

# Acute diarrhoea

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# Diarrhea

- Diarrhea is best defined as excessive loss of fluid and electrolyte in the stool.
- Acute diarrhea is defined as sudden onset of excessively loose stools of  $>10$  mL/kg/day in infants and  $>200$  g/24 hr in older children, which lasts  $<14$  days. When the episode lasts  $>14$  days, it is called *chronic* or *persistent diarrhea*.

# Common causes:

**Viral enteritis :** Rota virus .

**Bacterial enteritis:**

**Enterotoxin associated :**

Ecoli ,Cholera ,clostredium perfringers ,Staphylococcus.

**Non enterotoxin associated :**

Salmonella ,Shigella ,Ecoli ,Yersinia.

**Parasitic enterities :** Amebiasis ,Giardiasis,cryptosporidiosis.

- Food poisoning
- Systemic infection
- **Antibiotic induced:**  
Clostridium difficile.

# **MANIFESTATION:**

**VOMITING  
DIARRHEA  
± FEVER**

# History:

Duration of illness.

type & frequency of stool, presence of blood or mucus.

type & amount of feeding .

frequency of urination .

Irritable and Lethargy

Current family illness

Source of water supply.

Contact with animal

History of travel.

Associated symptoms: fever , skin rash, localized abd pain.



# PHYSICAL EXAMINATION:

Vital signs.

weight .

skin turgor ,mucous membranes ,fontaneles, eyes.

Activity state.

Irritability .

Associated rash.

# INVESTIGATION:

**SHOULD BE MINIMIZED IN MILD CASES**

Stool routine & culture.

RFT , serum electrolytes.

CBC.

Urine routine & culture.

# The broad principles of management of acute gastroenteritis in children:

- ✓ Oral rehydration therapy versus IVF
- ✓ Enteral feeding and diet selection



# What about

- Antibiotic use
- Anti diarrheal drugs
- ✓ Zinc supplementation
- ✓ additional therapies such as probiotics

# Electrolyte content of various oral rehydration solutions

<b>Solution</b>	<b>Glucose g/L</b>	<b>Na Meq/L</b>	<b>K Meq/L</b>	<b>Base Meq/L</b>	<b>osmolality</b>
<b>Pedialyte</b>	25	45	20	30	250
<b>Rehydralyte</b>	25	75	20	30	310
<b>Enfalyte</b>	30	50	25	30	200
<b>WHO ORS</b>	13.5	75	20	30	245
<b>COMMONLY USED BEVERAGES</b>					
<b>Apple juice</b>	120	0.4	44	-	730
<b>Coca-Cola</b>	112	1.6	-	13.4	650

# Treatment Based on Degree of Dehydration

# Rehydration:

- children with Mild to moderate dehydration are most effectively treated with ORS.
- **In initial vomiting stage** ; small volume 5-15 ml of ORS should be given frequently , large volume feeding should be avoided.
- Once rehydration is accomplished(usually in 8-12 hours) easily absorbed foods from the regular diet should be started.

For example: rice , rice cereal , Bananas

## **NUTRITION**

**Continue breast-feeding, or resume age-appropriate normal diet after initial hydration, including adequate caloric intake for maintenance**

# Minimal or no dehydration

**REHYDRATION THERAPY:** Not applicable.

## **REPLACEMENT OF LOSSES:**

<10 kg body weight: 60–120 mL oral rehydration solution (ORS) for each diarrheal stool or vomiting episode; >10 kg body weight: 120–240 mL ORS for each diarrheal stool or vomiting episode.

## **NUTRITION:**

Continue breast-feeding, or resume age-appropriate normal diet after initial hydration, including adequate caloric intake for maintenance

# Mild to moderate dehydration

## **REHYDRATION THERAPY:**

ORS, 50–100 mL/kg body weight over 3–4 hr

. If not tolerating orally give i.v

## **REPLACEMENT OF LOSSES:**

<10 kg body weight: 60–120 mL oral rehydration solution (ORS) for each diarrheal stool or vomiting episode; >10 kg body weight: 120–240 mL ORS for each diarrheal stool or vomiting episode.

## **NUTRITION:**

Continue breast-feeding, or resume age-appropriate normal diet after initial hydration, including adequate caloric intake for maintenance

# Severe dehydration

## If child in shock

Normal saline 10-30 mL/kg body weight as fast as possible intravenously until perfusion and mental status improve

then administer maintenance and deficit as 5% dextrose  $\frac{1}{2}$  normal saline intravenously



# Severe dehydration

**REHYDRATION THERAPY:** normal saline in 20 mL/kg body weight intravenous amounts until perfusion and mental status improve; then administer 100 mL/kg body weight ORS over 4 hr or 5% dextrose  $\frac{1}{2}$  normal saline intravenously at twice maintenance fluid rates

## **REPLACEMENT OF LOSSES:**

Same; if unable to drink, administer through nasogastric tube or administer 5% dextrose  $\frac{1}{4}$  normal saline with 20 mEq/L potassium chloride intravenously

## **NUTRITION:**

Continue breast-feeding, or resume age-appropriate normal diet after initial hydration, including adequate caloric intake for maintenance

# NUTRITION:

- ✱ Breast-fed infants should **continue** to nurse ad libitum even during acute rehydration.
- ✱ Infants too weak to eat can be given milk or formula through a **nasogastric tube**.
- ✱ Lactose-containing formulas are usually **well tolerated**

# NUTRITION:

✱ If lactose malabsorption appears clinically substantial, lactose-free formulas can be used.

✱ Complex carbohydrates, fresh fruits, lean meats, yogurt, and vegetables are all **recommended**.

✱ Carbonated drinks or commercial juices with a high concentration of simple carbohydrates should be **avoided**

## **ZINC SUPPLEMENTATION:**

**There is some evidence that zinc supplementation in children with diarrhea in developing countries leads to reduced duration and severity of diarrhea.**

**children with acute diarrhea in at-risk areas may receive oral zinc in some form for 10–14 days during and after diarrhea**

## ADDITIONAL THERAPIES.

The use of probiotic nonpathogenic bacteria for prevention and therapy of diarrhea has been successful in developing countries.

Probiotics are living microorganisms or components of microbial cells that have a beneficial effect on the host.

They are mainly lactic acid–producing bacilli, mostly **Lactobacilli** and **Bifidobacteria**, and also the yeast **Saccharomyces boulardii**.

# ANTIBIOTIC THERAPY.

While these agents are important to use in specific cases, their widespread and indiscriminate use leads to the development of antimicrobial resistance

# Specific antibiotic:

Salmonella below age 6 months : Third generation CS

Shigella species: trimethoprim-sulfamethoxazole(septrin).

Compaylobacter jejuni: Azithromycin , Clarithromycin.

C.difficile: Vancomycin , Metronidazole(Flagyl).

Giardia: Metronidazole , Nitazoxanide.

Entamoeba histolytica: Metronidazole(Flagyl).

# Acute diarrhea in pediatric

**THANK YOU**

