

DEPARTMENT OF INTERNATIONAL
CHILD HEALTH

INSTITUTIONAL REPORT

MONOGRAPH 2

THE TREATMENT AND PREVENTION OF
DIARRHOEAL DISEASES



Management Science for Health
PRITCH
Technologies for Primary Health Care

P2-ABG-793

MODULE 2

**THE TREATMENT AND PREVENTION
OF
DIARRHOEAL DISEASE**

This module was developed with the technical and financial participation of the Diarrhoeal Diseases Control Programme of the World Health Organisation (WHO), Regional Bureau for Africa, Brazzaville.

**MANAGEMENT SCIENCES FOR HEALTH
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PRE-REQUISITES

The student must have basic knowledge of the following:

- SYMPTOMATOLOGY OF INFECTIOUS DISEASES
- COURSE ON NURSING TECHNIQUES
- PHARMACY
- NUTRITION
- MODULE 1

LEARNING OBJECTIVES

- This module deals with the treatment of patients with diarrhoea and measures for its prevention.
- The following diagram lays out the learning objectives. These objectives are based on the tasks that the student will carry out after his studies.
- The information provided and practical exercises are designed to facilitate learning.

<p>Teach the members of the family how to treat diarrhoea at home</p>
<p>2.1</p>
<p>Duration 1 hr.</p>

->

<p>Assess the state of a patient with diarrhoea using a guide sheet.</p>
<p>2.2</p>
<p>Duration 1 hr 30 mins.</p>

->

<p>Begin treatment based on the evaluation of the state of the patient</p>
<p>2.3</p>
<p>Duration 1 hr.</p>

->

<p>Prepare an ORT solution using packets or water, salt and sugar.</p>
<p>2.4</p>
<p>Duration 1 hr.</p>

<p>Supervise the treatment and follow-up of the patient</p>
<p>2.5</p>
<p>Duration 30 mins.</p>

->

<p>Provide appropriate nutritional care for the child with diarrhoea</p>
<p>2.6</p>
<p>Duration 1 hr.</p>

->

<p>Describe the role and the limits of medication other than ORS in the treatment of diarrhoea</p>
<p>2.7</p>
<p>Duration 2 hrs.</p>

->

<p>Set up an effective system for the treatment and care of patients with diarrhoea</p>
<p>2.8</p>
<p>Duration 1 hr. 30 mins.</p>

<p>Explain the importance of the various vaccines used for the control of diarrhoeal diseases</p>
<p>2.9</p>
<p>Duration 1 hr.</p>

->

<p>Explain the importance of hygiene and sanitation in the control of diarrhoeal diseases</p>
<p>2.10</p>
<p>Duration 1 hr.</p>

->

<p>Explain the importance of infant feeding in the prevention of diarrhoea</p>
<p>2.11</p>
<p>Duration 1 hr.</p>

INTRODUCTION

THE DANGERS OF DIARRHOEA

The two major complications of diarrhoea are dehydration in the short-term and malnutrition in the long-term.

The physiopathology of these two complications has been dealt with in Module 1.

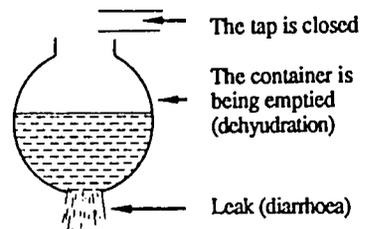
The table below illustrates the mechanism by which fluid is lost and shows the importance of replacing these losses.

The way to treat diarrhoea is, therefore, to prevent or to compensate for the loss of fluids and salts (dehydration), and to prevent the occurrence of malnutrition.

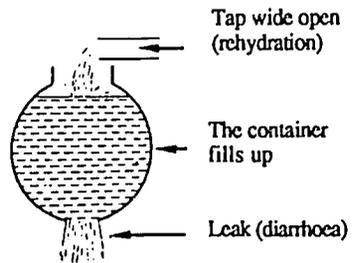
THE FIVE PHASES OF DIARRHOEA AND ITS TREATMENT

Phase 1. DEHYDRATION

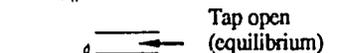
One might compare the patient suffering from diarrhoea with a container storing salt solution which has a hole in the bottom. If the container is emptied, the patient dies. It is essential to prevent the container from being emptied.



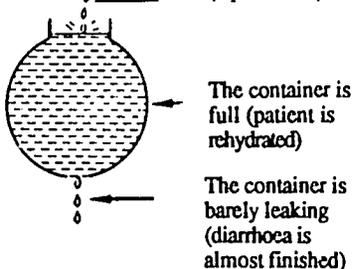
Phase 2. REHYDRATE THE PATIENT with salts and water to fill up the container. It is important to act quickly, within the first six hours, or earlier if possible.



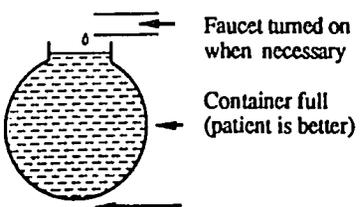
Phase 3. MAINTAINING A BALANCE consists of preventing the container from being emptied by adding salt water as long as the hole has not been plugged. At the same time, the patient should be strengthened by appropriate feeding.



Phase 4. THE PATIENT IS BETTER when the container is full and is no longer leaking.



Phase 5. PREVENTION consists of trying to avoid future leaks by watching over the general state of health and physical resistance of the patient. In the event of a new leak, prevention would consist of administering salt solution and food before the container begins to be emptied, (in other words, before the patient dehydrates).



LEARNING OBJECTIVE: 2.1

Educate family members about home treatment of diarrhoea.

Mothers and other family members can often treat diarrhoea themselves with fluids and food that they have at home. Health workers can help if they show mothers how to do this.

The three rules for treating diarrhoea in the home are explained on the next three pages. Briefly, these rules are to:

1. Increase fluids
 2. Continue to feed the child
 3. Bring the child to a health worker if he is not getting better.
- (These rules are also given in Treatment Plan A on the Diarrhoea Treatment Chart (Annex 1). "How to Treat Diarrhoea at Home," the small card for mothers, gives a short version of the rules (Annex 2).

Steps for Teaching Families

Health workers should explain the 3 rules of home treatment to mothers and other family members whenever they have the opportunity, for example, when a mother comes for prenatal care or brings her child for immunization.

- Remember the community's beliefs about diarrhoea and ways of treating it.

Relate your advice to current practices and use words the mother will understand.

- Explain the three rules for treating diarrhoea at home.
- Show the mother what to do (for example, show how much fluid to give the child after each stool).
- Use teaching aids which are familiar (for example, use the mothers own child to show her how to look for sunken eyes; use commonly available containers to demonstrate how to mix ORS).
- Let the mother show you what she is learning while you watch (for example, feeding the fluid with a spoon) to be sure that she can do it and to help her remember.
- Ask her to tell you, in her own words, things that she has learned but not practiced, to be sure that she remembers. (For example, she can tell you what food she will give and how often).
- Ask her if she has any questions and try to answer them.
- Ask her about any problems she may have following the 3 rules. Listen to what she says and try to help her find a solution to them.
- Tell the mother what to expect (for example, how long it will take for the child to get well).

THREE RULES FOR HOME TREATMENT OF DIARRHOEA

1. GIVE THE CHILD MORE FLUIDS THAN USUAL



WHAT FLUIDS?

- Give the recommended home fluid or food-based fluids, such as gruel, soup or rice water. In general, it is best to teach the mother how to use fluids that she already knows how to prepare and that require no modification. If there is no readily available cereal-based fluid that can help to prevent dehydration, the Ministry of Health may recommend a modified cereal-based fluid or a special solution made with salt and sugar.
- If an infant is breastfed, continue to breastfeed and try to do so more often than normal (at least every 3 hours)
- If an infant is not breastfed, dilute the milk feed with twice the usual amount of water. Offer the milk feed at least every 3 hours.

HOW MUCH?

Give children under 2 years old approximately 50-100 ml (1/4-1/2 large cup) of fluid after each loose stool. Give older children 1/2 to 1 large cup. Adults should drink as much as they want.

2. CONTINUE TO FEED THE CHILD



WHAT FOODS?

Give the child above 4-6 months of age foods with the highest amount of nutrients and calories relative to their volume. Depending on the child's age, these should be mixes of cereal and locally available beans, or mixes of cereal and meat or fish. Add oil to these foods to make them more energy-rich. Dairy products and eggs are also suitable. Fresh fruit juices and bananas are helpful because they contain potassium.

Avoid:

- high-fibre or bulky foods, such as coarse fruits and vegetables, fruit and vegetable peels, and whole grain cereals. These are hard to digest.
- very dilute soups. these are recommended as fluids, but are not sufficient as foods because they fill up the child without providing sufficient nutrients.
- foods with a lot of sugar. These foods can worsen diarrhoea.

HOW MUCH FOOD?

Encourage the child to eat as much as he wants. Offer food every 3 or 4 hours (six times each day) or more often to a young child. Small, frequent feedings are best because they are more easily digested and preferred by the child.

After the diarrhoea has stopped, give the child one extra meal each day for a week. This extra food helps the child regain the weight lost during the illness. Some children will continue to need extra foods to reach their pre-illness weight, or a normal weight for height.

HOW TO PREPARE THE FOOD

Prepare foods by cooking well, fermenting, mashing or grinding. This will make the food easier to digest. Give freshly prepared foods to minimize the chance of contamination. If previously prepared foods must be offered, first reheat them to a boil.

WHY FEED THE CHILD?

Starving a child who has diarrhoea can cause undernutrition or make it worse. Mothers may withhold food, believing this will decrease the diarrhoea. This is a mistake. It is very important to give the child the nutrients he needs to stay strong and grow. A strong child will resist illness better.

During and after diarrhoea give special attention to feeding the child nutritious food frequently. Even though absorption of nutrients from food is lessened somewhat during diarrhoea, most of the nutrients will, nevertheless, be absorbed. Fluids given to the child do not replace the need for food.

3. TAKE YOUR CHILD TO THE HEALTH WORKER



If a child passes many stools, is very thirsty, or has sunken eyes, he probably is dehydrated. The child may need more treatment than the mother can give at home.

THE MOTHER SHOULD BRING THE CHILD TO A HEALTH WORKER if the child has one or several of the following:

- passes many stools
- is very thirsty
- has sunken eyes

These 3 signs suggest your child is dehydrated.

- has a high fever
- does not eat or drink normally
- seems not to be getting better.

HOME TREATMENT OF DIARRHOEA

1. INCREASE FLUIDS

2. FEED THE CHILD

3. BRING THE CHILD TO THE HEALTH WORKER IF HE IS NOT GETTING BETTER



EXERCISE 2 - A

In this exercise you will have a group discussion about what mothers in your community are currently doing to treat diarrhoea in the home and, if their methods of treatment could be improved, how to bring about these improvements.

Issues you should prepare to discuss include:

1. What are current home treatment practices? What are their advantages and disadvantages? Could they be improved?
2. What specific fluids and foods can health workers recommend for treating diarrhoea at home?
3. How can health workers make the best use of mothers' time at the health centre to teach home treatment? How are mothers currently taught? Can this be improved?

ASSESSMENT OF THE PATIENT



LEARNING OBJECTIVE: 2.2

Asses the state of a patient with diarrhoea using a guide sheet.

EXERCISE 2 - B

Ask students what they already know about the subject of this objective.

Write down their answers and discuss.

The first thing a health worker must do when faced with a patient with diarrhoea is to assess the physical state of the patient. In order to do this he should:

- question the patient or the person who has brought the patient
- examine the patient
- weigh the patient
- take the patient's temperature.

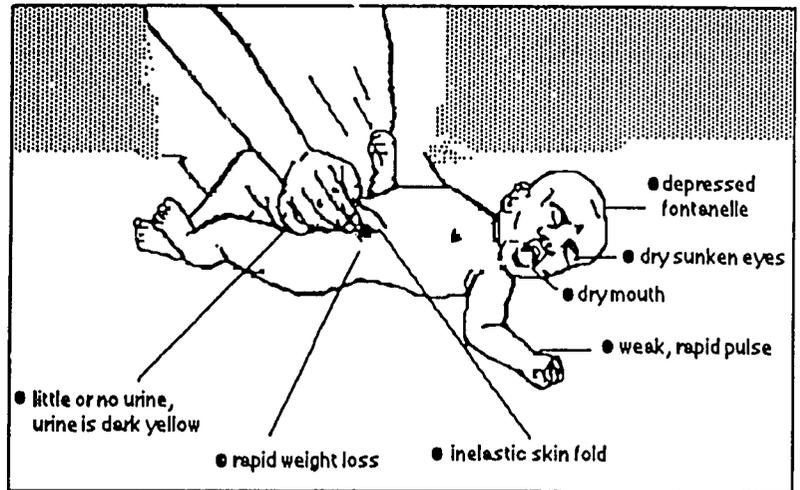
Questioning allows the health worker to obtain the following information:

- the age of the patient
- the duration of the illness
- the quantity, frequency and consistency of stools
- the duration and frequency of vomiting
- the time of the last urination, its color and quantity
- the presence of fever or of convulsions
- the type and quantity of fluids and food ingested before and during the illness

The physical examination should cover:

- the general state of the patient
- tears
- eyes
- mouth
- tongue
- breathing
- skin fold, does it return to normal quickly, slowly, or very slowly?

- is the pulse perceptible? If yes, is it normal, rapid, very rapid, or weak?
- is the fontanel normal, depressed, or very sunken?



Weighing the patient:

- If a scale is available, weigh the patient carefully, naked or with the least possible amount of clothing. If the patient has been regularly weighed before and the weight recorded, compare the present weight with the last recorded weight to assess the presence and degree of dehydration.

Taking the temperature:

- Diarrhoea is often accompanied by an inflammation of the rectum which may give a false reading if temperature is taken rectally. For this reason one always takes an axillary temperature reading unless the child has a very high fever and it is possible to carefully disinfect the thermometer.

EXERCISE 2 - C:

Examine a patient with diarrhoea, explaining the importance of each step of the examination.

Use the steps referred to in Table No 1. (Guide Sheet). **How to Assess a patient with diarrhoea.**

**RESULTS OF THE
ASSESSMENT OF
THE STATE OF
THE PATIENT**

LEARNING OBJECTIVE: 2.3

Using the results of the assessment, begin the appropriate treatment.

Discuss the treatment plans with the students.
There are four possibilities:

See Table No. 1: How to Assess a Patient with Diarrhoea
1. Absence of any sign of dehydration (See Column A, Table 1)

2. Moderate dehydration, presence of at least two signs from Column B.

3. Severe dehydration, if there are at least two signs present from Column C.

4. Presence of other signs (see last columns) indicates diarrhoea with complications which requires treatment in addition to or other than ORT.

**How to treat a patient
with diarrhoea**

Based on the results of the assessment of the general state of the patient, one of the following treatment plans should be chosen and put into operation:

- Treatment Plan A to prevent dehydration
- Treatment Plan B to treat dehydration
- Treatment Plan C to treat severe dehydration rapidly

It is necessary to treat other serious problems identified.



**IN ALL CASES IT IS NECESSARY TO CONTINUE
FEEDING THE CHILD.**

HOW TO ASSESS YOUR PATIENT

FOR DEHYDRATION

FOR OTHER PROBLEMS

		A	B	C		
1. ASK ABOUT	DIARRHOEA VOMITING THIRST URINE	Less than 4 liquid stools per day None or a small amount Normal Normal	4 to 10 liquid stools per day Some Greater than normal A small amount, dark	More than 10 liquid stools per day Very frequent Unable to drink No urine for 6 hours	Longer than 14 days duration Blood in the stool	
2. LOOK AT:	CONDITION TEARS EYES MOUTH and TONGUE BREATHING	Well, alert Present Normal Wet Normal	Unwell, sleepy or irritable Absent Sunken Dry Faster than normal	Very sleepy, unconscious, floppy or having fits Absent Very dry and sunken Very dry Very fast and deep	Severe undernutrition	
3. FEEL:	SKIN PULSE FONTANELLE (in infants)	A pinch goes back quickly Normal Normal	A pinch goes back slowly Faster than normal Sunken	A pinch goes back very slowly Very fast, weak, or you cannot feel it Very sunken		
4. TAKE TEMPERATURE					Fever - 38.5°C (or 101°F) or greater	
5. WEIGH IF POSSIBLE		Loss of less than 25 grams for each kilogram of weight	Loss of 25-100 grams for each kilogram of weight	Loss of more than 100 grams for each kilogram of weight		
6. DECIDE		The patient has no signs of dehydration Use Plan A	If the patient has 2 or more of these signs, he has some dehydration Use Plan B	If the patient has 2 or more of these danger signs, he has severe dehydration Use Plan C	IF YOUR PATIENT HAS:	THEN:
					Blood in the stool and diarrhoea for less than 14 days	Treat with an appropriate oral antibiotic for shigella dysentery. If this child is also - dehydrated, - severely undernourished, or - less than 1 year of age, reassess the child's progress in 24 - 48 hours. For the severely undernourished child, also refer for treatment of severe undernutrition.
					Diarrhoea for longer than 14 days with or without blood	Continue feeding and refer for treatment.
					Severe undernutrition	
					Fever - 38.5°C (or 101°F) or greater	Show the mother how to cool the child with a wet cloth and fanning. Look for and treat other causes (for example, pneumonia, malaria).

TREATMENT PLAN A TO TREAT DIARRHOEA

EXPLAIN THE THREE RULES FOR TREATING DIARRHOEA AT HOME:

1. GIVE YOUR CHILD MORE FLUIDS THAN USUAL TO PREVENT DEHYDRATION. SUITABLE FLUIDS INCLUDE:

- The recommended home fluid or food-based fluids, such as gruel, soup, or rice water.
- Breastmilk or milk feeds prepared with twice the usual amount of water.

2. GIVE YOUR CHILD FOOD

- Give freshly prepared foods. Recommended foods are mixes of cereal and beans, or cereal and meat or fish. Add a few drops of oil to the food, if possible.
- Give fresh fruit juices or bananas to provide potassium.
- Offer food every 3 or 4 hours (6 times a day) or more often for very young children.
- Encourage the child to eat as much as he wants.
- Cook and mash or grind food well so it will be easier to digest.
- After the diarrhoea stops, give one extra meal each day for a week, or until the child has regained normal weight.

3. TAKE YOUR CHILD TO THE HEALTH WORKER IF THE CHILD HAS ANY OF THE FOLLOWING:

- passes many stools
 - is very thirsty
 - has sunken eyes
 - has a fever
 - does not eat or drink normally
 - seems not to be getting better.
- } These 3 signs suggest your child is dehydrated.

TEACH THE MOTHER HOW TO USE ORS SOLUTION AT HOME, IF:

- The mother cannot come back if the diarrhoea gets worse.
- It is national policy to give ORS to all children who see a health worker for diarrhoea treatment, or
- Her child has been on Plan B, to prevent dehydration from coming back.

SHOW HER HOW TO MIX AND GIVE ORS

SHOW HER HOW MUCH TO GIVE

- 50-100 ml (¼ to ½ large cup) of ORS solution after each stool for a child less than 2 years old.
- 100-200 ml (½ to 1 large cup) for older children.
- Adults should drink as much as they want.

TELL HER IF THE CHILD VOMITS, wait 10 minutes. Then continue giving the solution but more slowly – a spoonful every 2 - 3 minutes.

GIVE HER ENOUGH PACKETS FOR 2 DAYS

Note: While a child is getting ORS, he should be given breastmilk or dilute milk feeds and should be offered food. Food-based fluids or a salt and sugar solution should *NOT* be given in addition to ORS.

EXPLAIN HOW SHE CAN PREVENT DIARRHOEA BY:

Giving only breastmilk for the first 4 - 6 months and continuing to breastfeed for at least the first year.

Introducing clean, nutritious weaning foods at 4 - 6 months.

Giving her child freshly prepared and well-cooked food and clean drinking water.

Having all family members wash their hands with soap after defecating, and before eating or preparing food.

Having all family members use a latrine.

Quickly disposing of the stool of a young child by putting it into a latrine or by burying it.

TREATMENT PLAN B TO TREAT DEHYDRATION

1. AMOUNT OF ORS SOLUTION TO GIVE IN FIRST 4 TO 6 HOURS

Patient's age							
Patient's weight in kilograms							
Give this much solution for 4-6 hours	in ml.	200-400	400-600	600-800	800-1000	1000-2000	2000-4000
	in local unit of measure:						

* Use the patient's age only when you do not know the weight.

NOTE: ENCOURAGE THE MOTHER TO CONTINUE BREASTFEEDING.

If the patient wants more ORS, give more.

If the eyelids become puffy, stop ORS and give other fluids. If diarrhoea continues, use ORS again when the puffiness is gone.

If the child vomits, wait 10 minutes and then continue giving ORS, but more slowly.

2. IF THE MOTHER CAN REMAIN AT THE HEALTH CENTRE

- Show her how much solution to give her child.
- Show her how to give it – a spoonful every 1 to 2 minutes.
- Check from time to time to see if she has problems.

3. AFTER 4 TO 6 HOURS, REASSESS THE CHILD USING THE ASSESSMENT CHART. THEN CHOOSE THE SUITABLE TREATMENT PLAN.

NOTE: If a child will continue on Plan B, tell the mother to offer small amounts of food.

If the child is under 12 months, tell the mother to:

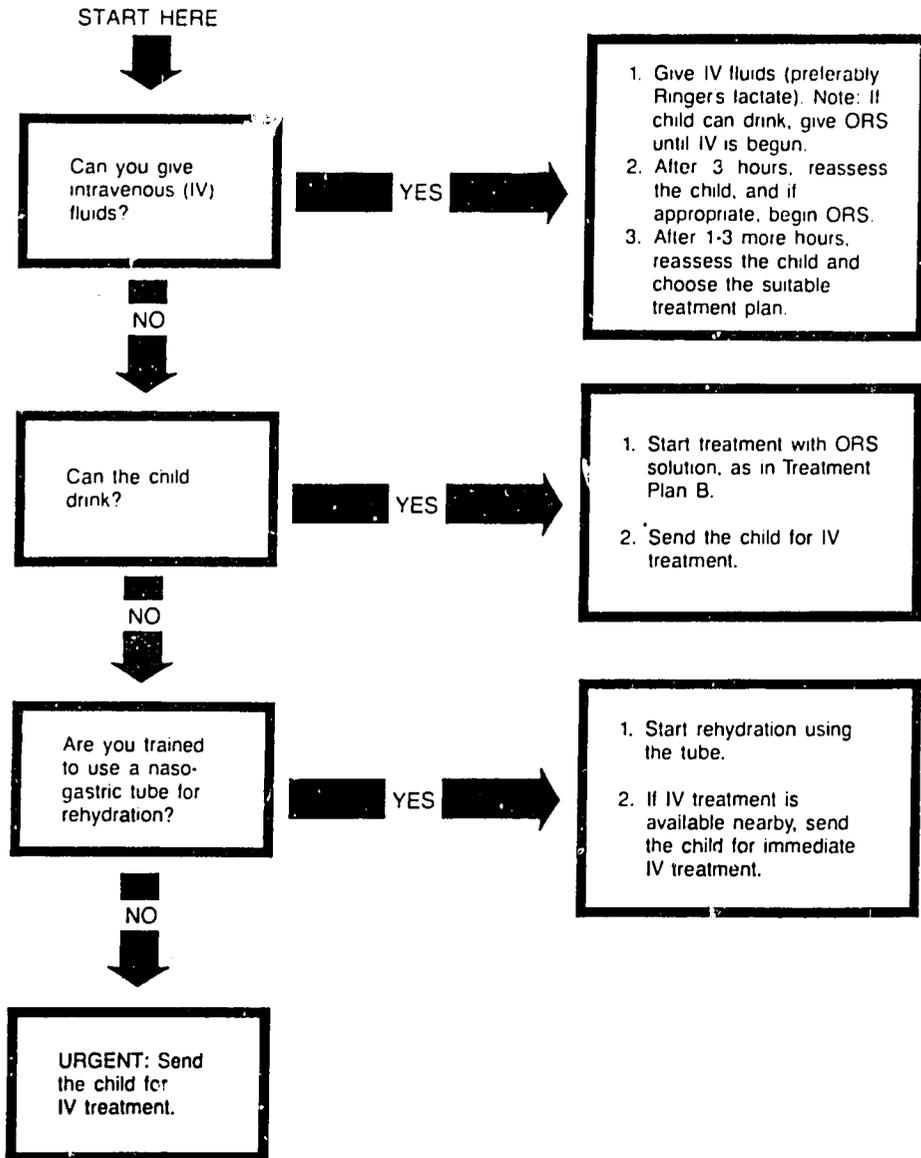
- continue breastfeeding or
- if she does not breastfeed, give 100-200 mls of clean water before continuing ORS.

4. IF THE MOTHER MUST LEAVE ANY TIME BEFORE COMPLETING TREATMENT PLAN B

- Give her enough ORS packets for 2 days and show her how to prepare the fluid.
 - Show her how much ORS to give to finish the 4-6 hour treatment at home.
 - Tell her to give the child as much ORS and other fluids as he wants after the 4-6 hour treatment is finished.
 - Tell her to offer the child small amounts of food every 3-4 hours.
 - Tell her to bring the child back to the health worker if the child has any of the following:
 - passes many stools
 - is very thirsty
 - has sunken eyes
 - has a fever
 - does not eat or drink normally
 - seems not to be getting better.
- } These 3 signs suggest the child is dehydrated.

TREATMENT PLAN C TO TREAT SEVERE DEHYDRATION QUICKLY

Follow the arrows. If the answer to the questions is yes go across. If it is no go down.



NOTE: If the child is above 2 years of age and cholera is known to be currently occurring in your area, suspect cholera and give an appropriate oral antibiotic once the child is alert.



EXERCISE 2 - D

A mother brings her 18 month-old son, Pano, to the health center. She is worried because Pano has had diarrhoea for three days. You question the mother and find out that the child has drunk a lot of water, but has urinated very little. He has vomited twice, and today has had 6 liquid stools. You notice that Pano's eyes are a little sunken, that his mouth and tongue are very dry, and that his breathing is normal. When you pinch the skin on his stomach, it leaves a doughy fold. His pulse is strong but rapid, and his temperature is 39o C. Pano is grouchy, nervous, and cries while you examine him. He has tears in his eyes.

1. On the chart below, circle the signs or symptoms you noticed.
2. Based on the items you circled below, what is the degree of Pano's dehydration? (check the appropriate answer):
 - no dehydration
 - moderate dehydration
 - serious dehydration
3. What plan of treatment would you select for Pano?
4. Are there other serious problems that Pano should also be treated for? If so, what would you prescribe?
5. If Pano weighs 12 kg and he loses 300 g. of fluid through his stools each day, in how many days will he lose 10% of his body weight? How much ORS should you give him?

**PREPARATION OF
ORAL REHYDRATION
SOLUTION:
ORAL REHYDRATION
SOLUTION (ORS)
PACKETS**



LEARNING OBJECTIVE: 2.4

Prepare an oral rehydration solution using ORS-packets or water, salt and sugar.

EXERCISE 2 - E

Ask students what they already know about the theme of this specific objective.

Write down their responses and discuss together.

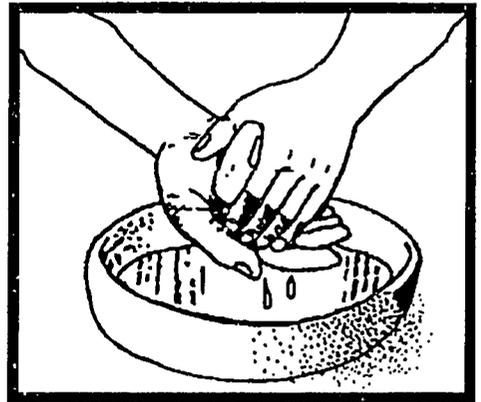
To prepare ORS packets

Remark: Packets are usually prepared to be diluted in one liter of water. There are packets available for smaller quantities of water. They contain the same ingredients but in smaller quantities.

Assemble the following and keep within reach:
1 ORS packet
1 large spoon (tablespoon)
1 liter of water
1 clean container with lid
1 bar of soap

How to proceed:

- wash hands with soap
- pour one liter of drinking water (or quantity called for on packet) into clean container
- pour contents of packet into water and stir with spoon until the powder is completely dissolved
- taste solution to see what it tastes like
- It is preferable to use water that has been boiled and cooled, but if that is not possible, use the cleanest water available.
- The container used must be like the containers used in the community.
- A fresh solution of ORS must be made up each day and put into a clean container that is kept covered.
- Each day throw away the solution left over from the previous day.



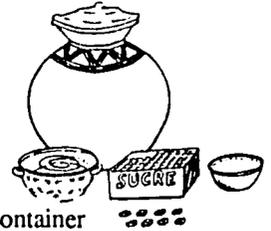
To prepare home solution(home-prepared solution or salt and sugar solution)

Composition:

- 1 litre of water
- 8 sugar cubes or 40 g or 1/2 small (no. 8) tea glass
- 1 level teaspoon of salt or 3.5 g or two pinches (use three fingers)

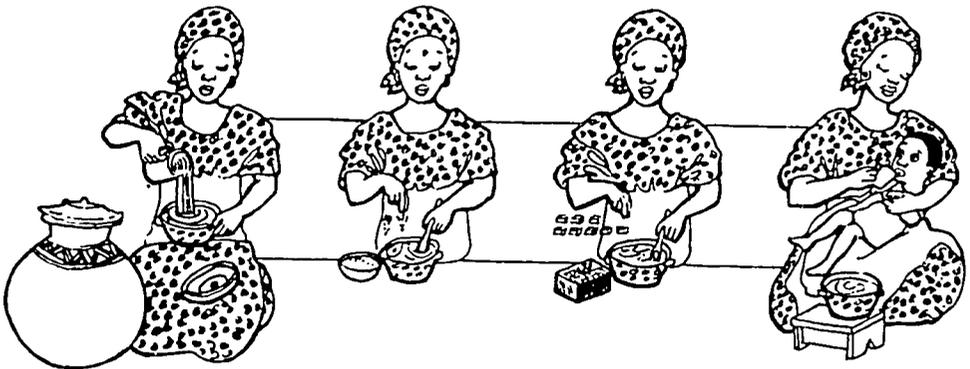
Assemble within easy reach:

- * 1 litre drinking water
- * 1 clean container like those commonly used in the community, with lid
- * 1 small container to drink from
- * sugar
- * salt
- * bar of soap



How to proceed:

- wash hands thoroughly with soap
- pour one litre of drinking water into clean container
- add 40 g or 8 cubes of sugar
- add two pinches of salt (using three fingers)
- stir until sugar and salt have completely dissolved
- let patient drink as much as possible in small quantities, especially after each bowel movement



EXERCISE 2 - F

Refer to TREATMENT PLAN A

A mother brings her child to the community health centre. He is 11 months old and is suffering from diarrhoea. She lives far from the centre and states that she will not be able to return for several days, even if the child's condition deteriorates. The health worker questions the mother and examines the child without finding signs of dehydration. He decides to begin with Treatment Plan A. The mother mentions that she usually gives rice-water to her children when they have diarrhoea, but she has heard about something better.

Simulate what the health worker does and what he tells the mother.

SURVEILLANCE OF THE PATIENT

LEARNING OBJECTIVE 2.5

Supervise the treatment and surveillance of the patient.



EXERCISE 2-G

Ask students what they already know about the subject of this objective.

Write down their answers and discuss.

It is especially important to keep the patient under surveillance at the beginning of rehydration in order to:

Verify that:

- * the mother really understands how to prepare the ORT solution
- * she knows how to administer the ORS in a continuous manner
- * the child responds well to rehydration.



For proper supervision of a child suffering from diarrhoea it is necessary that:

- the nurse do the initial treatment, carefully explaining to the mother what he/she is doing
- the nurse check the treatment every half-hour
- the nurse show the mother how to prepare and administer the solution
- the nurse supervise the regularity of the treatment
- the nurse weigh the child at least once a day, to evaluate rehydration in comparison with the initial weight

- the nurse check on the mother's breast-feeding and/or feeding of the child
- before the child is discharged and they leave, the nurse must verify that the mother understands the importance of continuing with ORS and proper feeding at home
- he/she must make sure that the mother can recognize the warning signals which mean she should return to the center.

In cases where the child is mildly or moderately dehydrated and does not need to be hospitalized, the child must be kept and watched for several hours to make sure that he/she responds favourably to the ORT.

The nurse should in any case do the things described above.

Rehydration by nasogastric tube:

This method is used as an emergency measure for a patient in shock and unable to drink.

The insertion of a nasogastric tube is simple. It is, however, necessary to keep in mind that there is a risk of killing the patient while trying to rehydrate him/her if the tube has been inserted into the trachea. It is very important to check carefully that the tube is in the stomach before using it.

Choose a tube with a diameter suited to the size of the patient. If absolutely necessary, clean intravenous tubing may be used. Cut the tube to the length needed: from the patient's nose to the base of the sternum plus 15 cm. Mark the position with a bit of tape. A cut end should be blunted by passing it through a flame. It is not necessary to sterilize a nasogastric tube, but it must be clean. A tube may be used more than once if it is boiled after each usage.

To insert the tube, dip the tip of the tube into oil, and slowly pass it into one nostril. If the patient is old enough, ask him/her to swallow. Continue to pass the tube through until the position marked reaches the nostril. Fix the tube with adhesive tape below the nose and to the cheek or side of the forehead.

To make sure that the tube is in the stomach it is necessary to:

- look into the mouth of the patient and make sure that the tube is not coiled in the throat
- using a syringe, apply suction to the tube. If the tube is in the stomach, gastric fluid should be present.
- inject air into the tube, using the syringe, while listening to the upper abdomen, either with a stethoscope or directly with the ear. A distinct gurgle will be heard as air enters the stomach, indicating the presence of liquids.

These precautions will avoid mistakes in inserting the tube which could cause flooding of the lungs.

When satisfied that the tube is in the correct position, slowly introduce ORT solution using a clean syringe (50 to 100 cc) or a used serum bottle with neck.

The flow of fluid depends on the general state of the patient.

A tube may be left in place for several days.



EXERCISE 2 - H

If possible, students should go to a health centre where they may examine and treat a child with diarrhoea. Have a group discussion about the way each child was examined and treated.

For the following rehydration techniques:

intravenous and sub-cutaneous perfusions,

the student should refer to his/her nursing course

FEEDING PATIENTS WITH DIARRHOEA

LEARNING OBJECTIVE 2.6

Ensure the correct nutritional treatment of a child with diarrhoea.



EXERCISE 2 - I

Ask students what they already know about the subject of this objective.

Write down their answers and discuss with them.

FEED THE PATIENT

In certain cultures it has been the practice to stop feeding children with diarrhoea. This traditional belief has influenced health personnel for a long time, who until recently continued to recommend fasting during diarrhoea. It has been realized that this practice is frankly harmful. If having the child fast usually reduces the volume of stools, it also causes a weight loss which could make existing malnutrition much worse. It has been observed that a child who has fasted even for a few hours has much more difficulty digesting food. This can cause problems of food intolerance when he begins to eat again.

Never withhold food from children suffering from diarrhoea.

FOOD AND ACUTE DIARRHOEA

Feeding during acute diarrhoea has three phases:

1. initial phase (the first 4-6 hours) when treatment for dehydration and continued breast-feeding are crucial
2. once this initial period has passed it is necessary to resume semi-solid or solid feeding in addition to continued breast-feeding
3. during the period immediately following acute diarrhoea, supplementary feeding is needed.

The type of food to be recommended in cases of diarrhoea depends on the age of the patient.

If the child is under 4 months old, continue breast-feeding from the beginning of rehydration. The child suffering from diarrhoea needs the easily absorbed nutrients as well as the natural immunities present in mothers' milk. *Note that children under 12 months of age should alternate breastfeeding with ORS.*

In all cases, explain the importance of continued breastfeeding to the mother. If necessary, discuss with her any erroneous ideas about mothers' milk being harmful to children with diarrhoea. Never try to introduce new foods to a child suffering from diarrhoea.



If the child is older than 4 months, it is necessary to supplement breast milk with highly nourishing liquid meals.

Curdled milk has a reduced amount of milk-sugar. It is generally well-tolerated by children with diarrhoea and can be used in the preparation of their meals. It should be prepared each day, if possible, to feed children with diarrhoea. To do this, curdle skimmed, powdered milk by the traditional bacteriological method after having mixed 100g of milk per litre of water. Before feeding it to the child, add 3 sugar cubes and two teaspoonfuls of vegetable oil to each glass (200 ml) of milk. Often children will eat only curdled milk for several days.

Like all sick children, those with diarrhoea often refuse solid foods. It is a good idea to give porridge to those who normally eat solid foods, and for those who do not yet eat solid foods to give them dishes that are more liquid than usual. In any case, it is very important to give well-balanced meals rich in fats and protein. Using fat to increase the energy content of food poses no problem for children with diarrhoea. Even if the fats are not completely absorbed and some are found in the stool, they provide sufficient energy to prevent severe weight loss and play an important role in the absorption of some vitamins (Vitamin A).

Peanut butter may be used to prepare dishes for patients with diarrhoea. Remember that, contrary to raw peanuts, peanut butter does not cause diarrhoea.

Don't limit meals to traditional antidiarrhoeal foods like broths based on carrots, baobab fruit or guava leaves. These dishes are nutritionally poor: they only aggravate any malnutrition, which is often a factor in making diarrhoea more serious. These preparations are traditionally regarded as medication rather than food.



To provide the energy requirements for a child weighing 10 kg from carrot broth or baobab fruit broth alone, it would be necessary to get the child to consume about 5 litres per day, which is strictly impossible. A child fed on traditional antidiarrhoeal remedies alone becomes severely malnourished within a few days.

The best foods are those which are easily digested, such as grain porridges enriched with oil and sugar, soups, milk products, eggs, well-cooked fish and meat, and foods containing potassium such as pineapple, bananas, and coconut milk.

FEEDING AND CHRONIC DIARRHOEA

Correct feeding is essential to the healing process in cases of chronic diarrhoea.

Many children lose weight or stop growing when they have chronic diarrhoea because of:

- **reduced food intake:** This is without doubt the most important cause. Children suffering from chronic diarrhoea consume less than 30% of their normal food intake. This loss of appetite can be due to the fact that the child is unhappy, has stomach pains, or is suffering from anorexia and perhaps fever. It is also true that mothers often avoid giving the child certain foods when he has diarrhoea. Although food taboos vary considerably from one culture to another, it is safe to conclude that most children with chronic diarrhoea eat less than normal, and certainly less than they require for normal growth.

- **Malabsorption:** Despite intestinal lesions and abnormal digestion in cases of chronic diarrhoea, the intestine normally absorbs 70% of the calories provided by the food ingested, including a significant part of protein and fats, even in cases of severe diarrhoea. In very severe cases, the poor digestion of fats may have a negative affect on the digestion of certain liposoluble vitamins (especially vitamin A) which can cause xerophthalmia.

It is much more difficult to treat chronic diarrhoea than acute diarrhoea. It is particularly difficult to know if treatment is effective, since the nature of the illness varies from one child to another. Nevertheless, there are several measures that should be taken:

- **prevention:** The correct treatment of acute diarrhoea is the best means of preventing the development of chronic diarrhoea. It is also important to improve hygiene and to immunise against measles.
- **better nutrition:** Whatever the cause of chronic diarrhoea, it is important to ensure that the patient is fed appropriately. Mothers may be concerned about "wasting" food on children with diarrhoea, and do not always understand, that a large part of the food is, nevertheless, absorbed. It is also important to advise mothers to increase the energy content of food and the frequency of feeding. All negative beliefs and prejudices, especially against breastfeeding, should be combatted.



- **use of low-lactose foods:** Diarrhoea can be reduced if children who usually receive milk that is similar in composition to cow's milk, are fed for several days with food containing half the normal lactose content. Commercially prepared lactose-free milk is often expensive. However, the fermentation of milk (yoghurt) as it is traditionally practised in many communities, reduces the concentration of lactose.

- **Diets that exclude foods poorly tolerated by the child:** If the specific cause of a food allergy can be identified, diets which exclude these foods can prove useful. Certain cereals can provoke allergic reactions, but more research is needed in this area.

THE FEEDING OF THE ANOREXIC CHILD

The child with diarrhoea can suffer from loss of appetite and therefore become difficult to feed. Thus anorexia can reduce the quantity of food consumed by up to 40%.



Even the most devoted mother may have difficulty in feeding the anorexic child; she will have to use all her powers of persuasion to make the child eat. Usually the child turns his head away whenever food is offered and may refuse to eat the family's usual meal. The anorexic child may also have difficulty chewing since his organism does not secrete sufficient quantities of saliva. He, therefore, turns the food round and round in his mouth, keeps it without swallowing or spits it out. In such cases, at regular intervals, the child should be offered small quantities of soft foods that can be easily swallowed without chewing. Appropriate foods exist in each culture. For example: porridge, boiled rice, a mixture of rice and lentils, yoghurt, mashed bananas, boiled potatoes or carrots. Fish and eggs can also be given if they can be obtained. The mother must be extremely patient and avoid getting angry at the irascibility of her sick child, especially when she is tired and busy.

Give the child food that he likes

Certain children may prefer savory foods while others may prefer sweet foods. Mothers should not be too rigid about what the sick child eats. The important thing is that he eat something. Many mothers have preconceived ideas about which foods are easily digested and which are not. They may insist that the child eat the food they consider appropriate while the anorexic child wants to eat something else. The child may refuse to eat bland or tasteless food, preferring to have the more highly seasoned foods that he is used to. Once again, it is important that he eat something. The type of food is of less importance.

A mother must be very patient when she feeds an anorexic child.

GROWTH MONITORING AND DIARRHOEA

In the longer term, the related problems of diarrhoea and malnutrition require a preventive as well as a curative approach. Growth is an indication of good health in the child. Subnormal growth is an indication of bad health.

Frequent episodes of diarrhoea can cause malnutrition and disrupt growth. Growth monitoring permits health workers to identify children at risk.



Monitoring the weight and height of a child in order to identify a low or irregular growth rate does not necessarily involve complicated procedures. It can be done in health facilities and even at community level if the necessary equipment and techniques are available.

The information on the growth of the child must be registered in a way that is simple enough for all concerned to see immediately when the child is losing weight or when his growth rate is below normal.

In such cases, the child should immediately be given special care in the form of supplementary feeding and treatment of any infection. If this is done, children living in the poorer areas of the world will be less vulnerable to serious illness and an attack of diarrhoea will no longer be fatal to them.



EXERCISE 2-J

- A. Discuss two local recipes for food which would be appropriate for a child of 6 months with diarrhoea.
- B. Role-play, giving advice about feeding to a mother whose child under 6 months of age is being seen for diarrhoea.

ANTIDIARRHOEAL DRUGS

LEARNING OBJECTIVE 2.7

Describe the role and the limits of antidiarrhoeal drugs other than ORS in the treatment of diarrhoea.



EXERCISE 2-K

Ask students what they already know about the subject of this objective.

Write down their answers and discuss.

Two principal types of drugs are commonly prescribed for the treatment of diarrhoea:

- antimicrobial drugs
- antidiarrhoeal drugs

The two kinds of drugs are often combined, and many pharmaceutical preparations are sold which contain both antibiotics and antidiarrhoeal drugs.

Antibiotics and Sulphaguanidine are presumed to act by inhibiting the germs responsible for diarrhoea. However, in most studies of non-specific, acute diarrhoea, antibiotics have been shown to be ineffective. They may even, in some cases make the diarrhoea episode last longer. In addition, a large number of the cases of childhood diarrhoea in our countries are due to viruses which do not respond to either antibiotics or to Sulphaguanidine.

Like Ganidan* (sulphaguanidine), other drugs that have been shown to be of little use in treating diarrhoea in children are often prescribed in our countries: Immodium* (Loperamide), Elixir of paregoric (tincture of opium) or Diarsed* (diphenexylate & atropine), do nothing to correct dehydration due to diarrhoea. The effect of these medicines is to mask the diarrhoea by paralyzing the intestine. The liquids secreted due to the presence of bacterial toxins or viruses stagnate within the paralyzed intestine, which is incapable of eliminating. This leads both the doctor and the parents to believe that the diarrhoea is over, since the stools have ceased. However, the process of dehydration continues, and may lead to the death of the child.

Another category of drugs used widely in Africa to treat childhood diarrhoea consists of powders such as Arobon* (carob pulp), Gelopectose* (neutral pectin), often extracted from fruits or vegetables. These powders modify the appearance of children's stools. They swell when they come into contact with the water in the diarrhoea, producing a more or less solid paste. Thus the appearance of the stool changes, but not the quantity of water in the stool. The same amount of fluid is lost, and if oral rehydration therapy is not rapidly initiated, the child may die of dehydration even though his stools appear to be almost normal.



The list of useless drugs for diarrhoea would not be complete without charcoal. In fact, charcoal does not absorb the toxins present in the intestine at all, contrary to what was formerly thought to be true.

The inappropriate use of these drugs is due to the longstanding habits of the majority of health care professionals in prescribing medication, the tendency of the general public to use drugs without prescription, and the fact that scientific knowledge concerning diarrhoea and its treatment has not been updated.

EFFECTS OF THE PRINCIPAL, CLASSICAL ANTI-DIARRHOEAL DRUGS

Type of medication	Example	Properties	Comments
Stool solidifiers	Arobon* (carob pulp) Gelopectose* (natural pectin)	solidify stools	have no effect on loss of liquids and nutrients which makes diarrhoea dangerous
Intestinal motricity inhibitors	Immodium* (Loperamide), Diarsed* (diphenexylate + atropinen), Elixir of paregoric* (tincture of opium)	inhibit intestinal movement	masks the loss of fluids, which are no longer excreted but is no less serous. Leads to risk of spread of bacteria outside the digestive tract.
Intestinal antiseptics	Ganidan* (Sulphaguanidine), Ercefuryl* (nifuroxazine), Thiacyl* (succinylsulphathiazol)	inhibit growth of certain intestinal germs	are not active against the few germs which require antibiotic treatment. Have no effect on diarrhoea due to the secretion of bacterial toxins.
Mixed drugs	Thiacyl or carob* (succinylsulphathiazol + carob pulp), Dialyl*, Diarsed-neomycin* (diphenexylate + atropine, + neomycin)	group several antidiarrhoeal drugs	The combining of several useless drugs makes a useless drug.
Other drugs	Charcoal (vegetal carbon) Kaolin, Ultra-yeast (saccharonyces Boulardii)	none	Their use stems more from tradition than from a serious scientific base

"None of the classic antidiarrhoeal medicines prevent dehydration or the denutrition which makes diarrhoea dangerous. They should be discontinued in favor of a widespread campaign on the techniques of oral rehydration." Dr. A. Briend.

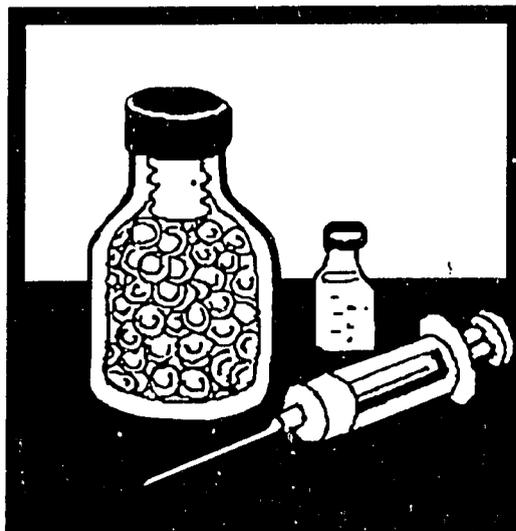
Source: Table extracted from the book, "Treatment and Prevention of Malnutrition", Dr. A. Briend, Orstom (ed) 1985.

Nonetheless, certain medicines have a place in the treatment of diarrhoeal disease. (see table below)

USE OF ANTI-INFECTIOUS DRUGS FOR CASES OF DIARRHOEA OTHER THAN CHOLERA

Clinical conditions that justify treatment other than rehydration alone	Possible causes	Laboratory tests to perform if possible	Treatment
Bloody diarrhoea accompanied by fever	Shigella bacterial dysentery	Plate culture of faeces with record of bacterial sensitivity to antibiotics	Nalidixic Acid, Trimetoprim or ampicillin
Bloody stools without fever accompanied by violent abdominal pain	Acute intestinal amoebiasis	Examination of fresh stools	Metronidazole, Diloxanide furoate
Chronic diarrhoea with frothy, greasy stools	Giardiasis	Examination of stools	Metronidazole, Tinidazole, Quinacrine, Furazolidone

In all other circumstances, the use of all other drugs is strictly USELESS and FREQUENTLY DANGEROUS. Don't waste the family budget in prescribing them.



The real problem is still the lack of knowledge on part of health workers and mothers of the real danger of diarrhoea, i.e. acute dehydration, and of its effective treatment with oral rehydration therapy.

LEARNING OBJECTIVE 2.8

Organise an effective system for the treatment and surveillance of diarrhoea cases.

It is necessary to keep close watch on children who present signs of dehydration until they begin to respond favorably to treatment.

This care does not necessarily entail a special structure.

It should be an integral part of the routine activities of any health facility. But whether it is in a hospital, a MCH center, a health center or dispensary, there must be a certain degree of organization to ensure that:

- mothers are kept at the health service for a certain period of time
- demonstrations are done to show the mothers how to prepare the rehydration solution
- a sufficient quantity of ORS is prepared to meet daily needs
- children are fed during the time they are under observation

The above must occur using materials with which the mother is familiar and which she would normally use at home.



In certain hospitals, special structures for ORT called Oral Rehydration Units may be created as referral centers for treatment of diarrhoea and the training of personnel.

DESCRIPTION OF A DIARRHOEA TREATMENT TRAINING UNIT

Each training unit for treatment of diarrhoea will be organised in a different way, but they should all have certain common characteristics:

1. Appropriate therapy for the treatment of diarrhoea is organised in a systematic way so that the participants can observe and also practice the techniques involved.
 - a) Mothers stay with their children, administer ORS and continue to breastfeed.
 - b) Mothers are taught to administer ORS and to continue to give it at home, to recognize at least three signs of dehydration, and to feed their children during and after the diarrhoea episode. Other relevant health education messages on the prevention of diarrhoea are communicated.
 - c) ORT is used in an appropriate manner. Intravenous (IV) therapy is not used when ORT can be effective.
 - d) Antibiotics are not used unless they are necessary. Antidiarrhoeal medicines are never used.



2. The number of children with diarrhoea brought to the unit is sufficient to give each participant the opportunity to treat several cases during the training period.
3. The doctors, nurses and other members of the staff work well together and have a common approach to the treatment of diarrhoea.

4. The available work space is divided into three zones. These do not necessarily have to be adjacent. The diarrhoea ward is often part of the general medicine ward.

Reception and screening area where:

- cases are assessed and referred for appropriate treatment,
- mothers whose children do not have signs of dehydration learn to prevent and to treat diarrhoea at home. They practice making and administering ORS. They learn to recognize at least three signs of dehydration. They are told to return to the unit if these signs appear.

ORT area where:

- benches and bedside tables (or seats or mats) are arranged in such a manner that the doctors, other staff, participants, and mothers can easily move around,
- mothers or other family members administer ORS to children under the supervision of staff,
- there is sufficient ventilation (fans), and there is access to toilets and handwashing facilities,
- ORS solution is prepared using packets, in large quantities (unless it is prepared in the pharmacy).

The diarrhoea patient area where:

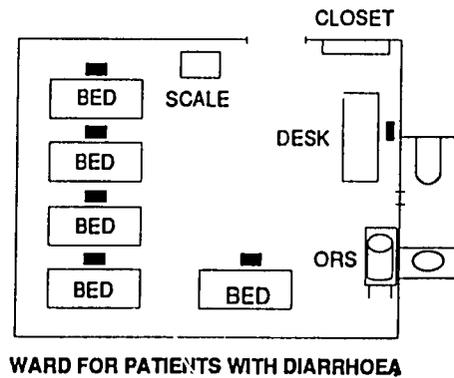
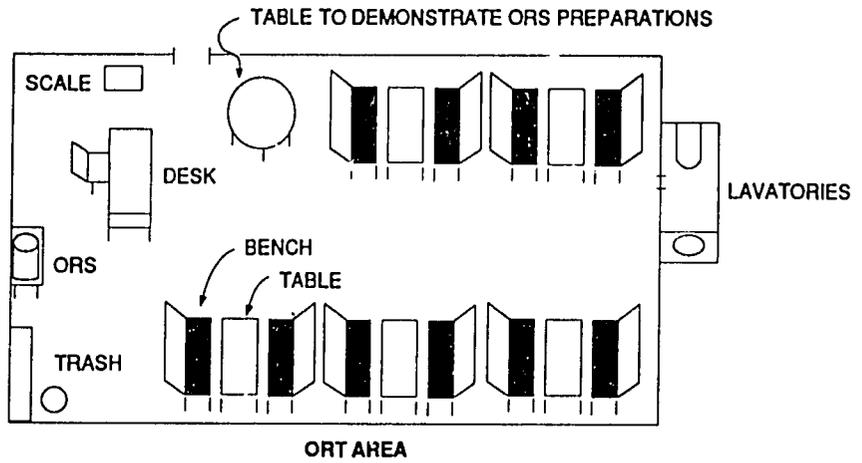
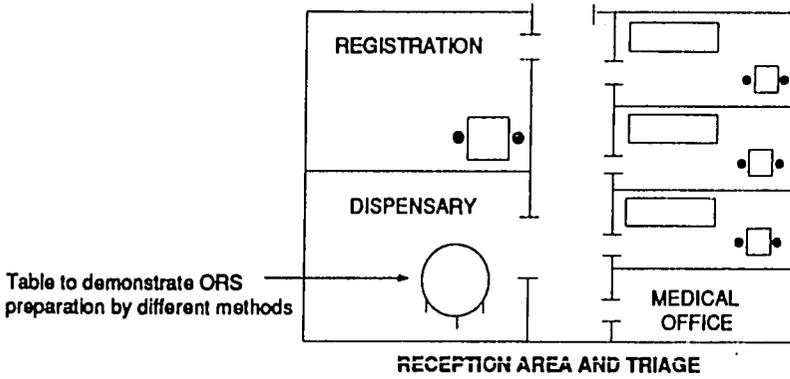
- children with severe dehydration and cases of diarrhoea with complications are separated from children with other illnesses,
- sick children are treated first with intravenous drip or by nasogastric tube; ORS is given to them as quickly as possible, as is any other needed treatment,
- the mother or another member of the family may stay next to the child's bed.

5. The physical characteristics, staff, materials, and the range of services provided in the diarrhoea treatment unit should resemble the hospital environment in which the participants will be working.

This is necessary so that participants can easily perceive the applicability of what they are learning for the health facility where they will be assigned.

6. At night there is continued supervision of the in-patients and of any emergency patients admitted. There is a staff member with experience in ORT on duty at all times.
7. Necessary supplies are available in sufficient quantities. Supplies are taken from available stocks and prepared each morning.

DIARRHOEA TREATMENT TRAINING UNIT



Source: WHO
CDD/SER/86.1

EXERCISE 2-L

Visit a health facility to study the way diarrhoea case management is organised. Discuss observations in class, suggesting alternative solutions for problems noted.



EXERCISE 2-M

You are in charge of a dispensary which sees at least 10 cases of diarrhoea per day. Knowing that you have no spare rooms, nor special equipment, how would you ensure the surveillance of these patients?

- A. Discuss alternative forms of organising this surveillance in class.
- B. Make a list of locally available equipment which needed to guarantee adequate surveillance of the patients.

PREVENTION OF DIARRHOEA



LEARNING OBJECTIVE 2.9

Explain the importance of different vaccinations used in diarrhoeal control.

Diarrhoea can be prevented by immunisation, availability of potable water, a clean environment and health education.

VACCINATIONS

Cholera Vaccines

Vaccines available today are not effective in combatting cholera for the following reasons:

- 1) even when they perform as expected, they are only 50-60% effective and will only last from 3 to 6 months.
- 2) vaccination does not affect the severity of the disease and nor does it reduce the number of asymptomatic infections. It cannot, therefore, prevent cholera from being introduced into a country, or from spreading within a given region.

Measles vaccination

It is known that measles may cause diarrhoea as well as other complications. The vaccine against measles provides significant immunity; it could prevent from 11 to 22% of deaths from diarrhoea in children under five years of age.

Anti-typhoid vaccines

Controlled testing with live vaccines in adults living in endemic areas show a protection factor of from 60 to 85%. This indicates that antityphoid vaccines can be useful in highly endemic zones. On the other hand, the use of anti-typhoid/paratyphoid A & B vaccines is no longer recommended because these do not provide significant protection.



Anti-Shigella vaccines

Vaccines against shigella have been proven to be effective in field testing, but 5 doses and several boosters are required for adequate protection. This poses a problem for its use in a widespread vaccination campaign.

Vaccinations against viral diarrhoea

Since the rotavirus has been identified as the major cause of fatal diarrhoea in young children, a large-scale effort is being made to develop a vaccine, given that this virus has only 2 or 3 serotypes.

At present, given the large spectrum of pathogenic agents and the difficulty of isolating the mechanism which controls immunity in each one, the chance of developing vaccines to control diarrhoeal diseases in developing countries is doubtful.

Nonetheless, continuing research enables us to envisage promising results in the future.

The following vaccines are not available commercially now but probably will be available in several years:

- oral cholera vaccine
- oral antityphoid vaccine
- oral antirotavirus vaccine.

HYGIENE AND SANITATION

LEARNING OBJECTIVE 2.10

Explain the importance of hygiene and sanitation measures in diarrhoeal disease control.

PERSONAL HYGIENE

Research has shown that personal and domestic hygienic practices have an impact on morbidity due to diarrhoea. Low levels of education and certain local beliefs, on the other hand, lead to increased incidence of diarrhoea.

Health education programs that target personal hygiene, especially handwashing with soap and water, have demonstrated that the rate of diarrhoea can be reduced by from 14 to 48%. Handwashing must occur after bowel movements, before preparing food, before eating or feeding children.

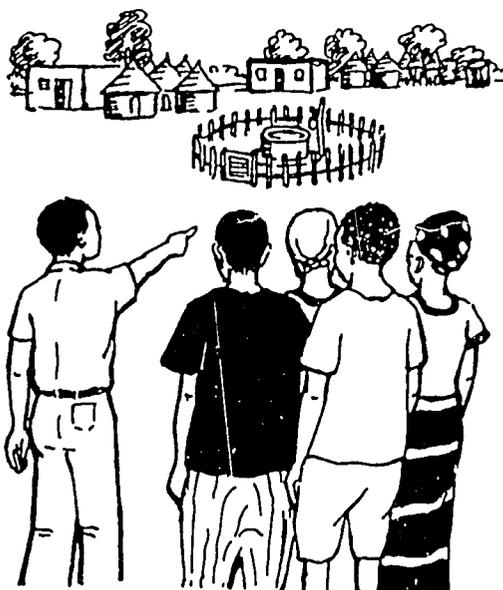


POTABLE WATER SUPPLY

Effectiveness. Well-designed and implemented projects to improve the quantity and quality of water, and sanitation measures can reduce the incidence of diarrhoea by 35%, and the mortality rate by even higher percentages. Such results would be even easier to obtain if the projects were to stress community educational activities.

The availability of clean water is a fundamental strategy in any diarrhoeal disease control programme. The first concern of health workers should be to ensure the quality of the public water supply. The most effective protective measure is to eliminate, as far as possible, any potential sources of contamination of the water supply.

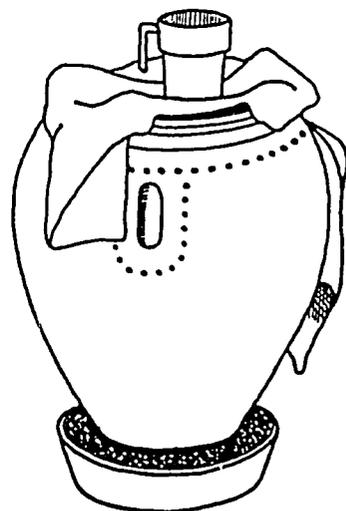
In urban areas, drinking water which has been correctly treated and contains residual chlorine in a free state may be available to the population. This water may be stored at home in clean, covered, containers.



In rural areas, if treated water is not available, it can, nevertheless, be purified by filtering, boiling, or decanting and adding a preparation which releases chlorine (bleaching powder, liquid bleach or iodine). The dosage must be determined by a technician according to the critical point of the water. That is to say, the quantity of chlorine which, when added, completely oxydizes any organic matter present in the water.

Habits and attitudes linked to water usage are the most difficult to change. It is not easy to make people perceive the differences between clean and contaminated water. Water from a biologically clean well may have a different taste, and therefore be rejected in favor of stream water, with a familiar taste.

Finally, storage containers for water should always be as clean as possible.

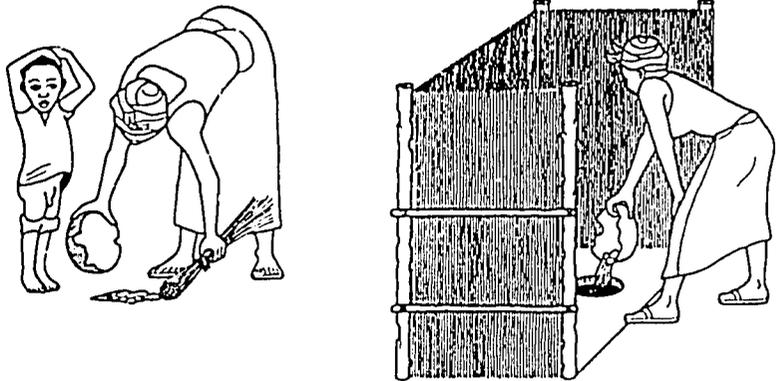


Food Hygiene

There is no doubt that a considerable part of the transmission of diarrhoeal diseases in developing countries is due to poor hygiene, linked to food and food preparation, although it is difficult to quantify the proportion of disease transmission that can be attributed to this cause. Raw data from eight developing countries indicate that outbreaks of food-related illnesses (as opposed to overall food-related infections) may be the cause of up to 10% of the episodes of diarrhoea in children under 5. In urban areas this percentage could reach 30%. It is probable that well-planned programs designed to improve food hygiene would reduce the incidence of diarrhoea in developing countries. It is not possible to estimate the extent of the possible reduction at the present time.

The feasibility and the cost of an improvement of food hygiene, especially in the home in developing countries is largely unknown.

Epidemiological research conducted by the WHO/PCDD and other programmes is needed to determine the role food plays in the transmission of diarrhoea, in the home and outside of the home, in developing countries. This research should aim to identify the principal foods and practices that play a major role in transmitting the pathogenic agents that cause the great majority of cases of serious diarrhoea in developing countries. Studies should be begun in urban communities.



Elimination of excrement

The principal causes of diarrhoea are found in feces. Consequently the hygienic disposal of human stool is extremely important. Each family should have access to a latrine which everyone uses and keeps clean. Latrines should be at least 15 metres from the water source. It should be noted that, contrary to certain beliefs, the feces of young children can be an important source of contamination. It is, therefore, important to educate mothers about proper disposal practices.

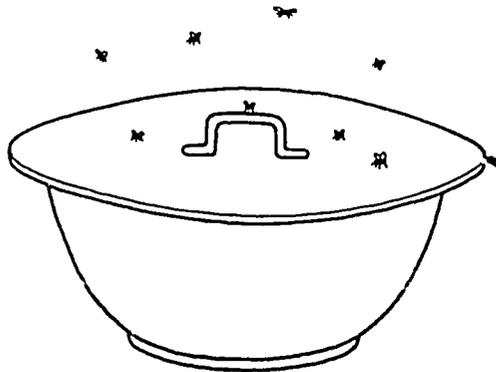
Disposal of household waste

Household waste should be collected in closed containers to be burned, buried, or carried in community bins to be treated, far from homes and sources of clean water.



Flies and vermin

Flies and vermin should be kept as far away as possible by various means, including fumigation and spraying if possible, but also by protecting food in covered containers or storage pantries.



EXERCISE 2-N

- List hygiene measures which can have an impact on the incidence of diarrhoea.
- Order them according to local community practices.

LEARNING OBJECTIVE 2.11

Explain the importance of infant feeding practices for the prevention of diarrhoea

BREASTFEEDING

Encouraging mothers to breastfeed their children in accordance with local custom reduces the incidence by between 8 and 20%, and the mortality rate from diarrhoea by 24 to 27% in children from 0 to 5 months of age. In children under 5, the incidence of diarrhoea can be reduced by between 1 and 4%, and mortality by 8 to 9%.



WEANING

Several studies have shown that improved weaning practices have a positive impact on the nutritional status of the child, and that a good communications programme on weaning could cut moderate to serious malnutrition (weight for age below 75%) in half. Depending on the prevalence of malnutrition and the age-groups targeted by the communications programme on weaning, an improvement of this order in nutritional status would reduce mortality from diarrhoea in children under 5 by between 2 and 12%.

Educational programs to improve weaning methods have been very successful in several countries. There have also been failures due to poorly conceived programmes. Advice given in such programmes is often complex, inappropriate and impractical. It is often easier to implement programs in urban rather than rural areas. It is important to work closely with the target group in order to discover particular problems in weaning practices, and then to formulate precise, well-tested measures to help correct the problems.



In conclusion, the WHO analysed 15 programs, and the results are summarized in the following table. (For more detailed information see WHO document: OMS/CDD/TAG/85.7):

<p>Category 1</p> <ul style="list-style-type: none"> • Encourage mothers to breastfeed • Antimeasles vaccination • Provision of potable water • Promotion of personal and research*). <p>Category 2</p> <ul style="list-style-type: none"> • Improvement of weaning practices • Vaccination for rotavirus recommendations for <p>Category 3</p> <ul style="list-style-type: none"> • Prevention of low birth weight • Use of growth charts • Anti-cholera vaccines • Hygienic food practices • Campaign against zoonosis • Campaign against epidemics <p>Category 4</p> <ul style="list-style-type: none"> • Improve the secretion of milk • Supplementary feeding programs • Chemoprophylaxis • Fly control campaign 	<p>These were efficient steps to take, (which are thought to be feasible and economically viable, should be implemented and justify any domestic hygiene:</p> <p>These are probably viable but should be studied additionally before issuing any operation.</p> <p>These measures have doubtful efficiency, and would require additional information.</p> <p>These are inefficient or extremely costly measures which are not priorities in the campaign to control diarrhoea.</p>
<p>Analysis of birth control (spacing) and supplementary vitamin A feeding are not advanced enough yet to indicate which category they belong to.</p> <hr/> <p>* Potable water supply and sanitation are exceptions because, although not viable only in light of the PCDD, they have been implemented because of other advantages.</p>	

MODULE 2

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