Vomiting With Diarrhea

Pediatric After-Hours Version - Standard - 2014

DEFINITION

- Vomiting and diarrhea together is covered by this guideline (EXCEPTION: if vomiting is resolved, use the Diarrhea guideline)
- Vomiting is the forceful emptying (throwing up) of a large portion of the stomach's contents through the mouth
- Diarrhea means 2 or more watery or very loose stools. (Reason: 1 loose stool can be normal)

Vomiting **Severity** is defined:

- **MILD**: 1-2 times/day
- **MODERATE**: 3-7 times/day
- **SEVERE**: 8 or more times/day (vomits everything or nearly everything)
- Caution: Multiple stomach contractions (heaves) do not count as separate episodes of vomiting. At least 10 minutes need to pass, before we consider it another episode of vomiting.

INITIAL ASSESSMENT QUESTIONS

1. **SEVERITY**: "How many times has he vomited today?" "Over how many hours?"
   - **MILD**: 1-2 times/day
   - **MODERATE**: 3-7 times/day
   - **SEVERE**: 8 or more times/day, vomits everything or repeated "dry heaves" on an empty stomach
2. **ONSET**: "When did the vomiting begin?"
3. **FLUIDS**: "What fluids has he kept down today?" "What fluids or food has he vomited up today?"
4. **DIARRHEA**: "When did the diarrhea start?" "How many times today?" "Is it bloody?"
5. **HYDRATION STATUS**: "Any signs of dehydration?" (e.g., dry mouth [not only dry lips], no tears, sunken soft spot) "When did he last urinate?"
6. **CHILD'S APPEARANCE**: "How sick is your child acting?" "What is he doing right now?" If asleep, ask: "How was he acting before he went to sleep?"
7. **CONTACTS**: "Is there anyone else in the family with the same symptoms?"
8. **CAUSE**: "What do you think is causing your child's vomiting?"

- Author's note: IAQ's are intended for training purposes and not meant to be required on every call.

TRIAGE ASSESSMENT QUESTIONS

**Call EMS 911 Now**

Shock suspected (very weak, limp, not moving, too weak to stand, pale cool skin)

\[ \text{FIRST AID: have child lie down with feet elevated} \]
\[ \text{CA: 50, 12} \]

Sounds like a life-threatening emergency to the triager

\[ \text{CA: 50, 12} \]

See More Appropriate Guideline
Vomiting occurs without diarrhea

Go to Guideline: Vomiting Without Diarrhea (Pediatric)

Diarrhea is the main symptom (vomiting is resolved)

Go to Guideline: Diarrhea (Pediatric)

[1] Vomiting and/or diarrhea is present AND [2] age > 1 year AND [3] ate spoiled food in previous 12 hours

Go to Guideline: Food Poisoning (Pediatric)


Go to Guideline: Diarrhea (Pediatric)

Go to ED Now

Severe dehydration suspected (very dizzy when tries to stand or has fainted)

CA:   51,  21,  12

[1] Blood (red or coffee grounds color) in the vomit AND [2] not from a nosebleed  (Exception: Few streaks AND only occurs once AND age > 1 year)

R/O: peptic ulcer, esophagitis, Mallory-Weiss tear
CA:   51,  16,  21,  12

Difficult to awaken

R/O: encephalitis, Reye's syndrome, intussusception, overdose
CA:   51,  20,  12

Confused (delirious) when awake

R/O: encephalitis, meningitis
CA:   51,  12

Poisoning suspected (with a medicine, plant or chemical)

CA:   51,  19,  12

[1] Age < 12 weeks AND [2] fever 100.4 F (38.0 C) or higher rectally

R/O: sepsis
CA:   51,  17,  21,  12

Go to ED Now (or PCP triage)

[1] Newborn (< 1 month old) AND [2] starts to look or act abnormal in any way (e.g., decrease in activity or feeding)

R/O: sepsis, NEC, adrenal insufficiency
CA:   52,  12

[1] Bile (green color) in the vomit AND [2] 2 or more times (Exception: Stomach juice which is yellow)

R/O: GI obstruction
[1] Age < 12 months AND [2] bile (green color) in the vomit (Exception: Stomach juice which is yellow)
   R/O: GI obstruction, necrotizing enterocolitis
   CA: 52, 20, 12

   R/O: bowel obstruction
   CA: 52, 20, 12

Appendicitis suspected (e.g., constant pain > 2 hours, RLQ location, walks bent over holding abdomen, jumping makes pain worse, etc)
   CA: 52, 20, 12

[1] Blood in the diarrhea AND [2] 3 or more times (or large amount)
   R/O: severe Shigella, Salmonella, Campylobacter or E. coli 0157
   CA: 52, 21, 16, 12

[1] Dehydration suspected AND [2] age < 1 year (Signs: no urine > 8 hours AND very dry mouth, no tears, sunken soft spot, ill appearing, etc.)
   CA: 52, 21, 12

[1] Dehydration suspected AND [2] age > 1 year (Signs: no urine > 12 hours AND very dry mouth, no tears, ill appearing, etc.)
   CA: 52, 21, 12

High-risk child (e.g., diabetes mellitus, recent abdominal surgery)
   CA: 52, 21, 12

[1] Fever AND [2] > 105 F (40.6 C) by any route OR axillary > 104 F (40 C)
   R/O: serious bacterial infection
   CA: 52, 18, 21, 12

   R/O: serious bacterial infection
   CA: 52, 21, 12

Child sounds very sick or weak to the triager
   Reason: severe acute illness or serious complication suspected
   CA: 52, 21, 12

See Physician within 4 Hours (or PCP triage)
[1] Age < 12 weeks AND [2] vomited 3 or more times in last 24 hours (Exception: reflux or spitting up)
   R/O: early GI obstruction
   CA: 53, 21, 22, 12

   Reason: dehydration risk
[1] SEVERE vomiting (vomiting everything) > 8 hours (> 12 hours for > 6 yo) AND [2] continues after receiving frequent sips of ORS per guideline

CA: 53, 21, 22, 12

(Caution: intermittent abdominal pain that comes on with vomiting and then goes away is common)

R/O: early GI obstruction
CA: 53, 20, 22, 12

Call PCP Now

Vomiting an essential medicine

CA: 59, 22, 12


CA: 59, 22, 12

See Physician within 24 Hours


CA: 54, 4, 7, 6, 10, 25, 12


CA: 54, 8, 9, 10, 25, 12


R/O: bacterial diarrhea
CA: 54, 16, 4, 7, 6, 8, 9, 10, 27, 12

Fever present > 3 days (72 hours)

R/O: bacterial cause
CA: 54, 10, 4, 7, 6, 8, 9, 25, 12

See PCP When Office is Open (within 3 days)

[1] MILD vomiting (1-2 times/day) with diarrhea AND [2] persists > 1 week

CA: 55, 4, 7, 8, 9, 10, 15, 25, 12

See PCP within 2 Weeks

Vomiting is a chronic problem (recurrent or ongoing AND present > 4 weeks)

R/O: cyclic vomiting, peptic ulcer
CA: 56, 23, 4, 7, 6, 8, 9, 10, 25, 12

Home Care

[1] SEVERE vomiting (8 or more times/day OR vomits everything) with diarrhea BUT [2] hydrated

Reason: will usually pass and all triage questions negative
Reason: probably viral gastroenteritis and all triage questions negative  
CA:  58, 13, 4, 7, 6, 10, 15, 14, 26, 5, 12

Reason: probably viral gastroenteritis and all triage questions negative  
CA:  58, 13, 8, 9, 10, 15, 14, 26, 11, 12

CA:  58, 13, 4, 7, 6, 15, 14, 26, 24, 12

CA:  58, 13, 8, 9, 15, 14, 26, 24, 12

CARE ADVICE (CA) -

1. Reassurance:
   - Sometimes children vomit almost everything for 3 or 4 hours, even if given small amounts. However, some fluid is being absorbed and this will help prevent dehydration.
   - From what you've told me, your child is well hydrated at this time.
   - So continue offering fluids (Avoid: withholding fluids).

2. Call Back If:
   - Signs of dehydration occur
   - Vomits everything for over 8 hours while receiving ORS correctly (12 hours for 6 years and older)
   - Blood in vomit
   - Your child becomes worse

3. Sleep:
   - Encourage your child to rest or go to sleep for a few hours. (Reason: sleep often empties the stomach and relieves the need to vomit.)
   - When your child awakens, again offer small amounts of clear fluids every 5 minutes.
   - If your child also has watery diarrhea, awaken after 3 hours for clear fluids, if she doesn’t self-awaken.
4. **For Bottlefed Infants** (under 1 year old), offer Oral Rehydration Solution (e.g., Pedialyte or the store brand):
   - ORS is a special electrolyte solution that can prevent dehydration. It’s readily available in supermarkets and drug stores.
   - For vomiting once, continue regular formula.
   - For vomiting more than once within last 2 hours, offer ORS for 8 hours. Spoon or syringe feed small amounts: 1-2 teaspoons (5-10 ml) every 5 minutes.
   - After 4 hours without vomiting, double the amount.
   - **Formula**: After 8 hours without vomiting, return to regular formula.

5. **Call Back If**:
   - Vomiting everything for over 8 hours
   - **Moderate** vomiting persists over 24 hours
   - **Mild** vomiting persists over 1 week
   - Diarrhea becomes severe
   - Signs of dehydration occur
   - Your child becomes worse

6. **Solids** - For infants (under 1 year old) after 8 hours without vomiting:
   - For infants 4 months and older, also return to baby foods. If diarrhea is severe, start with cereals.
   - Return to normal diet in 24-48 hours.

7. **For Breastfed Infants**, reduce the amount per feeding.
   - If vomits once, nurse 1 side every 1 to 2 hours.
   - If vomits more than once within last 2 hours, nurse for 5 minutes, every 30 to 60 minutes. After 4 hours without vomiting, return to regular breastfeeding.
   - If continues to vomit, switch to ORS for 4 hours.
   - Spoon or syringe feed small amounts of ORS: 1-2 teaspoons (5-10 ml) every 5 minutes.
   - After 4 hours without vomiting, return to breastfeeding. Start with small feedings of 5 minutes every 30 minutes and increase as tolerated.

8. **For Older Children** (Age over 1 year):
   - Offer clear fluids in small amounts for 8 hours.
   - ORS: Vomiting with watery diarrhea needs Oral Rehydration Solution (e.g., Pedialyte). If refuses ORS, use 1/2-strength Gatorade.
   - Give small amounts: 2-3 teaspoons (10-15 ml) every 5 minutes.
   - After 4 hours without vomiting, double the amount.
   - After 8 hours without vomiting, return to regular fluids. (Exception: Fruit juice and soft drinks).

9. **Solids**: For older children (Age over 1 year old), add bland foods after 8 hours without vomiting.
   - Starchy foods are easiest to digest.
   - Start with crackers, bread, cereals, rice, mashed potatoes, noodles, etc.
   - Return to normal diet in 24-48 hours.
10. **Avoid Meds:**
   - Discontinue all nonessential medicines for 8 hours. (Reason: usually makes vomiting worse.) (Avoid ibuprofen, which can cause gastritis).
   - Consider acetaminophen suppositories (same as oral dose) if the fever needs treatment (over 102 F or 39 C and causing discomfort).
   - Call if child vomiting an essential medicine.

11. **Call Back If:**
   - Vomiting everything for 8 hours (12 hours for age over 6 years)
   - **Moderate** vomiting persists over 48 hours
   - **Mild** vomiting persists over 1 week
   - Diarrhea becomes severe
   - Signs of dehydration occur
   - Your child becomes worse

12. **Care Advice** per Vomiting With Diarrhea (Pediatric) guideline.

13. **Reassurance:**
   - Most vomiting with diarrhea is caused by a viral infection of the stomach and intestines or by food poisoning.
   - Vomiting is the body’s way of protecting the lower GI tract.
   - When vomiting and diarrhea occur together, treat the vomiting. Don't do anything special for the diarrhea.

14. **Expected Course:**
   - Moderate vomiting usually stops in 12 to 24 hours.
   - Mild vomiting (1-2 times/day) with diarrhea can continue intermittently for up to a week.
   - **Contagiousness:** Your child can return to daycare or school after vomiting and fever are gone.

15. For **Mild Diarrhea**, follow the care advice for vomiting. Don't do anything special for the diarrhea.

16. **Sample:** Bring in a sample of the "bloody" material (Reason: for testing).

17. **Fever Under 3 Months Old:** Don't give any acetaminophen before being seen. Need accurate documentation of temperature in medical setting to decide if fever is really present. (Reason: may require septic work-up.)

18. **Fever:** Give acetaminophen to bring down the fever. An acetaminophen suppository would be preferable.

19. **Sample:** For possible poisoning, bring in any material that's vomited (Reason: for testing).

20. **NPO:** Do not allow any eating, drinking or oral medicines. (Reason: condition may need surgery and general anesthesia.)
21. **ORS:**
   - Give small amounts (1-2 tsps or 5-10 mls) of ORS (e.g., Pedialyte) every 5 minutes until seen.
   - If over 1 year of age, can also use water or ORS every 5 minutes.
   - If don't have ORS, do the following:
     - If formula fed, offer 5 ml (1 tsp) of formula every 5 minutes.
     - If breastfed, offer formula or nurse for 5 minutes every 30 minutes.
     - If over 1 year old, offer 10 ml (2 tsps) of water every 5 minutes.

22. **Call Back If:**
   - Your child becomes worse

23. **Vomiting Diary:** Keep a diary of your child's vomiting: Include the date, time, place, and what your child ate in the previous 2 hours. (Reason: try to find some of the triggers.)

24. **Call Back If:**
   - Mild vomiting with diarrhea persists over 1 week
   - Vomiting becomes worse
   - Signs of dehydration occur
   - Your child becomes worse

25. **Call Back If:**
   - Vomiting becomes worse
   - Signs of dehydration occur
   - Your child becomes worse

26. **Dehydration: How to Recognize**
   - Dehydration is the most important complication of diarrhea and/or vomiting.
   - Dehydration means that the body has lost excessive fluids.
   - The following are signs of dehydration:
     - Decreased urination (no urine in more than 8 hours under 1 year, no urine in more than 12 hours over 1 year) occurs early in the process of dehydration. So does a dark yellow, concentrated yellow. If the urine is light straw colored, your child is not dehydrated.
     - Dry tongue and inside of the mouth. Dry lips are not helpful.
     - Decreased or absent tears.
     - In infants, a depressed or sunken soft spot.
     - Irritable, tired out or acting ill. If your child is alert, happy and playful, he or she is not dehydrated.

27. **Call Back If:**
   - Vomiting becomes worse
   - Blood in stool recurs 3 or more times OR is large in amount
   - Signs of dehydration occur
   - Your child becomes worse

50. **Call EMS 911 Now:** Your child needs immediate medical attention. You need to hang up and call 911 (or an ambulance). (Triager Discretion: I'll call you back in a few minutes to be sure you were able to reach them.)
51. **Go To ED Now**: Your child needs to be seen in the Emergency Department immediately. Go to the ER at ___________ Hospital. Leave now. Drive carefully.

52. **Go To ED Now (or PCP Triage)**:
   - **If No PCP Triage**: Your child needs to be seen within the next hour. Go to the ER/UCC at ___________ Hospital. Leave as soon as you can.
   - **If PCP Triage Required**: Your child may need to be seen. Your doctor will want to talk with you to decide what's best. I'll page him now. If you haven't heard from the on-call doctor within 30 minutes, or your child becomes worse, go directly to the ER/UCC at ___________ Hospital.

53. **See Physician Within 4 Hours** (or PCP triage):
   - **If No PCP Triage**: Your child needs to be seen. Go to ______ (ED/UCC or office if it will be open) within the next 3 or 4 hours. Go sooner if your child becomes worse.
   - **If PCP Triage Required**: Your child may need to be seen. Your doctor will want to talk with you to decide what's best. I'll page him now. If you haven't heard from the on-call doctor within 30 minutes, call again. (Note: If PCP can't be reached, send to ED/UCC or office.)

54. **See Physician Within 24 Hours**:
   - **If Office Will Be Open**: Your child needs to be examined within the next 24 hours. Call your child's doctor when the office opens, and make an appointment.
   - **If Office Will Be Closed And No PCP Triage**: Your child needs to be examined within the next 24 hours. Go to ______ at your convenience.
   - **If Office Will Be Closed And PCP Triage Required**: Your child may need to be seen within the next 24 hours. Your doctor will want to talk with you to decide what's best. I'll page him now. (Exception: from 10 pm to 7 am. Since this isn't serious, we'll hold the page until morning.)

55. **See PCP Within 3 Days**: Your child needs to be examined within 2 or 3 days. Call your child's doctor during regular office hours and make an appointment. (Note: if office will be open tomorrow, tell caller to call then, not in 3 days.)

56. **See PCP Within 2 Weeks**: Your child needs an evaluation for this ongoing problem within the next 2 weeks. Call your child's doctor during regular office hours and make an appointment.

57. **Follow-Up**: Discuss _________ with your child's doctor at the next regular office visit. (Call sooner if you become more concerned.)

58. **Home Care**: You should be able to treat this at home.

59. **Call PCP Now**: You need to discuss this with your child's doctor. I'll page him now. If you haven't heard from the on-call doctor within 30 minutes, call again.

60. **Call PCP Within 24 Hours**: You need to discuss this with your child's doctor within the next 24 hours.
   - **If Office Will Be Open**: Call the office when it opens tomorrow morning.
   - **If Office Will Be Closed**: I'll page him now. (Exception: from 9 pm to 9 am. Since this isn't urgent, we'll hold the page until morning.)

61. **Call PCP When Office Is Open**: You need to discuss this with your child's doctor within the next few days. Call him/her during regular office hours.
Severity of Vomiting

The following is an arbitrary attempt to classify vomiting by risk for dehydration:

- **Mild**: 1 - 2 times/day
- **Moderate**: 3 - 7 times/day
- **Severe**: 8 or more times/day
  
  Caution: Multiple stomach contractions (heaves) do not count as separate episodes of vomiting. At least 10 minutes need to pass, before we consider it another episode of vomiting.

- At the beginning of a vomiting illness (especially following food poisoning), it's common for a child to vomit everything or nearly everything for 3 or 4 hours and then become stable with mild or moderate vomiting.

- Parents who call within the first hours of a vomiting illness, need to be reassured that the severe vomiting usually passes.

- Watery stools in combination with vomiting carry the greatest risk for causing dehydration.
- The younger the child, the greater the risk for dehydration.

Causes

- Main cause: stomach and intestinal infection (gastroenteritis) from a virus (e.g., Rotavirus).
  
  The illness usually starts with vomiting but diarrhea follows within 12-24 hours.

- Food poisoning from toxins produced by bacteria growing in poorly refrigerated foods (e.g. Staphylococcus toxin in egg salad or Bacillus cereus toxin in rice dishes).

- If vomiting persists as an isolated symptom (without diarrhea) beyond 24 hours, more serious causes must be considered.

Detecting Bile in Vomitus

- Bile in the vomitus is a serious finding. In young infants, it is commonly seen with volvulus and bowel obstruction. These are surgical emergencies.
- Bile is always green or dark green in color.
- When mixed with stomach juices, it can be greenish-yellow, but never just yellow. If the caller is unsure if the color is greenish, ask "Does it look like spinach or mustard?" If the caller is still unsure, the child needs to be seen.

- Bile is in a liquid state. If the green color is in a glob of mucus, it's usually nasal mucus ("snot") or coughed-up phlegm that has been swallowed.

- Yellow-colored fluid in vomitus is usually normal stomach juices and acid. Vitamin drops can also cause this color. Recall how Vitamin C can turn the urine bright yellow.

- Many HCPs think that bile is bright yellow. The confusion probably comes from the fact that jaundiced babies are yellow.

Appendicitis: Serious Cause

- Symptoms: periumbilical pain for 4-12 hours
• Then constant localized RLQ pain
• Movement: increases pain (prefers to lie still)
• Position: lies on side, hips flexed, curled up
• Walking: Refuses or walks bent over and holding lower abdomen. Walking in a guarded way is also suggestive of appendicitis.
• Jumping or hopping: pain increases
• For any of the above, refer in now even if vomiting is the main symptom
• Associated fever 50% and vomiting 60%
• Complications: perforation and peritonitis over 48 hours from onset (perforation occurs 20-70%)
• Death from shock less than 1%

Ruptured (Perforated) Appendicitis

• Delayed diagnosis of appendicitis is the 2nd most common cause of pediatric malpractice lawsuits (McAbee, 2009).
• Yet, ruptured appendix at the time of surgery is common: 90% in 0-2 year olds, 70% in 2-5 y o, 30% in 6-12 y o and 10% in teens.
• The perforation rate is inversely related to the age of the patient.
• Even an examination may not detect appendicitis. Some children are seen twice before the correct diagnosis is made.
• Atypical symptoms can be present: diarrhea (from pelvic appendix touching sigmoid colon), vomiting onset before pain (age 2 to 5), and minimal migration of pain to RLQ.
• In younger children, remember that crying can be from pain.
• Suspect appendicitis in children who have constant abdominal pain for more than 2 hours; even if they lack any of the classic symptoms.
• Symptoms may change after perforation: The RLQ pain can become more generalized and the pain severity can temporarily diminish. However, the pain persists (it doesn’t go away), the abdomen becomes rigid, fever begins or rises, and the child becomes less willing to move about.

Distinguishing Appendicitis From Gastroenteritis

• Gastroenteritis (GE) is the most common cause of acute onset abdominal PAIN
• Appendicitis accounts for 1% or 2%
• GE: Intermittent mild PAIN
• Appendicitis: Constant PAIN
• GE: PAIN doesn't interfere with activities
• Appendicitis: PAIN interferes with activities
• GE: Often starts with VOMITING
• Appendicitis: VOMITING (present 60%) is usually delayed, starting 12-24 hours after pain. (Exception: Vomiting can be the first symptom in young children).
• GE: Progresses to associated DIARRHEA
• Appendicitis: DIARRHEA is usually absent (Exception: from pelvic appendix)
• FEVER: not helpful for distinguishing appendicitis from gastroenteritis

Return to School

• Your child can return to day care or school after vomiting and fever are gone.

Giving Fluids Versus NPO For Vomiting With Diarrhea

The reason that this guideline instructs callers not to use NPO for children who have vomiting with diarrhea is being NPO can contribute to dehydration. In addition, during the brief time that fluid is
retained in the stomach, some of it is absorbed and this can help prevent dehydration. The literature demonstrates that we can feed most children through a vomiting with diarrhea illness.

**Peptobismol**

Peptobismol (bismuth subsalicylate) is sometimes used for diarrhea. It has no proven benefit for treating vomiting. The concern that the salicylate in Peptobismol might cause Reye's syndrome has never been documented. Therefore, we should not needlessly burden parents with this concern.

**Antiemetic Drugs for Vomiting: Zofran**

- Zofran (Ondansetron) is a proven effective treatment for the vomiting associated with chemotherapy or surgery.
- Positives: It is a safe agent, even in young children
- Negatives: It's expensive; about $50 per dose given IM or IV for active vomiting.
- A study (Roslund, 2007) demonstrated the efficacy of Zofran for treating vomiting in children with acute viral gastroenteritis who have failed ORS therapy in an ED setting.
- An evidence-based review article (DeCamp, 2008) supports prescribing Zofran for SEVERE vomiting in an ED setting, but NOT for MILD-MODERATE vomiting in an office or clinic setting.
- Vomiting can have many serious causes. Zofran is never used without first examining the child.
- Telephone management: the availability of Zofran does not change telephone triage or advice.

**Birth To 3 Months Old: Indications For Seeing Patients Immediately With Fever**

- The triage question, “Age < 12 weeks AND fever 100.4 F (38.0 C) or higher rectally”, is found in multiple symptom-based and newborn guidelines.
- Rectal temperatures are preferred before sending babies into the Emergency Room. (Reason: EDs/offices perform rectal readings to guide ED work-ups). If a caller is unable to take a rectal temp, the following definitions of fever can apply to this question as well:
  - Rectal or Temporal Artery temperature: 100.4 F (38.0 C) or higher
  - Pacifier temperature: 100 F (37.8 C) or higher
  - Axillary (armpit) temperature: 99 F (37.2 C) or higher
  - Tympanic temperatures are not reliable before 6 months of age.
- Temporal artery and skin infrared temperatures may be reliable in young infants. (De Curtis 2008)
- Note: Rectal temperatures always preferred over axillary readings (Reason: axillary often inaccurate). (EXCEPTION: Axillary temp above 100.4 F (38 C), just see them)

**Dehydration: Estimation By Telephone**

**Summary**

- A child who is alert, happy and playful is NOT dehydrated.
- Diminished urination occurs early in the process of dehydration (Gorelick 1997). Decreased urination (no urine in more than 12 hours) alone, however, should not be used to diagnose dehydration if other findings of dehydration are absent. (Exception: no urine > 12 hours and can't urinate now). As an isolated symptom, decreased urination only has a 17% predication for dehydration. In general, children with normal urine output are NOT dehydrated. (Exception: renal disease, diabetes mellitus or insipidus).
- A subset of 4 factors - capillary refill > 2 seconds, absent tears, dry mucous membranes, and ill general appearance-best predicted dehydration. The presence of any 2 factors correlated with a 5% deficit and the presence of any 3 factors with a 10% deficit (Gorelick 1997). In another study,
decreased skin turgor (tenting) was a good predictor of dehydration and the duration of tenting correlated closely with the extent of dehydration (Armon 2000). However, this sign is usually difficult to assess by telephone.

- In general, mild diarrhea, mild vomiting or a mild decrease in fluid intake does not cause dehydration.

**Mild Dehydration:** 3-5% weight loss
1. Urine Production: slightly decreased
2. Urine Color: dark yellow
3. Mucous Membranes: normal
4. Tears: present
5. Anterior Fontanelle: normal
6. Mental Status: normal
7. Capillary Refill: less than 2 sec
8. Treatment: can usually treat with ORS at home

**Moderate Dehydration:** 5-10% weight loss
1. Urine Production: none for over 8 hrs. for infants, over 12 hrs. for older children
2. Urine Color: dark yellow-brown (amber)
3. Mucous Membranes: dry inside of mouth
4. Tears: decreased
5. Anterior Fontanelle: normal to sunken
6. Mental Status: irritable
7. Capillary Refill: more than 2 sec
8. Treatment: must be seen

**Severe Dehydration:** >10% weight loss
1. Urine Production: very decreased or absent
2. Mucous Membranes: very dry inside of mouth
3. Tears: absent, sunken eyes
4. Anterior Fontanelle: sunken
5. Mental Status: very irritable to lethargic
6. Capillary Refill: > 2-4 sec
7. Treatment: must be seen. If signs of shock, activate EMS (911)

**Signs of Shock**
1. Extremities (esp. hands and feet) are bluish or gray
2. Extremities are cold
3. Child too weak to stand or very dizzy when tries to stand
4. Child is difficult to awaken or unresponsive
5. Pulse is rapid and weak
6. Capillary refill > 4 seconds

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**REFERENCES**


**SEARCH WORDS**

ABDOMEN
BARF
BILE
BILIOUS
BLOOD IN VOMITUS
DEHYDRATED
DEHYDRATION
DIARRHEA

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