

Diarrhea and Wound Healing

Nancy Collins, PhD, RD, LD/N

Q: Many of my patients have pressure ulcers on the coccyx or sacrum. Frequent bouts of diarrhea make it difficult to care for these ulcers and healing is often impeded. Can you provide guidelines on managing diarrhea?

A: Diarrhea is characterized by frequent loose or liquid stool. If stool contaminates a pressure ulcer, treating and healing the wound may be more difficult. Prompt and effective treatment of diarrhea involves a multidisciplinary approach to identify its cause and begin the proper nutritional, medical, and pharmaceutical regimen.

Causes and Types of Diarrhea

Diarrhea is a symptom of many disorders and diseases. The first step in treating diarrhea is to identify its cause. Table 1 lists several common causes of diarrhea.

The 3 most common types of diarrhea are watery, fatty, and small-volume. Identifying the type of diarrhea may help determine its cause. Watery diarrhea occurs when the amount of water and electrolytes moving into the intestinal mucosa exceeds the amount absorbed into the bloodstream.¹ Watery diarrhea

may be classified into 2 subtypes: osmotic or secretory. To determine which type is present, identify if the diarrhea abates with fasting. Osmotic diarrhea is relieved by fasting; secretory diarrhea is not.² Watery osmotic diarrhea usually accompanies lactose intolerance, dumping syndromes, and enteral feeding intolerances. Watery secretory diarrhea is a sign of bacterial enterotoxins and viruses. Fatty diarrhea, or steatorrhea, usually accompanies conditions associated with malabsorption, such as chronic pancreatitis or short-bowel syndrome. Small-volume diarrhea may accompany diverticulosis of the colon.

Bloody stool or black tarry stool may indicate a more serious condition and should not be confused with common diarrhea. Black tarry stool, or melena, usually indicates that blood is coming from the upper part of the gastrointestinal tract. Maroon or red bloody stool, called hematochezia, usually suggests that blood is coming from the large intestine or rectum. These conditions warrant prompt medical attention and testing. Occasionally, the ingestion of black licorice, lead, iron supplements, or blueberries can cause black stool and false melena. A fecal occult blood test can be administered to rule out false melena.

Table 1.
COMMON CAUSES OF DIARRHEA

Type	Cause
Food intolerance	Lactose intolerance, gluten intolerance, or excessive intake of sorbitol, mannitol, or xylitol
Protein-calorie malnutrition	Hypoproteinemia (albumin level <2.6 g/dL) is associated with intestinal edema, which negatively affects luminal absorption and may result in diarrhea
Bacterial contamination	Contaminated food or water may lead to infection with <i>Campylobacter</i> , <i>Salmonella</i> , <i>Shigella</i> , or <i>Escherichia coli</i>
Viral infections	Rotavirus, Norwalk virus, cytomegalovirus, herpes simplex virus, or viral hepatitis
Enteral tube feedings	Hypertonic formula, refeeding syndrome, contamination, bolus feeding into small intestine, or lack of fiber in formula
Parasites	<i>Giardia lamblia</i> , <i>Entamoeba histolytica</i> , or <i>Cryptosporidium</i> can enter the body through food or water and settle in the digestive system
Drug reactions	Laxatives, diuretics, cholinergic drugs, antibiotics, prostaglandins, liquid medications containing sugar alcohols, warfarin, thyroid preparations, antiepileptics
Gastrointestinal diseases	Inflammatory bowel disease, short-bowel syndrome, HIV/AIDS, Crohn's disease, chronic ulcerative colitis, bowel resection, or malabsorption syndrome
Fecal impaction	Impacted feces prevent the passage of normal stool; only watery stool is able to pass the point of impaction

Nancy Collins, PhD, RD, LD/N, is a registered and licensed dietitian in private practice in Pembroke Pines, FL. For the past decade, she has served as a consultant to health care institutions on issues regarding regulatory compliance, clinical nutrition, and food service management and as a medical-legal expert to law firms involved in health care litigation. Questions for future columns may be sent to Dr Collins at NCtheRD@aol.com.

Medical Treatment

A thorough medical workup may help identify the cause of diarrhea and, thereby, direct the treatment plan. The first step is to obtain a detailed medical and nutritional history, including use of dietetic food products. Many diabetic patients replace sugary foods with dietetic foods that contain sugar alcohols such as sorbitol, mannitol, and xylitol. These products frequently cause diarrhea and should be eliminated from the diet if they are not well tolerated. Because many medications contain sugar alcohols, the patient's medication list should also be reviewed and appropriate substitutes recommended. Magnesium-containing medications and supplements may also cause diarrhea and should be monitored as well.³

A stool culture may be ordered to identify parasites, bacteria, or other signs of infection. Stool may also be examined for fecal white blood cells and *Clostridium difficile* toxin. Blood tests may be ordered to rule out or confirm the presence of certain diseases. A fasting or elimination test can be performed to determine if diarrhea is caused by a food allergy or intolerance. Finally, a sigmoidoscopy or colonoscopy may be performed.

Preventing Dehydration

The main goal in the treatment of diarrhea is to prevent dehydration and electrolyte imbalance. Losses of potassium and sodium should be corrected as soon as possible by providing a proper oral rehydration solution. Water does not contain the necessary electrolytes for oral rehydration therapy, and sugary juices, such as apple juice, may worsen diarrhea. Caffeinated and alcoholic beverages should also be limited. Proper solutions may be homemade or purchased from a medical nutrition supplement company. Commercially available mixtures include EqualYTE (Ross Products, Columbus, OH) and Ceralyte (Cera Products, Jessup, MD). Sport drinks such as Gatorade (Stokely-Van Camp, Inc, a subsidiary of Quaker Oats, Chicago, IL) may also be used. EqualYTE is an enteral rehydration solution that may be tube-fed or administered orally. It contains electrolytes with a sodium content that is equal to half-normal saline. It also contains fructooligosaccharides and provides 100 calories per liter.⁴ Ceralyte, a rice-based solution that may be purchased in powder or liquid form, is available in several flavors.⁵

Careful laboratory monitoring of sodium, potassium, chloride, blood urea nitrogen/creatinine ratio, and albumin should be performed. Patients with a history of hypertension or heart failure should be monitored closely when given high-sodium solutions.

Medical Nutrition Therapy

Although medical nutrition therapy is determined by the diarrhea's specific cause, some general recommendations apply. In acute cases, it may be necessary to begin treatment by having

INTERNET RESOURCES THAT PROVIDE INFORMATION ABOUT ORAL REHYDRATION PRODUCTS

American Dietetic Association	http://www.eatright.org
Ross Products	http://www.ross.com
Cera Products	http://www.ceralyte.com
Stokely-Van Camp, Inc	http://www.gatorade.com
Corpak MedSystems	http://www.corpakmedsystems.com
4WebMed	http://www.4webmed.com
Rehydration Project	http://www.rehydrate.org

the patient not eat or drink anything for 12 hours. Intravenous fluids may be ordered if dehydration is present. Oral fluids should be started as soon as tolerated. The initial oral diet should consist of broth, tea, and toast, with additional foods added as tolerated. High-sugar foods should be avoided. Foods containing probiotics, such as yogurt with live cultures, may be given, especially to patients taking antibiotics. Small, frequent meals throughout the day are best tolerated. Dairy products and wheat products should be reintroduced slowly. Foods high in roughage, such as raw fruits and vegetables, should be avoided. Soluble fiber, which dissolves in water, should be added to the diet as tolerated. Soluble fiber, including pectin, is found in oatmeal, apples, bananas, beans, and psyllium. Kannana Banana Flakes (Corpak MedSystems, Wheeling, IL) may be used in oral and tube-fed diets to provide soluble fiber. If lactose intolerance is present, a lactose-free diet may be prescribed. If steatorrhea is present, replace fat-soluble vitamins with a vitamin supplement. Drugs such as Imodium, Pepto-Bismol, Kaopectate, or Lomotil may be ordered as needed. If complete bowel rest is needed, total parenteral nutrition may be provided.

Most cases of diarrhea will resolve with time and a multifaceted treatment plan, including a careful history, physical and medical workup, medical nutrition therapy, and drugs. Despite all of these approaches, however, some patients may fail to improve and a fecal incontinence pouch or operative diversion may be necessary until the wound heals. In every scenario, interventions should be carefully documented. If one approach does not work, there is always another idea or product to try. ●

References

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