

# Acute Diarrhea in children

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Diarrhoea



# Definition

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- 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
- 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

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# 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
- Fecal-oral transmission
- Clinical picture similar to rotavirus (fever and watery diarrhea)

# Astrovirus

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- 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

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- 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* O157:H7

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- 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

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- 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

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- 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

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- **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

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- 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, immunosuppression, or warning signs
- Fluoroquinolone or Azithromycin

## Specific Antibiotic Therapy

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- 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.
- o 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:

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- 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..