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PRITECH

Technologies for Primary Health Care

Management Sciences for Health
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PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME

TRAINERS' GUIDE

AND

TRAINING MATERIALS

VOLUME I & II

A Report Prepared By PRITECH Consultant:
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PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME

FOLLOW-UP VISITS.

TRAINERS' GUIDE.

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ABBREVIATIONS USED IN THE TRAINERS' GUIDE:

ADHO	Assistant District Health Officer.
CDD	Control Of Diarrhoeal Diseases.
DHO	District Health Officer.
DHS	Director of Health Services.
DTU	Diarrhoea Training Unit.
ITV	British Independent Television Channel
IV	Intravenous
MS	Medical Superintendant.
MOH	Ministry of Health.
MOIC	Medical Officer in Charge.
NIH	National Institute of Health.
OPD	Outpatient Department.
ORS	Oral Rehydration Salts.
ORT	Oral Rehydration Therapy.
PCSP	Pakistan Child Survival Project
PRITECH	Technologies in Primary Health Care.
TV	Television.
UNICEF	United Nations Childrens Fund.
VCR	Video Cassette Recorder.
WHO	World Health Organisation.

1. INTRODUCTION.

1.1 What is the Control of Diarrhoeal Disease Programme ?

The Control of Diarrhoeal Diseases (CDD) programme is organised through the Ministry of Health (MOH) and National Institute of Health (NIH). The objectives of the CDD programme are to reduce diarrhoea mortality and morbidity rates in Pakistan through diarrhoea case management training at the health facility and household level. To achieve these objectives, the MOH developed a National Diarrhoea Treatment Policy (see P-1.2,3 for details) and the national case management training programme is based upon thi policy.

1.2 What is the Diarrhoea Training Unit Programme ?

To assist with this national training programme, Diarrhoea Training Units (DTUs)were established in 1989, at 10 major teaching hospitals. These DTUs provide model diarrhoea managment, based upon the Diarrhoea Policy Objectives (A-13), to outpatients in a specially equipedOral Rehydration Therapy (ORT) Unitand to inpatients in the diarrhoea ward. DTU workshops for doctors from government health facilities, lasting 5-6 days, are scheduled throughout the diarrhoea season, allowing the participants "hands-on" experience rehydrating diarrhoea cases in the model ORT unit. Training is provided by the DTU training team consisting of the Professor of Paediatrics, staff from his/her department and a specially appointed DTU physician. In the Planning Session, on the last day of the DTU Workshop, the DTU team and provincial government officers discuss the setting up of an ORT unit in the government doctor's own health facility. The doctor, at the end of the DTU workshop, then returns to establish an ORT unit and implement the Diarrhoea Policy Objectives (A-13) in his/her own health facility.

1.3 What are the Follow-up Visits ?

The DTU physician assists the DTU-trained doctor in establishing an ORT unit and improving diarrhoea management in his/her health facility during a series of Follow-up Visits to the health facility, as shown below:

Step 1.Pre-Training Evaluation Visit.
DTU Workshop to train health facility doctor.
Step 2.Training Session with health facility staff.
Step 3. Planning Session with health facility staff.
Step 4.Post-Training Evaluation Visit with Provincial Health Officers.

In Section 8 of this Trainer's Guide, these steps are explained in more detail.

1.3 How are the Follow-up Visits Scheduled ?

Step 1. PRE-TRAINING EVALUATION VISIT. 4 hours.

The Pre-Training Evaluation Visit is scheduled a few weeks before the health facility doctor attends the 5-6 day DTU Workshop. The DTU

physician visits the health facility and discusses the DTU and ORT unit programme with the MS/MOIC and records his/her observations of the current diarrhoea management in the Health Facility Diarrhoea Management Checklist (A-1).

Step 2. TRAINING SESSION, 8 hours. (This can be divided into 2 visits lasting 4 hours each).

The Training Session is scheduled to take place after the health facility doctor has completed the DTU Workshop training and when the ORT equipment has arrived in the health facility. The time required for the Training Session will depend upon the training teams assessment of the diarrhoea management practised by the doctors and paramedics in the health facility and the improvements needed. It will also depend upon the size of the health facility and the number of participants. The average time is 8 hours.

Step 3. PLANNING SESSION, 4 hours.

The Planning Session follows on from the Training Session and should be take place during the same visit, preferably being scheduled the day after the Training Session has been completed.

Step 4. POST-TRAINING EVALUATION VISIT, 2-4 hours.

The Post-Training Evaluation Visit should be scheduled a month after the Planning Session, allowing time for the health facility staff to implement the Plan of Action for Improvements to achieve the Diarrhoea Policy Objectives (A-13).

1.5 Who is trained on these Follow-up Visits ?

All the staff in the health facility who come into contact with diarrhoea cases should receive training. This often means ALL the staff in the smaller health facilities, like RHCs. The DTU physician will train the doctors and the DTU LHV will train the nurses, LHVs, dispensers, health technicians, vaccinators and dais in the Training Session. At the end of the Training Session the participants will have aquired the knowledge and skills to provide correct diarrhoea management in their own health facility. However knowledge and skills are not enough ! ACTION is also required to achieve the Diarrhoea Policy Objectives in the health facility. This action is discussed in the Planning Session with all the relevant health facility staff and a Plan of Action developed.

1.6 Who are the trainers ?

The DTU physician trains the doctors and the DTU LHV trains the paramedic staff. The DTU training team should also involve the following people as assistant trainers in these Follow-up Visits:

- Provincial Health Department staff (ie CDD manager, DHO etc.)
- DTU-trained doctor from the health facility.
- Medical Superintendant (MS) or Medical Officer in Charge (MOIC) of the health facility.
- Paramedic tutors training students at the health facility (ie.

nursing, health technician, dispenser tutors etc.) The larger health facilities like District Headquarter Hospitals usually have several tutors in residence.

- Other doctors from the DTU Director's department of paediatrics (ie. Assistant Professors).

2. OBJECTIVES OF THE FOLLOW-UP VISITS

These objectives can be divided into the following:

2.1 Pre-Training Evaluation Visit Objectives.
2.2 Training Session Objectives for Doctors and Paramedics.
2.3 Planning Session Objectives.
2.4 Post-Training Evaluation Visit Objectives.

2.1 Pre-Training Evaluation Visit Objectives.

The objectives of this Pre-Training Evaluation Visit are the following:

1. To discuss the DTU/ORT unit programme with the MS/MOIC of the health facility.
2. To select a doctor from the health facility for the DTU Workshop.
3. To select a good location for the ORT unit.
4. To record observations of diarrhoea management in the Health Facility Diarrhoea Management Checklist (A-1).

2.2 Training Session Objectives For Doctors and Paramedics.

The objectives of the Training Session are to provide the Medical Officers and Paramedics with the necessary skills and knowledge to perform the following duties:

- Assessment of diarrhoea cases.
- Management of diarrhoea cases with No Dehydration.
- Management of diarrhoea Cases with Milo-Moderate Dehydration.
- Management of diarrhoea cases with Severe Dehydration.
- Management of diarrhoea cases with Acute Dysentery.

The Practical Sessions in the prototype agenda are designed to provide 2 levels of skills training:

- Basic Skills (for all health facility staff).
- Additional Skills (for staff working with ORT cases).

The Clinical Forms (A-7,8) and Skills Checklists (A-9,10) will provide guidance to trainers and participants on how to achieve these training objectives.

2.3 Training Objectives for Medical Officers.

On completion of the training ALL MOs will have the knowledge to answer basic questions about the following topics:

KNOWLEDGE.

T-1 Objectives of the National DTU/ORT unit programme.
T-2 Aetiology of Diarrhoea.
T-3 Indications for Drugs in Diarrhoea.
T-4 Assessment of Diarrhoea Dehydration.
T-5 Treatment of Diarrhoea cases with None, Mild-Moderate, Severe Dehydration and Acute Dysentery.
T-6 Talking with Parents, 4 Rules of Home Treatment.
P-7 Pakistan's National Diarrhoea Treatment Policy.

On completion of the training all the doctors will be able to perform the following BASIC SKILLS:-

1. Set up an ORT trolley or teach paramedic to set up an ORT trolley.
2. Assess diarrhoea cases using Clinical Form (A-7) in handout (A-2) to
   - 2.2 Determine history of current diarrhoea episode.
   - 2.2 Determine diet prior to diarrhoea.
   - 2.3 Assess hydration status.
   - 2.4 Select Diarrhoea Treatment Plan.
   - 2.5 Weigh child and determine nutrition status using growth chart.
   - 2.6 Determine treatment of other illnesses/complications.
   - 2.7 Prescribe appropriate medicines.
   - 2.8 Assess immunization status and refer if necessary.
   - 2.9 Decide which cases need to be sent home, to the ORT unit or to the Inpatient ward.

For children with No Dehydration (Plan A) and for all diarrhoea cases before they go home all the doctors will be able to do the following or teach a paramedic to do the following:

3. Demonstrate ORS preparation.
4. Demonstrate ORS administration.
5. Give every parent 2 packets of ORS to take home.
6. Teach every parent 4 rules of Home Treatment.
7. Teach paramedics and parents using 3 steps to Good Communication.

On completion of the training the doctors with assigned ORT duties will be able to perform the following ADDITIONAL SKILLS or will be able to teach a paramedic to perform these additional skills.

For diarrhoea cases with Mild-Moderate Dehydration the doctors will be able to do the following:

1. Weigh child.
2. Calculate nutritional status using growth chart.
3. Record information in ORT register (if used in the Health Facility)
4. Calculate volume of ORS required in 4-6 hours.
5. Monitor amount of ORS given and record this on patients' input/output chart.
6. Teach paramedic how to administer ORS and then supervise them showing parents.
7. Reassess the hydration status every 1-2 hours using the Assessment Chart in the handout (A-2).
8. Help paramedic staff encourage mothers to continue breastfeeding.
9. Give soft foods like kitchri, banana, yoghurt to children over 4 months as soon as they can eat.
10. Send child home when all signs of dehydration have disappeared.

For cases with Severe Dehydration the doctors will be able to do the following:

11. Calculate iv fluid volume required.
12. Monitor amount of iv fluid required and given on an input/output chart.
13. Monitor patient's hydration status regularly and record findings, every 2 hours until patient is rehydrated, then every 3 hours.
14. Encourage paramedic staff and parents to start ORS, breastfeeding and foods as soon as child can eat and drink.
15. Discontinue iv therapy as soon as appropriate.

2.2 Training Objectives For Paramedics.

On completion of training ALL the paramedics will have the KNOWLEDGE to answer basic questions on the main points of the following topics:

MP-1 DTU/ORT Unit programme.
MP-2 Dangers of Diarrhoea.
MP-2 Assessment of Diarrhoea/ Dehydration.
MP-3 Oral Rehydration Therapy.
MP-4 Limited role of drugs in diarrhoea Treatment.
MP-5 Cases for referral to the doctor.
MP-6 Prevention of diarrhoea.
MP-7 Talking with Parents. The 4 Rules of Home Treatment.
P-3 Pakistan's National Diarrhoea Treatment Policy.

On completion of training ALL the paramedics will be able to perform the following BASIC SKILLS using their handout (A-3) as a reference:

1. Set up an ORT trolley.
2. Assess a diarrhoea case using the Clinical Form (A-8).
3. Determine grade of dehydration and select a Diarrhoea Treatment Plan

4. Refer complicated cases to the doctor.

For children with No dehydration (Plan A) and for all diarrhoea cases before they go home the paramedics will be able to do the following:

5. Demonstrate ORS preparation.
6. Demonstrate ORS administration.
7. Give every parent 2 ORS packets to take home.
8. Teach parents the 4 rules of Home Treatment.
9. Use the 3 steps to Good Communication.

Paramedics working with ORT cases should receive extra training so that they can perform the following ADDITIONAL SKILLS.

1. Weigh the child.
2. Calculate the nutrition status using the growth chart.
3. Take the temperature and if high demonstrate to parent how to tepid sponge child. Take temperature again in 1 hour.
4. Record information in ORT register (if used in the health facility)
5. Select amount of ORS required in 4-6 hours.
6. Monitor amount of ORS given and record this on patient's input/output chart.
7. Administer ORS and teach parent to administer ORS.
8. Reassess hydration status every 1-2 hours using Assessment Chart.
9. Encourage mother to continue breastfeeding.
10. Give soft foods like kitchri, banana, yoghurt to children over 4 months as soon as they can eat.
11. Send child home when all signs of dehydration have disappeared.

For children with Severe Dehydration treated with iv therapy the paramedics will be able to do the following:

12. Monitor amount of iv fluid required and given on input/output chart
13. Monitor patients hydration status regularly and record findings, every 2 hours until patient is rehydrated, then every 6 hours.
14. Encourage the parent to start ORS, bresstfeeding and soft foods as soon as child can eat and drink.
15. Discontinue IV therapy as soon as appropriate.

2.3 Planning Session Objectives.

The objectives of the Planning Session are the following:

1. For the health facility staff to become aware of the current diarrhoea management in the health facility and the improvements required in order to achieve the Diarrhoea Policy Objectives (A-13)

2. For the health facility staff to develop a Plan of Action to achieve the Diarrhoea Policy Objectives (A-13).

2.4 Post-Training Evaluation Visit Objectives.

The objectives of the Post-Training Evaluation Visit are the following:

1. For the DTU physician, a provincial health officer, the MS/MOIC and the DTU-trained doctor to visit the health facility and record their observations in the Health Facility Diarrhoea Management Checklist (A-1).

2. For the evaluation team to compare their observations with the Pre-Training Visit Observations, the Diarrhoea Policy Objectives (A-13) and the Plan of Action for Improvements.

3. For the evaluation team to decide upon the future Plan of Action.

3. TRAINING MATERIALS

3.1 Reference Materials for Trainers

The following are a list of reference books to be used by trainers to prepare for the Follow-up Training Visits. The DTU physician can lend out copies of these reference materials to the assistant trainers before the training visit.

Reference Materials for Trainers of Doctors.
- O Readings on Diarrhoea, relevant chapters (english).
- O WHO DTU Director's Guide, relevant lectures (english).
- O DTU Follow-up Visit, Trainer's Guide (english).
- O UNICEF Diarrhoea Management Video and Script (english/urdu), V-3,4.

Reference Materials for Trainers of Paramedics
- O WHO Acute Diarrhoea, Practical Guidelines (english).
- O DTU Follow-up Visit, Trainers' Guide (english), Paramedic Classroom Session Module (A-6).
- O Pakistan Health Technician's Training Manual (urdu/ english)
- O UNICEF Diarrhoea Management Video and Script (urdu/english), V-3,4.

3.2 List of Teaching Aids for Trainers.

The following teaching aids are transported in the DTU vehicle and used by the training team during the Follow-up Training and Planning Sessions:
DTU physicians training kit and
DTU LHV's training kit (bag containing doll, ORT equipment, notebook rice, lentils, cellotape, marker pens/chalk).
2 Videos (UNICEF diarrhoea managment in urdu and Vicious Circles.)
Flipchart/Board and pens/chalks.
Posters:
Guidelines for Assessment of Diarrhoea (P-1)
Guidelines for Treatment of Diarrhoea (P-2)
Pakistan's National Diarrhoea Treatment Policy (P-3)
Oral Rehydration Therapy , ORS preparation, 8 pictures (urdu) (P-4)
Oral Rehydration Therapy, 3 pictures (urdu) (P-5)
Photograph of twins, one breastfed, one bottlefed (P-6).
Diarrhoea Policy Checklist (A-11,12)

The following are handouts given to the doctor and literate paramedics during the Follow up Training Session:

3.3 Handout For Doctors. (A-2)
CONTENTS (all in english):
- O Guidelines for Diarrhoea Assessment and Treatment, P-1,2 leaflet.
- O Clinical Form for Doctors, A-7.
- O Skills Checklist, A-9.
- O Pakistan National Diarrhoea Treatment Policy, P-3 leaflet.

3.4 **Handout For Paramedics.** (A-3)
CONTENTS (all in urdu) :
O Guidelines for Diarrhoea Assessment and Treatment, leaflets.
O Clinical Form for Paramedics, A-8.
O Skills Checklist, A-10.
O ORT leaflet.
O Pakistan's National Diarrhoea Treatment Policy, P-3, leaflet.

The following forms and checklists are used in the training and planning sessions.

3.5 Forms.

Clinical Form for Doctors (A-7)
Clinical Form for Paramedics, urdu (A-8)

3.6 Checklists.

Health Facility Diarrhoea Management Checklist (A-1)
Skills Checklist for Doctors (A-9)
Skills Checklist for Paramedics, urdu (A-10)
Diarrhoea Policy Checklist english/urdu (A-11,12)

CHAPTER 4. TRAINING SESSION AGENDA.

The following are prototype agendas, the first for the training of doctors and the second for the training of paramedics. They can be adapted to the different needs and conditions of different sized health facilities, but the teaching content should remain much the same.

4.1 Prototype Agenda For Doctors. (A-4).

FOLLOW-UP VISIT, STEP 2 : THE TRAINING SESSION:

Part 1. Classroom Session.
-Registration.
-Pre-Training Assessment.
-Introduction.
-Management of Diarrhoea.
-Talking with Parents.

Part 2. Practical Session in ORT.
-Work with diarrhoea cases in OPD, ORT unit, Inpatients.
-Case presentations.

Part 3. Joint Session.
-Joint training with paramedics.
-Pakistan's Diarrhoea Treatment Policy.

FOLLOW-UP VISIT, STEP 3: THE PLANNING SESSION.

Part 1. Health facility Visit.
-Visit OPD, ORT Unit, Inpatients to observe diarrhoea management.
-Record observations in Diarrhoea Policy Checklist (A-11,12).

Part 2. Development of a Plan of Action.
-Small group-discussion of observations.
-Complete Diarrhoea Policy Checklist columns.
-Develop a Plan of Action for improvements.
-Discuss Plan of Action with MS/MOIC.

FOLLOW-UP VISIT, STEP 2 : THE TRAINING SESSION

Part 1. CLASSROOM SESSION.

Registration.
Inauguration.

Pre-training Assessment.
- List doctors' diarrhoea management practices on flipchart/board.

Introduction:
- Introductory Talk: Objectives of DTU/ORT unit programme (T-1)
- UNICEF video module 23 "Setting up an ORT unit."

Management of Diarrhoea:
- Introductory Talk: Aetiology of Diarrhoea (T-2).
- List drugs doctors prescribe for diarrhoea on flipchart/board.
- Introductory Talk and Discussion: Indications for Drugs (T-3)
- Video "Vicious Circles" part 11 on Imodium.
- Introductory Talk: Management of Acute Diarrhoea (T-4).
- Give out Medical Officers Handout (A-2).
- Explain Assessment Chart and Clinical Form (A-2).
- UNICEF video module 1-2 "ORT and signs of dehydration".
- Discussion: Assessment Chart (A-2).
- Explain Treatment Chart (A-2).
- Discuss Case studies: None/Mild-Moderate/Severe Dehydration and Acute Dysentery (C1-5) with doctors using Handout (A-2) for reference.

Talking with Parents:
- Introductory Talk: Importance of Talking with Parents (T-5).
- Explain 4 Rules of Home Treatment.
- Explain 3 Steps to Good Communication.
- Role play doctor teaching parent 4 rules (Trainer + doctor).
- Repeat role play (doctor + doctor).

Part 2. PRACTICAL SESSION.

Practical Session in ORT.*
- Work with diarrhoea cases in OPD, ORT unit, Inpatient ward.
- Use Clinical form (A-7) and Skills Checklist (A-9).
- Use posters P-1,2,3 for reference.
- Use posters P-4,5,6 for teaching parents.
- Set up an ORT trolley.
- Demonstrate ORS preparation.
- Demonstrate ORS administration.
- Talking with Parents, 4 Rules of Home Treatment.
- Case presentations by doctors and discussion.

* This Practical Session is essential for doctors with assigned ORT duties. It is optional for other doctors and can be substituted with ward rounds and role plays/demonstrations in the Classroom Session.

Part 3. . JOINT SESSION.

Pakistan's National Diarrhoea Treatment Policy:
- Joint training session with doctors and paramedics.
- Display National Diarrhoea Treatment Policy poster (P-3).
- Explain each item in the policy (P-3).
- Question and answer session.
- MS/MOIC comments on implementation of policy in health facility.

FOLLOW-UP VISIT, STEP 2: THE PLANNING SESSION.

Improving Current Diarrhoea Management in the Health Facility.

Part 1. Visit Health Facility.
- Display National Diarrhoea Policy poster (P-3).
- Give out Diarrhoea Policy Checklist (A-11) to each doctor.
- Explain the checklist (A-11).
- Visit OPD, ORT unit and Inpatient ward and help doctors record their observations in the checklist (A-11).

Part 2. Development of a Plan of Action.
- Use posters P-3 and A-11.
- Small group discussion of observations using checklists (A-11).
- Discuss then fill "Observations" column of poster A-11.
- Discuss then fill "Diarrhoea Policy Objectives" column of poster A-11
- Discuss then fill "Improvements Required" column of poster A-11.
- Discuss then fill "How", "By whom" and "When" columns of poster A-11
- Discuss Final Plan of Action with MS/MOIC.
- Decide date of Evaluation Visit. *

* Optional.

4.2 **Prototype Agenda For Paramedics.** (A-5).

Refer to Paramedic Classroom Session Module (A-6) for content and more detailed training instructions for the Classroom Session.

FOLLOW-UP VISIT, PART 2 : THE TRAINING SESSION.

Part 1. Classroom session.
-Registration.
-Pre-Training Assessment.
-Introduction.
-Introduction to Diarrhoea.
-Treatment of Diarrhoea.
-Limited role of drugs in diarrhoea treatment.
-When to refer child for help.
-Prevention of diarrhoea.
-Talking with Parents.

Part 2. Practical Session in ORT.
-Work with diarrhoea cass in OPD, ORT unit, Inpatients.
-Case presentations.

Part 3. Joint Session.
-Joint training with doctors.
-Pakistan's National Diarrhoea Treatment Policy.

FOLLOW-UP VISIT, PART 2: THE PLANNING SESSION.

Part 1. Health Facility Visit.
-Visit OPD, ORT unit, Inpatinets to observe diarrhoea management.
-Record observations in Diarrhoea Policy checklist.

Part 2. Development of Plan of Action.
-Small group discussion of observations.
-Complete Diarrhoea Policy Checklist columns
-Develop a Plan of Action for improvements.
-Discuss Plan of Action with MS/MOIC.

FOLLOW-UP VISIT: STEP 1. THE TRAINING SESSION.

Part 1. CLASSROOM SESSION.

Registration.
Inauguration.

Pre-Training Assessment.
- List Paramedics Current Diarrhoea Management on flipchart/board.

Introduction:
- Explain the DTU/ORT unit programme (MP-1).

Introduction to Diarrhoea. (MP-2).
- Assess knowlegde of dangers of diarrhoea.
- Explain Dangers of Diarrhoea.
- Explain ORT.
- UNICEF video module 1.
- Demonstrate Signs of Dehydration (using child or doll).
- Paramedic repeats demonstration of signs (using doll)
- UNICEF video module 2.
- Give out Paramedic Handout (A-3)
- Use poster (P-1).
- Explain Assessment Chart (A-3) and Clinical Form (A-8).
- Discuss Case Studies (C 5-8) using Assessment Chart (A-3).

Treatment of Diarrhoea. Rule 1. Give More Fluids. (MP-3).
- Assess knowledge of Home Fluids/ORS.
- Explain importance of Home Fluids/ORS.
- Demonstrate ORS preparation.
- Paramedic repeats demonstration of ORS preparation.
- Demonstrate how to mark litre line in a container.
- Use poster P-1,2 and Handout A-3.
- Explain Treatment Plans.
- Demonstrate ORS administration and dealing with problems.
- Role Play health worker giving ORS (Trainer + Paramedic).
- Repeat role play (Paramedic + Paramedic).
- UNICEF video modules 9, 10, 11.
- Discuss reassessment of child during rehydration.
- UNICEF video module 23.
- Discuss role of each paramedic in ORT in the health facility.

Treatment of Diarrhoea. Rule 2. Continue Foods. (MP-3).
- Assess knowledge of feeding during diarrhoea.
- Explain importance of feeding.
- Discuss good foods (including breastfeeding).
- Explain how much, how often, how long.
- Role Play giving parent feeding advice (Trainer + Paramedic).
- Repeat Role Play (Paramedic + Paramedic).
- UNICEF video module 14.

The Limited Role Of Drugs In Diarrhoea Treatment. (MP-4)
- Assess knowledge of drugs for diarrhoea. Write drigs on board.
- Display National Diarrhoea Treatment Policy poster (P-3).
- Explain National Treatment Policy on drugs.
- ITV video "Vicious Circles" on Imodium.
- Discuss the limited role for drugs.
- Role Play advising parent antidiarrhoeals are not needed (Trainer + Paramedic)
- Repeat Role Play (Paramedic + Paramedic).

Diarrhoea Treatment. Rule 3. When to Refer Child for Help. (MP-5)
- Explain 5 signs for referral to doctor using Clinical Form (A-8)
- Role play referring these signs to doctor (Trainer + Paramedic).
- Repeat this role play (Paramedic + Paramedic).
- Ask what signs make a parent bring a child with diarrhoea for help.
- Explain danger signs to bring child for help.
- Role play advising parent on these danger signs(Trainer + Paramedic)
- Repeat role play (Paramedic + Paramedic).

Rule 4. Prevention of Diarrhoea. (MP-6).
- Assess knowledge of causes of diarrhoea.
- Discuss main causes (bottlefeeding, dirty hands)
- Explain 2 protections, breastfeeding & handwashing.
- Role play advising parent on 2 protections (Trainer + Paramedic).
- Repeat Role Play (Paramedic + Paramedic).

Talking with Parents, The 4 Rules of Home Treatment. (MP-7)
- Display Posters P-4,5,6.
- Revise the 4 Rules of Home Treatment using posters P-4,5,6.
- Explain the importance of <u>early</u> Home Treatment.
- Explain the 3 Steps to Good Communication.
- Role Play using 3 Steps to teach Rule 1, Extra Fluids.(Trainer + Paramedic)
- Repeat Role Play with Rule 2.(Paramedic + Paramedic).
- Repeat Role Play with all 4 Rules (Paramedic + Paramedic).

Part 2. PRACTICAL SESSION.

Practical Session in ORT.
- Disply posters P-1,2,3,4,5,6.
- Supervise paramedics setting up an ORT trolley and teaching groups of parents in OPD, ORT Unit and Inpatient ward. Use Basic Skills Checklist.(A-10) and poster P-1,2,3,4,5,6.
- Do exit interview on parents trained by paramedics.
- Supervise paramedics working in ORT unit rehydrating children. Use Additional Skills Checklist (A-10).*
- Do exit interview on parents trained by paramedics.
- Case presentations by paramedics and general discussion.

* This Additional Skills Training part of the Practical Session is essential for paramedics assigned ORT duties. This part of the session may need to be scheduled on a separate day, allowing the DTU LHV to work exclusively with these paramedics in the ORT unit.

Part 3. JOINT SESSION.

National Diarrhoea Treatment Policy. (P-3).
- Joint training session with doctors and Paramedics.
- Display National Diarrhoea Treatment Policy poster (P-3).
- Explain each item in policy (P-3).
- Ask paramedics if they have any questions.
- MS/MOIC comments on policy implementation in health facility.

FOLLOW-UP VISIT: STEP 2. THE PLANNING SESSION.

Part 1. Visit Health Facility
- Display Diarrhoea Treatmant Policy poster (P-3).
- Give out Diarrhoea Policy Checklist (A-12) to literate paramedics.
- Explain checklist (A-12).
- Visit OPD, ORT unit, Inpatient ward and help paramedics record their observations in the Diarrhoea Policy Checklist (A-12)

Part 2. Development of Plan of Action.
- Display posters P-3 and A-12.
- Small group discussion of observations using checklists (A-12).
- Discuss then fill "Observations" column of poster (A-12).
- Discuss then fill "Diarrhoea Policy Objectives" column of poster.
- Discuss then fill "Improvements Required" column of poster (A-12).
- Discuss then fill "How", "By Whom" and When" column of poster (A-12)
- Discuss Final Plan of Action with MS/MOIC.

5. TEACHING METHODS.

In this section most of the remarks apply equally to the doctor and paramedic training, hence the word "participant" is used.

5.1 Some general hints on training.

Introduce yourself by name at the beginning of the training and explain the work you are doing. Try to learn the names of most of the participants and find out something about their work experience. Keep the language as simple as possible, especially for non-literates, and avoid using abbreviations like DTU, ORT without explaining what they mean first. Speak loudly and clearly so that everybody can hear you. Try not to cut anybody short while they are speaking. Make the training as active and practical as possible. Sit the participants in a circle so that you can make eye contact with everybody. Keep eye contact with all the participants to check they are interested and understand the teaching. Avoid turing your back on the participants. Give equal attention to all the participants and try to encourage the shy ones. Be supportive, catch the participants doing something right and praise them for it. Avoid just telling people what to do, demonstrate and give examples instead. Always check what the participants know at the beginning of a training session and then check again at the end of the session. If the participants look tired change to another activity or stop for tea. Vary the activities as much as possible by changing the teaching method every few minutes. The following teaching methods are used in the Follow-up Visits:

5.2 Introductory Talks.
5.3 Demonstrations.
5.4 Practical Sessions in ORT.
5.5 Case studies and presentations.
5.6 Role plays.
5.7 Posters.
5.8 Flipcharts/blackboards.
5.9 Videos.

5.2 Introductory Talks.

There are 5 introductory talks in the prototype agenda for doctors. The 5 topics are listed below with details of their reference pages in Readings on Diarrhoea and the WHO Director's Guide.

T-1 Objectives Of DTU/ORT Unit Programme.
Trainer's Guide (T-1).

T-2 Aetiology of Diarrhoea.
Readings on Diarrhoea Chapter 3, Page 13.
WHO Director's Guide E-14, E-47-53.

T-3 Indications For Drugs In Diarrhoea.
Readings on Diarrhoea, Chapter 13, Page 127.
WHO Director's Guide, E-7, E-40

T-4 Management Of Acute Diarrhoea
Readings on Diarrhoea Chapters 7, 8, 10, 11.
WHO Director's Guide E-8 and E-30.

T-5 Talking with Parents.
Readings on Diarrhoea, Chapter 9, Page 75.

There are Main Points for 7 topics in the Paramedic Classroom Session Module (A-6).

MP-1 Introduction to DTU/ORT Unit Programme.
MP-2 Introduction to Diarrhoea.
MP-3 Oral Rehydration Therapy.
MP-4 The limited role of drugs in diarrhoea treatment.
MP-5 When to refer a child for help.
MP-6 Prevention of Diarrhoea.
MP-7 Talking with Parents, the 4 Rules of home treatment.

The trainers should prepare for these introductory talks by reading these reference pages and main points in advance of the Training Session Visit.

These introductory talks should be short, lasting about 10 minutes. At the start of each talk the trainer should assess the knowledge of the participants on the topic. This will avoid the trainer teaching the participants something they already know. The trainer should also refer to the posters (P-1,2,3,4,5,6) displayed on the wall and the handouts (A-2,3) to emphasise main points and familiarise the participants with these materials. At the end of the talk the trainer should summarize the main points and write them on the flipchart/board. A discussion session or role play should follow the talk, relating the topic to the participants' work duties in the health facility. The procedure for giving an introductory talk can be summarized as follows:

Preparation.

1. Display posters (P-1,2,3,4) and flipchart/board so that all participants can see them.

Procedure.

Step 1. Assess the participants knowledge of the new topic. For example ask "I have a 10 month old baby with diarrhoea. What drugs would you prescribe for my child ?" Write their answers on the flipchart/board.

Step 2. Give a short introductory talk on the topic, lasting about 10 minutes. Refer to the posters (P-1,2,3,4,5,6) and handouts (A-2,3). Answer any questions the participants may have.

Step 3. Summarize the main points and write them on flipchart/board.

Step 4. Ask volunteers to explain each of the main points.

Step 5. Discuss the topic in relation to the participants' health facility work, using case studies, case presentations and role plays to encourage discussion.

5.3 Demonstrations.

Demonstrations are used in the agenda to teach the following practical basic skills:

- O Assessing signs of dehydration (head-to-toe method).
- O Setting up an ORT trolley.
- O ORS preparation.
- O ORS administration.

The demonstration is first performed by the trainer and then a return demonstration is performed by a participant. If the participants make a mistake during the return demonstration the trainer must not embarass them by saying they are wrong. Instead the trainer should just repeat the demonstration to show the correct way.

Training Materials.

DTU physicians and DTU LHVs training kits.
Doll.
ORT equipment (ORS packets, jug, pao-sized glass, containers available in local bazaar labelled with volumes, cups, spoons, water in container).
Table or trolley.
Foods like rice, lentils, banana.

Preparation.

1. Prepare all the training materials on a table or trolley before the training session starts. These materials should be locally available in the bazaar or health facility.

Procedure.

Step 1. Arrange the participants so that everybody can see the demonstration.

Step 2. Explain the purpose of the demonstration. Tell the participants that they will be expected to demonstrate the skill later.

Step 3. Demonstrate the practical skill, explaining each step, and allow the participants to ask questions.

Step 4. Summarize and discuss the steps at the end of the demonstration.

Step 5. Ask a volunteer to repeat the demonstration infront of the others.

Step 6. Encourage questions, and discuss as a group any problems encountered.

Step 6. Ask another volunteer to repeat the demonstration again for revision.

5.4 Practical Sessions in ORT.

The Practical Sessions in ORT provide the participants with a work setting for aquiring BASIC SKILLS and ADDITIONAL SKILLS in diarrhoea management. Refer to the skills training objectives in Section 2.2 and the Skills Checklists (A-9,10) for more detailed information on these skills. The participants should use the Clinical Forms (A-7,8) and Skills Checklists (A-9,10) as a guide for checking their own progress and other participants' progress. The trainers should use the completed Clinical Forms (A-7,8) and Skills Checklists (A-9,10) to evaluate the participants progress and highlight any gaps in their training that need to be rectified.

BASIC SKILLS.
During the Practical Session in ORT ALL the participants should aquire basic skills in talking with parents about ORS preparation, administration and the 4 Rules of Home Treatment. If there are not enough parents of diarrhoea cases available, parents of children with other clinical problems can be used. Participants can set up an ORT trolley and work with parents in the OPD, ORT unit and In-patient ward.

ADDITIONAL SKILLS
It is important that all the participants, who are assigned ORT duties in the health facility, aquire additional skills rehydrating children. This may however prove logistically quite difficult, especially in the less busy health facilities and outside the peak diarrhoea season. If there are only a few diarrhoea cases with dehydration for the practical session, priority should be given to these health workers. The DTU team can also schedule an extra morning to train these health workers individually "on-the-job" in the ORT unit and Inpatient ward.

If there are a larger number of participants than diarrhoea cases, divide the participants into groups of 2-3. One participant can examine the case using the Clinical Forms (A-7,8) and the other 1-2 participants can observe and fill in the Skills Checklists (A-9,10).

Training Materials.

Posters (P-1,2,3,4,5,6)
Trolley.
ORT Equipment (jugs, cups, spoons, ORS packets, containers from the local bazaar with volumes written on them, 250 ml glasses, water in container)
Handouts (A 2 or 3).
Clinical Forms (A 7 or 8).
Skills Checklists (A 9 or 10).
Enough ORT equipment, handouts, forms, checklists for each participant

Location.
OPD, ORT unit, In-patient ward. The location depends upon the availability of diarrhoea cases. Participants requiring BASIC SKILLS training should be sent to the OPD, and Inpatient ward. Those requiring ADDITIONAL SKILLS training should attend cases in the ORT unit and Inpatient ward.

Time Required

BASIC SKILLS TRAINING: 2 hours should be adequate for setting up an ORT trolley, taking a history, examining the child and talking with the parents about ORS preparation, administration and the 4 rules of home treatment.

ADDITIONAL SKILLS TRAINING: 4-6 hours IS REQUIRED if diarrhoea cases are being rehydrated. The participants can have a break for lunch or another classroom session and then come back later in order to manage the different stages of rehydration. The DTU training team may need to schedule extra "on-the-job" individual training to these staff with ORT duties on a separate day.

Preparation and Procedure. See Section 8.2 page for details

Important Points to bring out in the Additional Skills Practical Session.

Participants need to know signs of dehydration very well. They should see as many dehydrated patients as possible to learn how the signs can appear in different children (ie children who are malnourished compared to well nourished etc). The best way to learn about ORT and how patients respond is to check a dehydrated patient repeatedly during the entire 4-6 hour course of rehydration therapy. Participants have to practise using the Assessment and Treatment Charts in their handouts (A 2,3) to select the correct treatment and the amount of ORS required. Participants should administer the ORS at the appropriate rate (a teaspoonful every 1 minute). Participants should involve parents in giving ORS to their children. Participants should teach parents what to do and should help and encourage them, and solve any problems they may have. The volumes and rates recommended for ORS are approximate. The participants should appreciate how the patient's response must be monitored, and the rate and volume of fluid adjusted according to the patients condition (ie vomiting, heavy purging etc.) When vomiting occurs the parent should stop giving ORS for 10 minutes and then begin giving ORS again but more slowly. The parent should be reassured that the ORS is helping the child and should be continued. The participants should emphasize the dangers of drugs like antidiarrhoeals and explain that diarrhoea is a self limiting condition. They should encourage mothers to continue breastfeeding during diarrhoea. Dehydrated infants can resume breastfeeding as soon as they can suck. It is important to offer a child over 4 months soft foods like kitchri, banana, yoghurt as soon as they can eat. Participants should be told to note any problems or questions that arise when treating cases. These should be discussed with the trainers both during the practical session and later during the case presentations.

Examples of Training Materials used in the Practical Session.

Clinical Form for Doctors (A-7)
Clinical Form for Paramedics (A-8).
Skills Checklist for Doctors (A-9)
Skills Checklist for Paramedics (A-10).

5.5 Case Studies and Presentations.

Case Studies (C 1-10) and Case Presentations provide problem solving activities for the participants which aid the learning process. Case presentations are real cases the participants have treated in the practical session and recorded on a Clinical Form (A-7,8). As many participants as possible should have a chance to present a case. The Case Studies (C 1-10), included in this Trainers' Guide, provide the participants with basic information about fictitious cases. The participants study the information and apply their knowledge to solving the clinical problem. The following clinical problems should be discussed:

- No signs of dehydration.
- Mild-Moderate Dehydration.
- Severe Dehydration.
- Acute Dysentery.

Some hints for the trainer about Case Presentations.
Ask for a volunteer to present a case 's/he has managed in the practical session. Explain to the presenter that they can refer to the Clinical Form (A7,8) to recall details of the case. The presenter describes the patient's history and clinical signs to the group. Stop the presentation and ask questions of the other participants, such as what a sign or symptom might mean and what treatment they would give and why. Ask the presenter to then continue describing the treatment actually given and the patient's progress. Stop the presenter at appropriate times to question the participants, such as by asking whether the treatment was correct. As a way to discuss difficult or unusual conditions, raise hypothetical situations for discussion (eg. what would you do if the child had vomiting, abdominal distension, heavy purging, fever ?) Request other participants to present their cases. If any of the 4 clinical problems listed above are not covered during these case presentations, select the missing ones from the case studies (C 1-10) for discussion.

Training Materials.

Posters (P-1,2,3,4,5,6)
Flipchart/Board and marker pen/chalk.
Clinical Forms (A-7,8) filled in by participants.
Case Studies (C 1-10).
Handouts (A-2,3)

Location. Classroom.

Time. 1 hour. Allow about 15 minutes for each case presentation so that all 4 clinical problems can be discussed.

Preparation.

1. Display the posters (P-1,2,3,4,5,6) on the wall. Set up the flipchart/board.

2. Arrange the chairs in a circle so that all the participants can see the posters and flipchart/board.

Procedure.

Step 1. Ask a volunteer to present a case s/he has managed in the practical session. The trainer can ask questions of the participants throughout the presentation and encourage the participants to ask questions.

Step 2. Discuss the case comparing the assessment and treatment by the presenter with that of the Assessment and Treatment Guidelines and National Policy. Use posters (P-1,2,3,4) and Handouts (A-2,3).

Step 3. Ask another volunteer to present a case on one of the 4 clinical problems (None, Mild-Moderate, Severe Dehydration and Acute Dysentery) that has not been presented before. Discuss this case.

Step 4. Continue the case presentations with different presenters until all 4 clinical problems have been covered. If participants have not treated some of these clinical problems then fill in the gaps with Case Studies (C 1-10).

Examples of Case Studies with Answers.

In the attachments section 9.2 are some example of case studies taken from the DTU Student Workbook and WHO Director's Guide. The Trainers can also make up their own case studies using the Clinical Form (A-7,8) as a guide. An example of this is shown (C-11).

5.6 Role Plays.

A role play is a learning activity in which the participants act out roles like in a real life work situation, using their newly aquired skills and knowledge. Role plays are especially useful in developing communication and teaching skills. Role plays also help trainers to assess, in a none threatening way, what the participants have learnt. The role plays in the prototype agendas have a health worker talking to the parent of a child with diarrhoea. In the first role play the trainer plays the role of the health worker and a participant plays the role of a parent whose child has diarrhoea. In the repeat role play 2 participants play both roles. These role plays are very effective in preparing participants to face real parents and patients in the practical session. The trainer should encourage the role players to use these 3 steps to good communication.

Step 1. ASK checking questions to find out what parents do.
(PRAISE good practices. DO NOT criticize bad practices).
Step 2. EXPLAIN the advice in simple language.
Step 3. ASK parents TO REPEAT this advice in their own words.

The trainers should demonstrate these 3 steps in all the role plays and then the participants can practise using them in the repeat role plays.

It is preferable to select the more confident participants in the first 2-3 role plays. The trainer can do this by asking for volunteers. Select a participant who is used to talking to mothers like a paediatrician, LHV or dai, for the role of the mother, because they are more likely to know what sort of questions mothers ask. In later role plays the quieter less experienced paramedics can be involved. The trainer should not allow the role plays to be interrupted or to go on for too long. About 5-10 minutes is usually enough time. At the end of each role play there should be a discussion, allowing all the participants a chance to correct mistakes and make suggestions on how to improve the communication with parents.

Training Materials.

Trolley/table.
Posters (P-4,5,6)
Doll, soother, feeding bottle.
ORT equipment (ORS packets, glasses, containers from the local bazaar with volumes written on, water and container, spoons.)
Soft foods like kitchri, yoghurt, banana.

Location. In the classroom.

Time Allow 5-10 minutes for each role play.

Preparation.

1. Prepare all the training materials used in the role play before starting. Display the posters (P-4,5,6) so that all the participants can see them.

Procedure.

Step 1. Ask for a volunteer to play the part of the parent and give them the doll. The trainer plays the part of the health worker giving advice to the parent of a child with diarrhoea. Trainer, acting the part of the health worker, should use all the training materials including the posters. Trainer should also demonstrate the 3 steps to good communication, ASK, EXPLAIN, ASK TO REPEAT, in the role play.

Step 2. Discuss the role play with all the participants, with emphasis on the 3 steps to good communication.

Step 3. Repeat the role play with 2 participants, one playing the parent and the other the health worker.

Step 4. Discuss the role play, bringing out any problems encountered with the 3 steps to good communication.

Step 5. Revise the main points that should have come out in the role plays.

5.7 Posters.

These posters are used in the Follow up Visits:
P-1 Guidelines for Assessment of Diarrhoea/Dehydration.
P-2 Guidelines for Treatment of Acute Diarrhoea/Dysentery.
P-3 Pakistan's National Diarrhoea Treatment Policy.
P-4 Oral Rehydration Therapy, 8 pictures showing preparation of ORS in 4 pictures and feeding, breastfeeding, ORS giving and handwashing in 4 pictures (urdu).
P-5 Oral Rehydration Therapy, 3 pictures, showing ORS giving, breastfeeding and soft foods (urdu).
P-6 Photograph of 6 month old twins, one breastfed and one bottlefed.
A-11 Diarrhoea Policy Checklist as a poster.

A plentiful supply of all these posters should be kept in the DTU vehicle at all times.

Posters P-1, 2, 3 and 4 contain all the essential information in diarrhoea management for health workers. In other words, the essential knowledge the health workers must have at the end of the training, in order to improve current diarrhoea management in their health facility. The pictures in posters P-4,5 and 6 are useful as reference materials for non-literate paramedics. Leaflet sized versions of posters P-1,2,3 and 4 are given to the participants in the handouts (A 2 and 3). These handouts can be used as desk references by the participants both in the health facility and their private practices. The Diarrhoea Policy Checklist poster (A-11) is used in the Planning

Session for the development of a Plan of Action.

In preparation for the training session, the trainers should display these posteres at eye level, in all areas of the health facility in which diarrhoea cases are being managed by health workers. This will include the OPD, ORT unit and Inpatient wards. During the classroom and practical sessions the trainers should refer to the posters frequently and supervise the participants using them to determine the management of real cases and case studies. At the end of the training all the health facility staff should know the content of these posters. P-4,5 and 6 are used by the health workers for teaching parents. Participants should practise using these posters (P-4,5,6) to teach parents in the practical session in ORT.

Here are some hints on using Picture Posters with Non-literates.

Trainers and health workers must understand that people who are unable to read and write, also have problems understanding pictures. This applies both to the paramedics using the posters and the parents they are teaching. The procedure described below will help trainers and health workers use the posters so that non-literate paramedics and parents understand them.

Preparation.

1.Display the posters (P-4,5,6) at eye level in a position where the paramedics/parents can see them clearly. The trainer can check this before the training session, by standing at the back of the classroom or teaching area.

Procedure.

Step 1. Asks the paramedics/parents what they see in the pictures. This will help in understanding which pictures they have difficulty with.

Step 2. Explain the messages in the pictures, pointing to different items. For example with the feeding picture in Posters P-4 and 5 say "This is a bowl of kitchri, a bowl of yoghurt and some bananas."

Step 3. Arranges the paramedics/parents in small groups and give each group a poster to discuss.

Step 4. Ask a volunteer paramedic/parent to explain the messages in the poster.

5.8 Flipcharts/boards.

Trainers can use blackboards, whiteboards and flipcharts as visual aids to assist them with the training. These visual aids allow information to be presented in a step-by-step way. Flipcharts are blackboard sized notebooks in which the pages can be flipped over. Flipcharts and boards do however require considerable skill for effective use, as the trainers back is often turned to the audience.

Flipcharts have the advantage over blackboards and whiteboards in that the content does not have to be erased and can be preserved for future use. Flipcharts are also more transportable.

Here are some hints on using flipcharts/boards:

1. They should be positioned so that all the participants can see them clearly. This can most easily be done by arranging the participants in a circle.
2. The trainer must stand to one side of the flipchart/board so that all the participants can see.
3. The trainer should not talk to the flipchart/board.
4. Different coloured markers/chalks should be used to emphasize the main points.
5. The writing should be clear and large enough for everybody to see. Trainer can best test this before the training session, by writing something on the flipchart/board and then checking from the back of the room.
6. The trainer should not write too much information on the flipchart/board at any one time.
7. The drawings should be large and simple.

Flipcharts/boards can be used to summarize the main points at the end of an introductory talk. As an example of this, a very effective way of teaching the indications for drugs in diarrhoea, is to ask the participants which drugs they prescribe or recommend in diarrhoea treatment. Their answers can be listed on the flipchart/board. At the end of the introductory talk the trainer can ask the participants which drugs from the list on the flipchart/board are still indicated in diarrhoea treatment. The participants can come up and cross of all the drugs that are no longer indicated. This makes a very dramatic end to the training session and one that the participants remember for a long time.

5.9 <u>Videos.</u>

Two videos are used in the Follow-up Training Visit, the UNICEF Diarrhoea Management video and the ITV "Vicious Circles" video.

The UNICEF video is divided into 23 modules and is available in english and urdu. See V-1,2 for users' guide in english/urdu with training objectives for each module and V-3,4 for english/urdu script. The video should be stopped after each module for revision and discussion. Questions the trainers should ask after each module are listed in the users' guide (V-1,2). This video stresses the early signs of dehydration, thirst and irritability and encourages the head-to-toe method of examining for signs of dehydration. It also recommends the inability to drink as the descision point for using iv therapy. It was filmed at the International Centre for Diarrhoeal Diseases Research, Dacca, Bangladesh. UNICEF have given each DTU multiple copies of this video dubbed in urdu for distribution by the DTU physician to health worker training institutes like Public Health Schools, Nursing Schools, Health Technician Schools and Medical Associations like PMA and PPA.

The "Vicious Circles" video is in english and is divided into 2 parts, part 1 on the formula milk problem in Pakistan (lasting 25 mins) and part 2 on the successful campaign banning Imodium drops and syrups in Pakistan (lasting 25 mins). The video features several Diarrhoea Training Units in the Punjab and Sindh.

The TV and VCR belonging to the DTU should <u>not</u> be used for these Follow-up Visits because of the risk of damage incurred during transportation. The TV and VCR used should be hired locally or provided by the health facility staff. The trainers must check to see whether the TV and VCR are working before the training starts. One TV and VCR will be required for the doctors' training and one for the paramedics' training. The DTU LHV should be trained to use the VCR in her Training Sessions. Several copies of each video should be taken on Follow up visits, just in case problems arise with one copy.

5.10 ORDER OF REVIEW FOR WARD ROUNDS

1. Mother and child

   Greet the mother and child. Ask them how the illness and treatment have been going. Explain that the child's illness is going to be presented and discussed, and ask them to listen and correct the information if necessary.

2. Presentation

   If a student has seen the case, ask the student to present it briefly; otherwise have the resident or head nurse present it

3. Mother and child

   Ask whether they have anything to add. Ask about current diarrhea and vomiting, appetite and feeding, any problems the mother sees in following the instructions given her, any aspects of the treatment she wonders about

4. Chart review

   - initial history and physical examination: any important points omitted, recording complete or not

   - weight on admission and presently; check nutritional status on growth chart (should be in the patient record)

   - initial dehydration status and rehydration technique

   - initial diagnoses: of diarrhea, of complications, of accompanying illnesses

   - lab examinations: appropriateness of what was ordered, results

4. Chart Review (continued)

   - oral treatment: when was oral fluid initiated

   - feeding: when were foods started, what foods were given

   - other medical treatment: whether drugs and antibiotics used met indications for use,

   - educational treatment: whether education given to mother was recorded

   - progress sheet: current vital signs, stool and vomitus outputs, urine outputs, volumes of fluid given; food given; use of low osmolar fluids in addition to ORS (eg plain water, breastfeeding etc); calculate fluid balance (subtract total output from total input) to determine net fluid balance since admission

   - lab results, whether they will affect treatment

5. Patient examination

   - examine patient, asking current symptoms and more details about progress

6. Mother

   - check her understanding of how to mix and give ORS and home fluids, how to manage feeding, indications for bringing child back

   - ask if she has any additional concerns, any questions raised by the discussion

6. EVALUATION.

The Follow-up Visit programme has the Health Facility Diarrhoea Management Checklist (A-1) as its basic evaluation tool. The overall objectives of the programme are summarized in the Diarrhoea Policy Objectives (A-13). The success of the programme can be monitored by comparing the checklist observations at the Pre-Training Evaluation Visit and the Post-Training Evaluation Visit with the Diarrhoea Policy Objectives (A-13).

Evaluations are also conducted on individual health workers during the Training Session. These evaluations conducted during the Training Session will assess what participants have learnt during the training session. Evaluation conducted weeks after the training assess what the participants have done on the job using what they have learnt. These different types of evaluations are conducted by the DTU team, as shown below:

6.1 Pre-Training Visit Evaluation.

The DTU physician visits the health facility of a government doctor BEFORE the doctor attends a DTU workshop and records his/her observations in the Health Facility Diarrhoea Management Checklist (A-1). This checklist is then used during the DTU Workshop Planning Session and for comparison at the Post-Training Evaluation Visit.

ealth facility evaluated using.....Health Facility Diarrhoea Management Checklist (A-1)

6.2 Training Session Evaluation.

The DTU physician, DTU LHV and assistant trainers evaluate the participants during the Training Session.

Doctors evaluated using..... .....Case Studies (C 1-5)
Case presentations.
Clinical Forms (A-7).
Skills Checklist (A-9)
Handout Content (A-2)

Paramedics evaluated using .....Case Studies (C 6-10)
Role plays.
Clinical Forms (A-8)
Skills Checklist (A-10).
Handout Content (A-3).

6.3 Planning Session Evaluation.

The DTU physician, DTU LHV, MS/MOIC, DTU trained doctor and participants visit the health facility to evaluate current diarrhoea management and then compare it with the Diarrhoea Policy Objectives (A-13).

Health Facility evaluated using.....Diarrhoea Policy Checklist (A-11
.....Diarrhoea Policy Objectives

6.4 Post-Training Evaluation Visit.

The DTU physician visits the health facility with a provincial health officer and they record their observations in the checklist which has already been used on the Pre-Training Evaluation Visit. The evaluation is based upon comparisons of the observations between the Pre and Post-Training visits with the Diarrhoea Policy Objectives.

Health Facility evaluated using.....Health Facility Diarrhoea Management Checklist (A-1).
.....Diarrhoea Policy Objectives.

7. PREPARATION FOR THE FOLLOW-UP VISITS.

This section covers the procedures the DTU physician has to follow in preparing for these Follow-up Visits:-
Step 1. Pre-Training Evaluation Visit.
Step 2. Training Session.
Step 3. Planning Session.
Step 4. Post-Training Evaluation Session.

7.1 Select The Dates For the Follow-up Visits.

Arrange convenient dates for the Follow-up Visits in consultation with the provincial health staff (ie. DHS, CDD manager and local DHO /ADHO) and health facility staff (ie. MS/MOIC, DTU-trained doctor and paramedic tutors). Request that a TV and VCR be made available on the dates arranged for the Training Session, either by hiring locally or by being provided personally by health facility staff.

7.2 Select And Prepare Assistant Trainers.

Request the provincial health department staff (ie. DHS, CDD Manager, local DHO/ADHO) and health facility staff (ie. MS/MOIC, DTU trained doctor, paramedic tutors) to assist as trainers in the Training and Planning Sessions. Discuss the prototype agenda with them and ask them which topics they would like to assist in teaching. Rearrange agenda according to the assistant trainers availability. Supply them with the following reference materials to prepare them for this training:

Reference Materials for Trainers of Doctors.
O Readings on Diarrhoea, relevant chapters.
O WHO DTU Director's Guide, relevant lectures.
O DTU Follow-up Training Visit, Trainer's Guide.
O UNICEF Diarrhoea Management Video and Script (V-3).

Reference Materials for Trainers of Paramedics.
O WHO Acute Diarrhoea, Practical Guidelines (english).
O DTU Follow-up Training Visit, Trainer's Guide.
O Pakistan Health Technician's Training Manual (english/urdu), diarrhoea chapter.
O UNICEF Diarrhoea Management Video and Script (urdu), (V-4).

Keep a record in the Follow up Visit notebook of people to whom reference materials have been lent.

7.3 Determine The Number Of Participants.

The number of participants for the Training and Planning Sessions can be determined by looking at the front page of the Health Facility Diarrhoea Management Checklist (A-1) filled in for this health facility at the Pre-Training Visit or DTU Workshop Planning Session. For an example of this information see below:

	TOTAL STAFF IN HEALTH FACILITY	NUMBER OF STAFF TRAINED DURING VISIT			
		POST-TRAINING VISIT 1 Date:	POST-TRAINING VISIT 2 Date:	POST-TRAINING VISIT 3 Date:	POST-TRAINING VISIT 4 Date:
Medical Officers	2				
Nurses	3				
LHV	1				
Dispensers	1				
Health Technicians	1				
Vaccinators	2				
Dais	2				

It is important to determine the number of doctors and paramedics who need training in order to prepare budgets and decide on numbers of assistant trainers required.

7.4 Send Budget Request To Pakistan Child Survival Project.

A budget request with details of the number of participants and meals required should be sent to the Project Manager, Pakistan Child Survival Project (PCSP), Islamabad, one month in advance of the Training and Planning Sessions. This will allow plenty of time for the budget to be approved by PCSP and financial arrangements made by Jaffer Brothers before the visit. The postal address is as follows:

Pakistan Child Survival Project,
National Basic Health Services Cell,
Feroze Center, 14-D (West), 3rd Floor, Blue Area,
Islamabad,

Phone: 815818 or 811325. Fax: 92-51-820648 (c/o Holiday Inn).

The DTU physician should contact the provincial Jaffer Brothers representative to confirm that all the arrangements have been made. Jaffer Brothers will deal with all the expenses incurred. The DTU physician has a 500 rupee emergency fund for unexpected expenses that may be incurred during field visits.

7.5 Book Lodgings For Training Team.

Many health facilities are more than a 2-3 hours drive from the DTU and the training team will have to stay overnight in hotel or government resthouse accommodation near the health facility. The DTU physician should make a request for accomodation to the PCSP and once approval has been recieved Jaffer Brothers will make the bookings. The DTU physician should confirm that these bookings have been made.

7.6 Check Supplies Of Training Materials.

Check that the following training materials are available in the DTU and store them in the DTU vehicle in preparation for the Training and Planning Sessions. If the supplies of these materials are not adequate, order extra supplies from the Project Manager, Pakistan Child Survival Project, well in advance of the visit dates.

Training Materials Required.

- 0 Follow-up Training Visit Notebooks (one for DTU physician, one for DTU LHV.)
- 0 Flipchart/Board and marker pens/chalks.
- 0 Cellotape.
- 0 DTU physicians kit and
- 0 DTU LHV's Training kit (bag containing notebook, doll,ORT equipment, mice, lentils).
- 2 UNICEF Diarrhoea Management Video (in urdu). Take 4 copies.
- 0 ITV "Various Circles" Video. Take 4 copies.
- 0 Posters, Nos 1,2,3,4,5,6, (at least 10 copies)

(There should be enough posters to hang up one sample of each in the 2 training rooms, the OPD, ORT Unit, In-patient wards, MS/MOIC office.)
O Handouts for Medical Officers (A-2), one for each MO).
O Handouts for Paramedics (A-3), one for each literate paramedic).
(For numbers of handouts required, see section 7.3)

8. CONDUCTING THE FOLLOW UP VISITS.

The Follow up Visits are divided into 4 steps:

8.1	Step 1. Pre-Training Evaluation Visit,	4 hours.
8.2	Step 1. Training Session,	8 hours.
8.3	Step 2. Planning Session,	4 hours.
8.4	Step 3. Post-Training Evaluation Visit,	2-4 hours.

Instructions on conducting these visits are given in this section. More detailed information on teaching methodology is given in sections 3, 4 and 5 of this Trainers' Guide. Procedures to prepare for these visits are given in section 7.

8.1 Step 1. PRE-TRAINING EVALUATION VISIT.

The DTU physician visits the health facilities listed for the next DTU Workshop.

Objectives. See Section 2.1

Time Required. Allow 4 hours plus travel time.

Materials required.

Health Facility Diarrhoea Management Checklist (A-1).
Readings On Diarrhoea, 2 copies.
DTU Workshop Agenda, 1 copy.

Preparation.

1. Arrange a convenient date and time for the visit with the MS/MOIC of the health facility.

Procedure.

1. Meet the MS/MOIC on arrival. Explain about the DTU/ORT unit programme. Show him the DTU Workshop agenda. Gives dates of the DTU Workshop and discuss which doctor from the health facility should be sent for training.

2. Explain that an area in the health facility will be required to set up an ORT unit. Visit the health facility, with the MS/MOIC and the doctor to be trained in the DTU Workshop, and discuss the most suitable location for the ORT unit. It should be near "all the action" in the OPD, so that the DTU-trained doctor can supervise the ORT unit activities.

3. Visit the OPD and Inpatient wards with the MS/MOIC and doctor to be trained in the DTU Workshop. Discuss the current diarrhoea management and write observations in the Health Facility Diarrhoea Management Checklist (A-1). Give copies to the MS/MOIC and the doctor.

4. Give the MS/MOIC and the doctor to be trained in the DTU Workshop a copy of Readings on Diarrhoea to read in advance. * Optional

8.2 Step 2. THE TRAINING SESSION.

The Training Session is divided into 3 parts:
Part 1. Classroom Session. 5 hours.
Part 2. Practical Session in ORT. 2 hours.
Part 3. Joint Session with Doctors and Paramedics. 1 hour.

Objectives. See Section 2.2

Trainers.

The DTU physician and DTU trained doctor train the doctors and the DTU LHV train the paramedics. This training can take place in separate rooms at the same time or on different days. This will depend upon the number of participants. In the larger health facilities like District Headquarter Hospitals with a large number of participants it is easier to train the doctors and paramedics on different days.

Agenda.

Follow the prototype agenda for doctors (A-4) and prototype agenda for paramedics (A-5). These prototype agendas can be adapted to the diverse needs and conditions encountered in different health facilities. For example the timing of the practical session in ORT may need to be changed to fit with the peak diarrhoea patient flow. If the doctors and paramedics are trained at the same time and there is only one TV and VCR available, the agenda may need to be altered allowing the 2 groups to view the video modules at the same time.

Location.

One room is required for training the doctors and one room for training the paramedics. The size of the rooms required will depend upon the number of participants. Practical Sessions will be conducted in the OPD, ORT unit and In-patient ward. The Joint Session should take place in the larger of the 2 classrooms so that all the doctors and paramedics can be accomodated.

Training Materials.

These will have to be arranged in the 2 classrooms allocated for the doctor and paramedic training.

Training Materials for Doctors' Classroom.
Prototype Agenda for doctors (A-4).
DTU physician's Training Kit (bag containing notebook, cellotape, marker pens, ORT equipment).
Trolley/table for ORT equipment.
Board or Flipchart.
TV and VCR.
UNICEF Diarrhoea Management Video, urdu, (2 copies).
ITV "Vicious Circles" video, (2 copies).
Posters P-1,2,3,4,5,6.
Handouts for Doctors (one for each doctor).

Training Materials for Paramedics' Classroom.
Prototype Agenda for Paramedics (A-5) and Paramedic Classroom Session Module (A-6).
DTU LHV's Training Kit (bag containing notebook, cellotape, doll, ORT equipment, rice, le[illegible]s)
Trolley or table for ORT equipment.
TV and VCR.
UNICEF Di[illegible]oea Management video, urdu (2 copies).
ITV "Vicious Circles" video, (2 copies).
Posters P-1,2,3,4,5,6 in urdu.
Handouts for Paramedics (one for each literate paramedic).

Time Required. Allow 8 hours.

<u>Preparation.</u>

1. On arrival meet MS/MOIC to briefly explain the objectives of the Training Session and obtain permission to proceed. Request DTU trained doctor and MS/MOIC to assist with the training. Show them the Doctor's and Paramedics' Agenda (A-4,5) and Handouts (A-2,3). Ask the MS/MOIC to make the inaugural speech.

2. Prepare the rooms for the training. One room is needed for the doctors and one for the paramedics. Bring all the training materials from the DTU vehicle. The DTU driver can help with this. Set up the TVs and VCRs and check they are working before you start. Display posters (P-1,2,3,4,5,6) so that all the participants can see them. Organise the seating so that there are enough chairs for all the participants. Set up ORT equipment on a table or a trolley.

3. Find out how many diarrhoea cases there are in the OPD, ORT unit and In-patient ward. This will help with the organisation of the Practical Session in ORT. Explain to the health facility staff that they should inform you of any interesting diarrhoea cases that come in, so that you can use them during the Training Session.

Part 1. CLASSROOM SESSION. Time: 5 hours.

Objectives. See Section 2.2 for Knowledge and Basic Skills Training Objectives.

<u>Procedure.</u>

1. DTU physician and assistant trainers call all the doctors into one room and start the training following the prototype agenda for doctors (A-4).

2. DTU LHV and assistant trainers calls all the paramedics into another room and start the training following the prototype agenda for paramedics (A-5) and the Paramedics Classroom Session Module (A-6)

3. DTU physician and LHV should make a list of the names and designations of all the participants in their Follow up Visit notebooks.

Part 2 PRACTICAL SESSION. Time: 2 hours.

Training Objectives. See Section 2.2 for Basic and Additional Skills training objectives.

Preparation.

1. Trainers allocate diarrhoea cases in OPD, ORT unit and Inpatient wards to the participants. Participants may have to be divided into groups if there are not enough diarrhoea cases.

2. Trainers give out clinical forms (A-7,8) and a skills checklist (A-9,10) to each participant.

Procedure.

1. The participants use the clinical forms (A-7,8) to examine diarrhoea cases.

2. Trainers supervise participants by observing them, checking filled in clinical forms (A-7,8) and using the skills checklists (A-9,10)

3. Trainers encourage the participants to use their handouts (A-2,3) and the posters (P-1,2,3,4) for assessing cases, selecting treatment plans and advising parents.

6. At the end of the Practical Session participants present the cases they have treated to the group. The trainers lead a discussion comparing the participants management with the Assessment and Treatment Guidelines and Policy (P-1,2,3). This can take place in the practical area or back in the classroom, depending upon the availablity of space.

Part 3. JOINT SESSION.

Preparation.

1. Request MS/MOIC to attend this session.

2. Display poster (P-3).

Procedure.

1. Trainer calls all the doctors and paramedics together into one room for a joint training session on the National Diarrhoea Treatment Policy (P-3).

2. Trainer explains each item in the policy pointing to the poster (P-3) and asking participants to look at their handouts (A-2,3).

3. Trainer asks participants if they have any questions.

4. Trainer asks MS/MOIC to comment on the policy and its implementation in the health facility.

8.3 Step 3. The PLANNING SESSION.

The Planning Session is divided into 2 parts:
Part 1. Health Facility Visit, 2 hours.
Part 2. Development of a Plan of Action, 2 hours.

This should be a joint session with the doctors and paramedics together. If the number of participants is too large they can be divided into 2 groups. The DTU physician and MS/MOIC can visit the health facility with the doctors and the DTU LHV and DTU-trained doctor can visit with the paramedics. The 2 groups can then meet up for a joint session to develop the Plan of Action.

Objectives. See Section 2.3

Training Materials.

Posters, P-1,2,3.
Diarrhoea Policy Checklists A-11,12 (one leaflet size for each literate participant.)
Diarrhoea Policy Checklist, one poster size.
Flipchart/Board and pens/chalk.
Health Facility Diarrhoea Management Checklist completed by the DTU physician for that health facility.

Time Required.

Allow 4 hours, 2 hours for the Health Facility Visit (Part 1) and 2 hours for the Development of a Plan of Action (Part 2). The Health Facility visit should be scheduled in the morning, to correspond with the peak flow of diarrhoea cases attending OPD and the ORT unit.

Location.

Part 1. Classroom and then a visit to the OPD, ORT unit, Inpatient wards, in areas where diarrhoea cases are being managed.

Part 2. Classroom. In a room large enough to take all the participants.

Part 1, Health Facility Visit

Preparation.

1. Obtain permission from the MS/MOIC to visit the health facility and request that s/he attends the whole Planning Session.
2. Explain to health facility staff that the participants will be visiting the OPD, ORT unit and Inpatients to see diarrhoea cases and apologise for any inconvenience caused.
3. Prepare the classroom. Have enough seats for all the participants. Display Pakistan's National Diarrhoea Treatment Policy poster (P-3) in the classroom, so that all the participants can see it clearly.

Procedure.

1. Call the participants together into the classroom.

2. Hand a Diarrhoea Policy Checklist (A-11, 12) to each literate participant. Non-literate participants should each be teamed up with one literate participant who will work with them on the visit.

3. Explain that the Diarrhoea Policy Checklist is just like the poster (P-3) which they are already familiar with from the Training Session. Go through each question in the checklist and explain that the participants will have to check for each one in the OPD, ORT unit and Inpatient ward and write yes or no in the "Your Observations" column.

4. Make a visit of the health facility with the participants, visiting the OPD, ORT unit and Inpatient ward and help them record their observations in the Diarrhoea Policy Checklist (A-11,12). If there is a large group of participants divide them into 3 groups, one group to visit OPD, one ORT unit and one the Inpatient ward. The DTU physician, DTU LHV and DTU trained doctor should each supervise one group. Arrange a set time (after 2 hours) for all the groups to return to the classroom.

5. Return to the classroom.

Part 2. The Development of a Plan of Action.

Preparation.

1. Display the poster sized Diarrhoea Policy Checklist (A-11,12) in the classroom so that all the participants can see it.

Procedure.

1. Divide the participants into 2-3 small groups.

2. Ask small groups to discuss their observations amongst themselves, using their completed Diarrhoea Policy Checklists (A-11,12).

3. Trainer asks the small groups to give suggestions on how to fill the "Your Observations" column of the poster sized Diarrhoea Policy Checklist (A-11,12). After discussion trainer writes in this column.

4. Trainers ask participants to give suggestions on what should happen for good diarrhoea management. After discussion trainer writes in the "Diarrhoea Policy Objectives" column.

5. Trainer asks participants to compare the first column "Your Observations" with the second column " Diarrhoea Policy Objectives" Trainer explains that when these 2 columns do not agree, improvements are required. Trainer discusses with the participants what these improvements should be and writes them in the "Improvements Required" column.

6. Trainer discusses with participants how these improvements can be achieved and writes their answers in the "How" , "By whom" and "When" columns. The completed form is now the Plan of Action for that health facility.

7. The Plan of Action is discussed and then hopefully endorsed by the MS/MOIC.

8. The date of the Evaluation Visit is decided upon by the training team and MS/MOIC and the participants informed.*

* Optional and will depend upon the availability of provincial health staff.

8.4 Step 4. POST-TRAINING EVALUATION VISIT

The Post-Training Evaluation Visit should be scheduled 1 month after the Training and Planning Sessions. The DTU physician and provincial health official visit the health facility together. They record their observations of the diarrhoea management using the Health Facility Diarrhoea Management Checklist (A-1), which has been previously filled in by the DTU physician at the Pre Training Evaluation Visit.

Objectives. See Section 2.4 for details.

Materials Required.

Health Facility Diarrhoea Management Checklist (A-1) already filled by DTU physician at Pre-Training Visit.
Plan of Action for this health facility developed at Planning Session.

Time Required. Allow 2-4 hours plus travel time.

Location.

A health facility where staff have recently been trained, by the DTU training team, and have developed a Plan of Action for improvements. The evaluation team will visit the OPD, ORT unit and Inpatient wards.

Preparation for Visit.

1. DTU physician should arrange a convenient date for visit with the provincial health officer responsible for supervising the diarrhoea management at the health facility and with the MS/MOIC. One option would be to decide upon date at end of Follow up Planning Session.

Procedure.

1. On arrival the DTU physician and provincial health officer visit the MS/MOIC and request that s/he joins them on the Evaluation Visit. The DTU trained doctor should also be requested to join them. The MS/MOIC should be shown a copy of the Health Facility Diarrhoea Management Checklist (A-1).

2. The DTU physician, provincial health official, MS/MOIC and DTU-trained doctor visit the OPD, ORT unit and Inpatient wards and record their observations in the Health Facility Diarrhoea Management Checklist (A-1).

3. The evaluation team return to the MS/MOIC's office and compare the observations on the Pre-Training Visit, the observations on this Post-Training Visit with the Plan of Action (A-11) for improvements to this health facility. A further Plan of Action (A-11) should be made on any improvements still required to achieve the Diarrhoea Policy Objectives and a copy of this kept by each member of the evaluation team.

4. The provincial health officer discusses with the MS/MOIC the date of the next supervisory visit.

PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME

FOLLOW-UP VISITS

TRAINER'S GUIDE

ATTACHMENTS.

A 1-13	Checklists/Forms/Handouts/Paramedic Training Module
C 1-11	Case Studies.
T 1-5	Introductory Talks for Doctors.
V 1-4	Video Information.
P 1-6	Posters.

ATTACHMENTS.

CHECKLISTS/FORMS/AGENDAS/HANDOUTS/MODULES.

A-1 Health Facility Diarrhoea Management Checklist.
A-2 Handout for Doctors.
A-3 Handout for Paramedics.
A-4 Prototype Agenda for Doctors.
A-5 Prototype Agenda for Paramedics.
A-6 Paramedic Classroom Session Module.
MAIN POINTS FOR PARAMEDICS. (included in A-6)
MP-1 Introduction to DTU/ORT Unit Programme.
MP-2 Introduction to Diarrhoea.
MP-3 Oral Rehydration Therapy.
MP-4 The limited role of drugs in diarrhoea treatment.
MP-5 When to refer a child for help.
MP-6 Prevention of Diarrhoea.
MP-7 Talking with Parents, the 4 Rules of home treatment.
A-7 Clinical Form for Doctors.
A-8 Clinical Forms for Paramedics.
A-9 Skills Checklist for Doctors.
A-10 Skills Checklist for Paramedics.
A-11 Diarrhoea Policy Checklist (english), poster and leaflet.
A-12 Diarrhoea Policy Checklist (urdu), poster and leaflet.
A-13 Diarrhoea Policy Objectives, poster and leaflet.

CASE STUDIES.

For Doctors.
C-1 No Dehydration.
C-2 Mild-Moderate Dehydration.
C-3 Severe Dehydration.
C-4 Acute Dysentery.
C-5 Complicated Cases.

For Paramedics:-
C-6 No Dehydrtion
C-7 Mild-Moderate Dehydration.
C-8 Severe Dehydration
C-9 Dysentery.
C-10 Persistent Diarrhoea.

INTRODUCTORY TALKS FOR DOCTORS

T-1 Objectives of DTU/ORT Unit Programme.
T-2 Aetiology of Diarrhoea.
T-3 Indications for Drugs in Diarrhoea.
T-4 Management of Acute Diarrhoea.
T-5 Talking with Parents.

VIDEO

V-1 UNICEF Diarrhoea Management Video Users' Guide (english).
V-2 UNICEF Diarrhoea Management Video Users' Guide (urdu)
V-3 UNICEF Diarrhoea Management Video Script (english).
V-4 UNICEF Diarrhoea Management Video Script (urdu)

POSTERS.

P-1 Guidelines for Assessment of Dehydration, poster and leaflet.
P-2 Guidelines for Treatment of Diarrhoea, poster and leaflet.
P-3 Pakistan's National Diarrhoea Treatment Policy, poster and leaflet
P-4 Oral Rehydration Therapy, 8 pictures, (urdu) poster and leaflet.
P-5 Oral Rehydration Therapy, 3 pictures (urdu).
P-6 Photograph of Twins, one breastfed and one bottlefed

PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME

FOLLOW-UP VISITS.

TRAINER'S GUIDE

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A-3 Handout for Paramedics.
A-4 Prototype Agenda for Doctors.
A-5 Prototype Agenda for Paramedics.

A-6 Paramedic Classroom Session Module.
MAIN POINTS FOR PARAMEDICS. (included in A-6)
MP-1 Introduction to DTU/ORT Unit Programme.
MP-2 Introduction to Diarrhoea.
MP-3 Oral Rehydration Therapy.
MP-4 The limited role of drugs in diarrhoea treatment.
MP-5 When to refer a child for help.
MP-6 Prevention of Diarrhoea.
MP-7 Talking with Parents, the 4 Rules of home treatment.

A-7 Clinical Form for Doctors.
A-8 Clinical Forms for Paramedics.
A-9 Skills Checklist for Doctors.
A-10 Skills Checklist for Paramedics.
A-11 Diarrhoea Policy Checklist (english), poster and leaflet.
A-12 Diarrhoea Policy Checklist (urdu), poster and leaflet.
A-13 Diarrhoea Policy Objectives, poster and leaflet.

HEALTH FACILITY DIARRHOEA MANAGEMENT CHECKLIST

This checklist should be filled out at the health facilities of DTU workshops trainees BEFORE they attend the training (PRE-TRAINING) and AFTER they attend the training (POST-TRAINING). A copy of this checklist should be given to the trainee to help prepare for the PLANNING SESSION on the last day of the DTU Workshop.

This checklist should be used as the basis for the PLANNING SESSION.

Name of visiting DTU Physician: _____ Name of DTU: _____
District Health Officer: _____
Name of Health Facility: _____ District: _____
MS and/or Medical Officer Incharge: _____ Phone No: _____

Type of Facility: [ ] Teaching Hospital [ ] Tehsil Hospital [ ] Major Hospital
[ ] Rural Health Center [ ] District Headquarter Hospital [ ] Other _____

Number of diarrhoea cases per month: High season: _____ Low season: _____

	TOTAL STAFF IN HEALTH FACILITY	NUMBER OF STAFF TRAINED DURING VISIT			
		POST-TRAINING VISIT 1 Date: _____	POST-TRAINING VISIT 2 Date: _____	POST-TRAINING VISIT 3 Date: _____	POST-TRAINING VISIT 4 Date: _____
Medical Officers					
Nurses					
LHVs					
Dispensers					
Health Technicians					
Vaccinators					
Dais					
Others					
Name and designation of visiting government official					

SUMMARY OF HEALTH FACILITY ASSESSMENT
(Fill this part only AFTER you complete this whole form!

	PRE-TRAINING			POST-TRAINING VISIT 1			POST-TRAINING VISIT 2			POST-TRAINING VISIT 3			POST-TRAINING VISIT 4		
(write "Yes" or "No")	In OPD	In OPT	In-Patient	In OPD	In OPT	In-Patient	In OPD	In OPT	In-Patient	In OPD	In OPT	In-Patient	In OPD	In OPT	In-Patient
Is Diarrhoea case management adequate?															
Is staff training in diarrhoea management adequate?															

Problems Identified:

Actions Required/Taken:

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Oct/Nov, 1990

4/6

Problems Identified:	Actions Required/Taken:

A-1

DIARRHOEA MANAGEMENT CHECKLIST	PRE-TRAINING (Date ____)			POST-TRAINING VISIT 1 (Date ____)			POST-TRAINING VISIT 2 (Date ____)			POST-TRAINING VISIT 3 (Date ____)			POST-TRAINING VISIT 4 (Date ____)		
(write "Yes" or "No")	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient
ORT EQUIPMENT															
ORT equipment adequate? (*check equipment list*)															
Comments															
EDUCATIONAL MATERIALS															
Posters on the walls with good ORT messages? (*breastfeeding, preparation & administration of ORS, feeding, hygiene*)															
Posters on the walls with bad ORT messages? (*formula milks, feeding bottles, commercial foods, anti-diarrhoeals, etc.*)															
Are parents given mothers leaflets?															
Comments.															

WITH GOVERNMENT SUPERVISORY OFFICIAL, IF PRESENT, FILL THESE SECTIONS BELOW

(write "Yes" or "No")	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient
RECORD KEEPING															
All diarrhoea cases registered? (*Please copy 5 records from register*)															
Monthly reports of diarrhoea cases prepared and sent?															
Do staff need training in record keeping?															
Comments:															
HYGIENE															
General hygiene adequate?															
Toilet facilities adequate?															
Hand washing facilities adequate?															
Comments:															
HEALTH FACILITIES SUPPLIES															
ORS packets adequate? If no, how many are needed?															
Antibiotics for dysentery adequate? If no, how many are needed?															
Ringers Lactate adequate? If no, how many are needed?															
IV equipment adequate? (*cannulas, poles, scalp veins, NG tubes.*)															
DRUGS WHICH SHOULD NOT BE IN STOCK															
Antidiarrhoeals in stock? There should be NO antidiarrhoeals.															
Comments:															

DIARRHOEA MANAGEMENT CHECKLIST	PRE-TRAINING			POST-TRAINING VISIT 1			POST-TRAINING VISIT 2			POST-TRAINING VISIT 3			POST-TRAINING VISIT 4		
	Date _____			Date _____			Date _____			Date _____			Date _____		
(write "Yes" or "No")	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient
ORT															
Do ALL diarrhoea cases drink ORS or other fluids?															
Does staff demonstrate how to prepare ORS?															
Does staff explain how to give ORS? *(how much, how often, how long)*															
Is special care given to neonates to avoid excessive use of ORS and to assist breast-feeding?															
Are parents of diarrhoea cases given 1 to 2 ORS packets to take home?															
COMMENTS:															
CONTINUED FEEDING															
Is breastfeeding encouraged for ALL infants?															
Is breastfeeding continued during rehydration?															
Is food appropriate for age given no later than 4 hours after rehydration is started?															
Are milk feeds diluted? *(milk should NOT be diluted)*															
Is milk mixed with cereals and given during maintenance?															
Are feeding bottles used? *(feeding bottles should NOT be used)*															
COMMENTS:															
DRUGS *(Antidiarrhoeals, Antiemetics and Antispasmodics should not be used in health facility nor prescribed for diarrhoea)*															
Are Antidiarrhoeals used/prescribed?															
Are Antiemetics used/prescribed?															
Are Antispasmodics used/prescribed?															
Are Antibiotics ONLY prescibed for dysentery and systemic infection?															
Is only a single Antibiotic prescribed?															
COMMENTS:															
I.V. THERAPY															
Is I.V. ONLY used for SEVERE dehydration?															
Is I.V. stopped within 6 hours of initiation? *(I.V. should be stopped and ORS started)*															
Is Ringers Lactate used for severe dehydration?															
Is I.V. patient started on ORS as soon as child can drink?															
COMMENTS:															
IMMUNIZATION															
Are immunizations of mothers and children up to date before leaving?															
COMMENTS:															
HYGIENE															
Does staff wash hands after each case?															
COMMENTS:															
EXIT INTERVIEW WITH PARENTS *(Check parent knows these 4 things before leaving)*															
1. Give more fluids															
2. Continue foods *(including breastmilk)*															
3. When to bring child back															
4. Prevention of diarrhoea															
COMMENTS:															

Is performance of staff in diarrhoea management adequate? *(Decide by looking at the checklist for case management)*. If not adequate, give further training and write number of staff trained at this visit by you and the DTU LMV on the front page

PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

FOLLOW-UP VISITS

HANDOUT FOR DOCTORS (A-2)

CONTENTS:

Standard Guidelines for Assessment of Dehydration.
Standard Guidelines for Treatment of Diarrhoea.
Clinical Form.
Skills Checklist.
Pakistan's National Diarrhoea Treatment Policy.

STANDARD GUIDELINES ON

HOW TO ASSESS YOUR PATIENT FOR DEHYDRATION DUE TO DIARRHŒA

EVALUATE child for degree of dehydration according to the Table below:

	DEGREE OF DEHYDRATION		
	NONE (no visible signs of dehydration)	**MILD TO MODERATE**	**SEVERE**
ASK			
• Diarrhœa	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day
• Thirst	Normal	Greater than normal	Unable to drink
• Vomiting	None or a small amount	Some	Very frequent
• Urine	Normal	Small amount, dark	No urine for 6 hours
LOOK			
• Condition	Well and alert	Unwell, sleepy or irritable	Very sleepy, unconscious, limp, having convulsions
• Eyes	Normal	Sunken	Dry and sunken
• Tears	Present	Absent	Absent
• Mouth and Tongue	Wet	Dry	Very dry
• Breathing	Normal	Faster than normal	Very fast and very deep
FEEL			
• Skin	Abdominal pinch goes back immediately	A pinch goes back slowly in 1-2 seconds	A pinch goes back very slowly in 2-3 seconds or longer
• Pulse	Normal	Faster than normal (more than 110/min.)	Very fast, weak, or you cannot feel it (more than 140/min.)
• Fontanelle (in infants)	Normal	Sunken	Very sunken
WEIGH	Loss of less than 5% of body weight	Loss of 5-10% of body weight	Loss of more than 10% of body weight
DECIDE	The patient has **NO** signs of dehydration	If the patient has 2 or more of these signs, he has **MILD TO MODERATE** dehydration	If the patient has 2 or more of these signs, he has **SEVERE** dehydration

STANDARD TREATMENT FOR

ALL LOOSE OR WATERY STOOLS

(DIARRHŒA / DYSENTERY)

FOR ALL CHILDREN

who visit a health facility
for loose or watery stools :

TREAT child according to the Table below.

DEGREE OF DEHYDRATION	AGE OF CHILD		
	Up to 4-6 months (exclusively breast fed)		More than 4-6 months (partially breast fed)
NONE (No visible sign of dehydration)	• Breastfeed more often.		• Breastfeed more often. • Give more fluids such as rice water, lassi and plain water. • Continue soft foods such as khichri, yogurt and mashed banana.
MILD TO MODERATE	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers.
	10-20 ml ORS per kilogram body weight per hour		
SEVERE	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN. IF CHILD WANTS MORE WATER, GIVE IT.		

- Observe parent prepare and feed ORS in the facility.
- Do not give antidiarrhoeal drugs. They are dangerous and contraindicated by WHO.
- If child vomits, wait 10 minutes and then give small amounts of ORS slowly.
- After 4-6 hours, reassess the child using the assessment chart, then choose the suitable treatment.

★ *For Bloody Stools: Give ORS and Cotrimoxazole (5 mg TMP/kg dose twice daily for 5 days). If child is not better in 48 hours, refer to hospital.*

★ *If the child is above 2 years of age and comes from a community where confirmed cholera cases are currently occurring, suspect cholera and give oral tetracycline (50 mg/kg/day in four divided doses for three days) after the child is rehydrated. Tetracycline is not recommended for routine use in children under 8 years of age.*

EXPLAIN to parent and ensure that parent understands that:

- Child should return to center or physician if (i) the child shows any sign of dehydration, or (ii) the child does not improve, or (iii) diarrhoea lasts more than 2-3 days.
- Child should continue to breastfeed often.
- Child should drink more liquids than usual.
- Child should continue eating soft foods like yogurt, khichri, mashed banana, etc. 5 to 7 times a day.
- After diarrhoea stops, child should eat one extra meal each day for two weeks.

GIVE parents two ORS packets to take home to continue treatment.

DIARRHOEA CLINICAL FORM

*** START GIVING ORS NOW ***

Name of Health Facility: _____

Patient Registration Number: _____ Date: _____

Patient Name: _____ Age: _____ [ ] Male [ ] Female

Address: _____ [ ] Urban [ ] Rural

I. HISTORY OF CURRENT DIARRHOEA EPISODE

1. Duration of Diarrhoea _____ days
2. Total number of stools in 24 hours _____
3. Blood in stool [ ] yes [ ] no
4. Watery stool [ ] yes [ ] no
5. Vomiting (last 24 hours) [ ] yes [ ] no
   If yes number of times _____
6. Abdominal Pain [ ] yes [ ] no
7. Urine (in last 6 hours) [ ] yes [ ] no
8. Are other illnesses present? [ ] yes [ ] no
   If yes what? _____
9. Past history of diarrhoea [ ] yes [ ] no
   If yes. When? _____

ACTIONS TAKEN BY PARENT DURING DIARRHOEA

1. Breastfeeding [ ] never [ ] more [ ] usual [ ] less [ ] stopped
2. Other Milks [ ] never [ ] more [ ] usual [ ] less [ ] stopped
3. Fluids [ ] never [ ] more [ ] usual [ ] less [ ] stopped
   If yes, what? _____
4. Foods [ ] never [ ] more [ ] usual [ ] less [ ] stopped
   If yes what? _____
5. Did parent give ORS? [ ] yes [ ] no
6. Did parent prepare ORS correctly? [ ] yes [ ] no
7. Medicine given [ ] yes [ ] no
   If yes, what? _____
8. Did parent do anything else for diarrhoea [ ] yes [ ] no
   If yes what? _____

Conclusion Action is [ ] Adequate [ ] Inadequate

II. DIET PRIOR TO DIARRHOEA

Breast feeding	[ ] yes	[ ] no		
Bottle feeding	[ ] yes	[ ] no	If yes what? _____	How many times/day? _____ How much/day? _____
Fluids	[ ] yes	[ ] no	If yes what? _____	How many times/day? _____ How much/day? _____
Foods	[ ] yes	[ ] no	If yes what? _____	How many times/day? _____ How much/day? _____

Conclusions: Diet is [ ] Adequate [ ] Inadequate

III. EXAMINE THE CHILD AND USE THIS CHART TO SELECT THE TREATMENT PLAN (Circle Answers)

	NO Dehydration Plan-A	MILD-To-MODERATE (SOME) Dehydration Plan-B	SEVERE Dehydration Plan-C	Other problems e.g. Ear, Chest, etc
Diarrhoea	Less than 4 liquid stools/day	4-10 liquid stools/day	More than 10 liquid stools/day	
Vomiting	None or small amount	Some	Very frequent	
Thirst	Normal	Greater than Normal	Unable to drink	
Urine	Normal	A small amount	No Urine for 6 hours	
Condition	Well, alert	Unwell, sleepy, irritable	Very sleepy, unconscious floppy or having fits	
Fontanelle	Normal	Sunken	Very sunken	
Eyes	Normal	Sunken	Very dry & sunken	
Tears	Present	Absent	Absent	
Mouth & Tongue	Wet	Dry	Very dry	
Breathing	Normal	Faster than normal	Very fast and deep	
Skin	Pinch goes back quickly	Pinch goes back slowly	Pinch goes back very slowly	
Pulse	Normal	Faster than normal	Very fast, weak, can't feel	
	Child has No signs of dehydration	If 2 or more of these signs child has Mild Moderate dehydration	If 2 or more of these signs child has SEVERE dehydration	

* Temperature °C _____ * Weight in Kgs _____ then plot on Growth Chart

Immunization: Child (under 2 years of age) BCG [ ] DPT - Polio I [ ] II [ ] III [ ] Booster [ ] Measles [ ]
Mother TTi [ ] TT II [ ] TT III [ ] TT IV [ ] TT V [ ]

IV. ASSESSMENT AND TREATMENT

1. Duration of Diarrhoea	[ ] Less than 7	[ ] 7-13 days	[ ] Persistent (14 + days)
2. Diarrhoea is	[ ] Watery	[ ] Non-watery	[ ] Bloody
3. Dehydration Status	[ ] None	[ ] Mild-Moderate/Some	[ ] Severe
4. Diarrhoea Treatment Plan	[ ] A (None)	[ ] B (Mild-Moderate Some)	[ ] C (Severe)
5. Nutrition Status	[ ] Normal	[ ] Grade I [ ] Grade II	[ ] Grade III
6. Nutrition Treatment			
7. Treatment of Other Illnesses/Complications			
8. Medicines prescribed			
9. Immunization Status	[ ] Up to date	[ ] Not up to date	[ ] Refer for immunization

V. OUTCOME:

[ ] **Treated & Sent Home** [ ] **Admitted** [ ] **Died** (God Forbid)
[ ] Mother and Child Sent for immunization

Federal CDD Cell, NIH-MOH, GOP

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TREATMENT PLANS

Degree of Dehydration	AGE OF CHILD		
	Up to 4-6 months (exclusively breastfed)		More than 4-6 months (partially breastfed)
NONE (Plan-A)	o Breastfeed more often		o Breastfeed more often. o Give more fluids such as rice water lassi, plain water and ORS. o Continue soft foods such as khichri yogurt and mashed banana
	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
MILD TO MODERATE (SOME) (Plan-B)	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers.
	10-20 ml ORS per kilogram body weight per hour		
SEVERE (Plan-C)	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr) Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE HOME TREATMENT	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN IF CHILD WANTS MORE WATER, GIVE IT		

SUPERVISORY CHECKLIST

FIND OUT WHETHER PARENT IS ABLE TO DO OR EXPLAIN THE FOLLOWING *(If parent is not able, then teach parent again)*	Yes	No
1. Need for home fluids (like breastmilk rice water, lassi, plain water)		
2. How to mix ORS		
3. How to give ORS (how much, how often, how long)		
4. Need to continue breastfeeding		
5. Need to continue feeding from 4 to 6 months of age (how much, how often, how long)		
6. When to bring child back (including signs of dehydration)		
7. Prevention of diarrhoea (handwashing & breastfeading)		
8. Need for up to date immunization for mother and child.		
9. MOTHER'S LEAFLET GIVEN AND EXPLAINED		

Ask parent to teach these things to all their relatives and neighbours

PATIENT'S PROGRESS SHEET (in ORT unit or ward)

Time of Arrival: _____ Time fluid therapy started _____

HISTORY	History on Arrival	HOURS AFTER ARRIVAL At 2 hours	At 4 hours	At 6 hours	At 12 hours
Number of Stools					
Episodes of vomiting					
Urine output					
ORS given (Total)					
Other fluids given (Total)					
Food given					
Medicines prescribed					
IV Fluid given (Volume)					
CLINICAL STATUS	**ON ARRIVAL**				
General Appearance					
Fontanelle					
Eyes					
Tears (present or absent)					
Mouth and Tongue					
Skin Turgor					
Respiration (per minute)					
Temperature (°C)					
Weight (kg)					
ASSESSMENT AND TREATMENT	**ON ARRIVAL**				
Dehydration Status					
Treatment Plan Chosen					
Total Fluid Input					
Total Fluid Output					
Total Fluid now Advised					

STOOL EXAMINATION

pH _____ Naked eye examination _____

Reducing substances _____ Microscopic examination _____

INTAKE-OUTPUT CHART

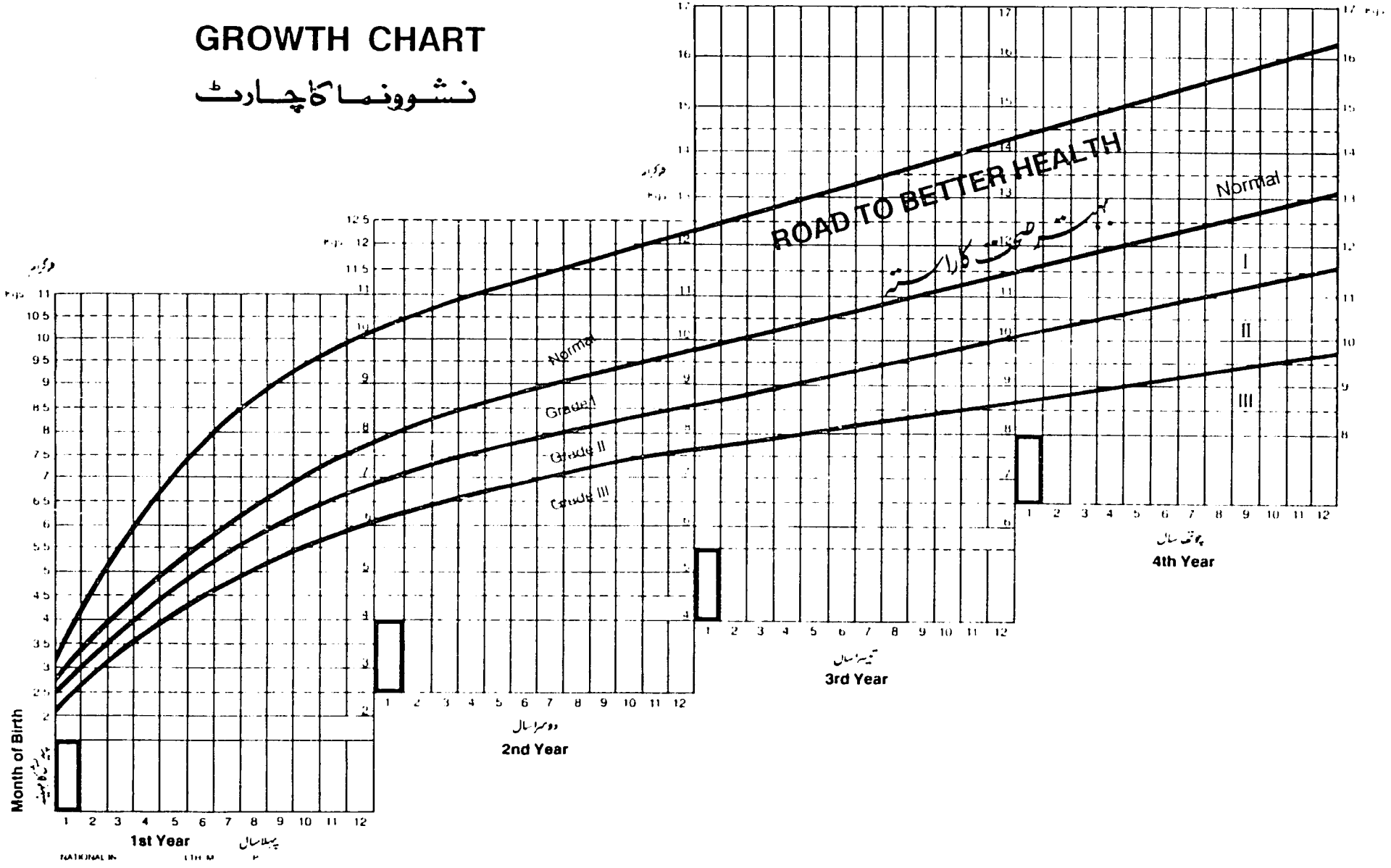
TIME	FLUID INPUT ORS (mls)	FLUID INPUT BREASTMILK (how many times)	FOOD (Name and quantity)	FLUID OUTPUT URINE (No.)	FLUID OUTPUT STOOL (No.)	FLUID OUTPUT VOMIT (No.)	REMARKS

FOLLOW-UP VISITS (Plot weights on Growth Chart on back page)

DATE	WEIGHT	CLINICAL NOTES	ADVICE

GROWTH CHART

نشوونما کا چارٹ



PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

BASIC AND ADDITIONAL SKILLS CHECKLIST (A-9)

FOR DOCTORS.

Name of Participant: _____

Name of Health Facility: _____

Name of Trainer/Observer: _____

Date: _____

This Skills Checklist has 2 purposes:

1. Participants should use it as a guide for checking their own skills or other participants' skills.
2. Trainers should use it when they evaluate how well students perform the basic and additional skills.

After observing the participant performing these skills, enter a rating and comments in the appropriate columns.

Rating: 1 = Inadequate
2 = Needs Improvement
3 = Adequate.

This log certifies that _____

has successfully demonstrated competence and earned

certification in these basic skills: YES []

in these additional skills YES []

Name of Examiner : _____ Date: _____

BASIC SKILLS CHECKLIST FOR DOCTORS. (A-9)

To manage all diarrhoea cases that come to your health facility use your handout (A-2) as a reference and follow these steps or teach paramedic staff to follow these steps:

	YES	NO	RATING	COMMENTS.
1.SET UP AN ORT TROLLEY WITH:-				
(or teach a paramedic how to.)				
1.1 ORS packets.				
1.2 Water in container (few litres)				
1.3 Litre container with lid.				
1.4 Stirring spoon.				
1.5 Cups and spoons.				
1.6 A selection of containers from the local bazaar with volumes written on them.				
2.ASSESS A DIARRHOEA CASE USING THE CLINICAL FORM (A-7). 2.1 Determine history of present diarrhoea episode.				
2.2 Determine diet prior to diarrhoea.				
2.3 Assess hydration status using Assessment Chart.				
2.4 Select Diarrhoea Treatment Plan				
None A.				
Mild-Moderate B,				
Severe C.				
2.5 Weigh child, use growth chart to determine nutrition status:				
Normal.				
Grade 1 Malnutrition.				
Grade 11 Malnutrition.				
Grade 111 Malnutrition.				

	YES	NO	RATING	COMMENTS.
2.6 Determine treatment of other illnesses/complications.				
2.7 Prescribe appropriate medicines				
2.8 Assess immunization status and refer if necessary.				
2.9 Decide which cases need to be sent home, to the ORT unit and to the ward.				
FOR CHILDREN WITH NO DEHYDRATION (Plan A) AND FOR ALL DIARRHOEA CASES BEFORE THEY GO HOME DO THE FOLLOWING:				
3.DEMONSTRATE ORS PREPARATION:				
(or teach a paramedic to:)				
3.1 Wash hands.				
3.2 Pour 1 litre/seer or 4 pao sized glasses of clean water into a container.				
3.3 Empty a whole packet of ORS into the water and stir with a clean spoon.				
3.4 Cover container.				
3.5 Explain that after 24 hours any ORS left must be thrown away and a fresh litre made.				
3.6 Check parents can do or explain these 5 steps.				
4.DEMONSTRATE ORS ADMINISTRATION:				
(or teach a paramedic to:)				
4.1 Give ORS with a cup and spoon.				
4.2 Give ORS with child sitting up.				
4.3 Give a spoon every minute. If child wants more, give more.				
4.5 Give half to one glass after each stool or vomit.				

	YES	NO	RATING	COMMENTS.
4.6 If child vomits, wait 10 mins then give ORS more slowly every 2-3 minutes.				
4.7 Check parent can do or explain these 5 steps.				
5.GIVE PARENT 2 ORS PACKETS TO TAKE HOME.				
6.TEACH PARENT THE 4 RULES OF HOME TREATMENT:-				
(or teach paramedic to explain:)				
6.1 Give more fluids.				
6.2 Continue foods (including breastmilk)				
6.3 Bring child back if signs of dehydration develop or child is not getting better.				
6.4 Help to prevent another diarrhoea episode by: washing hands before touching food, breast-feeding and NOT bottlefeeding.				
7.USE 3 STEPS TO GOOD COMMUNICATION:				
7.1 Ask parent what they do.				
7.2 Explain the 4 rules.				
7.3 Ask parent to repeat 4 rules in their own words.				

YES & NO Column: Write Yes in the "YES" column if the skill has been performed
Write No in the "NO" column if the skill has not been performed.

Rating scale:
1 = Inadequate.
2 = Needs Improvement.
3 = Adequate.

Comments Column: For any comments about performance of the skill.

ADDITIONAL SKILLS CHECKLIST FOR DOCTORS. (A-9).

To manage diarrhoea cases with Mild-Moderate Dehydration and Severe Dehydration in the ORT unit and Inpatient Ward use your handout (A-2) for reference and follow these steps or teach para-medic staff to follow these steps:

	YES	NO	RATING	COMMENTS.
1.WEIGH THE CHILD: 1.1 Explain to parent what you are doing.				
1.2 Check scales are on zero.				
1.2 Ask parent to remove child's clothes leaving one thin layer.				
1.4 Place child on scales.				
1.5 Record weight in Kgs.				
2.CALCULATE NUTRITIONAL STATUS USING GROWTH CHART. 2.1 Ask parent the child's age and month of birth.				
2.2 Find child's age on the horizental scale of growth chart on the back of the Clinical Form.				
2.3 Find the child's weight on the vertical scale.				
2.4 Make a mark where these 2 lines meet.				
2.5 Check to see whether mark falls into the Normal, Grade 1, Grade 11 or Grade 111 part of the growth chart.				
2.6 Record the nutritional status.				
3.RECORD INFORMATION IN ORT REGISTER (if used in your Health Facility).				

	YES	NO	RATING	COMMENTS.
4. CALCULATE VOLUME OF ORS REQUIRED IN 4-6 HOURS (using weight rather than age to calculate volume).				
4.1 Calculate using 10-20 ml/Kg/hour				
5. MONITOR AMOUNT OF ORS GIVEN AND RECORD THIS ON PATIENT'S INPUT/OUTPUT CHART.				
5.1 Record name of child on input/output chart.				
5.2 Record amount of ORS required				
5.3 Record time ORS was started.				
5.4 Record every 200 ml cup given.				
5.5 Add extra ORS for every stool/vomit and record amount:				
Under 1 yr. give extra 100 mls				
Over 1 yr. give extra 200 mls.				
6. TEACH PARAMEDIC HOW TO ADMINISTER ORS AND THEN SUPERVISE THEM SHOWING PARENT.				
6.1 Show parent how to give a spoon of ORS every minute using the seconds hand of the ORT unit clock as your reference.				
6.2 Deal with difficulties administering ORS:				
Explain that if a child is thirsty he will drink the ORS too quickly and vomit.				
Explain ORS helps to reduce the vomiting.				
7. REASSESS HYDRATION STATUS EVERY 1-2 HOURS USING THE ASSESSMENT CHART (A-2).				

	YES	NO	RATING	COMMENTS.
8.HELP PARAMEDIC STAFF ENCOURAGE MOTHER TO CONTINUE BREASTFEEDING.				
8.1 Deal with any breastfeeding questions paramedic staff may have.				
9.GIVE SOFT FOODS LIKE KITCHRI, BANANA, YOGHURT TO CHILDREN OVER 4 MONTHS AS SOON AS THEY CAN EAT.				
9.1 Have food prepared every day or ask parents to bring from bazaar.				
10.SEND CHILD HOME WHEN ALL SIGNS OF DEHYDRATION HAVE DISAPPEARED.				
FOR CHILDREN WITH SEVERE DEHYDRATION TREATED WITH IV THERAPY:				
11.CALCULATE IV FLUID VOLUME REQUIRED (using weight rather than age.) Under 1 year 25ml/kg/hour.				
Over 1 year 30 ml/kg/hour.				
12.MONITOR AMOUNT OF IV FLUID REQUIRED AND GIVEN ON AN INPUT/OUTPUT CHART.				
13.MONITOR PATIENTS HYDRATION STATUS REGULARLY AND RECORD FINDINGS, EVERY 2 HOURS UNTIL PATIENT IS REHYDRATED, THEN EVERY 6 HOURS.				
13.1 Check hydration is improving				
13.2 Check for signs of over-hydration like eye swelling.				
14.ENCOURAGE PARAMEDICS AND PARENT TO START THE FOLLOWING AS SOON AS CHILD CAN DRINK AND EAT: 1. ORS.				
2. Breastfeeding,				
3. Soft foods.				
15.DISCONTINUE IV THERAPY AS SOON AS APPROPRIATE (usually within 6 hours of initiation.)				

DIARRHOEA MANAGEMENT CHECKLIST (write "Yes" or "No")	OBSERVATIONS OF CURRENT MANAGEMENT			DIARRHOEA POLICY OBJECTIVES			IMPROVE
	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	
O R T							
Do ALL diarrhoea cases drink ORS or other fluids?							
Does staff demonstrate how to prepare ORS?							
Does staff explain how to give ORS? *(how much, how often, how long)*							
Is special care given to neonates to avoid excessive use of ORS and to assist breast-feeding?							
Are parents of diarrhoea cases given 1 to 2 ORS packets to take home?							
CONTINUED FEEDING							
Is breastfeeding encouraged for ALL infants?							
Is breastfeeding continued during rehydration?							
Is food appropriate for age given no later than 4 hours after rehydration is started?							
Are milk feeds diluted? *(milk should NOT be diluted)*							
Is milk mixed with cereals and given during maintanance?							
Are feeding bottles used? *(feeding bottles should NOT be used)*							
DRUGS *(Antidiarrhoeals, Antiemetics and Antispasmodics should not be used in health facility nor prescribed for diarrhoea)*							
Are Antidiarhoeals used/prescribed?							
Are Antiemetics used/prescribed?							
Are Antispasmodics used/prescribed?							
Are Antibiotics ONLY prescibed for dysentery and systemic infection?							
Is only a single Antibiotic prescribed?							
I.V. THERAPY							
Is I.V. ONLY used for SEVERE dehydration?							
Is I.V. stopped within 6 hours of initiation? *(I.V. should be stopped and ORS started)*							
Is Ringers Lactate used for severe dehydration?							
Is I.V. patient started on ORS as soon as child can drink?							
IMMUNIZATION							
Are immunizations of mothers and children up to date before leaving?							
HYGIENE							
Does staff wash hands after each case?							
EXIT INTERVIEW WITH PARENTS *(Check parent knows these 4 rules before leaving)*							
1. Give more fluids							
2. Continue foods *(including breastmilk)*							
3. When to bring child back							
4. Prevention of diarrhoe							

ENTS REQUIRED	HOW CAN IMPROVEMENTS BE MADE?	BY WHOM?

PAKISTAN'S NATIONAL DIARRHOEA TREATMENT POLICY

ORAL REHYDRATION THERAPY(ORT): ORS + BREASTMILK + FOOD

- All diarrhoea cases will drink ORS (or other fluid) prior to leaving.
- All parents will be taught how to mix ORS.
- All parents will be taught how to give ORS (how much, how often, how long) ORS will be given using a cup and spoon or dropper
- Special care/attention will be given to neonates, especially low birth weight, to avoid excessive use of ORS. Breastfeeding will be encouraged and assisted where needed.
- All parents will be given 1 to 2 ORS packets for home use.

BREASTFEEDING

- Breastfeeding will be encouraged for all infants and continued even during rehydration.

CONTINUED FEEDING

- Feeding appropriate for age will be encouraged to start no later than 4 hours after start of rehydration.
- Milk feeds will not be diluted but may be mixed with cereals and can be offered during maintenance.
- No feeding bottles will be used

DRUGS

- No anti-diarrhoeal, antiemetic, antispasmodic drugs will be used or prescribed for diarrhoea in children, especially under 5 years.
- Antibiotics will be used only for specified indications to be recorded on the patient record whenever used. This will generally be reserved for bloody dysentery or other systemic infections. Only a single antibiotic will be prescribed

IV THERAPY

- I.V. will be used only for severe dehydration as demonstrated by objective findings recorded on the patient record form.
- I.V. will be used only for rehydration and stopped within 6 hours of initiation.
- Ringer's lactate is preferred but 0.9% Saline with 5% Dextrose is an acceptable alternative. Glucose/Dextrose solution alone will not be used.
- Patients on I.V. will be started on ORS as soon as they can drink.

IMMUNIZATION

- Ensure that no child leaves before its immunization is up-to-date (especially measles). Similarly, the mother should be given TT immunization.

HYGIENE

- Staff will demonstrate commitment to importance of personal hygiene by washing their hands after handling each patient.

PLEASE ENSURE THAT

- Parents leave only after they can explain in their own words the following:

1. **The Need for the Child to Drink More Fluids than Usual:**
   - Mix ORS correctly using local measures.
   - Use ORS correctly offering 1/2 to 1 tea cup for each stool or vomit and more if child desires.
2. **The Need for the Child to Continue Eating:**
   - Breastfeed, and if 6 months or older, state the food and the approximate amount of food to feed child.
3. **When to Bring the Child Back:**
   - Explain signs of dehydration and indications to bring child back.
4. **How to Prevent Diarrhoea:**
   - Explain the importance of handwashing, breastfeeding and danger of bottle feeding.

tional Institute of Health, DTU Meeting, March 6-8, 1988
...nistry of Health, Government of Pakistan

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PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

FOLLOW-UP VISITS

HANDOUT FOR PARAMEDICS (A-I)

CONTENTS:

Standard Guidelines for Assessment of Dehydration.
Standard Guidelines for Treatment of Diarrhoea.
Clinical Form.
ORT leaflet.
Skills Checklist.
Pakistan's National Diarrhoea Treatment Policy.

STANDARD GUIDELINES ON

HOW TO ASSESS YOUR PATIENT FOR DEHYDRATION DUE TO DIARRHŒA

EVALUATE child for degree of dehydration according to the Table below:

	DEGREE OF DEHYDRATION		
	NONE (no visible sign of dehydration)	**MILD TO MODERATE**	**SEVERE**
ASK			
• Diarrhœa	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day
• Thirst	Normal	Greater than normal	Unable to drink
• Vomiting	None or a small amount	Some	Very frequent
• Urine	Normal	Small amount, dark	No urine for 6 hours
LOOK			
• Condition	Well and alert	Unwell, sleepy or irritable	Very sleepy, unconscious, limp, having convulsions
• Eyes	Normal	Sunken	Dry and sunken
• Tears	Present	Absent	Absent
• Mouth and Tongue	Wet	Dry	Very dry
• Breathing	Normal	Faster than normal	Very fast and very deep
FEEL			
• Skin	Abdominal pinch goes back immediately	A pinch goes back slowly in 1-2 seconds	A pinch goes back very slowly in 2-3 seconds or longer
• Pulse	Normal	Faster than normal (more than 110/min.)	Very fast, weak, or you cannot feel it (more than 140/min.)
• Fontanelle (in infants)	Normal	Sunken	Very sunken
WEIGH	Loss of less than 5% of body weight	Loss of 5-10% of body weight	Loss of more than 10% of body weight
DECIDE	The patient has **NO** signs of dehydration	If the patient has 2 or more of these signs, he has **MILD TO MODERATE** dehydration	If the patient has 2 or more of these signs, he has **SEVERE** dehydration

STANDARD TREATMENT FOR

ALL LOOSE OR WATERY STOOLS

(DIARRHŒA / DYSENTERY)

FOR ALL CHILDREN

who visit a health facility for loose or watery stools:

TREAT child according to the Table below.

DEGREE OF DEHYDRATION	AGE OF CHILD		
	Up to 4-6 months (exclusively breast fed)		More than 4-6 months (partially breast fed)
NONE (No visible sign of dehydration)	• Breastfeed more often.		• Breastfeed more often. • Give more fluids such as rice water, lassi and plain water. • Continue soft foods such as khichri, yogurt and mashed banana.
MILD TO MODERATE	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers.
	10-20 ml ORS per kilogram body weight per hour		
SEVERE	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN. IF CHILD WANTS MORE WATER, GIVE IT.		

- Observe parent prepare and feed ORS in the facility.
- Do not give antidiarrhoeal drugs. They are dangerous and contraindicated by WHO.
- If child vomits, wait 10 minutes and then give small amounts of ORS slowly
- After 4-6 hours, reassess the child using the assessment chart, then choose the suitable treatment.

★ *For Bloody Stools: Give ORS and Co-trimoxazole 5 mg TMP/kg dose twice daily for 5 days. If child is not better in 48 hours refer to hospital*

★ *If the child is above 2 years of age and comes from a community where confirmed cholera cases are currently occurring, suspect cholera and give oral tetracycline (50 mg/kg/day in four divided doses for three days) after the child is rehydrated. Tetracycline is not recommended for routine use in children under 8 years of age*

EXPLAIN to parent and ensure that parent understands that:

- Child should return to center or physician if (i) the child shows any sign of dehydration, or (ii) the child does not improve, or (iii) diarrhoea lasts more than 2-3 days.
- Child should continue to breastfeed often.
- Child should drink more liquids than usual.
- Child should continue eating soft foods like yogurt, khichri, mashed banana, etc. 5 to 7 times a day.
- After diarrhoea stops, child should eat one extra meal each day for two weeks.

GIVE parents two ORS packets to take home to continue treatment.

CLINICAL FORM FOR PARAMEDICS. (A-8)

Start giving ORS NOW. Give a cup of ORS to the parent and demonstrate how to give 1 spoon every minute to the child.

1. Record the following information:

Name of patient: _____ Age: _____

Weight: _____ kgs. Nutrition status: Use growth chart _____

(If Grade 111 malnutrition refer patient to the doctor).

Temperature: _____ (if higher then normal treat with tepid sponging and ORS. If temperature does not return to normal after 1 hour, refer patient to doctor).

Duration of diarrhoea _____ days. (if more than 14 days refer patient to doctor.)

Blood in stools: Yes [] No [] (if blood is present refer case to doctor.)

Presence of other illnesses: _____

(If other illnesses are present refer patient to doctor).

Fluids given during diarrhoea : Breastmilk Yes [] No []
Other milks Yes [] No []
ORS Yes [] No []
Other fluids Yes [] No []

(If fluid therapy inadequate give fluid advice).

Foods given during diarrhoea: Yes [] No []

(If food therapy inadequate give feeding advice.)

2. Assess for Signs of Dehydration.

Assess the grade of dehydration using the Assessment chart below.

III. EXAMINE THE CHILD AND USE THIS CHART TO SELECT THE TREATMENT PLAN (Circle Answ...)				
	NO Dehydration Plan-A	MILD-To-MODERATE (SOME) Dehydration Plan-B	SEVERE Dehydration Plan-C	Other problems ie ENT, Chest, etc
Diarrhoea	Less than 4 liquid stools/day	4-10 liquid stools/day	More than 10 liquid stools/day	
Vomiting	None or small amount	Some	Very frequent	
Thirst	Normal	Greater than Normal	Unable to drink	
Urine	Normal	A small amount	No Urine for 6 hours	
Condition	Well, alert	Unwell, sleepy, irritable	Very sleepy, unconcious, floppy or having fits	
Fontanelle	Normal	Sunken	Very sunken	
Eyes	Normal	Sunken	Very dry & sunken	
Tears	Present	Absent	Absent	
Mouth & Tongue	Wet	Dry	Very dry	
Breathing	Normal	Faster than normal	Very fast and deep	
Skin	Pinch goes back quickly	Pinch goes back slowly	Pinch goes back very slowly	
Pulse	Normal	Faster than normal	Very fast, weak, can't feel	
	Child has no signs of dehydration	If 2 or more of these signs, child has Mild-Moderate dehydration	If 2 or more of these signs, child has SEVERE dehydration	

Treatment Plan for None Dehydration (Plan-A).

Treatment Plan for Some Dehydration (Plan-B)

Treatment Plan for Severe Dehydration (Plan-C)

3. Treatment Plan Selected: _____

4. Type of fluid to be given: _____

Amount of fluid to be given in the first 4-6 hours : _____

5. Treatment given:- (specify volume of fluid actually taken and time period.)

	INPUT	OUTPUT (stools, vomits, urine
1 hour		
2 hours		
3 hours		
4 hours		
5 hours		
6 hours		

6. Signs of improvement observed:-

<u>At time of discharge.</u>

7. Instructions given to parent:-

<u>Comments.</u>

Note down any problems you encountered and questions to later discussion:-

TREATMENT PLANS

Degree of Dehydration	AGE OF CHILD		
	Up to 4-6 months (exclusively breastfed)		More than 4-6 months (partially breastfed)
NONE (Plan-A)	o Breastfeed more often		o Breastfeed more often. o Give more fluids such as rice water lassi, plain water and ORS. o Continue soft foods such as khichri yogurt and mashed banana
	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
MILD TO MODERATE (SOME) (Plan-B)	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers
	10-20 ml ORS per kilogram body weight per hour		
SEVERE (Plan-C)	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr) Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE HOME TREATMENT	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN IF CHILD WANTS MORE WATER, GIVE IT		

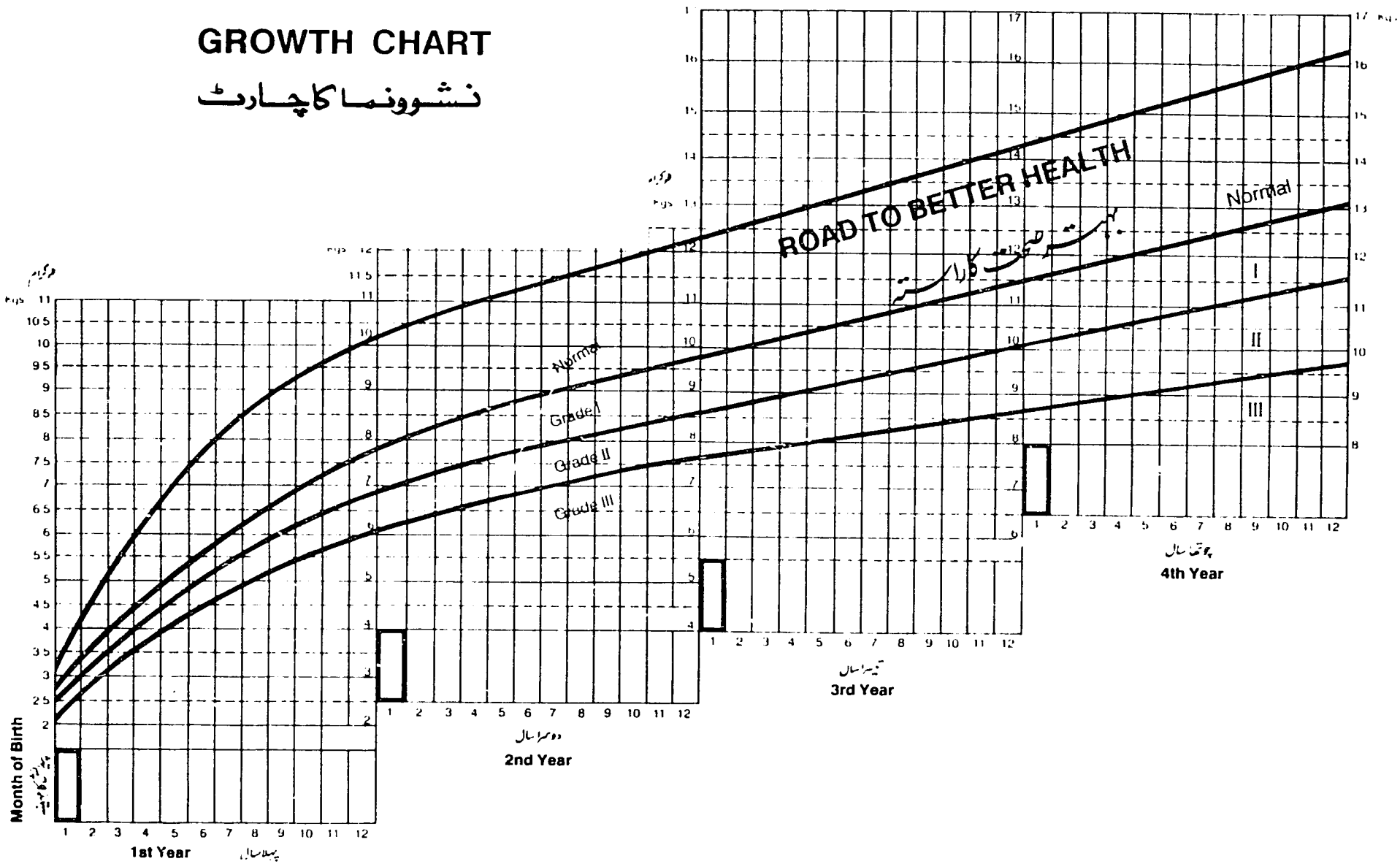
SUPERVISORY CHECKLIST

FIND OUT WHETHER PARENT IS ABLE TO DO OR EXPLAIN THE FOLLOWING *(If parent is not able, then teach parent again)*	Yes	No
1. Need for home fluids (like breastmilk rice water, lassi, plain water)		
2. How to mix ORS		
3. How to give ORS (how much, how often, how long)		
4. Need to continue breastfeeding		
5. Need to continue feeding from 4 to 6 months of age (how much, how often, how long)		
6. When to bring child back (including signs of dehydration)		
7. Prevention of diarrhoea (handwashing & breastfeeding)		
8. Need for up to date immunization for mother and child.		
9. MOTHER'S LEAFLET GIVEN AND EXPLAINED		

Ask parent to teach these things to all their relatives and neighbours

GROWTH CHART

نشوونما کا چارٹ



P-4

اور آر ایس پلانے کے علاوہ بچے کو ماں کا دودھ اور نرم غذائیں بھی دیتے رہیں۔

دست کی بیماری میں بچے کو اور آر ایس محلول پانی اس طریقے سے بنا کر پلائیں۔

FEDERAL EPI/CDD CELL, NIH, MOH, GOP

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PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

BASIC AND ADDITIONAL SKILLS CHECKLIST (A-10)

FOR PARAMEDICS.

Name of Participant: _____

Name of Health Facility: _____

Name of Trainer/Observer: _____

Date: _____

This Skills Checklist has 2 purposes:

1. Participants should use it as a guide for checking their ow skills or other participants' skills.

2. Trainers should use it when they evaluate how well students perfo the basic and additional skills.

After observing the participant performing these skills, enter a rating and comments in the appropriate columns.

Rating: 1 = Inadequate
2 = Needs Improvement
3 = Adequate.

This log certifies that _____

has successfully demonstrated competence and earned

certification in these basic skills: YES []

in these additional skills YES []

Name of Examiner : _____ Date: _____

BASIC SKILLS CHECKLIST FOR PARAMEDICS. (A-10)

To manage all diarrhoea cases that come to your health facility use your handout (A-3) as a reference and follow these steps:	YES	NO	RATING	COMMENTS.
1.SET UP AN ORT TROLLEY WITH:-				
1.1 ORS packets.				
1.2 Water in container (few litres)				
1.3 Litre container with lid.				
1.4 Stirring spoon.				
1.5 Cups and spoons.				
1.6 A selection of containers from the local bazaar with volumes written on them.				
2.ASSESS A DIARRHOEA CASE USING THE CLINICAL FORM (A-8).				
2.1 Examine child in parents arms.				
2.2 Ask if any blood in the stools.				
2.3 Ask if the following fluids were given during diarrhoea: a. Breastmilk.				
b. Other milks.				
c. ORS.				
d. Other fluids.				
2.4 Ask if foods given during diarrhoea				
2.5 Look for these signs of dehydration and record them on the assessment chart (A-3). a. Thirst				
b. Irritability				
c. Tearless eyes				
d. Sunken eyes				
e. Dry mouth and lips				

	YES	NO	RATING	COMMENTS
f. Listlessness				
g. Sunken fontanelle in infants				
h. Deep and rapid breathing				
i. Skin pinch goes back slowly				
j. Rapid heartbeat				
k. Weak, rapid pulse				
3. DETERMINE GRADE OF DEHYDRATION AND SELECT TREATMENT PLAN.				
3.1 No Dehydration, Plan A.				
3.2 Mild-Moderate Dehydration, Plan B.				
3.3 Severe Dehydration, Plan C.				
4. REFER THE FOLLOWING 5 COMPLICATED CASES TO THE DOCTOR:				
4.1 Severe Malnutrition.				
4.2 High fever that does not go down after 1 hr. with tepid sponging.				
4.3 Diarrhoea for over 14 days.				
4.4 Blood in the stools.				
4.5 Severe Dehydration.				
FOR CHILDREN WITH NO DEHYDRATION (Plan A) AND FOR ALL DIARRHOEA CASES BEFORE THEY GO HOME DO THE FOLLOWING:				
5. DEMONSTRATE ORS PREPARATION:				
5.1 Wash hands.				
5.2 Pour 1 litre/seer or 4 pao sized glasses of clean water into a container.				
5.3 Empty a whole packet of ORS into the water and stir with a clean spoon.				
5.4 Cover container.				

	YES	NO	RATING	COMMENTS
5.5 Explain that after 24 hours any ORS left must be thrown away and a fresh litre made.				
5.6 Check parents can do or explain these 5 steps.				
6.DEMONSTRATE ORS ADMINISTRATION:				
6.1 Give ORS with cup and spoon.				
6.2 Give ORS with child sitting up.				
6.3 Give a spoon every minute. If child wants more, give more.				
6.5 Give half to one glass after each stool or vomit.				
6.6 If child vomits, wait 10 mins then give ORS more slowly every 2-3 minutes.				
6.7 Check parent can do or explain these 5 steps.				
7.GIVE PARENT 2 ORS PACKETS TO TAKE HOME.				
8.TEACH PARENT THE 4 RULES OF HOME TREATMENT:-				
8.1 Give more fluids.				
8.2 Continue foods (including breastmilk)				
8.3 Bring child back if signs of dehydration develop or child is not getting better.				
8.4 Help to prevent another diarrhoea episode by: washing hands before touching food, breast-feeding and NOT bottlefeeding.				

	YES	NO	RATING	COMMENTS
9.USE 3 STEPS TO GOOD COMMUNICATION:				
9.1 Ask parent what they do.				
9.2 Explain the 4 rules.				
9.3 Ask parent to repeat 4 rules in their own words.				

YES & NO Column: Write Yes in the "YES" column if the skill has been performed
Write No in the "NO" column if the skill has not been performed.

Rating scale:
1 = Inadequate.
2 = Needs Improvement.
3 = Adequate.

Comments Column: For any comments about performance of the skill.

ADDITIONAL SKILLS CHECKLIST FOR PARAMEDICS. (A-10).

To manage diarrhoea cases with Mild-Moderate Dehydration and Severe Dehydration in the ORT unit and Inpatient Ward follow these steps and use the handout (A-3) for reference.	YES	NO	RATING	COMMENTS.
1.WEIGH THE CHILD: 1.1 Explain to parent what you are doing.				
1.2 Check scales are on zero.				
1.3 Ask parent to remove child's clothes leaving one thin layer.				
1.4 Place child on scales.				
1.5 Record weight in kgs.				
2.CALCULATE NUTRITIONAL STATUS USING A GROWTH CHART. 2.1 Ask parent the child's age and month of birth.				
2.2 Find the child's age on the horizental scale of growth chart on the back of the Clinical Form.				
2.3 Find the child's weight on the vertical scale.				
2.4 Make a mark where these 2 lines meet.				
2.5 Check to see whether the mark falls into the Normal, Grade 1, Grade 11 or Grade 111 part of the growth chart.				
2.6 Record the nutritional status.				
3.TAKE TEMPERATURE UNDER ARM. 3.1 If high demonstrate to parent how to tepid sponge child.				
3.2 Take temperature again in 1 hr.				
3.3 If still high refer child to doctor.				

	YES	NO	RATING	COMMENTS
4.RECORD INFORMATION IN ORT REGISTER (if used in your Health Facility).				
5.SELECT AMOUNT OF ORS REQUIRED IN 4-6 HOURS (preferably using weight rather than age to calculate volume).				
5.1 Calculate using 10-20 ml ORS per Kg. body weight per hour.				
6.MONITOR AMOUNT OF ORS GIVEN AND RECORD THIS ON PATIENT'S INPUT/OUTPUT SHEET.				
6.1 Record name of child on input/output chart.				
6.2 Record amount of ORS required				
6.3 Record time ORS was started.				
6.4 Record every 200 ml cup given.				
6.5 Add extra ORS for every stool/vomit and record amount:				
Under 1 yr. give extra 100 mls for every stool or vomit.				
Over 1 yr. give extra 200 mls.				
7.ADMINISTER ORS AND TEACH PARENT TO ADMINISTER ORS. 7.1 Show parent how to give a spoon of ORS every minute using the seconds hand of the ORT unit clock as your reference.				
7.2 Deal with difficulties administering ORS:				
Explain that if a child is thirsty he will drink the ORS too quickly and vomit.				
Explain ORS helps to reduce the vomiting.				

	YES	NO	RATING	COMMENTS.
8 REASSESS HYDRATION STATUS EVERY 1-2 HOURS USING THE ASSESSMENT CHART (A-3).				
9.ENCOURAGE MOTHER TO CONTINUE BREASTFEEDING.				
9.1 Deal with any breastfeeding problems she may have.				
10.GIVE SOFT FOODS LIKE KITCHRI, BANANA, YOGHURT TO CHILDREN OVER 4 MONTHS AS SOON AS THEY CAN EAT.				
10.1 Prepare this food every day or ask parents to bring from bazaar.				
11.SEND CHILD HOME WHEN ALL SIGNS OF DEHYDRATION HAVE DISAPPEARED.				
FOR CHILDREN WITH SEVERE DEHYDRATION TREATED WITH IV THERAPY:				
12.MONITOR THE AMOUNT OF IV FLUID REQUIRED AND GIVEN ON AN INPUT/OUTPUT CHART.				
13.MONITOR PATIENTS HYDRATION STATUS REGULARLY AND RECORD FINDING, EVERY 2 HOURS UNTIL PATIENT IS REHYDRATED, THEN EVERY 6 HOURS.				
13.1 Call doctor if hydration status is not improving.				
13.2 Check for signs of over hydration like eye swelling.				
14.ENCOURAGE PARENT TO START THE FOLLOWING AS SOON AS CHILD CAN DRINK AND EAT: 1. ORS.				
2. Breastfeeding,				
3. Soft foods.				
15.DISCONTINUE IV THERAPY AS SOON AS APPROPRIATE (usually within 6 hours of initiation.)				

PAKISTAN'S NATIONAL DIARRHOEA TREATMENT POLICY

ORAL REHYDRATION THERAPY(ORT): ORS + BREASTMILK + FOOD

- All diarrhoea cases will drink ORS (or other fluid) prior to leaving.
- All parents will be taught how to mix ORS
- All parents will be taught how to give ORS (how much, how often, how long). ORS will be given using a cup and spoon or dropper
- Special care attention will be given to neonates, especially low birth weight, to avoid excessive use of ORS. Breastfeeding will be encouraged and assisted where needed.
- All parents will be given 1 to 2 ORS packets for home use.

BREASTFEEDING

- Breastfeeding will be encouraged for all infants and continued even during rehydration.

CONTINUED FEEDING

- Feeding appropriate for age will be encouraged to start no later than 4 hours after start of rehydration.
- Milk feeds will not be diluted but may be mixed with cereals and can be offered during maintenance.
- No feeding bottles will be used.

DRUGS

- No anti-diarrhoeal, antiemetic, antispasmodic drugs will be used or prescribed for diarrhoea in children, especially under 5 years.
- Antibiotics will be used only for specified indications to be recorded on the patient record whenever used. This will generally be reserved for bloody dysentery or other systemic infections. Only a single antibiotic will be prescribed.

IV THERAPY

- I.V. will be used only for severe dehydration as demonstrated by objective findings recorded on the patient record form.
- I.V. will be used only for rehydration and stopped within 6 hours of initiation.
- Ringer's lactate is preferred but 0.9% Saline with 5% Dextrose is an acceptable alternative. Glucose/Dextrose solution alone will not be used.
- Patients on I.V. will be started on ORS as soon as they can drink.

IMMUNIZATION

- Ensure that no child leaves before its immunization is up-to-date (especially measles). Similarly, the mother should be given TT immunization.

HYGIENE

- Staff will demonstrate commitment to importance of personal hygiene by washing their hands after handling each patient.

PLEASE ENSURE THAT

- Parents leave only after they can explain in their own words the following:

1. **The Need for the Child to Drink More Fluids than Usual:**
   - Mix ORS correctly using local measures.
   - Use ORS correctly offering 1/2 to 1 tea cup for each stool or vomit and more if child desires.
2. **The Need for the Child to Continue Eating:**
   - Breastfeed, and if 6 months or older, state the food and the approximate amount of food to feed child.
3. **When to Bring the Child Back:**
   - Explain signs of dehydration and indications to bring child back.
4. **How to Prevent Diarrhoea:**
   - Explain the importance of handwashing, breastfeeding and danger of bottle feeding.

tional Institute of Health, DTU Meeting, March 6-8, 1988
...nistry of Health, Government of Pakistan

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PAKISTAN S DIARRHOEA TRAINING UNIT PROGRAMME.

TRAINERS' GUIDE.

PROTOTYPE AGENDA FOR DOCTORS (A-4)

THE TRAINING SESSION:

Part 1. Classroom Session
-Registration.
-Pre-Training Assessment.
-Introduction.
-Management of Diarrhoea.
-Talking with Parents

Part 2. Practical Session in ORT.
-Work with diarrhoea cases in OPD, ORT unit, Inpatients.
-Case presentations.

Part 3. Joint Session.
-Joint training with paramedics.
-Pakistan's National Diarrhoea Treatment Policy.

THE PLANNING SESSION:

Part 1. Health Facility Visit.
-Visit OPD, ORT unit, Inpatients to observe diarrhoea management
-Record observations in Diarrhoea Policy Checklist.

Part 2. Development of Plan of Action.
-Small group discussion of observations.
-Complete Diarrhoea Policy Checklist columns.
-Develop a Plan of Action for improvements.
-Discuss Plan of Action with MS/MOIC.

The following are prototype agendas, the first for the training of doctors and the second for the training of paramedics. They can be adapted to the different needs and conditions of different sized health facilities, but the teaching content should remain much the same.

Prototype Agenda For Doctors. (A-4).

FOLLOW-UP VISITS. STEP 1. THE TRAINING SESSION.

Part 1. CLASSROOM SESSION.

Registration.
Inauguration.

Pre-training Assessment.
- List doctors' diarrhoea management practices on flipchart/board.

Introduction:
- Introductory Talk: Objectives of DTU/ORT unit programme (T-1)
- UNICEF video module 23 "Setting up an ORT unit."

Management of Diarrhoea:
- Introductory Talk: Aetiology of Diarrhoea (T-2).
- List drugs doctors prescribe for diarrhoea on flipchart/board.
- Introductory Talk and Discussion: Indications for Drugs (T-3)
- Video "Vicious Circles" part 11 on Imodium.
- Introductory Talk: Management of Acute Diarrhoea (T-4).
- Give out Medical Officers Handout (A-2).
- Explain Assessment Chart and Clinical Form (A-2).
- UNICEF video module 1-2 "ORT and signs of dehydration".
- Discussion: Assessment Chart (A-2).
- Explain Treatment Chart (A-2).
- Discuss Case studies: None/Mild-Moderate/Severe Dehydration and Acut Dysentery (C1-5) with doctors using Handout (A-2) for reference.

Talking with Parents:
- Introductory Talk: Importance of Talking with Parents (T-5).
- Explain 4 Rules of Home Treatment.
- Explain 3 Steps to Good Communication.
- Role play doctor teaching parent 4 rules (Trainer + doctor).
- Repeat role play (doctor + doctor).

Part 2. PRACTICAL SESSION.

Practical Session in ORT.*
- Work with diarrhoea cases in OPD, ORT unit, Inpatient ward.
- Use Clinical form (A-7) and Skills Checklist (A-9).
- Use posters P-1,2,3 for reference.
- Use posters P-4,5,6 for teaching parents.
- Set up an ORT trolley.
- Demonstrate ORS preparation.
- Demonstrate ORS administration.
- Talking with Parents, 4 Rules of Home Treatment.
- Case presentations by doctors and discussion.

* This Practical Session is essential for doctors with assigned ORT duties. It is optional for other doctors and can be substituted with ward rounds and role plays/demonstrations in the Classroom Session.

Part 3. JOINT SESSION.

Pakistan's National Diarrhoea Treatment Policy:
- Joint training session with doctors and paramedics.
- Display National Diarrhoea Treatment Policy poster (P-3).
- Explain each item in the policy (P-3).
- Question and answer session.
- MS/MOIC comments on implementation of policy in health facility.

FOLLOW-UP VISITS: STEP 2. THE PLANNING SESSION.

Improving Current Diarrhoea Management in the Health Facility.

Part 1. Visit Health Facility.
- Display National Diarrhoea Policy poster (P-3).
- Give out Diarrhoea Policy Checklist (A-11) to each doctor.
- Explain the checklist (A-11).
- Visit OPD, ORT unit and Inpatient ward and help doctors record their observations in the checklist (A-11).

Part 2. Development of a Plan of Action.
- Use posters P-3 and A-11.
- Small group discussion of observations using checklists (A-11).
- Discuss then fill "Observations" column of poster A-11.
- Discuss then fill "Diarrhoea Policy Objectives" column of poster A-11
- Discuss then fill "Improvements Required" column of poster A-11.
- Discuss then fill "How", "By whom" and "When" columns of poster A-11
- Discuss Final Plan of Action with MS/MOIC.
- Decide date of Evaluation Visit. *

* Optional.

PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME.

TRAINERS' GUIDE.

PROTOTYPE AGENDA FOR PARAMEDICS (A-5)

THE TRAINING SESSION:

Part 1. Classroom Session
-Registration.
-Pre-Training Assessment.
-Introduction.
-Introduction to Diarrhoea.
-Treatment of Diarrhoea
-Limited role of drugs in diarrhoea treatment.
-When to refer child for help.
-Prevention of diarrhoea.
-Talking with Parents

Part 2. Practical Session in ORT.
-Work with diarrhoea cases in OPD, ORT unit, Inpatients.
-Case presentations.

Part 3. Joint Session.
-Joint training with doctors.
-Pakistan's National Diarrhoea Treatment Policy.

THE PLANNING SESSION:

Part 1. Health Facility Visit.
-Visit OPD, ORT unit, Inpatients to observe diarrhoea management.
-Record observations in Diarrhoea Policy Checklist.

Part 2. Development of Plan of Action.
-Small group discussion of observations.
-Complete Diarrhoea Policy Checklist columns.
-Develop a Plan of Action for improvements.
-Discuss Plan of Action with MS/MOIC.

Prototype Agenda For Paramedics. (A-5).

Refer to Paramedic Classroom Session Module (A-6) for content and more detailed training instructions for the Classroom Session.

FOLLOW-UP VISIT: STEP 1. THE TRAINING SESSION.

Part 1. CLASSROOM SESSION.

Registration.
Inauguration.

Pre-Training Assessment.
- List Paramedics Current Diarrhoea Management on flipchart/board.

Introduction:
- Explain the DTU/ORT unit programme (MP-1).

Introduction to Diarrhoea. (MP-2).
- Assess knowlegde of dangers of diarrhoea.
- Explain Dangers of Diarrhoea.
- Explain ORT.
- UNICEF video module 1.
- Demonstrate Signs of Dehydration (using child or doll).
- Paramedic repeats demonstration of signs (using doll)
- UNICEF video module 2.
- Give out Paramedic Handout (A-3)
- Use poster (P-1).
- Explain Assessment Chart (A-3) and Clinical Form (A-8).
- Discuss Case Studies (C 5-8) using Assessment Chart (A-3).

Treatment of Diarrhoea. Rule 1. Give More Fluids. (MP-3).
- Assess knowledge of Home Fluids/ORS.
- Explain importance of Home Fluids/ORS.
- Demonstrate ORS preparation.
- Paramedic repeats demonstration of ORS preparation.
- Demonstrate how to mark litre line in a container.
- Use poster P-1,2 and Handout A-3.
- Explain Treatment Plans.
- Demonstrate ORS administration and dealing with problems.
- Role Play health worker giving ORS (Trainer + Paramedic).
- Repeat role play (Paramedic + Paramedic).
- UNICEF video modules 9, 10, 11.
- Discuss reassessment of child during rehydration.
- UNICEF video module 23.
- Discuss role of each paramedic in ORT in the health facility.

Treatment of Diarrhoea. Rule 2. Continue Foods. (MP-3).
- Assess knowledge of feeding during diarrhoea.
- Explain importance of feeding.
- Discuss good foods (including breastfeeding).
- Explain how much, how often, how long.
- Role Play giving parent feeding advice (Trainer + Paramedic).
- Repeat Role Play (Paramedic + Paramedic).
- UNICEF video module 14.

The Limited Role Of Drugs In Diarrhoea Treatment. (MP-4)
- Assess knowledge of drugs for diarrhoea. Write drigs on board.
- Display National Diarrhoea Treatment Policy poster (P-3).
- Explain National Treatment Policy on drugs.
- ITV video "Vicious Circles" on Imodium.
- Discuss the limited role for drugs.
- Role Play advising parent antidiarrhoeals are not needed (Trainer + Paramedic)
- Repeat Role Play (Paramedic + Paramedic).

Diarrhoea Treatment. Rule 3. When to Refer Child for Help. (MP-5)
- Explain 5 signs for referral to doctor using Clinical Form (A-8)
- Role play referring these signs to doctor (Trainer + Paramedic).
- Repeat this role play (Paramedic + Paramedic).
- Ask what signs make a parent bring a child with diarrhoea for help.
- Explain danger signs to bring child for help.
- Role play advising parent on these danger signs(Trainer + Paramedic)
- Repeat role play (Paramedic + Paramedic).

Rule 4. Prevention of Diarrhoea. (MP-6).
- Assess knowledge of causes of diarrhoea.
- Discuss main causes (bottlefeeding, dirty hands)
- Explain 2 protections, breastfeeding & handwashing.
- Role play advising parent on 2 protections (Trainer + Paramedic).
- Repeat Role Play (Paramedic + Paramedic).

Talking with Parents, The 4 Rules of Home Treatment. (MP-7)
- Display Posters P-4,5,6.
- Revise the 4 Rules of Home Treatment using posters P-4,5,6.
- Explain the importance of <u>early</u> Home Treatment.
- Explain the 3 Steps to Good Communication.
- Role Play using 3 Steps to teach Rule 1, Extra Fluids.(Trainer + Paramedic)
- Repeat Role Play with Rule 2.(Paramedic + Paramedic).
- Repeat Role Play with all 4 Rules (Paramedic + Paramedic).

Part 2. PRACTICAL SESSION.

Practical Session in ORT.
- Disply posters P-1,2,3,4,5,6.
- Supervise paramedics setting up an ORT trolley and teaching groups of parents in OPD, ORT Unit and Inpatient ward. Use Basic Skills Checklist,(A-10) and poster P-1,2,3,4,5,6.
- Do exit interview on parents trained by paramedics.
- Supervise paramedics working in ORT unit rehydrating children. use Additional Skills Checklist (A-10).*
- Do exit interview on parents trained by paramedics.
- Case presentations by paramedics and general discussion.

* This Additional Skills Training part of the Practical Session is essential for paramedics assigned ORT duties. This part of the session may need to be scheduled on a separate day, allowing the DTU LHV to work exclusively with these paramedics in the ORT unit.

Part 3. JOINT SESSION.

National Diarrhoea Treatment Policy. (P-3).
- Joint training session with doctors and Paramedics.
- Display National Diarrhoea Treatment Policy poster (P-3).
- Explain each item in policy (P-3).
- Ask paramedics if they have any questions.
- MS/MOIC comments on policy implementation in health facility.

FOLLOW-UP VISIT: STEP 2. THE PLANNING SESSION.

Part 1. Visit Health Facility
- Display Diarrhoea Treatmant Policy poster (P-3).
- Give out Diarrhoea Policy Checklist (A-12) to literate paramedics.
- Explain checklist (A-12).
- Visit OPD, ORT unit, Inpatient ward and help paramedics record their observations in the Diarrhoea Policy Checklist (A-12)

Part 2. Development of Plan of Action.
- Display posters P-3 and A-12.
- Small group discussion of observations using checklists (A-12).
- Discuss then fill "Observations" column of poster (A-12).
- Discuss then fill "Diarrhoea Policy Objectives" column of poster.
- Discuss then fill "Improvements Required" column of poster (A-12).
- Discuss then fill "How", "By Whom" and When" column of poster (A-12
- Discuss Final Plan of Action with MS/MOIC.

PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

PARAMEDIC CLASSROOM SESSION MODULE. (A-6).

TRAINER'S GUIDE.

Time Required : Allow 5 hours.

Agenda: Follow Prototype Agenda for Paramedics (A-5).

Teaching materials, Preparation, Procedure. See Section 8.2

KNOWLEDGE TRAINING OBJECTIVES:
On the completion of training all the paramedics will be able to answer basic questions on the following topics:
MP-1 Introduction to DTU/ORT unit programme.
MP-2 Introduction to Diarrhoea.
MP-3 Oral Rehydration Therapy.
MP-4 The limited role of drugs in diarrhoea treatment.
MP-5 When to refer a child for help.
MP-6 Prevention of Diarrhoea.
MP-7 Talking with Parents, the 4 Rules of Home Treatment.

BASIC SKILLS TRAINING OBJECTIVES:
On the completion of training all the paramedics will be able to perform the following basic skills:
1. Assess a diarrhoea/dehydration case using the handout (A-3).
2. Select the Treatment Plan using the handout (A-3).
3. Refer complicated cases to the doctor.
4. Set up an ORT trolley.
5. Demonstrate ORS preparation.
6. Demonstrate ORS administration and deal with vomiting.
7. Teach parents the 4 rules of Home Treatment.
8. Give every parent 2 ORS packets to take home.

Introduction to DTU and ORT unit programme.

HOW TO TEACH THIS.

Call paramedics into one room and seat them in a circle so that you can make eye contact with them all.

Introduce yourself by name.

Hold doll. Explain you are a parent of a baby with diarrhoea. Ask paramedics how they would treat your baby in their health facility.

Explain the DTU/ORT unit programme briefly and you role in training government paramedics.

Ask each paramedic to introduce themself by name and explain their work. List names and designations in your Follow-up Visit notebook.

MAIN POINTS.(MP-1)

The Pakistan government plans to establish an ORT unit in every government health facility. The aim of these ORT units is to reduce deaths from diarrhoea. To train health workers in ORT, the government have set up 10 DTUs in major teaching hospitals. The DTU training team, consisting of a physician and LHV, visit health facilities to train the staff and assist them in setting up ORT units.

Introduction to Diarrhoea.

HOW TO TEACH THIS.

Ask paramedics: Why is diarrhoea dangerous ?

Explain the 2 killers in diarrhoea DEHYDRATION and MALNUTRITION. Discuss the problem in Pakistan with over 200,000 deaths each year.

Explain these deaths can be prevented with ORT, FLUIDS to stop DEHYDRATION and FOODS to stop MALNUTRTION.

Show UNICEF video, module 1 "ORT". Stop video and ask paramedics to repeat what they have learnt.

Explain that loss of fluids leads to DEHYDRATION. Demonstrate signs of dehydration using the doll and the head-to-toe method. Ask paramedic to hold doll and repeat this demonstration.

MAIN POINTS. (MP-2)

Why diarrhoea is dangerous.
Diarrhoea is dangerous and kills children quickly. It is the main cause of death in Pakistani children claiming over 200,000 lives each year. These deaths are due to losing water, salts and nutrients in the diarrhoea stools leading to the 2 killers DEHYDRATION and MALNUTRITION.

Oral Rehydration Therapy.
DEHYDRATION can be prevented and treated with FLUIDS.
MALNUTRITION can be prevented and treated with FOODS.
ORT = FLUIDS + FOODS.

When to start ORT.
Even one watery stool is diarrhoea, and should be treated quickly with ORT.

Signs of Dehydration.
The signs of dehydration from

Show UNICEF module 2 "Signs of Dehydration." Stop video and ask paramedics to repeat what they have learnt.

Display poster P-1 and give each literate paramedic a handout (A-3).

Explain the Assessment Chart in the handout (A-1) and None, Mild-Moderate, Severe grades of Dehydration.

Ask the paramedics to use their ASSESSMENT CHART, to fill in the details for case study C-5 and then assess the grade of dehydration. Repeat this with other case studie C-6,7,8.

loss of water and salt are :

Early signs.

1. Irritability.
2. Thirst.

Later signs.

1. Sunken fontanelle (infants)
2. Sunken, dry, tearless eyes.
3. Dry mouth and tongue.
4. Fast, deep breathing.
5. Skin pinch goes back slowly.
6. Pulse is fast and weak.

Very late dangerous signs.

1. Unable to drink.
2. Sleepy or comatose.
3. Pulse absent or very weak.

Oral Rehydration Therapy. Rule 1. Give More Fluids.

HOW TO TEACH THIS.

Hold doll. Explain you are a parent with a 1 year old child who has diarrhoea. Ask paramedics which fluids they would recommend. Discuss good traditional fluids like rice water.

Ask paramedics what they know about ORS. Explain importance of ORS in replacing salts and water.

Demonstrate ORS preparation using containers available from the local bazaar. Explain the 5 points of preparation.

Discuss which containers are used locally and show how to mark a litre line on a container using a scratch mark or nail polish.

Ask for a volunteer to repeat the demonstration of ORS preparation.

Explain how to give ORS (when to start, which container, how much, how often, how long, vomiting)

Role play giving ORS with you as the health worker using ORT

MAIN POINTS. (MP-3)

What fluids ?

As soon as diarrhoea starts, with the first watery stool, give more fluids like ORS, rice water, lassi, plain water.

Why ORS ?

ORS is a good fluid because it prevents and treats dehydration. It contains salts and water to replace those lost in the diarrhoea stool. ORS also contains glucose, a sugar, which increases the absorption of water and salts into the body.

How to prepare ORS.

1. Wash hands.
2. Pour 1 litre/seer or 4 pao sized glasses of clean water into a container.
3. Empty a whole packet of ORS into the water and stir with a clean spoon.
4. Cover container.
5. After 24 hours throw away any ORS left and prepare a fresh litre.

How to give ORS.

When to start ORS ? As soon

equipment and the Treatment Chart. A paramedic plays the part of the parent and hold the doll.

Get 2 paramedics to repeat this role play.

Show UNICEF video modules 9, 10, 11. om ORS administration and vomiting.

Discuss how long a child should stay in health facility receiving ORS. Use the Assessment Chart and give an example of a child with signs of mild-moderate dehydration who after 2 hours had fewer signs and after 4 hours of rehydration had no signs. Discuss which health workers in the health facility will be responsible for reassessing the children being rehydrated in the ORT unit.

Show UNICEF video module 23 "Setting up an ORT unit". Discuss the module.

Ask the paramedics what they think about having an ORT unit in their own health facility. Ask each of them to describe the role they will take in implementing ORT in their own health facility.

as diarrhoea starts.
What container to use ? Cup and spoon. NEVER use feeding bottle. Give ORS with child sitting up, not lying down.

How much ORS ? Use TREATMENT CHART and child's age and hydration status to select amount of ORS required. Add extra half-1 glass ORS per stool or vomit to this amou of ORS. If child wants more ORS then give more.
How often ? 1 spoon every minute when signs of dehydration are present. Half to 1 glass after each stool or vomit when no sign present. Give more ORS if child wants more.
How long ? Until diarrhoea stops.
<u>What to do if child vomits.</u>
Wait 10 mins then give ORS more slowly, a spoon every 2-3 mins. Vomiting often occurs because child takes ORS too quickly. Frequency should be 1 spoon every min
<u>How long should child stay in health facility ?</u>
Until signs of dehydration have gone. Child must be regularly examined for sigr using Assessment chart.
Give 2 ORS packets to take home.

<u>Oral Rehydration Therapy. Rule 2. Continue foods.</u>

<u>HOW TO TEACH THIS.</u>

Ask paramedics what feeding advice they recommend for a child with diarrhoea. Discuss this. Traditional foods like kitchri are very good. Show foods on poster.

Explain the importance of feeding during diarrhoea including breast

<u>MAIN POINTS.</u> (MP-3)

<u>Introduction.</u>
Foods, including breastmi should be continued durin diarrhoea because feeding
1. Helps to prevent malnutrition.
2. Increases absorption of water and salt into bod

feeding. Discuss the vicious cycle diarrhoea..malnutrition..diarrhoea.

Explain how to give foods (how much, how often, how long.)

Role play with you as the parent and a paramedic as the health worker giving advice on feeding during diarrhoea. The parent has stopped food because s/he thought it would increase the diarrhoea. Repeat this role play with another 2 paramedics.

Show UNICEF video module 14. "Feeding during diarrhoea." Discuss this.

3.Reduces duration of diarrhoea.

<u>What foods ?</u>

Exclusive breastfeeding for infant under 4 months. Brestfeeding plus Kitchri, rice, yoghurt and banana are all good foods. for children over 4 months Foods should be mashed so that they are soft and a teaspoon of oil added to each meal. They should be freshly prepared or thoroughly reheated.

<u>How to give foods.</u>

How much ? 1 teaspoon per month of age (ie 7 tea spoons at 7 months).
How often ? 6 times a day.
How long ? Throughout diarrhoea episode and one extra meal each day for 2 weeks after diarrhoea stops.

<u>The limited role of drugs in diarrhoea treatment.</u>

<u>HOW TO TEACH THIS.</u>

Ask paramedics which drugs are used for treating diarrhoea. Write answers on a board.

Show them the Pakistan Diarrhoea Treatment Policy poster (P-3) and discuss the section on drugs.

Show the "Vicious Circles" video part 2 on Imodium.

Discuss the dangers of drugs and emphasise that most diarrhoeas are self-limiting.

Ask the paramedics to come up one at a time and cross of a drug which is not indicated in diarrhoea.

Role play a parent demanding drugs for a child with diarrhoea, with you playing the parent and paramedic playing the health worker.

<u>MAIN POINTS.</u> (MP-4)

The Pakistan Diarrhoea Treatment Policy state that drugs have a very limited role in diarrhoea treated. Most diarrhoea episodes are self limiting and stop in a few days without drugs. Antidiarrhoeals antiemetics, antispasmodic should never be use because they are useless and sometimes harmful. Antibiotics are used for diarrhoea cases with blood in the stool and shoul always be prescribed by a doctor.

Rule 3. When to refer child for help.

HOW TO TEACH THIS.

Explain the 5 signs in a child with diarrhoea requiring referral to a doctor by the paramedic, using the Clinical Form (A-8).

Ask a paramedic to list these 5 signs using the 5 fingers of one hand to reming them.

Role play health worker referring a child with one of these signs to the doctor, with you as the health worker and a paramedic as the parent. Ask 2 paramedics to repeat role play.

Ask paramedics what makes parents bring a child with diarrhoea to a health facility for help. Discuss this. Parents should be encouraged to bring a child with early signs of dehydration like thirst and irritablity, rather than later signs.

Explain the danger signs that should alert parents to bring their child with diarrhoea to the health facility for help.

Role play giving advice to parent on when to bring child for help with you as the health worker and the paramedic as the parent. Get 2 paramedics to repeat this role play.

MAIN POINTS. (MP-5)

In health facility.
If a paramedic finds any of these 5 signs in a chil with diarrhoea s/he should refer child to the doctor:

1. Severe dehydration (iv therapy required).
2. Blood in stool (antimicrobial required)
3. Fever not settling with ORS and tepid sponging (systemic examination by doctor required).
4. Severe malnutrition (feeding therapy require
5. Diarrhoea for more tha 14 days (investigations required).

In community/home.
If a child with diarrhoea develops any of thes danger signs, the parent should bring him/her to the health facility, givir fluids like ORS on the way

1. Signs of dehydration lik thirst, irritability, sunken eyes.
2. Blood in stool.
3. Fever.
4. Child is not improving with fluids and food at home.

Rule 4. Prevention of Diarrhoea.

HOW TO TEACH THIS.

Ask the paramedics what causes diarrhoea. Discuss the dangers of feeding bottles and the protection provided by breastfeeding and handwashing.

Ask paramedics how they could prevent a child coming back to their health facility with a further episode of diarrhoea.

MAIN POINTS. (MP-6)

Causes of Diarrhoea.
Diarrhoea is caused by th child putting dirty thing in his or her mouth like:

1. Dirty water
2. Dirty food.
3. Feeding bottles.

Prevention of Diarrhoea.
Episodes of diarrhoea can be greatly reduced by:

Discuss advice to parents on breastfeeding and handwashing.

Role play giving advice to parent on breastfeeding and hand washing with you as the health worker and a paramedic as the parent. Get 2 paramedics to repeat this role play.

1. Breastfeeding a child exclusively (no other fluids or food) until 4-6 months of age.
2. Mother washing hands with soap and wate before preparing food o feeding the child.

Talking with Parents. The 4 rules of Home Treatment.

HOW TO TEACH THIS.

Display posters P-4,5,6.
Ask paramedics what are the 4 rules of home treatment.

Explain 4 rules and how they prevent deaths from diarrhoea if started as soon as diarrhoea starts.

Explain that parents of diarrhoea cases should know the 4 rules before leaving the health facility. Discuss how the paramedics can ensure that this happens. Explain the 3 steps to good communication with parents.

Role play a health worker teaching a parent who has stopped all fluids except breastmilk, using the 3 steps to good communication:
Step 1. Checking question. Paramedic asks: What fluids have you given ?
Parents answer: Breastmilk.
aramedics reply: That is very good.
Step 2. Paramedic explains: You can also give other fluids like ORS, rice water, lassi, plain water.
Step 3. Checking question. Paramedic asks: What fluids should you give your child with diarrhoea ?

Repeat similar role plays for rules 2, 3 and 4 using a different pair of paramedics for each role play.

Ask each paramedic to list the 4 rules. Role play paramedic teaching all 4 rules to a parent.

MAIN POINTS. (MP-7)

If parents practise these rules at home as soon as diarrhoea starts they will help to prevent their children dying from the 2 killers DEHYDRATION and MALNUTRITION. They will also reduce the number of episodes of diarrhoea.

4 Rules of Home Treatment.

1. Give more fluids.
2. Continue foods, includin breastfeeding.
3. Bring child for help whe danger signs develop.
4. Prevent further diarrhoe with breastfeeding, hand washing and avoiding feeding bottles.

Good Communication.

All parents of childre with diarrhoea at th health facility should be taught these 4 rules. To ensure that parents leave the health facility knowin these 4 rules, paramedics should follow these steps for good communication:

The 3 Steps.

Step 1. Checking question. ASK parent how they treat diarrhoea at home. (PRAISE good practices.)
Step 2. EXPLAIN the 4 rules
Step 3. Checking question. ASK parent to EXPLAIN 4 rules in their own words.

H - 7

DIARRHOEA CLINICAL FORM

*** START GIVING ORS NOW ***

Name of Health Facility: _____

Patient/Registration Number: _____ Date: _____

Patient Name: _____ Age: _____ [ ] Male [ ] Female

Address: _____ [ ] Urban [ ] Rural

I. HISTORY OF CURRENT DIARRHOEA EPISODE

1. Duration of Diarrhoea _____ days
2. Total number of stools in 24 hours _____
3. Blood in stool [ ] yes [ ] no
4. Watery stool [ ] yes [ ] no
5. Vomiting (past 24 hours) [ ] yes [ ] no
   If yes, number of times _____
6. Abdominal Pain [ ] yes [ ] no
7. Urine (in last 6 hours) [ ] yes [ ] no
8. Are other illnesses present? [ ] yes [ ] no
   If yes, what? _____

Past history of diarrhoea [ ] yes [ ] no
If yes, When? _____

ACTIONS TAKEN BY PARENT DURING DIARRHOEA

1. Breastfeeding [ ] never [ ] more [ ] usual [ ] less [ ] stopped
2. Other Milks [ ] never [ ] more [ ] usual [ ] less [ ] stopped
3. Fluids [ ] never [ ] more [ ] usual [ ] less [ ] stopped
   If yes, what? _____
4. Foods [ ] never [ ] more [ ] usual [ ] less [ ] stopped
   if yes, what? _____
5. Did parent give ORS? [ ] yes [ ] no
6. Did parent prepare ORS correctly? [ ] yes [ ] no
7. Medicine given [ ] yes [ ] no
   if yes, what? _____
8. Did parent do anything else for diarrhoea [ ] yes [ ] no
   if yes what? _____

Conclusion: Action is: [ ] Adequate [ ] Inadequate

II. DIET PRIOR TO DIARRHOEA

Breast feeding	[ ] yes	[ ] no			
Bottle feeding	[ ] yes	[ ] no	If yes what? _____	How many times/day? _____	How much/day? _____
Fluids	[ ] yes	[ ] no	If yes what? _____	How many times/day? _____	How much/day? _____
Foods	[ ] yes	[ ] no	If yes, what? _____	How many times/day? _____	How much/day? _____

Conclusions: Diet is: [ ] Adequate [ ] Inadequate

III. EXAMINE THE CHILD AND USE THIS CHART TO SELECT THE TREATMENT PLAN *(Circle Answers)*

	NO Dehydration Plan-A	MILD-To-MODERATE (SOME) Dehydration Plan-B	SEVERE Dehydration Plan-C	Other problems e.g. ENT, Chest, etc
Diarrhoea	Less than 4 liquid stools/day	4-10 liquid stools/day	More than 10 liquid stools/day	
Vomiting	None or small amount	Some	Very frequent	
Thirst	Normal	Greater than Normal	Unable to drink	
Urine	Normal	A small amount	No Urine for 6 hours	
Condition	Well, alert	Unwell, sleepy, irritable	Very sleepy, unconcious, floppy or having fits	
Fontanelle	Normal	Sunken	Very sunken	
Eyes	Normal	Sunken	Very dry & sunken	
Tears	Present	Absent	Absent	
Mouth & Tongue	Wet	Dry	Very dry	
Breathing	Normal	Faster than normal	Very fast and deep	
Skin	Pinch goes back quickly	Pinch goes back slowly	Pinch goes back very slowly	
Pulse	Normal	Faster than normal	Very fast, weak, can't feel	
	Child has No signs of dehydration	If 2 or more of these signs, child has Mild-Moderate dehydration	If 2 or more of these signs, child has SEVERE dehydration	

* Temperature °C _____ * Weight in Kgs _____ then plot on Growth Chart

Immunization: Child (under 2 years of age) BCG [ ] DPT - Polio I [ ] II [ ] III [ ] Booster [ ] Measles [ ]
Mother: TT I [ ] TT II [ ] TT III [ ] TT IV [ ] TT V [ ]

IV. ASSESSMENT AND TREATMENT

1. Duration of Diarrhoea	[ ] Less than 7	[ ] 7-13 days	[ ] Persistent (14 - days)	
2. Diarrhoea is	[ ] Watery	[ ] Non-watery		[ ] Bloody
3. Dehydration Status	[ ] None	[ ] Mild-Moderate/Some		[ ] Severe
4. Diarrhoea Treatment Plan	[ ] A (None)	[ ] B (Mild-Moderate/Some)		[ ] C (Severe)
5. Nutrition Status	[ ] Normal	[ ] Grade I	[ ] Grade II	[ ] Grade III
6. Nutrition Treatment				
7. Treatment of Other Illnesses/Complications				
8. Medicines prescribed				
9. Immunization Status	[ ] Up to date	[ ] Not up to date	[ ] Refer for immunization	

V. OUTCOME:

[ ] **Treated & Sent Home** [ ] **Admitted** [ ] **Died** (God Forbid)
[ ] **Mother and Child Sent for immunization**

Federal CDD Cell, NIH-MOH, GOP

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TREATMENT PLANS

Degree of Dehydration	AGE OF CHILD		
	Up to 4-6 months (exclusively breastfed)		More than 4-6 months (partially breastfed)
NONE (Plan-A)	o Breastfeed more often		o Breastfeed more often. o Give more fluids such as rice water lassi, plain water and ORS. o Continue soft foods such as khichr yogurt and mashed banana
	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
MILD TO MODERATE (SOME) (Plan-B)	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers
	10-20 ml ORS per kilogram body weight per hour		
SEVERE (Plan-C)	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr) Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE HOME TREATMENT	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN IF CHILD WANTS MORE WATER, GIVE IT		

SUPERVISORY CHECKLIST

FIND OUT WHETHER PARENT IS ABLE TO DO OR EXPLAIN THE FOLLOWING *(If parent is not able, then teach parent again)*	Yes	No
1. Need for home fluids (like breastmilk rice water, lassi, plain water)		
2. How to mix ORS		
3. How to give ORS (how much, how often, how long)		
4. Need to continue breastfeeding		
5. Need to continue feeding from 4 to 6 months of age (how much, how often, how long)		
6. When to bring child back (including signs of dehydration)		
7. Prevention of diarrhoea (handwashing & breastfeeding)		
8. Need for up to date immunization for mother and child.		
9. MOTHER'S LEAFLET GIVEN AND EXPLAINED		

Ask parent to teach these things to all their relatives and neighbours

PATIENT'S PROGRESS SHEET (in ORT unit or ward)

Time of Arrival: _____ Time fluid therapy started _____

HISTORY	History on Arrival	HOURS AFTER ARRIVAL At 2 hours	At 4 hours	At 6 hours	At 12 hours
Number of Stools					
I isodes of vomiting					
L ine output					
ORS given (Total)					
(her fluids given (Total)					
od given					
Medicines prescribed					
IV Fluid given (Volume)					
.INICAL STATUS	ON ARRIVAL				
General Appearance					
ontanelle					
es					
ears (present or absent)					
Mouth and Tongue					
in Turgor					
espiration (per minute)					
Temperature (°C)					
eight (kg)					
SSESSMENT AND TREATMENT	ON ARRIVAL				
Dehydration Status					
eatment Plan Chosen					
otal Fluid Input					
Total Fluid Output					
Total Fluid now Advised					

STOOL EXAMINATION

pH _____ Naked eye examination _____

Reducing substances _____ Microscopic examination _____

INTAKE-OUTPUT CHART

TIME	FLUID INPUT ORS (mls)	FLUID INPUT BREASTMILK (how many times)	FOOD (Name and quantity)	FLUID OUTPUT URINE (No.)	FLUID OUTPUT STOOL (No.)	FLUID OUTPUT VOMIT (No.)	REMARKS

FOLLOW-UP VISITS (Plot weights on Growth Chart on back page)

DATE	WEIGHT	CLINICAL NOTES	ADVICE

GROWTH CHART

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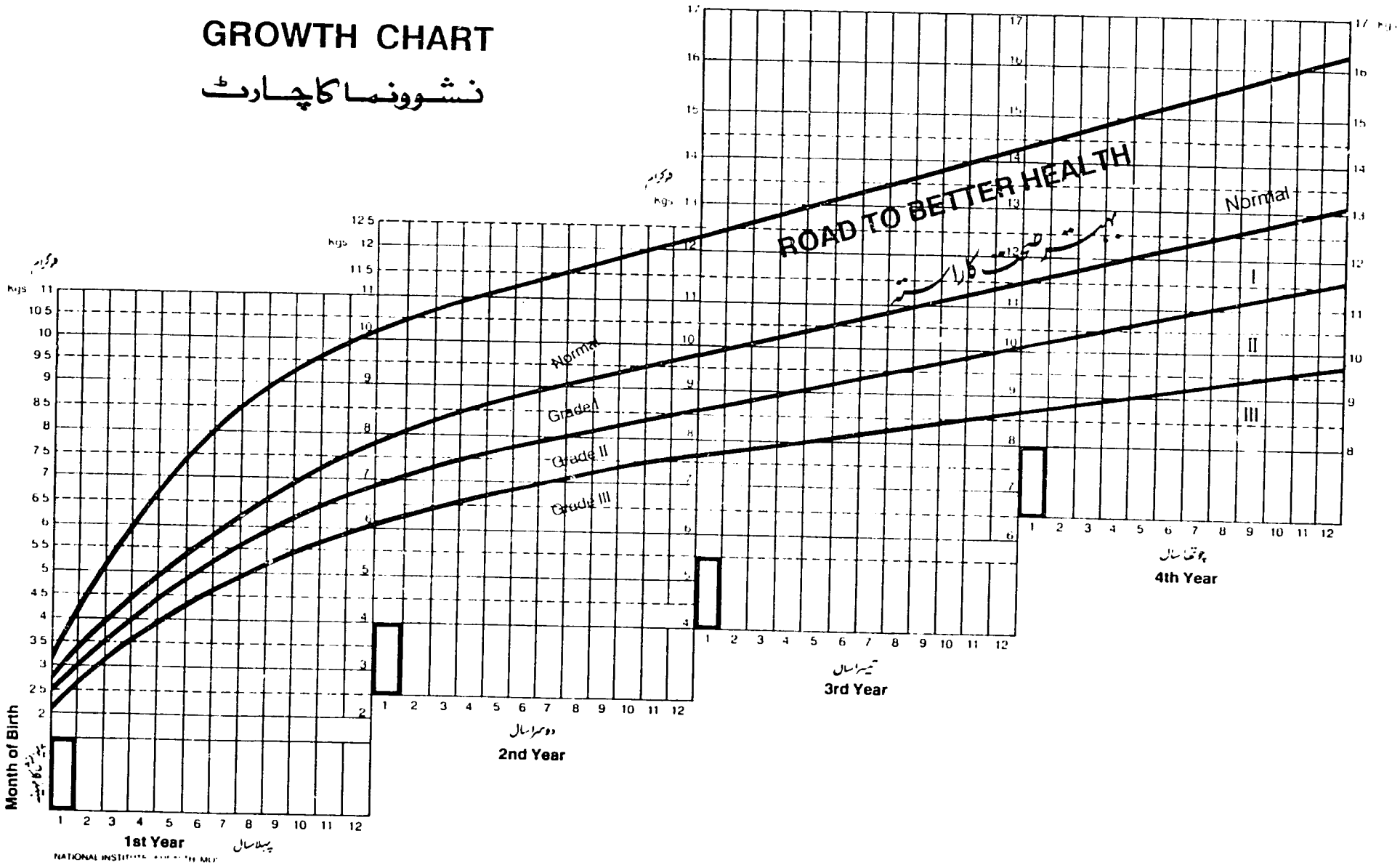

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CLINICAL FORM FOR PARAMEDICS. (A-8)

Start giving ORS NOW. Give a cup of ORS to the parent and demonstrate how to give 1 spoon every minute to the child.

1. Record the following information:

Name of patient:_____ Age:_____

Weight:_____Kgs. Nutrition status: Use growth chart_____

(If Grade 111 malnutrition refer patient to the doctor).

Temperature:_____ (if higher then normal treat with tepid sponging and ORS. If temperature does not return to normal after 1 hour, refer patient to doctor).

Duration of diarrhoea_____ days. (if more than 14 days refer patient to doctor.)

Blood in stools: Yes [] No [] (if blood is present refer case to doctor.)

Presence of other illnesses:_____

(If other illnesses are present refer patient to doctor).

Fluids given during diarrhoea : Breastmilk Yes [] No []
Other milks Yes [] No []
ORS Yes [] No []
Other fluids Yes [] No []

(If fluid therapy inadequate give fluid advice).

Foods given during diarrhoea: Yes [] No []

(If food therapy inadequate give feeding advice.)

2. Assess for Signs of Dehydration.

Assess the grade of dehydration using the Assessment chart below.

III. EXAMINE THE CHILD AND USE THIS CHART TO SELECT THE TREATMENT PLAN (Circle Answ...				
	NO Dehydration Plan-A	MILD-To-MODERATE (SOME) Dehydration Plan-B	SEVERE Dehydration Plan-C	Other problems ie ENT, Chest, etc
Diarrhoea	Less than 4 liquid stools/day	4-10 liquid stools/day	More than 10 liquid stools/day	
Vomiting	None or small amount	Some	Very frequent	
Thirst	Normal	Greater than Normal	Unable to drink	
Urine	Normal	A small amount	No Urine for 6 hours	
Condition	Well, alert	Unwell, sleepy, irritable	Very sleepy, unconcious, floppy or having fits	
Fontanelle	Normal	Sunken	Very sunken	
Eyes	Normal	Sunken	Very dry & sunken	
Tears	Present	Absent	Absent	
Mouth & Tongue	Wet	Dry	Very dry	
Breathing	Normal	Faster than normal	Very fast and deep	
Skin	Pinch goes back quickly	Pinch goes back slowly	Pinch goes back very slowly	
Pulse	Normal	Faster than normal	Very fast, weak, can't feel	
	Child has no signs of dehydration	If 2 or more of these signs, child has Mild-Moderate dehydration	If 2 or more of these signs, child has SEVERE dehydration	

TREATMENT PLAN for None Dehydration (Plan A.)

TREATMENT Plan for Some Dehydration (Plan B)

TREATMENT Plan for Severe Dehydration (Plan C)

3. Treatment Plan Selected: _____

4. Type of fluid to be given: _____

Amount of fluid to be given in the first 4-6 hours : _____

5. Treatment given:- (specify volume of fiuid actually taken anc time period.)

	INPUT	OUTPUT (stools, vomits, u
1 hour		
2 hours		
3 hours		
4 hours		
5 hours		
6 hours		

6. Signs of improvement observed:-

At time of discharge.

7. Instructions given to parent:-

Comments.

Note down any problems you encountered and questions to l discussion:-

TREATMENT PLANS

Degree of Dehydration	AGE OF CHILD		
	Up to 4-6 months (exclusively breastfed)		More than 4-6 months (partially breastfed)
NONE (Plan-A)	o Breastfeed more often		o Breastfeed more often. o Give more fluids such as rice water lassi, plain water and ORS. o Continue soft foods such as khichri yogurt and mashed banana
	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
MILD TO MODERATE (SOME) (Plan-B)	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers.
	10-20 ml ORS per kilogram body weight per hour		
SEVERE (Plan-C)	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr) Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE OME TREATMENT	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN IF CHILD WANTS MORE WATER, GIVE IT.		

SUPERVISORY CHECKLIST

FIND OUT WHETHER PARENT IS ABLE TO DO OR EXPLAIN THE FOLLOWING *(If parent is not able, then teach parent again)*	Yes	No
1. Need for home fluids (like breastmilk rice water, lassi, plain water)		
2. How to mix ORS		
3. How to give ORS (how much, how often, how long)		
4. Need to continue breastfeeding		
5. Need to continue feeding from 4 to 6 months of age (how much, how often, how long)		
6. When to bring child back (including signs of dehydration)		
7. Prevention of diarrhoea (handwashing & breastfeeding)		
8. Need for up to date immunization for mother and child.		
9. MOTHER'S LEAFLET GIVEN AND EXPLAINED		

Ask parent to teach these things to all their relatives and neighbours

GROWTH CHART

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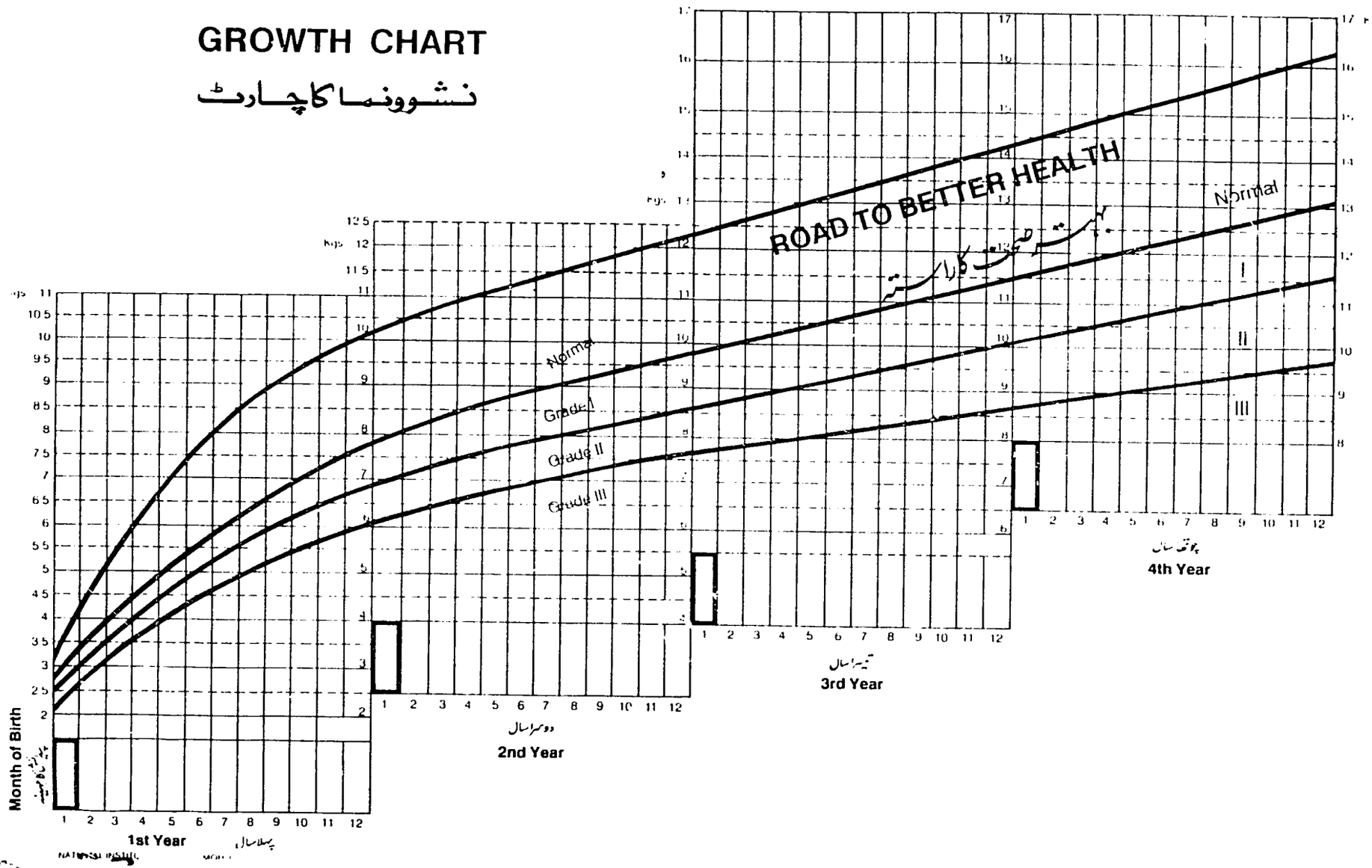


PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

BASIC AND ADDITIONAL SKILLS CHECKLIST (A-9)

FOR DOCTORS.

Name of Participant: _____

Name of Health Facility: _____

Name of Trainer/Observer: _____

Date: _____

This Skills Checklist has 2 purposes:

1. Participants should use it as a guide for checking their own skills or other participants' skills.

2. Trainers should use it when they evaluate how well students perform the basic and additional skills.

After observing the participant performing these skills, enter a rating and comments in the appropriate columns.

Rating: 1 = Inadequate
2 = Needs Improvement
3 = Adequate.

This log certifies that _____

has successfully demonstrated competence and earned

certification in these basic skills: YES []

in these additional skills YES []

Name of Examiner : _____ Date: _____

BASIC SKILLS CHECKLIST FOR DOCTORS. (A-9)

To manage all diarrhoea cases that come to your health facility use your handout (A-2) as a reference and follow these steps or teach paramedic staff to follow these steps:

	YES	NO	RATING	COMMENTS.
1.SET UP AN ORT TROLLEY WITH:-				
(or teach a paramedic how to.)				
1.1 ORS packets.				
1.2 Water in container (few litres)				
1.3 Litre container with lid.				
1.4 Stirring spoon.				
1.5 Cups and spoons.				
1.6 A selection of containers from the local bazaar with volumes written on them.				
2.ASSESS A DIARRHOEA CASE USING THE CLINICAL FORM (A-7).				
2.1 Determine history of present diarrhoea episode.				
2.2 Determine diet prior to diarrhoea.				
2.3 Assess hydration status using Assessment Chart.				
2.4 Select Diarrhoea Treatment Plan				
None A.				
Mild-Moderate B,				
Severe C.				
2.5 Weigh child, use growth chart to determine nutrition status:				
Normal.				
Grade 1 Malnutrition.				
Grade 11 Malnutrition.				
Grade 111 Malnutrition.				

	YES	NO	RATING	COMMENTS.
2.6 Determine treatment of other illnesses/complications.				
2.7 Prescribe aporopriate medicines				
2.8 Assess immunization status and refer if necessary.				
2.9 Decide which cases need to be sent home, to the ORT unit and to the ward.				
FOR CHILDREN WITH NO DEHYDRATION (Plan A) AND FOR ALL DIARRHOEA CASES BEFORE THEY GO HOME DO THE FOLLOWING:				
3.DEMONSTRATE ORS PREPARATION:				
(or teach a paramedic to:)				
3.1 Wash hands.				
3.2 Pour 1 litre/seer or 4 pao sized glasses of clean water into a container.				
3.3 Empty a whole packet of ORS into the water and stir with a clean spoon.				
3.4 Cover container.				
3.5 Explain that after 24 hours any ORS left must be thrown away and a fresh litre made.				
3.6 Check parents can do or explain these 5 steps.				
4.DEMONSTRATE ORS ADMINISTRATION:				
(or teach a paramedic to:)				
4.1 Give ORS with a cup and spoon.				
4.2 Give ORS with child sitting up.				
4.3 Give a spoon every minute. If child wants more, give more.				
4.5 Give half to one glass after each stool or vomit.				

	YES	NO	RATING	COMMENTS.
4.6 If child vomits, wait 10 mins then give ORS more slowly every 2-3 minutes.				
4.7 Check parent can do or explain these 5 steps.				
5.GIVE PARENT 2 ORS PACKETS TO TAKE HOME.				
6.TEACH PARENT THE 4 RULES OF HOME TREATMENT:-				
(or teach paramedic to explain:)				
6.1 Give more fluids.				
6.2 Continue foods (including breastmilk)				
6.3 Bring child back if signs of dehydration develop or child is not getting better.				
6.4 Help to prevent another diarrhoea episode by: washing hands before touching food, breast-feeding and NOT bottlefeeding.				
7.USE 3 STEPS TO GOOD COMMUNICATION:				
7.1 Ask parent what they do.				
7.2 Explain the 4 rules.				
7.3 Ask parent to repeat 4 rules in their own words.				

YES & NO Column: Write Yes in the "YES" column if the skill has been performed
Write No in the "NO" column if the skill has not been performed.

Rating scale:
1 = Inadequate.
2 = Needs Improvement.
3 = Adequate.

Comments Column: For any comments about performance of the skill.

ADDITIONAL SKILLS CHECKLIST FOR DOCTORS. (A-9).

To manage diarrhoea cases with Mild-Moderate Dehydration and Severe Dehydration in the ORT unit and Inpatient Ward use your handout (A-2) for reference and follow these steps or teach para-medic staff to follow these steps:

	YES	NO	RATING	COMMENTS.
1.WEIGH THE CHILD: 1.1 Explain to parent what you are doing.				
1.2 Check scales are on zero.				
1.2 Ask parent to remove child's clothes leaving one thin layer.				
1.4 Place child on scales.				
1.5 Record weight in kgs.				
2.CALCULATE NUTRITIONAL STATUS USING GROWTH CHART. 2.1 Ask parent the child's age and month of birth.				
2.2 Find child's age on the horizental scale of growth chart on the back of the Clinical Form.				
2.3 Find the child's weight on the vertical scale.				
2.4 Make a mark where these 2 lines meet.				
2.5 Check to see whether mark falls into the Normal, Grade 1, Grade 11 or Grade 111 part of the growth chart.				
2.6 Record the nutritional status.				
3.RECORD INFORMATION IN ORT REGISTER (if used in your Health Facility).				

	YES	NO	RATING	COMMENTS.
4. CALCULATE VOLUME OF ORS REQUIRED IN 4-6 HOURS (using weight rather than age to calculate volume).				
4.1 Calculate using 10-20 ml/Kg/hour				
5. MONITOR AMOUNT OF ORS GIVEN AND RECORD THIS ON PATIENT'S INPUT/OUTPUT CHART.				
5.1 Record name of child on input/output chart.				
5.2 Record amount of ORS required				
5.3 Record time ORS was started.				
5.4 Record every 200 ml cup given.				
5.5 Add extra ORS for every stool/vomit and record amount:				
Under 1 yr. give extra 100 mls				
Over 1 yr. give extra 200 mls.				
6. TEACH PARAMEDIC HOW TO ADMINISTER ORS AND THEN SUPERVISE THEM SHOWING PARENT.				
6.1 Show parent how to give a spoon of ORS every minute using the seconds hand of the ORT unit clock as your reference.				
6.2 Deal with difficulties administering ORS:				
Explain that if a child is thirsty he will drink the ORS too quickly and vomit.				
Explain ORS helps to reduce the vomiting.				
7. REASSESS HYDRATION STATUS EVERY 1-2 HOURS USING THE ASSESSMENT CHART (A-2).				

	YES	NO	RATING	COMMENTS.
8.HELP PARAMEDIC STAFF ENCOURAGE MOTHER TO CONTINUE BREASTFEEDING.				
8.1 Deal with any breastfeeding questions paramedic staff may have.				
9.GIVE SOFT FOODS LIKE KITCHRI, BANANA, YOGHURT TO CHILDREN OVER 4 MONTHS AS SOON AS THEY CAN EAT.				
9.1 Have food prepared every day or ask parents to bring from bazaar				
10.SEND CHILD HOME WHEN ALL SIGNS OF DEHYDRATION HAVE DISAPPEARED.				
FOR CHILDREN WITH SEVERE DEHYDRATION TREATED WITH IV THERAPY:				
11.CALCULATE IV FLUID VOLUME REQUIRED (using weight rather than age.) Under 1 year 25ml/Kg/hour.				
Over 1 year 30 ml/Kg/hour.				
12.MONITOR AMOUNT OF IV FLUID REQUIRED AND GIVEN ON AN INPUT/OUTPUT CHART.				
13.MONITOR PATIENTS HYDRATION STATUS REGULARLY AND RECORD FINDINGS, EVERY 2 HOURS UNTIL PATIENT IS REHYDRATED, THEN EVERY 6 HOURS.				
13.1 Check hydration is improving				
13.2 Check for signs of over-hydration like eye swelling.				
14.ENCOURAGE PARAMEDICS AND PARENT TO START THE FOLLOWING AS SOON AS CHILD CAN DRINK AND EAT: 1. ORS.				
2. Breastfeeding,				
3. Soft foods.				
15.DISCONTINUE IV THERAPY AS SOON AS APPROPRIATE (usually within 6 hours of initiation.)				

PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

BASIC AND ADDITIONAL SKILLS CHECKLIST (A-10)

FOR PARAMEDICS.

Name of Participant: _____

Name of Health Facility: _____

Name of Trainer/Observer: _____

Date: _____

This Skills Checklist has 2 purposes:

1. Participants should use it as a guide for checking their own skills or other participants' skills.
2. Trainers should use it when they evaluate how well students perfor the basic and additional skills.

After observing the participant performing these skills, enter a rating and comments in the appropriate columns.

Rating: 1 = Inadequate
2 = Needs Improvement
3 = Adequate.

This log certifies that _____

has successfully demonstrated competence and earned

certification in these basic skills: YES []

in these additional skills YES []

Name of Examiner : _____ Date: _____

BASIC SKILLS CHECKLIST FOR PARAMEDICS. (A-10)

To manage all diarrhoea cases that come to your health facility use your handout (A-3) as a reference and follow these steps:	YES	NO	RATING	COMMENTS.
1.SET UP AN ORT TROLLEY WITH:-				
1.1 ORS packets.				
1.2 Water in container (few litres)				
1.3 Litre container with lid.				
1.4 Stirring spoon.				
1.5 Cups and spoons.				
1.6 A selection of containers from the local bazaar with volumes written on them.				
2.ASSESS A DIARRHOEA CASE USING THE CLINICAL FORM (A-8).				
2.1 Examine child in parents arms.				
2.2 Ask if any blood in the stools.				
2.3 Ask if the following fluids were given during diarrhoea: a. Breastmilk.				
b. Other milks.				
c. ORS.				
d. Other fluids.				
2.4 Ask if foods given during diarrhoea				
2.5 Look for these signs of dehydration and record them on the assessment chart (A-3). a. Thirst				
b. Irritability				
c. Tearless eyes				
d. Sunken eyes				
e. Dry mouth and lips				

	YES	NO	RATING	COMMENTS
f. Listlessness				
g. Sunken fontanelle in infants				
h. Deep and rapid breathing				
i. Skin pinch goes back slowly				
j. Rapid heartbeat				
k. Weak, rapid pulse				
3.DETERMINE GRADE OF DEHYDRATION AND SELECT TREATMENT PLAN.				
3.1 No Dehydration, Plan A.				
3.2 Mild-Moderate Dehydration, Plan B.				
3.3 Severe Dehydration, Plan C.				
4.REFER THE FOLLOWING 5 COMPLICATED CASES TO THE DOCTOR:				
4.1 Severe Malnutrition.				
4.2 High fever that does not go down after 1 hr. with tepid sponging.				
4.3 Diarrhoea for over 14 days.				
4.4 Blood in the stools.				
4.5 Severe Dehydration.				

FOR CHILDREN WITH NO DEHYDRATION (Plan A) AND FOR ALL DIARRHOEA CASES BEFORE THEY GO HOME DO THE FOLLOWING:

5.DEMONSTRATE ORS PREPARATION:				
5.1 Wash hands.				
5.2 Pour 1 litre/seer or 4 pao sized glasses of clean water into a container.				
5.3 Empty a whole packet of ORS into the water and stir with a clean spoon.				
5.4 Cover container.				

	YES	NO	RATING	COMMENTS
5.5 Explain that after 24 hours any ORS left must be thrown away and a fresh litre made.				
5.6 Check parents can do or explain these 5 steps.				
6. DEMONSTRATE ORS ADMINISTRATION:				
6.1 Give ORS with cup and spoon.				
6.2 Give ORS with child sitting up.				
6.3 Give a spoon every minute. If child wants more, give more.				
6.5 Give half to one glass after each stool or vomit.				
6.6 If child vomits, wait 10 mins then give ORS more slowly every 2-3 minutes.				
6.7 Check parent can do or explain these 5 steps.				
7. GIVE PARENT 2 ORS PACKETS TO TAKE HOME.				
8. TEACH PARENT THE 4 RULES OF HOME TREATMENT:-				
8.1 Give more fluids.				
8.2 Continue foods (including breastmilk)				
8.3 Bring child back if signs of dehydration develop or child is not getting better.				
8.4 Help to prevent another diarrhoea episode by: washing hands before touching food, breast-feeding and NOT bottlefeeding.				

	YES	NO	RATING	COMMENTS
9.USE 3 STEPS TO GOOD COMMUNICATION:				
9.1 Ask parent what they do.				
9.2 Explain the 4 rules.				
9.3 Ask parent to repeat 4 rules in their own words.				

YES & NO Column: Write Yes in the "YES" column if the skill has been performed
Write No in the "NO" column if the skill has not been performed.

Rating scale:
1 = Inadequate.
2 = Needs Improvement.
3 = Adequate.

Comments Column: For any comments about performance of the skill.

ADDITIONAL SKILLS CHECKLIST FOR PARAMEDICS. (A-10).

To manage diarrhoea cases with Mild-Moderate Dehydration and Severe Dehydration in the ORT unit and Inpatient Ward follow these steps and use the handout (A-3) for reference.	YES	NO	RATING	COMMENTS.
1.WEIGH THE CHILD: 1.1 Explain to parent what you are doing.				
1.2 Check scales are on zero.				
1.2 Ask parent to remove child's clothes leaving one thin layer.				
1.4 Place child on scales.				
1.5 Record weight in Kgs.				
2.CALCULATE NUTRITIONAL STATUS USING A GROWTH CHART. 2.1 Ask parent the child's age and month of birth.				
2.2 Find the child's age on the horizontal scale of growth chart on the back of the Clinical Form.				
2.3 Find the child's weight on the vertical scale.				
2.4 Make a mark where these 2 lines meet.				
2.5 Check to see whether the mark falls into the Normal, Grade 1, Grade 11 or Grade 111 part of the growth chart.				
2.6 Record the nutritional status.				
3.TAKE TEMPERATURE UNDER ARM. 3.1 If high demonstrate to parent how to tepid sponge child.				
3.2 Take temperature again in 1 hr.				
3.3 If still high refer child to doctor.				

	YES	NO	RATING	COMMENTS
4. RECORD INFORMATION IN ORT REGISTER (if used in your Health Facility).				
5. SELECT AMOUNT OF ORS REQUIRED IN 4-6 HOURS (preferably using weight rather than age to calculate volume).				
5.1 Calculate using 10-20 ml ORS per Kg. body weight per hour.				
6. MONITOR AMOUNT OF ORS GIVEN AND RECORD THIS ON PATIENT'S INPUT/OUTPUT SHEET.				
6.1 Record name of child on input/output chart.				
6.2 Record amount of ORS required				
6.3 Record time ORS was started.				
6.4 Record every 200 ml cup given.				
6.5 Add extra ORS for every stool/vomit and record amount:				
Under 1 yr. give extra 100 mls for every stool or vomit.				
Over 1 yr. give extra 200 mls.				
7. ADMINISTER ORS AND TEACH PARENT TO ADMINISTER ORS. 7.1 Show parent how to give a spoon of ORS every minute using the seconds hand of the ORT unit clock as your reference.				
7.2 Deal with difficulties administering ORS:				
Explain that if a child is thirsty he will drink the ORS too quickly and vomit.				
Explain ORS helps to reduce the vomiting.				

	YES	NO	RATING	COMMENTS.
8 REASSESS HYDRATION STATUS EVERY 1-2 HOURS USING THE ASSESSMENT CHART (A-3).				
9. ENCOURAGE MOTHER TO CONTINUE BREASTFEEDING.				
9.1 Deal with any breastfeeding problems she may have.				
10. GIVE SOFT FOODS LIKE KITCHRI, BANANA, YOGHURT TO CHILDREN OVER 4 MONTHS AS SOON AS THEY CAN EAT.				
10.1 Prepare this food every day or ask parents to bring from bazaar.				
11. SEND CHILD HOME WHEN ALL SIGNS OF DEHYDRATION HAVE DISAPPEARED.				
FOR CHILDREN WITH SEVERE DEHYDRATION TREATED WITH IV THERAPY:				
12. MONITOR THE AMOUNT OF IV FLUID REQUIRED AND GIVEN ON AN INPUT/OUTPUT CHART.				
13. MONITOR PATIENTS HYDRATION STATUS REGULARLY AND RECORD FINDING, EVERY 2 HOURS UNTIL PATIENT IS REHYDRATED, THEN EVERY 6 HOURS.				
13.1 Call doctor if hydration status is not improving.				
13.2 Check for signs of over hydration like eye swelling.				
14. ENCOURAGE PARENT TO START THE FOLLOWING AS SOON AS CHILD CAN DRINK AND EAT: 1. ORS.				
2. Breastfeeding,				
3. Soft foods.				
15. DISCONTINUE IV THERAPY AS SOON AS APPROPRIATE (usually within 6 hours of initiation.)				

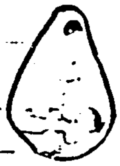
DIARRHOEA POLICY CHECKLIST A-11

Name of Health facility: _____

Name of the observer: _____

Date

DIARRHOEA MANAGEMENT CHECKLIST (Write "Yes" or "No")	OBSERVATIONS OF CURRENT MANAGEMENT			DIARRHOEA POLICY OBJECTIVES			IMPROVEMENTS REQUIRED
	In OPD	In ORT	In-Patient	In OPD	In ORT	In-Patient	
O R T							
Do ALL diarrhoea cases drink ORS or other fluids?							
Does staff demonstrate how to prepare ORS?							
Does staff explain how to give ORS? *(how much, how often, how long)*							
Is special care given to neonates to avoid excessive use of ORS and to assist breast-feeding?							
Are parents of diarrhoea cases given 1 to 2 ORS packets to take home?							
CONTINUED FEEDING							
Is breastfeeding encouraged for ALL infants?							
Is breastfeeding continued during rehydration?							
Is food appropriate for age given no later than 4 hours after rehydration is started?							
Are milk feeds diluted? *(milk should NOT be diluted)*							
Is milk mixed with cereals and given during maintenance?							
Are feeding bottles used? *(feeding bottles should NOT be used)*							
DRUGS *(Antidiarrhoeals, Antiemetics and Antispasmodics should not be used in health facility nor prescribed for diarrhoea)*							
Are Antidiarhoeals used/prescribed?							
Are Antiemetics used/prescribed?							
Are Antispasmodics used/prescribed?							
Are Antibiotics ONLY prescibed for dysentery and systemic infection?							
Is only a single Antibiotic prescribed?							
I.V. THERAPY							
Is I.V. ONLY used for SEVERE dehydration?							
Is I.V. stopped within 6 hours of initiation? *(I.V. should be stopped and ORS started)*							
Is Ringers Lactate used for severe dehydration?							
Is I.V. patient started on ORS as soon as child can drink?							
IMMUNIZATION							
Are immunizations of mothers and children up to date before leaving?							
HYGIENE							
Does staff wash hands after each case?							
EXIT INTERVIEW WITH PARENTS *(Check parent knows these 4 rules before leaving)*							
1. Give more fluids							
2. Continue foods *(including breastmilk)*							
3. When to bring child back							
4. Prevention of diarrhoe							



IRED	HOW CAN IMPROVEMENTS BE MADE?	BY WHOM?	When?

DIARRHOEA POLICY OBJECTIVES

(write "Yes" or "No")	In OPD	In ORT	In-Patient
ORT			
Do ALL diarrhoea cases drink ORS or other fluids?	YES	YES	YES
Does staff demonstrate how to prepare ORS?	YES	YES	YES
Does staff explain how to give ORS? (*how much, how often, how long*)	YES	YES	YES
Is special care given to neonates to avoid excessive use of ORS and to assist breast-feeding?	YES	YES	YES
Are parents of diarrhoea cases given 1 to 2 ORS packets to take home?	YES	YES	YES
CONTINUED FEEDING			
Is breastfeeding encouraged for ALL infants	YES	YES	YES
Is breastfeeding continued during rehydration?	YES	YES	YES
Is food appropriate for age given no later than 4 hours after rehydration is started?	YES	YES	YES
Are milk feeds diluted? (*milk should NOT be diluted*)	NO	NO	NO
Is milk mixed with cereals and given during maintonance?	YES	YES	YES
Are feeding bottles used? (*feeding bottles should NOT be used*)	NO	NO	NO
DRUGS (*Antidiarrhoeals, Antiemetics and Antispasmodics should not be use*			
Are Antidiarhoeals used/prescribed?	NO	NO	NO
Are Antiemetics used/prescribed?	NO	NO	NO
Are Antispasmodics used/prescribed?	NO	NO	NO
Are Antibiotics ONLY prescibed for dysentery and systemic infection?	YES	YES	YES
Is only a single Antibiotic prescribed?	YES	YES	YES
I.V. THERAPY			
Is I.V. ONLY used for SEVERE dehydration?			YES
Is I.V. stopped within 6 hours of initiation? (*I.V. should be stopped and ORS started*)			YES
Is Ringers Lactate used for severe dehydration?			YES
Is I.V. patient started on ORS as soon as child can drink?			YES
IMMUNIZATION			
Are immunizations of mothers and children up to date before leaving?	YES	YES	YES
HYGIENE			
Does staff wash hands after each case?	YES	YES	YES
EXIT INTERVIEW WITH PARENTS (*Check parent knows these 4 rules before leaving*)			
1. Give more fluids	YES	YES	YES
2. Continue foods (*including breastmilk*)	YES	YES	YES
3. When to bring child back	YES	YES	YES
4. Prevention of diarrhoea	YES	YES	YES

PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

TRAINERS' GUIDE.

CASE STUDIES FOR DOCTORS. Pages.

C-1 No Dehydration.....39
C-2 Mild-Moderate Dehydration.....45 & 47
C-3 Severe Dehydration.....59 & 62
C-4 Acute Dysentery.....79 & 81
C-5 Complicated Cases.....D 4-9
C-11 Example of case study made by Trainer.

INSTRUCTIONS ON HOW TRAINER SHOULD USE THESE CASE STUDIES

1. Explain to the doctors that you are going to read a short case study of a child who has diarrhoea and is brought to their health facility, and will then ask them questions about the case. Explain that they can make a record of the case in their Clinical Form (A-7) and use their handout (A-2) to help them find the answers.

2. Read the case study slowly and allow doctors to ask questions so that they understand all the information.

3. Ask question 1 and allow a little time for all the doctors to think about the answer. Then choose a volunteer to answer. Check that the answer corresponds to the answer given in the answer sheet.

4. Repeat this for all the questions allowing different doctor to answer each time.

DOCTORS ATTACHMEI

CASE STUDY - C1. No Dehydration.

A mother has brought her 11-month-old daughter to a health centre because the child has diarrhoea. The mother is breastfeeding the child. She says she lives far from the health centre and might not be able to come back for several days, even if the child gets worse. The mother mentions that she usually gives her children gruel when they get diarrhoea but heard that the health centre has something better.

The health worker asks, looks and feels for signs of dehydration, but finds none. He decides to treat according to Plan A.

What should the health worker do and what should he tell the mother?

ANSWER:

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Treatment Plan A C-1

A mother has brought her 11-month-old daughter to a health centre because the child has diarrhoea. The mother is breastfeeding the child. She says she lives far from the health centre and might not be able to come back for several days, even if the child gets worse. The mother mentions that she usually gives her children gruel when they get diarrhoea but heard that the health centre has something better.

The health worker asks, looks and feels for signs of dehydration, but finds none. He decides to treat according to Plan A.

● What should the health worker do and what should he tell the mother?

ANSWER:

He should:

- *Praise the mother on giving her child gruel and encourge her to continue doing so.*
- *Explain to the mother that she should also give more fluid than usual and breastfeed the baby more frequently (that is, every two to three hours). The mother should also frequently feed the child small amounts of food, (e.g., every three to four hours). Foods should be well cooked and mashed. Encourage the child to eat as much as she wants.*
- *Tell the mother to bring her child back if she passes many stools, is unusually thirsty or has sunken eyes. These are signs that she is dehydrated.*
- *Tell the mother to bring the child back if she develops a high fever, does not eat or drink normally or does not seem to be getting better.*
- *Give the mother enough packets of ORS for two days because she lives far away.*
- *Observe while the mother mixes the packet with the correct amount of water. Show her 1/4 cup of solution in a cup--the amount she should give the baby after each diarrhoea stool.*

DOCTORS
ATTACHMENT 2

Case Studies: Treatment Plan B mild - moderate Dehydration

CASE STUDY C-2

Ali is five months old. His mother breastfeeds him. His diarrhoea started last night, and he has had eight very watery stools. His mother said there was no blood in the stools. His urine amount is less than normal. As the doctor examines Ali, she finds that the skin pinch goes back slowly, the fontanelle is a little sunken, and the eyes are a little sunken. Ali does not have a fever.

Describe Ali's signs and symptoms of dehydration.

ANSWER:

Is he severely dehydrated?

ANSWER:

Which treatment plan should the doctor select and follow?

ANSWER:

What else should the doctor advise Ali's mother?

ANSWER:

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How much ORS should be given to the child in the first four to six hours?

ANSWER:

When should the mother start to breastfeed Ali again?

ANSWER:

When should the child be reassessed?

ANSWER:

When the doctor reassesses Ali, she finds that he is continuing to pass large amounts of watery diarrhoea. His skin pinch goes back quicker than before, but his eyes and fontanelle are still a little sunken.

Describe the treatment to be given now.

ANSWER:

After another four hours, Ali looks much better. His eyes are no longer sunken, the fontanelle is normal and the skin pinch goes back quickly.

What should be done next? Why?

ANSWER

In addition to the advice on fluids and feeding, what else should the doctor tell Ali's mother?

ANSWER:

CASE STUDY C2

Ali

Ali is five months old. His mother breastfeeds him. His diarrhoea started last night, and he has had eight very watery stools. His mother said there was no blood in the stools. His urine amount is less than normal. As the doctor examines Ali, she finds that the skin pinch goes back slowly, the fontanelle is a little sunken, and the eyes are a little sunken. Ali does not have a fever.

- Describe Ali's signs and symptoms of dehydration.

  ANSWER: *Ali has the following signs of dehydration:*

  - *eight watery stools in less than 24 hours*
  - *less urine than normal*
  - *eyes that are a little sunken*
  - *a skin pinch which goes back slowly*
  - *a sunken fontanelle.*

- Is he severely dehydrated?

  ANSWER: *No. Ali is not severely dehydrated.*

- Which treatment plan should the doctor select and follow?

  ANSWER: *The doctor should select and follow Plan B: To Treat Dehydration.*

- What else should the doctor advise Ali's mother?

  ANSWER: *The doctor should encourage Ali's mother to continue breastfeeding and to begin giving him solid foods since he is five months old.*

- How much ORS should be given to the child in the first four to six hours?

  ANSWER: *The child should be given 200 to 400 ml of ORS solution in the first four to six hours.*

- When should the mother start to breastfeed Ali again?

  ANSWER: *The mother should not stop breastfeeding. She can and should continue breastfeeding during the time the child receives ORS.*

- When should the child be reassessed?

  ANSWER: *The child should be reassessed after four to six hours.*

When the doctor reassesses Ali, she finds that he is continuing to pass large amounts of watery diarrhoea. His skin pinch goes back quicker than before, but his eyes and fontanelle are still a little sunken.

- Describe the treatment to be given now.

  ANSWER: *Since some of the signs of dehydration are still present, Treatment Plan B will still be followed. Ali should be given 200-400 ml of ORS solution for another four to six hours. He should be breastfed between the times he receives ORS solution. This procedure should be repeated until the signs of dehydration have gone. He should be offered a small amount of food, such as cereal.*

After another four hours, Ali looks much better. His eyes are no longer sunken, the fontanelle is normal and the skin pinch goes back quickly.

- What should be done next? Why?

  ANSWER: *Plan A should be selected because there are no longer signs of dehydration. The child can be sent home. The doctor should give the mother two ORS packets and instruct her how to use them to ensure that further dehydration is prevented.*

- In addition to the advice on fluids and feeding, what else should the doctor tell Ali's mother?

  ANSWER: *The doctor should tell Ali's mother that the family can help prevent Ali from getting diarrhoea by practicing good hygiene. When preparing food for the baby, the mother should make sure that her hands and all the pots and utensils are clean. The prepared food should not be left uncovered and should not be kept longer than a day. The baby's stools should be disposed of quickly and away from the other children and sources of drinking water. The doctor can also tell the mother that water should be boiled if it is not clean.*

POCTORS
ATTACHMENT 3

CASE STUDY C-2 mild - moderate Dehydration.

Anita, a 10-month-old child, has had diarrhoea for two days. She was weaned off the breast last month, and her mother gives her rice porridge. When the diarrhoea started, Anita's mother immediately stopped giving foods and liquids because she was afraid that it would make the diarrhoea worse. Even so, Anita did not get better, and her mother brought her to see the doctor. The doctor found that Anita's pulse was faster than normal and that the inside of her mouth was dry. She was quite thirsty, and her mother said that she had not urinated much. She was irritable, crying and moving restlessly during the examination. The doctor noticed that there were no tears.

What treatment plan should the doctor select? Why?

ANSWER:

How much ORS should the child be given for the first four to six hours?

ANSWER:

What factors other than dehydration are having an effect on Anita's health?

ANSWER:

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Anita's mother begins giving ORS the way she has been shown, but after 15 minutes, Anita starts to vomit.

What could be the reason for the vomiting? What should the doctor advise the mother?

ANSWER:

Anita is reassessed after four hours. Her mouth is wet and she has urinated. Her pulse is normal, she is more calm and she seems much better. She has continued to pass liquid stools.

What treatment should the doctor recommend now?

ANSWER:

What specific advice should the doctor give Anita's mother concerning her diet while she is still having diarrhoea? After the diarrhoea? If she has c

ANSWER:

-DOCTORS
ATTACHMENT 3

What advice should the doctor give Anita's mother on preventing diarrhoea?

ANSWER:

CASE STUDY

Anita C-2

Anita, a 10-month-old child, has had diarrhoea for two days. She was weaned off the breast last month, and her mother gives her rice porridge. When the diarrhoea started, Anita's mother immediately stopped giving foods and liquids because she was afraid that it would make the diarrhoea worse. Even so, Anita did not get better, and her mother brought her to see the doctor. The doctor found that Anita's pulse was faster than normal and that the inside of her mouth was dry. She was quite thirsty, and her mother said that she had not urinated much. She was irritable, crying and moving restlessly during the examination. The doctor noticed that there were no tears.

- What treatment plan should the doctor select? Why?

  ANSWER: *Anita should get Treatment Plan B since she has the following signs of dehydration (two or more in Column B):*

  - *pulse faster than normal*
  - *mouth dry*
  - *more thirst than usual*
  - *little urine*
  - *irritable*
  - *absence of tears.*

- How much ORS should the child be given for the first four to six hours?

  ANSWER: *The child should be given 400 to 600 ml of ORS solution for the first four to six hours.*

- What factors other than dehydration are having an effect on Anita's health?

  ANSWER: *Anita's weaning food is not adequate, and her mother has been starving her during the diarrhoea. She is most likely suffering from undernourishment.*

Anita's mother begins giving ORS the way she has been shown, but after 15 minutes, Anita starts to vomit.

- What could be the reason for the vomiting? What should the doctor advise the mother?

  ANSWER: *The vomiting could be due to the child drinking too much too quickly because of her thirst. The doctor should tell the mother to wait 10 minutes before giving ORS, then continue, but more slowly, a spoonful at a time. Even if the baby vomits, she will usually retain enough ORS solution to continue rehydrating.*

Anita is reassessed after four hours. Her mouth is wet and she has urinated. Her pulse is normal, she is more calm and she seems much better. She has continued to pass liquid stools.

- What treatment should the doctor recommend now?

  ANSWER: *Anita's signs of dehydration have gone, so the doctor should now select Treatment Plan A as maintenance therapy to prevent dehydration from reoccurring.*

- What specific advice should the doctor give Anita's mother concerning her diet while she is still having diarrhoea? After the diarrhoea? If she has diarrhoea again?

  ANSWER: *The doctor should give the following advice on Anita's nutrition:*

  - *While recovering from the illness, she should receive more food than usual (four to six small meals a day) containing protein/energy rich foods (such as meat, fish, ground nuts, oil, dairy products).*
  - *Her usual weaning diet should be improved by adding protein/energy foods to her rice porridge.*
  - *Even if she has diarrhoea, her mother should not withhold food and liquids. She should continue feeding, making sure the foods are protein/energy rich and adequate.*

- What advice should the doctor give Anita's mother on preventing diarrhoea?

  ANSWER: *The doctor should give the following advice on preventing diarrhoea:*

  - *Wash hands before preparing food for the family and before feeding Anita.*
  - *Prepare foods in a clean place, using clean pots and utensils.*

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- *Dispose of baby's stool in latrine or away from houses and water sources. Always wash hands after stool disposal.*
- *Anita should drink clean water; it may be necessary to boil the water.*

DOCTOR S
ATTACHMENT 4

Case Studies: Treatment Plan C, Severe Dehydration

CASE STUDY C-3
Ahmed

Ahmed is 13 months old. He still gets some breastmilk but his mother also gives him formula in a bottle along with baby cereal. She brings him to the health centre because he has had diarrhoea for a week and now it is worse. There have been more than 10 liquid stools the day she brings him to the doctor. Ahmed has had little appetite and has received less food than normal since the diarrhoea started. He is very quiet. His head hangs back and his arms and legs have poor muscle tone. He has passed no urine since last night.

The doctor takes the child's temperature and finds that it is 40° C. Ahmed has very dry and sunken eyes and a very sunken fontanelle. His radial pulse is not detectable and his heart rate is 150/min. However, he is conscious and opens his eyes to look at the doctor. He is very thirsty and when offered something to drink he is able to take it.

What signs of dehydration does Ahmed have?

ANSWER:

What is his degree of dehydration?

ANSWER:

Are there any other problems?

ANSWER:

The clinic currently has no intravenous solutions in stock so the doctor decides to send Ahmed to the hospital with his mother. What should he do for Ahmed before the child is sent there?

ANSWER:

Ahmed and his mother arrive at the hospital, where I.V. treatment can be administered. This hospital uses Ringer's Lactate solution. The nurse weighs Ahmed and finds he weighs six kg.

How much I.V. fluid should be given to the child in the first hour?

ANSWER:

Within the first two hours 240 ml of I.V. fluid are given to the child. Cooling him with a wet cloth has lowered his fever. The child's progress is assessed. He has passed no more stool since coming to the hospital. He has urinated. His eyes and fontanelle are still sunken. His radial pulse is now palpable, with a rate of 110 per minute. He is a little more alert.

Has the child's treatment been ideal? Explain your answer. How much fluid should be given over the next hour?

ANSWER:

After three hours of treatment, Ahmed's fluid treatment is on schedule according to the treatment plan. His clinical condition is the same as at two hours with his pulse rate now 100 per minute.

What should the child be given during the next three hours? How much should be given?

ANSWER:

After six hours of therapy, Ahmed's fontanelle is a little sunken. His eyes are sunken but not dry and his pulse is normal. He now has a fever of 38°C.

What treatment plan should be selected and followed?

ANSWER:

Plot Ahmed's weight on the growth chart provided. What percentage of the standard weight for 13 months is Mario's weight? What is Ahmed's nutritional status?

Based on your answers, what further steps should the doctor take while the patient is in the hospital? What advice should the nurse give to Ahmed's mother concerning his further nutritional management before she goes home?

ANSWER:

CASE STUDY #1

Ahmed

(Adapted from WHO Supervisory Skills: Treatment of Diarrhoea)

Ahmed is 13 months old. He still gets some breastmilk but his mother also gives him formula in a bottle along with baby cereal. She brings him to the health centre because he has had diarrhoea for a week and now it is worse. There have been more than 10 liquid stools the day she brings him to the doctor. Ahmed has had little appetite and has received less food than normal since the diarrhoea started. He is very quiet. His head hangs back and his arms and legs have poor muscle tone. He has passed no urine since last night.

The doctor takes the child's temperature and finds that it is 40° C. Ahmed has very dry and sunken eyes and a very sunken fontanelle. His radial pulse is not detectable and his heart rate is 150/min. However, he is conscious and opens his eyes to look at the doctor. He is very thirsty and when offered something to drink he is able to take it.

- What signs of dehydration does Ahmed have?

ANSWER: Ahmed *has the following signs of dehydration:*

- *more than 10 liquid stools a day,*
- *quiet and floppy,*
- *no urine for six hours,*
- *very dry and sunken eyes,*
- *very sunken fontanelle, and*
- *very fast pulse.*

- What is his degree of dehydration?

ANSWER: Ahmed *has severe dehydration.*

- Are there any other problems?

ANSWER: Ahmed *has a high fever of 40° C.*

The clinic currently has no intravenous solutions in stock so the doctor decides to send Ahmed to the hospital with his mother. What should he do for Ahmed before the child is sent there?

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ANSWER: *The doctor should prepare ORS solution for Ahmed, and instruct his mother to begin administering it while taking him to the hospital (400 to 600 ml over the next 4 to 6 hours). The solution should be given frequently in small amounts (by spoon, for example).*

Ahmed and his mother arrive at the hospital, where I.V. treatment can be administered. This hospital uses Ringer's Lactate solution. The nurse weighs Ahmed and finds he weighs six kg.

- How much I.V. fluid should be given to the child in the first hour?

ANSWER: *The child should be given 180 ml (30 ml/kg x 6 kg) of I.V. fluid the first hour.*

Within the first two hours 240 ml of I.V. fluid are given to the child. Cooling him with a wet cloth has lowered his fever. The child's progress is assessed. He has passed no more stool since coming to the hospital. He has urinated. His eyes and fontanelle are still sunken. His radial pulse is now palpable, with a rate of 110 per minute. He is a little more alert.

- Has the child's treatment been ideal? Explain your answer. How much fluid should be given over the next hour?

ANSWER: *The treatment has not been ideal. The child received 240 ml but he should have received 300 ml (30 ml/kg x 6 kg for the first hour plus 20 ml/kg x 6 kg for the next hour). During the next hour the child should be given 60 ml extra, to make up the deficit from the first 2 hours, plus an additional 180 ml (20 ml/kg x 6 kg).*

After three hours of treatment, Ahmed's fluid treatment is on schedule according to the treatment plan. His clinical condition is the same as at two hours with his pulse rate now 100 per minute.

- What should the child be given during the next three hours? How much should be given?

ANSWER: *The intravenous drip should be slowed down, and oral rehydration solution (ORS) begun by mouth. During the next three hours, 240 ml of ORS should be given.*

After six hours of therapy, Ahmed's fontanelle is a little sunken. His eyes are sunken but not dry and his pulse is normal. He now has a fever of 38°C.

- What treatment plan should be selected and followed?

  ANSWER: *Plan B should be followed. The mother should be instructed to offer Ahmed the breast frequently and she should be encouraged to feed the child.*

- Plot Mario's weight on the growth chart provided. What percentage of the standard weight for 13 months is Ahmed's weight? What is Ahmed's nutritional status?

- Based on your answers, what further steps should the doctor take while the patient is in the hospital? What advice should the nurse give to Ahmed's mother concerning his further nutritional management before she goes home?

  ANSWER: *Ahmed's weight is less than 60% of the standard. The child is severely malnourished.*

  The doctor (or other hospital staff member) should get a more complete history regarding the child's diet before diarrhoea began. Aggressive feeding should be given, emphasizing cereals to assist in fluid absorption. Small, frequent (5-7 times daily) feedings should be given in hospital. The mother should be encouraged to offer the breast frequently.

  Before the mother takes Ahmed home, the nurse should advise the mother against giving formula in a bottle and suggest that she use a spoon and cup instead. She should also advise the mother to mix milk formula with other cereals and foods during the period immediately after diarrhoea stops. She should advise Ahmed's mother to supplement the baby cereal with protein and energy-rich foods such as oil, legumes, eggs, meat, fish and dairy products.

DOCTORS ATTACHMENT 5

CASE STUDY : C-3 Severe Dehydration.

Six-Month-Old Baby

You are a doctor working in an urban clinic. A six-month-old baby is brought to you. She is comatose, with a rapid heart rate and an impalpable pulse. She has cold, clammy skin, and deep, rapid, sighing breathing. Her abdomen is distended and bowel sounds are infrequent. The child has been having profuse, watery diarrhoea and severe vomiting for the past two days. The local pharmacist prescribed antiemetic drops and a suspension containing diphenoxylate with atropine. The mother tells you that two weeks before the onset of the illness she started supplementing breastfeeding with whole milk and feels this is the reason for the child's illness. The baby has a temperature of 38° C and weighs six kg.

Assess the child's degree of dehydration and explain your decision.

ANSWER:

What route and type of fluids will you use to replace the fluid deficit? Why?

How much fluid is needed to replace deficits? Over what time periods would you divide this replacement?

ANSWER:

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Do you think you need to add nything to your rehydration fluid? Why? If so, what, how much, and how will you give it?

ANSWER:

What do you say to the mother about the medication given to the infant by the local pharmacist? Explain your answer.

ANSWER:

Do you think the mother's assumption about the cause of the illness is correct? Why?

ANSWER:

What specific recommendations will you give her for feeding during the current illness and the recovery period?

ANSWER:

After adequate rehydration therapy, what route, type of fluid and volume should you give for maintenance therapy? How should maintenance therapy differ from rehydration therapy?

ANSWER:

What is the probable cause of the abdominal distension and reduced bowel sounds?

ANSWER:

If the infant continues to have watery stools after fluid deficits have been replaced, what will be your specific instructions?

ANSWER:

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CASE STUDY C-3

Six-Month-Old Baby

You are a doctor working in an urban clinic. A six-month-old baby is brought to you. She is comatose, with a rapid heart rate and an impalpable pulse. She has cold, clammy skin, and deep, rapid, sighing breathing. Her abdomen is distended and bowel sounds are infrequent. The child has been having profuse, watery diarrhoea and severe vomiting for the past two days. The local pharmacist prescribed antiemetic drops and a suspension containing diphenoxylate with atropine. The mother tells you that two weeks before the onset of the illness she started supplementing breastfeeding with whole milk and feels this is the reason for the child's illness. The baby has a temperature of 38° C and weighs six kg.

- Assess the child's degree of dehydration and explain your decision.

  ANSWER: *The child has severe dehydration and acidosis. This is shown by rapid impalpable pulse; cold, clammy skin; and deep, rapid, sighing breathing. Her coma is probably caused by vascular shock.*

- What route and type of fluids will you use to replace the fluid deficit? Why?

  ANSWER: *The intravenous route is preferred for severe dehydration and electrolyte imbalance because of its rapidity. Also, the child is unable to drink due to coma. Ringer's lactate solution is preferred because it includes all the necessary components for complete electrolyte replacement: lactate replaces HCO_3 and treats acidosis, potassium replaces K losses and treats paralytic ileus and NaCl replaces sodium losses and treats dehydration.*

- How much fluid is needed to replace deficits? Over what time periods would you divide this replacement?

  ANSWER: *In the first three hours, a total of 420 ml of Ringer's lactate can be given intravenously. This is calculated as follows: 30 ml/kg x six kg the first hour plus 40 ml/kg x six kg for the next two hours. For example: 180 ml + 240 ml = 420 ml.*

- Do you think you need to add anything to your rehydration fluid? Why? If so, what, how much, and how will you give it?

  ANSWER: *If you responded to the description of the child's rapid, deep, sighing breathing by diagnosing acidosis and thought of adding concentrated sodium bicarbonate to the I.V. solution, your diagnosis was correct but your treatment was unnecessary. In essentially all cases where acidosis has been produced primarily by base loss in the stool, it will be treated effectively only with rehydration, using Ringer's lactate, ORS or other base containing rehydration solutions. The addition of concentrated sodium bicarbonate to the infusion is rarely indicated in managing acidosis caused by diarrhoea.*

- What do you say to the mother about the medication given to the infant by the local pharmacist? Explain your answer.

  ANSWER: *After telling the mother that she did well to seek help for her infant because of the vomiting, diarrhoea and dehydration signs, explain that antiemetic medication (medicine that stops the vomiting) and "antidiarrhoeal agents" such as diphenoxylate with atropine [Lomotil] are not recommended for the treatment of diarrhoea in children. Some of these drugs can be dangerous (even fatal) for infants. Although some may slow the intestine, they sometimes slow it too much and cause paralysis, allowing fluids to accumulate. This can cause the child to dehydrate and even vomit. Explain that the drugs given by the pharmacist may have caused her to get worse.*

- Do you think the mother's assumption about the cause of the illness is correct? Why?

  ANSWER: *The mother's belief that weaning led to the diarrhoea episode is quite likely correct, although her reasoning may be wrong. It is unlikely that the use of the whole milk, as opposed to a diluted formula, leads to diarrhoea at this age. However, epidemiological studies have shown that diarrhoea increases after weaning begins and that exclusive breastfeeding prevents diarrhoea. The increase in diarrhoea incidence around weaning time probably is related more to contamination of the food.*

- What specific recommendations will you give her for feeding during the current illness and the recovery period?

  ANSWER: *Once the child recovers from her comatose state and is alert and able to drink, the mother should continue breastfeeding. Small amounts of weaning foods (e.g., cereals and mashed fruit) may be offered as well. During convalescence the child should be given extra foods. The mother should be carefully instructed on diet food preparation, hygiene and hand washing to prevent diarrhoea in the future.*

- After adequate rehydration therapy, what route, type of fluid and volume should you give for maintenance therapy? How should maintenance therapy differ from rehydration therapy?

  ANSWER: *After adequate rehydration therapy, when the child has recovered from shock and coma and the signs of dehydration are gone, the oral route is preferred, provided she can drink and vomiting is limited. The oral route is preferred because it is more beneficial to gut recovery. ORS solution may be given with an equal amount of plain water or breastmilk to replace continued stool losses of 50 to 100 ml/kg over 24 hours and insensible and renal losses of 100 to 130 ml/kg/day. Instruct the mother to give 1/2 cup of diluted ORS or other similar solution after each stool.*

  Maintenance therapy differs from rehydration therapy in that it has a lower concentration of sodium, to allow for lower levels of stool losses during recovery. These lower concentrations of sodium can be achieved by alternating ORS with low solute fluids such as breastmilk and water.

- What is the probable cause of the abdominal distension and reduced bowel sounds?

  ANSWER: *The most likely cause is paralytic ileus. Paralytic ileus can be secondary both to hypokalaemia, due to potassium losses in stool and vomiting, and to the effects of the medications given.*

- If the infant continues to have watery stools after fluid deficits have been replaced, what will be your specific instructions?

  ANSWER: (See above.) *The full set of instructions from Treatment Plan A should be given to the mother. The hospital should ensure that arrangements for giving appropriate food to the child are made while the child is still in the hospital ward.*

DOCTORS ATTACHMENT 6

CASE STUDY C-4

Ayaz

Ayaz, who is two years old, is brought to the health centre because he has had bloody diarrhoea for three days. The health worker assesses the child and finds that he has no signs of dehydration and he is not febrile or malnourished. The health worker is not surprised that the child has bloody diarrhoea because in the last week many patients have had the same illness.

What kind of diarrhoea does Ayaz have?

ANSWER:

How should the health worker treat Ayaz?

ANSWER:

Should an antibiotic be given, and, if so, how should it be given?

ANSWER:

Should the health worker do any tests on the stool? Why or why not?

ANSWER:

What important advice should the health worker give the mother to help prevent the spread of this infection?

ANSWER:

If the child returns after 48 hours because he is not improving, what should the health worker do for follow-up?

ANSWER:

CASE STUDY C-4 Acute Dysentery

Ayaz

Ayaz, who is two years old, is brought to the health centre because he has had bloody diarrhoea for three days. The health worker assesses the child and finds that he has no signs of dehydration and he is not febrile or malnourished. The health worker is not surprised that the child has bloody diarrhoea because in the last week many patients have had the same illness.

- What kind of diarrhoea does Ayaz have?

  ANSWER: *Ayaz has acute diarrhoea because it is less than 14 days. Ayaz has dysentery because there is blood in the stool. Ayaz should be treated as if he had dysentery caused by Shigella based solely on having blood in the stool.*

  The fact that there seems to be an epidemic of dysentery in the community suggests that the organism may be Shigella dysenteriae type 1.

- How should the health worker treat Ayaz?

  ANSWER: *The key components for the treatment of Ayaz are:*

  - *Antibiotic therapy*
  - *Home fluids to prevent dehydration*
  - *Continued feeding*
  - *Follow-up and reassessment at 48 hours if not improved.*

- Should an antibiotic be given, and, if so, how should it be given?

  ANSWER: *The health worker should give Ayaz a five-day course of TMP-SMX. It is given orally at TMP 10 mg/kg/day and SMX 50 mg/kg/day in two divided doses.*

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- Should the health worker do any tests on the stool? Why or why not?

  ANSWER: *It is not necessary for the health worker to do tests on Ayaz' stool. In general if the stool is reported to be bloody by the child caretaker or the nurse it is not necessary to verify this by lab tests. The only time a health worker should consider having the stool cultured is when an epidemic is first recognized to confirm the diagnosis.*

- What important advice should the health worker give the mother to help prevent the spread of this infection?

  ANSWER: *Bloody diarrhoea is easily transmitted to other members of the family through poor hygiene. Therefore, the health worker should explain to the mother that the family should be very careful about disposing of Ayaz's stools and that all family members should wash their hands with soap and water after touching the baby's stools and before eating.*

- If the child returns after 48 hours because he is not improving, what should the health worker do for follow-up?

  ANSWER: *The health worker should:*

  - *check the weight and compare it to the prediarrhoea weight,*
  - *check the clinical response to the treatment (e.g., less diarrhoea, nausea, abdominal cramps and fever and increased alertness and appetite),*
  - *examine for signs of dehydration, and*
  - *reinforce advice given for home treatment (e.g., fluids and feeding).*

DOCTORS ATTACHMENT 7.

CASE STUDY C-4

Munir is 10 months old and has never really been sick. However, his elder sister has brought him to the health centre today because he has had diarrhoea for five days. The sister tells the clinic officer in charge that the family had been giving fluids and food at home but Munir seems to be getting worse as the last two days he is eating and drinking much less. When questioned the sister says that Munir is not vomiting but she does not know whether there is any blood or mucus in the stool. When the clinical officer examines the baby he notices that the child is a little lethargic. He has a pulse of 100 per minute and a respiratory rate of 32 per minute. The mouth and tongue are dry, the fontanelle and the eyes are a little sunken and the skin turgor is normal. He looks at the clinic card and sees that the baby weighs 8 kg.

How would you describe Munir's hydration status, and what treatment plan would you recommend?

ANSWER:

Since the sister did not know if there was blood in the stool, what should the clinic officer do?

ANSWER:

The clinic officer decides to keep Munir in the ORT unit for rehydration therapy. After four hours the nurse from the ORT unit reports to the clinic officer that Munir has had 500 cc of ORS solution and one bloody diarrhoeal stool while in the unit. Has Munir had enough fluid?

ANSWER:

The clinic officer reexamines Munir and finds no signs of dehydration. How should the clinic officer treat Munir now?

ANSWER:

After 48 hours the sister returns to the same health centre as Munir is not getting any better. He still has bloody diarrhoea and is again not eating or drinking very well. The clinic officer reexamines Munir and feels that there are no signs of dehydration at this time However, he is worried that the diarrhoea is not getting better with the antibiotic Cotrimoxazole. The clinic officer does a microscopic stool exam and finds red and white blood cells and no amoebae. If you were the clinic officer what would you do now?

ANSWER

CASE STUDY C-4 Acute Dysentery

Munir is 10 months old and has never really been sick. However, his elder sister has brought him to the health centre today because he has had diarrhoea for five days. The sister tells the clinic officer in charge that the family had been giving fluids and food at home but Munir seems to be getting worse as the last two days he is eating and drinking much less. When questioned the sister says that Munir is not vomiting but she does not know whether there is any blood or mucus in the stool. When the clinical officer examines the baby he notices that the child is a little lethargic. He has a pulse of 100 per minute and a respiratory rate of 32 per minute. The mouth and tongue are dry, the fontanelle and the eyes are a little sunken and the skin turgor is normal. He looks at the clinic card and sees that the baby weighs 8 kg.

- How would you describe Munir's hydration status, and what treatment plan would you recommend?

  ANSWER: *Munir's pulse and respirations are normal, but he has the following signs of dehydration: dry mouth, sunken eyes and sunken fontanelle. These three signs tell us that Munir has some dehydration and he should be treated according to Treatment Plan B.*

- *Since the sister did not know if there was blood in the stool, what should the clinic officer do?*

  ANSWER: *The clinic officer can look at the diaper to see if there is any bloody diarrhoea present. If the child is staying for oral rehydration therapy, the nurses and sister can be asked to look for blood in the diarrhoea. There is no need to test the stool.*

The clinic officer decides to keep Munir in the ORT unit for rehydration therapy. After four hours the nurse from the ORT unit reports to the clinic officer that Munir has had 500 cc of ORS solution and one bloody diarrhoeal stool while in the unit. Has Munir had enough fluid?

ANSWER: *According to Treatment Plan B, Munir should get 400 to 600 cc. of ORS solution in the first four to six hours. Therefore, the 500 cc is probably enough. The reassessment should confirm this by reexamining for the clinical signs of dehydration found earlier.*

- The clinic officer reexamines Munir and finds no signs of dehydration. How should the clinic officer treat Munir now?

ANSWER: *As Munir is no longer dehydrated, he may be sent home with advice to give home fluids and continue feeding. Because blood was seen in the stool, the clinic officer should also prescribe an antibiotic such as TMP-SMX or ampicillin (if Shigella organisms from that area are usually sensitive).*

After 48 hours the sister returns to the same health centre as Munir is not getting any better. He still has bloody diarrhoea and is again not eating or drinking very well. The clinic officer reexamines Munir and feels that there are no signs of dehydration at this time. However, he is worried that the diarrhoea is not getting better with the antibiotic TMP-SMX. The clinic officer does a microscopic stool exam and finds red and white blood cells and no amoebae. If you were the clinic officer what would you do now?

ANSWER: *You should change the antibiotic to nalidixic acid, or if this antibiotic is unavailable, you should refer the child to a larger centre for treatment and investigation. If the facilities are available, you could do a stool culture.*

DOCTORS ATTACHMENT
C5-1

CASE 5-1

An 8-month-old girl is brought by her mother to the treatment centre with a history of diarrhoea and vomiting for 2 days. The patient has had 4 watery stools (without blood) over the last 24 hours and 2 episodes of vomiting. The mother is not certain when or how much her child has urinated over the last day. She has continued to breastfeed exclusively. The mother has not yet started feeding the baby other foods. The patient appears to be marasmic; her weight is 5 kg. She is alert and afebrile. Her eyes appear slightly sunken but her mother says that they are always that way. Her mouth and tongue are moist; she has just finished breastfeeding. Her anterior fontanelle is slightly sunken and her skin turgor (elasticity) is decreased. Her respiratory rate and pulse are normal.

1. What additional information would be useful for assessing this child's condition?

2. If tears are present and the child is not thirsty, how would you manage this child?

3. If the child urinates a large amount of dilute urine after 1 hour, there is no change in the fontanelle or skin turgor, and the child refuses the ORS, what would you do?

4. If, one hour after starting Treatment Plan B, the child drinks ORS avidly and there is some improvement in the skin turgor and fontanelle, what would you do?

INSTRUCTIONS ATTACHMENT
C 5-1

COMPLICATED CASES
Signs of Dehydration in a Marasmic Child.

ANSWERS TO CASE 5-1

1. In marasmic children, it is more difficult to make an accurate assessment of the signs of dehydration. Tenting of the skin and a sunken anterior fontanelle are generally not reliable signs of dehydration in marasmic children. Additional information on thirst and the presence or absence of tears would be useful since these will not be altered by malnutrition.

2. The child is probably not dehydrated. However, since she has had some vomiting and 4 diarrhoeal stools per day and her skin turgor and fontanelle are abnormal, it would be reasonable to treat the patient initially according to Plan B to see if there is any improvement in these signs. You can also observe her urine output.

3. This confirms that the child is not dehydrated. Treat her according to Treatment Plan A. She will also require nutritional rehabilitation. Clearly, the mother needs to be educated about appropriate feeding with soft and solid nutritious foods.

4. Assume the child is dehydrated and continue ORS according to Treatment Plan B. Monitor the child carefully for signs of improvement of dehydration during therapy. Stop ORS administration if the child develops signs of overhydration (oedema.)

CASE. 5-2

A 2-year-old boy presents with a history of watery diarrhoea (without blood) for 5 days for which he has received ampicillin treatment. The patient has had 6 watery stools over the last day and vomited twice. He has refused to eat and has had nothing to drink today. He recently urinated a small amount of dark urine.

The patient weighs 12 kg. He is irritable and afebrile. His eyes are sunken, tears are absent, his mouth is dry, his tongue has a white coating and his skin turgor is decreased. His pulse and respiratory rate are fast.

1. What is the child's hydration status?

2. How much ORS will you give the child and over what period of time?

3. The child refuses to take the ORS by spoon. What will you do now?

INSTRUCTORS ATTACHMENT C 5-2

Complicated Cases
Refusing to take ORS.

ANSWERS TO CASE 5-2

1. Some (mild-moderate) dehydration

2. 600-800 ml over 4-6 hours

3. First, determine why the child is refusing the ORS: (1) taste the solution to determine if it is prepared correctly and is not too warm; (2) examine the child's mouth to see if he has stomatitis or thrush (this is possible since he has been taking antibiotics); (3) perhaps he has received antiemetic or antimotility drugs which make him too sleepy to drink -- if this is the case, bathe him with cool water to arouse him so that he can drink the ORS.

   Second, try administering the ORS by another method: by cup alone, dropper, or a syringe without the needle. If these simple methods do not work, insert a nasogastric tube to administer ORS. If a nasogastric tube is not available, he will require rehydration by the intravenous route.

CASE # 5-3

A 10-month-old boy presents with watery diarrhoea (without blood) and some dehydration. The mother has been treating him with an antidiarrhoeal preparation given to her by the local pharmacist. He urinated a small amount of dark urine 2 hours ago. On examination, he is sleepy and afebrile; his eyes, sunken; tears, absent; his mouth, dry; his skin turgor, diminished; and his pulse and respiratory rate are rapid.

ORS is given slowly according to Treatment Plan B. During the first hour, the child vomits 4 times. The abdomen is very distended.

1. What do you think is happening? What will you do now?

COMPLICATED CASES.

Abdominal Distension

ANSWER TO CASE 5-3

1. You must try to find out why the child's abdomen is distended. Examine the abdomen, listening carefully for bowel sounds.

   (a) The child may have decreased intestinal motility and abdominal distention due to the drug. If so, this effect may last for hours and may impede the progress of oral rehydration.

   (b) The distention may be caused by hypokalaemia. In this case, the potassium deficits can be replaced by *slow* administration of ORS containing 20 mmol potassium per litre. ORS can be given more quickly after the abdominal distention decreases.

   (c) The child may have a paralytic ileus due to bowel obstruction or another surgical condition, requiring a different intervention. In this case fluids should not be given orally but intravenously to correct the dehydration. Appropriate diagnostic procedures and surgical consultation should take place promptly.

DOCTORS ATTACHMENT C 5-4

CASE 5-4

A 2-year-old boy with some (mild-moderate) dehydration is started on Treatment Plan B. His weight is 11 kg and he is alert. At the onset of therapy he has a dry mouth, decreased skin turgor, sunken eyes, and no tears. He has a respiratory rate of 20/minute and a pulse of 110/minute.

During the 2 hours of therapy he drinks the ORS avidly, consuming nearly 400 ml. He has passed 4 large watery stools during the same period. On reassessment, his general condition has deteriorated. He appears less alert. Noticeably, his skin turgor is more diminished; his eyes are still sunken; his mouth is moist (but he is drinking ORS); and his pulse and respiratory rates are more rapid (140/minute and 40/minute, respectively).

1. What is your conclusion about the child's condition after the first 2 hours of ORT?

Complicated Cases

Heavy Purging

ANSWER TO CASE 5-4

1. The child appears to have become more dehydrated during the last 2 hours, probably because his ongoing diarrhoeal fluid losses are too great (i.e., he is purging at too high a rate) for his dehydration to be corrected by the oral rehydration therapy alone. His heavy purging may be due to *Vibrio cholerae 01* infection. With very high rates of diarrhoeal purging (10 ml/kg/h), it is generally necessary to rehydrate dehydrated patients intravenously until the purging lessens. If the patient has cholera, he should be treated with an appropriate antibiotic (e.g., tetracycline) to attenuate the illness.

   It is also possible, but much less likely, that the patient has glucose intolerance and cannot absorb the ORS. In the case of glucose intolerance, intravenous fluid therapy is required for rehydration.

C-11

DIARRHOEA CLINICAL FORM

*** START GIVING ORS NOW ***

Name of Health Facility: _____

Patient/Registration Number: _____ Date: _____

Patient Name: Sara Age: 8mths [ ] Male [✓] Female

Address: _____ [ ] Urban [✓] Rural

I. HISTORY OF CURRENT DIARRHOEA EPISODE

1 Duration of Diarrhoea 8 days
2 Total number of stools in 24 hours 6
3 Blood in stool [✓] yes [ ] no
4 Watery stool [ ] yes [✓] no
5 Vomiting (past 24 hours) [✓] yes [ ] no
If yes number of times 2
6 Abdominal Pain [ ] yes [✓] no
7 Urine (in last 6 hours) [✓] yes [ ] no
8 Are other illnesses present? [ ] yes [ ] no
If yes, what? Fever
9 Past history of diarrhoea [✓] yes [ ] no
If yes, When? 1 month ago

ACTIONS TAKEN BY PARENT DURING DIARRHOEA

1. Breastfeeding [✓] never [ ] more [ ] usual [ ] less [ ] stopped
2. Other Milks [ ] never [ ] more [ ] usual [✓] less [ ] stopped
3. Fluids [ ] never [✓] more [ ] usual [ ] less [ ] stopped
If yes, what? Herbal Tea
4 Foods [ ] never [ ] more [ ] usual [ ] less [ ] stopped
if yes, what? _____
5 Did parent give ORS? [ ] yes [✓] no
6 Did parent prepare ORS correctly? [ ] yes [✓] no
7 Medicine given [ ] yes [ ] no
if yes, what? Kao pectate
8 Did parent do anything else for diarrhoea [ ] yes [✓] no
if yes what? _____

Conclusion: Action is [ ] Adequate [ ] Inadequate

II. DIET PRIOR TO DIARRHOEA

Breast feeding	[ ] yes	[✓] no			
Bottle feeding	[✓] yes	[ ] no	if yes what? Cow's Milk	How many times/day? 6	How much/day?
Fluids	[ ] yes	[✓] no	if yes what?	How many times/day?	How much/day?
Foods	[ ] yes	[✓] no	if yes what?	How many times/day?	How much/day?

Conclusions: Diet is [ ] Adequate [ ] Inadequate

III. EXAMINE THE CHILD AND USE THIS CHART TO SELECT THE TREATMENT PLAN *Circle Answers*

	NO Dehydration Plan-A	MILD-To-MODERATE (SOME) Dehydration Plan-B	SEVERE Dehydration Plan-C	Other problems e.g. ENT, Chest, etc
Diarrhoea	Less than 4 liquid stools/day	4-10 liquid stools/day	More than 10 liquid stools day	
Vomiting	None or small amount	Some	Very frequent	
Thirst	Normal	Greater than Normal	Unable to drink	
Urine	Normal	A small amount	No Urine for 6 hours	
Condition	Well, alert	Unwell, sleepy, irritable	Very sleepy, unconcious floppy or having fits	
Fontanelle	Normal	Sunken	Very sunken	
Eyes	Normal	Sunken	Very dry & sunken	
Tears	Present	Absent	Absent	
Mouth & Tongue	Wet	Dry	Very dry	
Breathing	Normal	Faster than normal	very fast and deep	
Skin	Pinch goes back quickly	Pinch goes back slowly	Pinch goes back very slowly	
Pulse	Normal	Faster than normal	Very fast, weak, can't feel	
	Child has No signs of dehydration	If 2 or more of these signs, child has Mild Moderate dehydration	If 2 or more of these signs, child has SEVERE dehydration	

* Temperature °C 39°C * Weight in Kgs 5.5 Kgs then plot on Growth Chart

Immunization: Child (under 2 years of age) BCG [✓] DPT - Polio I [✓] II [ ] III [ ] Booster [ ] Measles [ ]
Mother TT I [ ] TT II [ ] TT III [ ] TT IV [ ] TT V [ ]

IV. ASSESSMENT AND TREATMENT

1. Duration of Diarrhoea	[ ] Less than 7	[✓] 7-13 days	[ ] Persistent (14 + days)	
2. Diarrhoea is	[ ] Watery	[ ] Non-watery		[✓] Bloody
3. Dehydration Status	[ ] None	[✓] Mild-Moderate/Some		[ ] Severe
4. Diarrhoea Treatment Plan	[ ] A (None)	[✓] B (Mild-Moderate/Some)		[ ] C (Severe)
5. Nutrition Status	[ ] Normal	[ ] Grade I	[✓] Grade II	[ ] Grade III
6. Nutrition Treatment	Start supplementary food S			
7. Treatment of Other Illnesses/Complications	Tepid Sponge			
8. Medicines prescribed	Cotrimoxazole x 5 days			
9. Immunization Status	[ ] Up to date	[ ] Not up to date	[✓] Refer for immunization	

V. OUTCOME:

[✓] Treated & Sent Home [ ] Admitted [ ] Died (God Forbid)
[✓] Mother and Child Sent for immunization

TREATMENT PLANS

Degree of Dehydration	AGE OF CHILD		
	Up to 4-6 months (exclusively breastfed)		More than 4-6 months (partially breastfed)
NONE (Plan-A)	o Breastfeed more often		o Breastfeed more often. o Give more fluids such as **rice water lassi, plain water and ORS.** o Continue soft foods such as **khichri yogurt and mashed banana**
	0-11 MONTHS	**1-4 YEARS**	**5 YEARS & OVER**
MILD TO MODERATE (SOME) (Plan-B)	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers
	10-20 ml ORS per kilogram body weight per hour		
SEVERE (Plan-C)	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr) Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE HOME TREATMENT	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN IF CHILD WANTS MORE WATER, GIVE IT		

SUPERVISORY CHECKLIST

FIND OUT WHETHER PARENT IS ABLE TO DO OR EXPLAIN THE FOLLOWING *(If parent is not able, then teach parent again)*	Yes	No
1. Need for home fluids (like breastmilk rice water, lassi, plain water)		
2. How to mix ORS		
3. How to give ORS (how much, how often, how long)		
4. Need to continue breastfeeding		
5. Need to continue feeding from 4 to 6 months of age (how much, how often, how long)		
6. When to bring child back (including signs of dehydration)		
7. Prevention of diarrhoea (handwashing & breastfeeding)		
8. Need for up to date immunization for mother and child.		
9. MOTHER'S LEAFLET GIVEN AND EXPLAINED		

Ask parent to teach these things to all their relatives and neighbours

PATIENT'S PROGRESS SHEET (in ORT unit or ward)

Time of Arrival: _____ Time fluid therapy started _____

HISTORY	History on Arrival	HOURS AFTER ARRIVAL At 2 hours	At 4 hours	At 6 hours	At 12 hours
Number of Stools					
Episodes of vomiting					
Urine output					
ORS given (Total)					
Other fluids given (Total)					
Food given					
Medicines prescribed					
IV Fluid given (Volume)					
CLINICAL STATUS	**ON ARRIVAL**				
General Appearance					
Fontanelle					
Eyes					
Tears (present or absent)					
Mouth and Tongue					
Skin Turgor					
Respiration (per minute)					
Temperature (°C)					
Weight (kg)					
ASSESSMENT AND TREATMENT	**ON ARRIVAL**				
Dehydration Status					
Treatment Plan Chosen					
Total Fluid Input					
Total Fluid Output					
Total Fluid now Advised					

STOOL EXAMINATION

pH _____ _____

Reducing substances _____

Naked eye examination _____

Microscopic examination _____

INTAKE-OUTPUT CHART

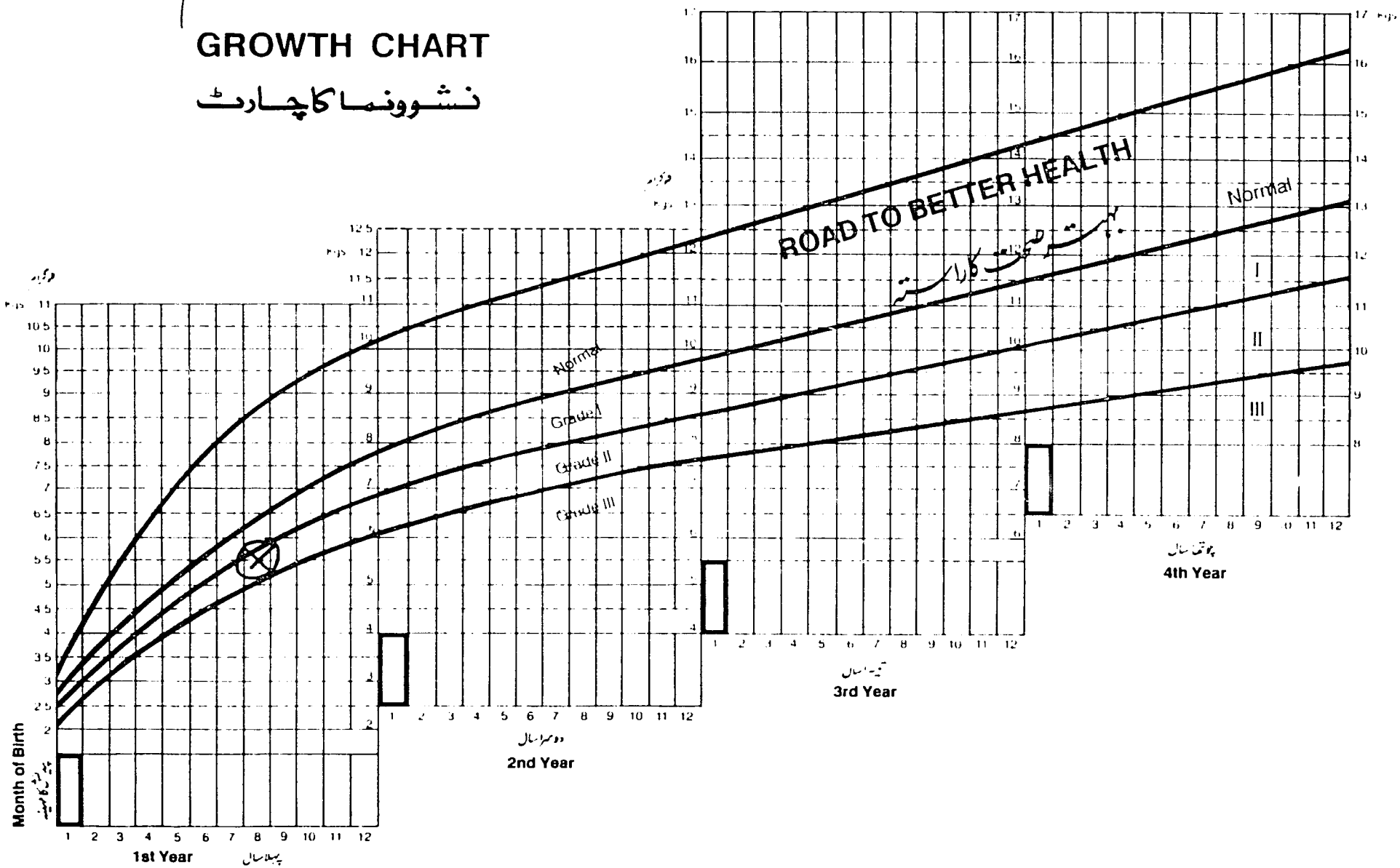
TIME	FLUID INPUT ORS (mls)	FLUID INPUT BREASTMILK (how many times)	FOOD (Name and quantity)	FLUID OUTPUT URINE (No.)	FLUID OUTPUT STOOL (No.)	FLUID OUTPUT VOMIT (No.)	REMARKS

FOLLOW-UP VISITS (Plot weights on Growth Chart on back page)

DATE	WEIGHT	CLINICAL NOTES	ADVICE

GROWTH CHART

نشوونما کا چارٹ



PAKISTAN DIARRHOEA TRAINING UNIT PROGRAMME.

TRAINER'S GUIDE.

CASE STUDIES FOR PARAMEDICS.

C-6 No Dehydration.
C-7 Mild-Moderate Dehydration.
C-8 Severe Dehydration.
C-9 Blood in Stool (Dysentery)
C-10 Persistent Diarrhoea.

INSTRUCTIONS ON HOW TRAINER SHOULD USE THESE CASE STUDIES

1. Explain to the paramedics that you are going to read a short case study of a child who has diarrhoea and is brought to their health facility, and will then ask them questions about the case. Explain that they can make a record of the case in their Clinical Form (A-8) and use their handout (A-3) to help them find the answers.

2. Read the case study slowly and allow paramedics to ask questions so that they understand all the information.

3. Ask question 1 and allow a little time for all the paramedics to think about the answer. Then choose a volunteer to answer. Check that the answer corresponds to the answer given in the box under the question.

4. Repeat this for all the questions allowing different paramedics to answer each time.

CASE STUDY (C-6).

A mother has brought her 3 month old baby daughter to your health facility. The baby was well until yesterday when she started passing loose watery stools. She has passed 3 stools since yesterday and has vomited once. The mother has stopped giving the baby diluted cow's milk by feeding bottle, but is continuing to breastfeed. When you examine the baby you find that she looks alert and her mouth and tongue are not dry. The skin pinch goes back quickly and her eyes are not sunken. The baby is malnourished.

● 1. What do you first say to the mother ?

ANSWER: * PRAISE the mother for bringing her baby to the health facility and continuing to breastfeed.

● 2. Does the baby have any signs of dehydration ?

ANSWER: * The baby has no signs of dehydration.

● 3. What degree of dehydration does this baby have ?

ANSWER: * The baby has NONE dehydration, that means no visible signs.

● 4. What is the Diarrhoea Treatment Plan for this baby ?

ANSWER: * Plan A. Breastfeed more often.

● 5. What advice would you give the mother about treatment at home ?

ANSWER: * Give advice on the 4 rules of home treatment:-
* Rule 1. Give more fluids like breastmilk.
* Rule 2. Continue breastfeeding more frequently.
* Rule 3. Bring baby back to the health facility if signs of dehydration develop like sunken eyes, passing many stools, very thirsty or child is not getting better.
* Rule 4. STOP using the feeding bottle, use a cup and spoon instead. Breastfeed more often and try to reduce the amount of cow's milk required. Mother should wash her hands before preparing food or feeding the baby.

● 6. Why do you think this baby got diarrhoea ?

ANSWER: * Because of bottlefeeding. A 3 month old baby should be exclusively breastfed. The feeding bottle is difficult to keep clean and introduces microbes. If the mother replaces her protective breastmilk containing antibodies, with other fluids her baby will get diarrhoea.

● 6. This baby is malnourished. Why do you think this baby became malnourished ?

ANSWER: * The mother partly replaced her breast milk, which is the complete food for a baby of this age (under 4-6 months) with diluted cow's milk.

CASE STUDY (C-7).

A father brings his 8 month old son to your health facility by bus giving plain water on the way. The baby is irritable and very thirsty. He has passed 5 stools since the morning and has slightly sunken eyes. His mouth and lips are dry. You examine him and find that he has a slight temperature of 38.5 C.

- 1. What do you first say to the father ?

ANSWER: * Praise father for bringing his son and giving plain water in the bus on the way.

- 2. What degree of dehydration does this baby have ?

ANSWER: * Mild-Moderate (Some) Dehydration (Plan B).

- 3. What other questions would you like to ask the father about the diarrhoea ?

ANSWER:
* How many days has your baby had diarrhoea ?
* Is there any blood in the stools ?
* Does the baby have any other illness ?
* What other fluids have you given during diarrhoea ?
* What foods have you given during diarrhoea ?

- 4. How would you treat the slight fever ?

ANSWER: * Show father how to tepid sponge the child with a wet cloth. Start giving fluids including ORS. Take temperature again in one hour. If still high refer child to the doctor. Dehydration can cause a slight fever and once the child has been rehydrated with ORS the fever will go down.

- 5. How would you treat this child in your health facility ?

ANSWER: * Give him ORS before doing anything else. Send him to the ORT unit where he would be weighed and the amount of ORS required calculated. Give him ORS until all the signs of dehydration have gone.

- 6. He weighs 7 Kg. How much ORS would you give in the first 6 hours?

ANSWER: * 10-20mls x 7kg x 6 hours = 420 - 840 mls ORS.

- 7. If you did not know the weight, how much ORS would you give in the first 4-6 hours ?

ANSWER: * 200 - 600 mls or 1/4 - 1/2 seer.

- 8. The father is worried because the child vomited after taking ORS. What advice would you give to the father ?

ANSWER: * Do not worry. Wait 10 minutes then continue giving ORS but give more slowly 1-2 spoons every 2-3 minutes.

CASE STUDY (C-8)

A 3 year old baby boy is brought to your health facility by his grandfather. The grandfather tells you that the boy has had very frequent watery stools for 2 days. The boy is very drowsy and has very dry and sunken eyes. He has not been able to drink anything for a few hours.

● 1. What do you first say to the grandfather ?

ANSWER: * PRAISE him for bringing his grandson to the health facility.

● 2. What would you do next for this boy ?

ANSWER: * Refer him immediately to the doctor.

● 3. Why would you refer him immediately to the doctor ?

ANSWER: * Because he has 2 or more signs of SEVERE Dehydration and needs the Treatment Plan for SEVERE Dehydration, Plan C.

● 4. What signs of SEVERE dehydration does this boy have ?

ANSWER: * Unable to drink.
* Very sleepy.
* Very dry and sunken eyes.

● 5. What are the other signs of dehydration you should look for ?

ANSWER: Encourage them to answer using doll and head-to-toe method.
* Very sunken fontanelle (but child is not an infant and fontanelle will be closed.)
* Tears absent.
* Mouth and tongue very dry.
* Breathing very fast.
* Skin pinch goes back very slowly.
* Pulse very fast, weak, or not felt.

● 6. What treatment should the doctor give this boy ?

ANSWER: * The doctor should examine for other signs of dehydration. The doctor should then weigh the boy, calculate the amount of iv fluid required to rehydrate the boy in 4-6 hours, set up an iv drip and and give Ringers Lactate according to Treatment Plan C for SEVERE Dehydration.

● 7. The boy has been given Ringers Lactate for 3 hours and his signs of dehydration are less. He is not drowsy now ? You are looking after him on the ward. What would you do next ?

ANSWER: * Offer him ORS if he is able to drink. Teach the grandfather to give him one spoon every minute and more if boy wants it. Remove the iv line within 6 hrs of its initiation.

● 8. What other advice would you offer the grandfather ?

ANSWER: * Teach him 4 rules of home treatment and give 2 ORS packets.

CASE STUDY (C-9)

A 7 month old baby girl is brought to your health facility by her father. The father tells you that she has had diarrhoea with blood in the stools and a fever for 2 days. He has been giving ORS and rice water since the diarrhoea started. She looks unwell, but her fontanelle is not sunken and her skin pinch goes back quickly.

- 1. What do you first say to the father ?

ANSWER: * Praise him for giving ORS and rice water when the diarrhoea started and for bringing his daughter to the health facility

- 2. What would you do next for this baby girl ?

ANSWER: * Start giving ORS. Give a cup to the father and show him how to give one spoon every minute and more if baby wants more.
* Take the temperature and show father how to tepid sponge baby
* Refer baby to doctor because she has blood in the stools.

- 3. How will the doctor treat this baby ?

ANSWER: * The doctor will give an antibiotic for the bloody stools (dysentery).

- 4. Why does the baby have a fever ?

ANSWER: * Fever is often associated with acute dysentery.

- 5. What signs of dehydration does this baby have ?

ANSWER: * This baby has no signs of dehydration.

- 6. Why do you think the baby has no signs of dehydration ?

ANSWER: * Because the father started giving extra fluids like ORS and rice water as soon as the diarrhoea started. This will not stop the diarrhoea, but it will help to prevent dehydration developing.

- 7. You find the baby weighs 5 Kg. What is the grade of malnutrition ?

ANSWER: Grade 2. (Baby aged 7 months and weighing 5 Kg).

- 8. The father says that the baby is being breastfed and has not been started on any other foods because her teeth have not erupted yet. What advice would you give ?

ANSWER: * Explain that breastfeeding is very good and should be continued. Advise that baby can start taking soft foods, like mashed potato, banana, yoghurt and kitchri, even though the teeth have not erupted. A few spoons should be given 6 times a day during the diarrhoea episode and an extra meal for 2 weeks after diarrhoea stops. A teaspoon of oil should be added to each meal.

CASE STUDY (C-10)

A mother brings her 5 year old son to your health facility. She is very worried because her son has had diarrhoea for 3 weeks. She has tried many different medicines from the bazaar. He has only passed a small amount of urine today and he is very thirsty.

1. What do you first say to the mother ?

ANSWER: * PRAISE her for bringing her son to the health facility.

2. Does the child have any signs of dehydration ?

ANSWER: * Yes, the child has 2 signs of dehydration:
* 1. Passing small amounts of urine.
* 2. Thirst.

3. What degree of dehydration does this child have ?

ANSWER: The child has 2 signs of Mild-Moderate dehydration.

4. How would you treat this child in your health facility ?

ANSWER: * Give him ORS at once, then send him to the ORT unit where he would be weighed and the amount of ORS required calculated. Continue giving ORS until all the signs of dehydration have gone. Teach the mother how to prepare and give ORS and the 4 rules of home treatment.

5. The weighing scales are not working. How much ORS will you give him in the first 4-6 hours ?

ANSWER: * 1 to 2 litres or 1 to 2 seers.

6. What else would you do with this child ?

ANSWER: * Refer him to the doctor because he has had diarrhoea for more than 14 days.

7. What advice would you give to the mother about getting medicines from the bazaar ?

ANSWER: * Tell her that medicines for diarrhoea have to be prescribed by the doctor. Medicines for stopping diarrhoea from the bazaar are all useless and some of them are even dangerous. Some of them like Imodium, Lomotil and Rheatrol syrups are now banned in Pakistan because they have been causing abdominal swelling and killing many children.

8. What would you do before sending the child home ?

ANSWER: * Ask mother to explain how to prepare and give ORS and the 4 rules of home treatment in her own words.
* Give her 2 packets of ORS.

PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME.

TRAINER'S GUIDE.

9.3 INTRODUCTORY TALKS FOR DOCTORS

T-1 Objectives Of DTU/ORT Unit Programme.
Trainer's Guide (T-1).

T-2 Aetiology of Diarrhoea.
Readings on Diarrhoea Chapter 3, Page 13.
WHO Director's Guide E-14, E-47-53.

T-3 Indications For Drugs In Diarrhoea.
Readings on Diarrhoea, Chapter 13, Page 127.
WHO Director's Guide, E-7, E-40

T-4 Management Of Acute Diarrhoea
Readings on Diarrhoea Chapters 7, 8, 10, 11.
WHO Director's Guide E-8 and E-30.

T-5 Talking with Parents.
Readings on Diarrhoea, Chapter 9, Page 75.

T-1

PAKISTAN NATIONAL CDD ROGRAMME

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PAKISTAN.

Total population aged less than 5 years:	18 million.
Prevalence of diarrhoea:	5.7%
Number of diarrhoea episodes in children under 5 years: (18 million X 5 episodes)	90 million per year
Total number of deaths in children less than 5 years:	700,000 per year.
Total number of deaths due to diarrhoea	228,000 per year
Infant and Child malnutrition rate	48%
Severe malnutrition (Gomez Grade 111)	10%
ORS usage rate (1988)	73%
Home fluid usage rate (1988)	6.4%
Children immunized against measles: Under 12 months	53%
18 mths- 23 mths	81%
2-4 years	70%

PAKISTAN NATIONAL CDD PROGRAMME

OBJECTIVES:

To reduce mortality and morbidity due to acute diarrhoeal diseases in children under 5 years of age.

TARGETS:

By end of the June, 1993:

- Mortality due to diarrhoeal diseases in children under 5 years of age shall be reduced by 50%.
- Morbidity due to diarrhoeal diseases in children under 5 years of age shall be reduced by 25%.
- Hospital admission rate due to diarrhoeal diseases in children under 5 years of age shall be reduced by 50%.
- Hospital case fatality rate due to diarrhoeal diseases in children under 5 years of age shall be reduced by 50%.

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Strategies

Treatment of diarrhœa

- Early treatment with home available fluids to prevent dehydration
- Correct dehydration with ORS
- Feeding during and after diarrhœa
- Selective use of antibiotics and IV fluids
- Proper management of persistent diarrhœa

Prevention of diarrhœa

- Breast feeding
- Measles immunization
- Improved weaning practices
- Use of plenty of clean water
- Hand washing
- Use of latrines
- Proper disposal of stools of small children

ORS Procurement/Distribution

Regular sources

- Federal CDD Cell
- Provincial budget
- Relaxation from MOH for sale of ORS through general/kiryana stores

Temporary source

- UNICEF

PAKISTAN'S NATIONAL DIARRHOEA TREATMENT POLICY

ORT

- All diarrhoea cases will drink ORS (or other fluid) prior to leaving.
- All parents will be taught how to mix ORS.
- All parents will be taught how to give ORS (how much, how often, how long) ORS will be given using a cup and spoon or dropper.
- Special care/attention will be given to neonates, especially low birth weight, to avoid excessive use of ORS. Breastfeeding will be encouraged and assisted where needed.
- All parents will be given 1 to 2 ORS packets for home use.

BREASTFEEDING

- Breastfeeding will be encouraged for all infants and continued even during rehydration.

CONTINUED FEEDING

- Feeding appropriate for age will be encouraged to start no later than 4 hours after start of rehydration.
- Milk feeds will not be diluted but may be mixed with cereals and can be offered during maintenance.
- No feeding bottles will be used.

DRUGS

- No anti-diarrhoeal, antiemetic, antispasmodic drugs will be used or prescribed for diarrhoea in children, especially under 5 years.
- Antibiotics will be used only for specified indications to be recorded on the patient record whenever used. This will generally be reserved for bloody dysentery or other systemic infections. Only a single antibiotic will be prescribed.

IV THERAPY

- I.V. will be used only for severe dehydration as demonstrated by objective findings recorded on the patient record form.
- I.V. will be used only for rehydration and stopped within 6 hours of initiation.
- Ringers lactate is preferred but 0.9% saline with 5% Dextrose is an acceptable alternative Glucose/Dextrose solution alone will not be used.
- Patients on I.V. will be started on ORS as soon as they can drink.

IMMUNIZATION

- Ensure that no child leaves before its immunization is up-to-date (especially measles). Similarly, the mother, if in child bearing age group (15-45 years), should be given TT immunization.

HYGIENE

- Staff will demonstrate commitment to importance of personal hygiene by washing their hands after handling each patient

PLEASE ENSURE THAT

- Parents leave only after they can explain in their own words the following:

1. **The Need for the Child to Drink More Fluids than Usual:**
   - Mix ORS correctly using local measures
   - Use ORS correctly offering 1 2 to 1 tea cup for each stool or vomit and more if child desires.
2. **The Need for the Child to Continue Eating:**
   - Breastfeed, and if 6 months or older, state the food and the approximate amount of food to feed child.
3. **When to Bring the Child Back:**
   Explain signs of dehydration and indications to bring child back
4. **How to Prevent Diarrhoea:**
   - Explain the importance of handwashing breastfeeding and danger of bottle feeding

KEY MESSAGES FOR MOTHERS — CDD/ORT

DIARRHOEA CAN KILL

When your child has diarrhoea he loses lots of water and salt from his body. He may die if the water and salts are not put back into his body. ORS solution and fluids put the water and salts back into the child's body. The more diarrhoea your child has the more ORS, fluids and food he needs.

Diarrhoea often causes the child to lose weight. That is why it is important to breastfeed the child often and for children older than four months, feed the child soft foods like khichri, yogurt and bananas.

1. GIVE YOUR CHILD MORE FLUIDS AS SOON AS DIARRHOEA STARTS

As soon as diarrhoea starts, give your child more fluids than usual: breastmilk, rice water, and ORS are particularly good.

Feed your child Fluids/ORS after every stool and as much as your child will drink.

For children under 2 years of age

How to prepare ORS:

- Pour one whole packet of ORS into one litre (seer) or four glasses (pao size) of water. Stir until the powder is dissolved.
- Give your child one cup of ORS after every stool. Feed ORS to the child slowly. Continue feeding ORS even if the child vomits.
- Keep the ORS solution in a clean container and cover it to keep dirt out. Use the ORS solution within 24 hours. Throw away the leftover and make a fresh solution.

2. FEED YOUR CHILD BREASTMILK AND SOFT FOODS OFTEN DURING DIARRHOEA

- Breastfeed your child more often during diarrhoea
- Feed your child food which is easy to digest like rice and lentils (khichri), porridge, yogurt, bananas.
- Feed your child as much as he wants.
- Feed your child often: at least 5-7 times a day.
- After diarrhoea ends, breastfeed your child more often and, if the child is 4-6 months of age, feed it more foods than usual for 2 weeks.

3. TAKE YOUR CHILD TO A HEALTH FACILITY OR DOCTOR IF YOU NOTICE ANY OF THESE SIGNS

- o Irritable
- o Thirstier than usual
- o Sleepy, lethargic, weak
- o Dry lips and mouth
- o Sunken eyes
- o If you pinch the skin, it will go back slowly.
- o Dark or too little urine

} Signs of Dehydration

- o Has blood in stool
- o Has fever

4. YOU CAN PREVENT DIARRHOEA

Diarrhoea is caused by something dirty that goes into the child's mouth. To prevent diarrhoea you must ensure that nothing dirty goes into the child's mouth. The easiest ways to prevent diarrhoea are to:

- Feed your baby only breastmilk and no other food or drink up to 4 to 6 months.
- Start feeding your baby soft foods in addition to breastmilk at 4 to 6 months.
- Avoid the use of soothers.
- Give the child fresh, clean, well cooked food and clean water.
- Keep the area near the child clean.
- Wash your HANDS prior to cooking and feeding the child and washing the child's hands every time he touches dirt and before he eats.
- Have your child vaccinated against measles.

DIARRHOEA TRAINING UNIT

Objectives:

1)Establish properly functioning areas in all major health facilities providing correct diarrhoea case management emphasizing Oral Rehydration Therapy and feeding and effective education of mother - ORT Units.

2) Train all health care providers to a level of competence and attitude to assure proper use of ORT, feeding and non use of drugs for all cases of diarrhoea.

3) Ensure that all cases of diarrhoea are treated from the onset of illness with appropriate fluids, continual feeding and timely referral when required.

DIARRHOEA TRAINING UNIT

Strategy:

1) Establish model functioning ORT Units to serve as Model - DTUs.

2) Obtain written commitment of health authorities to establish ORT Units in their health facilities, each to commit individually.

3) Identify appropriate space and equipment with essential items for ORT treatment, mother education, and where appropriate, in patient care of diarrhoea cases.

4) Careful selection of participants for training who will be given full authority and responsibility to operate the ORT Unit.

5) Provide standardized training emphasizing case management skills and attitude obtained through responsible clinical case management in DTU.

CONTD.

DTU Strategies continued...

6) Close follow-up of trainees through site visits to assist, encourage and ensure establishment and proper function of ORT Unit for each trainee.

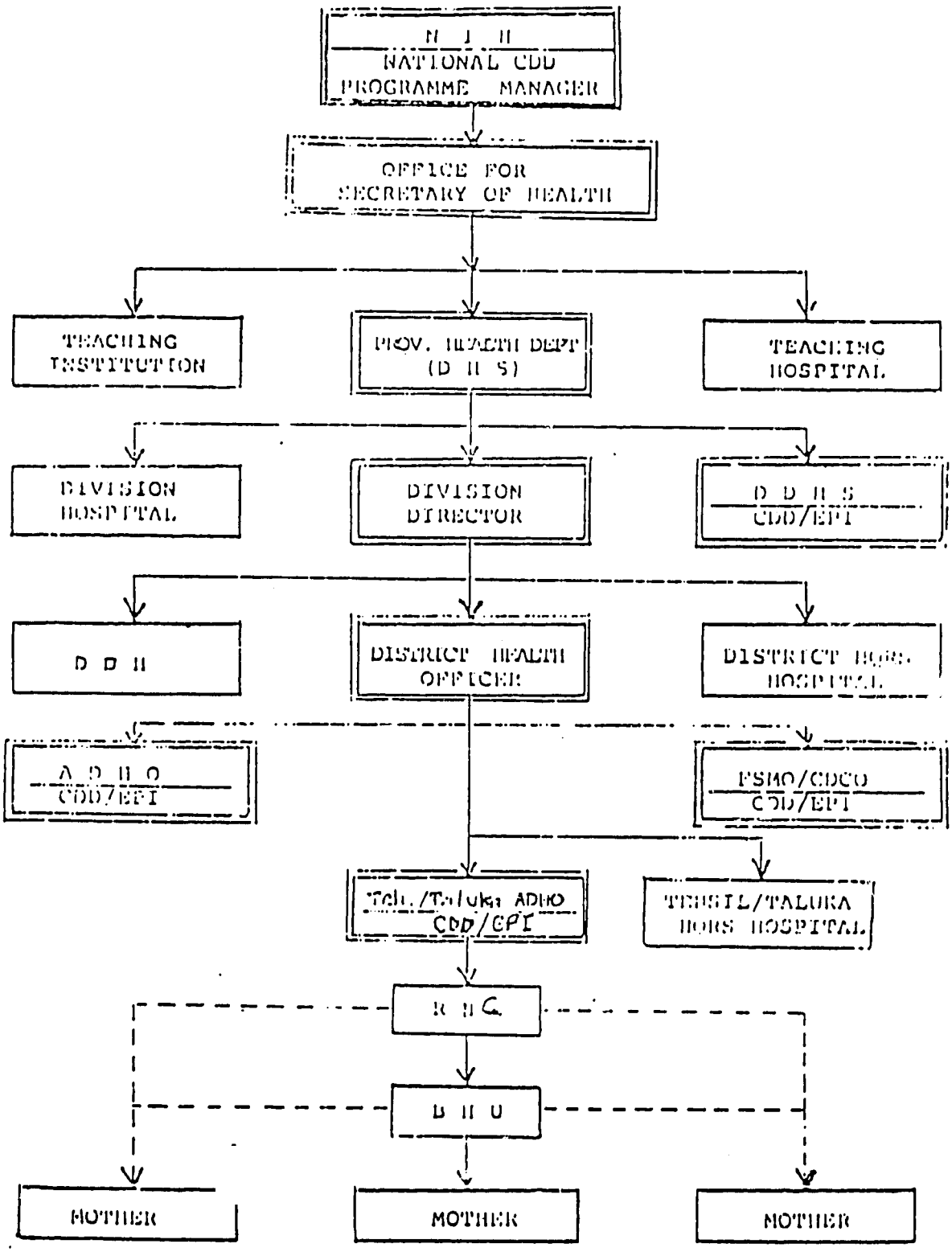
7) Establish continual contact between ORT Unit and the parent DTU and other ORT Units.

8) Evolution of ORT Units to become DTUs in all medical colleges and divisional hospitals.

9) Expand training to RHCs, BHU's and dispensaries each of which will establish ORT corner according to specified functional guidelines.

10) All ORT Units will involve paramedical support staff and local practitioners in active case management experience with ORT.

DELIVERY OF CDD PROGRAMME



Programme Technical Administrative Unit

Health Service Unit (Fixed Centre)

(EPI Worker Outreach Team & Mobile Unit)

O.R.S او۔آر۔ایس

NOT
FOR
SALE

فروخت
ممنوع ہے

MINISTRY OF HEALTH
GOVT. OF PAKISTAN

وزارت صحت
حکومت پاکستان

• ایک لیٹر (سیر یا پاؤ بھر) ۴ گلاس صاف پانی ایک برتن میں لیں۔ او۔آر۔ایس کا پورا پیکٹ اس میں ڈال کر چمچے سے ہلائیں۔ بچے کو ہر دست کے بعد ایک یا آدھی پیالی بھر کر او۔آر۔ایس کا پانی پلائیں۔

یاد رکھیں: او۔آر۔ایس کا پانی صرف ۲۴ گھنٹے تک استعمال کیا جا سکتا ہے۔ اس کے بعد دوبارہ او۔آر۔ایس والا پانی بنائیں۔

• بچے کو ماں کا دودھ اور نرم غذا مثلاً کھچڑی، دہی وغیرہ بھی دیتے رہیں۔

COMPOSITION:

Sodium Chloride	2.5g	Trisodium Citrate Dihydrate	2.9g
Potassium Chloride	1.5g	Glucose Anhydrous	20.0g

READINGS ON DIARRHOEA

Medical Education for Diarrhoea Control

PRITECH/WHO
Medical Education Project

PILOT VERSION
June 1988

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CHAPTER 3

Aetiology of Diarrhoea

INTRODUCTION

A relatively small number of organisms are responsible for most cases of acute diarrhoea in infants and children. These are listed by frequency, beginning with the most common, in Table 3-1: Aetiologic Agents Causing Most Cases of Diarrhoea.

Until a few years ago, pathogenic organisms could be found in the feces of only about 25% of patients with acute diarrhoea. Today, with newer techniques available, laboratories capable of comprehensive laboratory studies can identify potential pathogens in up to 70% of acute diarrhoeas presenting to hospital or treatment facilities and in a smaller proportion (up to half) of cases occurring in the community.

In general, the same pathogens are responsible for diarrhoea in infants and young children worldwide. However, the frequency and proportion of the specific diarrhoeal pathogens identified may be different in different places and laboratories. This difference is due in part to differences in the actual organisms causing diarrhoea in different places. However it is due also to the differences in the technical ability of laboratories to diagnose all possible pathogens, definitions of diarrhoea used, selection of cases, collection of samples and several other factors (e.g., host susceptibility, environmental factors, antibiotic use, seasonality differences and the occurrence of epidemics).

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Table 3-1: Aetiologic Agents Causing Most Cases of Diarrhoea

ORGANISM	TYPE	PROPORTION OF CASES	EFFECTIVENESS OF ANTIBIOTICS IN TREATMENT
Rotavirus	Virus	Up to 50% of cases coming to health facilities. 5% to 10% of cases in the community	Not effective
Enterotoxigenic Escherichia coli (ETEC)	Bacteria	Up to 25% of diarrhoea in all ages	Not effective
No agent found	---	25% or more	Not effective
Shigella	Bacteria	5% to 10%	Effective
Campylobacter	Bacteria	5% to 15%	Effective only if given early in course of disease
Vibrio cholerae	Bacteria	In endemic areas may cause 5% to 10% of cases seen in health facilities	Effective
Nontyphoid Salmonella	Bacteria	Up to 10% of cases	Not effective in usual uncomplicated diarrhoea

Table 3-1 shows that rotavirus, ETEC, and "no agent found" are the most frequent causes of children's diarrhoea, comprising, perhaps, 75% of cases. Antibiotics do not appear to shorten the duration of the diarrhoea or the amount of stool excreted in any of the cases that fall into these three categories.

Shigella and Campylobacter, both causes of dysentery and bloody stool, make up a large percentage of diarrhoea cases. Antibiotics are effective in treating dysentery caused by Shigella and some cases of Campylobacter. However, both organisms also can cause watery diarrhoea without blood. In those milder nondysenteric cases, antibiotics are less effective in reducing duration or volume of stool.

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Thus, we can say that for almost all the major causes of acute watery diarrhoea, except cholera, antibiotics are not useful in treatment.

SPECIFIC INFECTIOUS CAUSES OF DIARRHOEA

All three of the major types of infectious agents--bacteria, viruses and parasites--cause diarrhoea. In this section the range of agents is listed, and the relative frequencies are discussed. The following list notes the various bacterial agents that cause diarrhoea:

- o *Aeromonas hydrophila*
- o *Bacillus cereus*
- o *Campylobacter jejuni*
- o *Clostridium difficile*
- o *Clostridium perfringens*
- o *Escherichia coli*
- o *Plesiomonas shigelloides*
- o *Salmonella* spp.
- o *Shigella* spp.
- o *Staphylococcus aureus*
- o *Vibrio cholerae* O group 1 and non-O group 1
- o *Vibrio parahaemoliticus*
- o *Yersinia enterocolitica*

In developing countries, enterotoxigenic *E. coli* (ETEC), *Campylobacter jejuni*, *Shigella* and enteropathogenic *E. coli* (EPEC) are the most important bacterial causes of infantile diarrhoea. *V. cholera* O1 cause epidemics among older children and adults in many parts of Africa and Asia. *C. difficile* is responsible for a hemorrhagic colitis in children and adults that can occur after treatment with antibiotics.

The following is a list of the various viral agents that cause diarrhoea:

Confirmed	*Possible*
o Adenovirus	o Astrovirus
o Rotavirus	o Calicivirus
o 27 nm viruses (Norwalk)	o Coronavirus
	o Minirotavirus
	o "Small round virus"

READINGS ON DIARRHOEA

Rotavirus is the leading cause of diarrhoeal disease in the first two years of life among cases that visit hospitals and health centres worldwide. However, it is responsible for only 5% to 10% of cases in the community.

Norwalk virus often causes vomiting and diarrhoea in older children and adults in developed countries, whereas in less developed counrries, children acquire an antibody to the virus at an early age. A smaller percentage of diarrhoeal episodes is due to this agent.

The following is a list of the various parasitic organisms that have been described as causing diarrhoea:

- Balantidium coli
- Capillaria philippinensis
- Cryptosporidium
- Entamoeba histolytica
- Giardia lamblia
- Isospora belli
- Fasciolopsis buski
- Sarcocystis suihominis
- Strongoloides stercoralis
- Trichuris trichiura

The most important worldwide are Cryptosporidium, a newly recognized cause of watery diarrhoea, E. histolytica and G. lamblia.

Mixed infections with two or more enteropathogens occur in 15% to 20% of cases, but their clinical significance is difficult to interpret; one or more of the organisms recovered may be responsible for the diarrhoea.

Merely finding a potentially pathogenic organism in the feces of a child with diarrhoea does not necessarily mean that the organism has caused the diarrhoea. This is true in particular of Campylobacter and E. histolytica, which, in a number of studies, have been found in an equal or nearly equal percentage of children with diarrhoea and in nondiarrhoeic control groups.

Pathogenic Mechanisms

Toxins

Some 25% of diarrhoeas in children result from the action of toxins released by bacteria on the intestinal mucosa, most commonly from E. coli and from V. cholerae. These toxins stimulate the cellular mechanisms that produce cyclic nucleotides (cyclic AMP). These then decrease the absorption of sodium from the gut lumen by villus tips and (with some toxins) also increase the secretion by the mucosal crypts of sodium chloride and water into the gut lumen.

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CHAPTER 13

Drugs in the Management of Diarrhoea[1]

INTRODUCTION

Drugs are generally not indicated for the routine treatment of acute diarrhoea. Of children with acute, watery diarrhoea, 95% can be successfully treated with oral rehydration therapy and continued feeding alone. In careful trials, many drugs have been shown to have no effect on diarrhoea. A few drugs may have a modest effect on duration of diarrhoea or stool output, but in children, this benefit is often outweighed by the adverse side effects of the drug.

APPROPRIATE ANTIMICROBIAL USE

Although drugs are generally not indicated in treatment of diarrhoea, there are some exceptions. For a few infectious diarrhoeas, antimicrobials can significantly diminish the severity and duration of the diarrhoea and may shorten excretion of the pathogen.

An antimicrobial should be used for patients with one of the following:

- Proven or suspected cholera;
- Dysentery characterized by grossly bloody stools (the majority of these cases are caused by *Shigella*);
- Laboratory-confirmed symptomatic *Entamoeba histolytica* infection;
- Laboratory-confirmed symptomatic *Giardia lamblia* infection.

Some symptomatic laboratory-confirmed infections with *Giardia lamblia* will respond to an antimicrobial drug. However, because many children with *Giardia lamblia* are asymptomatic, there are times when this organism, although identified in the stool or intestine, will not be the cause of the diarrhoea.

In a similar fashion, amoebae may be found in the stool but may not be the cause of diarrhoea. Many studies have shown a similar percentage of children with amoebae in the stool when comparing diarrhoea patients with healthy children. Because of this, it must be remembered that a child with diarrhoea and amoebae in the stool may, in fact, have a viral or ETEC bacterial diarrhoea. If so, the patient's diarrhoea will not respond to metronidazole or other amoebicidal drugs. The presence of vegative forms, as opposed to

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[1]This chapter discusses drugs used in treating diarrhoea according to their mechanism of action. All drugs used in diarrhoea (except purgatives, cardiac stimulants and steroids) are used as "antidiarrhoeals," that is, drugs which will act to reduce or stop the diarrhoea. Some writers, however, separate antimicrobials (drugs which act against the agents causing diarrhoea) from antidiarrhoeals (drugs which act against the physiologic mechanisms of diarrhoea, such as antimotility, and antisecretory drugs, or adsorbents.

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cysts, will help confirm that the diarrhoea is caused by the amoebae and should respond to amoebicidal therapy.

For this reason, diarrhoea patients being treated for Giardia or amoebae should be given special instructions about indications for returning for a follow-up examination, to guard against the possibility that the treatment for the observed parasite may not be effective for controlling the diarrhoea.

Even a recommended antimicrobial drug must be used with caution, since its use can produce resistance in microorganisms. Indiscriminate use of some antimicrobials may prolong diarrhoea by direct toxic effects on the mucosa and by the emergence of pathogenic bacteria which are normally suppressed by the normal gut flora. This bacterial overgrowth may lead to hemorrhagic colitis.

Table 13-1 (Antimicrobial Drugs Used in Treatment of Specific Causes of Acute Diarrhoea) lists the currently recommended antibiotics and antimicrobials for the above pathogens and their recommended doses for children and adults.

In addition, antibiotic usage should be based on information available about the antibiotic susceptibility of the pathogen in the region. In general, tetracycline is recommended for cholera, although some resistant strains appear to be developing in Africa. Trimethoprim-sulfamethoxazole is the usual drug of choice for shigellosis, although in a few areas the organism is still sensitive to ampicillin. Nalidixic acid should be reserved for those not recovering on trimethoprim-sulfamethoxazole. Metronidazole is used for amoebiasis or giardiasis.

Specific drug therapy may also be required for other acute infections such as pneumonia, meningitis, otitis media or malaria, which may accompany diarrhoea.

INAPPROPRIATE DRUG USE

The following types of drugs are often used but have no role in diarrhoea management:

- Certain Antimicrobials: Sulfonamides, neomycin, halogenated oxyquinolines;
- Antimotility Agents: Opium-like drugs such as codeine, diphenoxylate (Lomotil), loperamide (Imodium);
- Antisecretory Agents: Chlorpromazine, bismuth subsalicylate;
- Adsorbents and Binding Agents: Pectin, kaolin, cholestyramine;
- Cardiac Stimulants;
- Steroids;
- Purgatives.

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Recovery from these toxin-induced diarrhoeas is by replacement of the affected cells through the normal regeneration process of the intestinal mucosa, a process that usually takes two to five days--longer in malnourished children. Elimination of the organism with antibiotics will shorten and reduce the diarrhoea from V. cholera, but with diarrhoea caused by E. coli the usual course is shorter than cholera, and antibiotics have no helpful effect.

Toxins produced by bacteria growing in food are responsible for the very short-lasting diarrhoeas that characterize food poisoning. Cellular replacement does not appear to be necessary to recover from these diarrhoeas. Staphylococcus is the most common cause of this type of food poisoning

Invasion

Shigella, some E. coli as well as C. jejuni produce diarrhoea by invasion of the mucosa and actual destruction of mucosal cells, often in both small and large intestine. Invasion is followed by the production of microabscesses and ulcers, leading to the presence of red and white blood cells in the stool or frank blood (bloody dysentery). Spasm of intestinal smooth muscle--felt by the patient as "cramps" or abdominal pain--and fever also are commonly present. These organisms also produce a variety of toxins that may play a role in fluid absorption and secretion, but certainly are important in facilitating penetration of the mucosa.

These invasive bacterial diarrhoeas account for 10% to 20% of child diarrhoeas and are associated with much greater nutritional losses from an episode than the toxigenic diarrhoeas. Because of the greater tissue destruction by these invasive diarrhoeas, recovery and healing takes longer.

Viruses

Viruses are responsible for 50% of all childhood diarrhoeas that present to health facilities. Viruses such as rotavirus invade the intestinal cells and alter their functioning and reproduction, leading to blunting of the villi, as well as reduction in absorption and net secretion. This results in diarrhoea, as well as general symptoms such as malaise and mild fever. Recovery occurs when the mucosal surface regenerates.

Parasites

The pathogenic mechanism of amoebic dysentery is similar to that of the invasive bacteria described above. Giardia, however, does not lead to dysentery but rather to a mild, more prolonged diarrhoea with epigastric distress, bulky stools and the presence of the Giardia organism in the upper small intestine. Because of their location, these organisms are often absent in the stool of colonized patients and need special procedures (string test, cathartic or mucosal biopsy) to find them.

Both Entamoeba histolytica and Giardia often are present in the stools of non-diarrhoeic children in many locations. Thus, their presence in the stool of diarrhoeic children does not prove that they are the cause of the diarrhoea, they merely may be innocent bystanders to an infection caused by a virus or bacterium not detectable by stool microscopic examination.

With amoeba, differentiation between the carrier state and a pathologic one can be assisted by more detailed examination of the forms of the amoeba found in the stool. The pathologic situation in which the amoeba is presumed to be causing diarrhoea or dysentery is characterized more by the presence of vegetative forms of amoebae in the stool, while the carrier or nonpathologic situation does not have these forms but rather has amoebic cysts. This approach, however, is not highly reliable.

Cryptosporidium probably is responsible for about 5% of childhood diarrhoeas as well as diarrhoea in immunocompromised patients, such as those with acquired immunodeficiency syndrome (AIDS). It is not susceptible to available antimicrobial agents.

Among helminths, there is reasonable evidence that Strongyloides and Trichuris can cause diarrhoea. The pathogenic mechanisms are not entirely clear. There is no evidence, however, that Ascaris or hookworm cause diarrhoea.

Specific Enteropathogens

The section that follows reviews each of the major enteropathogens in additional detail:

Escherichia coli

Escherichia coli (E. Coli) causes up to one-fourth of all diarrhoeas in developing countries. Five groups of E. coli are recognized: enterotoxigenic, enteropathogenic, enteroadherent, enteroinvasive, and enterohaemorrhagic.

Enterotoxigenic E. coli (ETEC): ETEC is a major cause of dehydrating diarrhoea in children under five years and adults in developing countries. Transmission usually occurs through contaminated food (especially weaning foods) and water and is more common during the warmer seasons. ETEC is the most common cause of diarrhoea in persons traveling from developed to developing countries (i.e., travellers' diarrhoea).

Two important virulence factors for ETEC are (1) colonization factors that allow ETEC to adhere to receptors on the enterocytes of the small intenstine and (2) enterotoxins. Genes for these colonizing factors and for the enterotoxins are encoded on transmissible plasmids. ETEC produce heat-labile (LT) and/or heat-stable (ST) enterotoxins that cause net secretion of fluid and electrolytes, presenting clinically as watery diarrhoea. Cholera-like purging is sometimes observed. ETEC do not destroy the brush border or invade

the mucosa. The diarrhoea is usually self-limited but can result in persistent diarrhoea.

Enteropathogenic E. coli (EPEC): EPEC are E. coli of specific serotypes that cause watery diarrhoea accompanied by vomiting and fever in infants and children up to two years of age worldwide. In urban areas of Brazil, up to 30% of acute diarrhoea cases are attributed to EPEC. The disease is usually self-limited but can be severe (fatal) or result in persistent diarrhoea, particularly in bottle-fed infants under six months of age in transitional countries.

The mechanism of EPEC diarrhoea is not yet clear. Enteroadherence and production of cytotoxin may be important.

Enteroadherent E. coli (EAEC): EAEC is a group of E. coli that have been found in a number of countries and belong to serotypes mostly distinct from EPEC serotypes. Like EPEC, EAEC causes watery diarrhoea in young children, which may at times be long lasting. EAEC adheres tightly to the small intestinal mucosa and produces typical morphological changes, but the mechanism by which it causes diarrhoea is not clear and may in part be due to cytotoxins.

Enteroinvasive E. coli (EIEC): EIEC is not a commonly found pathogen; it causes sporadic foodborne cases and outbreaks of diarrhoea in all ages worldwide. The organism is similar both biochemically and serologically to Shigella, and like Shigella, it is able to penetrate and multiply within the colonic epithelial cells and cause dysentery. Polymorphonuclear leukocytes are usually present in stools.

Enterohaemorrhagic E. coli (EHEC): A newly recognized enteropathogen, E. coli serotype 0157:H7, is a cause of sporadic haemorrhagic colitis in North America, where improperly cooked meat has served as the major vehicle of transmission; occasionally, person-to-person transmission may have occurred. Illness is characterized by the acute onset of cramps, absent or low-grade fever, and watery diarrhoea that may rapidly progress to bloody diarrhoea. EHEC produces a cytotoxin that may be responsible for the oedema and diffuse bleeding in the colon, as well as the haemolytic-uremic syndrome that sometimes develops in children. The global importance of this organism is not known.

Vibrio cholerae

Vibrio cholerae has two biotypes, El Tor and classical, and two serotypes, Ogawa and Inaba. Biotyping and serotyping are not important for treatment and control. The El Tor biotype is responsible for the current seventh pandemic, although at present both El Tor and classical biotypes are prevalent in cholera-endemic Bangladesh. In endemic areas, cholera may account for 5% to 10% of hospitalized patients with diarrhoea in all age groups. However, it occurs most often in children two to nine years of age, in whom it accounts for a large portion of severe cases. In a newly affected area, young adults are most often infected initially

Both contaminated water and food can serve as vehicles for the transmission of cholera. Person-to-person spread is much less common but may occur in overcrowded and unhygienic situations. V. cholerae adheres to and multiplies on the mucosa of the small intestine, where it produces a heat-labile enterotoxin that causes the diarrhoea.

Cholera has become endemic in many counties of Africa and Asia. During the last few years, outbreaks due to strains of V. cholerae O1 that is resistant to tetracycline have occurred in Bangladesh, the United Republic of Tanzania and other countries. The epidemic strains contained plasmids that carried the resistance genes. In Tanzania, it is probable that excessive antibiotic pressure resulting from mass chemoprophylaxis contributed to the emergence of these strains.

Shigella

Shigella causes about 10% of acute diarrhoea in children under five years; it also occurs in older children and adults. It is the most common cause of dysentery in children. The genus Shigella is subdivided into four serogroups:

- S. flexneri, the most common serogroup in developing countries;
- S. sonnei, the most common in developed countries;
- S. dysenteriae, type 1 causes epidemics with high mortality;
- S. boydii, which is less common.

Shigella is found only in humans and certain primates. The spread of shigellosis often occurs by person-to-person contact since a low infectious dose (10 to 100 organisms) is required. Foodborne and waterborne transmission also occur.

Shigella infection may present as fever and watery diarrhoea, or as a dysenteric syndrome from the onset characterized by fever; abdominal cramps and tenesmus; and frequent, small-volume, bloody-mucoid stools with many leukocytes. The duration of Shigella illness generally ranges from a few days to two weeks. Mortality is greatest in malnourished children.

Dysentery is initiated when Shigella organisms invade and then multiply within colonic epithelial cells, causing cell death, mucosal ulcers and a marked inflammatory reaction. In spite of the invasive colitis, Shigella seldom invades the bloodstream. The virulence factors include a smooth lipopolysaccharide cell-wall antigen that may contribute to invasiveness and a toxin (Shiga toxin) that is cytotoxic, neurotoxic and perhaps also capable of causing watery diarrhoea.

In many countries antibiotic resistance has been observed in Shigella infections. Plasmid-mediated resistance to sulfonamides, streptomycin, tetracycline, ampicillin, chloramphenicol and even trimethoprim-sulfamethaxole

is common and is probably related at least in part to the unrestricted sale and use of antibiotics.

Campylobacter jejuni

C. jejuni is responsible for 5% to 14% of diarrhoea in infants in developing and developed countries worldwide. It is common cause of diarrhoea in several animal species (e.g., chickens, goats, pigs, dogs). Humans acquire the infection through direct contact with infected animals or their feces, from the consumption of contaminated food or water and occasionally, from person-to-person spread. Many consider the disease to be a zoonosis.

The clinical presentation of C. jejuni infection varies from asymptomatic carriage to mild diarrhoea to severe invasive disease. In most cases, fever and abdominal pain occur. The diarrhoea may be watery, but in one-third of cases dysenteric stools characterized by blood and mucus appear after a day or two and usually contain polymorphonuclear leukocytes.

C. jejuni probably produces diarrhoea by invasion of the ileum and the large intestine. Two types of toxins are produced: a cytotoxin and a heat-labile enterotoxin. Their role as virulence factors is not known.

Salmonella

There are more than 2,000 serotypes, about 6 to 10 of which account for most cases of Salmonella gastroenteritis in humans. Since animals are the main reservoir for these organisms, Salmonella infection most commonly results from the ingestion of contaminated animal products, especially poultry, meat, eggs and milk. Salmonella gastroenteritis in young children is relatively rare in less developed countries as compared with industrialized countries, except where there is a large consumption of processed foods.

Salmonella gastroenteritis usually presents as acute watery diarrhoea with nausea, cramps and fever. Dysentery may occur in about 5% of cases. Strains resistant to ampicillin, chloramphenicol and trimethoprim-sulfamethoxazole are now prevalent worldwide.

Rotavirus

Rotavirus is the most important cause of viral gastroenteritis in infants worldwide.

Rotavirus is responsible for up to 50% of diarrhoea in children aged 6 to 24 months who visit treatment facilities in developing countries. It spreads by fecal-oral transmission. Four human serotypes of rotavirus are known.

The severity of illness ranges from asymptomatic infection (mainly in neonates and adults) to acute dehydrating diarrhoea that may lead to death. The clinical syndrome typically includes watery diarrhoea with vomiting and fever

Rotavirus infection causes patchy damage to the epithelial cells of the proximal small intestine, resulting in blunting of the absorptive villi. Infection may cause some reduction in the activity of lactase and disaccharidases, resulting in malabsorption of carbohydrates, but this is usually of no clinical significance. The intestinal morphology and absorptive capacity usually return to normal within two to three weeks after illness.

Giardia lamblia

Giardia lamblia have a worldwide distribution, with prevalence rates of infection of up to 100% in some populations. Children aged one to five years are most commonly infected. Giardia infections are usually foodborne, waterborne or spread from person to person; the latter occurs particularly in children living in a crowded family or attending day-care centers.

Giardia usually causes acute or subacute diarrhoea, sometimes malabsorption with fatty stools and often abdominal pain and bloating. Giardia infect the small bowel, but the pathogenic mechanism is unclear.

Entamoeba histolytica

Prevalence rates of E. histolytica infection vary widely but its distribution is worldwide. The incidence of disease increases with age. This infection is usually overdiagnosed as identification of this protozoan is not easy, and the parasite is often confused with polymorphonuclear leukocytes. Transmission is foodborne or waterborne. E. histolytica cysts are highly resistant to chemical disinfectants, including chlorination.

Asymptomatic infections are frequent (90%). Symptomatic amoebiasis ranges from persistent mild diarrhoea to fulminant dysentery. Only a small proportion of infected persons will develop invasive amoebiasis. Strain virulence varies with electrophoretic isoenzyme patterns. E. histolytica invades the mucosa of the large intestine, where it is thought to elaborate neurohumoral substances that cause intestinal secretion and damage resulting in an inflammatory type of diarrhoea.

Cryptosporidium

Cryptosporidium is a coccidian parasite recognized earlier as a diarrhoea pathogen in animals. It was first identified as a cause of watery diarrhoea in immunosuppressed patients, particularly in those with AIDS. In developing countries, it may account for 4% to 11% of childhood diarrhoea. Cryptosporidiosis is transmitted by the fecal-oral route.

Illness is characterized by acute watery diarrhoea. Cryptosporidium attaches to the microvillous surface of the enterocytes where it is presumed to cause malabsorption due to the resulting mucosal damage.

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Other Causes

In addition to the numerous aetiological agents described above, other conditions cause or are associated with diarrhoea, including drugs, surgical conditions, other diseases and systemic infections, and food intolerance. Infectious causes described above, however, are responsible for all but a very tiny fraction of diarrhoeas in developing countries.

A variety of drugs, especially antibiotics, cause diarrhoea. Antibiotics appear to act by killing the normal mixed flora, which then allows unusual organisms or strains resistant to the antibiotic to flourish. This has led to an important complication of the unnecessary treatment of diarrhoea with antibiotics, haemorrhagic colitis caused by C. difficile.

Certain acute surgical conditions, such as pigbel and intussception, may cause diarrhoea.

Diarrhoea is also associated with other diseases. Malaria and schistosomiasis both are commonly associated with diarrhoea. Sometimes these illness cause diarrhoea directly; sometimes the diarrhoea is caused by the usual enteric pathogens. Diarrhoea very often accompanies measles and is the cause of a large proportion of measles deaths, both during the acute measles episode and during the subsequent two- to three-month period of reduced resistance to infection.

Diarrhoea also occurs along with other systemic infections, such as pneumonia, streptococcal sore throat and otitis media.[1] The mechanism for these diarrhoeas is unclear; an identifiable diarrhoea pathogen cannot always be found. It is currently believed, however, that the majority of these diarrhoeas are caused, as usual, by an enteropathogen acting directly on the intestine, rather than by an indirect noninfectious physiologic response to the accompanying infection.

Food intolerance from such causes as lactase deficiency or food allergies can cause diarrhoea. Tuberculosis of the gut, chronic granulomatous diseases of the intestine such as Crohn's disease, and some tumors can also cause diarrhoea.

IMPLICATIONS FOR MANAGEMENT

Despite the wide variety of possible causes of diarrhoea and, therefore, of potentially different actions to be taken in diagnosis or management, almost all acute watery diarrhoeas are self-limiting. They will stop without cause-specific treatment, with little long-term consequences, if the patient can be kept well hydrated and nourished during the episode. Except in cases of cholera, antibiotics or antimicrobials will not hasten the recovery of patients with acute watery diarrhoea.

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[1]More on the topic of diarrhoea accompanying other infections can be found in Chapter 14.

READINGS ON DIARRHOEA

Thus, laboratory examination of stool by microscopy or culture is not needed in managing the usual acute watery diarrhoea case.

Dysentery caused by Shigella or amoebas often does respond to antimicrobial treatment. Epidemiologic studies in a number of countries have shown that Shigella is the cause in about 60% of diarrhoeas with bloody stool (dysentery). For this reason, the clinician can begin treatment of cases of dysentery by presuming that they are Shigella infections and using an antibiotic to which local Shigella strains are sensitive.

A large number of the dysenteric diarrhoeas in children under one year of age are caused by Campylobacter. Some studies have found that treatment with erythromycin will shorten these diarrhoeas and more rapidly eliminate the organism, but treatment must begin early in the course of the case to be effective. For this reason treatment with erythromycin for suspected Campylobacter is not currently recommended routinely for dysentery in children under age one.

For cases of acute watery diarrhoea that persist, despite treatment with fluids (oral rehydration therapy) and feeding--and antimicrobials in the few circumstances in which they are indicated--further exploration using various laboratory approaches will be necessary. Further treatment will depend on the results of such examinations.

More detailed laboratory examinations are indicated in follow-up reexamination of diarrhoea patients who have not responded to initial therapy, particularly in dysentery and persistent diarrhoea. Further discussion of the use of the laboratory is provided in Chapter 7 (Assessment of Dehydration and the Diarrhoea Patient), Chapter 15 (Dysentery: Aetiology, Diagnosis and Treatment) and Chapter 16 (Persistent Diarrhoea) of these Readings on Diarrhoea.

SUMMARY

A summary of the most common agents causing acute diarrhoea in infants and children worldwide, their relative incidence and the pathogenic mechanisms by which they cause disease is provided in Table 3-2 (Most Common Agents Causing Acute Diarrhoea in Infants and Children).

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MOST COMMON AGENTS CAUSING ACUTE DIARRHOEA IN INFANTS AND CHILDREN

AGENTS	INCIDENCE	PATHOGENESIS	COMMENTS
1. Rotavirus	Responsible for up to 50% of diarrhoeas in children post n. 24 months visiting treatment facilities. Causes 5-10% of all diarrhoeas in the community. Asymptomatic infection can also occur in neonates and adults. Prevalent worldwide.	Cytopathic to small intestinal epithelial cells	- Diarrhoea is associated with vomiting and fever - Four serotypes of human rotavirus are known. - Spread by faecal-oral transmission. Peak incidence is in colder seasons.
2. Enteropathogenic Escherichia coli (EPEC)	Important pathogen in infants and adults. Causes up to 25% of all diarrhoeas in all age groups in the developing countries.	Produces heat-labile (LT) and/or heat-stable (ST) enterotoxins causing secretory diarrhoeas of small intestinal origin.	Common cause of travellers' diarrhoea. - Usually foodborne or waterborne.
3. Shigella	Causes up to 10% of acute diarrhoeas in children under 5 years. Also occurs in older children and adults.	Dysentery syndrome by invasion of large bowel. Enterotoxin-mediated small bowel diarrhoea.	- Sh. flexneri most common in developing countries. Spreads commonly from person to person, less often by food and water. - Sh. dysenteriae I causes epidemics with high mortality. Multiple antibiotic resistance common.
4. Vibrio cholerae	In cholera-endemic areas, commonly in children 2-10 years of age. In newly affected areas, initial cases usually adults. Accounts for only 5-10% of hospitalized patients in all age groups in non-epidemic situations.	Produces secretory diarrhoea of small bowel origin due to an enterotoxin.	- Has emerged as an important cause of epidemic diarrhoea due to the recent spread of V. cholerae El Tor to many countries of the world. - Usually waterborne or foodborne.
5. Non-typhoid Salmonella	In developing countries up to 10% of diarrhoeas in children can be due to salmonellae. Incidence increases with socio-economic development.	Intracellular invasion of ileal epithelium.	- Produces acute febrile gastroenteritis. - More than 2000 serotypes. Usually foodborne, especially from animal products. - Multiple antibiotic resistance common.
6. Campylobacter jejuni	Causes 5-15% of all diarrhoea worldwide. Disease is a zoonosis like salmonellosis.	May be invasive and/or produce an enterotoxin.	- Can cause watery diarrhoea or dysentery with fever. - Usually foodborne, especially from animal products.

OTHER AGENTS

A number of other pathogens are known, but their relative importance as causes of acute diarrhoea in infants and young children in developing countries is either minimal or not known and requires further study. They include bacterial agents such as enteropathogenic E. coli, enteroinvasive E. coli, Yersinia enterocolitica, Norwalk and Norwalk-like viruses and enteric adenovirus. Protozoa as a group are not a common cause of acute dehydrating diarrhoea, except Giardia lamblia, Entamoeba histolytica, and probably Cryptosporidia, which are responsible for some cases.

TABLE 13-1

ANTIMICROBIAL DRUGS USED IN TREATMENT OF SPECIFIC CAUSES OF ACUTE DIARRHOEA

CAUSE	ANTIBIOTIC(S) OF CHOICE:[1]	ALTERNATIVE:[1]
Cholera[2,3]	Tetracycline Children - 50 mg/kg/day in 4 divided doses X 2 days Adults - 500 mg 4 times a day X 3 days	Furazolidone Children - 5 mg/kg/day in 4 divided doses X 3 days Adults - 100 mg 4 times a day X 3 days Trimethoprim (TMP) - Sulfamethoxazole (SMX)[4] All ages - TMP 8 mg/kg/day and SMX 40 mg/kg/day in 2 divided doses X 3 days
Shigella Dysentery[2,3]	Trimethoprim (TMP) - Sulfamethoxazole (SMX) Children - TMP 10 mg/kg/day and SMX 50 mg/kg/day in 2 divided doses X 5 days Adults - TMP 160 mg and SMX 800 mg twice daily X 5 days - OR - Nalidixic Acid - Children - 55 mg/kg/day in 4 divided doses X 5 days Adults - 1 gm 3 times a day X 5 days	
Acute Intestinal Amoebiasis	Metronidazole[5] Children - 30 mg/kg/day X 5 - 10 days Adults - 750 mg 3 times a day X 5-10 days	In very severe cases: Dehydroemetine hydrochloride by deep, intramuscular injection, 1-1.5 mg/kg (maximum 90 mg) for up to 5 days depending on response (all ages)
Acute Giardiasis	Metronidazole[5] Children - 15 mg/kg/day X 5 days Adults - 250 mg 3 times a day X 5 days	Quinacrine Children - 7 mg/kg/day in divided doses X 5 days Adults - 100 mg 3 times a day X 5 days

1 All doses given are for oral administration unless otherwise indicated. If drugs are not available in liquid form for use in young children, it may be necessary to approximate the doses given in this table.

2 Selection of antibiotic for treatment should take into account frequency of resistance to antibiotics in the area.

3 Antibiotic therapy not essential for successful therapy but shortens duration of illness and excretion of organisms in severe cases.

4 Other choices include chloramphenicol and erythromycin.

5 Tinidazole and ornidazole can also be used in accordance with the manufacturers' recommendations.

Antimicrobials, such as sulfaguanidine or other sulfonamides, neomycin, streptomycin and halogenated oxyquinolines (for example, clioquinol), have no proven value for the treatment of acute diarrhoea and may be harmful. For example, neomycin damages the intestinal mucosa and can contribute to malabsorption; clioquinol may cause neurological damage.

Antimotility drugs may provide some transient pain relief and, in a few cases, reduce the diarrhoea's duration. In a small proportion of diarrhoea cases characterized by severe cramps, spasms or vomiting, these drugs may be useful. However, they should be avoided in routine diarrhoea treatment because of such adverse side effects as nausea, vomiting, drowsiness and even cardiopulmonary arrest. Paralytic ileus is a possible effect in infants. Antimotility drugs may also delay excretion of the pathogen.

Antisecretory drugs, such as chlorpromazine, did reduce stool production in cholera patients in India. The required dose, however, caused sedation that interfered with ORS administration, and the effect on stooling was small. Therefore it is not recommended.

Bismuth subsalicylate appears to work in young adults with traveller's diarrhoea. It significantly diminishes the number of stools and subjective complaints, although stool water and weight were unchanged. But the therapeutic dose appears to be unsafe for children.

Aspirin and berberine have been shown to reduce stool volume, but to such a small extent that is not appropriate to recommend their use.

Adsorbents, such as kaq'in and charcoal, have been used to treat diarrhoea on the basis of their ability to bind and inactivate bacterial toxins. Some studies, but not all, have shown that adsorbents do not decrease stool output. For example, an experimental charcoal (GM ganglioside preparation) may reduce stool output in a limited group of patients with cholera and E. coli, but normal activated charcoal and kaolin have been shown to be ineffective in cholera cases. Kaolin did increase the consistency of stools in infantile diarrhoea, but had no effect on stool weight or water content. Research on the popular combination of kaolin and pectin is inconclusive.

Cholestyramine is an exchange resin that avidly binds bile acids and bacterial endotoxin. In one study, it was shown to substantially shorten the duration of illness for children with persistent diarrhoea, and two studies have shown it to produce a reduction in stool output of up to 50% in acute diarrhoea in children. It has caused acidosis, however, when used in high dosage. Further studies need to be done before its routine use is recommended.

Cardiac stimulants and steroids have been used to treat shock in patients with diarrhoea. Shock in acute diarrhoea is usually secondary to diarrhoeal dehydration and requires aggressive and appropriate fluid management. Cardiac stimulants and steroids have no role in this situation and may be dangerous.

Purgatives are used in some cultures to "cleanse the bowel." These drugs are dangerous since they can enhance the diarrhoea and resulting dehydration.

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SUPER ORS: A FUTURE ALTERNATIVE

The most effective and safest "antidiarrhoeal drug" may turn out to be an improved oral rehydration salts (ORS) formulation (sometimes called "Super ORS") that would correct dehydration and reduce the volume and duration of diarrhoea by enhancing salt and water absorption even more than the present glucose-based formula. Such a solution also might limit the nutritional consequences of diarrhoea by permitting earlier feeding and shortening the duration of diarrhoea.

Experimental ORS formulations being tested are based on the principle that, in addition to glucose, other organic solutes can also enhance the absorption of sodium and water. They include: D-hexoses, neutral amino acids (glycine, leucine, l-alanine) and dipeptides and tripeptides of such neutral amino acids.

Studies are underway to evaluate two types of formulations. In one, starches from cereals (such as rice powder, or maltodextrins, chemically processed glucose-polymers from maize) are substituted for glucose in the solution. These starches break down into glucose, which stimulates absorption, but are less osmotic and therefore attract less sodium and water into the intestinal lumen.

Rice powder-based ORS at a concentration of 50 g/l has been shown to reduce the rate of stool output in the first 214 hours by 13% to 42%, total stool output by 15% to 49% and the duration of diarrhoea by 17% to 30% in children aged four months to 10 years. Work is continuing to study the stability of packaged rice powder-based ORS, to develop a practical rice-based ORS that does not require cooking and to test other cereals more likely to be available in certain regions than rice.

Preliminary results of studies of the second formulation, of maltodextrin, are less encouraging than those with rice powder. In these studies, certain amino acids and dipeptides that enhance the absorption of sodium and water are added to ORS containing glucose or maltodextrins. L-alanine appears to have the most promise, while glycine may be effective only in cholera and has caused severe diuresis in some studies.

OBSTACLES TO LIMITED DRUG USE

Despite the proven effectiveness of oral rehydration therapy (ORT) and feeding alone, and the proven <u>ineffectiveness</u> of most drugs in the majority of diarrhoea cases, many health workers continue to prescribe unnecessary and often harmful drugs to treat diarrhoea.

Reasons for Widespread Drug Use in Diarrhoea

- Doctors still believe drugs will stop diarrhoea;
- Drugs can relieve some diarrhoea-related symptoms such as vomiting, nausea and anorexia;
- Specific types of diarrhoeas need antibiotics;
- Drugs are a placebo for anxious mothers;
- Mothers expect and demand drugs;
- Drug vendors say drugs are effective, give doctors samples and urge doctors to use drugs;
- Other doctors are giving drugs;
- Doctors may make money from selling drugs;
- Prescribing drugs saves time compared to teaching mothers about diet and ORT;
- Doctors are taught in medical school to use drugs;
- ORS is not viewed as medicine.
- ORS is thought of as too simple, low technology and too cheap ("poor people's medicine");
- The Ministry of Health continues to provide antidiarrhoeal drugs to its health facilities and clinics.

The majority of these reasons can be overcome with the availability of correct information about drugs--that they are, for the most part, ineffective and potentially harmful in treating diarrhoea in children--and about the effectiveness of ORT and continued feeding as treatment. The principles of ORT are as high-technology as any drug available, and its low price should be recognized as a benefit, not an indication of low quality.

Mothers' demands for drugs can usually be answered by information also, along with clear recognition by the mother that the physician does believe fully that ORT and feeding are the most effective and appropriate treatment for acute watery diarrhoea. The extra time it takes to teach mothers about ORT can be shortened by using a simple mother's card or pamphlet with pictures or drawings showing how to prepare and give the solution and by delegating some of the teaching to an assistant (see Chapter 9).

Government programs to control diarrhoea can work with medical schools to ensure that case management techniques which are used in teaching clinics and hospitals where medical students learn about diarrhoea are correct and emphasize limited drug use. Efforts can also be made to limit the drugs

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supplied to government facilities to only those which are recommended technically, not any drug which physicians request. Bangladesh has set an example by limiting its national formulary to only essential drugs, thereby avoiding confusion, saving money and providing better treatment.

SUMMARY

While drugs and antibiotics are widely used to treat diarrhoea, in all but a few cases of acute watery diarrhoea they are useless and potentially harmful. Prescribing useless drugs costs extra money for the patient and may distract efforts from the fluid and feeding treatment which is so important to full and rapid recovery from diarrhoea. A certain few types of diarrhoea can be helped by specific antimicrobial therapy, in particular dysentery and cholera. For other forms of acute watery diarrhoea, ORT and feeding are the best treatment.

The practice of routinely treating episodes of diarrhoea with multiple adjunct agents and antibiotics, sometimes available as combination drugs, is to be deplored. Oral rehydration therapy is a proven, cost-effective method of treating diarrhoea. The economic savings from treating the disease in this way can be considerable.

T-4

CHAPTER 7

Assessment of Dehydration and the Diarrhoea Patient

INTRODUCTION

In assessing the clinical characteristics of a diarrhoea patient who has been brought for medical attention, the health worker's first priority is to determine the degree of dehydration. If the patient is severely dehydrated, rehydration should be begun immediately, after which the remainder of the assessment can be carried out.

Thus the main objectives of clinical assessment of a diarrhoea patient are to:

- determine the degree of dehydration;
- differentiate between those cases that need antibiotic treatment for diarrhoea; specifically dysentery, and those that need more complex examination, such as cases failing to respond to previous treatment or persistent diarrhoea;
- detect accompanying illnesses, especially malnutrition;
- obtain information needed to define appropriate treatment, particularly the diet.

Other information that can be useful if obtained during an assessment would include past history of diarrhoea, mother's knowledge about diarrhoea and her beliefs about fluid administration and feeding during diarrhoea, immunization status particularly measles immunization (related to diarrhoea prevention), and whether the mother already understands and can carry out ORT correctly.

The end result of the assessment should consist of the following:

- treatment plan for dehydration: Plan A, B or C;
- diagnosis of the type of diarrhoea: acute watery, dysentery, persistent diarrhoea or other;
- appropriate recommendations for feeding during and after the diarrhoea;
- recommended drug treatment for those patients needing specific antibiotic therapy or other medications;
- diagnosis and treatment recommendations for any illnesses additional to the diarrhoea.

USE OF ASSESSMENT CHART AND PATIENT FORMS

Use of a checklist of symptoms, signs and other information will help the health worker to remember important points.

The World Health Organization (WHO) recommends that clinicians assess diarrhoea patients using the WHO Assessment Chart (Figure 7-1: How to Assess Your Patient for Dehydration). This chart organizes the process of obtaining information during an assessment in a practical fashion. Areas to be examined by history or physician examination are defined as "Ask, Look, and Feel," while the specific findings characteristic of no dehydration, some dehydration and severe dehydration are organized in columns A, B and C respectively. Additional symptoms or signs that suggest clinical problems in addition to diarrhoea are listed in a fourth column.

The health worker need only circle those items that apply. Two or more circled items in one of the columns A, B or C put the patient in that particular category of dehydration and that treatment plan:

<u>No Signs of Dehydration</u> - Plan A (prevent dehydration and treat diarrhoea)

<u>Some Dehydration</u> - Plan B (treat dehydration with ORS solution)

<u>Severe Dehydration</u> - Plan C (treat severe dehydration quickly)

Where signs have been noted in the last column, other treatment in addition to that for dehydration is suggested also.

Other useful clinical checklists include the Clinical Form and Patient's Progress Sheet (Appendix 1 and 2). These request more detailed data, allow recording of treatment recommendations, provide a place to record intake and output as well as the sequence of clinical findings in patients kept for rehydration, and provide a place for a supervisor to record observations of the assessment and treatment process.

ASSESSING THE CHILD WITH DIARRHOEA

When a child comes to a health worker or health centre because of diarrhoea, the first step is to assess the child for signs of dehydration. The health worker should also ask if there is diarrhoea when a child comes with an illness that often is accompanied by diarrhoea, such as measles.

<u>The Examination</u>

The next sections are based on the WHO Assessment Chart and can be best understood by referring to the chart (Figure 7-1) while reading the following:

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HOW TO ASSESS YOUR PATIENT

		FOR DEHYDRATION			FOR OTHER PROBLEMS
		A	B	C	
1 ASK ABOUT	DIARRHOEA	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day	Longer than 14 days duration Blood in the stool
	VOMITING	None or a small amount	Some	Very frequent	
	THIRST	Normal	Greater than normal	Unable to drink	
	URINE	Normal	A small amount dark	No urine for 6 hours	
2 LOOK AT	CONDITION	Well alert	Unwell sleepy or irritable	Very sleepy unconscious, floppy or having fits	Severe undernutrition
	TEARS	Present	Absent	Absent	
	EYES	Normal	Sunken	Very dry and sunken	
	MOUTH and TONGUE	Wet	Dry	Very dry	
	BREATHING	Normal	Faster than normal	Very fast and deep	
3 FEEL	SKIN	A pinch goes back quickly	A pinch goes back slowly	A pinch goes back very slowly	
	PULSE	Normal	Faster than normal	Very fast weak, or you cannot feel it	
	FONTANELLE (in infants)	Normal	Sunken	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 old and 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)

Source: WHO. Programme for Control of Diarrhoeal Diseases. Supervisory Skills - Treatment of Diarrhoea. 1987:54.

FIGURE 7-1

Ask

The health worker should ask the following questions:

- How many liquid stools per day has the child had? For how long has the child had diarrhoea? Is there blood (more than one or two streaks) in the stool?

- Has there been any vomiting? If so, has there been more than a small amount? How frequently has the child vomited?

- Is the child able to drink? If so, is he thirstier than normal?

- Has the child passed urine in the last six hours? If so, is it a normal amount or a small amount? Is it darker than normal?

Look

The health worker should look for the following signs and symptoms:

- What is the child's general condition?
  - Is he well and alert?
  - Is he unwell, sleepy, or irritable?
  - Is he very sleepy, floppy, or unconscious?
  - Is he having fits?
  - Is he severely undernourished?

- Does the child have tears when he cries?

- Are the child's eyes normal, sunken or very dry and sunken?

- Are the child's mouth and tongue wet, dry or very dry?

- Is the child's breathing normal, faster than normal or very fast and deep?

Feel

The health worker should examine the child for the following conditions:

- When the skin is pinched, does it go back quickly, slowly or very slowly (longer than two seconds)? In a baby, the health worker should pinch the skin of the abdomen or thigh.

  Note: Pinching the skin may give misleading information:
  - In the severely undernourished patient, the skin may go back slowly even if the patient is not dehydrated.
  - In the obese patient, the skin may go back quickly even if the patient is dehydrated.

- Can the pulse be felt? If so, is it normal, faster than normal, very fast or w

- Is the fontanelle (the soft spot on top of the head) normal, sunken or very sunken?

  Note: This is a helpful sign only in children whose fontanelle is not yet closed (usually children under 12 months old).

Weigh

The health worker should weigh the child, if a scale is available.

- If a scale is available, carefully weigh the child unclothed or lightly clothed. If the child has been weighed routinely and his weight has been recorded, compare the child's present weight with his last recorded weight.

  Has there been any weight loss during the diarrhoea? If so,
  - were less than 25 gm lost for each kilogram of the child's weight?
  - were 25 to 100 gm lost for each kilogram of the child's weight?
  - were more than 100 gm lost for each kilogram of weight?

  Note: Loss of fluid causes loss of weight. Assessing weight loss is useful if a health worker has a very accurate scale and knows how to use the scale correctly. If a child has been weighed recently, his weight loss will give some idea about how much fluid he has lost. Weighing the child again later can help to assess his progress. However, it is more useful to rely on clinical signs than on weight loss determination to make a judgement about dehydration.

  Plot the weight on a growth chart (Appendix 3: Nutritional Status as Weight for Age) in order to detect the presence of malnutrition.

- If a scale is not available, do not delay treatment.

Take Temperature

The health worker should take the child's temperature and determine if the child has a fever (more than 38.5°C or 101°F)?

Note: Rectal temperature should be taken if the health worker is used to that procedure and is able to disinfect the thermometer after each use. Otherwise, the axillary (armpit) temperature should be taken.

DECIDING HOW TO TREAT

After the child has been examined, the health worker must decide how to treat him. The health worker should:

- Find on the chart "How to Assess Your Patient" the signs that describe the child's condition;

- Decide if the child has any of the signs in the column labeled "For Other Problems." If so, there are problems that require treatment in addition to any treatment that may be needed for dehydration. The health worker should treat these problems according to customary practice or refer for treatment.

  If there is blood in the stool and diarrhoea for less than 14 days, antibiotics should be given. If there is diarrhoea for longer than 14 days with or without blood in the stool or if there is severe undernutrition, the health worker should continue feeding the child and refer for treatment. If there is fever, the mother should be showed how to cool the child with a wet cloth and fanning, then other causes (for example, malaria) should be looked for and treated.

- Determine the degree of dehydration.
  - Look at Column C. If two or more of the signs listed in that column are present, conclude that the patient has <u>severe dehydration</u>.

    If two or more signs from Column C are <u>not</u> present, look at Column B. If two or more of the signs listed in that column are present, conclude that the patient has <u>some dehydration</u>.

    If two or more signs from Column B are <u>not</u> present, conclude that the patient has <u>no signs of dehydration</u>.

- Select the appropriate treatment plan based on the degree of dehydration. These treatment plans are described on the Diarrhoea Treatment Chart.

  For <u>no signs of dehydration</u> select Treatment Plan A: To Treat Diarrhoea.

ASSESSING THE DEGREE OF DEHYDRATION

A dehydrated child may present with one or more signs of dehydration. Depending on the number and severity of the signs, dehydration may be assessed as <u>some</u> dehydration or <u>severe</u> dehydration.

<u>Some Dehydration</u>

The category of "some dehydration" includes both mild and moderate dehydration:

- Mild dehydration (4% to 5% loss of body weight) is often difficult to detect clinically as it is characterized primarily by increased thirst. The child also may be a little restless.

- Moderate dehydration (6% to 9% loss of body weight) is characterized by a history of excessive thirst and a decrease in urination (the urine also will be darker). In addition, the young child will appear restless, or

lethargic but irritable, and the older child will appear somewhat faint when lying or sitting more upright. The patient's eyes will be sunken and without tears, the mouth and tongue will be dry and breathing will be deep and often more rapid than normal. The skin will retract slowly when pinched and the pulse will be rapid and weak. In infants, the fontanelle will be depressed. Systolic blood pressure will be low.

Both mild and moderate dehydration are combined as <u>some</u> diarrhoea and will be treated with ORS (Column "B" on the Assessment Chart).

Loss of skin turgor is seen when a child has lost more than 5% of body water. To detect loss of skin turgor, the examiner pinches the skin, then observes how rapidly it returns to its normal position.

Severe Dehydration

In the case of "severe dehydration" (more than 10% loss of body weight) there may be a history of no urine flow for several hours. There is altered state of consciousness (even coma); the extremities are likely to be cold, and may also be sweaty and cyanotic; and the child may unable to drink, because of stupor. The eyes are deeply sunken and without tears, the mouth and tongue are very dry and breathing is deep and rapid. The skin retracts very slowly when pinched, the pulse is very rapid and the radial pulse is either feeble or not detectable. The fontanelle in infants is very sunken. Systolic blood pressure often cannot be measured.

Finding two or more signs of severe dehydration should alert the examiner to the need for intravenous therapy (Treatment Plan C).

ASSESSING OTHER DISEASES AND CONDITIONS

The child with diarrhoea should also be examined quickly to determine the presence of other diseases (for example, measles, pneumonia, malaria, otitis media).

Acidosis can be detected by the presence of deep respirations.

ADDITIONAL ASPECTS OF ASSESSMENT

Nutritional assessment is covered in more detail in Nutritional Management of Diarrhoea Patients (Chapter 12).

The role of the laboratory in assessment and diagnosis is discussed in more detail in the Aetiology of Diarrhoea (Chapter 3), Dysentery: Aetiology, Diagnosis and Treatment (Chapter 15) and Persistent Diarrhoea (Chapter 16). Signs of complications, and additional examinations recommended when complications are suspected, are covered in Complications of Diarrhoea and Dehydration: Diagnosis and Management (Chapter 14).

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CHAPTER 8

Management of Diarrhoea With No Dehydration: Home Therapy and Treatment Plan A

INTRODUCTION

Treatment actions taken at home are the cornerstone of effective management for those patients who seek attention for diarrhoea at a health facility and are found not to be dehydrated. Also, actions to encourage early therapy for diarrhoea by mothers at home, when the diarrhoea begins, are important components of good diarrhoea management. If mothers know the principles of effective diarrhoea management, they can begin treatment before seeking medical attention. For example, when mothers give oral fluid therapy to children at home early in a diarrhoeal episode, dehydration can be prevented completely in many cases. Or, in cases with more severe diarrhoea, early fluid therapy at home can reduce the severity of dehydration in patients coming to treatment facilities. As such, both the number of visits to health facilities for diarrhoea and overall diarrhoeal disease mortality rates can be substantially reduced by early fluid treatment at home. Continued feeding during this early period--especially breastfeeding--will augment this preventive effect by speeding the recovery process and preventing nutritional deficits due to diarrhoea.

For these reasons it is very important that the physician know those actions that the mothers should be taking to manage diarrhoea at home. The physician must also know how to communicate with mothers effectively so that they will carry out these actions, both in response to current episodes of diarrhoea in their children and in response to subsequent episodes that will occur in the future.

This chapter describes in detail the specific components of home therapy for diarrhoea (i.e., what the mother should be doing). It outlines the information about each component of home therapy the physician or health worker should understand and communicate to the mother or caretaker of the diarrhoea patient. Specific details of the methods that will make that communication more effective are found in Effective Communication: Talking to Mothers About Diarrhoea (Chapter 9).

WHAT IS TREATMENT PLAN A?

Treatment Plan A consists of the actions to be taken to manage acute watery diarrhoea with no dehydration; it is summarized in Figure 8-1: Treatment Plan A to Treat Diarrhoea.

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

   These 3 signs suggest your child is dehydrated.
   - has a fever
   - does not eat or drink normally
   - seems not to be getting better.

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 (½ 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.

Source: WHO. Programme for Control of Diarrhoeal Diseases. Supervisory Skills - Treatment of Diarrhoea. 1987:55.

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Because both the patient's mother and the physician have important roles in Plan A, it may be considered as having two aspects:

- Those actions that the mother performs at home to manage the diarrhoea in her child (home therapy), and

- Those actions that the physician or health worker perform to bring about correct home therapy and prevention of diarrhoea (communication).

To do this well, the physician or health worker needs to understand what effective and safe home fluids and foods are and how to identify them in the locale.

HOME THERAPY: THE MOTHER'S ROLE IN PLAN A

Home therapy is aimed at preventing dehydration and nutritional damage from a current episode of diarrhoea. Many patients with diarrhoea show no evidence of dehydration but may be in danger of becoming dehydrated. While these patients do not require oral rehydration salts (ORS) solution, they should drink sufficient quantities of fluids at home to replace the ongoing losses of fluids and electrolytes and to provide their normal daily fluid requirements.

Patients already treated at a health facility for dehydration (Treatment Plans B or C) will need continued administration of ORS solution or other fluids to replace continuing diarrhoeal fluid losses, as well as normal daily fluid requirements after returning home.

Mothers need to be taught what fluids to give, and how much, depending on which of the above situations is relevant.

Continued feeding will assist in stimulating absorption of fluid and in maintaining nutritional intake and speeding the process of healing the intestine. Mothers need to be taught what foods to give, how to prepare and give them, and how to overcome anorexia in their children.

Some diarrhoeas may continue or become worse despite appropriate home therapy. Mothers need to be taught to recognize the signs of dehydration and other signs that indicate that they should bring their children to a health worker for additional treatment.

These are the three rules of home therapy:

- Give the child more than the usual amount of fluids.

- Continue to feed the child.

- Bring the child to the health centre if there is no improvement or there are signs of dehydration.

Actions to Prevent Subsequent Episodes of Diarrhoea

After mothers have already understood well the components of home therapy for the current episode of diarrhoea, they should also be taught actions to prevent subsequent episodes of diarrhoea.

The components of home therapy are described next:

Give the Child More Than the Usual Amount of Fluids

What fluids? The ideal home fluid from a variety of perspectives is breastmilk, but other fluids also can be given at home. These other fluids are described in more detail the section "Deciding Which Fluids to Use for Home Therapy" later in this chapter. Suitable fluids can be summarized as follows:

- o breastmilk;
- o food-based fluids such as gruel made of rice or other cereals and lightly salted soups, also milk feeds (or formulas) prepared with twice the usual amount of water;
- o salt-sugar solution, where it is recommended by government policy; and
- o ORS solution. While not considered a "home available" fluid, ORS solution can be used in the home to prevent dehydration. ORS packets are commonly given to patients at health facilities for use at home, both to treat patients who have not yet been dehydrated and to continue the treatment of patients who have been dehydrated.

The ministries of health of many countries have national home fluid recommendations.

Mothers are much more likely to prepare fluids that are familiar, available and affordable. The nutritional value and caloric content of candidate fluids should be considered in addition to whether they are effective and safe for preventing dehydration.

How much fluid and how often should it be given? Infants who are breastfed should be given breastmilk at least every three hours throughout an episode of diarrhoea.

For infants who are not breastfed, the milk formula normally consumed should be diluted with an equal volume of water and given at least every three hours.

In addition, after each loose stool:

- o children under two years old should drink approximately 50 to 100 ml (1/4 to 1/2 cup) of fluid;

- children two to five years of age should drink approximately 100 to 200 ml (1/2 to 1 cup) of fluid;

- children older than five years and adults should drink as much fluid as they want.

If a child is receiving ORS solution, he or she should be given food and/or breastmilk to dilute milk feeds. The child, however, should not be given dilute food-based fluids or sugar-salt solution in addition to ORS.

Continue to Feed the Child

Diarrhoea contributes to malnutrition because of withholding of food by mothers, anorexia, and poor digestion and absorption leading to nutrient losses. Food, in addition to its nutritional benefit, helps stimulate sodium and water absorption. Therefore, feeding should be continued during and after diarrhoea.

Continued feeding is particularly important in cases of bloody dysentery, because of the greater negative nutritional effect on the child with dysentery compared with the child who has watery diarrhoea.

What foods? In general, the ideal food to be given during diarrhoea should be culturally acceptable, readily available and easily digestible. The concentrations of salt and sugar should not be high. Foods that contain potassium, such as bananas and citrus fruits, are beneficial. Energy-rich and nutritious foods--such as mixtures of cereal with beans, meat or fish, with dairy products, or with eggs--are also recommended. Energy content can be enhanced by adding a few drops of oil to the food.

Foods should be freshly prepared, to avoid spoiling and contamination. Foods should be cooked, and mashed or ground well, so that they are easy to digest. In addition, fermentation may increase the digestibility of some foods; for example, yogurt may be easier to digest than other dairy products because its lactose already has been broken down.

The following foods should be avoided:

- very salty foods;

- foods with a high sugar content;

- high-fiber foods that are difficult to digest;

- diluted soups or paps that are filling but not nutritious; and

- special formulas that are expensive and unnecessary, such as using special soy-based formula when the child does not have milk intolerance.

How much food should be given, and how often should it be given? Give the child as much food as he or she wants. Offer it every three to four hours (six times a day), or more often for very young children. Small, frequent feedings are better tolerated while a child has diarrhoea.

Special feeding in convalescence: After the diarrhoea stops, give the child one extra meal each day for a week or longer until he or she has regained normal weight. Add oil (e.g., vegetable oils such as peanut, corn or palm oil) or other fats (e.g., butter) to the food, to increase the number of calories in each feeding. Because of the likelihood that during the diarrhoea the intake or absorption of nutrients may have been reduced below the necessary levels, children need extra food during convalescence to recover completely from the effects of diarrhoea. If a weighing or growth monitoring program exists, the child should be brought back for reweighing during the month after diarrhoea, if possible--especially if the child has had dysentery or is malnourished already.

Follow-up is recommended, for malnourished children in particular, to ensure that the pre-diarrhoea weight has been regained and that growth has been resumed. Malnourished children should return one week after diarrhoea has stopped, and for two monthly visits thereafter. During these visits the health worker should plot the changes in weight on a growth card or chart (See Appendix 3: Nutritional Status As Weight For Age).

Full recovery from diarrhoea has not taken place until the child has regained his or her pre-diarrhoea weight.

Bring the Child to the Health Centre If There Is No Improvement or There Are Signs of Dehydration

Mothers must be taught the easily recognizable signs of dehydration, such as continual passage of frequent stools, increased thirst or dry and sunken eyes. In many cultures other signs can also be easily learned, such as sunken fontanelle, dry mouth or tongue, skin returning slowly after a pinch, or tiredness and unwillingness to play. Those signs that are already recognized in the mother's culture will be more likely to be learned and given attention.

Mothers should be instructed to bring their children to the health centre if the child develops the aforementioned signs of dehydration, if the child does not eat or drink normally, or if the child develops other problems, such as fever or blood in the stools. Also, the mother should be taught that if the child's diarrhoea continues more than two to four days after returning home and he or she is not improving, the child should be brought back to the health centre for re-examination.

Prevent Diarrhoea

If the mother already understands the three rules of home therapy, or is able to remember additional instructions, she should be taught practical actions to prevent diarrhoea. An effort should be made to give only those preventive

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messages that are suitable for the situation of the particular mother and child. Possible actions include:

- For infants:
  - give only breastmilk for the first four to six months;
  - continue to breastfeed for at least the first year;
  - give clean and nutritious weaning foods, beginning at four to six months.
- For children over nine months who have not had measles:
  - get a measles immunization.
- For all children and other family members:
  - give clean drinking water, either from a protected well or public source or boiled;
  - give freshly prepared and well cooked food, to avoid contamination;
  - wash hands with soap after defecating, and before eating or preparing food;
  - use a latrine; for young or sick children, quickly dispose of the stool by putting it into a latrine or burying it.

COMMUNICATION: THE HEALTH WORKER'S ROLE IN PLAN A

The physician's or other health worker's role in Plan A is to communicate the information needed to perform these actions to the patient's mother or caretaker. This must be done in such a way that the mother:

- understands what is to be done (knowledge);
- is able to perform the necessary actions (skill);
- agrees to do what is recommended (attitude).

The doctor's tasks thus include:

- Explaining the three rules for treating diarrhoea at home.
- Teaching in particular detail how to prepare and use ORS solution at home, if:
  - the mother cannot come back if the diarrhoea gets worse;
  - it is national policy to give ORS solution to children who see a health worker for diarrhoea treatment; or
  - the child has been on Plan B, and treatment with ORS solution is to be continued, to replace continuing fluid losses and to prevent dehydration from coming back.
- Determining which preventive recommendations are appropriate for the particular mother and child (or whether none are), and explaining them to the mother.

Teaching the three rules for home therapy, and the possible recommendations for diarrhoea prevention have already been described above.

Teaching the mother the knowledge and skills necessary to use ORS solution at home should include showing her how to mix ORS and give it to the child. This can be done by demonstrating the preparation of the solution, then letting the mother practice it herself. This is the most effective method.

Another approach is to give instructions, if possible using a mother's pamphlet, after which the mother can practice making the solution.

The least effective approach is to only tell the mother how to prepare and give the solution, without demonstrating it, using a mother's pamphlet with pictures or giving her a chance to practice herself.

If possible, the mother should be given the chance to give some ORS solution to her child while at the health facility. This will help to ensure that she understands the use of cup and spoon to give the solution, and that she knows how fast to give it.

Instructions on how much to give, and on what to do if the child vomits, should also be given. Details of these are given in Figure 8-1 (Treatment Plan A to Treat Diarrhoea).

Finally, enough ORS packets to last for two days should be given. The quantity will depend on the size of the ORS packets (for 1 litre or 200 ml) and the expected fluid needs, based on the dose per stool and the expected stool frequency. The mother should be instructed to discard any ORS solution that is not used after 24 hours and to prepare fresh solution. This means that she must be given (or instructed to obtain elsewhere) at least two packets, to cover a two-day period, more if smaller packets than 1 litre are being used.

Additional details on the most effective methods of communicating to mothers the knowledge, skills and attitudes needed are provided in Effective Communication: Talking To Mothers About Diarrhoea (Chapter 9).

Deciding Which Fluids to Use For Home Therapy: The Physician's Role in Treatment Plan A

Since mothers or caretakers of diarrhoea patients need specific advice about which fluids and foods to give the diarrhoea patient, physicians need to understand the relevant composition of local foods and fluids to deal with diarrhoea in a specific locality and cultural environment.

A solution of oral rehydration salts (ORS) in water is the fluid recommended by the World Health Organization (WHO) for <u>treatment</u> of dehydration from diarrhoea. While ORS may also be used to <u>prevent</u> dehydration, it may be more convenient, less costly and nearly as effective to use other fluids, such as cereal gruels, soups or salt-and-sugar solutions. The critical action is to

give the child with diarrhoea more fluids. This early home therapy should prevent most cases from becoming dehydrated. However, some fluids are preferable, and thus should be recommended.

Fluids for Home Therapy

Food-based fluids: These include (1) cereal gruels, which are made by boiling ground or powdered cereals such as rice, wheat, maize, sorghum, oats, rye, or barley in water; then adding more water to make them drinkable; and straining the gruel for very young children; (2) soups, which can be home-made vegetable, fish and chicken soups; (3) diluted yogurt-like drinks; (4) and other fluids commonly prepared in the home.

Food based fluids contain some salt and a source of glucose, either a complex carbohydrate (such as a starch) or sucrose. They also may contain legumes. The composition of these food-based fluids may be appropriate prepared in the traditional way or the traditional recipe may need to be slightly modified, for example by diluting the mixture or adding salt (see Table 8-1: Advantages and Disadvantages of Possible Home Fluids for Prevention of Dehydration).

Salt-sugar solution: Salt-sugar solution (SSS) is currently the most widely promoted home-prepared fluid. There are many recipes for SSS; some propose different ways of measuring table salt and some form of sugar, and others propose different container sizes for water. Many of these recipes lead to SSS preparations that have salt or sugar concentrations outside the range recommended by WHO. Several studies have now demonstrated that many of the mothers who have been trained to prepare SSS cannot remember the recipe, or prepare it incorrectly, which often results in dangerously concentrated solutions. Also, salt and sugar, as well as proper utensils, are not available in many areas. These errors in preparation have led to a solution that is often ineffective and/or unsafe. For these reasons fluids that do not require learning and remembering a complex recipe are now being recommended by national policies.

ORS solution: ORS solution made from a packet containing glucose and salts mixed in water is the recommended fluid for treating dehydration; it may also be used to prevent dehydration.

Decision Process

The following criteria should be used to judge the appropriateness of a fluid for home therapy and whether to recommend it:

- The fluid is effective in producing salt and water absorption; if possible it has an additional nutritional benefit.
- The composition of the fluid is safe, and there is little likelihood of wrong measurement (for example, of salt).

ADVANTAGES AND DISADVANTAGES OF POSSIBLE HOME FLUIDS FOR PREVENTION OF DEHYDRATION

TYPE OF FLUID	ADVANTAGES	DISADVANTAGES
Suitable food-based fluids commonly prepared in homes	Variable but safe composition Widely available Mothers already know how to prepare May already be used during diarrhea Often involves boiled (sterile) water Not dependent on a delivery system	Effectiveness may vary Spoilage (e.g., from fermentation of gruels) necessitates frequent preparation May lack "appeal" as a therapy May be misunderstood to be a substitute for food Boiling takes time and consumes fuel
Food-based fluids made suitable with minor modification (such as adding salt or diluting)	Those listed above, plus: Effectiveness may be increased Modification may enhance "appeal" as a therapy	Those listed above, plus: May be difficult to change a current preparation method Composition may vary more. If too much salt is added to the solution, it may be dangerous (can cause hypernatraemia).
Salt-sugar solution (SSS)	Salt and sugar are often available in homes Has some of the appeal of a special therapy Not dependent on a delivery system No boiling needed	Requires 3 accurate measurements Widely variable and potentially dangerous composition due to inaccurate measurements: - Too much salt is dangerous (can cause hypernatraemia) - Too much sugar can lead to osmotic diarrhea (and consequent hypernatraemia) Utensils may not be available for measuring correct amounts of salt, sugar and water Sugar may be costly or unavailable Recipes are difficult to teach, learn, and remember
ORS solution	Easy to prepare, if there is an appropriate container Requires measurement of only one ingredient, water. Composition consistently safe unless water is incorrectly measured No boiling needed May be less expensive for families than currently used remedies Will probably prevent dehydration more effectively Has the appeal of a special therapy	Container for measuring an appropriate amount of water may not be available Requires instruction on how to mix and administer Must be obtained from a health worker or purchased, thus creating dependence It will be expensive to provide ORS for every case of diarrhea There may not be enough ORS supplies nationally for use in prevention as well as treatment In most cases, is unnecessary for prevention of dehydration

Source: WHO/CCD/SER/87.10. A decision process for establishing policy on fluids for home therapy of diarrhoea.

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- The fluid or its ingredients and utensils are widely available and affordable.

- The fluid is easy to prepare. (It is best if mothers already know how to make the solution. The fewer precise measurements required, the more accurately the solution will be prepared. Even modifying a familiar recipe may lead to inaccurate measurements.)

- The fluid is one that is likely to be used when needed; that is, the solution has an acceptable taste, is acceptable culturally during diarrhoea, and has some appeal as therapy.

Recommended Composition of Effective and Safe Fluids for Home Therapy

To prevent dehydration, the body needs to maintain normal levels of sodium and water. Glucose carries sodium across the intestinal wall so it can be used by the body. Thus, a home therapy fluid should contain sodium and a source of glucose (e.g., sucrose or a complex carbohydrate). The fluid should have enough sodium to compensate for the loss of sodium in diarrhoea and enough glucose to effectively transport the sodium. Too much sodium, however, can result in hypernatraemia; too much glucose causes osmotic diarrhoea, which may also lead to hypernatraemia.

See Table 8-2 for the WHO-recommended composition of home fluids (WHO Recommended Composition of Home Therapy Fluids). The osmolality should be less than blood plasma, i.e., less than 300 mOsm/kg of water. The concentration of sodium in a home fluid should be in the range of 30 to 80 mmol/L to correct sodium deficits. This concentration of sodium would result from dissolving about 1.5 to 3 gm of sodium in 1 L of water. For optimal absorption of sodium, the ratio of sodium to glucose concentrations should be between 1 to 1 and 1 to 1.4. For example, if the sodium concentration is 60 mmol/L, the glucose concentration should be between 60 and 84 mmol/L. If the sodium and glucose concentrations meet these criteria, a safe and effective solution will be assured.

Other Fluids

Nonalcoholic and non-caffeine-containing drinks are often promoted as beneficial for the prevention of diarrhoea. However, commercial beverages, such as soft drinks and concentrated fruit juices, are not ideal for home therapy because of their high osmolality (see Table 8-3: Sodium and Potassium Content of Fluids Often Used for Home Treatment). They also have a low sodium content. Commercial soups, on the other hand, have too high a sodium concentration and should not be used.

Of the fluids listed in Table 8-3, breastmilk is the most important for young infants because of its immunologic and nutritive properties. Its low sodium content makes it an excellent fluid to prevent hypernatraemia; it also decreases stool volume. Diluted cow's milk is also appropriate; however, it

WHO Recommended Composition of Home Therapy Fluids

	Recommended range	
Osmolality	< 300 mOsm/kg H_2O	
Sodium concentration	30 - 80 mmol/l	with a ration of sodium to glucose between 1:1 and 1:1.4.
Glucose concentration*	30 - 1123 mmol/l	

*If the fluid contains a complex carbohydrate, the glucose range is not relevant. The fluid should be thin enough to drink easily.

The recommended compositions apply to food-based fluids and SSS. ORS can also be used as a home therapy fluid. However, it has a slightly higher osmolality and sodium and glucose concentrations than that recommended here, compensated for by the fact that, in contrast to food-based fluids and SSS, the individual ingredients in ORS are premeasured accurately. Hence, the slightly higher values of ORS do not prevent it from being used as a home fluid.

Source: WHO/CCD/SER/87.10 "A Decision Process for Establishing Policy on Fluids for Home Therapy of Diarrhea"

TABLE 8 3

Sodium and potassium content of fluids often used for home treatment

Fluid	Concentration (mmol/l)		Osmolality (mOsm/kg H_2O)
	Sodium	Potassium	
Commercial soups (chicken, beef)	114 - 251	2.2 - 17	290 - 507
Commercial juices			
Apples	0.1 - 3.5	24 - 30	654 - 734
Grape	1.3 - 2.8	28 - 32	1167 - 1190
Lemon	9.0 - 10.0	27 - 29	485 - 506
Orange	0.6 - 2.5	41 - 65	542 - 710
Carbonated beverages			
Coca-cola	1.7	0.1	601
Pepsi-cola	1.3	0.1	591
7-Up	5.0 - 5.5	1.0 - 2.0	523 - 548
Canada dry	0.8 - 2.7	0.1 - 1.5	515 - 557
Water			
Tap	0.0 - 1.0	0.0 - 0.5	48 - 50
Coconut	0.0 - 5.4	32.6 - 53.5	255 - 333
Tea	0.0	5.0	
Milk			
Breast	7.0	13.0	-
Cow's	22.0	35.0	-

Source: WHO/CCD/SER/86.9 "Oral Rehydration Therapy for Treatment of Diarrhea in the Home"

contains more sodium than breastmilk. Tea, without the addition of salt and water, provides only water and some potassium and is not very useful in preventing dehydration.

Whether SSS or a food-based solution is recommended, in many situations the first action that a mother should take when diarrhoea occurs is to give the most readily available, unharmful fluid--this will often be breastmilk but may even be water or tea.

OBSTACLES TO EFFECTIVE IMPLEMENTATION OF TREATMENT PLAN A

Mothers and health workers may meet obstacles in carrying out their respective tasks in Treatment Plan A. Table 8-4 (Some Difficulties Encountered in Home Therapy for Diarrhoea) contains suggestions for dealing with these obstacles in providing fluids and feeding. Table 8-5 (Problems with Mixing ORS Solution) provides recommendations for resolving problems in preparing ORS solution.

SUMMARY

Treatment Plan A consists of

- a series of actions to be taken at home to manage acute watery diarrhoea before dehydration sets in, or after dehydration has already been treated with Treatment Plan B or C. The key actions include giving more fluids than usual, continuing feeding and bringing the child to the health centre if there is no improvement or there are signs of dehydration.

- communicating to the mothers of diarrhoea patients the knowledge, skills and attitudes needed to carry out home therapy, ORS solution preparation and use, and those actions that must be taken to prevent diarrhoea.

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TABLE 8-4

SOME DIFFICULTIES ENCOUNTERED IN HOME THERAPY FOR DIARRHEA

DIFFICULTIES	POSSIBLE SOLUTIONS
o Mother is discouraged because diarrhoea continues.	Explain purpose of fluids and importance of dehydration; indicate that diarrhea will eventually stop by itself
o Mother doesn't know what a good home fluid is.	Discuss with the mother what fluids she has at home, which ones she would use for diarrhea, and reach agreement with her on an appropriate fluid for her child.
o Mother may not have the ingredients to make the recommended fluid (such as sugar or salt).	Ask the mother if she has the ingredients in the house, or can get them easily. If she has problems obtaining certain ingredients, discuss alternative ingredients or an alternative home fluid to use.
o Mistrust exists between the mother and doctor or other health worker because no prescriptions are given for drugs.	Explain that drugs for diarrhea do not help to stop it (with some exceptions), and that the best treatment she can give, which will help to shorten the course and also keep her child strong and growing well, is fluid replacement and continued feeding.
o Fluid and feeding during diarrhoea is against mother's beliefs.	Ask the mother to explain her "model" of how diarrhea is caused. Discuss with her the dehydration model of diarrhea, and how fluid and feeding during diarrhea make sense in that model. Encourage her to substitute the dehydration model for her model.
o Child vomits after drinking ORS or other fluid.	Explain that more fluid is usually kept down than is vomited up. Tell the mother to wait 10 minutes, then to start giving ORS or home fluid again a spoonful at a time, waiting 2-3 minutes between spoonfuls.
o Child refuses to drink.	The child may not be thirsty, i.e. may not need fluid. If the child has early dehydration (before signs appear) he will be thirsty and want to drink. Sometimes the use of an alternative container will help, for example, use of a bottle if the child has never taken fluid or food from a spoon before.

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Table 8-5: Problems With Mixing ORS Solution

PROBLEMS	SOLUTIONS
Difficulty finding a litre measure (or cup or glass), or knowing how big a litre or 200 ml is.	Have various sized containers at the clinic and make sure mothers know and understand how much is a litre (or the correct measure).
Keeping the solution too long.	Explain that the solution should be kept covered and not used more than 24 hours after it is prepared.
Using less than a packet to avoid using up the packet.	Make sure mothers understand that the solution cannot be diluted and still be as effective.
Using hot (recently boiled) water (which may reduce sodium bicarbonate).	Explain that the water should be cool (room temperature) before adding contents of the packet. Mothers should wait approximately 15 minutes after removing boiling water from the fire before adding contents of the packet.

Effective Communication: Talking to Mothers About Diarrhoea

INTRODUCTION

In caring for children with diarrhoea, the mother is the most important health worker. More than any one else, the mother:

- can detect diarrhoea when it starts, and begin to give extra fluids and appropriate feeding at home;
- can tell when the child has become sicker or has developed signs of dehydration that necessitate bringing the child for medical attention soon enough to be helped easily;
- can provide the information needed by the doctor to make the correct diagnosis and plan the appropriate fluid, feeding and drug therapy;
- can mix packets of ORS and perform oral rehydration therapy (ORT) after returning home following initial rehydration at a health facility;
- is responsible for giving antibiotics at the right time and for the right number of days to the child with dysentery;
- is usually the one who will bring the child for measles immunization, wash her own and the child's hands before eating or preparing food, dispose of the child's feces hygienically, or do other actions to prevent diarrhoea.

Thus the effectiveness of diarrhoea treatment, oral rehydration therapy and other actions to control diarrhoeal disease are ultimately determined by whether mothers (or other caretakers) can use ORT and do the other things necessary to treat and prevent diarrhoea effectively.

For a mother to use ORT effectively, a physician must know how to talk with her about diarrhoea and teach her to care for her child at home. This requires that the physician have good communication skills. The ability to communicate well with a mother can make the difference between an effective physician and an ineffective one.

PROBLEMS IN COMMUNICATING WITH MOTHERS

For a variety of reasons, physicians often communicate ineffectively with mothers. Some of the reasons are as follows:

- The physician fails to get all the information needed.
- The information obtained is misinterpreted.

- The mother cannot understand the instructions given.
- The mother disagrees with the recommended treatment.
- The mother is unable to carry out the instructions.
- The instructions given are incomplete.
- The mother cannot remember what she is supposed to do.

In real-life situations physicians are rarely able to spend enough time with each mother. If the wrong treatment is given, or the mother is unable to carry out the treatment, then even that small amount of time is wasted.

It is clearly the physician's responsibility to ensure that each mother gets the right information on how she will need to take care of her sick child, whether the physician provides it directly or asks an assistant to take the responsibility for providing it. The physician, as manager of the clinic, ward or private practice, must monitor the staff's communication with mothers. To effectively supervise the staff's communication with mothers, physicians must themselves be good communicators. As the saying goes, "You can't teach what you yourself don't know."

COMMUNICATION SKILLS

The problems in communicating with mothers can be greatly reduced by using some simple communication skills that are described in the remaining sections of this chapter. Use of these skills will allow the physician to be a better communicator with mothers even when the time available is brief. Knowing these skills will also help in monitoring the communication efforts of assistants and other staff.

The following are necessary communication skills:

- How to ask checking questions:
  - to do a better assessment of the patient;
  - to be sure a mother understands what to do at home;
  - to monitor the staff's communication with mothers;
- How to use examples to make instructions to mothers more interesting and effective;
- How to use a mother's pamphlet;
- How to give support so a mother will feel positive about what she can do to care for her child.

Asking Checking Questions

Improving the Physician's Communication Skills

Asking simple checking questions can dramatically improve a physician's communication with mothers. A checking question confirms what a mother knows or helps to find out more complete or specific information about something a mother has said. For example, if a mother said that she had given tea to her child with diarrhoea, a checking question might be:

- "How much did she drink today?" or
- "What else did you give her to drink or eat?"

A checking question can also be a question that gets the mother to tell the physician or health worker what she has learned; this way the physician checks whether the mother remembers and understands what she has been taught. For example, after explaining to a mother how to treat her child's diarrhoea at home, one might ask the following:

- "Tell me the signs that mean you need to bring Ana back to me."

When asking a mother checking questions, it is helpful to phrase the questions so that she must say more than just Yes or No. For example, it is not effective to ask:

- "Do you understand the signs that mean you should bring Ana back to see me?"

The mother would answer Yes whether she understood or not. She would be reluctant to say that she did not remember and would fear appearing stupid.

Asking checking questions requires patience. When asking a mother a question, one must be quiet to give the mother a chance to think and then answer. If the mother is silent, one may feel an urge to answer the question oneself or to quickly ask a different question. However, it is important to realize that the mother may know the answer but she may be slow to respond for several reasons. For example, she may be surprised that she is really expected to answer; she may fear giving an incorrect answer; or she may hesitate to speak to an authority figure. Therefore, it is important to wait for her to answer and to give her encouragement.

The following are other examples of instances in which checking questions can be helpful in improving communication between physicians and mothers of children with diarrhoea:

- If the mother says, "Just this morning my child became sick," check the meaning of that statement by asking:
  "Is this the first morning she had diarrhoea? Did she have any loose stools before this morning?"

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- If the mother says, "No I didn't give her anything," check the meaning of that statement by asking:
  "Did you give her any medicines? Did you give her food? Did you give her fluids? Any ORS?"

- If the mother says, "Yes I know how to prepare ORS," check to be sure she understands by asking:
  "Have you ever used ORS before? Tell me how you would prepare it."

- If the mother makes a mistake in explaining how to mix the ORS, say, "Let me show you a better way to make it--a way that is simpler and makes it work even better." Then one can check again by asking:
  "Now tell me how you will prepare the solution at home."

The objective in a checking question is to make the mother feel comfortable, to get all the information needed to understand the child's condition and what the mother needs to be taught and to make sure she knows how to care for her child. The physician cannot know that the mother understands what she is being taught unless the physician hears the mother describe what she has learned.

Monitoring the Communication Skills of the Physician's Staff

Another valuable use of checking questions is to monitor communication of the physician's staff. If a physician has delegated the responsibility of teaching mothers to a nurse or other staff member, checking questions can help to monitor the effectiveness of the staff's teaching. The following example illustrates how this monitoring can be achieved:

> Three-year-old Mo was treated for dehydration and is now ready to go home. The nurse has talked to his mother about what she should do at home to care for the child. You, the physician, did not see or hear this instruction taking place. You have only a few minutes to spend with the mother before she leaves. You can ask three or four checking questions to find out whether the mother has been taught the most critical things about caring for the child at home.
>
> - You would <u>not</u> ask the mother:
> - "Did the nurse explain to you how to mix the ORS?", or
> - "Do you know how to mix that ORS?" since the mother would be afraid to answer No.
>
> - Instead, you would ask the mother:
> - "How much water will you mix with that ORS packet?"
> - "How much of the solution will you give to Mo?"
> - "How long did the nurse tell you to continue giving the ORS?"
> - "What else will you give him to eat and drink?"
> - "When will you bring Mo back to see the nurse again?"

If the mother can answer these questions correctly, the physician can be satisfied that the nurse or staff member communicates effectively with mothers.

Using Examples

Giving clear instructions to the mother is essential in giving good care to the patient. The first step of the interaction with a mother includes getting complete and accurate information from her in order to assess the child's current condition and the treatment given so far. The next step is to give all the information that the mother needs to care for her child and to communicate it clearly.

Using examples will make the instructions more interesting and effective. Examples make instruction more pertinent, especially if the examples are related to the mother's experience and knowledge. An example may be an object or a situation that the mother can visualize in her mind, or a real action that the mother can see while the physician or health worker is talking. For example, the health worker can show a mother a half-cup of solution while telling her to give her child a half-cup of solution after each stool. A mother also could be allowed to watch another mother giving a baby ORS solution with a spoon, thus permitting the first mother to see how to hold her baby and to see how fast she should be giving the spoonfuls of ORS. The visual image will remain in the mother's memory longer than the oral instructions.

Demonstration is particularly powerful in teaching a mother how to do a task. Showing her how to do the task is much more effective than just telling her how to do it. The most effective way to teach a mother a procedure or skill such as mixing ORS is to have her watch someone else do it and then practice it herself with guidance. As she tries to perform the task, the physician or staff member can observe those parts of the task that are difficult for the mother to perform and can explain or demonstrate as needed. Having seen the mother perform the task correctly, the physician or nurse can be confident that the mother has learned it.

The following are ways to use examples:

EXAMPLE	WAY TO USE EXAMPLE
Showing pictures	Show a drawing of a mother breastfeeding
Naming a specific (instead of giving only a general) rule	Telling a mother to give banana or pineapple, instead of telling her to give foods containing potassium
Demonstrating the task	Showing a mother how to feed ORS to her baby with a spoon
Showing an object	Packet of ORS
Telling a story	Telling the mother about a baby who became dehydrated and died can highlight the danger of diarrhoea in a mother's mind. The story might tell how the baby looked as it got worse
Having the mother practice it herself	The mother measures the correct amount of water to mix with contents of an ORS packet.

Using a Mother's Pamphlet

Communication is also improved by giving each mother a pamphlet that has been designed to be read by her. The mother's pamphlet should summarize the important elements of caring for a child with diarrhoea at home. The pamphlet should have words and pictures that illustrate the main points.

When a pamphlet is being developed, it should be shown to some mothers to test whether they understand its messages. Two examples of a mother's pamphlet are below (Figure 9-1: Sample Mother's Pamphlet--How To Treat Diarrhea At Home and Figure 9-2: Sample Mother's Pamphlet--If Your Child Has Diarrhea). If your country does not currently have a standard mother's pamphlet, or it is difficult for you to obtain it, develop one for your facility that mothers in your area will understand.

Using a mother's pamphlet while giving instructions to a mother is a special and effective way to use examples. Pointing to the pictures and words while they physician or nurse talks will help to focus the mothers attention better than just the words alone. Also, the mother is able to take the pamphlet home with her, which also helps to reinforce what she has learned.

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-- How To Treat Diarrhea At Home

(Mothers' Card)

1. As Soon As Diarrhea Starts, Give Your Child More Fluids Than Usual To Prevent Dehydration. Recommended Fluids Include:

- food-based fluids, such as gruel, soup, or rice water.
- breastmilk, or milk feeds with twice the usual amount of water.

2. Give Your Child Food

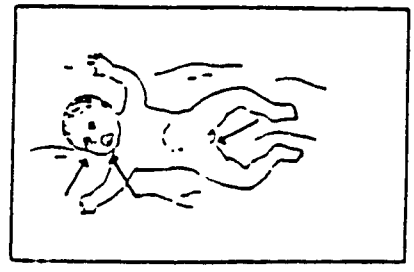
- which is freshly prepared: for example, mixes of cereal and beans, or cereal and meat or fish. Add oil to food if possible.
- fresh fruit juices or bananas.
- as much as the child wants: 6 or more times a day.
- which is cooked and mashed or ground well so it will be easier to digest.
- after the diarrhea stops, one extra meal each day for a week.

3. Take Your Child To The Health Centre If The Child:

- passes many stools
- has unusual thirst
- has sunken eyes

} signs of dehydration

- does not eat or drink normally
- seems not to be getting better



4. You Can Prevent Diarrhea By:

- giving breastmilk for the first 4-6 months and continuing to breastfeed for the first year
- introducing clean, nutritious weaning foods at 4-6 months
- giving your child freshly prepared and well-cooked food and clean drinking water
- having family members wash their hands with soap after defecating and before eating and preparing food.
- having all family members use a latrine
- quickly disposing of the stool of a young child in a latrine.

Source: PRITECH. Talking with Mothers About Diarrhea -- A Workshop for Physicians. 1988:18.

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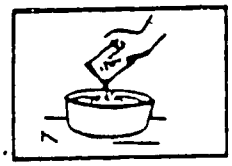
-- If Your Child Has Diarrhea

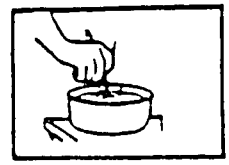
To Prevent The Dehydration

Suero Oral

1 Litre of Clean Water



1 Packet of Suero Oral



Mix it Well

Give One Cup For Each Stool

Food And Liquids

To Keep The Baby Strong

Keep Breastfeeding

Give Soft Foods Such As

Give A Lot Of Liquid Such As

Go To The Health Center

If The Diarrhea Last More Than 2 Days
Or If Your Child Has
Any Signs Of Dehydration

To Wait Is To Risk

Source: PRITECH. Talking with Mothers About Diarrhea - A Workshop for Physicians. 1988:19.

The following are reasons for why a mother's pamphlet can be a useful communications tool:

- Referring to the pamphlet will remind the physician or staff of the main points to cover while giving instructions, so that none will be forgotten.

- The pamphlet will remind the mother of the instructions when she is at home.

- If important points are left out of the instructions by mistake or because time is short, the mother will still get those messages when she refers to the pamphlet at home.

- Even mothers who are illiterate can benefit from a pamphlet, by referring to the pictures and by having a family member or neighbor read the written instructions.

- Because the mother keeps the pamphlet, the next time her child has diarrhoea she can refer to it and refresh her memory about what to do.

- The mother may show the pamphlet to other family members or neighbors, so more people will learn the messages it contains.

- The mother will appreciate being given something during her visit.

- The pamphlet will simplify the task of training your staff in the messages to tell mothers.

Giving Encouragement and Support

The effectiveness of a physician's efforts to provide ORT and other elements of good diarrhoea case management to children with diarrhoea is ultimately determined by whether mothers use ORT and whether mothers perform other treatment actions effectively. Using examples and a mother's pamphlet, and asking checking questions can ensure that mothers understand. However, understanding how to perform a task does not ensure that a mother will want to perform it. Therefore, it is important for a physician and staff to provide the support and encouragement that a mother needs in order to motivate her to carry out the instructions that she has been given.

Experts in behaviour change have identified three reasons for why mothers of children with diarrhoea may not carry out instructions for home therapy:

- Necessary skills or knowledge may be absent. For example, mothers may not know how to measure a litre of water to mix with the packet of ORS, or mothers may not recognize that the child is becoming dehydrated and that fluid is needed.

- Necessary materials or implements may not be available. For example, a mother may not own a vessel that measures the appropriate amount of water to mix with an ORS packet.

- The consequences of following the behaviour may not encourage the mother to continue.
  - There may be no positive consequences of engaging in the desired behaviour. For example, a mother's primary concern may be to stop the diarrhoea. When she observes that ORS did not stop the diarrhoea, she will think it did not work.

  - There may be positive consequences for <u>not</u> engaging in the desired behaviour. For example, not feeding a child who has diarrhoea is certainly more convenient than preparing special food and coaxing a sick child to eat.

  - There may be punishing consequences that discourage the desired behaviour. For example, during rehydration, a child may vomit, or the diarrhoea may seem to increase. The mother would want to avoid these consequences and may stop giving the ORS, which caused them.

In patient education, physicians and nurses usually focus on teaching knowledge and skills. They may be unaware that besides a lack of knowledge and skills, there may be other reasons for why the mother of a diarrhoeic child fails to provide effective ORT at home. Health workers may also feel that they cannot influence certain conditions such as the unavailability of materials or the fact that ORS does not stop diarrhoea. However, by giving the mother support, they can influence the mother's willingness to adopt the desired behaviour.

Sometimes in giving instruction to mothers, health workers may be tempted to focus on errors that the mothers have made in learning a skill; this approach, however, is counterproductive to effective learning. A good learning situation should provide the instructions, materials and support that a mother needs to do a task correctly. The health worker should then focus, and comment, on the correct behaviours. "To catch them doing it right" results in more rapid and lasting learning than emphasizing what has been done wrong.

Mothers will remember and will want to repeat behaviours they are praised for or that they feel confident doing. While there are many means of getting mothers to try a new behaviour once, positive consequences are essential for them to continue it over time. In a busy clinic, where time for giving instructions is often brief, mothers will make mistakes, and those mistakes have to be corrected. At the same time, a physician or nurse can recognize and give praise when a mother does something correctly. This will build her confidence and increase the likelihood that she will remember and repeat the action.

Asking checking questions that a mother answers correctly and then praising her is a way to "catch her doing it right." Having a mother practice a task with guidance, so that she will do it correctly, and telling her that she is doing well is another way. Complimenting a mother on what she did at home to care for the child, such as continuing feeding, is another way to support her and give her confidence. By commenting on what a mother has done well or learned, a health worker can give her support that will help and encourage her to do the task again, the next day, or the next time her child gets diarrhoea.

An important step in giving support is to help the mother think about how she will carry out the instructions. Find out whether she has the necessary materials. Find out if she is expecting negative consequences to arise if she performs the instructions. Once a mother's concerns are known, a health worker can give her support by helping her find a way to overcome a problem of unavailability that would otherwise discourage her completely. A health worker may be able to help her by giving her something she needs or suggesting a substitute.

If the mother is shown that positive consequences can arise from following instructions correctly, this will minimize the importance of the negative consequences in her mind. For example, by explaining the positive consequences of using ORS (such as rehydrating her child and restoring his appetite), the mother can be convinced that they will outweigh the punishing aspects (such as the inconveniently long time she will spend giving the ORS slowly and in small amounts).

The key is to first discuss with the mother what she will be able to do. This will establish whether she feels it is feasible and worthwhile. Also, once she has thought about and said what she will do, she is more likely to do it. During the discussion, ways to overcome problems that interfere with the behaviour can be suggested. For example, the health worker can ask, "What foods do you have at home that you will give your child?" When the mother answers, the health worker can confirm that this food is good to give a child with diarrhoea (or suggest another food) and discuss how the mother will prepare the food. The health worker's interest in the mother's situation will help her to be committed to carrying out the recommendations that have been made.

SUMMARY

In order to encourage mothers to practice effective diarrhoea treatment, it is important for physicians to develop the following communication skills in dealing with mothers:

Ask Checking Questions

A checking question asks for more complete information about something a mother has said, or it can determine what a mother has learned. Ask checking questions to:

- do a better assessment of the patient;
- be sure the mother understands how to care for the child at home;
- monitor the staff's communications with the mother.

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Use Examples

The use of examples will make instructions to the mother more interesting and effective. Examples can include:

- o showing pictures;
- o name a specific rule, instead of giving only a general one;
- o demonstrating a task;
- o showing an object;
- o telling a story;
- o having the mother practice certain tasks herself.

Use A Mother's Pamphlet

A mother's pamphlet is an effective communication tool; it helps:

- o to remind the physician and staff of the important points;
- o to give the mother instructions to use at home if she forgets or feels unsure;

Give Support

If the mother feels positive about what she can do to care for her child, she is more likely to carry out the instructions she has been given.

- o Discuss the mother's situation. If she lacks something that you have recommended, explain how to obtain it or recommend a substitute.
- o Praise the mother for things she did at home that were good for her child.
- o Show the mother positive consequences of an action or treatment that will outweigh the negative ones.
- o Ask checking questions that the mother can answer correctly, and then praise her.
- o Have the mother practice a task with guidance so that she will do it correctly, and tell her that she is doing well.

T-4

CHAPTER 10

Management of Diarrhoea With Some Dehydration: Treatment Plan B

INTRODUCTION

In recent community studies, 21% to 71% of children with diarrhoea examined at home had "some dehydration" according to the criteria in the World Health Organization (WHO) Assessment Chart (See Figure 7-1: How to Assess Your Patient for Dehydration). The actual percent depends on which criteria are used to define the presence of dehydration; stool frequency, for example, may not be as reliable a sign as the presence of decreased skin turgor. Dehydration during the course of diarrhoea also depends on the extent to which fluid losses are replaced as they occur, that is, on the extent to which mothers follow Treatment Plan A and the principles of home management of diarrhoea. Dehydration also depends on the severity of the diarrhoea and the amount of fluid being lost. For example, one may expect to see more patients with dehydration during a cholera epidemic.

Although changes in appetite often occur early, the child with diarrhoea may seem almost normal before becoming dehydrated. The onset of dehydration brings symptoms of being sick--irritability, vomiting, anorexia, listlessness and decreased playfulness. These symptoms lead the mother to seek medical attention. As a result, a larger percentage of patients being seen for diarrhoea at a health care facility will be dehydrated than the proportion of dehydrated people in the community. The majority of dehydrated patients seen at health facilities will have "some dehydration" (mild or moderate dehydration); only a few, usually less than 10% of cases seen, will have severe dehydration.

Cases with "some dehydration" need treatment to restore their fluids and electrolyte balance. This is best performed as oral rehydration with oral rehydration salts (ORS), according to Treatment Plan B.

WHAT IS TREATMENT PLAN B?

Treatment Plan B is the giving of ORS solution to correct dehydration, or <u>rehydration therapy</u>. It is summarized in Figure 10-1: Treatment Plan B To Treat Dehydration.

The key signs that distinguish patients who should be treated according to Plan B from those who should be treated according to Plans A or C are as follows:

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TREATMENT PLAN B
TO TREAT DEHYDRATION

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

Patient's age	2 4 6 8 10 12 18 months	2 3 4 6 8 15 years	adult			
Patient's weight in kilograms	3 5 7 9 11 13 15 20 30 40 50					
Give this much solution for 4-6 hours — in ml	200-400	400-600	600-800	800-1000	1000-2000	2000-4000
Give this much solution for 4-6 hours — 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.

Source: WHO. Programme for Control of Diarrhoeal Diseases. Supervisory Skills - Treatment of Diarrhoea. 1987:56.

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Plan C patients are severely dehydrated and may have very weak or absent pulses. They are clearly near cardiovascular shock with limpness and some depression of consciousness. These patients have quite sunken eyes and fontanelle, a skin pinch that retracts very slowly (one or two seconds) and often marked vomiting by history.

Plan B patients are alert, even irritable. Their pulses should be clearly palpable. They have clear signs of change in skin elasticity and pulse, but the pulse is definitely palpable, and their skin is only a little different from normal.

Plan A patients have no abnormal signs--only a history of diarrhoea with perhaps a little vomiting. Their only sign of dehydration is thirst.

When the patient has been rehydrated--which usually takes four to six hours--continued treatment (maintenance therapy) is given according to Plan A. This includes replacing continuing fluid losses from diarrhoea and providing normal daily fluid requirements and providing food.

Because most children with "some dehydration" usually correct their fluid deficits after four to six hours of ORS treatment, there is usually no need to admit them into a hospital. Often these patients are treated in a special area of the clinic which is set aside for this purpose. This area may be called an ORT (oral rehydration therapy) corner or the oral rehydration area in a Diarrhea Training Unit (DTU). See Appendix 4: The Diarrhea Training Unit for a brief description of a DTU.

Another principle of Treatment Plan B is that mothers or caretakers will stay with the children and assist in the treatment.

In addition to treating patients with "some dehydration," Treatment Plan B is used as a follow-up form of rehydration in those patients who presented with severe dehydration then improved after a few hours of intravenous therapy.

The main uses of Treatment Plan B are:

- The initial rehydration of patients who present with some signs of dehydration;
- The follow-up rehydration of patients who present with severe dehydration but have improved on intravenous rehydration therapy.

TASKS INVOLVED IN IMPLEMENTING TREATMENT PLAN B

The main tasks of Treatment Plan B are:

1. Calculate the correct amount of ORS solution to give;
2. Show the mother or caretaker how to give ORS solution;
3. Advise continued breastfeeding and when to offer foods;

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4. Monitor treatment and reassess the child after four to six hours;

5. Give advice for home treatment of diarrhoea (as in Treatment Plan A) when child is ready to go home.

Task 1: Calculate the Correct Amount of ORS Solution to Give

Signs of dehydration become apparent when a child has lost at least 4% to 5% of his/her body weight. Above 10%, the child is severely dehydrated. Thus, patients showing signs consistent with "some dehydration" can be considered to have a fluid deficit of between 4% and 9%. When signs are mild, the deficit is closer to 5% of body weight; when signs are more severe ("moderate dehydration") the deficit is closer to 9%. This percent can be used to estimate the amount of ORS required to replace the deficit. For example, a child weighing 11 kg on admission and showing signs of some dehydration (slightly more than mild) would have an estimated fluid deficit of 7% of body weight. To calculate the amount of ORS solution, multiply body weight by the estimated percent of body weight lost in diarrhoea (based on signs of dehydration). Thus, in this example, 11 kg X 7% = 0.77 litre or 770 ml.

The correct amount of ORS solution to give can also be calculated using the chart in Treatment Plan B (Figure 10-1). The amounts given in the chart are for the first four to six hours because the majority of patients will be hydrated in this time if they are able to take the fluid orally. The patient's weight in kilograms should be used to calculate the amount of ORS solution to give, using this chart. If scales are not available, the patient's age can be used. The physician or health worker simply needs to draw a vertical line on the chart from the weight (or the age) to the amount of fluid to be given. For example, if the child weighs seven kilograms (or is 10 months old), 400 to 600 ml of fluid should be given over four to six hours. If the patient is mildly dehydrated the amount of fluid given can be closer to 400 ml; if the child is moderately dehydrated, the amount should be close to 600 ml.

Aim to give 20% to 25% of the total amount of fluid calculated in the first hour. The rest should be evenly distributed over the next three to five hours.

Task 2: Show the Mother How to Give ORS Solution

The physician may often delegate this task to other members of the health team, however he/she will maintain the overall responsibility to see that the mothers or caretakers are shown how to give ORS solution.

The following points must be explained to the mother:

- How much solution to give in total (e.g., four cups, two glasses etc.);
- Give ORS solution a spoonful at a time every few minutes;

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- If the child vomits, wait 10 minutes then continue giving ORS solution a spoonful at a time and more slowly.

The mother should then give ORS according to these instructions. In most countries, when the mother has become comfortable with administering the fluid and the child is taking fluid well, the mother should be shown how to mix ORS solution using containers and utensils that would be available in her home. The health worker should demonstrate the methods and actually mix a packet. Then the mother should prepare the solution also, to ensure that she understands. Details of the most effective methods for teaching mothers how to mix and give ORS are discussed in detail in Chapter 9, "Effective Communication: Talking To Mothers About Diarrhoea."

Some countries have a policy that ORS packets should not be given to mothers to use at home. In those circumstances it is not necessary to teach the mother how to prepare ORS.

Task 3: Advise on Feeding

If the child is breastfed, mothers should be encouraged to continue breastfeeding during ORS therapy. Breastfeeding contributes some calories and helps replace the fluid deficit. By encouraging mothers to breastfeed during the child's treatment at the hospital or clinic, the health worker can reinforce the instructions given for home therapy to continue breastfeeding during a diarrhoea episode.

If a child is on a mixed diet, small amounts of food should be offered, after several hours of treatment, to take with the ORS solution. The mother should be encouraged to give the child food as soon as she returns home and told about the importance of food in bringing about complete and rapid recovery from the diarrhoea.

Task 4: Monitor Treatment and Reassess Child After Four to Six Hours

The doctor or health worker in charge should monitor the child's treatment. The health worker should:

- Check to see that the mother or caretaker is giving ORS solution correctly;
- Record the amount of fluid taken and number of diarrhoea stools;
- Detect any complications, such as serious deterioration in clinical status;
- Watch for signs of over-rehydration, as evidenced by the development of puffy eyelids. In this situation, the ORS and/or other fluids should be stopped until puffiness is gone.

After four to six hours, the child should be reassessed using the assessment chart. Further treatment should be carried out according to this assessment.

- If the child still has signs of dehydration, continue with Treatment Plan B, estimating on the basis of the clinical signs the new volume of fluid needed over the next four to six hours;
- If the child no longer shows signs of dehydration, he/she may be sent home after instructing the mother how to carry out Treatment Plan A.

Task 5: Give Advice for Home Treatment

When the child is no longer dehydrated, he/she may be sent home with advice for home treatment (Treatment Plan A). Briefly summarized, the three rules of home therapy are:

1. Give the child more fluids than normal;
2. Continue to feed the child;
3. Bring the child back if he/she does not improve or shows signs of dehydration;

In addition,

- Make sure the mother knows how to mix and give ORS solution at home (if this is the national policy), and give her enough packets for two days;
- Explain how the mother and family can prevent diarrhoea.

These points are described in more detail in Chapter 8: Management of Diarrhoea With No Dehydration: Home Therapy and Treatment Plan A.

Sometimes the mother or caretaker will not be able to stay at the clinic for the entire four- to six-hour treatment. In these situations, the mother should be shown how to prepare and give ORS solution and then given enough ORS packets for two days. Calculate how much fluid the child needs in the first four to six hours, and tell the mother to give this when she gets home. After the first four to six hours, tell her to give the child as much ORS and other fluids as he/she wants. Also give the mother the advice from Treatment Plan A.

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SOME PROBLEMS THAT MAY ARISE WHEN IMPLEMENTING PLAN B

PROBLEMS WITH PLAN B	POSSIBLE SOLUTIONS
No existing area for ORT in the clinic.	Give clear, simple instructions to staff and provide basic materials (table, spoons, containers, posters, etc). Can use corner of waiting room.
Old beliefs of mothers, also staff, which oppose giving food and liquid during diarrhoea.	Provide hands-on in-service training for staff during which they can see the benefits of ORT and become strong supporters; supervise rehydration so mothers can see good results of giving food and fluids.
Mother has difficulty remembering or following instructions after going home.	Give mothers clear, understandable pamphlets to take home; discuss possible problems with mothers before they leave clinic; have outreach workers visit mothers for follow-up to help solve problems.
Clinic staff gives incorrect instructions.	Offer staff skill-based in-service training; provide regular supervision with checklists; check mothers' understanding by interviewing them as they leave clinic.
Mother does not want to stay in clinic to do dehydration.	Provide education about importance of rehydration and home therapy if mother or caretaker can not stay; ask questions to be sure mother understands and can follow the instructions.

SUMMARY

Treatment Plan B is the treatment of dehydration using ORS solution for rehydration. It is appropriate for patients with some, but not severe, dehydration. A fluid deficit of 4% to 9% of body weight is usually replaced over four to six hours. The medical staff calculates the amount of ORS solution needed. The mother learns how to give the ORS solution, and carries out the actual rehydration. The medical staff monitors the progress of rehydration, as well as the mother's understanding and actions. When rehydration is complete, patients should continue treatment using Treatment Plan A. This is usually done at home.

CHAPTER 11

Management of Diarrhoea with Severe Dehydration: Treatment Plan C: Intravenous and Nasogastric Fluid Administration; Making Inpatient Ward Rounds

INTRODUCTION

Severe dehydration from diarrhoea is often fatal; 50% to 70% of diarrhoea deaths in countries where oral rehydration therapy (ORT) has not yet become widely practiced are from severe dehydration. However, a combination of parents learning to recognize dehydration and bringing patients for help earlier, plus competent management of severe dehydration by doctors and other health workers can dramatically reduce the mortality rate. In a number of countries and hospitals, this has already occurred.

Prior to modern treatment, there was a 10% to 30% case fatality rate among patients admitted to hospitals with severe dehydration. In cholera epidemics, the diarrhoea case fatality rate in health facilities has been up to 50%. Presently, improved intravenous therapy skills and use of ORT can reduce case fatality rates among hospital patients with uncomplicated acute watery diarrhoea to less than 1%. Indeed, the causes of diarrhoea mortality in hospitals where ORT and effective intravenous rehydration are routinely practiced now tend to be severe dysentery, malnutrition, pneumonia or generalized sepsis, rather than dehydration and hypovolemic shock. The majority of cases with uncomplicated dehydration from diarrhoea are rehydrated as outpatients and not even admitted.

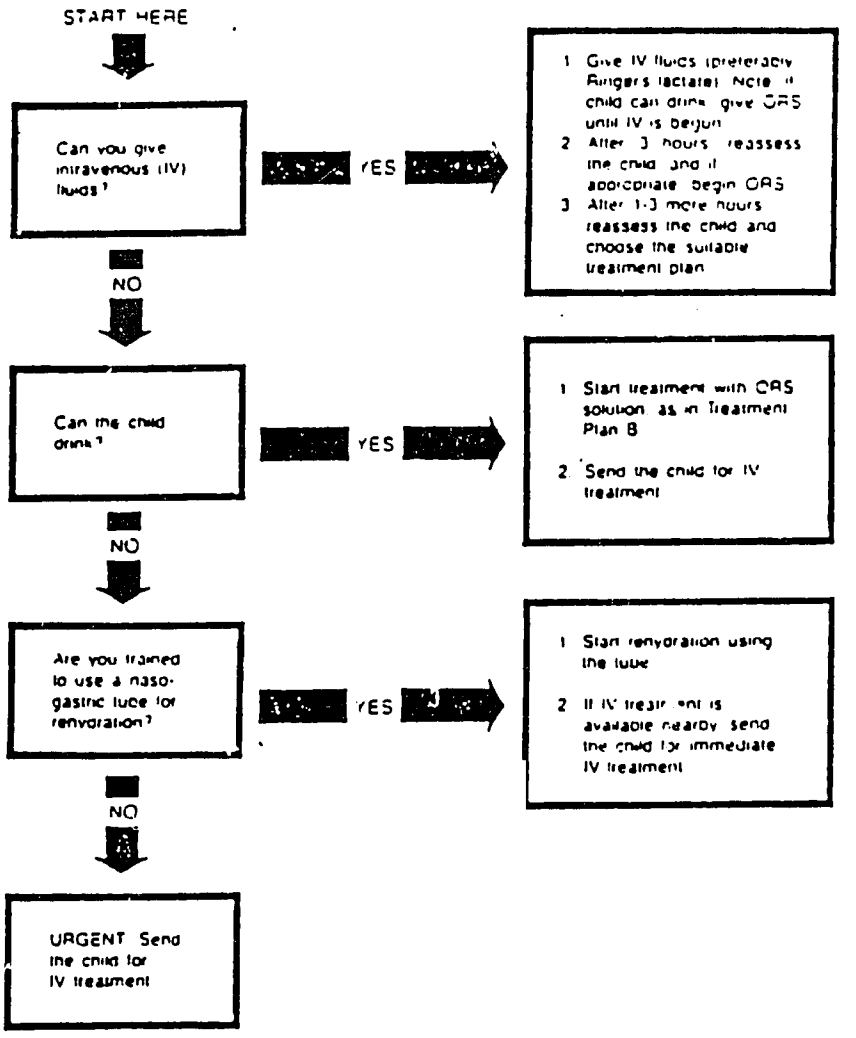
Overall it is estimated that 1% to 2% of diarrhoea cases in the community have "severe dehydration" as determined according to the World Health Organization (WHO) Assessment Chart. Because they are more ill, a larger proportion of these patients tend to be brought to health facilities than of patients with some or no dehydration. Thus doctors and workers at health facilities can expect to find a higher percentage of severely dehydrated patients among cases they see. This is usually less than 10% of diarrhoea cases, but may reach 30% or more during cholera epidemics.

Patients with severe dehydration should be treated according to Treatment Plan C. (See Figure 11-1: Treatment Plan C To Treat Severe Dehydration Quickly.) The method of treatment is intravenous (I.V.) fluid administration. Nasogastric tube or oral administration of fluids can be substituted when I.V. therapy is not available or no one trained to use it is present.

This chapter describes the guidelines for Treatment Plan C. It includes the methods for giving intravenous therapy for initial rehydration and for shifting to oral therapy for replacement of continuing fluid losses. The methods for inserting nasogastric tubes and for regulating fluid administration rates when nasogastric tubes must be used are also covered.

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.

Source: WHO. Programme for Control of Diarrhoeal Diseases. Supervisory Skills - Treatment of Diarrhoea. 1987:57

While intravenous therapy is often used when it is not necessary, its recommended use to treat diarrhoeal disease is not limited to severely dehydrated patients. Intravenous therapy is often overused. For example, even in situations where oral therapy would be more beneficial than intravenous treatment, a number of physicians persist in using I.V. drips and admitting patients to a hospital. However, in a few cases, I.V. or nasogastric rehydration is also recommended for moderately dehydrated patients. For this reason, the specific indications for the use of intravenous therapy, in addition to treating severe dehydration, will be described in this chapter.

Because patients with severe dehydration and continuing diarrhoea are usually admitted to the hospital, the chapter includes guidelines for making ward rounds of diarrhoea patients. The guidelines describe an approach to ward rounds that will ensure all important aspects of diarrhoea case management are covered.

WHAT IS TREATMENT PLAN C?

Treatment Plan C is summarized in Figure 11-1. Treatment Plan C is used primarily for patients with severe dehydration. The purpose of Plan C is to give the patient a large quantity of fluids quickly to replace the very large fluid loss which has resulted in severe dehydration and danger of death from hypovolemic shock.

Treatment Plan C usually involves giving fluids intravenously. Sometimes, because of lack of skill or equipment, an intravenous infusion cannot be established. In such circumstances the required fluid, in the form of ORS solution, can be given by nasogastric tube or orally if the patient can drink, and/or the patient is referred to a centre where intravenous treatment is available.

Patients with severe dehydration need intravenous therapy because fluids given orally may be absorbed too slowly due to the poor perfusion of the intestine. Also, many of these patients may be too weak to drink fluids; those with stupor or coma may aspirate fluid into the lungs, and potentially fatal aspiration pneumonia may occur.

INDICATIONS FOR USING TREATMENT PLAN C: SEVERE DEHYDRATION

The symptoms and signs of severe dehydration are listed in the WHO assessment chart (Figure 7-1) and are summarized below. A patient is classified as severely dehydrated if two or more of the following signs or symptoms are present.

Symptoms of Severe Dehydration:

- More than 10 stools per day;
- Very frequent vomiting;

- Inability to drink;
- No urine for six hours or longer.

Signs of Severe Dehydration:

- Very sleepy or unconscious, floppy, or having convulsions;
- Tears absent;
- Eyes very dry and sunken;
- Mouth and tongue very dry;
- Breathing very fast and deep;
- Skin pinch goes back very slowly;
- Pulse very fast and weak or unpalpable;
- Fontanelle very sunken.

In the case of a severely dehydrated child, taking the complete history and doing an examination must sometimes be deferred so treatment can be started immediately. Severe dehydration with vascular collapse is a clinical emergency. Merely seeing the child in a stupor, confirming that the conditions began with diarrhoea and vomiting and quickly checking the eyes, skin turgor and pulse will give enough information to immediately start an intravenous drip for rehydration. When the drip is running well and the emergency is over, the complete history can be taken and examination done.

Occasionally, patients with nonsevere dehydration may also need intravenous therapy. These patients include those with:

- Such a high rate of purging (passing stool) that they cannot keep up by drinking oral fluids;
- Persistent vomiting;
- Inability or refusal to drink;
- Abdominal distention and ileus;
- Glucose malabsorption (which means patient cannot benefit from ORS solution).

These indications are described in more detail below. While these patients would be administered fluids by I.V.s, they would be treated with the amount of fluid recommended in Treatment Plan B (since the amount of fluid recommended depends on the degree of dehydration).

TASKS INVOLVED IN IMPLEMENTING TREATMENT PLAN C

The main tasks of Treatment Plan C are:

1. Establish an intravenous line or nasogastric tube;

2. Calculate the correct amount of fluid to give for the first three hours;

3. Decide what intravenous fluid to use;

4. Monitor and reassess the patient frequently;

5. Make transition to Treatment Plans B and A when appropriate.

Task 1: Establish Intravenous Line or Nasogastric Tube

The technique of administration of intravenous fluids can only be taught by practical demonstration by someone with experience. Intravenous therapy should be given only by trained persons. Several general points are made here.

The needles, tubing, bottles and fluid used for intravenous therapy must be sterile.

Intravenous therapy can be given into any convenient vein. The most accessible veins are generally those in front of the elbow, on the back of the hand or, in infants, on the scalp. Using neck veins or making an incision to locate a vein is usually not necessary and should be avoided if possible. In some cases of severe dehydration, particularly in adults, simultaneous infusion into two veins may be necessary.

It is useful to mark intravenous fluid bottles at various levels with the times at which the fluid should have fallen to those levels. This allows easier monitoring of the rate of administration.

Step-by-step instructions for insertion of peripheral and scalp vein needles can be found in Appendix 5A, Peripheral Vein Intravenous Rehydration, and 5B, Scalp Vein Intravenous Rehydration.

In cases requiring rapid resuscitation, a needle may be introduced into the femoral vein where it must be held firmly in place and removed as soon as possible. Using the femoral vein, a large amount of fluid can be infused very rapidly, and peripheral veins will become evident. Instructions for locating the femoral vein and inserting an infusion needle into it also can be found in Appendix 5C.

The treatment of choice in severe dehydration is intravenous therapy. But if a person trained to insert an intravenous needle, needles, tubing or intravenous fluids is not available, then giving I.V. fluids will not be possible. In such circumstances:

- If the child can drink, start giving ORS orally as in Plan B, while sending the patient to another centre for I.V. treatment;

- If the child cannot drink, give ORS solution through a nasogastric tube. General instructions for inserting a nasogastric tube are given in Appendix 6: Rehydration Using a Nasogastric Tube. For a child, the procedure will vary a little. Lay the child down instead of having him/her sit. Take more precautions to prevent aspiration. Use a six- to eight-gauge diameter tube.

If a person trained to use a nasogastric tube for rehydration is not available, or if no tube is available, urgent referral to a centre with I.V. facilities is required.

Task 2: Calculate the Correct Amount of Fluid to Give

When a patient has severe dehydration, the fluid deficit can be estimated to be 10% of the patient's body weight or more. This may also be stated as 100 ml/kg of body weight. For various reasons, the deficit in infants with severe dehydration is estimated to be 11% of body weight, or 110 ml/kg. It is the goal of Treatment Plan C to replace that deficit as rapidly as possible.

The correct amount fluid and the rate of fluid to be given over the first three to six hours is given in Table 11-1: Guidelines for Rehydration Therapy for Severe Dehydration. The amount of fluid that is given is based on ml/kg body weight, and the rate of administration of the fluid depends on age.

Adults and children over one year old should be given 100 ml/kg within the first three hours. If the patient is in shock, the intravenous fluid should be given very quickly until the radial pulse is easily felt. Otherwise, up to one-half the fluid can be given in the first hour.

For infants under one year old, fluid should be given more slowly, starting at a rate of 30 ml/kg in the first hour, then 20 ml/kg per hour for the next two hours (for a total of 70 ml/kg in the first three hours). After that, the remainder of the deficit (40 ml/kg) should be given orally as ORS over the next three hours, that is, at a rate of 13 ml/kg/hour for three hours.

Initial rehydration and replacement of the calculated deficit should thus be completed in three hours in children over age one and adults, and in six hours in infants.

The volumes of fluids and rates of administration quoted above are averages based on usual needs. These amounts should be increased if they are not adequate and or decreased if hydration is achieved earlier than expected. Under-rehydration is suggested by persistence or non-improvement in signs of dehydration. Over-rehydration is suggested by puffiness around the eyes and congestive heart failure or pulmonary oedema.

Task 3: Decide What Intravenous Fluid to Use

A number of solutions are available for intravenous infusion. However, some do not contain appropriate or adequate amounts of the electrolytes required to correct the deficits found in dehydration associated with diarrhoea. These have already been reviewed in Chapter 6 in the section on Intravenous Solutions and in Table 6-3.

Ringer's Lactate Solution (also called Hartmann's Solution for Injection) is the best commercially available solution. If Ringer's Lactate is not

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TABLE 11-1

GUIDELINES FOR REHYDRATION THERAPY FOR SEVERE DEHYDRATION[1]

Age Group	Type of Fluid	Amount of Fluid (per kg body weight)	Time of Administration
Infants (under 12 months)	IV Ringer's Lactate	30 ml/kg	Within 1 hour
	FOLLOWED BY		
	IV Ringer's Lactate	40 ml/kg	Within next 2 hours
	FOLLOWED BY (if appropriate)		
	ORS Solution	40 ml/kg	Within next 3 hours
Other children and adults	IV Ringer's Lactate	100 ml/kg	Within 3 hours; initially as fast as possible until radial pulse is easily felt

1 The volumes of fluid and rates of administering treatment are averages based on usual needs. These amounts should be increased if they are not adequate to achieve rehydration, or decreased if hydration is achieved earlier than expected or if the appearance of puffiness around the eyes suggests overhydration. Once the health worker has gained some experience in rehydration therapy he may not need to follow this exact schedule.

Source: WHO. Programme for Control of Diarrhoeal Diseases. Supervisory Skills - Treatment of Diarrhoea. 1987:66

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available, ORS solution given by nasogastric tube should be considered as an alternative to the use of the following less-than-ideal intravenous solutions such as half-strength Darrow's solution, normal saline or half-strength normal saline in 5% dextrose.

Task 4: Monitor and Reassess the Patient Frequently

All patients with severe dehydration should be followed closely by some member of the health staff. Therapy should be assessed after one hour and then every two to three hours if the patient is still critical. At each assessment, the rate of fluid administration should be quickened or slowed and the volume needed recalculated depending on the changes observed in the patient's signs of dehydration and other aspects of the patient's condition.

In particular, attention should be given to:

- The number and volume of stools passed;
- The frequency and amount of vomiting;
- The signs of dehydration on examination;
- Whether the rehydration fluid (oral or I.V.) is being successfully given and in adequate amounts.

If the signs of dehydration and the diarrhoea and vomiting have become worse or remain unchanged, the rate of administration and the amount of fluid given may need to be increased.

If an infant has not improved in three hours, the intravenous infusion should be continued as previously. If the infant can be fed ORS solution, however, it should be given at this time with the intravenous solution. If the infant has improved at the three-hour assessment, the I.V. should be adjusted to drip as slowly as possible but not removed, and the majority of fluid given as ORS by mouth, according to the guidelines in Table 11-1 (Guidelines for Rehydration Therapy for Severe Dehydration).

As soon as an infant can suck, breastfeeding should be encouraged. If the infant is not breastfed, after the first six hours of therapy give 100 to 200 ml of clean water along with the ORS solution, and subsequently give water with the ORS solution in an approximately equal volume as the ORS solution. This will help prevent hypernatraemia from overadministration of salt and meet the body's normal daily fluid requirements.

Older children and adults should be reassessed at one hour then after every two to three hours. If the signs of dehydration are worse or remain unchanged, intravenous therapy must continue and, depending on the situation, may need to be speeded up. If at four hours the patient's condition has improved but some signs of dehydration are still present, giving ORS solution by mouth should be started according to the schedule of Treatment Plan B.

Older children and adults should have water available to drink as they wish in addition to the ORS, to meet their normal daily fluid requirements.

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Task 5: Make Transition to Treatment Plans B and A When Appropriate

The patient may be shifted to oral ORS solution administration (Treatment Plan B) when intravenous rehydration is no longer needed. I.V. rehydration is not needed when the signs of severe dehydration have definitely improved and when it has been demonstrated that the patient can drink adequate volumes of fluids.

If the patient has improved after the initial three hours of intravenous therapy and has already been drinking fluids successfully for 60 to 90 minutes, slow down the I.V. and observe for a few hours, giving ORS solution at the full rehydration rate for another three hours. If the patient continues to tolerate fluids and is drinking enough to cover stool losses plus normal maintenance, the intravenous line may be removed. Continue ORS at the rate used in Treatment Plan B.

If, on the other hand, the patient has not improved substantially after the initial three hours of intravenous therapy or is unable to drink and retain sufficient fluids, the intravenous fluids must be continued for a few more hours. In general, intravenous administration of fluids should not be needed for more than six to eight hours except under very unusual circumstances.

When the patient shows signs of rehydration and the signs of dehydration have improved, fluid should be given according to Treatment Plan B. When dehydration has been eliminated, fluids can be given according to Treatment Plan A. Severely dehydrated patients may continue to excrete large amounts of fluid as diarrhoea, as in cholera cases. In such patients, continuing losses may be replaced with ORS accompanied by a similar volume of plain water or low-sodium food-based fluids.

Feeding may be difficult or impossible during the initial few hours of rehydration. As soon as an infant is alert and can drink, however, breastfeeding should be started. In general, feeding should be started no later than six hours after admitting the patient. Feeding should be done according to Plans A and B and the specific recommendations on feeding found in Chapter 12. Detailed descriptions of Plans A and B can be found in Chapters 8 and 10.

MAINTENANCE THERAPY

Treatment Plan C is intended only for cases of severe dehydration. After the initial fluid and electrolyte deficits have been corrected (using Plan C followed by Plan B, for example) and the signs of dehydration are gone, it is important to replace ongoing abnormal losses of fluids or electrolytes associated with diarrhoea or vomiting and to provide the normal daily fluid requirements. Treatment Plan A with ORS should be used for such maintenance therapy; it includes continued feeding during the course of diarrhoea, as well as replacement of continuing fluid losses and provision of normal daily fluid requirements.

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Role of the Mother

A mother's role in managing a hospitalized child with severe dehydration is nearly the same as if she took the child home, since oral fluid administration and feeding should begin within three to six hours of admission. Accordingly, she needs to know the same information as if she were treating her child following Plan B: the concept of fluid replacement, keeping up with losses; how to give ORS with a spoon and cup a little at a time; how to deal with vomiting and the importance of early feeding, even if only a little at a time.

When the child is ready to be discharged, the mother needs to know how to manage diarrhoea at home, just as in Plan A.

Timing of Hospital Discharge

Hospital discharge can take place as soon as signs of dehydration have disappeared, and the patient is clearly tolerating ORT well. That is, vomiting is not a problem and the rate of intake keeps up with the rate of output. If other problems are present (unexplained fever, pneumonia or other complications), discharge should be determined in relation to management of those problems as well.

SPECIFIC INDICATIONS FOR INTRAVENOUS THERAPY

As mentioned earlier, the use of intravenous treatment is much more widespread than merely for the initial rehydration of severely dehydrated patients. This overuse is costly and unnecessary; it may distract both doctors and mothers from the oral fluids and feeding which are more effective in promoting intestinal recovery.

For modern doctors to overcome this overuse of I.V. therapy, it is important to know exactly in which situations it is indicated.

Who needs I.V. treatment?

The indications for use of intravenous fluids administration in diarrhoea may be summarized as follows:

- All patients with severe dehydration;
- A very few patients with nonsevere dehydration;

All Patients With Severe Dehydration

All patients with severe dehydration require I.V. treatment. It is particularly important that they receive an I.V. if they suffer from hypovolemic shock, stupor, coma, uncontrollable vomiting, prolonged oliguria, anuria, paralytic ileus, severe abdominal distention or some other serious

complication. If the facility is unable to provide an I.V., rehydration should be attempted with a nasogastric tube or ORS since, even though severely dehydrated, some patients will respond to this alternative treatment.

A Very Few Patients With Nonsevere Dehydration

A small proportion of cases with nonsevere dehydration may not be treated successfully with ORT alone. The following are the conditions where I.V. therapy is indicated after ORS has been given an adequate trial and has failed:

High Rate of Purging (Passing Stool)

Patients with watery diarrhoea who purge at very high rates (more than 10 ml/kg/hr) generally cannot drink sufficient fluids to replace continuing stool losses. It is usually necessary to treat such cases initially with I.V. fluids.

Persistent Vomiting

Vomiting frequently accompanies diarrhoea, but it is not a contraindication for ORT. Up to three episodes of vomiting per hour usually do not interfere with effective ORT, because most of the fluid taken is retained in spite of some losses through vomiting. Occasionally, however, a child may have intractable vomiting which may prevent effective oral rehydration. The determination of this should be based on objective clinical signs of dehydration, not merely on the presence of vomiting.

If the clinical signs do not improve despite repeated attempts to give fluids by mouth, ORS solution may have to be administered by nasogastric tube, or intravenous fluids must be initiated until the vomiting subsides.

It is important to remember that vomiting is often caused by dehydration and will disappear as fluids and electrolytes are replaced in the circulation.

Failure of Oral Rehydration

A few patients may become more dehydrated while on oral treatment if they cannot replace their fluid losses. This group may include patients with persistent vomiting or high rates of purging or any other indication. These patients need more aggressive therapy either by nasogastric tube or intravenous fluids. Again, this determination should be based on objective clinical evidence of increasing dehydration.

Inability or Refusal to Drink

Patients who cannot drink for reasons of stomatitis (due to measles, thrush, herpes or other causes), fatigue or central nervous system depression induced by drugs (such as antiemetics or antimotility drugs) should be given ORS solution by nasogastric tube or intravenous fluid. Comatose patients should be given fluid intravenously to avoid the dangers of regurgitation and aspiration.

Abdominal Distention and Ileus

If the abdomen is becoming distended, ORS solution should be given slowly and the abdomen evaluated. With increasing abdominal distention or paralytic ileus, fluids should be given intravenously. Signs of paralytic ileus may be indicative of an excessive intake of antimotility drugs, hypokalaemia, bowel obstruction or another surgical problem.

Glucose Malabsorption

Significant glucose malabsorption may occur very rarely during acute diarrhoea. Use of ORS in such patients may result in a marked increase in watery diarrhoea with large amounts of glucose in the stools. This may be detected by testing the stool for the presence of reducing substances, e.g., with Benedict's solution or Clinitest tablets. In the case of glucose malabsorption (as opposed to lactose intolerance), the enzyme-based test sticks (e.g., Combistix) can also be used. Discontinuing the ORS in such cases will usually reduce the stool volume.

INDICATIONS FOR USE OF A NASOGASTRIC TUBE TO ADMINISTER ORS

If there is a person trained in its use, a nasogastric tube can be used:

- in a severely dehydrated patient, when intravenous equipment, fluids or personnel trained to use them are not available;
- when stomatitis or pharyngitis prevents swallowing;
- when the child is too weak to swallow;
- as a secondary alternative to intravenous therapy when vomiting is severe and large volumes of fluid are needed to overcome it and when purging is heavy and large volumes are needed (more than the patient can drink).

CARING FOR THE HOSPITALIZED DIARRHOEA PATIENT: MAKING WARD ROUNDS

The hospitalized diarrhoea patient is generally cared for by a team of nurses and assistants. The doctor's role is often primarily to monitor and guide the

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team's activities, based on periodic assessments of the patient's condition and progress.

Making ward rounds is an important component of this monitoring role. Ideally, doing ward rounds is a targeted activity in which the supervising physician reviews the patient systematically, focusing attention on the most important issues in diarrhoea care, particularly on areas where errors or omissions are frequently made. However, this is not always the case because many physicians seem to confine their attention to only the fluid intake and output in hospitalized diarrhoea patients.

Areas Needing Special Attention on Ward Rounds

The following areas should receive special attention by the monitoring physician, for the reasons noted:

1. Role and Importance of the Mother

If diarrhoea care is to be effective, the mother or caretaker must be a full member of the care team. It is this person who must:

- o Give ORS correctly and persist even though the child may be vomiting;
- o Feed the child early in the episode and in the convalescent period, even though cultural beliefs may oppose such feeding and it may take more than the usual effort and expense;
- o Continue the treatment after discharge from the ward when rehydration is complete;
- o Know the signs and symptoms which indicate when to bring the child back to the doctor if he/she is not recovering.

Because of this important responsibility, the mother or caretaker must understand nearly as much about the treatment as a doctor, as well as be willing and able to carry it out.

2. The Importance of Nutrition and Feeding During Diarrhoea

The supervising physician should also check to see that the health workers and caretakers understand the following aspects about the role of nutrition in treatment of diarrhoea.

- o The importance of assessing nutritional status to better plan the patient's nutritional treatment;
- o The pathophysiology behind the interaction between early feeding and earlier recovery of the gut;
- o How to get children to eat during diarrhoea despite anorexia;

- Using the treatment of diarrhoea as an opportunity to deal with a poor basic weaning diet being given to the child at home.

3. *The Limited Role of Intravenous Treatment in Diarrhoea*

During ward rounds the supervising physician can confirm that health workers understand the following aspects of the limited role of I.V. treatment in diarrhoea, including:

- Strict indications for the initial use of I.V. treatment;
- The dangers and complications of I.V. treatment (overrehydration, infection at infusion site, higher rate of convulsions in treatment of hypernatraemia, etc);
- The timing (early in treatment) and management of the transition to ORT from initial I.V. rehydration;
- The greater efficacy of oral fluids than intravenous fluids in treating hyper- and hyponatraemia.

4. *The Limited Need for Laboratory Examinations*

By checking records during ward rounds, the physician can confirm the limited need for laboratory examinations:

- Stool exams or cultures for aetiologic diagnosis (only needed in situations where an epidemic of cholera needs to be documented, or in patients with blood in the stool after a first antibiotic has failed, or in some cases of persistent diarrhoea);
- Blood tests for electrolytes, blood urea nitrogen or glucose (rarely needed for dehydrated patients as nearly all patients will respond readily to rehydration with ORT or Ringer's Lactate; even comatose diarrhoea patients or those having convulsions will have responded to initial treatment before the laboratory results return).

5. *The Limited Need for Drugs and Antibiotics*

Ward rounds provide the physician the opportunity to educate parents of patients and health workers about the limited need for drugs in treatment of diarrhoea, including:

- The dangers of antispasmodics (such as paralytic ileus or coma in infants);
- The lack of efficacy of drugs against diarrhoea compared to the effectiveness of early feeding in reducing duration and stool volume;

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- The uselessness of antibiotics in most cases of acute watery diarrhoea without blood in the stool (except in cholera).

Method for Organizing Patient Review on Ward Rounds

With these priority areas in mind, the following order of review of the hospitalized diarrhoea patient is recommended. The chart lists the points to be examined.

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Figure 11-2: Order of Review for Ward Rounds

1. Mother and child

   Greet the mother and child. Ask them how the illness and treatment have been going. Explain that the child's illness is going to be presented and discussed, and ask them to listen and correct the information if necessary.

2. Presentation

   Ask a student or nurse to present the case.

3. Mother and child

   Ask whether they have anything to add. Ask about current diarrhoea and vomiting, appetite and feeding, any problems the mother sees in following the instructions given her, any aspects of the treatment she questions.

4. Chart review

   Check to see if when the initial history was taken and the physical examination was done any important points were omitted and whether the recording is complete.

   Does the chart list the weight on admission and presently? Check if the nutritional status is on the growth chart. (It should be in the patient record.)

   What was the initial dehydration status and what rehydration technique was used?

   What were the initial diagnoses: of diarrhoea, of complications, of accompanying illnesses?

   Check lab examinations for appropriateness of what was ordered and the results. Determine if lab results will affect treatment.

4. Chart Review (continued)

   - o Check when oral fluid was initiated.
   - o Look at when foods were started and what foods were given.
   - o Review other medical treatment: whether the drugs and antibiotics used met indications for use.
   - o See if education given to the mother was recorded.
   - o Monitor the patient's progress: current vital signs; stool, urine and vomitus outputs; volumes of fluid given; food given; use of low osmolar fluids in addition to ORS (e.g., plain water, breast-feeding, etc.).
   - o Calculate fluid balance (subtract total output from total input) to determine net fluid balance since admission.

5. Patient examination

   - o Examine patient, asking about current symptoms and for more details about his/her progress.

6. Mother

   - o Check her understanding of how to mix and give ORS and home fluids, how to manage feeding, and indications for bringing child back.
   - o Ask if she has any additional concerns or questions raised by the discussion.

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OUTLINE

Lecture I
Principles of Clinical Management of Acute Diarrhoea

A. Diarrhoeal Dehydration (Slide I-1)

Losses of body water and electrolytes with diarrhoea, vomiting, fever

Signs and symptoms apparent with loss of 4-5% body weight

Severe dehydration with 10% loss

Management involves correcting fluid and electrolyte deficits and replacing ongoing losses

B. Physiologic Basis of Oral Rehydration Therapy (ORT) (Slides I-2 - I-3)

Glucose-mediated sodium absorption

Optimal concentration for oral rehydration:

- Glucose: 20-30 grams per litre
- Sodium: As close as possible to that of plasma; ratio of sodium to glucose concentration about 1:1 to 1:1.4
- Potassium: Losses greatest in infants and most harmful in malnourished children; 20 mmol per litre recommended
- Citrate: 10 mmol per litre corrects base deficit acidosis; enhances absorption of sodium and chloride; can be replaced by bicarbonate (30 mmol per litre)

The WHO formula ORS

C. Justification for a Single Formulation (Slide I-4 - I-6)

Can treat dehydration from diarrhoeas of all causes in all ages

Effective in correcting pre-existing hyponatraemia and hypernatraemia

Simplifies delivery

D. Convincing Mothers to Use ORT (Slide I-7)

Does not reduce volume, frequency or duration of diarrhoea as mother wishes

Explain fluid needs of child; compare needs of dehydrated child to wilted plant

E. Sucrose, an Alternative to Glucose as a Carrier Molecule

Requires twice the grams per litre compared to glucose

Marginally less effective

F. Advantages of ORT over Intravenous (IV) Therapy (Slides I-8 - I-9)

Advantages of ORT: less expensive, no sterile materials or highly skilled personnel required, more comfortable for mother and child, mother can participate, feeding accepted more quickly

Disadvantages of IV: Higher cost, need for trained personnel, lack of availability, risk of infection

G. Impact of ORT in the Hospital and Community (Slides I-10 - I-13)

Reduction in case-fatality rates, hospitalization rates, use of IV therapy and cost

Reduced overall diarrhoeal mortality

Decreased malnutrition

Low cost--only US $1 to treat a case with ORT

H. Reasons for Failure of ORT (Slides I-14 - I-16)

High rate of purging

Persistent vomiting

Severe dehydration

Inability or refusal to drink

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Glucose malabsorption

Incorrect preparation or administration of ORS

Abdominal distention and ileus

I. Use of Home Fluids to Prevent Dehydration

Reduces visits to treatment facilities and overall diarrhoeal mortality rates

J. Feeding During and After Diarrhoea (Slide I-17)

Feeding soon after rehydration tends to improve absorption and weight gain

No need for lactose-free milk formula

Give breast milk or milk formula (half-strength) during diarrhoea

Give easily digestible foods; 4-6 small meals per day

K. Antimicrobials and Other Drugs (Slides I-18 - I-19)

T-3

Unnecessary for routine treatment of acute diarrhoea

Antimicrobials recommended for severe cholera, dysentery characterized by grossly bloody stools or laboratory-confirmed *Giardia lamblia* or *Entamoeba histolytica*

Antibiotics for other infections accompanying diarrhoea (e.g., pneumonia)

Drugs never indicated: antimicrobials such as sulfaguanidine, neomycin

Drugs not to be given to children: antimotility drugs, antiemetics, adsorbents, stimulants, purgatives

L. Super ORS (Slide I-20)

Would correct dehydration and reduce volume and duration of diarrhoea

Different formulations are currently under study.

T-4

Lecture I
Principles of Clinical Management of Acute Diarrhoea

A. Diarrhoeal Dehydration

(Slide I-1) Diarrhoea causes losses of body water and electrolytes (sodium, chloride, potassium, and bicarbonate); accompanying vomiting and fever aggravate these losses. Dehydration occurs when these fluid losses are not replaced adequately. This slide shows a typically dehydrated child. Symptoms and signs of dehydration are not apparent until fluid loss is equivalent to 4-5% of body weight. Increasing fluid deficits are manifested by thirst, decreased skin turgor, dry mucous membranes, sunken eyes, lack of tears, a sunken anterior fontanelle in infants, oliguria, and then anuria, hypotension, tachycardia, and diminished consciousness. Severe dehydration is apparent when fluid deficits reach 10% of body weight; with greater deficits, shock and death may follow.

The main principle of the appropriate management of diarrhoeal dehydration is that fluid and electrolyte deficits must be corrected and ongoing diarrhoeal fluid losses replaced.

B. Physiological Basis of Oral Rehydration Therapy (ORT)

(Slide I-2) Studies of intestinal fluid absorption have demonstrated clearly that, although intestinal absorption of sodium by some routes is inhibited during toxin-induced secretory diarrhoeas, glucose and other carrier-mediated sodium absorption remains intact, even in severely purging cholera patients. This slide shows the relationship between glucose concentration and sodium and water absorption in the small intestine. This process will be discussed in more detail in Lecture III. In addition, citrate (or bicarbonate) and potassium are absorbed independently of glucose during diarrhoea, and citrate (or bicarbonate) absorption appears to enhance the absorption of sodium and chloride. Numerous clinical studies in patients have provided conclusive evidence that fluid and electrolyte losses due to cholera and other acute diarrhoeas can be adequately replaced orally using glucose-electrolyte solutions of optimal concentration. For optimal absorption of orally administered electrolytes in water, certain conditions must be met:

1. The concentration of glucose should be 20-30 grams (111-165 mmol) per litre in order to achieve maximum sodium and water absorption; a higher concentration can induce osmotic diarrhoea as unabsorbed glucose will be fermented by bacteria, producing osmotically active products. A lower concentration can result in insufficient absorption of sodium and water;

2. The nearer the sodium concentration in the solution is to its concentration in plasma, the quicker and higher is its net absorption;

3. The ratio of sodium to glucose concentrations should be about 1:1 to 1:1.4;

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4. Potassium losses from acute diarrhoea are highest in infants and can be particularly harmful in those who are mainourished. A potassium concentration of 20 mmol per litre is well tolerated and adequate for replacement therapy;

5. A citrate concentration of 10 mmol per litre or a bicarbonate concentration of 30 mmol per litre is an optimal concentration for correcting base deficit acidosis in diarrhoeal dehydration. WHO now recommends the use of trisodium citrate, dihydrate instead of sodium bicarbonate as the base since the use of the former results in a product with a longer shelf-life.

(Slide I-3) Thus, the solution recommended by WHO called ORS (Oral Rehydration Salts) contains, per litre of water:

	In grams/l		In mmol/l
Sodium chloride	3.5	Sodium	90
Trisodium citrate, dihydrate*	2.9	Chloride	80
Potassium chloride	1.5	Potassium	20
Glucose (anhydrous)	20.0	Citrate	10
		Glucose	111

** can be replaced by sodium bicarbonate 2.5 grams/l*

C. Justification for a Single Formulation

(Slide I-4) This slide shows a table comparing the average composition of stool in acute diarrhoea with the composition of ORS solution. The stools of patients with cholera are isotonic with plasma but contain increased amounts of bicarbonate and potassium. Children with acute noncholera diarrhoea lose smaller amounts of sodium and bicarbonate and more potassium. The composition of ORS can be seen to be suitable for both situations.

Some paediatricians have expressed concern that the sodium concentration of 90 mmol per litre in ORS is too high for use in young infants with noncholera diarrhoea, whose kidney function has not yet matured. This concern is usually due to a failure to differentiate between the use of ORS for rehydration of dehydrated patients (i.e., to replace fluid deficits) and administration of ORS (with other fluids) during the maintenance phase (i.e., to replace ongoing losses) to prevent a recurrence of dehydration.

(Slide I-5) In the child with dehydration there is an accumulated deficit of sodium; this has been estimated in balance studies to be about 8-12 mmol of sodium per 100 ml of water in severe dehydration. Use of ORS containing 90mmol of sodium per litre of water is appropriate for the rehydration of such a case. During the maintenance phase, when ORS is used to replace the continuing losses, hypernatraemia is not a problem provided that breast milk, diluted milk formula, water or other fluid according to age is given, particularly in infants. ORS has now been used in this way to treat millions of diarrhoea cases of different etiologies in all ages and has been shown to be safe and effective.

milk, diluted milk formula, water or other fluid according to age is given, particularly in infants. ORS has now been used in this way to treat millions of diarrhoea cases of different etiologies in all ages and has been shown to be safe and effective.

(Slide I-6) Studies have also provided evidence of the safety and effectiveness of ORT for correcting pre-existing hyponatraemia and hypernatraemia, even in neonates. In fact, ORS appears to be more effective than intravenous therapy for the treatment of hypernatraemic dehydration; this success indicates that even in newborns the kidney can satisfactorily handle electrolytes when their extravascular fluid volume is being restored by rehydration.

The use of a single formulation throughout the national health system for treating dehydration from diarrhoeas of all causes in all ages, both for rehydration and for maintenance, has the advantage of greatly simplifying the delivery of ORT.

D. Convincing Mothers to use ORT

The present ORS formulation does not reduce the volume, frequency or duration of diarrhoea. Since a major concern of mothers (and consequently of health care providers) is the frequency and volume of the child's diarrhoeal stools, ORS may be perceived as an ineffective treatment. This can lead to problems with its acceptance and continued use during diarrhoea unless the mother is made fully aware of both the benefits and the limitations of ORS. (Slide I-7) To explain the benefit of ORT, she should be taught the concept of dehydration. This can be illustrated with a plant that is dehydrated (wilted) from lack of water. After giving water, the plant becomes rehydrated; this is analogous to giving ORS to a dehydrated child with diarrhoea.

E. Sucrose, an Alternative to Glucose as a Carrier Molecule

Sucrose (table sugar) can be substituted for glucose in ORS. To obtain the same glucose concentration, the sucrose concentration in grams per litre should be twice that of glucose. Sucrose is hydrolysed to glucose and fructose; the latter stimulates sodium absorption more slowly than the former. Thus, sucrose-ORS is marginally less effective in patients with high purging rates. Also, its use in young children has been associated with increased vomiting, possibly because they tend to drink too much of the sweeter tasting sucrose-ORS solution too quickly.

F. Advantages of Oral Rehydration Therapy over Intravenous (IV) Therapy

(Slide I-8) This slide shows a child with dehydration before and after treatment with ORS. (More examples like this can be seen in "Oral Rehydration for Childhood Diarrhoea", a film on treatment of acute diarrhoea available from WHO.) ORS can be used alone to rehydrate 95% or more of patients with mild or moderate diarrhoeal dehydration. Patients with severe dehydration require rehydration with IV fluids initially, but ORS should be used after the initial deficits have been corrected.

Disadvantages of IV therapy include high cost, need for trained personnel, lack of availability in rural or inaccessible areas, high risk of local or systemic infection when unsterile techniques or materials are used, and overhydration or underhydration when too great or small a volume of fluid is administered. (Slide I-9) Intravenous needles, especially when they are not sterilized properly, may serve as a source of systemic infection.

ORT offers many advantages over IV therapy and is well-suited for widescale use. In contrast to IV therapy, ORT is much less expensive and requires neither sterile materials (IV fluids, tubing, needles) nor skilled personnel. In addition, ORT is more comfortable for the mother and child and allows the mother to participate actively in the care of her child. It also provides an opportunity for informing her about other health interventions. Feeding is often delayed with IV therapy but gains quicker acceptance with ORT.

G. Impact of ORT In the Hospital and Community

When ORT is used appropriately on hospital wards and in outpatient departments, it can reduce diarrhoeal case-fatality rates, diarrhoeal disease hospitalization rates, and the frequency and duration of IV therapy and thus the cost of diarrhoea treatment.

(Slide I-10) For example, in Bustamante Children's Hospital in Kingston, Jamaica, the introduction of ORT resulted in a marked reduction in the number of children receiving IV fluids from 55% to 4% of cases with gastroenteritis visiting the hospital. This represented a significant saving in costs, both of fluids and equipment and of skilled staff time. Similar findings have been observed elsewhere.

(Slide I-11) This slide summarizes experience with the use of ORT in hospitals in 19 countries. Overall, there was a 61% decrease in admission rates in these hospitals following the introduction of ORT, sparing many children and their mothers the trauma and expense of hospitalization.

In these hospitals, overall disease case-fatality rates were reduced by 71%. This reduction is probably related both to the decreased use of IV treatment and to a general improvement in care associated with the use of ORT.

(Slide I-12) ORT can also diminish overall diarrhoeal mortality when used in the community setting. This slide compares diarrhoeal case-fatality and mortality rates in 2 communities in rural Bangladesh; the rates were significantly lower in Shamlapur where ORS was given to about 80% of diarrhoea cases than in Bordil where ORS was used for only 38% of diarrhoea cases.

(Slide I-13) ORT can also reduce the risk of malnutrition. Studies in the Philippines and Turkey demonstrated that children with diarrhoea who were given ORS and whose mothers received dietary education about continuing breast-feeding and other foods gained more weight in subsequent months than did children who were not given ORS and whose mothers had not received dietary education.

In addition, ORT is one of the least expensive health interventions. The cost of treating a case of diarrhoea with ORT is only US $1 (5-10% of the cost of intravenous therapy) and the cost of preventing a death from diarrhoea with ORT is $200 - $300.

H. Reasons for Failure of Oral Rehydration Therapy

As noted above, the vast majority of cases with diarrhoeal dehydration can be treated successfully with ORT; however, ORT may not succeed in a small proportion of cases. This proportion varies a great deal according to the experience of the nurse or physician taking care of the case. (Slide I-14) This slide summarizes some of the conditions where ORS alone may not be adequate:

1. High rate of purging

   Patients with watery diarrhoea who purge at very high rates (10 ml per kg per hour) generally cannot drink sufficient fluid to replace continuing stool losses. It is usually necessary to treat such cases initially with IV fluids.

2. Persistent vomiting

   Vomiting frequently accompanies diarrhoea, but it is not a contraindication for ORT. Up to 3 episodes of vomiting per hour usually do not interfere with effective ORT as most of the fluid taken is retained. Occasionally, however, a child may have intractable vomiting which may prevent effective oral rehydration. If the clinical signs do not improve despite repeated attempts, ORS may have to be administered by IV fluid given until the vomiting subsides.

3. Severe dehydration

   In patients with severe dehydration (10% weight loss), IV therapy is preferred. Nevertheless, whenever there is difficulty or a delay in starting IV therapy, ORS should be given orally if the patient can drink, or by nasogastric tube. Following a short period of initial rehydration intravenously, oral fluid administration should begin provided that the patient can drink.

4. Inability or refusal to drink

   Patients who will not drink for reasons of stomatitis (due to measles, thrush, herpes or other causes), fatigue, or central nervous system depression induced by drugs (such as antiemetics or antimotility drugs) should be given ORS by nasogastric tube or intravenous fluid. Those in coma should be given fluid intravenously. Patients may also refuse to drink improperly prepared ORS that is too salty or too warm.

5. Glucose malabsorption

In the rare patient, significant glucose malabsorption may occur during acute diarrhoea. Use of ORS in such patients may result in a marked increase in watery diarrhoea with large amounts of glucose in the stools. When ORS is discontinued in such cases, the stool volume usually decreases.

6. Incorrect preparation or administration of ORS

(Slide I-15) Obviously, if ORS is incorrectly prepared (too concentrated or too dilute) or incorrectly administered (too little or too rapidly), it may not be effective or it may cause increased purging or vomiting, and thus the patient cannot fully benefit from this therapy. For these reasons, it is most important that mothers understand how to dissolve the ORS packet's contents in the correct volume of water and know how much fluid to give their infants with diarrhoea. For this purpose, mothers and their sick infants should be supervised for a few hours before being sent home to continue the treatment.

7. Abdominal distention and ileus

(Slide I-16) If the abdomen is becoming distended, ORS should be given slowly and the abdomen evaluated. With increasing abdominal distention or paralytic ileus, fluids should be given intravenously. Signs of paralytic ileus may be indicative of an excess intake of antimotility drugs, hypokalaemia, bowel obstruction or another surgical problem.

I. Home Fluids to Prevent Dehydration

Early home therapy to prevent dehydration due to diarrhoea is important. When oral fluid therapy is given to children at home early during diarrhoeal illness to prevent dehydration, it can substantially decrease the number of visits to treatment facilities and overall diarrhoeal disease mortality rates. The important rules for home treatment of diarrhoea which caretakers should know and should be taught before returning home will be discussed in Lecture II.

J. Feeding during and after Diarrhoea

In the management of acute diarrhoea it is essential to repair the nutritional deficits. There is no physiological basis for "resting" the bowel during or following acute diarrhoea. In fact, fasting has been shown to impair the ability of the small intestine to absorb a variety of nutrients. **(Slide I-17)** During acute diarrhoea, 60% or more of nutrients continue to be absorbed. It has been found that children with diarrhoea who are fed soon after the rehydration phase of therapy or are breast-fed throughout fluid therapy tend to gain more weight on recovery compared with groups in which food is restricted or withheld.

Transient depression of lactase, if it occurs at all during acute diarrhoea, is usually not of any practical significance when infants are breast-fed or fed half-strength milk or formula during diarrhoea. The vast majority of infants with some lactase deficiency due to diarrhoea

tolerate such milk feedings well. In comparison with infants fed lactose-free milk, milk-fed infants recover uneventfully with no relapses or increase in the duration of diarrhoea; therefore, there is no need to give infants special lactose-free formula during diarrhoea. Also, there is no need to test the stools routinely for pH, lactose tolerance or d-xylose because such tests are over-sensitive and do not indicate whether the absorption of milk or other food is impaired. For the purpose of dietary management during diarrhoea, it is more appropriate to evaluate the clinical response (e.g., weight gain) than the volume of stool.The risk of potentially increased stool volume with milk feeding should be balanced against the benefit of an improved clinical and nutritional outcome. In general, one should "look at the child, and not at the stool".

Thus, during and after diarrhoea children should not be starved. They should be breast-fed or given milk feeds (diluted half-strength during diarrhoea and undiluted after diarrhoea stops). Breast milk not only has valuable nutritional and immunological properties; it also decreases stool volume and may prevent hypernatraemia. As soon as appetite returns (and after rehydration therapy is completed), children older than 4-6 months should be given energy-rich, and if possible, potassium-rich foods. Avoid foods that are fibrous or spicy. Small meals should be given 4-6 times a day. Severely malnourished children should be sent to a treatment centre for nutritional rehabilitation.

K. Antimicrobials and Other Drugs

Antimicrobial drugs are not indicated for the routine treatment of acute diarrhoea; 90% of children with watery diarrhoea can be successfully treated with ORT and continued feeding alone. **(Slide I-18)** Antimicrobials should be used for patients with cholera (especially severe cases) or dysentery characterized by grossly bloody stools, or symptomatic laboratory-confirmed infection with *Giardia lamblia* or *Entamoeba histolytica*. When possible, antimicrobial selection should be based on information about the antibiotic susceptibility of the pathogen. In general, tetracycline is recommended for cholera; trimethoprim-sulfamethoxazole for shigellosis, and metronidazole for amoebiasis or giardiasis. Specific drug therapy also may be required for other acute infections such as pneumonia, meningitis, otitis media or malaria which may accompany diarrhoea.

(Slide I-19) This slide shows a list of drugs which are often used but have no role in diarrhoea management. Antimicrobials such as sulfaguanidine or other sulfonamides, neomycin, streptomycin and halogenated oxyquinolines (e.g., clioquinol) have no proven value for the treatment of acute diarrhoea and may be harmful. Neomycin damages the intestinal mucosa and can contribute to malabsorption, and clioquinol may cause neurological damage. Antimotility drugs (diphenoxylate, loperamide), antiemetics (chlorpromazine), adsorbents (kaolin, pectin), stimulants (adrenalin or steroids), and purgatives (which may worsen dehydration) should not be given to children; they increase the cost of treatment and some of them are associated with adverse reactions.

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L. "Super ORS"

The most effective and safest "antidiarrhoeal" drug may turn out to be an improved ORS formulation (called "Super ORS") that would not only correct dehydration but also reduce the volume and duration of diarrhoea. Such a solution might also limit the nutritional consequences of diarrhoea by permitting earlier feeding and shortening the course.

(Slide I-20) These formulations are based on the principle that, in addition to glucose, other organic solutes can also enhance the absorption of sodium and water. They include: D-hexoses, neutral amino acids (glycine, leucine, 1-alanine), and dipeptides and tripeptides of such neutral amino acids. Studies are under way to evaluate 2 basic formulations: in one, maltodextrins or cereals, which break down into glucose but themselves are less osmotic and create less of a backdrag of sodium and water into the intestinal lumen, are substituted for glucose in the solution; in the other, certain amino acids and dipeptides that enhance the absorption of sodium and water are added to ORS containing glucose or maltodextrose.

T-4

OUTLINE

Lecture II
Management of Acute Diarrhoea

A. Assessment of the Patient (Slides II-1 - II-2)

To determine *quickly* the nature of diarrhoea, presence and degree of dehydration, and any complications, so that treatment can be started

1. History

2. Physical examination

B. Degree of Dehydration (Slides II-3 - II-12)

No signs of dehydration

Signs of some (mild-moderate) dehydration

Signs of severe dehydration

C. Management of the Patient with Diarrhoea -- Diarrhoea Treatment Chart (Slides II-13 - II-29)

Three essential parts to management of acute diarrhoea

- Prevention of dehydration if the child is *not* dehydrated
- Rehydration therapy (followed by maintenance therapy)
- Feeding

1. Prevention of Dehydration - Review of Plan A

   a. Give the child more fluids than usual including breast milk, dilute milk-feeds, food based fluids

      Amounts recommended

   b. Continue to feed the child

      What foods

How much food

How to prepare the food

c. The mother must watch for signs of dehydration and other problems

d. Show the mother how to mix and give ORS at home (if it is national policy to give ORS to all children who see a health worker for diarrhoea treatment, or if the mother cannot come back if the child gets worse, or if the child has been on Plan B)

e. Explain how she can prevent diarrhoea

2. Rehydration Therapy (rehydration phase and maintenance phase) - Review Treatment Plans B and C

a. ORT using ORS for a case with some dehydration

Amounts specified on Plan B

The mother should administer the fluid

After 4-6 hours, reassess and continue rehydration therapy or move to maintenance therapy

If the mother must leave before 4-6 hours, show her how to continue rehydration with ORS at home and explain when to bring the child back

b. Therapy of severe dehydration (Plan C)

IV therapy required initially for severe dehydration with or without complications

Ringers lactate recommended

Assessment after 1 hour, then every 1-2 hours

Begin ORS as soon as possible

If IV fluids are not available, give ORS to a child who can drink, or use a nasogastric tube. If improvement is not seen, send the patient to a facility for IV therapy.

If cholera is known to be occurring in the area, give an appropriate antibiotic.

c. Maintenance therapy (Plan A) to replace ongoing abnormal losses of fluid and electrolytes and to provide the normal daily fluid requirements

d. Practical tips and guidelines

Administration with cup and spoon, cup alone, dropper, feeding bottle

Vomiting -- wait 10 minutes, then start ORS solution again slowly (1 teaspoonful every 2-3 minutes)

Overhydration -- stop IV fluids or ORS; start again if diarrhoea continues and signs of dehydration reappear

e. Associated conditions

1. Hypernatraemia (serum Na+ > 150 mmol/1)

2. Hyponatraemia (serum Na+ < 130 mmol/1)

3. Protein-energy malnutrition

4. Fever

5. Metabolic acidosis

6. Hypokalaemia (serum K+ < 3.0 mmol/1)

7. Convulsions (seizures)

f. Treatment of dysentery

A fourth essential part of management: if there is blood in the stool with or without mucus and diarrhoea began less than 14 days ago, suspect shigellosis and give antibiotic therapy; reassess high risk patients after 24-48 hours.

Lecture II
Management of Acute Diarrhoea

A. Assessment of the Patient

(Slide II-1) A patient with diarrhoea should be assessed quickly to determine the nature and pattern of the diarrhoea, the presence of and degree (mild-moderate or severe) of dehydration and the presence of any other complication (e.g., malnutrition) so that appropriate treatment can be started without delay.

1. History

ASK questions to obtain the following information:

- Duration of illness;
- Quantity and frequency of stools;
- Presence of blood or mucus in the stool;
- Frequency of vomiting;
- Degree of thirst;
- When the child urinated last;
- If the urine is darker than usual;
- Presence of fever or convulsions;
- Type and quantity of liquids and food consumed during the illness and beforehand;
- Any drug taken;
- Any other case in the family.

This information should be recorded on an appropriate form.

2. Physical examination

LOOK at the patient, especially for signs of dehydration:

- General condition--alert, sleepy, unconscious, malnourished, having convulsions?
- Does he have tears when he cries?
- Are his eyes sunken or dry?
- Are his mouth and tongue wet or dry?
- Is he breathing faster and deeper than normal?

FEEL to assess the following:

- Skin turgor--pinch a fold of skin over the abdomen or the back of the hand to test for "tenting" or decreased skin turgor;
- Take the pulse rate (or heart rate) and determine how strong it is;

- Feel the anterior fontanelle of infants;
- If possible, check the systolic blood pressure.

(Slide II-2) WEIGH the child quickly if a reliable balance is available; the child's weight can be compared with later weights to assess the percentage of body weight gained (or lost) during therapy.

Note: The lack of a scale should never in itself prevent the successful rehydration of a patient.

Take the patient's temperature, if possible.

B. Assessment of Degree of Dehydration (Slide II-3)

A dehydrated patient may present with one or more "signs" of dehydration. Depending on their number and severity, dehydration may be assessed as mild-moderate or severe.

(The treatment chart should be posted on the wall.)

When assessing the patient, one can use this simple chart to assist in determining the degree of dehydration of the patient and which therapy to administer. The columns of the chart are labelled "A" for patients with no signs of dehydration, "B" for those with some (mild-moderate) dehydration and "C" for those with severe dehydration. The fourth column ("How to Assess Your Patient for Other Problems") refers to patients with dysentery, persistent diarrhoea, severe undernutrition or fever.

(Slide II-4) MILD dehydration (4-5% loss of body weight) is often difficult to detect clinically as it is characterized primarily by increased thirst. The child may also be a little restless.

(Slide II-5), **(Slide II-6)**, and **(Slide II-7)** MODERATE dehydration (6-9% loss of body weight) is characterized by a history of excessive thirst and a decrease in urination (the urine will also be darker). The young child will appear restless or lethargic but irritable, and the older child will appear giddy with changes in posture. The patient's eyes will be sunken and without tears, the mouth and tongue will be dry, and breathing will be deep and often more rapid than normal. The skin will retract slowly and the pulse will be rapid and weak. In infants, the fontanelle will be depressed. Systolic pressure will be low.

Note that both mild and moderate dehydration will be treated with ORS (Column "B").

(Slide II-8) and **(Slide II-9)** In SEVERE dehydration (loss of 10% or more body weight) there will be a history of no urine flow for several hours. There is altered state of consciousness (even coma), the extremities are cold, sweaty and cyanotic, and the child is unable to drink. The eyes are deeply sunken and without tears, the mouth and tongue are very dry,

and breathing is deep and rapid. The skin retracts very slowly, the pulse is rapid and feeble or impalpable, and the fontanelle (infants) very sunken. Systolic blood pressure often cannot be recorded.

The finding of 2 or more signs of severe dehydration or shock should alert the examiner to the need for rapid IV therapy.

The child with diarrhoea should also be examined quickly to determine if he has any other diseases (e.g., pneumonia, measles, malaria).

(Slide II-10) "Tenting" of the skin where it has been pinched by the examiner is demonstrated in this infant. It is seen when a child has lost more than 5% of body water.

(Slide II-11) This Asian child is suffering from severe dehydration caused by acute diarrhoea and manifested by the very sunken eyes; the lifted thorax indicates deep respirations to compensate for acidosis.

(Slide II-12) This is another severely dehydrated child. Note the very sunken fontanelle.

C. Management of the Patient with Diarrhoea

To determine the appropriate treatment, one looks at the chart for signs that describe the patient's condition. One then selects the treatment plan that corresponds to the patient's degree of dehydration or other problems.

There are 3 essential parts to the management of acute diarrhoea cases:

- ***prevention of dehydration*** if the child is ***not*** dehydrated
- ***rehydration therapy*** when dehydration ***is*** present, followed by maintenance therapy
- ***feeding***

1. Prevention of dehydration (Treatment Plan A)

(Slide II-13) Many patients with diarrhoea show no evidence of dehydration. While they do not require ORS, they should drink larger quantities of appropriate fluids at home to replace ongoing losses of fluids and electrolytes during diarrhoea and to provide their normal daily fluid requirements. Mothers should be taught how to treat diarrhoea at home by giving the child increased fluids and continuing to feed, and to recognize the signs indicating that she should bring her child to a health worker.

a. Give the child more fluids than usual

What fluids?

Infants who are breast-fed should be given breast milk at least every 3 hours throughout an episode of diarrhoea.

For infants who are not breast-fed, the milk formula normally consumed should be diluted with an equal volume of water and given at least every 3 hours.

(Slide II-14) Food-based fluids such as gruel made of rice or other cereals, lightly salted soups or a special sugar-salt solution (if mothers know how to prepare it) can be given. ORS can be used to prevent dehydration; however, in general, it is best to instruct mothers to give fluids that they already know how to prepare and for which the ingredients are readily available. In many countries, there is a nationally recommended home solution.

How much?

AFTER EACH LOOSE STOOL, children under 2 years old should be given approximately 50-100 ml (1/4 - 1/2 cup) of fluid; children 2-5 years of age, 100-200 ml (1/2 - 1 cupful); older children and adults should drink as much as they want.

b. Continue to feed the child

Diarrhoea contributes to malnutrition because of customary food withdrawal, anorexia, and nutrient losses. Therefore, feeding should be continued during and after diarrhoea.

What foods?

(Slide II-15) In general, the ideal food to be given during diarrhoea should be culturally acceptable, readily available, and easily digestible; the concentration given should be iso-osmolar. Foods that contain potassium, like bananas and citrus fruits, are beneficial. Energy-rich and nutritious foods, such as mixtures of cereal with beans, meat or fish; dairy products; and eggs are also recommended. Avoid high-fibre foods that are difficult to digest, dilute soups or paps that are filling but not nutritious, and special formulas that are expensive and not necessary.

How much food?

Give the child as much food as he wants or offer it every 3 or 4 hours (6 times a day). Small frequent feedings are better tolerated.

After the diarrhoea stops, give the child one extra meal each day for a week or longer until he has regained normal weight.

How to prepare the food?

The foods should be cooked well, fermented, and mashed or ground to make them easier to digest.

c. The mother must watch for signs of dehydration and other problems

(Slide II-16) The mother must be taught how to recognize signs of dehydration, such as increased thirst and sunken eyes.

She should be instructed to bring the child to a health worker if he seems dehydrated, does not eat or drink normally, develops other problems, such as fever, or seems not to get better.

d. Give ORS at home

(Slide II-17) Show the mother how to prepare and give ORS solution, if:

- it is the national policy to give ORS to all children who see a health worker for diarrhoea treatment;
- the mother cannot come back if the child gets worse;
- the child has been on plan B, to prevent dehydration from returning.

ORS should be made fresh every day, covered, and stored in a cool place. If it is not practical to boil the water used for the mixture, the water used should be as clean as possible.

After each loose stool, the mother should give:

- 50-100 ml (1/4 - 1/2 cup) of ORS solution for a child less than 2 years old;
- 100-200 ml (1/2 - 1 cup) for older children.

If possible, give her enough packets for 2 days of treatment. Tell her that if the child vomits, she should wait 5-10 minutes and then continue slowly giving smaller amounts.

e. Explain how she can prevent diarrhoea

She can prevent diarrhoea by breast-feeding, giving the child proper weaning foods and the cleanest possible water, having all family members wash their hands with soap after defecating and before preparing or eating food, having all members use a latrine, disposing of baby's stools properly, etc. (See Lecture V).

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2. Rehydration therapy (Treatment Plan B or C)

(Slide II-18) Fluids administered to a dehydrated patient with acute diarrhoea should be given in two phases, as has been explained in Lecture I.

Rehydration phase--to correct the existing water and electrolyte deficit as indicated by signs of dehydration. Rehydration therapy can usually be achieved with ORS solution except in cases with severe dehydration, shock, inability to drink or serious complications. In such cases, IV therapy is needed initially until the situation is corrected and ORS can be given.

Maintenance phase--to replace ongoing losses of water and electrolytes due to continuing diarrhoea in order to prevent a recurrence of dehydration. ORS is adequate for maintenance therapy.

a. Oral rehydration therapy of a case with some (mild-moderate) dehydration using ORS

How much fluid?

Existing water and electrolyte deficits must be corrected promptly and adequately. One can use the chart in Treatment Plan B to select the volume of fluid required. One should seek to give the maximum volume recommended, according to weight, for moderately dehydrated patients, and the minimum volume for mildly dehydrated cases; if the weight is not known, select the volume according to the patient's age.

The progress of rehydration therapy should be assessed after 1 hour and then every 1-2 hours according to the clinical status of the patient, not just by the volume of fluid given. Additional ORS should be given if the child wants more or if the volume of ORS is not adequate to achieve rehydration. If signs of overhydration such as oedematous (puffy) eyelids develop, ORS administration should be stopped and other fluids given until the oedema disappears.

(Slide II-19) The mother should be involved and taught by a trained health worker how to give ORS and in what quantity.

After 4-6 hours reassess the child's dehydration status.

If the child is rehydrated (i.e., signs of dehydration are gone), start Treatment Plan A using ORS (Maintenance Treatment).

If the child is still dehydrated, continue rehydration therapy with an appropriate volume according to Treatment Plan B over the next 4-6 hours.

(Slide II-20) Infants continuing rehydration treatment (Plan B) beyond 4-6 hours should be given:

- breast milk alternately with ORS solution, or
- if the child is not breast-fed, 100-200 ml of clean water before continuing ORS

Children older than 4-6 months should be fed small portions of food every 3-4 hours, beginning as soon as they are rehydrated.

If the mother must leave before completing rehydration therapy:

- Give her enough ORS packets (if sufficient packets are available) for 2 days and show her how to make the fluid.
- Show her how much ORS to give to finish the 4-6 hour treatment.
- Tell her to give the child as much ORS and other fluids as he wants while the diarrhoea continues, but to stop the ORS when the diarrhoea stops.
- Tell her to offer the child small amounts of food every 3-4 hours.
- Explain how to look for signs of dehydration and instruct her to bring the child back if he develops dehydration or other problems.

b. Therapy of severe dehydration (Treatment Plan C)

(Slide II-21) Patients with severe dehydration with or without hypovolaemic shock, fatigue, stupor or coma, uncontrollable vomiting, prolonged oliguria or anuria or other serious complications generally require vigorous IV therapy initially to achieve rehydration.

How much fluid?

(Slide II-22) If IV fluids are available, a severely dehydrated infant should be given intravenous Ringer's Lactate at 30 ml/kg within one hour followed by 40 ml/kg within the next 2 hours. If the infant has improved, he should then receive ORS at the rate of 40 ml/kg for the next 3 hours.

(Slide II-23) Older children or adults should receive 100 ml/kg of intravenous Ringer's solution within 3-4 hours as rapidly as possible.

(Slide II-24) If Ringer's Lactate solution is not available, one of the other solutions shown on this slide can be used.

The progress of rehydration therapy should be assessed after 1 hour and then every 1-2 hours. Attention should be given to the number and volume of stools passed, the extent of vomiting, the presence of and changes in signs of dehydration, and whether the rehydration fluid (IV initially and oral subsequently) is being given successfully in adequate amounts.

ORS should be begun as soon as possible, particularly when normal saline is used, to provide bicarbonate and potassium.

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If signs of dehydration become worse or remain unchanged, the rate of administration and the volume of fluid given may need to be increased.

What to do if IV fluids are not available

If IV therapy is not available and the child can drink, ORS solution should be started as in Treatment Plan B.

(Slide II-25) If health workers have been trained, they can administer ORS solution by nasogastric tube to a child who is not in shock but cannot drink (due to fatigue, drowsiness or other reasons) at a rate of 20 ml/kg body weight per hour. For babies in shock, this procedure should be used only when it is not possible to give IV fluids. If too much fluid is given too quickly, the abdomen may become swollen. In such case, the ORS solution should be stopped until the abdomen is less distended.

If the child worsens with therapy administered by the nasogastric or oral route, send him to a nearby treatment centre for immediate IV treatment but continue the fluid therapy until IV therapy can be started.

What to do after initial treatment

After 3-4 hours, reassess the child. If he can drink, start oral rehydration therapy with ORS according to Treatment Plan B.

If cholera is suspected

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

c. Maintenance therapy

After the initial fluid and electrolyte deficits have been corrected (using plan B or C) and the signs of dehydration are gone, it is important to replace ongoing abnormal losses of fluid and electrolytes associated with diarrhoea or vomiting and to provide the normal daily fluid requirements. Treatment Plan A with ORS should be used for maintenance therapy; it includes continued feeding during the diarrhoea illness.

D. Practical Tips and Guidelines

1. Mode of administration

(Slide II-26) Oral fluid can be administered to infants using a cup and spoon, cup alone, feeding bottle (if the child is used to it), a dropper, or if necessary .. syringe (without the needle).

2. Vomiting

(Slide II-27) Vomiting may occur during the first hour or two after administration of ORS (especially when children drink too much too quickly), but usually does not prevent success with oral rehydration. To reduce vomiting and to improve absorption, give ORS in smaller amounts slowly (approximately one teaspoonful every 2-3 minutes). If the patient vomits, wait 5-10 minutes and start ORS again slowly.

3. Overhydration

Children who receive too much fluid may develop oedema. Puffiness of the eyes is a useful sign of overhydration; it is not a sign of hypernatraemia. When overhydration occurs at any stage of treatment, intravenous fluids or ORS solution should be stopped and only started again if diarrhoea continues and signs of dehydration reappear.

E. Associated Conditions

1. Hypernatraemia (serum $Na^+ > 150$ mmol/l)

Patients (usually young infants) occasionally present with hypernatraemic dehydration. Such patients do not show the typical clinical signs of dehydration but are thirsty, and have a history of ingesting an inadequate amount of fluid or fluid with a high sugar content (hyperosmolar) during diarrhoea. Hypernatraemia (without dehydration) may also occur in infants to whom excessive amounts of ORS (without other less concentrated fluids) have been administered after diarrhoea has stopped.

(Slide II-28) The main problem associated with the treatment of hypernatraemic dehydration is the occurrence of seizures. The condition can be treated successfully with ORS. In fact, seizures appear to occur less often when ORS is used than when IV fluids are administered.

2. Hyponatraemia (serum $Na^+ < 130$ mmol/l)

(Same slide) Patients who ingest too much dilute fluid or only water during diarrhoea may occasionally present with hyponatraemia, characterized by lethargy and, less often, seizures. ORS is safe and effective therapy for hyponatraemic dehydration.

3. Protein-energy malnutrition

Compared with nutritionally normal children, severely malnourished children retain more fluid and sodium during rehydration therapy, in part because of reduced renal capacity to excrete excess sodium and water. Nevertheless, extensive experience as well as balance studies indicate that with proper supervision, marasmic infants and children with diarrhoeal dehydration can be successfully rehydrated with ORS, although they may develop

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oedema. **(Slide II-29)** Tenting of the skin is not a reliable sign of dehydration in marasmic children since they generally have poor skin turgor. Therefore, one should look for other signs of dehydration to avoid overestimating its severity in such patients.

There is much less experience in using ORS to treat children with diarrhoeal dehydration and kwashiorkor. It is difficult to detect dehydration and to estimate fluid requirements for rehydration in these patients because of their generalized oedema. If too much fluid is given and excess water and salt are retained, the oedema associated with protein deficiency may increase and congestive heart failure may develop. Nevertheless, patients with kwashiorkor can be safely rehydrated with ORS provided that they are monitored closely and fluid deficits are corrected slowly.

It may be necessary to continue ORS administration for longer in malnourished patients than in other patients to replace chronic losses of sodium and potassium. Nutrition rehabilitation therapy must also be initiated.

4. Fever

Patients with high fever should be treated promptly to bring the temperature down. This is best done by sponging with tepid water. Antipyretics may also be used.

Patients with fever and diarrhoea may have other infections (e.g., respiratory tract infection, otitis media, pyoderma or malaria). These should be diagnosed and treated appropriately.

5. Metabolic acidosis

Metabolic acidosis develops as a consequence of diarrhoeal dehydration. As a compensatory measure, respiratory alkalosis also occurs and is characterized by rapid, deep respirations. Administration of adequate ORS containing citrate or bicarbonate corrects the acidosis.

6. Hypokalaemia (serum $K^+ < 3.0$ mmol/l)

Insufficient replacement of potassium losses during repeated episodes of diarrhoea can lead to potassium depletion, characterized by loss of appeitie, muscle weakness, ileus, renal impairment, and cardiac arrhythmias. Such potassium deficits can be corrected by administering rehydration therapy with ORS (containing 20 mmol of potassium/l) and by continued feeding with foods rich in potassium during and after diarrhoea.

7. Convulsions (seizures)

In a patient with diarrhoea and a history of convulsions during the illness, the following possibilities should be considered and appropriate treatment given:

a. Hypoglycaemia: this results from inadequate food intake and/or malabsorption; it is rarely seen when feeding is adequate and occurs most often in malnourished infants. If the patient is comatose, 20% glucose for injection should be administered intravenously; 2.5 ml/kg given over 5 minutes should produce a rapid improvement in consciousness if hypoglycaemia is the cause of coma.

b. Febrile convulsions

c. Hypernatraemia or hyponatraemia

T-3

F. Treatment of Dysentery

If there is blood in the stool, with or without mucus, and the patient has had diarrhoea for less than 14 days, an appropriate oral antibiotic for *Shigella* dysentery should be given. If it is possible, the patient at high risk (that is, who is also dehydrated, or severely undernourished, or is less than one year old) should be reassessed in 24-48 hours to ensure he is improving.

A patient who has blood in the stool and whose diarrhoea has continued for more than 14 days requires continued feeding and referral for treatment of the persistent diarrhoea.

OUTLINE

Lecture IV
Epidemiology and Etiology of Acute Diarrhoeas

A. Epidemiology of Acute Diarrhoea (Slides IV-1 - IV-4)

1. Magnitude of the problem

High morbidity - 2 or more episodes per child per year; 3-10% last longer than 2 weeks

Persistent diarrhoea may cause 25% of diarrhoea-associated deaths

4-5 million deaths each year; 80% in children less than 2 years

A main cause of childhood malnutrition

Diarrhoea cases occupy 30% of pediatric beds

2. Mode of transmission and risk factors

Faecal-oral route

Risk factors for increased transmission of pathogens

- inadequate water supply
- faecally contaminated water
- lack of sanitary facilities
- poor personal and domestic hygiene
- improper food preparation and storage
- poor weaning practices

Risk factors for increased susceptibility

3. Seasonality

Bacterial diarrhoeas occur in the warm season

Viral diarrhoeas, particularly rotavirus, peak during drier, cooler months, though they occur year round in tropical areas.

4. Epidemics and Pandemics

Vibrio cholerae 01

Shigella dysenteriae 1

B. Overview of Etiologic Agents of Infectious Diarrhoea (Slides IV-5 - IV-10)

T-2

Comprehensive etiologic studies using new laboratory methods can identify pathogens in 50% to 70% of acute diarrhoea.

The same pathogens are responsible for diarrhoea in infants and children worldwide, though there may be variations in their frequency.

More than 25 bacterial, viral and parasitic organisms found responsible for diarrhoeal diseases

Laboratory diagnosis usually makes no difference in clinical management. Cases can be managed effectively with ORT and nutritional supplementation, and antibiotics can be prescribed on clinical and epidemiological grounds.

C. Epidemiologic Characteristics of Specific Enteropathogens (Slides IV-11 - IV-20)

Review of method of spread, clinical description and virulence factors of each:

1. *Escherichia coli* (E. Coli)

   - Enterotoxigenic *E. coli* (ETEC)
   - Enteropathogenic *E. coli* (EPEC)
   - Enteroadherent *E. coli* (EAEC)
   - Enteroinvasive *E. coli* (EIEC)
   - Enterohaemorrhagic *E.coli* (EHEC)

2. *Vibrio cholerae 01*

3. *Shigella*

4. *Campylobacter jejuni*

5. *Salmonella*

6. *Rotavirus*

7. *Giardia lamblia*

8. *Entamoeba histolytica*

9. *Cryptosporidium*

10. Other causes of diarrhoea

    - Some drugs, especially antibiotics
    - Certain acute surgical conditions, such as pigbel, intussception
    - Malaria, schistosomasis and measles

Lecture IV
Epidemiology and Etiology of Acute Diarrhoeas

A. Epidemiology of Acute Diarrhoea

1. Magnitude of the problem

Diarrhoeal diseases are one of the leading causes of childhood mortality and morbidity in developing countries where an estimated one thousand million episodes occur each year in children under 5 years of age. Children have been observed to have 2-8 or more separate episodes of diarrhoea per year; in some areas young children spend 15-20% of their time with a diarrhoeal illness. Most of the diarrhoeal episodes occur in children in the first 2 years of life.

Most diarrhoeal illnesses are acute, lasting no more than 2 weeks; however, an estimated 3-10% of these illnesses last longer. These persistent diarrhoea cases require care that is expensive and often ineffective, and they may cause as many as 25% of all diarrhoea-associated deaths.

Diarrhoeal episodes result in approximately 4-5 million deaths each year. About 80% of these deaths occur in children in the first 2 years of life.

In addition to causing high rates of mortality and morbidity, diarrhoeal diseases are one of the main causes of childhood malnutrition. Also of note is that as many as 30% of paediatric beds in developing countries are occupied by diarrhoea cases. As a consequence, diarrhoeal diseases place a very heavy burden on health facilities and national health budgets.

2. Mode of transmission and risk factors

(Slide IV-1) Infectious agents that cause diarrhoeal disease are usually spread by faecal-oral route, i.e., through the ingestion of contaminated food (especially weaning foods) or water, or by contact with hands that are faecally contaminated. **(Slide IV-2)** Several factors are associated with increased transmission of enteropathogens; they include: inadequate water supply, faecally contaminated water, lack of sanitary facilities (unhygienic disposal of faecal matter), poor personal and domestic hygiene, improper food preparation and storage, and poor weaning practices (early cessation of breast-feeding, bottle-feeding). Several host factors are associated with increased susceptibility to diarrhoeal illness; they include malnutrition, immunodeficiency or immunological suppression, reduced gastric acidity, decreased intestinal motility, and genetic factors (e.g., blood type).

3. Seasonality

(Slide IV-3) Distinct seasons of diarrhoea have been observed in many geographical areas. In temperate climates, bacterial diarrhoeas tend to occur more commonly during the warm season, whereas viral diarrhoeas, particularly rotavirus, peak during the winter. In tropical areas, rotavirus diarrhoea tends to occur throughout the year, with an increase in frequency during the drier, cooler months, while bacterial diarrhoeas tend to peak during the warmer, rainy season. Clearly, the seasonality of diarrhoeal illnesses will have an influence on the demand for ORT and diarrhoeal disease control activities in general.

4. Epidemics and pandemics

Two enteropathogens, *Vibrio cholerae 01* and *Shigella dysenteriae 1* are capable of causing major epidemics or even pandemics resulting in high morbidity and mortality in all age groups. (Slide IV-4) Since 1961, cholera caused by the El Tor biotype of *V. cholerae 01* has spread from the Celebes in Indonesia to countries or territories in Asia, the Eastern Mediterranean, and Africa, and to some areas in Europe and North America. Countries that have reported indigenous cholera since 1961 are shown in red on the map. *S. dysenteriae 1* has also been responsible for large-scale epidemics of severe dysentery in many regions, such as Central America in 1969-1971, and more recently in Central Africa and southern Asia.

T-2

B. Overview of Etiological Agents of Infectious Diarrhoea

1. Detection of enteropathogens

Technical advances in the development of new laboratory methods over the last decade have greatly increased our understanding of the causes of acute infectious diarrhoea. To date, more than 25 bacterial, viral, and parasitic organisms have been found to be responsible for acute diarrhoeal diseases. Laboratories capable of comprehensive etiological studies can identify potential pathogens in up to 70% of acute diarrhoeas presenting to hospital or treatment facilities and in a smaller proportion (up to half) of cases occurring in the community. In general, however, the same pathogens are responsible for diarrhoea in infants and young children worldwide. However, the frequency of diarrhoeal pathogens identified may vary according to the technical proficiency of laboratories in diagnosing all possible pathogens, definition of diarrhoea used, selection of cases, method of collecting samples, and several other factors (e.g., host susceptibility, environmental factors, antibiotic use, seasonality differences, and the occurrence of epidemics).

(Slide IV-5) This is a list of all the main bacterial agents that cause acute diarrhoea. In developing countries, enterotoxigenic *Escherichia coli* (ETEC), *Campylobacter jejuni*, *Shigella*, and enteropathogenic *E. coli* (EPEC) are the most important causes of infantile diarrhoea. *Vibrio cholerae 01* cause epidemics among older children and adults in many parts of Asia and Africa.

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(Slide IV-6) This is a list of the main viruses that cause acute diarrhoea. Rotavirus is the leading viral cause of diarrhoeal disease in the first 2 years of life among cases visiting hospitals and health centres worldwide. However, it is responsible for only 5-10% of cases in the community. Norwalk virus often causes vomiting and diarrhoea in older children and adults in developed countries, whereas in less developed countries children acquire antibody to the virus at an early age and a smaller percentage of diarrhoeal episodes are due to this agent.

(Slide IV-7) This is a list of parasitic agents capable of causing diarrhoea. The most important worldwide are *Cryptosporidium*, a newly recognized cause of watery diarrhoea, *Entamoeba histolytica*, and *Giardia lamblia.*

Mixed infections with 2 or more enteropathogens occurs in 15-20% of cases, but their clinical significance is difficult to interpret; one or more of the organisms recovered may be responsible for the diarrhoea.

Even in institutions with well-equipped laboratories, it is not possible at present to identify the specific causative agent of diarrhoea in time to make a decision about the clinical management of a case. However, the lack of a laboratory diagnosis usually does not hinder the treatment of diarrhoea cases since they can be managed effectively with ORT and proper feeding, regardless of the etiology, and the administration of antibiotics based on clinical and epidemiological evidence (see Lecture II).

2. Etiological studies

As noted above, the spectrum and frequency of etiological agents may vary. The following studies are illustrative.

(Slide IV-8) In a study in Dhaka, Bangladesh, rotavirus was most important while ETEC and *C. jejuni* ranked second as causes of diarrhoea in children under 2 years who required hospitalization for their illness. The rates of diarrhoea associated with rotavirus and *Campylobacter* peaked in the first year of life and decreased markedly by the age of 5 years, suggesting early acquisition of immunity; a similar pattern is seen in many developing countries. ETEC and *Shigella* were isolated most frequently in patients over 2 years of age. The pattern of age-specific rates of *Shigella*-associated diarrhoea in this population suggests a protective effect of breast milk. As is usually the case, *V. cholerae 01*, *E. histolytica*, and *G. lamblia* were isolated infrequently in cases under 2 years.

(Slide IV-9) Another hospital-based etiological study was conducted among children under 15 years of age presenting with diarrhoea to a major hospital in Bangui, Central African Republic. Again, rotavirus was the most frequently isolated pathogen among children under 18 months of age. Interestingly, EPEC was also commonly found among children under 2 years. The importance of EPEC as a diarrhoeal pathogen has been demonstrated in other urban areas in Africa, Asia, and Latin America. As in other areas,

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C. jejuni was isolated frequently from diarrhoea cases in children under 5 years. *E. histolytica* was isolated with increasing frequency in older children, especially those 6-15 years old.

(Slide IV-10) A recent community-based study of infants from a poor periurban population near Lima, Peru, demonstrated a staggering diarrhoeal attack rate, of the order of 10 episodes during the first year of life. Nonbreast-fed infants had an incidence of diarrhoea 2.5 times higher than exclusively breast-fed infants. The diarrhoeal episodes were associated with *C. jejuni*, ETEC, EPEC, rotavirus, *Shigella*, and MICryptosporidium. Prolonged episodes of diarrhoea (more than 14 days in duration) were associated most frequently with ETEC, *C. jejuni*, and EPEC.

C. Epidemiological Characteristics of Specific Enteropathogens

The major enteropathogens will be discussed briefly.

1. *Escherichia coli*

(Slide IV-11) Escherichia coli cause up to one quarter of all diarrhoeas in developing countries. Five groups of *E. coli* are recognized: enterotoxigenic, enteropathogenic, enteroadherent, enteroinvasive, and enterohaemorrhagic.

a. Enterotoxigenic *E. coli* (ETEC)

ETEC are a major cause of dehydrating diarrhoea in children under 5 years and adults in developing countries. Transmission usually occurs through contaminated food (especially weaning foods) and water, and is more common during the warmer seasons. ETEC is the most common cause of diarrhoea in travellers from developed to developing countries.

Two important virulence factors for ETEC are: (1) colonization factors that allow ETEC to adhere to receptors on the enterocytes of the small intestine and (2) enterotoxins. Genes for these colonizing factors and for the enterotoxins are encoded on transmissible plasmids. ETEC produce heat-labile (LT) and/or heat-stable (ST) enterotoxins which cause net secretion of fluid and electrolytes, presenting clinically as watery diarrhoea. Cholera-like purging is sometimes observed. ETEC do not destroy the brush border or invade the mucosa. The diarrhoea is usually self-limited, but can result in persistent diarrhoea.

b. Enteropathogenic *E. coli* (EPEC)

EPEC are *E. coli* of specific serotypes which cause watery diarrhoea accompanied by vomiting and fever in infants and children up to 2 years of age worldwide. In urban Brazil, up to 30% of acute diarrhoea cases are attributed to EPEC. The disease is usually self-limited, but can be severe (fatal) or result in persistent diarrhoea, particularly in bottle-fed infants under 6 months of age in transitional countries.

The mechanism of EPEC diarrhoea is not yet clear. Enteroadherence and production of cytotoxin may be important.

c. Enteroadherent *E. coli* (EAEC)

EAEC are a group of *E. coli* that have been found in a number of countries and belong to serotypes mostly distinct from EPEC serotypes. Like EPEC, they cause watery diarrhoea in young children, which may at times be prolonged. They adhere tightly to the small intestinal mucosa and produce typical morphological changes, but the mechanism by which they cause diarrhoea is not clear and may in part be due to cytotoxins.

d. Enteroinvasive *E. coli* (EIEC)

EIEC are not a commonly found pathogen. They cause sporadic foodborne cases and outbreaks of diarrhoea in all ages worldwide. These organisms are similar to *Shigella*, both biochemically and serologically, and like *Shigella*, they are able to penetrate and multiply within the colonic epithelial cells and cause dysentery. Polymorphonuclear leukocytes are usually present in stools.

e. Enterohaemorrhagic *E. coli* (EHEC)

A newly recognized enteropathogen, *E. coli* serotype 0157:H7, is a cause of sporadic haemorrhagic colitis in North America where improperly cooked meat has served as the major vehicle of transmission; occasionally, person-to-person transmission may have occurred. Illness is characterized by the acute onset of cramps, absent or low-grade fever, and watery diarrhoea that may rapidly progress to bloody diarrhoea. EHEC produces a cytotoxin which may be responsible for the oedema and diffuse bleeding in the colon, as well as the haemolytic-uraemic syndrome that sometimes develops in children. The global importance of this organism is not known.

2. *Vibrio cholerae 01*

(Slide IV-12) The cholera vibrio has two biotypes, El Tor and classical, and two serotypes, Ogawa and Inaba. Biotyping and serotyping are not important for treatment and control. The El Tor biotype is responsible for the current seventh pandemic, although at present both El Tor and classical biotypes are prevalent in cholera-endemic Bangladesh. In endemic areas, cholera may account for 5-10% of hospitalized patients with diarrhoea in all age groups. However, it occurs most often in children 2-9 years of age, in whom it accounts for a large portion of severe cases. In a newly affected area, young adults are most often infected initially.

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Both contaminated water and food can serve as vehicles for the transmission of cholera. Person-to-person spread is much less common but may occur in exceptionally overcrowded and unhygienic situations. *V. cholerae* adhere to and multiply on the mucosa of the small intestine (see slide) where they produce a heat-labile enterotoxin which causes the diarrhoea.

Cholera has become endemic in many countries of Africa and Asia. During the last few years, outbreaks due to strains of *V. cholerae 01* that are resistant to tetracycline have occurred in Bangladesh, the United Republic of Tanzania, and other countries. The epidemic strains contained plasmids which carried the resistance genes. In Tanzania, it is probable that excessive antibiotic pressure resulting from mass chemoprophylaxis contributed to the emergence of these strains.

3. *Shigella*

(Slide IV-13) *Shigella* causes about 10% of acute diarrhoea in children under 5 years; it also occurs in older children and adults. It is the most common cause of dysentery in children. The genus *Shigella* is subdivided into 4 serogroups:

- *Sh. flexneri* is the most common serogroup in developing countries;
- *Sh. sonnei* is most common in developed countries;
- *Sh. dysenteriae 1* causes epidemics with high mortality;
- *Sh. boydii* is less common.

Shigella are found only in man and certain primates. The spread of shigellosis often occurs by person-to-person contact since a low infectious dose (10 to 100 organisms) is required. Foodborne and waterborne transmission also occur.

Shigella infection may present as fever and watery diarrhoea, or as a dysenteric syndrome from the onset characterized by fever, abdominal cramps and tenesmus, and frequent, small volume, bloody-mucoid stools with many leukocytes. The duration of *Shigella* illness generally ranges from a few days to 2 weeks. Mortality is greatest in malnourished children.

Dysentery is initiated when *Shigella* organisms invade and then multiply within colonic epithelial cells, causing cell death, mucosal ulcers and a marked inflammatory reaction. In spite of the invasive colitis, *Shigella* seldom invade the blood stream. The virulence factors include: a smooth lipopolysaccharide cell-wall antigen that may contribute to invasiveness and a toxin (Shiga toxin) that is cytotoxic, neurotoxic, and perhaps also capable of causing watery diarrhoea.

In many countries of Africa and Asia, a high incidence of antibiotic resistance has been observed in *Shigella* infections. Plasmid-mediated resistance to sulfonamides, streptomycin, tetracycline, ampicillin, chloramphenicol, and sometimes trimethoprim-sulfamethaxole is common and is probably related at least in part to the unrestricted sale and use of antibiotics.

4. *Campylobacter jejuni*

(Slide IV-14) The slide shows an electronmicrograph of *C. jejuni*. *C. jejuni* is responsible for 5-14% of diarrhoea in infants in developing and developed countries worldwide. It is a common cause of diarrhoea in several animal species (e.g., chickens, goats, pigs, dogs). Humans acquire the infection through direct contact with infected animals or their faeces, from the consumption of contaminated food or water, and occasionally, from person-to-person spread. Many consider the disease to be a zoonosis.

The clinical presentation of *C. jejuni* infection varies from asymptomatic carriage to mild diarrhoea to severe invasive disease. In most cases, fever and abdominal pain occur. The diarrhoea may be watery, but in one third of cases dysenteric stools characterized by blood and mucus appear after a day or two and usually contain polymorphonuclear leukocytes.

C. jejuni probably produces diarrhoea by invasion of the ileum and the large intestine. Two types of toxins are produced: a cytotoxin and a heat-labile enterotoxin. Their role as virulence factors is not known.

5. *Salmonella*

(Slide IV-15) There are over 2000 serotypes or species, about 6-10 of which account for *Salmonella* gastroenteritis in man. Since animals are the main reservoir for these organisms, *Salmonella* infection most commonly results from the ingestion of contaminated animal products, especially poultry, meat, eggs, and milk. *Salmonella* gastroenteritis in young children is less common in developing countries as compared with industrialized countries, except where there is a large consumption of processed foods(e.g., urban areas in transitional countries).

Salmonella gastroenteritis usually presents as acute watery diarrhoea with nausea, cramps, and fever. Dysentery may occur in about 5% of cases. Strains resistant to ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole are now prevalent worldwide.

6. Rotavirus

(Slide IV-16) Rotavirus is the most important cause of viral gastroenteritis in infants worldwide. This electron micrograph of the rotavirus illustrates the wheel-like ("rota") appearance which has given the virus its name.

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Rotavirus is responsible for up to 40% of diarrhoea in children aged 6-24 months visiting treatment facilities in developing countries. It spreads by faecal-oral transmission. Six human serotypes of rotavirus are known, four of which are considered to be epidemiologically important.

The severity of illness ranges from asymptomatic infection (mainly in neonates and adults) to acute dehydrating diarrhoea that may lead to death. The clinical syndrome typically includes watery diarrhoea with vomiting and fever. Rotavirus infection causes patchy damage to the epithelial cells of the proximal small intestine, resulting in blunting of the absorptive villi. Infection may cause some reduction in the activity of lactase and disaccharidases, resulting in malabsorption of carbohydrates, but this is usually of no clinical significance. The intestinal morphology and absorptive capacity usually return to normal within 2-3 weeks after illness.

7. *Giardia lamblia*

(Slide IV-17) The slide shows a scanning electronmicrograph of *G. lamblia* trophozoites. *Giardia lamblia* have a worldwide distribution, with prevalence rates of infection of up to 100% in some populations. Children aged 1-5 years are most commonly infected. Giardia infections are usually foodborne, waterborne, or spread from person to person; the latter occurs particularly in children living in a crowded family or attending day care centres. Giardia usually causes acute or subacute diarrhoea, sometimes malabsorption with fatty stools and often abdominal pain and bloating. Giardia infect the small bowel, but the pathogenic mechanism is unclear.

8. *Entamoeba histolytica*

(Slide IV-18) The slide shows a microscopic picture of the tissue form of *E. histolytica*. Prevalence rates of *E. histolytica* infection vary widely but its distribution is worldwide. The incidence of disease increases with age. This infection is usually overdiagnosed as identification of this protozoan is not easy, and the parasite is often confused with polymorphonuclear leukocytes. Transmission is foodborne or waterborne. *E. histolytica* cysts are highly resistant to chemical disinfectants, including chlorination.

Asymptomatic infections are frequent (about 90%). Symptomatic amoebiasis ranges from persistent mild diarrhoea to fulminant dysentery. Only a small proportion of infected persons will develop invasive amoebiasis. Strain virulence varies with electrophoretic isoenzyme patterns. *E. histolytica* invades the mucosa of the large intestine, where it is thought to elaborate neurohumoral substances that cause intestinal secretion and damage resulting in an inflammatory type of diarrhoea.

9. *Cryptosporidium*

(Slide IV-19) *Cryptosporidium* is a coccidian parasite recognized first as a diarrhoea pathogen in animals. In man it was first identified as a cause of watery diarrhoea in immunosuppressed patients, particularly in those with acquired immune deficiency syndrome. In developing countries, it may account for 4-15% of childhood diarrhoea. *Cryptosporidiosis* is transmitted by the faecal-oral route.

Illness is characterized by acute watery diarrhoea. *Cryptosporidium* attaches to the microvillous surface of the enterocytes where it is presumed to cause malabsorption due to the resulting mucosal damage.

10. Other causes

(Slide IV-20) In addition to the numerous etiological agents described, it should be noted that some conditions cause or are associated with diarrhoea. A variety of drugs, especially antibiotics, and certain acute surgical conditions, such as pigbel and intussusception, may cause diarrhoea. Malaria, schistosomiasis, and measles both cause diarrhoea and are frequently associated with diarrhoea caused by the usual enteric pathogens. "Parenteral diarrhoea" is the occurence of diarrhoea along with other systemic infections, such as respiratory tract and middle ear infections. Contrary to the notion that such infections cause diarrhoea, recent evidence suggests they actually occur coincidentally with a diarrhoeal illness that is usually caused by an identifiable diarrhoeal agent. For this reason use of the term "parenteral diarrhoea" is discouraged.

PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME

FOLLOW-UP VISITS.

TRAINER'S GUIDE

VIDEO

V-1 UNICEF Diarrhoea Management Video Users' Guide (english).
V-2 UNICEF Diarrhoea Management Video Users' Guide (urdu).
V-3 UNICEF Diarrhoea Management Video Script (english).
V-4 UNICEF Diarrhoea Management Video Script (urdu).

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Module 1

DIARRHOEA, DEHYDRATION & THE PRINCIPLES OF ORAL THERAPY

After viewing this module, the student will be able to describe:

- What is diarrhoea?
- What are the characteristics of stool to define diarrhoea?
- What is the danger of diarrhoea?
- What is the long-term effect of diarrhoea?
- What are the two essential elements in responding to diarrhoea (oral rehydration and continued feeding, including breast-feeding)?

Module 2

SIGNS OF DEHYDRATION

After viewing this module the student should be able to:

- describe at least 10 important signs of dehydration;
- identify them correctly and interpret them appropriately in a dehydrated child. Signs include:

  Thirst
  Irritability
  Tear less eyes
  Sunken eyes
  Dry mouth and lips
  Listlessness
  Sunken fontanelle in infants
  Deep and rapid or Kussmaul breathing
  Reduced skin turgor
  Rapid heartbeat
  Weak and rapid pulse

  Cold extremities
  Little or no urine for 6 to 8 hours.

Module 9

HOW TO ADMINISTER THE ORAL REHYDRATION SOLUTION

Student should be able to:

- explain the importance of administering ORS slowly;
- explain why a spoon and cup should be used;
- explain why the child should be fed sitting or upright;
- explain how to feed ORS to a neonate;

  give guidelines to give to mother for continued replacement of fluid as diarrhoeal losses continue

Module 10

VOMITING AND ORAL REHYDRATION

Students should:

- explain the three factors that cause vomiting in a child taking ORS;
- explain techniques can be used in feeding ORS to reduce vomiting;
- tell what should be done if vomiting occurs (students should be convinced to continue ORS even if vomiting occurs with reasons why this is correct).

Module 11

ORAL REHYDRATION AND CONTINUED DIARRHOEA

Student should

Explain to the mother reasons for continuing oral rehydration solution even in the face of continued diarrhoea. (Discussions should include importance of ORS, the improved appetite, diminished lethargy, and other important attributes of a child properly treated with ORS even in the face of continuing fluid losses);

- make convincing arguments to mothers regarding the efficacy of ORS and the lack of

Module 14

CONTINUED FEEDING IS ESSENTIAL

Student should:

- Describe the importance of feeding during and after diarrhoea;
  describe the relationship between malnutrition and diarrhoea;
  describe the importance of nutritional therapy for even minor episodes and the relationship between individual episodes of diarrhoea and weight loss;
  students should describe the usefulness of weighing and growth monitoring to monitor nutritional recovery from an episode of diarrhoea
  identify locally appropriate and culturally accepted foods to give to a child suffering from diarrhoea.
  (Foods should be appropriate to age as well as culture);
- indicate importance of continued breast-feeding during and after diarrhoea.

Module 23

HOW TO SET UP AN ORT CORNER/CENTRE

Following study of this module students should be able to:

identify within their own outpatient area appropriate space in which to establish an ORT corner;

set up such a corner and conduct exercises demonstrating ORS to mothers who are waiting in the clinic with children suffering from diarrhoea;

establish such a corner in the outpatient department and train health aids or other volunteers to carry on the work of this corner as routine part of outpatient waiting area;

describe advantages to the patient in terms of improved therapy, improved understanding, improved ability to mix and use ORS;

explain benefits of ORT corner to the doctor in terms of reduced time required to educate mothers, in convincing her to use ORS, reduced use of anti-diarrhoeals and other inappropriate drugs;

describe cost savings to institution, time savings to mothers and health workers, efficiency of group learning and health education efforts, improved knowledge and use of ORS by mothers as a result of active learning techniques

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MODULE I

DIARRHOEA, DEHYDRATION AND PRINCIPLES OF ORAL THERAPY

What is diarrhoea?

Diarrhoea is *any* liquid or watery stool.

Even *one* watery stool is diarrhoea for it is the WATER that makes the difference.

Diarrhoea stools can be of any colour and consistency.

They can be clear and rice-watery as in cholera,

Or bloody as in dysentery,

Or with flecks of blood and mucous,

Or ofcourse, as is most commonly seen, just loose and messy stools of varying colours and consistencies.

In all cases, it is the watery nature that makes

diarrhoea dangerous and needs greatest attention.

A child with diarrhoea loses water, essential salts and nutrients from his body through his stools—

and sometimes, through vomiting which occasionally accompanies diarrhoea.

The immediate effect of this loss of water and salts is that the child's body starts "drying up".

This state of "drying up" is called dehydration.

If not corrected immediately, the dehydration becomes more severe and can easily become life threatening. The TIME between the onset of diarrhoea and severe dehydration leading to death, can sometimes be as *little* as 24 hours.

The long-term effect of diarrhoea is malnutrition which, in turn, predisposes the child to further infections including repeated attacks of diarrhoea.

Proper diarrhoea management, therefore, consists of two essential elements:

- replacing the water and salts lost from the body to prevent or correct dehydration
- and, equally important, replacing the nutrients lost during diarrhoea to prevent malutrition

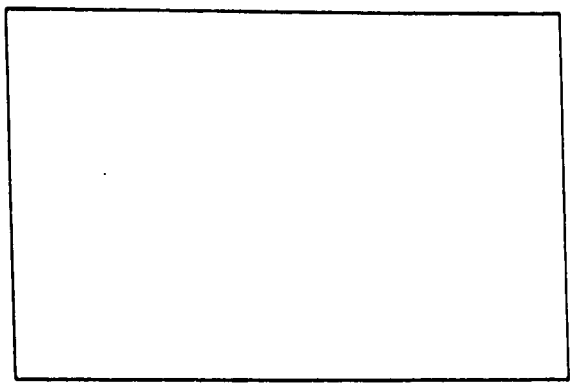
The water and salts lost from the body can be replaced by giving a solution consisting of water, glucose and salts. Since this can be given by mouth, the process is called *Oral Rehydration*.

Essential nutrients can be replaced by giving the child adequate quantities of easily-digestible foods *and*, in the case of infants, through breastfeeding.

Proper diarrhoea management, therefore, consists of oral rehydration and continued feeding and breastfeeding, all of which combined could also be referred to as *oral therapy*.

MODULE 2

SIGNS OF DEHYDRATION



In this module, we will look at the important signs and symptoms of dehydration. We will do this by comparing normal, healthy children with those suffering from dehydration or, for contrast, other illnesses.

The first thing to observe is how a child looks. This is a normal child. He is alert and happy. His eyes are bright and moist and do not seem to be sunken. His mouth and tongue are wet. He looks around, relates to people and is curious about his surroundings.

This child is dehydrated. He is irritable, worried, fussy and not easily distracted except when offered something to drink. Irritability and thirst are the earliest signs of dehydration. Also observe that his eyes are sunken.

Now let us look at another sign:

When a normal child like this one, cries, you can see tears in his eyes.

A dehydrated child's eyes, however, are dry and tearless even when he is crying. Absence of tears is an important early sign of dehydration.

Here is another normal child. His eyes are moist and do not look sunken. His mouth and lips are also moist.

This is the same child, a day earlier, when he was dehydrated. His eyes are dry and sunken. He looks drowsy and listless. His mouth and lips are dry and cracked.

In infants, another sign to look for is the soft spot on top of the head. This is called the fontanelle. If it appears depressed, as in this case, the infant is dehydrated.

In normal infants, observe how the fontanelle is not depressed. It also feels full. Let us compare this to the fontanelle of another dehydrated infant.

Observe how the fontanelle looks — and even feels — depressed. A depressed fontanelle is an important sign of dehydration in infants.

Now let us look at breathing. A normal child's breathing is slow and comfortable. His chest and abdomen move slightly with each breath.

This is another normal child. Observe how slow his breathing is. A normal child breathes about 20 to 25 times a minute.

This child with dehydration and acidosis is breathing deeply and rapidly. Notice how his stomach rises with each breath and how he uses his entire chest to breathe. His respiratory rate is 60 times a minute. This deep, rapid breating is called Kussmaul breating.

This is another child with Kussmaul breating. Observe how the breating is deep and rapid.

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Do not mistake Kussmaul breathing for the rapid, shallow breathing of pneumonia. This child has pneumonia. His breathing is also rapid but see how his chest draws in between his ribs. This is *not* Kussmaul breathing because it is rapid but not deep. You can also observe how his shallow breathing causes the base of the neck to draw in.

Observe, once again, how the breathing of a child with dehydration and acidosis is *deep* and *rapid*. This is called Kussmaul breathing.

The next sign to look for is the elasticity of the skin. A normal child's skin immediately springs back when it is pinched.

A dehydrated child's skin loses its elasticity and when pinched, goes back slowly. This is called reduced skin turgor. The amount of time the skin takes to return to normal is a rough measure of the severity of dehydration.

In this child, notice how the skin fold takes 2 or 3 seconds before returning to normal.

Another indicator of dehydration, is the child's heartbeat. A rapid heartbeat of over a 130 beats per minute in a resting child, is abnormal and represents significant dehydration.

Dehydration also makes the child's pulse faster and weaker.

In a normal child, the pulse in the extremities is strong and the hands and feet feel warm to the touch. This is a sign of adequate blood circulation.

In a significantly dehydrated child, the pulse in the extremities may be so weak that you cannot feel it and you may have to feel for it in the groin. this is a sign of poor blood circulation. If there is no pulse in the groin, significant dehydration is certainly present.

Let us now look at some other signs of dehydration.

This is called the washerwoman's hand because the skin is wrinkled and looks as if it has been immersed in water for a long time.

This adult patient's hands are so dehydrated that even the skin on the back of the fingers does not go back to normal when it is pinched. Washerwoman's hands are a sign of severe dehydration.

In contrast, a normal hand appears without wrinkles.

A healthy child passes a good stream of dilute urine every three or four hours.

No urine for six to eight hours is cause for concern and a significant sign of dehydration.

You are unlikely to find *all* these signs in one single patient. It is, therefore, important to remember that a person who has *any two* or more of these signs is dehydrated. The combination of sings helps determine the degree of dehydration.

Let us now see one such case.

This child's eyes are slightly sunken.

His breathing is deep and rapid... and his skin turgor is reduced.

His femoral pulse can be felt... but the pulse on top of his foot is very weak and the feet feel cold and clammy.

His mouth, lips and tongue feel very dry and his fontanelle is slightly depressed.

This child is definitely dehydrated.

Remember, the important signs of dehydration are:

- Thirst
- Irritability
- Tearless eyes
- Sunken eyes
- Dry mouth and lips
- Listlessness

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Sunken fontanelle in infants
Deep and rapid or Kussmaul breathing
Reduced skin turgor
Rapid heartbeat
Weak and rapid pulse
Cold extremities
Little or no urine for 6 to 8 hours.

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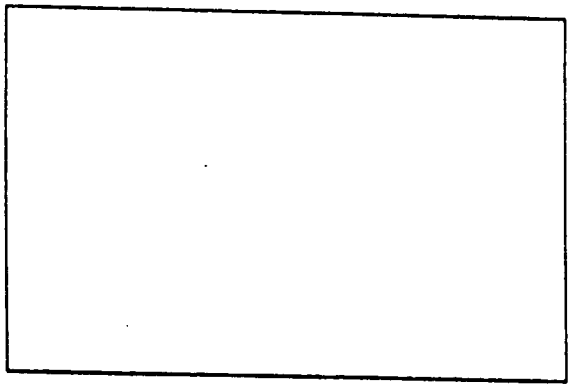
MODULE 9

HOW TO ADMINISTER ORAL REHYDRATION SOLUTION



What is the best method to administer the Oral Rehydration Solution?

Whether you give the child a home-made salt-sugar solution or the oral rehydraton salt, or ORS solution, —the best way is to give it *slowly*, sip by sip. Do not force it.

The safest way is to give it with a spoon so that the child gets only a little at a time.

Do not worry if some of the fluid drips down the chin.

When should you stop giving the solution?

The best indicator is the child's thirst. Give the child as much as she can drink. When she has had enough, she will automatically refuse to take any more.

At the first sign of diarrhoea, a child should be given any fluid available in the house. You can give fluids like salted rice or dal water, coconut water, salted nimbu-pani and salted lassi.

Remember, the best way to give the fluid is slowly and with a spoon, with the child sitting or propped up.

What if the child is given too much ORS or if it is given too fast or if the child is lying down while taking ORS?

This child is being given too much ORS, too rapidly. Worse still, she is drinking it while lying flat on her back.

Her stomach becomes distended, and she vomits. Lying down like this while drinking ORS could even be dangerous since she might choke and aspirate the fluid. Vomiting is not an indication to stop ORS. It only indicates that the fluid needs to be given with greater patience, a little at a time, and more slowly. And it is always better to make the child sit-up while giving her ORS.

So remember, giving ORS with a spoon and with the child propped up or sitting, is the safest method. It ensures that the child does not get too much ORS too rapidly. It also prevents the child from choking.

ORS can also be given to neonates. However, since they are only used to breastfeeding, it might be difficult to make them drink from a spoon. In that case, you can use a dropper. Be careful not to squirt the liquid into the baby's mouth, for he might choke.

Place the dropper at the corner of the child's mouth and give him the ORS almost drop by drop. The neonate's normal sucking and swallowing reflex will enable him to drink the fluid. A normal medicine dropper is cheap and should be disposed of after use.

How much ORS does a dehydrated child need?

The most accurate method of calculating a dehy-

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drated child's fluid requirements is by noting his weight. A moderately dehydrated child needs ORS equivalent to 8 to 10% of his body weight in the first four hours.

This neonate weighs 2.5 kilograms. If we use a rough estimation of 10% of his body weight, he needs 250 ml of ORS in the first 4 hours or at least 60 ml per hour. Give the ORS a little faster in the first hour-about 1-• times the calculated amount - say 90 to a 100 ml in this child's case.

This older child weighs 22 kilograms. He is moderately dehydrated so he needs about 8% of his body weight of ORS in the first four hours or at least 425 ml every hour. Since the ORS can be given faster in the initial period, we can give him upto 600 ml of ORS in the first hour.

Now let us see how much ORS a severely dehydrated child needs in order to be adequately rehydrated. For a severely dehydrated child, we calculate giving ORS equivalent to 10-12% of the body weight.

But because the child is severely dehydrated, 1/3 of the total fluid requirement is first given by intravenous Ringer's Lactate infusion as rapidly as possible.

Remember, as soon as the ;child becomes alert enough to drink, ORS can be started and continued till the child is properly rehydrated.

Once rehydrated, we only need to replace the losses as they occur. a rough rule-of-thumb is to give infants half a glass and older children one glassful-or approximately 250 ml- of fluid after each liquid stool.

Also remember that ORS should be given slowly, with the child sitting up to prevent the child from vomiting. As soon as the child is rehydrated, that is within four hours, he should be fed.

Infants should continue to be breast fed even during

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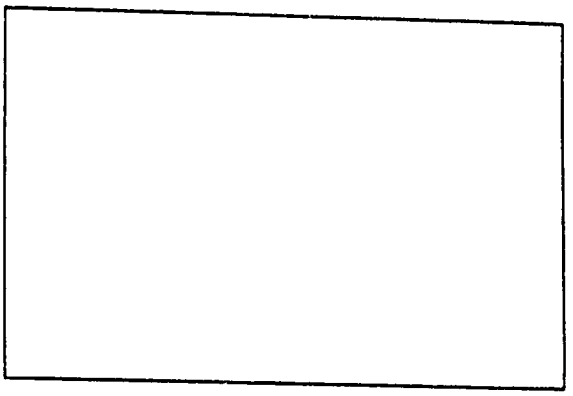
ORS in smaller quantities, preferably with a spoon and have the child propped up or sitting up.

Remember, you should NOT stop oral fluids if a child vomits.

This child was continued on ORS even after vomiting. The ORS was given a little at a time, but more frequently. And in a few hours, she was ready to eat — all because her mother continued oral rehydration despite the vomiting.

MODULE 11

ORAL REHYDRATION AND CONTINUED DIARRHOEA



You have seen this moderately dehydrated infant in earlier modules.

You also saw how he was given oral rehydration... and how he was transformed into a normal, hydrated child.

But his diarrhoea continued. Diarrhoea makes no difference as long as he is kept well hydrated.

This child was rehydrated, first with intravenous fluid and then with ORS.

His diarrhoea continued even after he was hydrated and eating normally.

The child's mother knew that she did not need to worry as long as he was kept well hydrated.

This child was also orally rehydrated....
and restored to good health.
Her diarrhoea also continued...
but caused no concern since she was being hydrated.
Remember: Diarrhoea need not cause concern as long as the child is kept well hydrated.

MODULE 14

CONTINUED FEEDING IS ESSENTIAL

This child is malnourished because of repeated attacks of diarrhoea. The peeling of his skin,...the swelling and oedema of his feet...and his enlarged liver are all signs of kwashiorkor.

This child is not only suffering from diarrhoea but has severe underlying malnutrition.

This child is also malnourished because of chronic diarrhoea. She is a classic case of marasmus.

These children are extreme examples of what can happen to a child who enters the vicious cycle of diarrhoea and malnutrition.

Malnutrition is often accompanied by repeated attacks of diarrhoea and diarrhoea, in turn, causes malnutrition.

These extreme cases show the cumulative impact of repeated and so called "minor" episodes of diarrhoea. They also demonstrate the insidious or less visible, but devastating effect of diarrhoea on the growth of the child.

It is important to remember that a child with diarrhoea loses water, essential salts *and* nutrients from his body. Oral rehydration replaces the water and salts and might save the child from dying, but food is also essential to replace the *nutrients* required for recovery and optimal growth.

The NUTRITIONAL management of diarrhoea is, therefore, as critically important as the prevention and management of dehydration.

When children lose their appetites during attacks of diarrhoea, mothers are sometimes reluctant to feed them. Some also traditionally believe that during diarrhoea, the stomach and intestines should be kept empty and given a rest. This is WRONG and can lead to prolonged and more severe illness. It is *essential* to continue to feed the child adequate quantities of easily digestible but nutritious foods. Soups, thin gruels and dal water are nutritionally POOR foods and are of little value. Mothers should be encouraged to continue feeding the child nutritious foods such as khichri...yoghurt...dals...mashed bananas...and potatoes...preferably enriched with oil.

Each episode of diarrhoea should be considered as a major nutritional assault, and the child MUST be given appropriate foods to replace nutritional losses.

Frequent feeding at short intervals is important since it helps the child to digest the food she takes.

Even after the diarrhoea stops, the illness is not over and the child needs extra food for several days to help the body to catch up on lost growth. Dietary treatment which is begun during the illness must, therefore, be

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continued with extra feeding for at least a week after the diarrhoea stops.

For infants, breast milk is ideal and breasfeeding should be continued as long as possible.

Remember

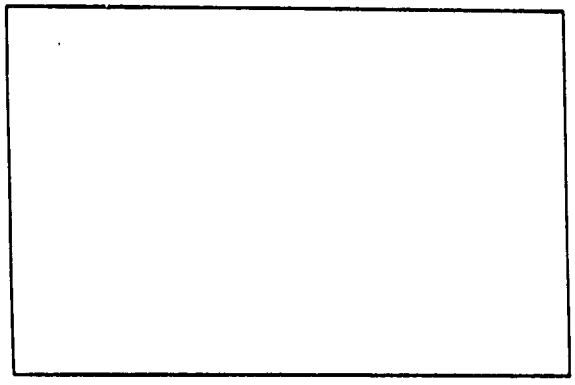
Frequent and continued feeding is an essential element of proper diarrhoea management.

The foods given to the child should be of high caloric density or should be enriched with oils.

A child with diarrhoea *must* be given frequent and generous quantities of easily-digestible foods to compensate for the nutrients he loses.

MODULE 23

HOW TO SET UP AN ORT CORNER



Oral Rehydration Therapy is potentially the most important medical advance of the 20th Century.

It is vital that this knowledge of ORT, reaches those who need it most — mothers with children suffering from diarrhoea.

In this module, we will show you how you can set up an Oral Rehydration Therapy Corner, in the outpatient clinic of even the busiest paediatric department.

This is a typical municipal hospital. It is overcrowded, and its facilities heavily utilised.....

Long queues form every morning, with hundreds of patients coming to register for a variety of complaints. Among children diarrhoea and its complications may account for 25 to 35 per cent of all pediatric visits.

The waiting area is overcrowded and noisy.....

Mothers wait passively for long periods, for their turn to see the doctor—and valuable time is wasted.

Children who are very ill, are irritable and restless...

Their mothers worried....

But this helpless waiting continues...

Couldn't this time be better utilised?

Is it possible for us to make this waiting period, a useful learning experience for these mothers before the doctor is able

to examine their children?

But where can we find some space?

A small room?

Or, even a part of the regular waiting area, that could be set aside especially for mothers with children suffering from diarrhoea?

Even this busy waiting area can be used effectively.

Here they would be able to watch a demonstration, on how to mix ORS properly,and to administer it to their children and prevent them from getting further dehydrated.

A nurse, a helper or even a skilled volunteer like this one, could demonstrate the mixing of ORS to mothers in this outpatient-waiting-area.

All she needs is:

A small table; a container in which to mix the ORS; a spoon or ladle for stirring; ORS packets; a simple means to measure one litre of water...like these common drinking glasses; cups and spoons for feeding the children ORS ....and finally, a source of clean drinking water.

Mothers with children suffering from diarrhoea are all directed to this area where they watch the demonstration.

PAKISTAN'S DIARRHOEA TRAINING UNIT PROGRAMME

FOLLOW-UP VISITS.

TRAINER'S GUIDE

POSTERS.

P-1 Guidelines for Assessment of Dehydration, poster and leaflet.
P-2 Guidelines for Treatment of Diarrhoea, poster and leaflet.
P-3 Pakistan's National Diarrhoea Treatment Policy, poster and leaflet
P-4 Oral Rehydration Therapy, 8 pictures, (urdu) poster and leaflet.
P-5 Oral Rehydration Therapy, 3 pictures (urdu).
P-6 Photograph of Twins, one breastfed and one bottlefed.

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STANDARD GUIDELINES ON

HOW TO ASSESS YOUR PATIENT FOR DEHYDRATION DUE TO DIARRHŒA

EVALUATE child for degree of dehydration according to the Table below:

	DEGREE OF DEHYDRATION		
	NONE (no visible sign of dehydration)	**MILD TO MODERATE**	**SEVERE**
ASK			
• Diarrhœa	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day
• Thirst	Normal	Greater than normal	Unable to drink
• Vomiting	None or a small amount	Some	Very frequent
• Urine	Normal	Small amount, dark	No urine for 6 hours
LOOK			
• Condition	Well and alert	Unwell, sleepy or irritable	Very sleepy, unconscious, limp, having convulsions
• Eyes	Normal	Sunken	Dry and sunken
• Tears	Present	Absent	Absent
• Mouth and Tongue	Wet	Dry	Very dry
• Breathing	Normal	Faster than normal	Very fast and very deep
FEEL			
• Skin	Abdominal pinch goes back immediately	A pinch goes back slowly in 1-2 seconds	A pinch goes back very slowly in 2-3 seconds or longer
• Pulse	Normal	Faster than normal (more than 110/min.)	Very fast, weak, or you cannot feel it (more than 140/min.)
• Fontanelle (in infants)	Normal	Sunken	Very sunken
WEIGH	Loss of less than 5% of body weight	Loss of 5-10% of body weight	Loss of more than 10% of body weight
DECIDE	The patient has **NO** signs of dehydration	If the patient has 2 or more of these signs, he has **MILD TO MODERATE** dehydration	If the patient has 2 or more of these signs, he has **SEVERE** dehydration

STANDARD TREATMENT FOR

ALL LOOSE OR WATERY STOOLS

(DIARRHŒA / DYSENTERY)

FOR ALL CHILDREN

who visit a health facility
for loose or watery stools :

TREAT child according to the Table below.

DEGREE OF DEHYDRATION	AGE OF CHILD		
	Up to 4-6 months (exclusively breastfed)		More than 4-6 months (partially breastfed)
NONE (No visible sign of dehydration)	• Breastfeed more often.		• Breastfeed more often. • Give more fluids such as rice water, lassi and plain water. • Continue soft foods such as khichri, yogurt and mashed banana.
MILD TO MODERATE	0-11 MONTHS	1-4 YEARS	5 YEARS & OVER
	First 4-6 hours ORS 200-600 ml or 1/4-1/2 seer.	First 4-6 hours ORS 600-800 ml or 1/2-3/4 seer.	First 4-6 hours ORS 1 to 2 litres or 1 to 2 seers.
	10-20 ml ORS per kilogram body weight per hour		
SEVERE	First 4-6 hours 400-750 ml Ringers Lactate intravenous (25 ml/kg/hr). Then ORS as above	First 4-6 hours 1-1.5 litres Ringers Lactate intravenous (30 ml/kg/hr) Then ORS as above	First 4-6 hours 2 litres Ringers Lactate intravenous (30 ml/kg/hr). Then ORS as above
MAINTENANCE	1/2 large cup (100 ml) ORS or other fluids per stool	1 large cup (200 ml) ORS or other fluids per stool	2 large cups ORS or other fluids per stool
	CONTINUE FEEDING THE CHILD OFTEN. IF CHILD WANTS MORE WATER, GIVE IT.		

- Observe parent prepare and feed ORS in the facility.
- Do not give antidiarrhœal drugs. They are dangerous and contraindicated by WHO.
- If child vomits, wait 10 minutes and then give small amounts of ORS slowly.
- After 4-6 hours, reassess the child using the assessment chart, then choose the suitable treatment.

★ *For Bloody Stools: Give ORS and Cotrimoxazole (5 mg TMP/kg dose twice daily for 5 days). If child is not better in 48 hours, refer to hospital.*

★ *If the child is above 2 years of age and comes from a community where confirmed cholera cases are currently occurring, suspect cholera and give oral tetracycline (50 mg/kg/day in four divided doses for three days) after the child is rehydrated. Tetracycline is not recommended for routine use in children under 8 years of age.*

EXPLAIN to parent and ensure that parent understands that:

- Child should return to center or physician if: (i) the child shows any sign of dehydration, or (ii) the child does not improve, or (iii) diarrhœa lasts more than 2-3 days.
- Child should continue to breastfeed often.
- Child should drink more liquids than usual.
- Child should continue eating soft foods like yogurt, khichri, mashed banana, etc. 5 to 7 times a day.
- After diarrhœa stops, child should eat one extra meal each day for two weeks.

GIVE parents two ORS packets to take home to continue treatment.

PAKISTAN'S NATIONAL DIARRHOEA TREATMENT POLICY P-3

ORAL REHYDRATION THERAPY (ORT): ORS + BREASTMILK + FOOD

- All diarrhoea cases will drink ORS (or other fluid) prior to leaving
- All parents will be taught how to mix ORS.
- All parents will be taught how to give ORS (how much, how often, how long). ORS will be given using a cup and spoon or dropper
- Special care attention will be given to neonates, especially low birth weight, to avoid excessive use of ORS. Breastfeeding will be encouraged and assisted where needed.
- All parents will be given 1 to 2 ORS packets for home use.

BREASTFEEDING

- Breastfeeding will be encouraged for all infants and continued even during rehydration

CONTINUED FEEDING

- Feeding appropriate for age will be encouraged to start no later than 4 hours after start of rehydration.
- Milk feeds will not be diluted but may be mixed with cereals and can be offered during maintenance.
- No feeding bottles will be used

DRUGS

- No anti-diarrhoeal, antiemetic, antispasmodic drugs will be used or prescribed for diarrhoea in children, especially under 5 years.
- Antibiotics will be used only for specified indications to be recorded on the patient record whenever used. This will generally be reserved for bloody dysentery or other systemic infections. Only a single antibiotic will be prescribed.

IV THERAPY

- I.V. will be used only for severe dehydration as demonstrated by objective findings recorded on the patient record form.
- I.V. will be used only for rehydration and stopped within 6 hours of initiation.
- Ringer's lactate is preferred but 0.9% Saline with 5% Dextrose is an acceptable alternative. Glucose/Dextrose solution alone will not be used.
- Patients on I.V. will be started on ORS as soon as they can drink.

IMMUNIZATION

- Ensure that no child leaves before its immunization is up-to-date (especially measles). Similarly, the mother should be given TT immunization.

HYGIENE

- Staff will demonstrate commitment to importance of personal hygiene by washing their hands after handling each patient.

PLEASE ENSURE THAT

- Parents leave only after they can explain in their own words the following:

1. **The Need for the Child to Drink More Fluids than Usual:**
   - Mix ORS correctly using local measures.
   - Use ORS correctly offering 1/2 to 1 tea cup for each stool or vomit and more if child desires.
2. **The Need for the Child to Continue Eating:**
   - Breastfeed, and if 6 months or older, state the food and the approximate amount of food to feed child.
3. **When to Bring the Child Back:**
   - Explain signs of dehydration and indications to bring child back.
4. **How to Prevent Diarrhoea:**
   - Explain the importance of handwashing, breastfeeding and danger of bottle feeding.

P-4

دست کی بیماری میں بچے کو او آر ایس محلول ملا پانی اس طریقے سے پلا کر پلائیں۔

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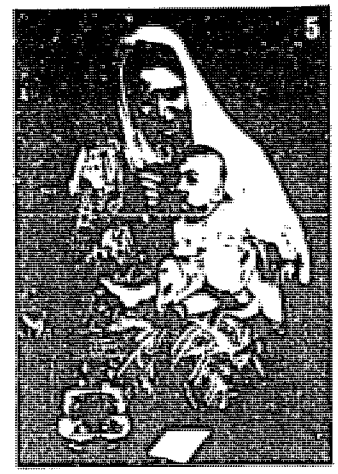
او آر ایس پلانے کے علاوہ بچے کو ماں کا دودھ اور نرم غذائیں بھی دیتے رہیں۔



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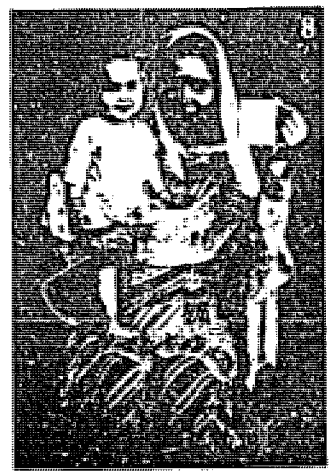

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FEDERAL EPI/CDD CELL, NIH, MOH, GOP

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اگر بچے کو دست کی بیماری ہے تو

بچے کو مسلسل او۔آر۔ایس
ملا پانی پلاتے رہیں۔

ماں بچے کو حسبِ معمول
اپنا دودھ پلاتی رہے۔

بچے کو نرم غذا مثلاً
کھچڑی، دہی اور کیلا بھی
دیتے رہیں۔