

# Control Of Diarrheal Disease (CDD)

## **Instructional Objectives:**

At the end of the lecture the student would be able to:

- 1-Define diarrheal disease in children.
- 2-Point out the occurrence of the disease.
- 3- Define the methods of assessment for dehydration.
- 4-List the degrees of dehydration and their plans of correction.
- 5-List the main preventive measures.

# Diarrhea

Passage of liquid or watery stools, at least three times in a 24-hours, consistency is more important than frequency.

(Frequent passing of formed stools is not diarrhea).

Note :

Breast fed child passes semi-solid pasty yellow stool which is not diarrhea.

# Types of diarrhea

- 1- Acute watery:** passage of frequent loose stools without visible blood ,it lasts for less than 14 days (Rota virus, E.Coli, Shigella, Campylobacter, Cryptosporidium).
- 2- Dysentery:** diarrhea with visible blood in the stool, (Shigella, Campylobacter ,entero invasive E.Coli)
- 3- Persistent:** which lasts for 14 days or longer (E.Coli, Shigella, Campylobacter ).

## **Victims :**

**Children under 5 years of age are the major victims and it is estimated that under 5 children may develop 1-12 episodes of diarrhea per year, this will lead to growth failure and other health complications.**

## Causes :

Diarrhea is caused by different types of microorganisms : **Viral , Bacteria, and Parasites .**

## **Contributing Factors to diarrhea are :**

- 1.Failing to breast fed exclusively for the first 4-6 months of life.**
- 2.Using infant feeding bottles.**
- 3.Storing cooked food at room temp.**
- 4.Using contaminated drinking water.**
- 5.Failing to wash hands after defecation.**
- 6.Failing to dispose feces hygienically.**

**Diarrhea can lead to malnutrition and growth retardation , where the degree of growth retardation directly correlates to the duration of the diarrhea (every day 25 gm loss of weight).**





## ***Factors leading to growth deficit in a baby with diarrhea:***

- 1- Reduced food intake due to anorexia (loss of appetite), the child will not eat much more over the mother withholds feeding the child.
- 2- Reduced absorption of nutrients due to Rapid gut transient time and enteropathy leading to transient malabsorption.
- 3- Catabolic loss: Vomiting (loss of nutrients), fever ,sweating, (energy expenditure).

Malnutrition will lead to immunity reduction leading to more infections & it will contribute to more diarrhea.

diarrhea usually is self limiting disease (it is not the killer) but it has serious outcomes especially **Dehydration (the killer)**, so it should be correct it quickly.

# Dehydration:

A deficit in water and electrolytes (Na, K, CL, HCO<sub>3</sub>).

This results from loss from stool, vomiting, urine, fever, sweat and breathing, *in addition to* inadequate replacement of this loss.



Accordingly Diarrhea in children is classified into :

a-Diarrhea without signs of dehydration.

b-Diarrhea with some (mild and moderate) dehydration

c-Diarrhea with Sever dehydration.

# Assessment:

- Assessing the child for dehydration (condition, eyes, tears, mouth and tongue, thirst, skin pinch, fontanel, arms and legs, pulse, and breathing).
- Weight the child
- Assess for dysentery and persistent diarrhea
- Assess for malnutrition and deficiencies
- Feeding
- Fever



# FIRST, ASSESS YOUR PATIENT FOR DEHYDRATION

	A	B	C
1. LOOK AT: CONDITION	Well, alert	* Restless, irritable *	* Lethargic or unconscious; floppy *
EYES	Normal	Sunken	Very sunken and dry
TEARS	Present	Absent	Absent
MOUTH and TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	* Thirsty, drinks eagerly *	* Drinks poorly or not able to drink *
2. FEEL: SKIN PINCH	Goes back quickly	* Goes back slowly *	* Goes back very slowly *
3. DECIDE:	The patient has <b>NO SIGNS OF DEHYDRATION</b>	If the patient has two or more signs including at least one * sign *, there is <b>SOME DEHYDRATION</b>	If the patient has two or more signs including at least one * sign *, there is <b>SEVERE DEHYDRATION</b>
4. TREAT:	Use Treatment Plan A	Weigh the patient, if possible, and use Treatment Plan B	Weigh the patient and use Treatment Plan C <b>URGENTLY</b>

# Treatment plans

## Plan A :(<5% loss)

The aim : is to prevent dehydration

Steps:

- 1-Give extra fluid : ORS (Oral Dehydration Solution) & home fluids (50-100ml after each stool in < 2years and 100-200 after 2 years).
- 2-Continue feeding of children (breast or another).
- 3-Teach the mother :

## Teach the mother to:

- 1- How to prepare and give ORS
- 2- Signs of dehydration & the danger signs (showing her pictures of the main signs of dehydration).
- 3-Telling her to bring her child immediately to the center if such signs occur (sever diarrhea, persistent vomiting, high fever, sever thirst, convulsion, drowsiness, decrease urine output, and inability to drink)



# FIRST, ASSESS YOUR PATIENT FOR DEHYDRATION

	A	B	C
1. LOOK AT: CONDITION	Well, alert	* Restless, irritable *	* Lethargic or unconscious; floppy *
EYES	Normal	Sunken	Very sunken and dry
TEARS	Present	Absent	Absent
MOUTH and TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	* Thirsty, drinks eagerly *	* Drinks poorly or not able to drink *
2. FEEL: SKIN PINCH	Goes back quickly	* Goes back slowly *	* Goes back very slowly *
3. DECIDE:	The patient has <b>NO SIGNS OF DEHYDRATION</b>	If the patient has two or more signs including at least one * sign *, there is <b>SOME DEHYDRATION</b>	If the patient has two or more signs including at least one * sign *, there is <b>SEVERE DEHYDRATION</b>
4. TREAT:	Use Treatment Plan A	Weigh the patient, if possible, and use Treatment Plan B	Weigh the patient and use Treatment Plan C <b>URGENTLY</b>

## Plan B :(5-10% loss)

The aim : is to correct dehydration

1- Give ORS in the health center: (50-100 ml/kg)

Average:  $Wt (Kg) * 75ml = \text{volume given within 4 hours}$

2- assess every hour :

If no dehydration  $\rightarrow$  go to plan A

If some dehydration  $\rightarrow$  repeat plan B

If severe dehydration  $\rightarrow$  go to plan C

3- continue feeding.

4- teach the mother how to prepare and give ORS and the signs of dehydration.

Notes:

- If the child vomits the ORS , wait for 10 minutes and then restart giving him the solution slowly.
- Puffiness of the face & eyes is a sign of over hydration.

# FIRST, ASSESS YOUR PATIENT FOR DEHYDRATION

	A	B	C
1. LOOK AT: CONDITION	Well, alert	<b>* Restless, irritable *</b>	<b>* Lethargic or unconscious; floppy *</b>
EYES	Normal	Sunken	Very sunken and dry
TEARS	Present	Absent	Absent
MOUTH and TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	<b>* Thirsty, drinks eagerly *</b>	<b>* Drinks poorly or not able to drink *</b>
2. FEEL: SKIN PINCH	Goes back quickly	<b>* Goes back slowly *</b>	<b>* Goes back very slowly *</b>
3. DECIDE:	The patient has <b>NO SIGNS OF DEHYDRATION</b>	If the patient has two or more signs including at least one <b>* sign *</b> , there is <b>SOME DEHYDRATION</b>	If the patient has two or more signs including at least one <b>* sign *</b> , there is <b>SEVERE DEHYDRATION</b>
4. TREAT:	Use Treatment Plan A	Weigh the patient, if possible, and use Treatment Plan B	Weigh the patient and use Treatment Plan C <b>URGENTLY</b>

## Plan C: (>10% loss)

*The aim is to Correct dehydration urgently*

Rout : IV or Naso-Gastric tube (because fast action is needed).

In IVF : give *Ringer's lactate solution*, if it is not available then use *normal saline*.

Wt (kg) x 100ml over a period of :

Age

30 ml / kg

70 ml / kg

< 1 year

1 hour

5 hour

> 1 year

30 min.

2.5 hours

**Assess every hour, if no improvement, give fluid more rapidly.**

**And as soon as the patient can drink : give ORS in 5ml/kg/hr.**

**Reassess after that and classify him according to the signs & choose the appropriate plan accordingly :**

**If not dehydrated → go to plan A.**

**If some dehydration → go to plan B.**

## ■ Signs of response:

- 1. Strong radial pulse.
- 2. Improve consciousness.
- 3. Ability to drink.
- 4. Improve skin turgor.
- 5. Passage of urine.





## ■ Causes of Seizures:

- Hypoglycemia (hypertonic glucose 200gr/L 2.5ml/ kg over 5min IV)
- Hyperthermia (Acetaminophen, cold sponges)
- Hyper and hyponatraemia (ORS or IV fluids )
- CNS conditions unrelated to diarrhea

## Oral Dehydration Solution (ORS).

### Composition:

Sodium Chloride 3.5 gm

Sodium tricitrate 2.9gm

Potassium Chloride 1.5 gm

Glucose: 20 gm

Dissolved In 1000ml (1 liter) of water .

**Advantages:** cheap, effective, easy to be given, and 95% of the cases is treated by ORS (Fatality rate has decreased a lot after the introduction of ORS).

If ORS not available home prepared fluids can be used like rice water, soup, fruit juice, salt and sugar solution (one table spoon of sugar & one teaspoon of salt)

## *Reasons for failure of ORS therapy*

High purging rate eg 15-20 times/ day

Persistent vomiting.

Sever dehydration.

In ability to drink.

glucose malabsorption.

Abdominal distention and ileus.

Incorrect preparation or administration of ORS.

***Indications of antimicrobials in diarrhea:***

Suspicion of cholera

Dysentery

Persistent diarrhea (Giardia, Entameba )

Pathogenic MO isolated by stool culture

## Indications for IV therapy:

*Severe dehydration with or without signs of shock*

*Fatigue*

*Comma*

*Persistent vomiting*

*Prolonged Oliguria*

## **Interventions that can prevent diarrhea:**

1. Breast feeding.
2. Improvement of weaning practice.
3. Hand washing A Clean water usage.
4. Measles immunization