

KCl 1.5 g (0.053 ounce)

Anhydrous glucose 13.5 g (0.48 ounce) or sucrose 27 g (0.96 ounce)

1 L water

This formula can easily be made and also is commercially available. Drinks made for perspiration replacement, such as Gatorade, are not the same as the hydration fluid but can be used if the individual is not volume depleted.

Antibiotics are not required in most cases but are a consideration in specific circumstances. The inability to obtain immediate results from cultures for enteric pathogens often necessitates a decision regarding empiric antibiotic therapy. In general, empiric antibiotics do not significantly affect the course of acute diarrhea. In one study in which all patients were culture positive, there was a 1-day benefit for those receiving antibiotic treatment compared with nontreatment. Among those who were severely ill, the results were better: 1.5 days for resolution in the treated group compared to 3.4 days in the untreated group.

Antibiotics should be avoided in patients with enterohemorrhagic *E. coli* because no benefit has been demonstrated and there may be an increased risk of hemolytic-uremic syndrome related to increased release of Shiga toxin. These patients often have bloody diarrhea and abdominal pain but no fever. If antibiotics have been started, they should be discontinued if culture results show *E. coli* O157:H7. There is also no clinical improvement with antibiotic treatment of nontyphoid *Salmonella* gastroenteritis, and the clearance of bacteria from the stool may be prolonged.

### Symptomatic Therapy

Dietary changes usually do not need to be drastic. The patient should be encouraged to take clear liquids and perhaps soft and low-fiber foods, which will aid in hydration and supply some calories for baseline energy requirements and enterocyte renewal. Milk should be avoided because of possible temporary lactose intolerance due to mucosal injury. Caffeine and ethanol should also be avoided because they stimulate intestinal motility.

In patients with acute diarrhea who do not have bloody diarrhea or fever, loperamide (Imodium), diphenoxylate-atropine (Lomotil), or tincture of opium can decrease the frequency of watery stools. These agents also possess antisecretory properties, and they inhibit intestinal motility, thereby allowing more intestinal absorption. The usual dose of loperamide should not exceed 8 2-mg tablets per day and diphenoxylate should not exceed 8 5-mg tablets per day. Diphenoxylate and tincture of opium have central-acting opioid effects and can cause unwanted side effects, particularly in the elderly. These drugs also are associated with increased risk of hemolytic-uremic syndrome in patients with enterohemorrhagic *E. coli* infections. The use of probiotics to repopulate intestinal flora in infectious diarrhea has not been well studied.

### CHRONIC DIARRHEA

The evaluation of chronic diarrhea is more variable, and the establishment of universal guidelines is more difficult, reflecting in part the many potential causes. Diarrhea may result from colonic inflammation, colonic neoplasia, small bowel inflammation, malabsorption due to small bowel mucosal disorders,

malabsorption due to pancreatic insufficiency, motility disorders, and functional bowel disorders.

Chronic diarrhea is a common reason for referral to a gastroenterology clinic, but the true incidence is difficult to estimate because of differing definitions and populations. In one study, the estimated prevalence of chronic diarrhea in the elderly population was between 7% and 14%, but that study also included functional bowel disorders. Another estimate excluding abdominal pain placed the prevalence at 4% to 5%. Chronic diarrhea certainly can affect the quality of life, and any clinician who cares for these patients has heard of patients being housebound because of a fear of diarrhea and incontinence.

### Evaluation of Chronic Diarrhea

Because of the myriad causes and differing severities, optimal guidelines are not established. Most recommendations are based on expert opinion and may include bias as a result of the types of referrals or regional differences. A thorough history and physical examination are essential. The history should try to establish the likelihood of organic versus functional disorders, to differentiate malabsorptive from inflammatory etiologies, and to determine the cause of the diarrhea. Consequently, important parts of the history include the following:

1. Character of the onset of diarrhea—sudden or gradual
2. Continuous versus intermittent symptoms
3. The presence of nocturnal diarrhea
4. Duration of diarrhea
5. Epidemiology—travel, exposure to contaminated food or water, family members with similar illness
6. Stool characteristics—watery, bloody, greasy
7. Fecal incontinence versus diarrhea or both
8. Abdominal pain—IBD, IBS, mesenteric vascular insufficiency
9. Weight loss—often significant in malabsorption, IBD, ischemia, and neoplasm
10. Aggravating factors—stress, specific foods (e.g., milk)
11. Prior evaluations to avoid repeating tests
12. Mitigating factors—what the patient has tried to control the diarrhea
13. Previous operations, radiation therapy, medications, supplements
14. Factitious diarrhea—always a consideration in eating disorders, malingering, or secondary gain
15. Review of systems—hyperthyroidism, scleroderma, tumor syndromes, diabetes mellitus
16. Risk factors for HIV and other immunosuppressed states

Physical examination rarely provides a specific diagnosis, but it does allow an assessment of fluid status and nutritional status. Some helpful findings include mouth ulcers or perianal disease that suggest the possibility of IBD, rashes or flushing, abdominal mass, and findings of hyperthyroidism.

Some causes are related to socioeconomic status. In contrast to acute diarrhea, infectious causes of chronic diarrhea are unusual in the United States, although they are frequently encountered in developing countries. Infectious causes are a concern in newly arrived immigrants or travelers. Occasionally,