

Fluid Management - Questions

1. An 18 month old girl with a 2 day history of vomiting, diarrhea and decreased oral intake, is seen in clinic, you estimate her to be 5% dehydrated. Of the following, the most likely additional examination finding is:
 - A. Bounding peripheral pulses
 - B. Capillary refill of 4 seconds
 - C. Hypotension
 - D. Periorbital edema
 - E. Tachycardia
2. You are evaluating 4 year old boy in the Emergency Department with hypovolemic shock, HR 140, RR 30, BP 65/40. Of the following, the most appropriate next step is administration of:
 - A. 5ml/kg of 25% Albumin
 - B. 5 ml/kg of 3% NS
 - C. 10 ml/kg of 5% albumin
 - D. 20 ml/kg of 0.45% NS
 - E. 20 ml/kg of 0.9% NS
3. A 10 year old boy has gastroenteritis and has had no urine output for the last 12 hours. Findings include: blood pressure 80/50, heart rate 120, capillary refill > 3 seconds and laboratory values of sodium 130, potassium 5.0, chloride 100, blood urea nitrogen 100, creatinine 10, bicarbonate 12 and hemoglobin 12. The **most** appropriate parenteral fluid regimen is to:
 - A. Administer a bolus of normal saline and correct intravascular volume depletion
 - B. Administer maintenance fluids
 - C. Administer maintenance fluids plus replace gastrointestinal losses
 - D. Restrict fluids to insensible water losses
 - E. Restrict fluids to insensible water losses plus urine and gastrointestinal losses
4. A 3 month old infant has had diarrhea for 4 days. Findings include blood pressure 80/40, pulse 150, doughy skin and sunken eyes. Electrolytes are creatinine 1.0, BUN 60, sodium 170, potassium 6.0, chloride 132, and bicarbonate 15. Fluid therapy is instituted and 12 hours later the patient has a generalized seizure. The **most** likely explanation for these findings are:
 - A. Hypoglycemia
 - B. Hyperkalemia
 - C. Idiopathic epilepsy
 - D. Rapid correction of hypernatremia
 - E. Rapid correction of metabolic acidosis
5. True or False: The electrolyte composition of gastric fluid and viral diarrhea is very similar and should be replaced with the same fluid.
6. Osmolality of extracellular body fluids is composed of the following solutes except:
 - A. Potassium
 - B. Blood urea nitrogen
 - C. Glucose
 - D. Sodium

Fluid Management - Answers

1. **Answer: E.** The patient should have tachycardia. Pulses would be expected to be normal to less than normal. This is considered mild dehydration and capillary refill of greater than 4 seconds would be more common in severe dehydration- over 15%. Periorbital edema would not be expected as a sign of dehydration and would signify a possible renal or cardiac condition.
2. **Answer: E.** Following Pediatric Advanced Life Support Guidelines- a fluid bolus should be administered for any child in shock. Isotonic fluid should be given at an initial dose of 20cc/kg. Normal Saline and Lactated Ringers are the only isotonic fluids that should be used for resuscitation.
3. **Answer: A.** The clinical picture is one of moderate dehydration. Initial fluid choice would be an isotonic fluid; either normal saline or lactated ringers.
4. **Answer: D.** Severe states of either hyper or hyponatremia may lead to dangerous fluid shifts in the central nervous system. Correction of a very high sodium level should be done slowly to prevent seizures or central pontine myelinosis.
5. **Answer: False.** Chloride is more likely to be lost with vomiting and bicarbonate more likely lost as a result of diarrheal loss. Sodium loss can be similar in gastric and diarrhea losses. Potassium is lost to a greater degree with diarrhea but is also lost in vomiting. Replacement of ongoing fluid losses of gastric origin should be with normal saline and potassium. Ongoing losses of diarrhea should be with glucose and normal saline with additional sodium bicarbonate and potassium.
6. **Answer: A.** Osmolality is based on the solutes present in the extracellular space. Potassium is found primarily in the intracellular space. Glucose, sodium and BUN are all included in the equation for serum Osmolality.