REFERENCES:

1. Infectious Diseases Society of America

2. American College of Gastroenterology

INTRODUCTION

Diarrheal disease is one of the top ten leading causes of death worldwide and is a particular concern for children younger than five years old in resource-limited settings.
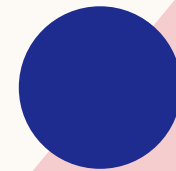
Most cases of acute diarrhea in adults are of infectious etiology, and most cases resolve with symptomatic treatment alone.

When clinicians care for adults with diarrhea, two important decision points are:
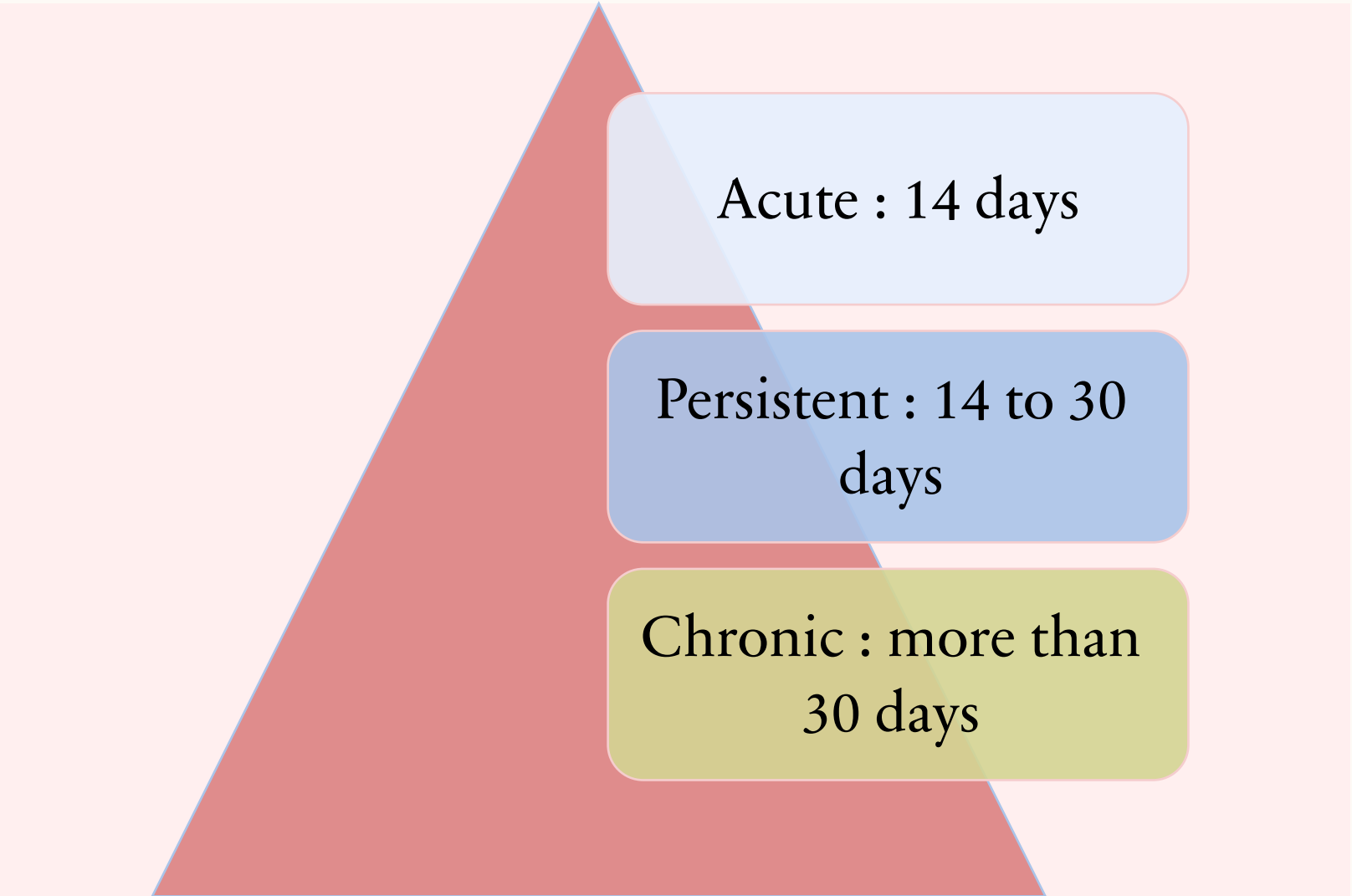- **when to perform stool testing**
- **whether to initiate empiric antimicrobial therapy**

DEFINITION

Acute infectious diarrhea is defined as the passage of loose or watery stools, typically at least **three times** in a 24-hour period lasting **less than 14 days**.

DIARRHEA DURATION:

Acute : 14 days

Persistent : 14 to 30 days

Chronic : more than 30 days

ETIOLOGIES

Most cases of acute diarrhea are due to infections and are self-limited

The major causes of acute infectious diarrhea include:
- **viruses**
  (norovirus, rotavirus, adenoviruses, astrovirus,…..)
- **bacteria**
  (Salmonella, Campylobacter, Shigella, enterotoxigenic Escherichia coli, Clostridioides difficile,…..)
- **protozoa**
  (Cryptosporidium, Giardia, Cyclospora, Entamoeba, …..)

MOST CASES OF ACUTE INFECTIOUS DIARRHEA ARE LIKELY VIRAL

infectious diarrhea

Among those with **severe diarrhea**, however, **bacterial causes** are responsible for more cases.

Protozoa are less commonly identified as the etiologic agents of acute gastrointestinal illness.
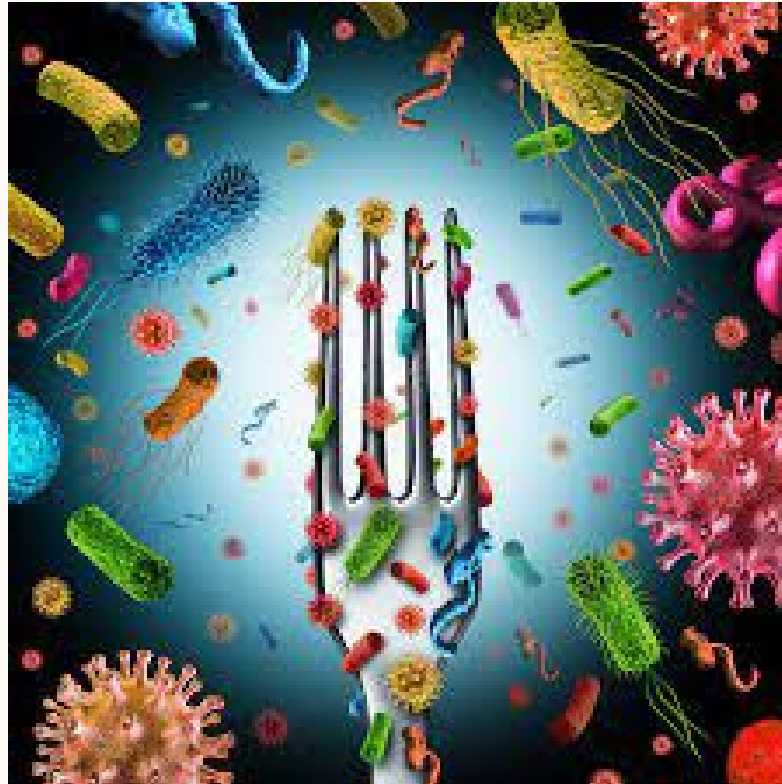
infectious diarrhea

HISTORY

- duration of symptoms
- frequency and characteristics of the stool and associated symptoms
- evidence of extracellular volume depletion (eg, dark yellow or scant urine, decreased skin turgor, orthostatic hypotension)
- potential exposures:

food history

Residence

occupational exposure

recent and remote travel

pets, and hobbies

- Medical and drug history

Common Causes of Sudden or Chronic Diarrhea

Sudden Diarrhea
- Food poisoning
- Traveler's diarrhea
- Stomach flu

Chronic Diarrhea
- Celiac disease
- Food intolerance/ allergy
- Milk/soy protein intolerance
- IBS
- Medication

verywell

infectious diarrhea

SMALL OR THE LARGE BOWEL?

How to find out?

SMALL BOWEL

- Typically watery
- Large volume
- Associated with abdominal cramping, bloating, and gas
- Weight loss can occur if diarrhea becomes persistent
- Fever is rarely a significant symptom
- Occult blood or inflammatory cells in the stool are rarely identified

infectious diarrhea

LARGE BOWEL

- Frequent, regular and small volume

- Often painful bowel movements

- Fever and bloody or mucoid stools are common

- Red blood cells and inflammatory cells can be seen routinely on stool microscopy

These inflammatory signs associated with large bowel infection (fever, bloody or mucoid stools) suggest invasive bacteria (eg, Salmonella, Shigella, or Campylobacter), enteric viruses (eg, cytomegalovirus [CMV] or adenovirus), Entamoeba histolytica, or a cytotoxic organism such as C. difficil.

infectious diarrhea

VISIBLY BLOODY ACUTE DIARRHEA :

- relatively uncommon

- High possibility of Shiga toxin-producing

E. coli (STEC) (eg, *E.coli* O157:H7)

,*Shigella*, *Campylobacter* and *Salmonella* species

- noninfectious etiologies such as inflammatory

  bowel disease or ischemic colitis

FOOD HISTORY

- **Within six hours** – suggests ingestion of a preformed toxin of Staphylococcus aureus or Bacillus cereus, particularly if nausea and vomiting were the initial symptoms

- **At 8 to 16 hours** – suggests infection with Clostridium perfringens

- **At more than 16 hours** – suggests either viral or other bacterial infection (eg, contamination of food with enterotoxigenic or STEC or other pathogens)

OTHER EXPOSURES

- Exposure to **animals** (poultry, turtles, petting zoos) has been associated with **Salmonella** infection.

- **Travel** to a resource-limited setting increases the risk of bacterial diarrhea and also informs the risk of certain parasitic infections.

- Occupation in **daycare** centers has been associated with infections with **Shigella**, **Cryptosporidium**, and **Giardia**. **Rotavirus** is a potential consideration.

MEDICAL HISTORY

- **Ask about recent antibiotic use** (as a clue to the presence of C. difficile infection)

- **Other medications** (such as proton pump inhibitors, which can increase the risk of infectious diarrhea)

- **Past medical history** (eg, to identify an immunocompromised host or the possibility of nosocomial infection)

As examples of medical history:

- **Pregnancy** 20-fold risk of **listeriosis**/ contaminated meat or unpasteurized dairy products

- **Cirrhosis** has been associated with **Vibrio** infection

- **Hemochromatosis** has been associated with **Yersinia** infection.

PHYSICAL EXAMINATION

The examination focuses on evaluating volume status and identifying complications.

Volume depletion can be suggested by:
- dry mucous membranes,
- diminished skin turgor
- postural or frank reductions in blood pressure
- altered sensorium

These signs can be mild or absent with early hypovolemia.

GENERAL LABORATORY TESTS

VOLUME DEPLETION

- CBC
- BUN, Cr
- K, Na
- BS

HIGH FEVERS OR SYSTEMICALLY ILL
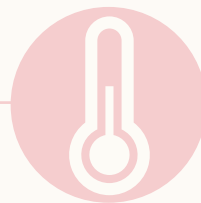
- BLOOD CULTURE

infectious diarrhea

STOOL TESTS FOR BACTERIAL PATHOGENS INDICATIONS

SEVERE ILLNESS

- Profuse watery diarrhea with signs of hypovolemia

- Passage of >6 unformed stools per 24 hours

- Severe abdominal pain

- Need for hospitalization

INFLAMMATORY DIARRHEA

- Bloody diarrhea

- Passage of many small volume stools containing blood and mucus

- Temperature ≥38.5ºC

HIGH-RISK HOST

- Age ≥70 years

- Comorbidities, such as cardiac disease, which may be exacerbated by hypovolemia or rapid infusion of fluid

- Immunocompromising condition (eg, HIV)

- IBD

- Pregnancy

INDICATIONS FOR IMAGING

- significant peritoneal signs or ileus computed tomography to identify potential complications:

- bowel perforation, abscess, fulminant colitis, toxic megacolon, or intestinal obstruction.

- colonic wall thickening are characteristic of C. difficile infection

MANAGEMENT

FLUID REPLETION

rehydration, preferably by the oral route intravenous fluid

DIETARY RECOMMENDAT IONS
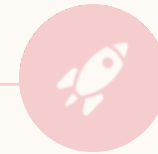
No high fat Foods
No Dairy products

SYMPTOMATIC THERAPY

Cautiously
Anti motility agent
Not in fever, bloody or mucoid stools

EMPIRIC ANTIBIOTIC THERAPY

?????

PROBIOTICS

specific probiotics
Lactobacillus GG
Saccharomyces boulardii

RECOMMENDATION

- Many clinicians are concerned about treating patients with **grossly bloody diarrhea** and do not use antibiotics given the possibility of **Shiga toxin-producing *E. coli* (STEC)** as the causative pathogen.
- **Do not use antibiotics for confirmed STEC** infections because there is no evidence of benefit and there is a risk of precipitating **hemolytic-uremic syndrome (HUS)** with antibiotic therapy.

RECOMMENDATION

- **For most adults with highly symptomatic or severe bloody diarrhea**, the benefits of antibiotic therapy may outweigh the low risk of potential complications from treating STEC.

- Nevertheless, **we withhold empiric antibiotic therapy pending stool testing to rule out STEC or Shiga toxin production in stable patients when the likelihood of STEC is higher** (eg, bloody diarrhea in the setting of an outbreak or in an afebrile patient).
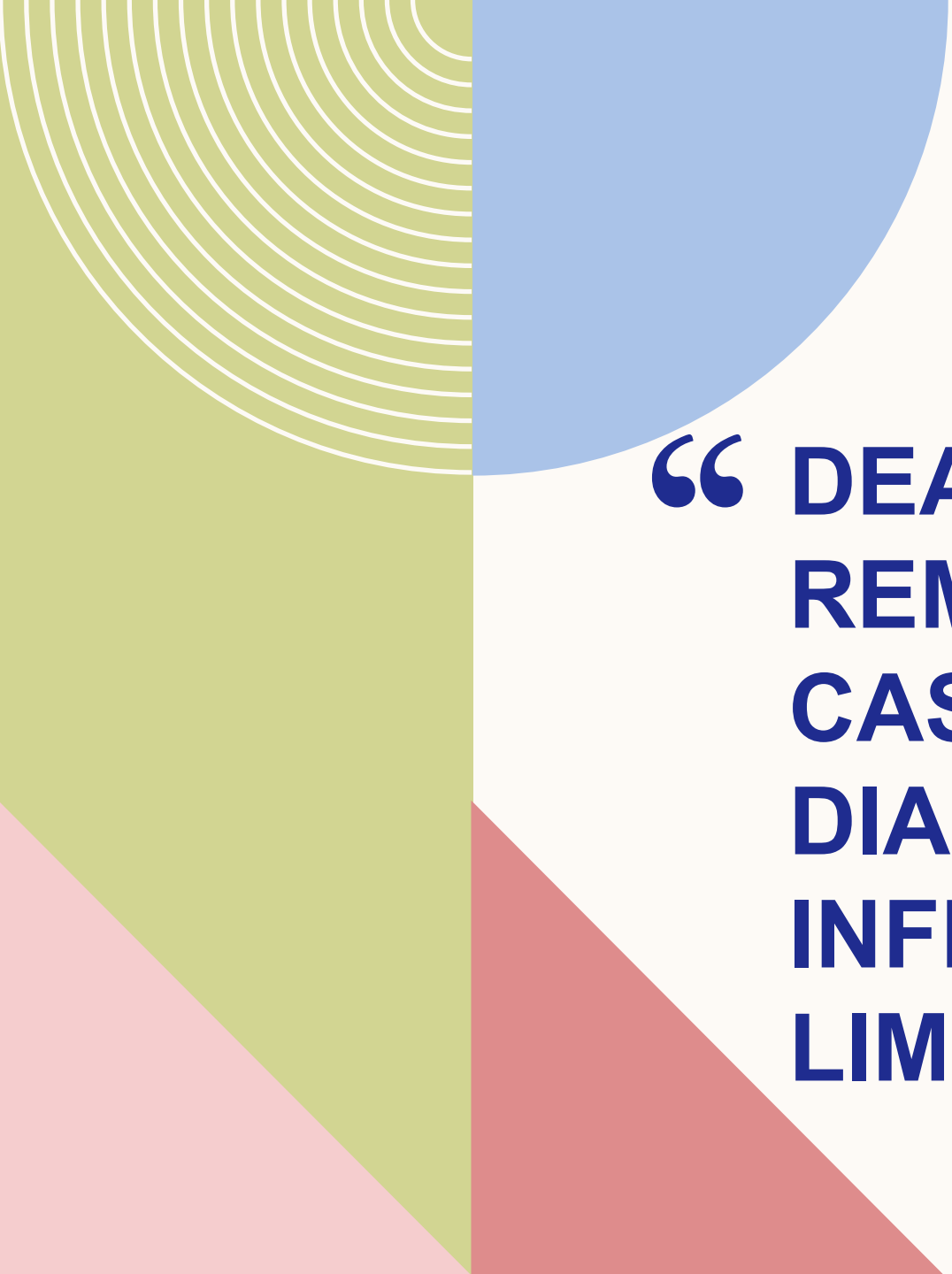
ANTIBIOTIC

AZITHROMYCIN

CIPROFLOXACIN

LEVOFLOXACIN

single 1 g
dose (for patients
without dysentery)
or as 500 mg once
daily for three days

a single 750 mg
dose or
500 mg twice
daily for three to
five days

500 mg as a
single
dose or given
once daily for
three to five days

" **DEAR PHYSICIAN, REMEMBER THAT, MOST CASES OF ACUTE DIARRHEA ARE DUE TO INFECTIONS AND ARE SELF-LIMITED** "

THANK YOU

Maryam Nakhostin
mnakhostin@gmail.com

Tehran University of Medical Sciences