

Diarrhoeal disease

- Diarrhoeal disease is the second leading cause of death in children under five years old, but is preventable and treatable.
 - Diarrhoeal disease kills 1.5 million children every year.
 - Globally, there are about two billion cases of diarrhoeal disease every year.
 - Diarrhoeal disease mainly affects children under two years of age.
 - Diarrhoea is a leading cause of malnutrition in children under five years old.
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Diarrhoeal disease is the second leading cause of death in children under five years old, responsible for killing 1.5 million children every year. Diarrhoea can last several days, during which the body loses the water and salts that are necessary for survival. Most people who experience severe dehydration and fluid loss. Children who are malnourished are at a higher risk of life-threatening diarrhoea.

Diarrhoea is defined as the passage of three or more loose or liquid stools per day (or more frequent than is normal for the individual). Frequent passing of formed stools is also considered diarrhoea. Diarrhoea is usually a symptom of an infection of the gastrointestinal tract, which can be caused by a variety of bacterial, viral and parasitic infections. It can also be caused by contaminated food or drinking-water, or from person-to-person as a communicable disease. Diarrhoea is treatable with a solution of clean water, sugar and salt, and is preventable.

There are three clinical types of diarrhoea:

- acute watery diarrhoea – lasts several hours or days, and includes mild to moderate dehydration;
- acute bloody diarrhoea – also called dysentery; and
- persistent diarrhoea – lasts 14 days or longer.

Scope of diarrhoeal disease

Every year there are about two billion cases of diarrhoeal disease worldwide.

Diarrhoeal disease is a leading cause of child mortality and morbidity in developing countries, often due to contaminated food and water sources. Worldwide, around 1 billion people live in areas with no access to basic sanitation, and 2.5 billion have no access to basic sanitation. Diarrhoea due to infection is most common in developing countries.

In 2004, diarrhoeal disease was the third leading cause of death in low-income countries, with 1.5 million deaths overall. In children under five years old, diarrhoeal disease is the second only to pneumonia. Out of the 1.5 million children killed by diarrhoeal disease, 1.1 million were under two years old.

In developing countries, children under three years old experience one or more episodes of diarrhoea every year. Each episode deprives the child of the nutrition necessary for growth. Diarrhoea is a major cause of malnutrition, and malnourished children are more likely to die from diarrhoea.

Dehydration

The most severe threat posed by diarrhoea is dehydration. During a diarrhoeal episode, electrolytes (sodium, chloride, potassium and bicarbonate) are lost through the stool, as well as through sweating and breathing. Dehydration occurs when these losses are not replaced.

The degree of dehydration is rated on a scale of three.

- Early dehydration – no signs or symptoms.
- Moderate dehydration:
 - thirst
 - restless or irritable behaviour
 - decreased skin elasticity
 - sunken eyes
- Severe dehydration:
 - symptoms become more severe
 - shock, with diminished consciousness, lack of urine output and feeble pulse, low or undetectable blood pressure, and

Death can follow severe dehydration if body fluids and electrolytes are not replaced. This can be done through the use of oral rehydration salts (ORS) solution, or through an intravenous drip.

Causes

Infection: Diarrhoea is a symptom of infections caused by a host of different microorganisms, most of which are spread by faeces-contaminated water. Infection is prevented by the use of clean water for drinking, cooking and cleaning. Rotavirus and *Escherichia coli* are common causes of diarrhoea in developing countries.

Malnutrition: Children who die from diarrhoea often suffer from undernutrition, making them more vulnerable to diarrhoea. Each diarrhoeal episode, in turn, makes children more malnourished. Diarrhoea is a leading cause of malnutrition in children under five years of age.

Source: Water contaminated with human faeces, for example, from a latrine, is a particular concern. Animal faeces also contain microorganisms that cause diarrhoea.

Other causes: Diarrhoeal disease can also spread from person-to-person, especially in poor hygiene. Food is another major cause of diarrhoea when it is prepared with contaminated water. Water can contaminate food during irrigation. Fish and seafood from contaminated water can also cause the disease.

Prevention and treatment

Key measures to prevent diarrhoea include:

- access to safe drinking-water
- improved sanitation
- exclusive breastfeeding for the first six months of life
- good personal and food hygiene
- health education about how infections spread
- rotavirus vaccination.

Key measures to treat diarrhoea include the following.

- Rehydration: with intravenous fluids in case of severe dehydration; ORS solution for moderate or no dehydration. ORS is a salt and sugar solution which can be prepared safely at home. It costs a few cents per packet and replaces the water and electrolytes lost in the stool.
- Zinc supplements: zinc supplements reduce the duration of diarrhoea and are associated with a 30% reduction in stool volume.
- Nutrient-rich foods: the vicious circle of malnutrition and diarrhoea can be broken by giving nutrient-rich foods – including breast milk – during an episode of diarrhoea, including exclusive breastfeeding for the first six months of life.
- Consulting a health worker if there are signs of dehydration.

WHO response

WHO works with Member States and other partners to:

- promote current policies for the management of diarrhoea in children
- conduct research to develop and test new health delivery strategies
- develop new health interventions, such as the rotavirus immunisation
- help to train health workers, especially at community level.

Control of Diarrheal Diseases (CDD)

Management of the Patient with Diarrhea

A. No Dehydration

- Condition – well, alert
- Mouth and Tongue – moist
- Eyes – normal
- Thirst – drinks normally, not thirsty
- Tears – present
- Skin pinch – goes back quickly
- TREATMENT PLAN A- HOME Treatment.

Three Rules for Home Treatment

1. Give the child more fluids than usual
 - use home fluid such as cereal gruel
 - give ORESOL, plain water
2. Give the child plenty of food to prevent under nutrition
 - continue to breastfeed frequently
 - if child is not breastfeed, give usual milk
 - if child is less than 6 months and not yet taking solid food, give usual milk
 - if child is 6 months or older and already taking solid food, give usual food mixed with vegetables, meat or fish; give fresh fruit juice or fruit pulp; provide potassium; feed child at least 6 times a day. After diarrhoea, give an extra meal each day for two weeks.
3. Take the child to the health worker if the child does not get better in 2 days or if any of the following:
 - many watery stools
 - repeated vomiting
 - marked thirst
 - eating or drinking poorly
 - fever
 - blood in the stool

Oresol Treatment

Age	give after Amount of ORS to each loose stool	Amount of ORS to provide home for use at
months ٢٤ >	ml ١٠٠-٥٠	ml/day ٤٠٠
years ١٠-٢	ml ٢٠٠-١٠٠	ml/day ١٠٠٠
years up ١٠	As much as wanted	ml/day ٢٠٠٠

B. Some Dehydration

- Condition – restless, irritable
- Mouth and Tongue – dry
- Eyes – sunken
- Thirst – thirsty, drinks eagerly
- Tears – absent
- Skin pinch – goes back slowly
- WEIGH PT, TTT. PLAN B

Approximate amount of ORS to give in 1st 4 hours

Age	(Weight (kg	(ORS (ml
months ٤	٥	٤٠٠-٢٠٠
months ١١-٤	٧,٩-٥	٦٠٠-٤٠٠
months ٢٣-١٢	١٠,٩-٨	٨٠٠-٦٠٠
.yrs ٤-٢	١٥,٩-١١	١٢٠٠-٨٠٠
.yrs ١٤-٥	٢٩,٩-١٦	٢٢٠٠-١٢٠٠
yrs. up ١٥	up ٣٠	٤٠٠٠-٢٢٠٠

١. If the child wants more ORS than shown, give more
٢. Continue breastfeeding
٣. For infants below 6 mos. who are not breastfeed, give 100-200 ml every 2-4 hrs during the period
٤. For a child less than 2 years give a teaspoonful every 1-2 min
٥. If the child vomits, wait for 10 min, then continue giving ORS,
٦. If the child's eyelids become puffy, stop ORS, give plain water
٧. If (-) signs of DHN- shift to Plan A

Use of Drugs during Diarrhea

- Antibiotics should only be used for dysentery and suspected cholera
- Antiparasitic drugs should only be used for amoebiasis and giardiasis

C. Severe Dehydration

- Condition – lethargic or unconscious; floppy
- Eyes – very sunken and dry
- Tears – absent
- Mouth and tongue – very dry
- Thirst- drinks poorly or not able to drink
- Skin pinch – goes back very slowly
- Treatment PLAN C- treat quickly

١. Bring pt. to hospital
٢. IVF – Lactated Ringers Solution or Normal Saline
٣. Re-assess pt. Every 1-2 hrs
٤. Give ORS as soon as the pt. can drink

Role of Breastfeeding in the Control of Diarrheal Dis

Two problems in CDD

١. High child mortality due to diarrhea
 ٢. High diarrhea incidence among under fives
- Highest incidence in age 6 – 23 months
 - Highest mortality in the first 2 years of life
 - Main causes of death in diarrhea :
 - **Dehydration**
 - To prevent dehydration, give home fluids “am” as s if dehydration is present, rehydrate early, correctly a ORS
 - **Malnutrition**
 - For under nutrition, continue feeding during diarrhea breastfeeding.

∇ Interventions to prevent diarrhea

١. breastfeeding
٢. improved weaning practices
٣. use of plenty of clean water
٤. hand washing
٥. use of latrines
٦. proper disposal of stools of small children
٧. measles immunization

Breastfeeding

1. Risk of severe diarrhea 10-30x higher in bottle fed infants than in breast
2. Advantages of breastfeeding in relation to CDD
 - a. Breast milk is sterile
 - b. Presence of antibodies protection against diarrhea
 - c. Intestinal Flora in BF infants prevents growth of diarrhea causing b
3. Breastfeeding decreases incidence rate by 8-20% and mortality by 24- months of age.
4. When to wean?
 - 4-6 months – soft mashed foods 2x a day
 - 6 months – variety of foods 4x a day

Summary of WHO-CDD recommended strategies to pr

1. Improved Nutrition

- Exclusive breastfeeding for the first 4-6 months of life and partially f
- Improved weaning practices

2. Use of safe water

- collecting plenty of water from the cleanest source
- protecting water from contamination at the source and in the home

3. Good personal and domestic hygiene

- handwashing , use of latrines, and proper disposal of stools of young children

4. Measles immunization
