THE MANAGEMENT OF DIARRHOEA IN CHILDREN

TRAINING MANUAL FOR OTHER HEALTH WORKERS
ACKNOWLEDGEMENT

This training manual is a result of a collaborative effort led by USAID’s Strengthening Health Outcomes through the Private Sector (SHOPS) project with tremendous support from local partners. These partners include: the Ministry of Health, Ghana Health Service, USAID/Ghana, WHO/Ghana, UNICEF, the Pharmacy Council, Food and Drugs Board, and the Ghana Registered Midwives Association.

The manual is a modification of the Ministry of Health's concise Integrated Management of Neonatal Childhood Illness (IMCI) manual. The content has been adopted to suit the training needs of health professionals.

Special thanks to the members of the manual task team and to all who contributed to the development of this manual.

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### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADR</td>
<td>Adverse Drug Reaction</td>
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<tr>
<td>ART</td>
<td>Antiretroviral Therapy</td>
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<td>CHERG</td>
<td>Child Health Epidemiology Reference Group</td>
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<td>FDB</td>
<td>Food and Drugs Board</td>
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<td>FRHP</td>
<td>Focus Regions Health Project</td>
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<tr>
<td>GDHS</td>
<td>Ghana Demographic Health Survey</td>
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<td>GHS</td>
<td>Ghana Health Service</td>
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<tr>
<td>GRMA</td>
<td>Ghana Registered Midwives Association</td>
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<td>HIV</td>
<td>Human Immune Deficiency Virus</td>
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<td>ICD</td>
<td>Institutional Care Division</td>
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<td>IMCI</td>
<td>Integrated Management of Childhood Illness</td>
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<td>IMNCI</td>
<td>Integrated Management of Newborn and Childhood Illness</td>
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<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>LCS</td>
<td>Licensed Chemical Seller</td>
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<tr>
<td>NG</td>
<td>NasoGastric</td>
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<tr>
<td>ORS</td>
<td>Oral Rehydration Solution</td>
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<td>RCH</td>
<td>Reproductive and Child Health</td>
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<tr>
<td>SHOPS</td>
<td>Strengthening Health Outcomes through the Private Sector</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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<td>USIAD</td>
<td>United States Agency for International Development</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Every year, more than 1.5 million children die from acute diarrhoea, accounting for approximately 16% of deaths in children under-five years of age in Africa. In Ghana diarrhoea often ranks third in the top ten diseases at the outpatients. According to the 2008 Ghana Demographic and Health Survey (GDHS) diarrhoea prevalence among children under the age of five was 19.8% with 27.2% prevalence among children in the 6-11 month age range, and 32.6% among children 12-23 months. These rates of diarrhoea prevalence are unacceptably high. According to data from the WHO Child Health Epidemiology Reference Group (CHERG), in 2010, diarrhoea accounted for 9% of all deaths in children under five in Ghana and 15% of all children aged 1-59 months.

In May 2004, WHO/UNICEF issued a joint statement recommending the use of zinc, an essential micronutrient for human growth, development and maintenance of the immune system, and a new formulation of oral rehydration solution (ORS), i.e. Low osmolarity ORS, with reduced levels of glucose and salt, as a two-pronged approach to improved case management of acute diarrhoea in children. These two advances: a new low osmolarity formula of ORS and the introduction of zinc supplements in conjunction with continued feeding and increased fluids have been found to have the potential to decrease diarrhoea related deaths by up to 88%.

**Purpose of this manual:**

As a healthcare worker YOU are an essential element in the promotion and implementation of improved diarrhoea case management. With the information provided in this training manual you will be well prepared to implement these changes in the management of diarrhoea. This training manual emphasizes the role of increased fluids, especially ORS solution, and continued feeding, and to introduce the use of zinc as part of the comprehensive treatment of diarrhoea. This training manual will also help you to counsel caregivers on ways of preventing future diarrhoea episodes.

**Objectives of the training:**

After completing this session, participants should be able to:

- Recognize the signs and symptoms of diarrhoea
- Assess and Classify a child with an episode of diarrhoea
- Identify and Treat a child with diarrhoea with the appropriate treatment based on the GHS IMCI guidelines
- Counsel caregivers on the care of a child with diarrhoea including the right administration of prescribed treatments
- Conduct a follow up visit for a child treated for diarrhoea when necessary
- Refer a sick child to the appropriate level of care when necessary

2.1 **DEFINITION OF DIARRHOEA**

Diarrhoea is the passage of unusually loose or watery stools, usually at least three times in a 24 hour period. However, it is the consistency of the stools rather than the number that is most important. Frequent passing of formed stools is not diarrhoea. Babies fed only breastmilk often pass loose, "pasty" stools; this also is not diarrhoea.

2.2 **TYPES OF DIARRHOEA**

There are three (3) clinical types of diarrhoea. These are:

- **Acute watery diarrhea (including cholera):** An episode lasts less than fourteen (14) days. Acute watery diarrhoea causes dehydration and contributes to malnutrition. The death of a child with acute diarrhoea is normally due to dehydration.

- **Persistent diarrhoea:** An episode lasts 14 days or more. Up to 20% of episodes of diarrhoea become persistent. Persistent diarrhoea often causes nutritional problems and contributes to death in children.

- **Dysentery:** This is diarrhoea with blood in stool with or without mucus. The most common cause of dysentery is shigella bacteria. *Amoebic dysentery is not common in young children.* A child may have both watery diarrhoea and dysentery.

2.3 **DEHYDRATION**

During diarrhoea there is an increased loss of water and electrolytes (sodium, chloride, potassium, and bicarbonate) in the liquid stool. Water and electrolytes are also lost through vomit (which may accompany the diarrhoea) sweat, urine, and breathing. Dehydration occurs when these losses are not replaced adequately and a deficit of water and electrolytes develops.

The volume of fluid lost through the stools in 24 hours can vary from 5 ml/kg (near normal) to 200 ml/kg, or more.

The concentrations and amounts of electrolytes lost also vary. The total body sodium deficit in young children with severe dehydration due to diarrhoea is usually about 70-110 millimoles per litre of water deficit. Potassium and chloride losses are in a similar range. Deficits of this magnitude can occur with acute diarrhoea of any aetiology.

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2.4 MALNUTRITION

Diarrhoea is, in reality, as much a nutritional disease as one of fluid and electrolyte loss. Children who die from diarrhoea, despite good management of dehydration, are usually malnourished and often severely so.

During diarrhoea, decreased food intake, decreased nutrient absorption, and increased nutrient requirements often combine to cause weight loss and failure to grow: the child's nutritional status declines and any pre-existing malnutrition is made worse. In turn, malnutrition contributes to diarrhoea which is more severe, prolonged, and possibly more frequent in malnourished children. This vicious circle can be broken by:

- continuing to give nutrient, rich foods during and after diarrhoea;
- giving a nutritious diet, appropriate for the child's age, when the child is well.

When these steps are followed, malnutrition can be prevented and the risk of death from a future episode of diarrhoea is much reduced. 

2.5 THE ROLE OF ZINC IN THE MANAGEMENT OF DIARRHOEA

Zinc is an essential micronutrient that can be found in all tissues of the body. It plays critical roles in metallo-enzymes, polyribosomes, the cell membrane, and cellular function, leading to the belief that it also plays a central role in cellular growth and in function of the immune system. Through randomized control trails or zinc supplementation, the importance of zinc in child health has been established.

Numerous studies have shown that zinc supplementation (10-20mg per day for 10 – 14 days) in children less than five years of age, significantly

- reduces the severity of diarrhoea
- reduces the duration of diarrhoea
- reduces the incidence of diarrhoea in the subsequent two (2) to three (3) months after the diarrhoea episode.

Based on these studies, it is now recommended that zinc (10-20 mg/day) be given for 10 to 14 days to all children with diarrhoea.

Zinc is well tolerated by children; there has been very low risk of adverse effects recorded following zinc supplementation. Studies show that the human body has good mechanisms that regulate the absorption and retention of zinc, decreasing the likelihood of toxic build up in the body.

2.6 WHO/UNICEF JOINT STATEMENT ON CLINICAL MANAGEMENT OF ACUTE DIARRHOEA

WHO and UNICEF in 2004 released a joint statement recommending actions for health care workers, mothers and caregivers and countries. The recommendations for health care workers in panel below.

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RECOMMENDATIONS

HEALTH-CARE WORKERS SHOULD

- Counsel mothers to begin administering suitable available home fluids immediately upon onset of diarrhoea in a child
- Treat dehydration with new low osmolarity ORS solution (or with an intravenous electrolyte solution in cases of severe dehydration)
- Emphasize continued feeding or increased breastfeeding during, and increased feeding after the diarrhoeal episode
- Use antibiotics only when appropriate, i.e. in the presence of bloody diarrhoea or shigellosis, and abstain from administering anti-diarrhoeal drugs
- Provide children with 20 mg per day of zinc supplementation for 10–14 days (10 mg per day for infants under six months old)
- Advise mothers of the need to increase fluids and continue feeding during future episodes.
- Health-care workers treating children for diarrhoea are encouraged to provide caretakers with three (3) 600ml packets of the new low osmolarity ORS, for home-use until the diarrhoea stops. Caretakers should also be provided with enough zinc supplements to continue home treatment for 10–14 days. Printed material (including text and illustrations) with advice on preventing and treating diarrhoea at home should accompany the ORS and zinc supplements.

3.1. GENERAL DANGER SIGNS AND A SICK CHILD

A child with a general danger sign has a serious problem. Most children with a danger sign need URGENT referral to the hospital. A general danger sign is present if:

- **The child is not able to drink or breastfeed:** A child has the sign “not able to drink or breastfeed” if the child is not able to suck or swallow when offered a drink or breast milk.

- **The child vomits everything:** A child who is not able to hold anything down at all has the sign “vomits everything” what goes down comes back up. A child who vomits everything will not be able to hold down food, fluids or oral drugs. A child who vomits several times but can hold down some fluid does not have this general danger sign.

- **The child has had convulsions (in this illness):** During a convulsion, a child's arm and legs stiffen because the muscles are contracting. The child may lose consciousness or not able to respond to spoken directions.

- **The child is lethargic or unconscious:** A lethargic child is not awake or alert when it should be. The child is drowsy and does not show interest in what is happening around him/her. Often the lethargic child does not look at his/her mother or watch her face when she talks. The child may stare blankly and appear not to notice what is going on around him/her. An unconscious child cannot be wakened. He does not respond when he/she is touched, shaken or spoken to.

- **The child is convulsing now:** During a convulsion, a child's arm and legs stiffen because the muscles are contracting. The child may lose consciousness or not able to respond to spoken directions.

3.2. ASSESS AND CLASSIFY DIARRHOEA

3.2.1 Assess diarrhoea

Following the integrated Management of Newborn and Childhood Illness (IMNCI) algorithm, a child with diarrhoea is assessed for:

- How long the child has had diarrhoea
- Blood in the stool to determine if the child has dysentery, and for
- Signs of dehydration
These are the steps for assessing a child with diarrhoea:

**STEP1: Ask about diarrhoea in all children:**

It is important to find out if sick children have diarrhea even if the caregiver does not mention diarrhoea as a reason for reporting.

**ASK: Does the child have diarrhoea?**

Use words for diarrhoea the mother understands. Where necessary use local terminology.

If the mother answers NO, ask about and assess the child for other symptoms, e.g. fever, cough etc. You do not need to assess the child further for a sign related to diarrhoea. If diarrhoea was the reason for coming to the clinic/pharmacy/LCS, record her answer. Then assess the child for signs of dehydration, persistent diarrhoea and dysentery.

**ASK: For how long?**

Give the mother time to answer the question. She may need time to recall the number of days.

**ASK: Is there blood in the stool?**

Ask the mother if she has seen blood in the stools at any time during this episode of diarrhoea.
Next, check for signs of dehydration. When a child becomes dehydrated, he is at first restless and irritable. If dehydration continues, the child becomes lethargic or unconscious.

As the child’s body loses fluids, the eyes may look sunken. When pinched, the skin will go back slowly or very slowly.

**STEP 2:** LOOK and FEEL for the following signs:

**LOOK:** at the child’s general condition.

Is the child lethargic or unconscious?
Restless and irritable?

Check for general danger signs. Is the child lethargic or unconscious? If the child is lethargic or unconscious, he has a general danger sign. Remember to use this general danger sign when you classify the child’s diarrhoea.

A child has the sign restless and irritable, if the child is restless and irritable all the time or every time he is touched and handled. If an infant or child is calm when breastfeeding but again restless and irritable when he stops breastfeeding, he has the signs ‘restless and irritable’. Many children are upset just because they are in the clinic. Usually these children can be consoled and calmed. They do not have the sign “restless and irritable”.

**LOOK:** for sunken eyes.

The eyes of a child who is dehydrated may look sunken. Decide if you think the eyes are sunken. Then ask the mother if she thinks her child’s eyes look unusual. Her opinion helps you confirm that the child’s eyes are sunken.

**Note:** In a severely malnourished child who is visibly wasted (that is, who has marasmus), the eyes may always look sunken, even if the child is not dehydrated. Even though sunken eyes are less reliable in a visibly wasted child, still use the sign to classify the child’s dehydration.

**OFFER** the child fluid. Is the child not able to drink or drinking poorly? Drinking eagerly, thirsty?
Ask the mother to offer the child some water in a cup or spoon. Watch the child drink. A child is not able to drink if he is not able to suck or swallow when offered a drink. A child may not be able to drink because he is lethargic or unconscious.

A child is drinking poorly if the child is weak and cannot drink without help. He may be able to swallow only if fluid is put in his mouth.

A child has the sign drinking “eagerly, thirsty” if it is clear that the child wants to drink. Look to see if the child reaches out for the cup or spoon when you offer him water. When the water is taken away, see if the child is unhappy because he wants to drink more.

If the child takes a drink only with encouragement and does not want to drink more, he does not have the sign “drinking eagerly, thirsty”.

PINCH the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? Slowly? Immediately?

Ask the mother to place the child on the examining table so that the child is flat on his back with his arms at his sides (not over his head) and his legs straight. Or, ask the mother to hold the child so he is lying flat in her lap.

Locate the area on the child’s abdomen halfway between the umbilicus and the side of the abdomen. To do the skin pinch, use your thumb and first finger. Do not use your fingertips because this will cause pain. Place your hand so that when you pinch the skin, the fold of skin will be in a line up and down the child’s body and not across the child’s body. Firmly pick up all of the layers of skin and the tissue under them. Pinch the skin for one second and then release it. When you release the skin look to see if the skin pinch goes back:

- Very slowly (longer than 2 seconds)
- Slowly
- Immediately

If the skin stays up for even a brief time after you release it, decide that the skin pinch goes back slowly.

Note: In a child with marasmus (severe malnutrition), the skin may go back slowly even if the child is not dehydrated. In an overweight child, or a child with oedema, the skin may go back immediately even if the child is dehydrated. Even though skin pinch is less reliable in these children, still use it to classify the child’s dehydration.

Fig.2. Skin Pinch Test
3.2.2. **Classify diarrhea**

Please refer to diagram 1. There are three arrows and three classification tables for classifying diarrhoea.

1. **All children with diarrhoea** are classified for dehydration.

2. If the child has had diarrhoea for 14 days or more, also classify the child for persistent diarrhoea. Classify persistent diarrhoea, only if the child has had diarrhoea lasting 14 days or more. 

   *Please refer to Annex A (Flow Chart for Accessing and Classifying Diarrhoea)*

3. If the child has blood in the stool, classify the child for dysentery. Classify dysentery, only if the child has blood in stool.

3.2.3. **Classification of dehydration**

There are three possible classifications of dehydration in a child with diarrhoea:

- **SEVERE DEHYDRATION**
- **SOME DEHYDRATION**
- **NO DEHYDRATION**

To classify the child's dehydration, begin with the top row:

- If two or more of the signs in the top row are present, classify the child as having **SEVERE DEHYDRATION**.
- If two or more of the signs are not present in the top row, look at the middle row. If two or more of the signs are present, classify the child as having **SOME DEHYDRATION**.
• If two or more of the signs from the middle row are not present, classify the child as having **NO DEHYDRATION**. This child does not have enough signs to be classified as having **SOME DEHYDRATION**. Some of these children may have one sign of dehydration or may have lost fluids without showing signs.

Here is a description of each classification for dehydration:

**SEVERE DEHYDRATION**

If the child has two of the following signs – lethargic or unconscious, sunken eyes, not able to drink or drinking poorly, skin pinch goes back very slowly – classify the dehydration as **SEVERE DEHYDRATION**.

**SOME DEHYDRATION**

If the child does not have signs of **SEVERE DEHYDRATION**, look at the next row. Does the child have signs of **SOME DEHYDRATION**?

If the child has two or more of the following signs – restless, irritable, sunken eyes, drinking eagerly, and thirsty, skin pinch goes back slowly – classify the child's dehydration as **SOME DEHYDRATION**.

**NO DEHYDRATION**

A child who does not have two or more signs in top or middle row is classified as having **NO DEHYDARTION**.

**EXAMPLE:**

A 4-month-old child named Clara was brought to the clinic because she had diarrhoea for 5 days. She did not have danger signs and was not coughing. The health worker assessed the child's diarrhoea. He recorded the following signs:

The child does not have two signs in the top row. The child does not have **SEVERE DEHYDRATION**.

The child had two signs from the middle row. The health worker classified the child's dehydration as **SOME DEHYDRATION**.
Answers to example: Clara

<table>
<thead>
<tr>
<th>Name: Clara</th>
<th>Age: 4 months</th>
<th>Temp.: 38°C</th>
<th>Initial visit: ?</th>
</tr>
</thead>
</table>

**Child’s problems:** Diarrhoea for 5 days  
**Assessment:** General danger signs not present  
No cough  
Restless or irritable  
Drinking eagerly/thirsty

**Classification:** Some Dehydration

### 3.2.4. Classify persistent diarrhea

After you classify the child’s dehydration, classify the child for persistent diarrhoea if the child has had diarrhoea for 14 days or more. There are two classifications for persistent diarrhoea. They are:

- **SEVERE PERSISTENT DIARRHOEA**
- **PERSISTENT DIARRHOEA**

<table>
<thead>
<tr>
<th>Dehydration present</th>
<th>SEVERE PERSISTENT DIARRHOEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dehydration</td>
<td>PERSISTENT DIARRHOEA</td>
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</table>

**SEVERE PERSISTENT DIARRHOEA**

If a child has had diarrhoea for 14 days or more and also has been classified as having **SOME DEHYDRATION** or **SEVERE DEHYDRATION**, classify the child’s illness as **SEVERE PERSISTENT DIARRHOEA**.  
(Note that this child has two classifications for his/her diarrhoea.)

**PERSISTENT DIARRHOEA**

A child who has had diarrhoea for 14 days or more and who has no sign of dehydration is classified as having **PERSISTENT DIARRHOEA**.
3.2.5. Classify Dysentery

There is only one classification for dysentery: **DYSENTERY**

- Blood in the stool (with or without mucus)

**DYSENTERY**

A child with diarrhoea and blood in the stool (with or without mucus) is classified as having **DYSENTERY**.

**Note:** a child with diarrhoea may have one or more classifications for diarrhoea. Record all the classifications that the child has.

**Diagram 1**

**IF YES, ASK:**
- For how long?
- Is there blood in the stool?

**LOOK AND FEEL:**
- Look at the child’s general condition, is the child:
  - Lethargic or unconscious?
  - Restless and irritable?
- Look for sunken eyes.
- Offer the child fluid. Is the child:
  - Not able to drink or drinking poorly?
  - Drinking eagerly, thirsty?
  - Pinch the skin of the abdomen. Does it go back:
    - Very slowly (longer than 2 seconds) slowly

**For dehydration**
- Two of the following signs:
  - Lethargic or unconscious
  - Sunken eyes
  - Not able to drink or drinking poorly
  - Skin pinch goes back very slowly
- SEVERE DEHYDRATION

- Two of the following signs:
  - Restless, irritable
  - Sunken eyes
  - Drinks eagerly, thirsty
  - Skin pinch goes back slowly
- SOME DEHYDRATION

- Not enough signs to classify as some or severe dehydration
- NO DEHYDRATION

**Classify**
- Two of the following signs:
  - Dehydration present
  - Severe persistent diarrhoea
- SEVEREPERSISTENT DIARRHOEA

- No dehydration
- PERSISTENT DIARRHOEA

**And if diarrhea lasts for 14 days**
- Blood in Stool
- DYSENTERY

**And if blood in stool**
EXERCISE A:

Photograph exercise – Group work with group feedback-
Practise identifying signs of dehydration in children with diarrhoea.

In this exercise you will look at photographs of children with diarrhoea and identify signs of dehydration.

EXERCISE B:

Individual work followed by group discussion
Practise classifying dehydration status in children with diarrhoea.
Read the following case studies. Record signs and classifications in your manual

Case study: 1
Jane has had diarrhoea for 3 days. There was no blood in the stool. The child was not lethargic or unconscious. She was not thirsty. The skin pinch went back immediately.

Record your answers in the box below

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Weight:</th>
<th>Temp.:</th>
<th>Initial visit:</th>
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Case study: 2
Mariama has had diarrhoea for 2 days. She does not have blood in the stool. She is restless and irritable. Her eyes are sunken. She is not able to drink. A skin pinch goes back very slowly.

Record your answers in the box below

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<th>Name:</th>
<th>Age:</th>
<th>Weight:</th>
<th>Temp.:</th>
<th>Initial visit:</th>
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</table>

Case study: 3
Joseph has had diarrhoea for five days. There is no blood in the stool. The health worker assesses the child for dehydration. The child is not lethargic or unconscious. He is not restless and irritable. His eyes look normal and are not sunken. When offered water, the child drinks eagerly. A skin pinch goes back immediately.

Record your answers in the box below

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Weight:</th>
<th>Temp.:</th>
<th>Initial visit:</th>
</tr>
</thead>
</table>

EXERCISE C:

Individual work with group feedback – Practise classifying children up through diarrhoea

In this exercise, you will practise classifying several children with diarrhoea. Read these case studies. Record the child signs and classify them on your manual. Use your chart booklet.

Case study: 1
Afua is 14 months old. She weighs 12kg. Her temperature is 37.5°C. Afua’s mother said the child
has had diarrhoea for 3 weeks. Afua does not have any general danger signs. She does not have cough or difficult breathing.

The health worker assessed her diarrhoea. He noted she has had diarrhoea for 21 days. He asked if there has been blood in the child’s stool. The mother said “No”. The health worker checked Afua for signs of dehydration. The child is irritable throughout the visit. Her eyes are not sunken. She drinks eagerly. The skin pinch goes back immediately.

Record your answers in the box below

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Weight:</th>
<th>Temp.:</th>
<th>Initial visit:</th>
</tr>
</thead>
</table>

**Case study: 2**

Eva is 3 years old. She weighs 10kg. Her temperature is 37°C. Her mother came today because Eva has a cough and diarrhoea.

She does not have any general danger signs. The health worker assessed her for cough or difficult breathing. She has had cough for 3 days. He counted 36 breaths per minute. She does not have chest indrawing or stridor.

When the health worker asked how long Eva had had diarrhoea, the mother said, for more than 2 weeks. There is no blood in the stool. Eva is irritable during the visit, but her eyes are not sunken. She is able to drink but she is not thirsty. A skin pinch goes back immediately.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Weight:</th>
<th>Temp.:</th>
<th>Initial visit:</th>
</tr>
</thead>
</table>
Case study: 3

Ernest is 10 months old. He weighs 8kg. His temperature is 38°C. He is here today because he has had diarrhoea for 3 days. His mother noticed blood in the child's stool. Ernest does not have any general danger signs. He does not have cough or difficult breathing. The health worker assesses the child for diarrhoea. “You said Ernest has had blood in the stool. I will check now for signs of dehydration”. The child is not lethargic or unconscious. He is not restless or irritable. He does not have sunken eyes. The child drank normally when offered some water and does not seem thirsty. The skin pinch goes back immediately.

Record your answers in the box below

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Weight:</th>
<th>Temp.:</th>
<th>Initial visit:</th>
</tr>
</thead>
</table>

EXERCISE D:
Video exercise and case study –“Does the child have diarrhoea?”
Video Case Study: Josh

In this exercise you will see demonstration of how to assess and classify a child with diarrhoea. You will see examples of signs and practise identifying them.

1. For each of the children, answer the question:

<table>
<thead>
<tr>
<th>Does the child have sunken eyes?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
</tr>
<tr>
<td>Child 1</td>
</tr>
<tr>
<td>Child 2</td>
</tr>
<tr>
<td>Child 3</td>
</tr>
<tr>
<td>Child 4</td>
</tr>
</tbody>
</table>
2. For each of the children shown, answer the question:

<table>
<thead>
<tr>
<th></th>
<th>Does the skin pinch go back:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very slowly?</td>
</tr>
<tr>
<td>Child 1</td>
<td></td>
</tr>
<tr>
<td>Child 2</td>
<td></td>
</tr>
</tbody>
</table>
You have learned to assess a child with diarrhoea and classify dehydration. Now, we will learn how to select one of the following treatment plans for DEHYDRATION.

Plan A – Treat Diarrhoea (No dehydration) at Home

Plan B – Treat Some Dehydration with Oral Rehydration Salts (ORS)

Plan C – Treat Severe Dehydration Quickly

All three plans provide fluid to replace water and salts lost in diarrhoea. An excellent way to both rehydrate and prevent dehydration in a child is to give him/her with a solution made with ORS. IV fluid should be used only in cases of SEVERE DEHYDRATION.

The only types of diarrhoea that should be treated with antibiotics are diarrhoea with SEVERE DEHYDRATION with cholera in the area and DYSENTERY.

3.1. PLAN A: TREAT DIARRHOEA (NO DEHYDRATION) AT HOME

This section describes PLAN A, treatment of a child who has diarrhoea with NO DEHYDRATION. The 4 Rules of Home Treatment are:

1. GIVE EXTRA FLUID (as the child will take)
2. CONTINUE FEEDING
3. GIVE ZINC SUPPLEMENT
4. WHEN TO RETURN

Children with diarrhoea who come to a health worker with NO DEHYDRATION will be put on Plan A. Children with dehydration need to be rehydrated on Plan B or C, then on Plan A. Eventually, all children with diarrhoea will be on Plan A.

Plan A involves counseling the child's mother about the 4 Rules of Home Treatment.

Rule 1: GIVE EXTRA FLUID

This section describes how to counsel the mother on the first rule of home treatment, give extra fluid. Extra fluid means more fluid than usual. Information about how to continue feeding the child will be discussed later.
TELL THE MOTHER

Give as much fluid as the child will take. The purpose of giving extra fluid is to replace the fluid lost in diarrhoea and thus prevent dehydration. The critical action is to give more fluid than usual as soon as the diarrhoea starts.

Tell the mother to breastfeed frequently and for a longer period at each feed. Also explain that she should give other fluids. ORS solution is one of the several fluids recommended for home use to prevent dehydration.

If a child is exclusively breastfed, it is important for this child to breastfeed more frequently than usual. Also give ORS solution or clean water. Breastfed children under 6 months should first be offered a breastfeed then given ORS.

If a child is not exclusively breastfed, give ORS and one or more of the following:

- Food-based fluids
- Clean water

Give him extra food-based fluids such as soups, rice water, mashed kenkey, and clean water (preferably given along with food).

Plan A lists two (2) situations in which the mother should give ORS solution at home.

- The child has been treated on Plan B or C during this visit. In other words, the child has just been rehydrated. For this child, drinking ORS solution will keep the dehydration from coming back.
- The child cannot return to a clinic if the diarrhoea gets worse. For example, the family lives far away or the mother has a job that she cannot leave.

TEACH THE MOTHER HOW TO MIX AND GIVE ORS (please refer to Annex B)

Give the mother 3 packets of ORS to use at home

When you give the mother ORS, show her how to mix the ORS solution and give it to her child. Ask the mother to practice doing it herself while you observe her. Give the mother 3 packets of ORS to use at home. (Give three 600 ml packets or the equivalent).

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

Explain to the mother that her child should drink the usual fluids that the child drinks each day and extra fluid. Show the mother how much extra fluid to give after loose stool:

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

Explain to the mother that the diarrhoea should stop soon. ORS solution will not stop diarrhoea. The benefit of ORS is that, it replaces the fluid and essential salts that the child loses in the diarrhoea and prevents the child from getting sicker.
Tell the mother to:

- Give frequent small sips from a cup or spoon. Use a spoon to give fluid to a young child.
  - If the child vomits, wait 10 minutes before giving more fluid. Then resume giving the fluid, but more slowly.
  - Continue giving extra fluid until the diarrhoea stops.

Check her understanding of how to give extra fluid according to Plan A. Use questions such as:

- What kinds of fluid will you give?
- How much fluid will you give your child?
- How often will you give the ORS solution to your child?
- Show me how much water you will use to mix ORS
- How will you give ORS to your child?
- What will you do if the child vomits?

Rule 2: CONTINUE FEEDING

The infant usual diet should be continued during diarrhoea and increased afterwards. Food should never be withheld and the child's usual foods should not be diluted. Breastfeeding should always be continued. The aim is to give as much nutrient rich food as the child will accept. Most children with watery diarrhoea regain their appetite after dehydration is corrected, whereas those with bloody diarrhoea often eat poorly until the illness resolves. These children should be encouraged to resume normal feeding as soon as possible. When food is given, sufficient nutrients are usually absorbed to support continued growth and weight gain. Continued feeding also speeds the recovery of normal intestinal function, including the ability to digest and absorb various nutrients. In contrast, children whose food is restricted or diluted lose weight, have diarrhoea of longer duration, and recover intestinal function more slowly.

Rule 3: GIVE ZINC SUPPLEMENT.

Tell mother how much Zinc to give:

- 2 to 6 months: 10mg daily for 10 days
- 6 months or more: 20mg daily for 10 days

Show the mother how to give Zinc supplement:

- Infants (up to 6 months): Dissolve tablet in a small amount of expressed breastmilk, ORS or clean water in a cup
- Older children (6 months to 5 years): Dissolve tablet in a small amount of clean water in a cup.

NOTE: Mother should continue to give zinc for 10 days even if the diarrhoea stops earlier.

Rule 4: WHEN TO RETURN

Tell the mother/caregiver of a child with diarrhoea to return if the child has any of the following signs:

- Blood in stool
- Drinking poorly
- Develops a fever
Plan A: Treat Diarrhoea at Home

Counsel the mother on the 4 rules of home treatment:
Give extra fluid, Continue feeding, Give Zinc supplement and When to return

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

   ➢ **TELL THE MOTHER:**
   - Breastfeed more frequently and for longer at each feed.
   - If the child is exclusively breastfed, give ORS solution or clean water in addition to breastmilk.
   - If the child is not exclusively breastfed, give one or more of the following: ORS solution, coconut water, strained rice water, mashed kenkey in water, mashed tuo-zafi, porridge (koko), and light soup without pepper, fruit juice 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.

2. **TEACH THE MOTHER HOW TO MIX AND GIVE ORS:**
   - Give the mother 3 packets of ORS to use at home.

3. **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

4. **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**  Refer to section above on Rule 2

3. **GIVE ZINC SUPPLEMENT**
   - Tell mother how much Zinc to give:
     - 2 to 6 months: 10 mg tablet daily for 10 days
     - 6 months or more: 20 mg tablet daily for 10 days

4. **WHEN TO RETURN**
   Tell the mother/caregiver of a child with diarrhoea to return if the child has any of the following signs:
   - Blood in stool
   - Drinking poorly
   - Develops a fever
EXERCISE 1: USING FLUID PLAN A: TREAT DIARRHOEA AT HOME
- GROUP DISCUSSION

1. Solomon is a 4-year-old boy who has diarrhoea. He has no general danger signs. He was classified as having diarrhoea with NO DEHYDRATION, NOT VERY LOW WEIGHT and NO ANAEMIA. He will be treated according to Plan A

   a. What are four rules of home treatment of diarrhoea?

   b. What fluids should the health worker tell his mother to give?

The following children came to the clinic because of diarrhoea. They were assessed and found to have no general danger signs. They were classified as NO DEHYDRATION, NOT VERY LOW WEIGHT and NO ANAEMIA. Write the amount of extra fluid that the mother should give after each stool.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Amount of fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asare</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Sam</td>
<td>2 years</td>
<td></td>
</tr>
<tr>
<td>Seidu</td>
<td>15 months</td>
<td></td>
</tr>
</tbody>
</table>

1.2. PLAN B: TREAT SOME DEHYDRATION WITH ORS

Plan B is treatment of a child who has diarrhoea with SOME DEHYDRATION. Plan B includes an initial treatment period of 4 hours in the clinic.

If a child who has SOME DEHYDRATION needs treatment for other problems, you should start treating the dehydration first. Then provide the other treatments.

> DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS

Use the chart Plan B to determine how much ORS to give. A range of amount is given. Look below the child's weight (or age if weight is not known) to find the recommended amount of ORS to give. For example, a 5 – kg – child will usually need 200 – 400 ml of ORS solution in the first 4 hours. The amounts shown in the box are to be used as guides. The child will usually want to drink as much as he needs. If the child wants more or less than the estimated amount, give him what he wants.

Another way to estimate the amount of ORS solution needed (in ml) is described below the box. Multiply the child's weight (in kilograms) by 75. For example, a child weighing 8kg, would need:
8kg × 75 ml = 600 ml of ORS solution in the first 4 hours
Giving ORS solution should not interfere with a breastfed baby's normal feeding. The mother should pause to let the baby breastfeed whenever the baby wants to, and then resume giving the ORS solution. For infants under 6 months who are not breastfed, the mother should give 100 – 200 ml clean water during the first 4 hours in addition to the ORS solution. The breastmilk and water will help prevent hypernatraemia in infants.

SHOW THE MOTHER HOW TO GIVE ORS SOLUTION

Tell her how much ORS solution to give over the next 4 hours. Show her the amount in units that are used in your area. Show her how to give a spoonful frequently. Show her how to give frequent sips from a cup. If the child vomits, the mother should wait about 10 minutes before giving more ORS solution. She should then give it more slowly. The mother should not give the child food during the first 4 hours of treatment with ORS.
Check with the mother from time to time to see if she has problems.

AFTER 4 HOURS

After 4 hours of treatment on Plan B, reassess the child using the ASSESS AND CLASSIFY Chart. Classify the dehydration. Choose the appropriate plan to continue treatment.
Note: Reassess the child before 4 hours if the child is not taking the ORS solution or seems to be getting worse.
If the child has improved and has NO DEHYDRATION, choose Plan A. Teach the mother Plan A if you have not already taught her during the past 4 hours.

Note: If the child’s eyes are puffy, it is a sign of overhydration. It is not a danger sign or a sign of hypernatraemia. It is simply a sign that the child has been rehydrated and does not need any more ORS solution at this time. The child should be given clean water or breastmilk. The mother should give ORS solution according to Plan A when the puffiness is gone.

If the child still has SOME DEHYDRATION, choose Plan B again. Begin feeding the child in clinic. Offer food, breastmilk or juice. After feeding the child, repeat the 4- hour Plan B treatment. Offer food, breastfeed frequently and juice every 3 or 4 hours. Breastfed children should continue to breastfeed frequently. If the clinic is closing before you finish the treatment, tell the mothers to continue treatment at home.

If the diarrhoea is worse and now has SEVERE DEHYDRATION, you will need Plan C (discussed later in this course).

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT

- Show the mother how to prepare ORS solution at home before she leaves.
- Show her how much ORS solution to give to complete the 4- hour treatment at home
- Give her enough packets to complete rehydration. Also give her 3 more packets as recommended in Plan A.
- Explain the 4 rules of Home Treatment:

1. GIVE EXTRA FLUID
2. CONTINUE FEEDING
3. GIVE ZINC SUPPLEMENT
4. WHEN TO RETURN
- **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**

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>&lt; 6kg</th>
<th>6-&lt; 10 kg</th>
<th>10 -&lt; 12kg</th>
<th>12 - 19 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>Up to 4 months</td>
<td>4 months up to 12 months</td>
<td>12 months up to 2 years</td>
<td>2 years up to 5 years</td>
</tr>
<tr>
<td>Amount ORS</td>
<td>200-400 ml</td>
<td>400 – 700 ml</td>
<td>700 – 900 ml</td>
<td>900 – 1400 ml</td>
</tr>
</tbody>
</table>

- Use the child’s age only when you do not know the weight. The appropriate amount of ORS required (in ml) can also be calculated by multiplying the child’s weight (in kg) times 75
- If the child wants more ORS than shown, give more.
- For infants less than 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 3 packets as recommended in Plan A.
  - Explain the 4 rules of Home treatment.

  1. **GIVE EXTRA FLUID**
  2. **CONTINUE FEEDING**
  3. **GIVE ZINC SUPPLEMENT**
  4. **WHEN TO RETURN**

  See Plan A for recommended fluid and See Counseling on when to return
EXERCISE J: USING FLUID PLAN B: TREAT SOME DEHYDRATION WITH ORS - GROUP DISCUSSION.

1. List the appropriate range of amount of ORS solution each child is likely to need in the first 4 hours of treatment.

<table>
<thead>
<tr>
<th>Name</th>
<th>Weight/Age</th>
<th>Range or amount of ORS solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Ato</td>
<td>10 kg</td>
<td></td>
</tr>
<tr>
<td>b. Joyce</td>
<td>7.5 kg</td>
<td></td>
</tr>
</tbody>
</table>

(2) Vivian is 5 months old and has diarrhoea. She is classified as SOME DEHYDRATION, NOT VERY LOW WEIGHT and NO ANAEMIA. There is no scale for weighing Vivian at the small clinic. Vivian's mother died during childbirth, so Vivian has been taking infant formula. The grandmother has recently started giving cooked cereal as well.

(a). Vivian should be given ………..ml of ……….solution during the first…hours of treatment. She should also be given…………ml of…………..solution during this period.
(b). What should the grandmother do if Vivian vomits during the treatment?
(c). When should the health worker reassess Vivian?
(d). When Vivian is reassessed, she has NO DEHYDRATION. What treatment plan should Vivian be put on?
(e). How many 600 ml packets of ORS should the health worker give the grandmother?
(f). To continue treatment at home, the grandmother should give Vivian………..ml of ………..after each loose stool.

EXERCISE K: ROLE PLAY – TEACHING A MOTHER TO CARE FOR A DEHYDRATED CHILD.
In this role play the health worker will teach a mother how to care for dehydrated child. In the first part child needs Plan B. In the second part the child is ready for plan A.

PART 1: THE SITUATION – What has happened so far?
A young mother brought 2 – year – old Laura to the clinic because she has had diarrhoea for one and half days. The health worker found no general danger signs. There was no blood in the stool. Laura was irritable. Her eyes looked sunken. When pinched, the skin of Laura's abdomen went back immediately. She drank eagerly. She has no other problems. The health worker classified Laura as SOME DEHYDRATION. She has no other disease classifications and NOT VERY LOW WEIGHT and NO ANAEMIA. The health worker selected Plan B treatment with ORS solution.

HEALTH WORKER
To start the role play, tell the mother that Laura needs treatment with ORS. Ask the mother to stay at the clinic to give Laura ORS solution. Then follow plan B to get the mother started giving ORS solution. Show the mother how much ORS solution to give. Show her how to give it. Answer her questions and help with any problems.
4.3. PLAN C: TREAT SEVERE DEHYDRATION QUICKLY

Severely dehydrated children need to have water and salt quickly replaced. Intravenous (IV) fluids are usually used for this purpose.
The treatment of the severe dehydrated child depends on:
➢ The type of equipment available at your clinic or at a nearby clinic or hospital
➢ The training you have received and
➢ Whether the child can drink.

To learn how to treat a severely dehydrated child according to Plan C at your clinic, you will read and study the appropriate Annex C that matches your situation.

1. Annex C – 1 teaches you how to treat according to Plan C if:
   • Your clinic has IV equipment and acceptable fluids, and
   • You have been trained to give IV fluid.

2. Annex C – 2 teaches you how to treat according to Plan C if:
   • You cannot give IV fluid at your clinic
   • IV fluid is available at another clinic or hospital that can be reached within 30 minutes.

3. Annex C – 3 teaches you how to treat according to Plan C if:
   • You cannot give IV fluid at your clinic
   • There is no clinic or hospital offering IV treatment nearby
   • Your clinic has nasogastric equipment, and
   • You are trained to use a nasogastric (NG) tube.

4. Annex C – 4 teaches you how to treat according to Plan C if:
   • You cannot give IV fluid at your clinic
   • There is no clinic or hospital offering IV treatment nearby
   • You cannot give NG therapy, and
   • The child can drink.

If you cannot give IV or NG fluid and the child cannot drink, refer the child urgently to the nearest clinic or hospital which can give IV or NG treatment.
To determine how you will treat a child who needs plan C treatment, refer to the flowchart(Annex C). Read the questions in order from top to bottom and answer for the situation at the clinic. Note the first time you answer YES. Turn to the appropriate Annex C (as indicated on the flowchart) and continue reading.

1.4 TREAT PERSISTENT DIARRHOEA

The treatment of PERSISTENT DIARRHOEA requires:

Special feeding:

FEEDING RECOMMENDATION FOR PERSISTENT DIARRHOEA

Children with persistent diarrhoea may have difficulty digesting milk other than breastmilk. They need to temporarily reduce the amount of other milk in their diet. They must take more breastmilk or other foods to make up for reduction.
Give Multivitamin and Mineral Supplement

- For persistent diarrhoea, give one dose daily of a multivitamin/mineral supplement for two weeks.

4.5 TREAT DYSENTERY

- Assess dehydration and give appropriate fluids to prevent or treat dehydration (Plan A or B)
- Anti-microbial treatment: Give oral antibiotics recommended for Shigella.

Treatment of choice
Co-trimoxazole, Oral (avoid in patients with G6PD deficiency)

2 months up to 12 months
- Syrup (40mg trimethoprim + 200mg sulphamethoxazole): 5ml 12hourly for 5 days
- Tablet (40mg trimethoprim + 200mg sulphamethoxazole) Half tablet 12hourly for 5 days

12 months up to 5 years
- Syrup (40mg trimethoprim + 200mg sulphamethoxazole): 7.5ml 12hourly for 5 days
- Tablet (40mg trimethoprim + 200mg sulphamethoxazole) One (1) tablet 12hourly for 5 days
When to consider amoebiasis (Amoebic Dysentery)

Amoebiasis is an unusual cause of bloody diarrhoea in young children, usually causing less than 3% of episodes.

Young children with bloody diarrhoea should not be treated routinely for amoebiasis. Such treatment should be considered only when microscopic examination of fresh faeces done in a reliable laboratory reveals trophozoites of *E. histolytica* containing red blood cells, or two different antimicrobials usually effective for *Shigella* in the area have been given without clinical improvement.

The treatment of choice for Amoebiasis is oral Metronidazole

Dosage: 10 mg/kg 3 times a day x 5 days
5 FOLLOW UP VISITS

As mentioned earlier, there is the need for follow-up visits within a specific number of days to assess the treatment provided. For example, Persistent diarrhoea requires follow up to ensure that feeding changes are working.

At the end of the sick child’s visit, tell the mother when to return for follow up. Sometimes a child may need follow up for more than one problem. In such cases, tell the mother the earliest definite time to return. Also tell her about earlier follow up that may be needed if a problem such as fever persists.

FOLLOW-UP CHART
Advice the mother to come for follow up at the earliest time listed for the child's problem.

<table>
<thead>
<tr>
<th>If the child has:</th>
<th>Return for follow-up in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYSENTERY</td>
<td>2 days</td>
</tr>
<tr>
<td>PERSISTENT DIARRHOEA</td>
<td>5 days</td>
</tr>
<tr>
<td>DIARRHOEA with (SOME or NO DEHYDRATION), if not improving.</td>
<td></td>
</tr>
</tbody>
</table>

WHEN TO RETURN IMMEDIATELY
Remember that this is an extremely important section of WHEN TO RETURN.

Advice mother to return immediately if the child has any of these signs.

<table>
<thead>
<tr>
<th>If child has Diarrhoea, also return if:</th>
<th>Blood in stool</th>
<th>Drinking poorly</th>
</tr>
</thead>
</table>

HOW TO CONDUCT A FOLLOW-UP VISIT FOR PERSISTENT DIARRHOEA
When a child with PERSISTENT DIARRHOEA returns for a follow-up visit after 5 days, follow these instructions:
**PERSISTENT DIARRHOEA**

*After 5 days*

Ask: - Has the diarrhoea stopped?
   - How many loose stools is the child having per day?

Assess for HIV infection (if trained).

**Treatment:**

- If the diarrhoea has not stopped (child is still having 3 or more loose stools per day), do a full reassessment (including for assessment for ART).
- If the diarrhoea has stopped (child having less than 3 loose stools per day), tell the mother to follow the usual feeding recommendations for the child’s age.
- Tell the mother to continue to give zinc and multivitamin/mineral supplements.

Ask if the diarrhoea has stopped and how many stools the child has per day.

**If the diarrhoea has not stopped (the child is still having 3 or more loose stools per day),** do a full reassessment. This should include assessing the child completely as described on the ASSESS AND CLASSIFY chart. Identify and manage any problems that require immediate attention such as dehydration. Then refer the child to hospital.

**If the diarrhoea has stopped (child having less than 3 loose stools per day),** instruct the mother to follow the feeding recommendations for the child's age. If the child is not normally fed in this way, you will need to teach her the feeding recommendations on the COUNSEL chart. Also remind the mother to continue giving the child the zinc and multivitamin/mineral supplement each day to complete 14 days of treatment.

**HOW TO CONDUCT A FOLLOW-UP VISIT FOR DYSENTERY**

When a child classified as having DYSENTERY returns for a follow-up visit after days, follow these instructions:
DYSENTERY

After 2 days:
Assess the child for diarrhoea. *(See Annex A)*

Ask:
- Are there fewer stools?
- Is there less blood in the stool?
- Is there less fever?
- Is there less abdominal pain?
- Is the child eating better?

**Treatment:**

- If the child is *dehydrated*, treat dehydration.
- If *number of stools, amount of blood in stools, fever, abdominal pain, or eating is the same or worse*:
  
  Change to Ciprofloxacin twice daily for three days. Give it for 3 days. Advice the mother to return in 2 days.

**Exceptions – if the child:**
- Is less than 12 months old or
- Was dehydrated on the first visit or
- Had measles within the last 3 months

  Refer to hospital.
- If *fewer stools, less blood in the stools, less fever, less abdominal pain, and eating better, continue giving the same antibiotic until finished.*

Reassess the child for diarrhoea as described in the box, “Does the child have diarrhoea?” on the **ASSESS AND CLASSIFY** chart. Ask the mother the additional questions to find out if the child is improving.

Then use the information about the child’s signs to decide if the child is the same, worse, or better. Select the appropriate treatment:

- *If the child is dehydrated* at the follow-up visit, use the classification table to classify the child's dehydration. Select the appropriate fluid plan and treat the dehydration.
- *If the number of stools, amount of blood in stools, fever, abdominal pain, or eating is the same or worse,* stop cotrimoxazole and give Ciprofloxacin recommended for *Shigella.* (This antibiotic will be specified on the TREAT chart.) The lack of improvement may be caused by antibiotic resistance of *Shigella.*

  - Give the first dose of Ciprofloxacin in the clinic
  - Teach the mother how and when to give the antibiotic and help her plan how to give it for 3 days
  - Advice the mother to bring the child back after 2 more days.

If after being treated with Ciprofloxacin for two days the child has still not improved, the child may have amoebiasis. This child may be treated with metronidazole (if it is available or can be obtained by the family) or referred for treatment. Amoebiasis can only be diagnosed with
certainty when trophozoites of *E. histolytica* containing red blood cells are seen in a fresh stool sample.

However, if the child
- Is less than 12 months old
- Was dehydrated on the first visit, or
- Had measles within the last 3 months,

This child is at a high risk. Refer this child to hospital.

- If the **child had fewer stools, less blood in the stool, less fever, less abdominal pain, and is eating better**, the child is improving on the antibiotic. Usually all of these signs will diminish if the antibiotic is working. If only some have diminished, use your judgement to decide if the child is improving. Tell the mother to finish the 5 days of the antibiotic. Review with the mother the importance of finishing the antibiotic.
Pharmacovigilance is defined as the science and activities relating to the knowledge, detection, assessment and prevention of adverse effects (including adverse drug reactions) or any drug-related problem.

Adverse Drug Reaction (ADR) is an unwanted or harmful reaction experienced following the administration of a drug or combination of drugs under normal conditions of use, which is suspected to be related to the drug.

The key point in this definition is that a patient experiences an unwanted and/or harmful reaction following drug therapy. Individual factors may play an important role but the phenomenon experienced must be noxious.

An adverse reaction may be expected or unexpected. An unexpected adverse reaction occurs when the nature or severity of the reaction is NOT consistent with domestic labeling or market authorization, or expected from characteristics of the drug.

WHY PHARMACOVIGILANCE OF ZINC TABLETS IN MANAGEMENT OF DIARRHOEAS

Incorporation of zinc in the management of diarrhoea in children is a new indication and not enough information is available on its safety. Also information on adverse events to zinc received from other countries may not be relevant to Ghana because genetic differences, traditions, disease patterns, prescribing practices and the concomitant use of traditional and complimentary medicines (e.g. herbal medicines) differs from country to country and may affect drug metabolism and the nature of adverse events.

Some Definitions in Pharmacovigilance

**Adverse Events:** Any untoward medical occurrence that may present during treatment with a pharmaceutical product but which does not necessarily have a causal relationship with this treatment.

The key point here is that an unwanted event occurs during or after the use of a drug. It encompasses “adverse drug reactions” and other unwanted reactions.

**Serious ADR:** A noxious and unintended response to a drug, which occurs at any dose and results in any of the following:

- hospitalization or prolongation of existing hospitalization
- causes congenital malformation
- results in persistent or significant disability or incapacity
- is life-threatening
- results in death
- requires medical intervention to prevent permanent damage

The term 'severe' is not synonymous with 'serious'.

'Severe' is used to describe the intensity of a specific event as in mild, moderate or severe. 'Seriousness' is based on patient/event outcome. It serves as guide for defining regulatory reporting obligations.

**Side Effect:** This is defined as any unintended effect of a pharmaceutical product occurring at doses normally used in humans, which is related to the pharmacological properties of the drug. Such effects may or may not be beneficial. Side effects are related to the known properties of the drug and can often be predicted.

**Signal:** Reported information on a possible causal relationship between an adverse event and a drug, the relationship normally is unknown or incompletely documented previously. Usually more than a single report is required to generate a signal, depending upon the seriousness of the event and the quality of the information.

**Sequelae:** Any medical condition that results from the adverse drug reaction.

**Rechallenge:** The re-introduction of the suspected drug after the adverse reaction has subsided.

**Dechallenge:** Withdrawal of the suspected drug after the adverse reaction has occurred.

**Unexpected Adverse Event:** An event is considered unexpected if the nature, severity, frequency or outcome is not consistent with the domestic labelling or market authorization or expected from the characteristics of the drug.

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**GUIDE TO REPORTING ADRs**

Who, What, When and How to Report ADRs

**Who Should Report ADRs**
All healthcare professionals including doctors, pharmacists, nurses, physician/medical assistants, laboratory technicians are requested to report all suspected adverse reactions to zinc used in diarrhoea management in children. Patients are also encouraged to report adverse drug reactions that their children may experience.

**What to Report**
Report all adverse reactions to zinc use in the management of diarrhoea in children. This may include:
- All expected and unexpected adverse reactions (i.e. not consistent with the product
package, insert or labelling)
· Serious adverse reactions even if the reaction is well known,
· increase in frequency of known adverse reactions
· Suspected product quality defects,
· counterfeits

NB: Any reaction that causes concern in the caregiver or the patient should be reported.

**Information to be provided on the Reporting Form**

**Patient Details**
· Name/Initials/Folder no, Age/Date of Birth, Sex, Weight, Name of the health facility or treatment centre, telephone number or any information that will help contact the patient in case of follow up.

**Reaction Details**
· A detailed description of the suspected adverse drug reaction.
· Date of onset of the reaction and date ended.
· Outcome of the reaction (whether the patient has recovered, not recovered or the outcome unknown)

**Details of the Suspected Product**
· The name (generic and brand if known)
· Manufacturer, batch number and expiry date (if known)
· Date therapy was initiated and the date therapy stopped.
· Reason(s) for use
· Concomitant medications (including medicines taken within reasonable time)

**Reporter Details**
· Name, phone number, e-mail address and postal address. This is important to enable the National Pharmacovigilance Centre follow up or give feedback on the report submitted.

**If in doubt, Report!**
Please do not hesitate to report any suspected adverse reaction of clinical concern, even if you are unable to supply all the details!

**When to Report**
Reporting to the National Pharmacovigilance Centre may be done in an expedited or unexpedited manner.

Expedited reporting should be done immediately and in not later than 7 days from becoming aware of the adverse drug reaction.

· All serious ADRs should be reported in an expedited manner.
· Any suspected increase in the frequency of unserious reactions shall also be reported on an expedited basis.

All other reports of ADRs that do not qualify under expedited reporting should be reported within a period of 28 days.
How to Report
All suspected ADRs should be reported to the National Pharmacovigilance Centre.

Reporting should be done by completing Adverse Reaction Reporting Form (see below) available from the following sources;

· FDB Head Office
· FDB Zonal Offices
· FDB website, www.fdbghana.gov.gh

Reports may be hand delivered, posted, faxed or e-mailed through any of the Food and Drugs Board's addresses.

Confidentiality in Pharmacovigilance
Information and data collected on patients during pharmacovigilance are treated as confidential and are not disclosed to third parties. Information obtained from ADR reports submitted may result in regulatory actions that will ensure patient safety and promote rational use of medicines and other products in Ghana.

ADVICE ABOUT ADR REPORTING

Management of ADRs

· The drug suspected of causing the ADR should be withdrawn especially if the reaction is serious e.g. anaphylactic shock.
· In less serious cases the decision to stop the drug should be based on the prescribers’ assessment of the risks and benefits of continuing therapy and the patient's wishes.
· If several drugs are being used the drug most likely to cause the event should be withdrawn first.
· If the reaction is likely to be dose-related dose reduction should be considered.
· If the patient cannot manage without a drug that has caused the adverse reaction, providing a symptomatic relief while providing the essential treatment should be considered.

Some Listed Side effects of Zinc

· Abdominal pain
· Dyspepsia
· Nausea
· Vomiting
· Gastric irritation
· Irritability
· Headache
· Lethargy
(A) PATIENT DETAILS:

Age/Date of Birth (dd/mm/yyyy): / / Gender: M ( ) F ( ) Wt: .......kg
Name/Folder Number ………………………Telephone No:……………………
Hospital/Treatment Centre…………………………………………………

(B) DETAILS OF ADVERSE REACTION AND ANY TREATMENT GIVEN(Attach a separate sheet when necessary)

Date reaction started (dd/mm/yyyy): / / Date reaction stopped (dd/mm/yyyy): / /

(C) OUTCOME OF ADVERSE REACTION:

Recovered ( ) Not yet recovered ( ) Unknown ( )
Did the adverse reaction result in any untoward medical condition? Yes ( ) No ( ) If yes, specify………………
SEVERITY: Death ( ) Life threatening ( ) Disability ( ) (specify)………………
Hospitalization ( )
Others (specify)………………

(D) SUSPECTED PRODUCT(S) (Attach sample or product label if available)

<table>
<thead>
<tr>
<th>Brand name</th>
<th>Generic name</th>
<th>Batch no.</th>
<th>Expiry date</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reasons for use (Indication) | Daily dose: | Route of Administration: |

Date started: | Date stopped: 
Did the adverse reaction subside when the drug was stopped (de-challenge)? Yes ( ) No ( )

Was the product prescribed? Yes ( ) No ( )

Source of Drug:
Was product re-used after detection of adverse reaction (re-challenge)? Yes ( ) No ( )

Did adverse reaction re-appear upon re-use? Yes ( ) No ( )

(E) CONCOMITANT DRUGS INCLUDING HERBAL MEDICINES TAKEN PRIOR TO THE ADVERSE REACTION (Attach a separate sheet when necessary)

<table>
<thead>
<tr>
<th>Name of Drug</th>
<th>Daily dose</th>
<th>Date started</th>
<th>Date stopped</th>
<th>Reasons for use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

(F) DETAILS OF REPORTER

Name of Reporter: ........................................................................................................

Address: ......................................................................................................................

Profession: ...................................................................................................................

Signature: ......................................................................................................................

Tel: .......................................................... E-mail: .................................................

Date (dd/mm/yyyy): / /
For all questions relating to Suspected Adverse Reactions, please call the Food and Drugs Board on Landline: +233 (0302) 233 200/235 100, Mobile: +233 (024) 4310 297. Fax +233 (0302) 229 794. E-mail: drugsafety@fdbghana.gov.gh

Please return the completed form to the Technical Advisory Committee on Safety Monitoring, Food and Drugs Board, P. O. Box CT2783, Cantonments-Accra, Ghana.

This form can also be downloaded on the Food and Drugs Board's website: www.fdbghana.gov.gh

Please, note that this report does not constitute an admission that the reporting medical professional or the suspected product caused or contributed to the event.

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**ADVICE ABOUT VOLUNTARY REPORTING**

Report adverse experiences with: Report Product Quality Problems such as:

* Medications (drugs and biologicals)  * Suspected Contamination
* Traditional and herbal remedies  * Questionable components
* Poor packaging or labelling  * Therapeutic failures

Report even if:

* You're not certain the product caused the event
* You don't have all the details

Confidentiality: Identities of the reporter and patient will remain strictly confidential.

Your support of the Safety Monitoring programme is much appreciated. Information supplied by you will contribute to the improvement of drug safety and therapy in Ghana.

PLEASE USE ADDRESS BELOW-JUST FOLD IN THIRDS AND MAIL

---

BUSINESS REPLY MAIL SERVICE
Permit No. GP/BRS/001/2003

No Postage
Stamp
Required

POSTAGE WILL BE PAID BY THE FOOD & DRUGS BOARD

FOOD AND DRUGS BOARD
P. O. CT 2783
CANTONMENTS
ACCRA, GHANA
Annex A (Flow Chart for Accessing and Classifying Diarrhoea)

IF YES, ASK:

- For how long?
- Is there blood in the stool?

LOOK AND FEEL:

- Look at the child’s general condition, is the child:
  Lethargic or unconscious? Restless and irritable?
- Look for sunken eyes.
- Offer the child fluid. Is the child:
  Not able to drink or drinking poorly? Drinking eagerly, thirsty?
  Pinch the skin of the abdomen. Does it go back:
  Very slowly (longer than 2 seconds) slowly

For dehydration

Classify

Two of the following signs:

- Lethargic or unconscious
- Sunken eyes
- Not able to drink or drinking poorly
- Skin pinch goes back very slowly

SEVERE DEHYDRATION

Two of the following signs:

- Restless, irritable
- Sunken eyes
- Drinks eagerly, thirsty
- Skin pinch goes back slowly

SOME DEHYDRATION

Not enough signs to classify as some or severe dehydration

NO DEHYDRATION

And if diarrhea lasts for 14 days

- Dehydration present
  SEVEREPERSISTENT DIARRHOEA

- No dehydration
  PERSISTENT DIARRHOEA

And if blood in stool

- Blood in Stool
  DYSENTRY
1. **Wash your hands** with soap and water.

2. **Pour** all the powder from one packet into a clean container. (Use any available container such as a jar, bowl, or bottle, so long as it is washed clean with soap and water)

3. **Measure** 600mls i.e. one (1) beer bottle or two (2) mineral bottles of clean water. Use the cleanest drinking water available. It is better to boil and cool the water, but if this is not possible, use available water.

4. **Pour** the water into the container and mix well until the powder is completely dissolved.

5. **Taste** the solution. It should taste a little bit salty, like tears.
Plan C: Treat Severe Dehydration Quickly

To determine the appropriate PLAN C Treatment, read the question. If the answer is "YES", go across. If "NO", go down.

START HERE

1. Can you give intravenous (IV) fluid immediately?  
   YES
   Turn to Annex C-1. Read *If You Can Give IV Treatment* thoroughly. Do the exercise at the end of the annex.
   
   NO

2. Is IV treatment available nearby (within 30 minutes)?  
   YES
   Turn to Annex C-2. Read *If IV Treatment Is Available Nearby* thoroughly. Do the exercise at the end of the annex.

   NO

3. Are you trained to use a naso-gastric (NG) tube for rehydration?  
   YES
   Turn to Annex C-3. Read *If You Are Trained To Use An NG Tube* thoroughly. Do the exercise at the end of the annex.

   NO

4. Can the child drink?  
   YES
   Turn to Annex C-4. Read *If You Can Only Give Plan C Treatment By Mouth* thoroughly. Do the exercise at the end of the annex.

   NO

Refer URGENTLY to hospital for IV or NG treatment.
ANNEX C-1

IF YOU CAN GIVE INTRAVENOUS (IV) TREATMENT

If you can give IV treatment and you have acceptable solutions such as Ringer's Lactate or Normal Saline at your clinic, give the solution intravenously to the severely dehydrated child.

The sections of Plan C below describe the steps to rehydrate a child intravenously. It includes the amounts of IV fluid that should be given according to the age and weight of the child. Study the sections carefully.

Some of the terms in this part of Plan C may be new to you. Read the following to understand how the terms are used in Plan C.

* The DRIP refers to the IV equipment and solution.

The "rate of the drip" refers to the number of drops per minute that the IV fluid is given.

"While the drip is set up" means during the time you are preparing the IV equipment, IV fluid and you are putting the IV needle into the child's vein.

* HYDRATION STATUS refers to whether the child is normally hydrated or dehydrated and the extent of dehydration. A child classified as NO DEHYDRATION has not lost enough fluid to show signs of dehydration. A child classified as SOME DEHYDRATION or SEVERE DEHYDRATION has less than a normal amount of fluid in the body.

To assess a child's hydration status, refer to the signs on the ASSESS & CLASSIFY chart.

* The RADIAL PULSE refers to the pulse felt over the radial artery. The radial artery is the main blood vessel at the wrist on the side of the thumb.

Provide IV Treatment for Severe Dehydration

When you provide IV therapy for SEVERE DEHYDRATION, you give the child a large quantity of fluids quickly. The fluids replace the body's very large fluid loss.

Begin IV treatment quickly in the amount specified in Plan C. If the child can drink, give ORS by mouth until the drip is running. Then give the first portion of the IV fluid (30 ml/kg) very rapidly (within 60 minutes for infants, within 30 minutes for children). This will restore the blood volume and prevent death from shock. Then give 70 ml/kg more slowly to complete rehydration.
During the IV treatment, assess the child every 1 - 2 hours. Determine if the child is receiving an adequate amount of IV fluid.

**EXAMPLE**

The following example describes how to treat a child with SEVERE DEHYDRATION if you can give IV treatment.

A 6-month-old (9 kg) girl, Ellen, was classified as SEVERE DEHYDRATION and NO ANAEMIA AND NOT VERY LOW WEIGHT. She was not able to drink but had no other disease classifications. IV treatment was available in the clinic. Therefore, the health worker decided to treat the infant with IV fluid according to Plan C.

The health worker gave Ellen 270 ml (30 ml x 9 kg) of Ringer's Lactate by IV during the first hour. Over the following five hours, he gave her 630 ml of IV fluid (70 ml x 9 kg), approximately 125 ml per hour. The health worker assessed the infant's hydration status every 1-2 hours (that is, he assessed for dehydration). Her hydration status was improving, so the health worker continued giving Ellen the fluid at a steady rate.

After 4 hours of IV treatment, Ellen was able to drink. The health worker continued giving her IV fluid and began giving her approximately 45 ml of ORS solution to drink per hour.

After Ellen had been on IV fluid for 6 hours, the health worker reassessed her dehydration. She had improved and was reclassified as SOME DEHYDRATION. The health worker chose Plan B to continue treatment. The health worker stopped the IV fluid. He began giving Ellen ORS solution as indicated on Plan B. **Monitor Amount of IV Fluid and the Child's Hydration Status**

When rehydrating a child who has SEVERE DEHYDRATION, you have to monitor the amount of IV fluid that you give. You may use a form, similar to the following sample form.

<table>
<thead>
<tr>
<th>Time (hr)</th>
<th>Volume (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set-up*</td>
<td></td>
</tr>
<tr>
<td>Estimated</td>
<td></td>
</tr>
<tr>
<td>Volume (ml)</td>
<td></td>
</tr>
<tr>
<td>Remaining</td>
<td>Volume (ml)</td>
</tr>
<tr>
<td>Received</td>
<td></td>
</tr>
</tbody>
</table>

---

{Module 04 -- page 092.jpg}
The form has 4 columns to record the amount of fluids given to a patient over a period of time.

1. **Time:** Record the times that you will check the IV fluid.

   - **For an Infant:** (under 12 months)
     - * After the first hour
     - * After the first half hour (30 minutes)
   - **For a Child:** (12 months up to 5 years)
     - * After the first half hour (30 minutes)
     - * Every hour over the next 5 hours

2. **Volume Set-up:** As you start the IV fluid, record the amount of fluid in the bottle or pack. The amount should be listed on the container. Each time you replace the IV fluid with another container, be sure to record the amount on the appropriate line on the form at the time of replacement.

3. **Estimated Volume Remaining:** Check the IV fluid remaining in the container at the times listed. The remaining volume cannot be read precisely. Estimate it to the nearest 10 ml (for example - 220 ml, 230 ml, 240 ml, etc). Record the estimated amount on the form.

4. **Volume Received:** Calculate the amount of IV fluid received by the child at the times listed. To calculate, subtract the "Volume remaining" amount from the "Volume set-up" amount. The answer is the amount of IV fluid the child has received up to the time you are checking. Record that amount on the form. It is helpful to mark the IV fluid container with a pen or tape to show the level that should be reached at a certain time. For example, mark the desired level to reach after the first 30 or 60 minutes, each hour, or at the end of 3 or 6 hours. This will help you adjust the rate of the drip correctly. Regulate the number of drops per minute to give the correct amount of fluid per hour.

The sample form below shows the amounts of IV fluid given to a 16-month-old (10 kg) child who is classified as having SEVERE DEHYDRATION. The health worker followed Plan C. He gave the child 300 ml (30 ml 10 kg) in the first 30 minutes. He gave 700 ml (70 ml 10 kg) over the next 2.5 hours (about 300 ml per hour).

**Sample Fluid Form**

<table>
<thead>
<tr>
<th>Time</th>
<th>Volume (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12:00 pm</strong></td>
<td>1000 ml</td>
</tr>
<tr>
<td><strong>12:30 pm</strong></td>
<td></td>
</tr>
</tbody>
</table>

* For each new bottle/pack, initial or added
Make sure the IV fluid is given correctly and in adequate amounts. To monitor whether the fluid rate is adequate, reassess the child's dehydration every 1-2 hours. If the signs of dehydration and the diarrhoea are worse or not improved, increase both the rate you give the fluid and the amount of fluid that you give. Also increase the fluid rate if the child is vomiting. If the signs are improving, continue giving IV fluid at the same rate.

While giving IV fluid, remember to also give small sips of ORS solution to the child as soon as he can drink. Give the child approximately 5 ml of ORS solution per kilogram of body weight per hour. Reassess Dehydration and Choose the Appropriate Treatment Plan

Assess the signs of dehydration in an infant after 6 hours and a child after 3 hours. Classify dehydration. Select the appropriate treatment plan (Plan A, B or C) to continue treatment.

After a child has been fully rehydrated and is classified as NO DEHYDRATION, keep the child at the clinic for 6 more hours if possible. During this time, the mother should give extra fluid according to Plan A. Watch to be sure that the mother can give enough fluid to fully replace all fluid lost while the diarrhoea continues. The child should also be fed. Check the child periodically to make sure that signs of dehydration do not return.
Your facilitator will lead a drill
to give you practice determining amounts of IV fluid for children on Plan C.

ANNEX C-1

IF YOU CAN GIVE INTRAVENOUS (IV) TREATMENT

If you can give IV treatment and you have acceptable solutions such as Ringer's Lactate or Normal Saline at your clinic, give the solution intravenously to the severely dehydrated child.

The sections of Plan C below describe the steps to rehydrate a child intravenously. It includes the amounts of IV fluid that should be given according to the age and weight of the child. Study the sections carefully.

Some of the terms in this part of Plan C may be new to you. Read the following to understand how the terms are used in Plan C.

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  To assess a child's hydration status, refer to the signs on the ASSESS & CLASSIFY chart.

* The RADIAL PULSE refers to the pulse felt over the radial artery. The radial artery is the main blood vessel at the wrist on the side of the thumb.

Provide IV Treatment for Severe Dehydration

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Begin IV treatment quickly in the amount specified in Plan C. If the child can drink, give ORS by mouth until the drip is running. Then give the first portion of the IV fluid (30 ml/kg) very rapidly
(within 60 minutes for infants, within 30 minutes for children). This will restore the blood volume and prevent death from shock. Then give 70 ml/kg more slowly to complete rehydration.

During the IV treatment, assess the child every 1 - 2 hours. Determine if the child is receiving an adequate amount of IV fluid. **EXAMPLE**

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After Ellen had been on IV fluid for 6 hours, the health worker reassessed her dehydration. She had improved and was reclassified as SOME DEHYDRATION. The health worker chose Plan B to continue treatment. The health worker stopped the IV fluid. He began giving Ellen ORS solution as indicated on Plan B. **Monitor Amount of IV Fluid and the Child's Hydration Status**

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<tbody>
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<td>Estimated</td>
</tr>
<tr>
<td>Volume (ml)</td>
<td>Remaining</td>
</tr>
<tr>
<td>Received</td>
<td>Volume (ml)</td>
</tr>
</tbody>
</table>

**Monitor Amount of IV Fluid and the Child's Hydration Status**

The management of diarrhoea in children | 51
For each new bottle/pack, initial or added

The form has 4 columns to record the amount of fluids given to a patient over a period of time.

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   **For an Infant:**
   - (under 12 months)
   - *After the first hour*
   - *After the first half hour (30 minutes)*

   **For a Child:**
   - (12 months up to 5 years)
   - *After the first half hour (30 minutes)*
   - *Every hour over the next 5 hours*

2. **Volume Set-up:** As you start the IV fluid, record the amount of fluid in the bottle or pack. The amount should be listed on the container. Each time you replace the IV fluid with another container, be sure to record the amount on the appropriate line on the form at the time of replacement.

3. **Estimated Volume Remaining:** Check the IV fluid remaining in the container at the times listed. The remaining volume cannot be read precisely. Estimate it to the nearest 10 ml (for example - 220 ml, 230 ml, 240 ml, etc). Record the estimated amount on the form.

4. **Volume Received:** Calculate the amount of IV fluid received by the child at the times listed. To calculate, subtract the "Volume remaining" amount from the "Volume set-up" amount. The answer is the amount of IV fluid the child has received up to the time you are checking. Record that amount on the form. It is helpful to mark the IV fluid container with a pen or tape to show the level that should be reached at a certain time. For example, mark the desired level to reach after the first 30 or 60 minutes, each hour, or at the end of 3 or 6 hours. This will help you adjust the rate of the drip correctly. Regulate the number of drops per minute to give the correct amount of fluid per hour.

The sample form below shows the amounts of IV fluid given to a 16-month-old (10 kg) child who is classified as having SEVERE DEHYDRATION. The health worker followed Plan C. He gave the child 300 ml (30 ml 10 kg) in the first 30 minutes. He gave 700 ml (70 ml 10 kg) over the next 2.5 hours (about 300 ml per hour).

**Sample Fluid Form**

<table>
<thead>
<tr>
<th>Time</th>
<th>Volume (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 pm</td>
<td>1000 ml</td>
</tr>
</tbody>
</table>

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Make sure the IV fluid is given correctly and in adequate amounts. To monitor whether the fluid rate is adequate, reassess the child's dehydration every 1-2 hours. If the signs of dehydration and the diarrhoea are worse or not improved, increase both the rate you give the fluid and the amount of fluid that you give. Also increase the fluid rate if the child is vomiting. If the signs are improving, continue giving IV fluid at the same rate.

While giving IV fluid, remember to also give small sips of ORS solution to the child as soon as he can drink. Give the child approximately 5 ml of ORS solution per kilogram of body weight per hour. **Reassess Dehydration and Choose the Appropriate Treatment Plan**

Assess the signs of dehydration in an infant after 6 hours and a child after 3 hours. Classify dehydration. Select the appropriate treatment plan (Plan A, B or C) to continue treatment.

After a child has been fully rehydrated and is classified as NO DEHYDRATION, keep the child at the clinic for 6 more hours if possible. During this time, the mother should give extra fluid according to Plan A. Watch to be sure that the mother can give enough fluid to fully replace all fluid lost while the diarrhoea continues. The child should also be fed. Check the child periodically to make sure that signs of dehydration do not return.