

# **TRAINING FOR IMPROVED PRACTICE: Public Health and Nutrition in Emergencies**

## **COMMUNICABLE DISEASES: Overview of Diarrheal Diseases**

### **UNICEF Core Corporate Commitments Training**

In collaboration with:

**Feinstein International Famine Center, Tufts University**

**Mailman School of Public Health, Columbia University**

**International Emergency and Refugee Health Branch,**

**Centers for Disease Control**

# Overview of the Session

- Identify the contribution of diarrheal diseases to mortality in emergencies
- Specify prevention and control measures, including the role of a laboratory
- Discuss care of children with diarrhea, including ORS
- Identify UNICEF's role in control of diarrheal diseases in emergencies

No Madonna and Child could touch that picture of a mother's tenderness for a son she soon will have to forget.

The air was heavy with odors of diarrhea of unwashed children with washed-out ribs and dried-up bottoms struggling in labored steps behind blown empty bellies.

Most mothers there had long ceased to care but not this one; she held a ghost smile between her teeth and in her eyes the ghost of a mother's pride as she combed the rust-colored hair left on his skull and then - singing in her eyes - began carefully to part it...

In another life this would have been a little daily act of no consequence before his breakfast and school; now she did it like putting flowers on a tiny grave.

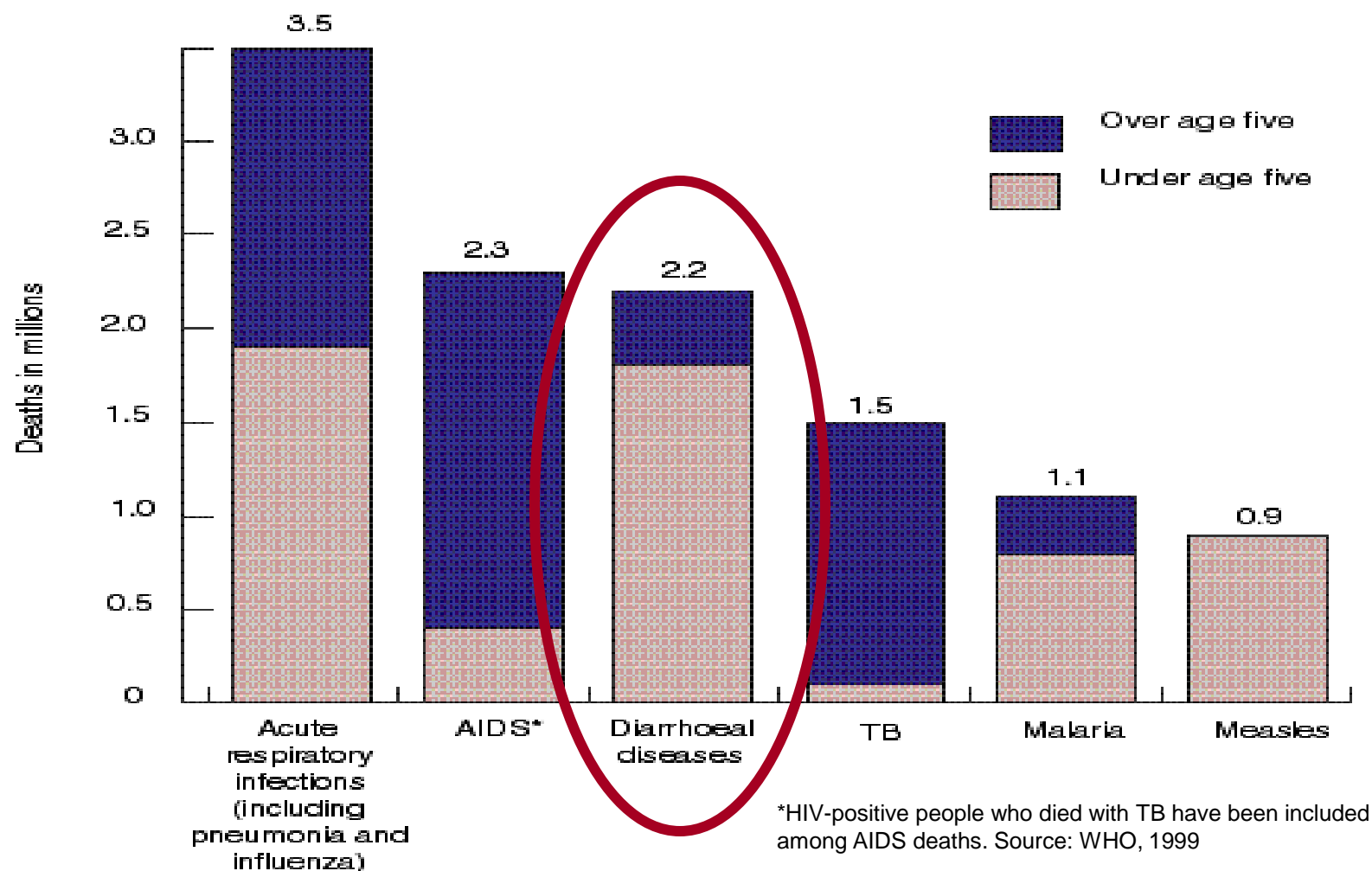
*Chinua Achebe*

# Diarrheal Diseases

- Often the major cause of mortality in acute phase of emergency
- Important cause of morbidity in emergencies where initial mortality is low, and then again in the post-emergency phase
- Caused 70% of deaths among Kurdish refugees and 90% of deaths among Rwandan refugees in Goma
- Major epidemics of cholera and dysentery have occurred, but...
- Most diarrheal illness is NOT caused by cholera or dysentery

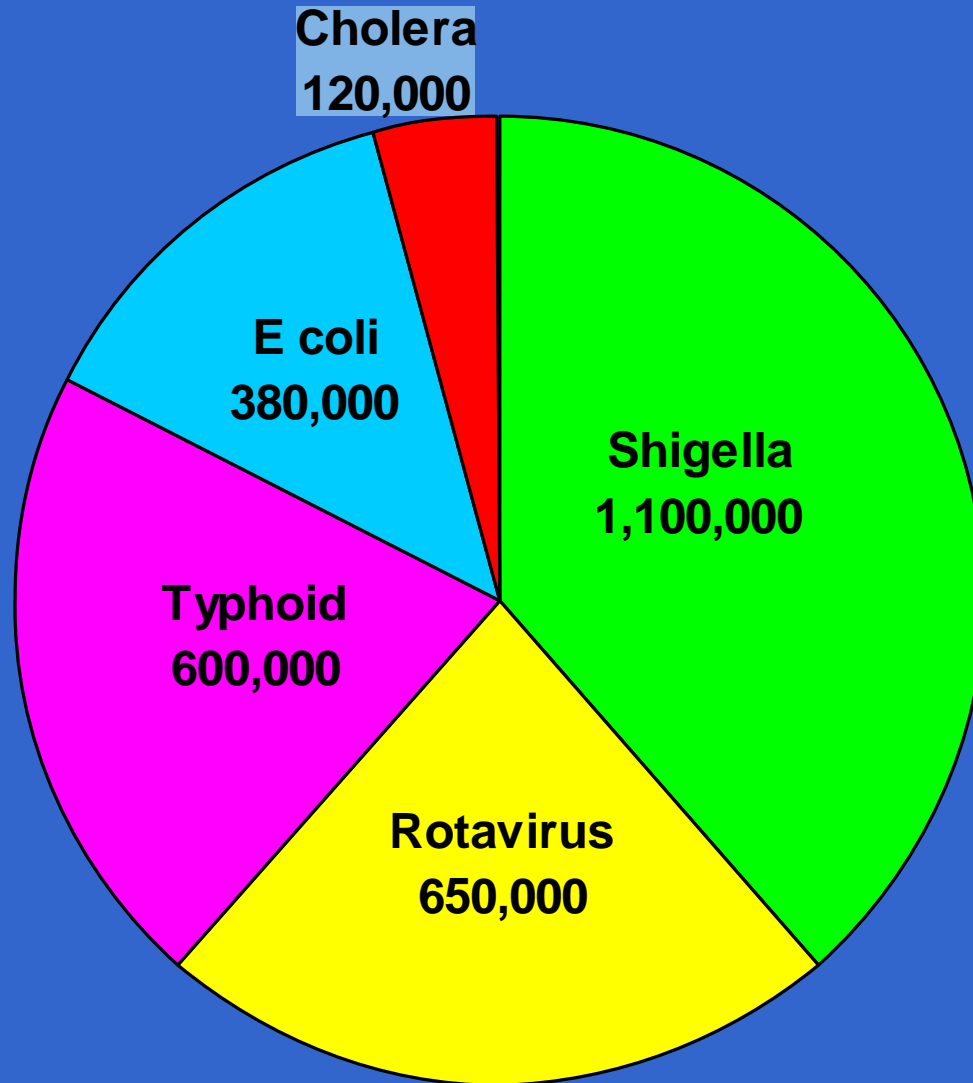
# Leading infectious killers

Millions of deaths, worldwide, all ages, 1998

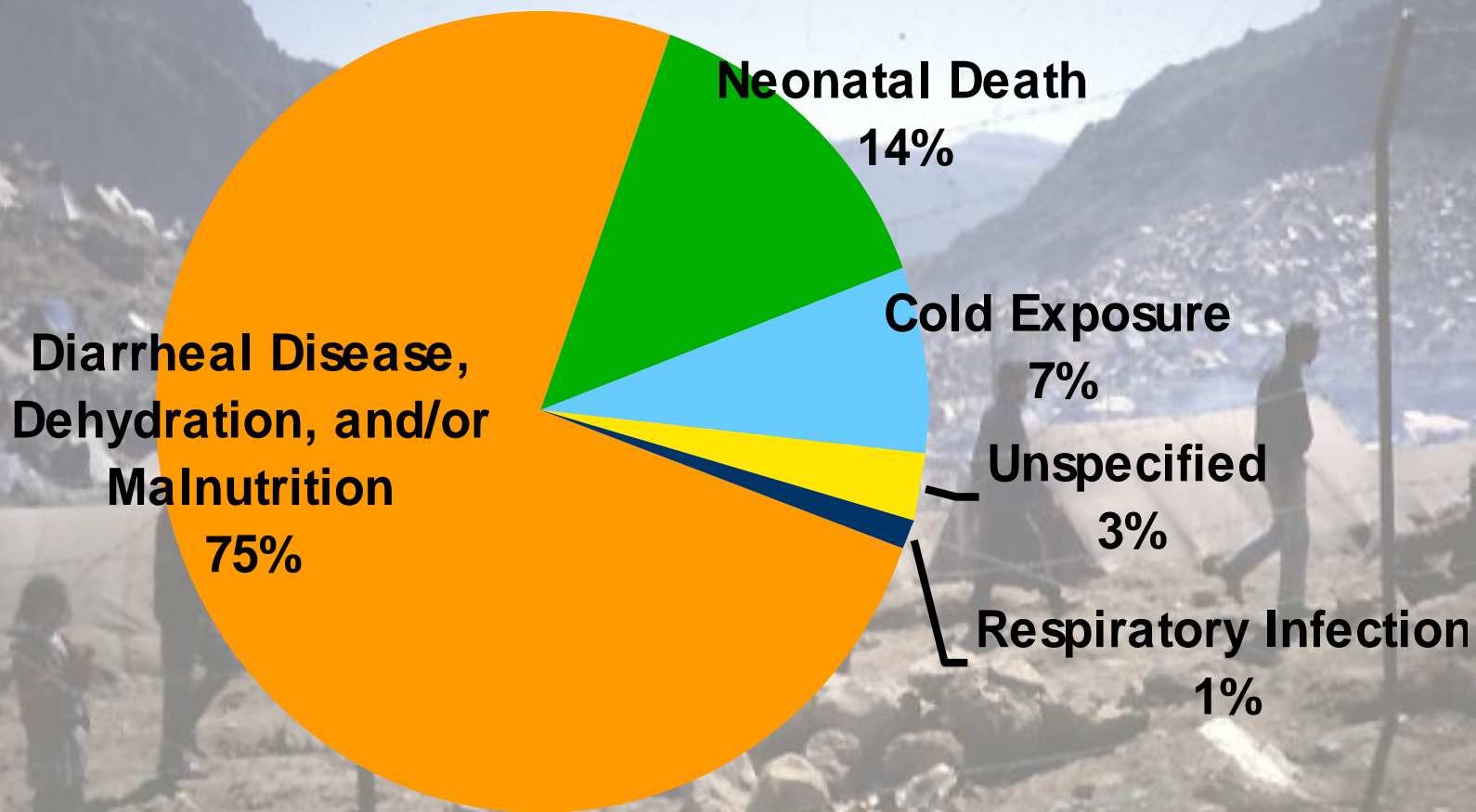


# Estimated annual mortality from diarrhoeal diseases

- Total 2.85 million deaths globally, 2000, WHO



# Causes of Death of Kurdish Refugees April-May, 1991



Source: R. Yip and T.W. Sharp, Acute Malnutrition and High Childhood Mortality Related to Diarrhea: Lessons from the 1991 Kurdish Refugee Crisis. JAMA, Aug.4,1993;270(No. 5):589.



# Severe floods hitting the Mekong Delta for the third year, 2002

- Over 1.4 million people displaced / affected by floods
- Hundreds of thousands of children are facing serious threats to their health from polluted drinking water and extremely poor sanitary conditions.



- UNICEF Viet Nam requires US\$540,750 to provide flood-affected children and their families with basic immediate and medium-term assistance.



**In small groups:**

**What are some of the early interventions to focus on in order to try to control the high toll that diarrheal diseases can take in emergencies?**

# Diarrhoea Prevention and Control

- Reduce mortality by reducing number and duration/severity of cases by:
  - Adequate basic relief (water, food, shelter, etc)
  - Outbreak preparedness
  - Surveillance
  - Treatment: ORS, breastfeeding, food, and (in some cases) medicine
- Aim for diarrhoeal cases :
  - Incidence  $<1\%$  / month
  - CFR  $<1\%$  including

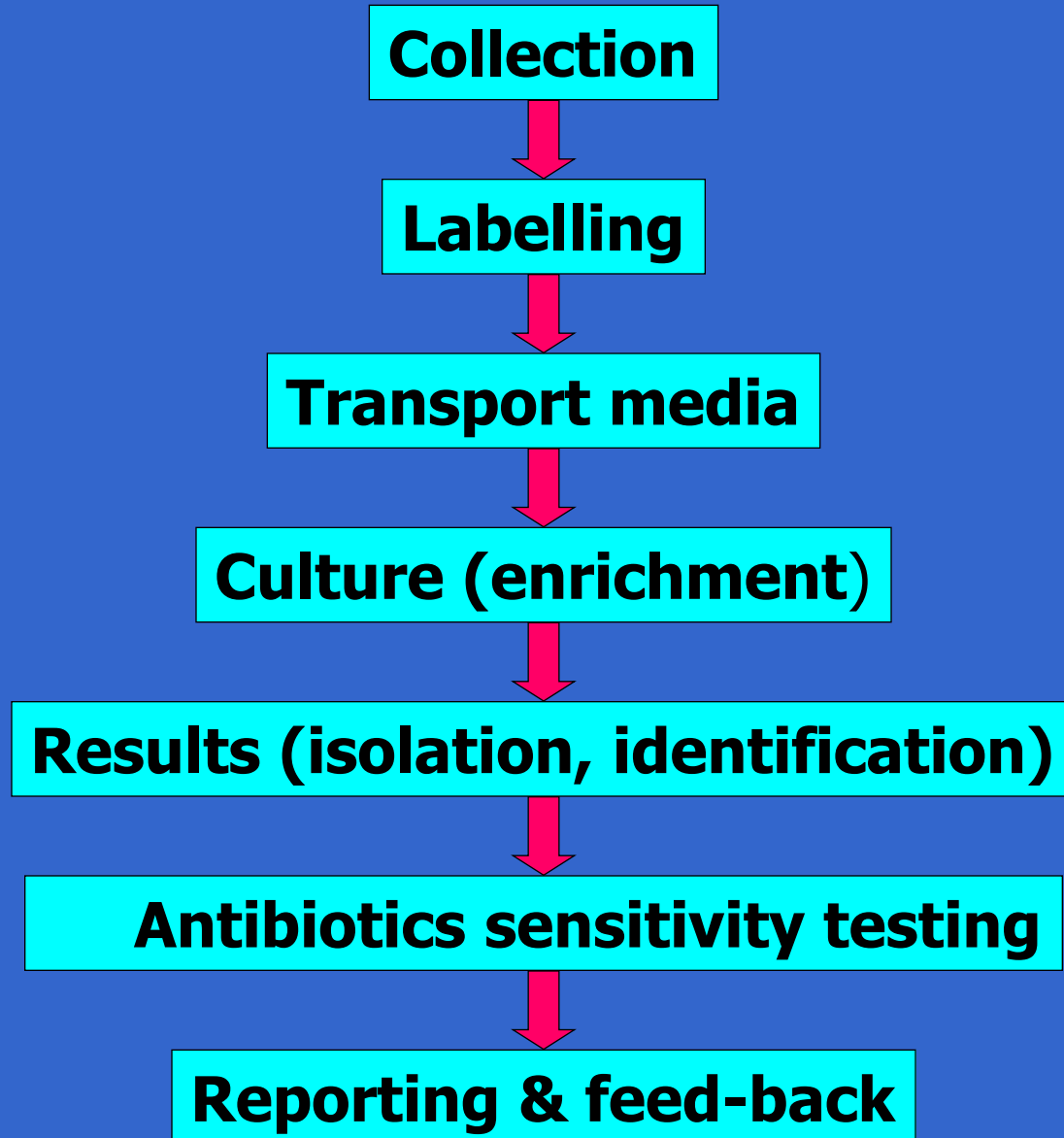
# Role of the laboratory

- Confirm causative organism
- Antimicrobial sensitivity

***!!! Supplies and equipment are needed !!!***



# Clinical laboratory service





# Laboratory functions re: diarrheal diseases

- Update laboratory technicians on cholera and shigella identification every two years.
- Collect fecal specimens from (a sample of) suspected cases.
- Use Cary Blair medium for suspected cholera cases and buffered glycerol saline for suspected dysentery cases.
- Plate the specimen within 24 hours of collection.
- Include confirmation of a proportion of cases at a reference laboratory.
- Use TCBS agar and alkaline peptone enrichment for suspected cholera cases and at least two standard enteric media for suspected dysentery cases.
- Carry out antibiotic sensitivity tests on a sample of cholera and shigella isolates.
- Report cholera and shigella results to the national authorities at least monthly.

**What is the first line  
treatment for  
dehydration?**

  
**نارکول**  
 (Arabic text describing the product's benefits for dehydration and electrolyte balance)

  
**ORESOL**  
 ORAL REHYDRATION POWDER  
 This product contains:  
 Sodium Chloride 2.50 g  
 Potassium Chloride 1.00 g  
 Sodium Bicarbonate 1.20 g  
 Glucose 10.30 g  
**DIRECTIONS:**  
 Dissolve in one 500 ml of drinking water.  
 To replace the amount of fluid lost:  
 1 cup to 2 cups (250 ml to 500 ml)  
 1 cup to 2 cups (250 ml to 500 ml)  
 1 cup to 2 cups (250 ml to 500 ml)  
**CAUTION:**  
 Do not use without medical advice.  
 Avoid, when used, the use of sugar.  
 Do not use if expired.

  
**سالتین**  
 (Arabic text describing the product's benefits for dehydration and electrolyte balance)

**বায়োবান**  
 (Bengali text describing the product's benefits for dehydration and electrolyte balance)

**জীবনী**  
**JEEVANEER**  
 (Bengali text describing the product's benefits for dehydration and electrolyte balance)

INDUSTRIA ARGENTINA  
**SALES PARA REHIDRATACION ORAL**  
 Contenido neto: 27.5 g  



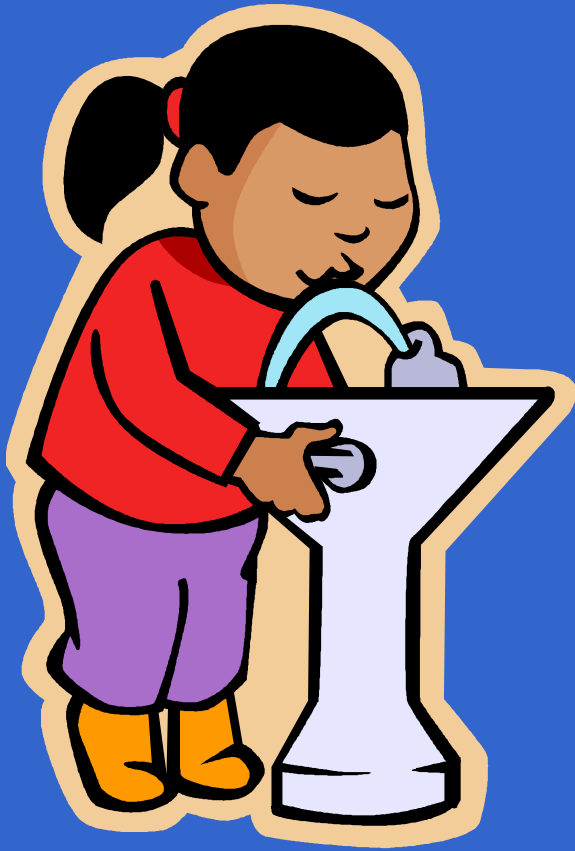

# If a child has diarrhea, classify dehydration

- ➡ No dehydration
- ➡ Some dehydration
- ➡ Severe dehydration



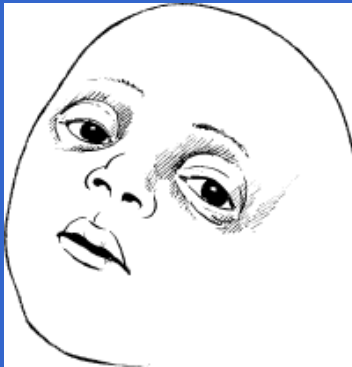
- *Diarrhoea with no dehydration* should be diagnosed if the child does not have two or more of the following signs which characterize some or severe dehydration:
  - restlessness/irritability
  - lethargy or unconsciousness
  - not able to drink or drinks poorly
  - thirsty and drinks eagerly
  - sunken eyes
  - skin pinch goes back slowly or very slowly.

# Assessing dehydration



- If the child has *two or more* of the following signs, the child has **some dehydration**:
- restlessness/irritability
- thirsty and drinks eagerly
- sunken eyes
- skin pinch goes back slowly.

# Assessing dehydration



- If any *two* of the following signs are present, **severe dehydration** should be diagnosed:



- lethargy or unconsciousness
- sunken eyes
- skin pinch goes back very slowly (2 seconds or more)
- not able to drink or drinks poorly.



# Diarrhea treatment plan A

## Diarrhea with no dehydration

### Diarrhoea Treatment Plan A: Treat diarrhoea at home

Counsel the mother on the 3 rules of home treatment:

give extra fluid, continue feeding, when to return

#### 1. GIVE EXTRA FLUID (as much as the child will take)

##### → TELL THE MOTHER:

- Breastfeed frequently and for longer at each feed.
- If the child is exclusively breastfed, give ORS or clean water in addition to breastmilk.
- If the child is not exclusively breastfed, give one or more of the following: ORS solution, foodbased fluids (such as soup, rice water, and yoghurt drinks), or clean water.

*It is especially important to give ORS at home when:*

- the child has been treated with Plan B or Plan C during this visit.
- the child cannot return to a clinic if the diarrhoea gets worse.

##### → TEACH THE MOTHER HOW TO MIX AND GIVE ORS. GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME.

##### → SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE:

Up to 2 years	50 to 100 ml after each loose stool
2 years or more	100 to 200 ml after each loose stool

Tell the mother to:

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue giving extra fluid until the diarrhoea stops.

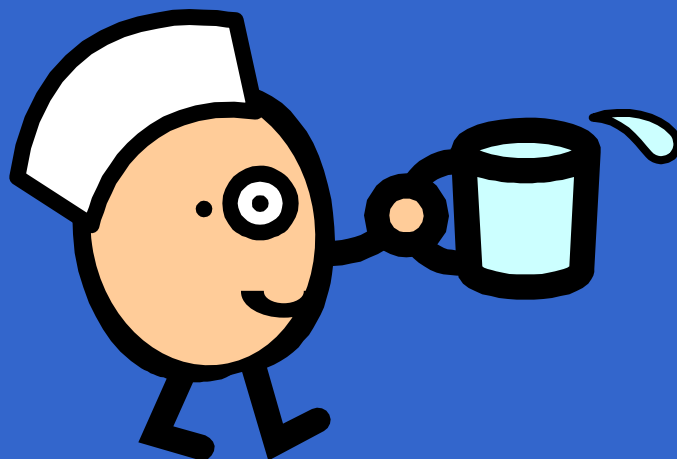
#### 2. CONTINUE FEEDING

#### 3. WHEN TO RETURN

} See Mother's Card (page 119)



# Diarrhoea Treatment Plan B: Treat **some** dehydration with ORS



Give in clinic recommended amount of ORS over 4-hour period

## ➔ DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS.

AGE*	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
WEIGHT	< 6 kg	6–< 10 kg	10–< 12 kg	12–19 kg
In ml	200–400	400–700	700–900	900–1400

\* Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) by 75.

- If the child wants more ORS than shown, give more.
- For infants under 6 months who are not breastfed, also give 100–200 ml clean water during this period.

## ➔ SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue breastfeeding whenever the child wants.

## ➔ AFTER 4 HOURS:

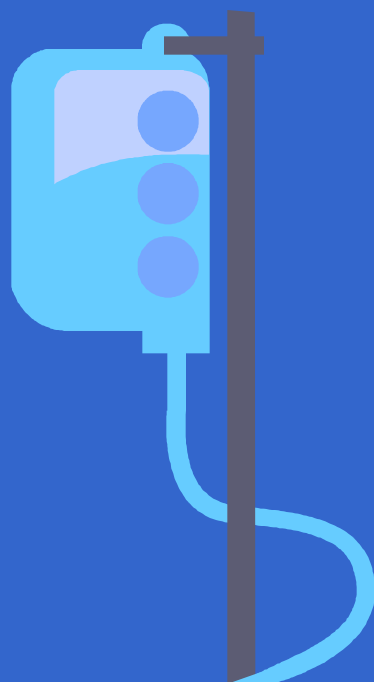
- Reassess the child and classify the child for dehydration.
- Select the appropriate plan to continue treatment.
- Begin feeding the child in clinic.

## ➔ IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:

- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish 4-hour treatment at home.
- Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in Plan A.
- Explain the 3 Rules of Home Treatment:

1. GIVE EXTRA FLUID
2. CONTINUE FEEDING
3. WHEN TO RETURN

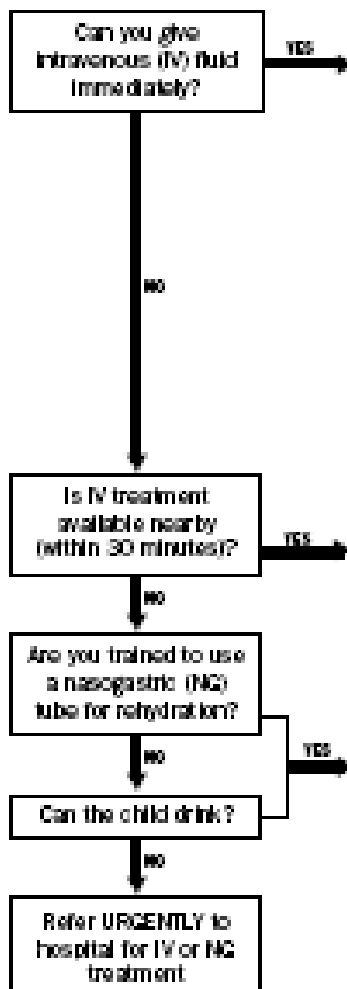
} See Diarrhoea Treatment Plan A (page 50)  
and  
Mother's Card (page 110)



# Diarrhoea Treatment Plan C: Treat **severe** dehydration quickly

→ FOLLOW THE ARROWS. IF ANSWER IS "YES", GO ACROSS. IF "NO", GO DOWN.

START HERE



- Start IV fluid immediately. If the child can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's lactate solution (or, if not available, a normal saline), divided as follows:

AGE	First give 30 ml/kg (ns)	Then give 70 ml/kg (ns)
Infants (under 12 months)	1 hour <sup>a</sup>	5 hours
Children (12 months up to 5 years)	30 minutes <sup>a</sup>	2 1/2 hours

<sup>a</sup> Repeat once if radial pulse is still very weak or not detectable.

- Reassess the child every 1–2 hours. If hydration status is not improving, give the IV drip more rapidly.
- Also give ORS (about 5 ml/kg/hour) as soon as the child can drink usually after 3–4 hours (infants) or 1–2 hours (children).
- Reassess as infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

- Refer URGENTLY to hospital for IV treatment.
- If the child can drink, provide the mother with ORS solution and show her how to give frequent sips during the trip.

- Start rehydration by tube (or mouth) with ORS solution: give 20 ml/kg/hour for 6 hours (total of 120 ml/kg).
- Reassess the child every 1–2 hours:
  - If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly.
  - If hydration status is not improving after 3 hours, send the child for IV therapy.
- After 6 hours, reassess the child. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

**NOTE:** If possible, observe the child for at least 6 hours after rehydration to be sure the mother can maintain hydration giving the child ORS solution by mouth.

# UNICEF Responsibilities in Control of Diarrheal Diseases in Emergency Settings

- ➡ Equipment & funds for the production and distribution of materials to support public education and social mobilization
- ➡ Material & funds for the training of health workers, including production & distribution of local language materials
- ➡ Material for treatment of dehydration, e.g., ORS, NG tubes, jugs, measuring cups, etc to supply ORT corners, IV fluids
- ➡ Support for health information and logistics systems
- ➡ ...



