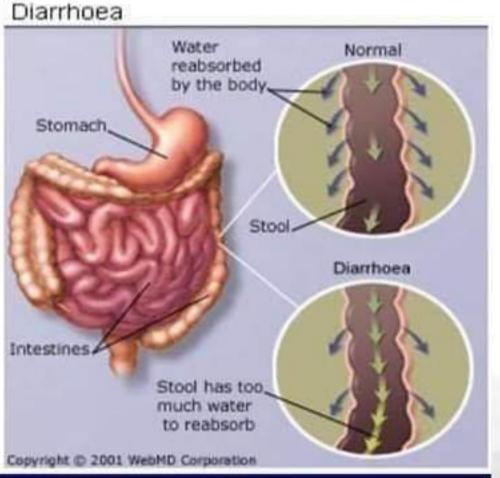
# Acute Diarrhea in children

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#### Definition



- Stool weight in excess of 200 gm/day
- 3 or more loose or watery stools/day
- Alteration in normal bowel movement characterized by decreased consistency and increased frequency
- Less than 14 days in duration

## **Epidemiology**

- 1.2-1.9 episodes per person annually in the general population
- 2.4 episodes per child <3 years old annually</li>
- 5 episodes per year for children <3 years old and in daycare
- Seasonal peak in the winter

## Etiology

- Viral: 70-80% of infectious diarrhea in developed countries
- Bacterial: 10-20% of infectious diarrhea but responsible for most cases of severe diarrhea
- Protozoan: less than 10%

## Viral Diarrhea

- Rotavirus
- Norovirus (Norwalk-like)
- Enteric Adenovirus
- Astrovirus

#### Rotavirus

- Leading cause of hospitalization for diarrhea in children
- Most prevalent during winter season
- Fecal-oral transmission: viral shedding can persist for 21 days
- Acute onset of fever followed by watery diarrhea (10-20 BM/day) and can persist for up to a week

### Norovirus

- Most common cause of diarrheal outbreaks/epidemics
- Multiple modes of fecal-oral transmission
- Acute onset of nausea and vomiting, watery diarrhea with abdominal cramps and can persist for 1-3 days

### **Enteric Adenovirus**

- Primarily affects children < 4 years old</p>
- Fecal-oral transmission
- Clinical picture similar to rotavirus (fever and watery diarrhea)

#### Astrovirus

- Primarily affects children < 4 years old and immunocompromised
- Seasonal peak in the winter
- Fecal-oral transmission: viral shedding can occur for several weeks
- Fever, nausea and vomiting, abdominal pain, and diarrhea lasting up to a week

# Summary of Viral Diarrhea

- Most likely cause of infectious diarrhea
- Rotavirus and Norovirus are most common
- Symptoms usually include low grade fever, nausea and vomiting, abdominal cramps, and watery diarrhea lasting up to 1 week
- Viral shedding can occur for weeks after symptoms resolve

## **Bacterial Diarrhea**

Campylobacter

- Salmonella
- Shigella
- Enterohemorrhagic Escherichia coli

## Campylobacter

- Most common bacterial pathogen
- Transmitted through ingestion of contaminated food or by direct contact with fecal material
- Symptoms include diarrhea (+/- blood), abdominal cramps (can be severe), malaise, fever
- Usually self-limited and does not require antibiotics

#### Salmonella

- Most common in children <4 years old and a peak in the first few months of life
- Transmitted via ingestion of contaminated food and contact with infected animals
- Symptoms include fever, diarrhea, and abdominal cramping
- Antimicrobial therapy can prolong fecal shedding

## Shigella

- Fecal-oral transmission
- Symptoms include fever, abdominal cramps, tenesmus, and mucoid stools with or without blood
- Can lead to serious complications
- Antimicrobial treatment shortens duration of illness and limits fecal shedding

### E. Coli 0157:H7

- Transmission via contaminated food and water
- Symptoms include bloody diarrhea, severe abdominal pain, and sometimes fever
- Can lead to serious complications
- Antibiotics have no proven benefit and may increase the risk of complications

# Summary of Bacterial Diarrhea

- Can affect all age groups
- Fecal-oral transmission, often through contaminated food
- Typical symptoms include bloody diarrhea, severe cramping, and malaise
- Antibiotic treatment not always necessary

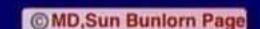
## Physical Exam

- Vitals, vitals, vitals!
- Abdominal exam
- Presence of occult blood
- Signs of dehydration

## Laboratory Evaluation

- Unnecessary for patients who present within 1 day from onset of diarrhea
- Warning signs/symptoms: bloody diarrhea, high fever, severe abd pain, dehydration.
- Fecal leukocytes followed by bacterial culture, ova & parasites, viral antigens
- CBC, chemistries

#### Treatment



- Fluid replacement
  - Fluids or Oral Rehydration Solutions (ORS)
  - Parenteral rehydration
- Early refeeding
- Symptomatic Treatment
  - Oral bismuth
  - Loperamide
- Antibiotics

## Fluid Replacement

- ORS: Infalyte, Pedialyte, Naturalyte and Rehydralyte
- Must be used or thrown out 24 hours after opening/mixing

### **AAP Guidelines**

- Diarrhea with no dehydration normal diet and supplemental ORS with each diarrheal episode.
- Diarrhea with some dehydration seek medical care, give ORS in the doctor's office, and cont. ORS and normal diet at home.
- Moderate severe dehydration consider intravenous hydration, especially if patient is also vomiting

## Early Refeeding

- Luminal contents help promote growth of new enterocytes and facilitate mucosal repair
- Can shorten duration of the disease
- Lactose restriction is not necessary except in severe disease

## Symptomatic Treatment

- Only in patients who are afebrile and have nonbloody diarrhea
- Loperamide inhibits peristalsis and has antisecretory properties
- Bismuth subsalicylate may help with nausea, vomiting, and abdominal pain, as well as shorten duration of illness

### Antibiotics

- antibiotic therapy generally not beneficial and can be harmful
- Those with more than eight stools/day, diarrhea >1 wk, volume depletion, immunosuppresion, or warning signs
- Fluoroquinolone or Azithromyzin

# Specific Antibiotic Therapy Therapy

- Viral of course not!
- Campylobacter only if severe
- Salmonella can prolong fecal shedding, only prescribe if severe
- Shigella proven beneficial
- E. Coli O157:H7 can be harmful

#### Zinc Supplementation in AD

- Responsible for > 200 enzymes in body.
- Improves the immune function & absorption.
- Supplementation in AD and PD helpful in 20-30% reduction in diarrhea.
- 42% lower rate of treatment failure or death.

#### - Dosages

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- o Infants 10mg daily x 2 weeks.
- Older children 20mg daily x 2 weeks.
- o Persistent diarrhea x 4 weeks

#### Home Available Fluids

#### Recommended

- Salt sugar solution
- Lemon water(Sikanjabi)
- Rice water / Kanjee
- Soups
- Dal water
- Lassi
- Coconut water
- Plain water

#### Not recommended

- Simple sugar solution
- Glucose solution
- Carbonated soft drinks
- Fruit juices-tinned or fresh
- Fluids for athletes
- Gelatin desserts
- Tea/Coffee

## Nursing management:

- Restoring fluid and electrolyte balance by ORS and IV therapy.
- Prevention of spread of infection by good hand washing practices, hygienic disposal of stools, care of diapers, general cleanliness and universal precautions.

- Preventing skin breakdown by frequent change of diaper, keeping the perineal area dry and clean
- Providing adequate nutritional intake by appropriate dietary management
- Reducing fear and anxiety by explanation, reassurance, answering questions and providing necessary informations.

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Giving health education for prevention of diarrhea, home management of diarrheal diseases, importance of ORS, dietary management etc..