5% dextrose ¼ normal saline with 20 mEq/L potassium chloride intravenously	Same

\* In severe dehydrating diarrhea, normal saline is less effective for treatment because it contains no bicarbonate or potassium. Use normal saline only if Ringers lactate solution is not available, and supplement with ORS as soon as the patient can drink. Plain glucose in water is ineffective and should not be used.

**Source:** Managing acute gastroenteritis among children. MMWR 2003; 52: 1 – 16. Available at: [www.cdc.gov/mmwr/preview/mmwrhtml/rr5216a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5216a1.htm).

**NOTE:** Restrictive diets should be avoided during acute diarrheal episodes. Breastfed infants should continue to nurse ad libitum even during acute rehydration. Infants too weak to eat can be given breastmilk or formula through a nasogastric tube. Lactose-containing formulas are usually well-tolerated. If lactose malabsorption appears clinically substantial, lactose-free formulas can be used. Complex carbohydrates, fresh fruits, lean meats, yogurt, and vegetables are all recommended. Carbonated drinks or commercial juices with a high concentration of simple carbohydrates should be avoided.

*\*The use of trade names or commercial sources does not imply endorsement by the Centers for Disease Control and Prevention or the Department of Health and Human Services.*

For more information, visit <http://emergency.cdc.gov/disasters>, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).