ONE MINUTE CONSULT

Q: Which adults with acute diarrhea should be evaluated? What is the best diagnostic approach?

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A: Evidence to answer this question is scarce. The general consensus is, however, that a patient with any of the following should be evaluated:

- Fever (temperature ≥ 38.5°C; 101.3°F)
- Dysentery (passage of blood and mucus in the stool)
- Symptoms of dehydration, particularly postural lightheadedness, decreased urine output, and excessive thirst
- Worsening diarrhea after 48 hours
- Six or more stools in 24 hours
- Advanced age (≥ 70 years)
- Compromised immune system
- Age greater than 50 with severe abdominal pain.[1–3]

If none of these is present, no further evaluation other than a brief history is generally necessary.[4] Oral hydration and over-the-counter loperamide usually suffice.

The rest of this article focuses on a cost-effective approach to the evaluation of acute diarrhea.

DEFINITION AND CLASSIFICATION

Diarrhea is defined as stool weight greater than 200 g/day, which is best determined by a 72-hour stool collection.[5]

Given the difficulty and impracticality of obtaining such information, a more useful definition is an increase in the frequency of stools with a decrease in consistency compared with the patient's baseline pattern. Another frequently used and practical definition is three or more stools in 24 hours.

Diarrhea that has lasted less than 14 days is referred to as acute, while chronic diarrhea has a duration greater than 1 month. Diarrhea that lasts 14 days and resolves within 1 month is generally referred to as persistent acute diarrhea.[1,2]

SOCIOECONOMIC IMPACT

Diarrhea is common: the estimated incidence of acute diarrhea in adults in the United States is approximately 99 million cases per year.

It is also costly: approximately 50% of patients restrict their daily activities by at least 1 full day, resulting in an estimated $20 billion in lost productivity for those who do not seek physician care. Approximately 250,000 patients are hospitalized, at an estimated medical cost of $560 million. Combining patients who are hospitalized and those who seek medical care but are not hospitalized, the total cost to society is greater than $23 billion annually.[2,6]
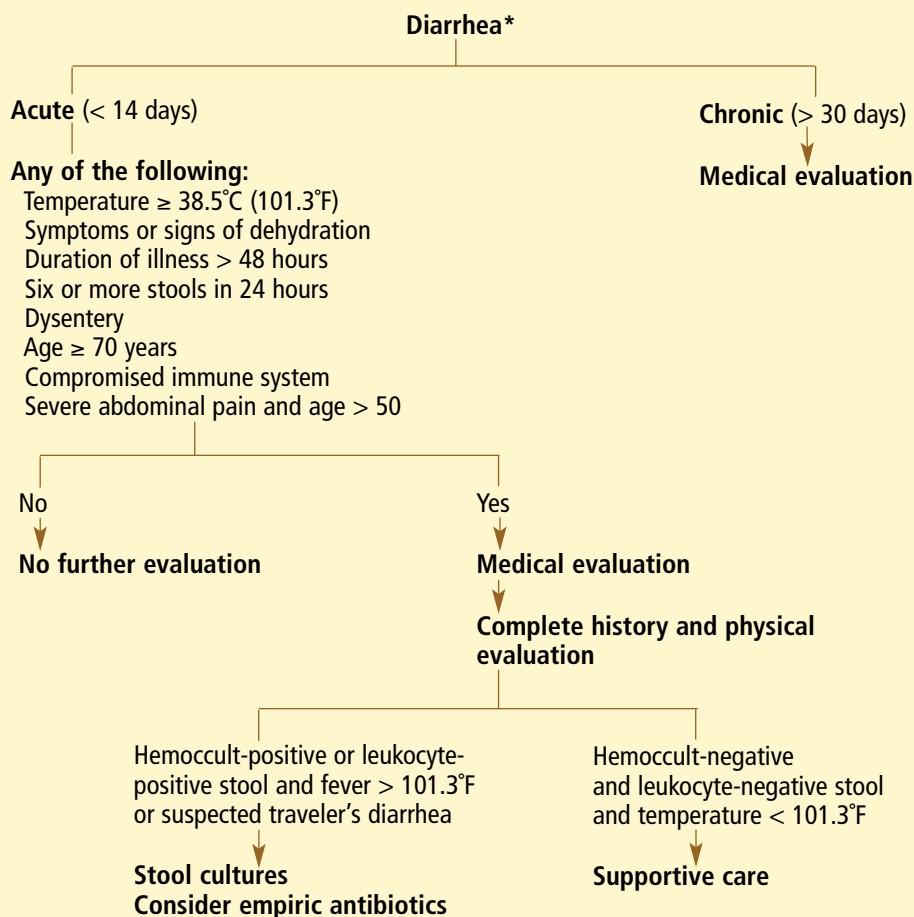
EVALUATION

Primary care physicians and gastroenterologists often encounter this problem in the office and indeed over the telephone and need to decide whether the patient needs further evaluation. In the initial encounter, the physician should ask about several important symptoms to determine if further evaluation is necessary (**FIGURE 1**).

If these symptoms are absent, hospitalization is probably not needed. Patients without these symptoms can usually be treated with

In some cases, only a brief evaluation is necessary

Workup for diarrhea

Diarrhea*

Acute (< 14 days)

Chronic (> 30 days)

Medical evaluation

Any of the following:
Temperature ≥ 38.5°C (101.3°F)
Symptoms or signs of dehydration
Duration of illness > 48 hours
Six or more stools in 24 hours
Dysentery
Age ≥ 70 years
Compromised immune system
Severe abdominal pain and age > 50

No

No further evaluation

Yes

Medical evaluation

Complete history and physical evaluation

Hemoccult-positive or leukocyte-positive stool and fever > 101.3°F or suspected traveler's diarrhea

Stool cultures
Consider empiric antibiotics

Hemoccult-negative and leukocyte-negative stool and temperature < 101.3°F

Supportive care

*Diarrhea lasting 15 to 29 days is referred to as persistent acute diarrhea, a poorly defined entity for which there are no guidelines as to how it should be investigated

DEVISED FROM RECOMMENDATIONS FROM THE AMERICAN COLLEGE OF GASTROENTEROLOGY,[2] THE INFECTIOUS DISEASES SOCIETY OF AMERICA,[13] AND A REVIEW BY ALEXANDRA ILNYCKI, MD.[6]

FIGURE 1

oral hydration and over-the-counter drugs such as loperamide, kaolin, or bismuth subsalicylate for symptomatic relief. Loperamide is generally recommended for most cases of acute diarrhea because it is safe and effective.[2,7,8]

Thus far, there are few data to support withholding antidiarrheals in the absence of fever greater than 101.3°F or bloody stools.[9,10]

History and physical examination
After deciding to proceed with a medical evaluation, the physician faces the dilemma of deciding what is an appropriate evaluation.

The history can give clues to the specific pathogen responsible for the illness (**TABLE 1**).[3,6] Ask about:
- Travel
- Sexual practices
- Antibiotic use within 2 months
- Other medications (eg, laxatives, antacids, digoxin, immunosuppressive drugs)
- Ill contacts
- Group gatherings after which other attendees also developed similar illness
- Recent surgeries or procedures
- Recent meals
- Water source

TABLE 1

Clues to specific pathogens in acute diarrhea

Appearance
  Bloody diarrhea
    Enterohemorrhagic *Escherichia coli*
    Campylobacter
    Salmonella
    Shigella
    Entamoeba histolytica
  Febrile dysentery with pseudoappendicitis symp-
  toms, thyroiditis, pericarditis, glomerulonephritis
    Yersinia enterocolitica
  Profuse watery diarrhea after eating inadequately
  cooked seafood
    Vibrio cholerae
    Noncholera *Vibrio*

Foods
  Eggs, poultry
    Staphylococcus aureus
    Salmonella
    Campylobacter
  Fried rice
    Bacillus cereus
  Home-canned foods
    Clostridium perfringens
  Milk products, deli meats, poultry
    Listeria
    Campylobacter
  Seafood
    Vibrio cholerae
    Noncholera *Vibrio*
  Undercooked beef, contaminated water (and fruits
  and vegetables washed in contaminated water)
    E coli 0157:H7
  Pets (turtles)
    Salmonella

Host
  Homosexual men
    Herpes simplex virus
    Treponema pallidum
    Chlamydia
    Giardia
    Cryptosporidium
    Neisseria gonorrhoea
    Shigella
  Immunocompromised
    Parasites: *Cryptosporidium parvum, Isospora belli,*
    Cyclospora, [*] *Microsporidia*
    Bacteria: *Salmonella enteritidis, Campylobacter,*
    Shigella, Mycobacterium avium intracellulare
    Viruses: Cytomegalovirus, herpes simplex virus,
    adenovirus, human immunodeficiency virus

Onset
  < 6 hours (preformed toxin)
    Staphylococcus aureus
    Bacillus cereus
  8–14 hours
    Clostridium perfrigens
  > 14 hours
    Bacteria: *Salmonella, Shigella, Campylobacter*
    Viruses: adenovirus, Norwalk virus, rotavirus
    Parasites[†]: *Entamoeba, Giardia, Cryptosporidium*

Setting where acquired
  Day care centers
    Rotavirus
    Giardia
    Salmonella
    Shigella
    Cryptosporidium
    Campylobacter
  Hospital or nursing home, antibiotic use
  in the past 2 months
    Clostridium difficile
  Travel to Middle East, South and Southeast Asia, Africa,
  Mexico, mountainous areas of North America
    Enterotoxicogenic *E coli*
    Aeromonas
    Giardia
    Entamoeba histolytica

[*]*Cyclospora* and *Cryptosporidium* have also been
documented in immunocompetent patients
[†]Parasitic infections may have a delayed and variable onset

DEVISED FROM RECOMMENDATIONS FROM THE AMERICAN COLLEGE OF GASTROENTEROLOGY[2] AND REVIEWS BY ALEXANDRA ILNYCKYI, MD,[6] AND DAVID ROLSTON, MD[4]

- Pets (particularly turtles)
- The onset and duration of the illness.

    The physical examination is helpful in determining the severity of dehydration, but rarely in determining the etiology of diarrhea. It should include:

- General appearance and mental status
- Vital signs, including orthostatic changes in blood pressure and heart rate, as well as temperature
- Abdominal examination
- Stool for occult blood

- Skin turgor and mucus membrane moisture (considered to be of value in children, but less reliable in adults, particularly the elderly).[1,3,6]

Characteristic skin lesions can in rare cases point to a specific cause of diarrhea due to underlying systemic diseases,[10,11] eg:

- Migratory necrolytic erythema—glucagonomas
- "Pinch" purpura—amyloidosis
- Generalized hyperpigmentation—Addison disease
- Dermatitis herpetiformis—celiac sprue
- Urticaria pigmentosa, telangiectasia macularis eruptiva persistens, and diffuse cutaneous mastocytosis—mastocytosis
- Carcinoid flush and venous telangiectasia—carcinoid syndrome
- Rose spots—typhoid fever.

Diagnostic studies

Stool cultures. Routine stool cultures grow a pathogenic organism in 1.5% to 5.6% of cases, at a cost of $950 to $1,200 per positive result.[2,12]

Stool cultures should probably be ordered only if the patient has fever and bloody diarrhea or is immunocompromised, or as part of a research project when investigating an outbreak of diarrhea.

Suspected traveler's diarrhea would also be an indication for stool culture, but many experts believe empiric antibiotics are appropriate in this situation, since these drugs can decrease the duration of illness by 2 to 3 days. Furthermore, stool cultures may be of little value if the patient responds to empiric therapy.[13]

In hospitalized patients, the yield of stool cultures drops to zero by the third day of hospitalization.

If stool cultures are ordered, it is important to inform the laboratory which organism is suspected. "Routine cultures" will detect *Shigella*, *Salmonella*, and *Campylobacter* species. Special culture media and conditions are required for *Aeromonas*, *Yersinia*, and *Vibrio* species and *Escherichia coli* O157:H7.[4] The pretest probability is based almost entirely on clues from the history and the physician's knowledge of the epidemiology of acute diarrhea.

Testing the stool for ova and parasites is not routinely indicated and should be done only in the following situations:

- Patients with a history of recent travel to Africa, South and Southeast Asia, Russia, the Far East, and the mountainous areas of North America where *Giardia*, *Cryptosporidium*, and *Cyclospora* infections are endemic
- Homosexuals who are immunocompromised (who are at risk for *Giardia* and *Entamoeba histolytica* infections)
- Epidemiologic studies for community outbreaks of the aforementioned parasites
- Dysentery with few leukocytes.[11,12]

If the patient has recently been hospitalized or has received antibiotics, stool cultures or stool testing for ova and parasites is not warranted, although sending stools for *Clostridium difficile* toxin testing is justified.

In addition to the aforementioned reasons for the low yield of stool cultures, it is also important to realize that viruses are a common cause of diarrhea and are not detected by routine stool cultures.

Fecal leukocyte testing can further aid in the decision to order stool cultures. A positive fecal leukocyte test suggests an inflammatory cause of acute diarrhea (although the sensitivity of this test is relatively low) and in the appropriate clinical setting can support obtaining stool cultures.[3,14]

Endoscopy is generally not of value in the evaluation of acute diarrhea. However, it may help to determine the cause of the diarrhea and can potentially change the treatment plan if ischemic colitis or inflammatory bowel disease is in the differential diagnosis. Another situation in which endoscopy may be of value is if the patient is immunocompromised and possibly has cytomegalovirus colitis.[6,10]

Other tests. Depending on the clinical severity of the illness, other tests to be considered are:

- Plain film radiography of the abdomen—to evaluate the possibility of colitis, toxic megacolon, or ileus
- A basic metabolic panel—to evaluate renal function and electrolyte status if the patient appears moderately to severely dehydrated
- A complete blood cell count—although rarely helpful in determining the cause of diarrhea, it can suggest an invasive organism if there is leukocytosis with bandemia. It can

When ordering stool cultures, tell the lab which organism you suspect

also be useful to evaluate for neutropenia if the history and physical indicate the patient may be at risk.[15]

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