BIBLIOGRAPHIC DATA SHEET

1. CONTROL NUMBER: PN-AAK-304

2. SUBJECT CLASSIFICATION (695): NA80-0000-G698

3. TITLE AND SUBTITLE (240)

A review of efforts to establish an oral rehydration center at Al-Bashir hospital in Amman, Jordan

4. PERSONAL AUTHORS (100)

Sullesta, E. O.; Nalin, David

5. CORPORATE AUTHORS (101)

Am. Public Health Assn. Int. Health Programs

6. DOCUMENT DATE (110)	7. NUMBER OF PAGES (120)	8. ARC NUMBER (170)
1980	72p.	J0616.342.S949

9. REFERENCE ORGANIZATION (130)

APHA

10. SUPPLEMENTARY NOTES (500)

11. ABSTRACT (950)

12. DESCRIPTORS (920)

Diarrhea
Rehydration
Jordan
Dehydration
Medical services
Health facilities
Health services
Health education

13. PROJECT NUMBER (150)

14. CONTRACT NO.(140)

AID/dspe-c-0053

15. CONTRACT TYPE (140)

16. TYPE OF DOCUMENT (160)

AID 590-7 (10-79)

PN-AAK-304

INTERNATIONAL HEALTH PROGRAMS

AMERICAN PUBLIC HEALTH ASSOCIATION
International Health Programs
1015 Fifteenth Street, N.W.
Washington, D.C. 20005

A REVIEW OF EFFORTS TO ESTABLISH AN ORAL REHYDRATION CENTER AT AL-BASHIR HOSPITAL IN AMMAN, JORDAN

A Report Prepared By:
ENRIQUETA O. SULLESTA, R.N., M.P.H.
DAVID NALIN, M.D., FACP

During The Period:
September 1-30, 1980

Supported By The:
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
(ADSS) AID/DSPE-C-0053

AUTHORIZATION:
Ltr. AID/DS/HEA: 12/2/80
Assgn. No. 583046

Agency for International Development
Library
Room 1656 SA-13
Washington, D.C. 20523

CONTENTS

Page

ACKNOWLEDGEMENTS ii

ABBREVIATIONS iii

EXECUTIVE SUMMARY iv

I. INTRODUCTION AND BACKGROUND 1

Purpose of the Assignment 1
Schedule and Program of Activities. 1
Country Profile 2

II. OBSERVATIONS AND FINDINGS 4

The Inpatient Unit of the Center. 4
The Outpatient Unit of the Center 5
The Nutrition Rehabilitation Unit 12
Al-Bashir Oral Rehydration Center as a Training Center. 12

III. RECOMMENDATIONS AND CONCLUSIONS 13

REFERENCES. 15

APPENDICES

Appendix A: List of Contacts and Visitors

Appendix B: List of Participating Staff

Appendix C: List of Forms Used at the Center

Appendix D: Preliminary Report on First Phase of Project for Al-Bashir Hospital Rehydration Center

Appendix E: Proposed Protocol: Comparison of Glucose vs. Glucose Plus Glycine in the Oral Rehydration Solutions for Therapy of Infant Diarrheas

ACKNOWLEDGMENTS

We would like to give our sincere thanks and express our appreciation to the many people at Al-Bashir Hospital, the Ministry of Health, and USAID/Amman for their support and cooperation, which enabled us to proceed smoothly with our work, and for their friendliness, which made our work a pleasant experience.

We are especially grateful to His Excellency, the Minister of Health, Dr. Zuheir Malhas; Dr. M. Abu Dahab, Dr. A. R. Jalal, Ms. Haddad, and staff of the Oral Rehydration Center of Al-Bashir Hospital; Dr. N. Khoury-Bulos, of the Pediatric Department, University Hospital; and Dr. E. Harrell, Mr. Jack Thomas, Dr. Sami Khoury, and Dr. James Turman, of USAID/Amman.

These persons and many others contributed to the success of our Jordanian assignment.

ABBREVIATIONS

MOH	Ministry of Health
OPD	Outpatient Unit, Oral Rehydration Center
ORC	Oral Rehydration Center
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
UNRWA	United Nations Relief and Work Administration
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

In compliance with the Health Minister's request to establish an oral rehydration center (ORC) in Jordan--a sequel to a series of seminars ("Modern Methods of Treating Acute Watery Diarrhea with Accent on Oral Rehydration Therapy") conducted in July 1980--a section of the Pediatric Department of Al-Bashir Hospital in Amman was designated and developed as such a center. The center is the first of its kind in Jordan and in the Near East/Eastern Mediterranean region.

Preparatory activities to establish the center began on August 30, 1980. Within four weeks, an inpatient unit for acute diarrhea rehydration and an outpatient unit for mildly dehydrated cases and for convalescing patients from the inpatient unit became operational. A third unit, the Nutrition Rehabilitation Unit (for post-rehydration nutrition rehabilitation), was set up and will be operational soon.

Doctors and nurses assigned to the center have been taught scientific methods for treating and evaluating the treatment of diarrhea. Teaching mothers and orienting observers and trainees are important aspects of the doctors' and nurses' function, bolstering the center's role in oral rehydration training.

I. INTRODUCTION AND BACKGROUND

I. INTRODUCTION AND BACKGROUND

In July 1980, a series of seminars on new methods for treating diarrhea that emphasized oral rehydration therapy (ORT) was conducted in Jordan by Dr. David Nalin and this writer. A high level of interest was shown by the seminar participants--doctors, nurses, and paramedicals from the government and private sector.

A believer in the merits of oral rehydration therapy, His Excellency, the Minister of Health, proposed the establishment of an oral rehydration center in a government hospital. This center will serve as a training ground for the doctors, nurses, and members of allied professions who will be implementing this technology in their own areas of expertise so that eventually it will be practiced in all parts of the country.

Purpose of the Assignment

The purpose of this assignment was to assist Dr. Nalin in establishing the Oral Rehydration Training Center in Al-Bashir Hospital, in Amman, Jordan. This is the first national oral rehydration therapy training center to be established in the Near East/Eastern Mediterranean region.

Schedule and Program of Activities

August 30 to September 4, 1980

Preparations for establishing the center were made between August 30 and September 4. Meetings with officials of the Ministry of Health, Al-Bashir Hospital, and USAID/Amman were held. Equipment and supplies were procured and the physical arrangement of the ward was completed. Staffing of the center was arranged. The design of the protocol and the evaluation of the research component were discussed.

September 5 to September 25, 1980

The inpatient unit (7-8 cribs) of the center began operating on September 5. Patients with moderate to severe dehydration were admitted and treated with the oral rehydration solution (ORS); no intravenous fluids and no antibiotics were given unless specifically indicated. The staff were

oriented and taught their functions and responsibilities; trainees and visitors were likewise oriented.

During this time the patients were the subject of a scientific study, "Evaluation of Glucose vs. Glucose plus Glycine in the Oral Rehydration Solution."

September 14, 1980 (to continue)

The outpatient unit (6-7 cribs) opened September 14. This unit, a room/ward, is adjacent to the inpatient unit. Mild cases of dehydration are treated here. The unit also serves as a convalescing room for those patients rehydrated at the inpatient unit.

September 26, 1980 (to continue)

The scientific study on the addition of glycine in the ORS composition was terminated on September 25, and the inpatient unit shifted from "research procedures" to "routine one procedures". The transition was smooth. New center staff (doctors and nurses) were efficient. Dr. Jalal, the designated head of the unit, plays a very active role in the orientation and training of staff and in the operation and supervision of the center. Dr. Abu Dahab, chief of the Pediatric Department, and Miss Haddad, chief nurse, are supportive of the center.

September 27, 1980 (to continue)

By September 27, the physical set-up of the Post-rehydration Nutrition Rehabilitation Unit of the center was complete. This unit has 6-8 cribs and is next to the outpatient unit. It will become operational soon with the designation of Dr. Hijazi, of the University Hospital, as the nutrition consultant. It is envisioned that in the future the unit will have a community outreach component.

Country Profile

Jordan is a small country, with an area of 37,500 square miles. It lies between the Mediterranean Sea and the Arabian Peninsula. It has a population of 2.2 million; 85 percent of the population live in urban areas. Forty percent of the population are Palestinian; 11 percent are nomads.

Jordan's population growth rate, 3.4 percent, is one of the highest in the world. The average family size is 7.5. The infant mortality rate is 97 per 1,000 live births. Diarrhea is among the top killers of infants. The literacy rate is 70 percent.

II. OBSERVATIONS AND FINDINGS

II. OBSERVATIONS AND FINDINGS

The Inpatient Unit of the Center

The Inpatient Unit of the Al-Bashir Hospital Oral Rehydration Center, a section in the Pediatric Department, began admitting patients on September 5, 1980. The preparatory phase for the establishment of the center began a week earlier, when Dr. Nalin and later Ms. Sullesta arrived. At that time equipment and supplies were procured, the physical arrangement of the unit was completed, staff were assigned and oriented, etc.

From September 5 to September 25, the unit admitted 50 cases. These persons became the subject of a scientific study on the evaluation of glucose and glucose plus glycine as a component of the oral rehydration solution.

Preliminary Results of the Scientific Study on Glucose vs. Glucose plus Glycine

A double-blind study to evaluate the two compositions of the ORS, one with glycine and one without glycine, was made on the first 50 cases at the center. The WHO formulation of the ORS was used for both groups, but glycine was added to one.

Composition of the Oral Solution
(Grams/Liter)

Glucose	A	B
Glucose	20.0	20.0
Glycine	8.2	0.0
NaCl	3.5	3.5
$NaHCO_3$	2.5	2.5
KCl	1.5	1.5

The first 27 cases analyzed showed that the two solutions tested with or without glycine were highly effective, but one solution appeared to be associated with more rapid rehydration during the critical first six hours of the rehydration. Additional data from the rest of the cases are needed to confirm this finding. Dr. Nalin is making the final analysis.

The Outpatient Unit of the Center

The Outpatient Unit (OPD) of the Oral Rehydration Center began its operations on September 14, 10 days after the Inpatient Unit opened. Previously, diarrhea patients, like all patients who came to the hospital, passed through the general outpatient department, where staff made the decision either to treat them and send them home or admit them to the hospital.

In the desire to "catch" all diarrhea cases, arrangements were made with the hospital management to allow patients with diarrhea to go to the center. Thus was the OPD unit opened.

The OPD unit is adjacent to the Inpatient Unit and can accommodate 6-8 cribs. It treats mildly dehydrated cases and cares for those from the Inpatient Unit who are convalescing, especially when the Inpatient Unit is short of cribs.

The OPD experience is aimed at providing to mothers the experience of administering oral rehydration therapy to their babies. It is here that mothers are taught the basic information on ORT and other preventive aspects in the control of diarrhea. For example:

- What are ORS and ORT?
- Why should it be administered?
- How should the solution be mixed?
- How much should be given?
- How is dehydration determined?
- When should milk and other food be given?
- Importance of Breastfeeding
- Hygiene and Sanitation

Before they go home, the mothers are given two or three packets of ORS and a plastic bottle for measuring the water. (The same information is taught to mothers in the Inpatient Unit.) It is hoped that the mothers will apply what they have learned the next time a child gets diarrhea.

The OPD also gives student-nurses and staff an opportunity to "practice" as health teachers/educators.

A. Preliminary Findings

From September 14 to September 28, 36 babies were admitted to the OPD.

1. Age and Sex

The ages ranged from 2 months to 2 years, with 22 (61 percent) below 1 year; 21 (60 percent) were males.

2. Duration of Diarrhea

The duration of diarrhea before the OPD visit ranged from 8 hours to 30 days.

Duration	Number/Percent
Less than 1 day	2 (5%)
1-3 days	19 (53%)
4-7 days	8 (22%)
8-15 days	5 (14%)
16-30 days*	2 (6%)

3. Frequency of Diarrhea

Eighty-one percent of the cases had diarrhea more than 4 times a day.

* One had had diarrhea since birth.

4. Type of Stool

More than half (56 percent) of the OPD cases had watery diarrhea, and more than one-third (39 percent) had semi-liquid stools when they were admitted.

Type of Diarrhea	Number/Percent	
Grade 1 (normal, firm-formed)	0	
Grade 2 (normal, semi-formed)	2	(6%)
Grade 3 (semi-liquid; takes shape of container)	14	(39%)
Grade 4 (totally watery; opaque)	17	(47%)
Grade 5 (totally watery; clear)	3	(8%)

5. Vomiting

Vomiting before admission occurred in 79 percent of the cases, 4 times in 42 percent.

6. Signs of Dehydration

More than one-third (36 percent) of the OPD cases had no visible sign of dehydration; about two-thirds (64 percent) had one or more signs.

7. Previous Treatment

Two-thirds of the cases had been treated previously. The type of treatment ranged from folk medicine to intravenous. Sixty-one percent were administered diarrhea medication, or antiemetics singly or in combination.

Type of Treatment	Number/Percent
None	12 (33%)
Folk Medicines	1 (2.8%)
Antibiotics, Antidiarrhea, Antiemetics	22 (61%)
Intravenous Fluids	1 (2.8%)

8. State of Nutrition

By ocular assessment, 15 (83 percent) cases had normal nutrition and 3 (17 percent) had poor nutrition. In 18 forms, the assessment was not made.

9. Length of OPD Stay and ORS Intake

The length of the OPD stay ranged from 45 minutes to 13 hours. The average OPD stay is about 3½ hours.

The ORS intake ranged from zero (0) to 750 ml., with an average of 317 ml.

B. Preliminary Results of Other Data

1. Follow-up Cases

During the second week of the study, discharged babies from the in- and outpatient units were appointed to return for follow-up, one week later if they were well, or anytime if they were sick. Twelve (12) of the cases who returned provided the following data:

Where Admitted	
Inpatients	5
Outpatients	4
Not Indicated	3
Appointment Visit	
Same Day	5
Early	2
Late	1
Not Indicated	4
ORT continued in home?	
Yes	11
No	1*
If Yes, for how many days?	
Less than 1 day	1
2 days	7
3 days	1
Not Stated	2
Correct mixing?	
Yes	8
No	1
Not Stated	2

* Did not understand.

Watery diarrhea continued in home?

Yes	6
No	6

Skin normal?

Yes	7
No	5

Impressions of ORT

Good	7
Not Effective	3*
Excellent	1
Not Stated	1

Reasons for bringing to ORC

For Checkup (well)	8
With Diarrhea	2**
Not Stated	2

C. Medical Cost Survey

Fifteen Medical Cost Survey forms were analyzed initially. The duration of diarrhea before the hospital visit ranged from 1 day to 30 days, with an average of 6.6 days.

---

* One was afraid to continue.

** Admitted to OPD; no IV.

1. Number of Doctors Seen

Eleven cases saw a total of 23 doctors. Three (27 percent) saw 1 doctor; 4 (36 percent) saw 2 doctors; and 4 also saw 3 doctors, an average of 2.1 doctor per patient. (Four forms had no data.)

2. Doctor's Fee

Thirteen of the 15 patients interviewed specified the amount of the doctor's fee. The 10 who paid spent in the range of J.D. 2.5 - J.D. 8.00 (U.S. $8.75 - $28.00). Three did not pay; two went directly to the hospital and one visited a doctor who was a relative. One was afraid to answer (his doctor might get punished), and another had no answer.

The total amount spent for doctors' fees was J.D. 43.00, or an average of J.D. 4.3 (U.S. $14.79) per patient.

3. Amount Spent for Medicines (syrups, injections, etc.)

Charges for medicines ranged from zero (0) to J.D. 7.5 (U.S. $25.80). Those who paid spent an average of J.D. 3.7 (U.S. $12.73).

Roughly, the paying patients spent an average of J.D. 6.27 (U.S. $21.88) for the doctor's fee and medicines.

It would be interesting to see if there is any difference in the expenses of the inpatients and outpatients. This can be determined when there is a sufficient number of interviewees in each group.

The above findings are not conclusive. The cases and samples were too small. The study was made to demonstrate to center staff the value of the forms for evaluation purposes, the necessity of completing forms accurately,

and the need for periodic evaluation to improve the services. For example, if the analysis shows that a significant number of mothers do not mix or administer the ORS correctly, the teaching component will need to be strengthened.

The Nutrition Rehabilitation Unit

It has been roughly estimated that more than 20 percent of the babies in the Inpatient Unit are malnourished; OPD preliminary data showed malnutrition in 17 percent. The need to rehabilitate these babies nutritionally after they have been rehydrated was seen as a necessary function of the center.

To this effect, a third room adjacent to the OPD unit was prepared as a post-dehydration nutrition rehabilitation unit. This unit has 8 cribs. Dr. Hijase of University Hospital has been designated nutrition consultant by the Minister.

The unit will provide therapeutic nutritional intervention to correct inpatients with severe malnutrition and outpatients with malnutrition.

Al-Bashir Oral Rehydration Center as a Training Center

One of the important functions of the Al-Bashir Hospital Oral Rehydration Center is to teach and train staff in the new methods for treating and preventing diarrhea. Center staff who have learned the scientific methods of therapy and therapy evaluation will demonstrate and teach the same to other trainees and guests. Doctor- and nurse-trainees from the Pediatric Department of University Hospital, visitors and observers from the Ministry of Health, the United Nations Relief and Work Administration (UNRWA), and USAID, teachers from the College of Nursing and Midwifery, doctors from other hospitals and centers, and doctors from other units of the department have thus far benefitted from the teaching and training the center provides.

A training schedule for all doctors and nurses in the Pediatric Department has been prepared and enacted. The assignment is rotated every three weeks. Dr. Jalal remains the head of the center, and one of the original staff nurses, Mrs. Salayta, is a permanent member of the staff. Dr. Abu Dahab, chief, Pediatrics, estimates that by the end of December 1980 all doctors and nurses in the department will have been trained. After December, trainees from other hospitals and centers will be allowed to participate in the program at Al-Bashir Hospital.

III. RECOMMENDATIONS AND CONCLUSIONS

III. RECOMMENDATIONS AND CONCLUSIONS

The Al-Bashir Hospital Oral Rehydration Center is expected to play a leading role in reducing deaths from diarrhea in Jordan. As the first such training center in the area, it will be a model for other countries in the Near East and Eastern Mediterranean region.

Maintaining the Quality of the Center (Supervision of Center and Care)

Center staff should be knowledgeable about the operations, procedures such as the methodology of oral rehydration and maintenance therapy, accurate weighing, management of complications, outpatient therapy, methods of data collection and recording, data analysis, etc.

The different disciplines--doctors, nurses, and practical nurses--should perform their particular roles. This means that each group of center staff (if rotation of staff is practiced) must be oriented and thoroughly taught the procedures.

The center's activities must be supervised closely in order to maintain the center's efficiency and effectiveness. At present, Dr. Jalal, designated head of the center, is in charge of supervision; Ms. Haddad, chief nurse, Pediatrics, and Mrs. Salayta, a staff nurse, are responsible for nursing supervision.

Periodic and Final Evaluation of Data

The forms used by staff of the inpatient and outpatient units (the nutrition unit is not yet operating) contain much information which, when analyzed, could yield interesting results. Periodic and final analyses (after 6 months to 1 year) of these data are recommended.

Community Outreach for Nutrition Rehabilitation Unit

In order to provide comprehensive therapy to malnourished patients, the acute rehydration and the post-rehydration nutrition rehabilitation units should be coordinated closely. If malnutrition is not treated, these children will be repeatedly readmitted for diarrhea and other infections attributable to their poor nutritional status.

A nutritionist, a doctor, and a nurse with some nutrition background should take charge of the unit. Follow-up visits to the homes and the community for additional supervision should be required of the unit. When applicable, a multi-agency approach should be tried.

If, after one or two years, the number of deaths from diarrhea in Jordan drops significantly, it will be possible to say that the Al-Bashir Hospital Oral Rehydration Center played a very important role and that it had become the kind of center it was envisioned to be.

REFERENCES

Khuri-Bulos, N.A. and Hammad H.A.M.," Gastroenteritis in Jordanian Children," Jordan Medical Journal, 1980, 14: 43-55.

Westinghous Health Systems. "National Health Planning in Jordan, Phase 2: Health Policy Strategy."

APPENDICES

Appendix A

LIST OF CONTACTS AND VISITORS

Appendix A

LIST OF CONTACTS AND VISITORS

Ministry of Health and U.N.

His Excellency, Dr. Zuheir Malhas, Minister of Health
Dr. Rizek Rajhdan, Undersecretary of Health
Dr. Suleiman Subehi, Chief, Preventive Medicine, MOH
Dr. Naji Auash, Medical Director, UNRWA
Dr. Said El Azab, Medical Officer, UNRWA
Dr. Abu Ghazala, Medical Officer, UNRWA

USAID Mission

Dr. Edgar C. Harrell, Chief of Mission
Ms. Lois Richards, Deputy Chief of Mission
Dr. James Turman, Chief, Technical Projects
Mr. Jack Thomas, Health and Population Officer
Dr. Sami Khoury, Health Officer, Mission;
Chairman, Department of Preventive Medicine, University of Jordan
Mrs. M. Pearson, Information Office

Al-Bashir Hospital

Dr. Mahdi Abu Dahab, Chief, Pediatric Department
Dr. Abdul Rahim Jalal, Specialist, Pediatric Department
Miss Haddad, Chief, Pediatric Department
Dr. Muftafa Shunnak, Chief, Internal Medicine
Dr. Akram Hilary, Chief of Laboratories
Dr. Saleh Kinj, Senior Pediatrician
Dr. Mohammad Khatib, Department of Internal Medicine

Others

Dr. Najwa Khoury-Bulos, Department of Pediatrics, University Hospital
Dr. Saleh Shajrawi, Pediatrician, Ma-an
Instructors, College of Nursing and Midwifery
Doctors and Nurses, University Hospital

Appendix B

LIST OF PARTICIPATING STAFF

Appendix B

LIST OF PARTICIPATING STAFF

Physicians

Dr. Abu Dahab, Chief of Pediatrics, Al-Bashir Hospital
Dr. Abdul R. Jalal, Senior Pediatrician, Al-Bashir Hospital
Dr. N. Khoury-Bulos, Pediatrician, University Hospital
Dr. Auni Hamdan, Pediatrics Resident, Al-Bashir Hospital
Dr. Kamal Gharaibeh, Pediatrics Resident, Al-Bashir Hospital
Dr. Mohammad Hussein, Pediatrics Resident, University Hospital
Dr. Salwa Bitar, Pediatrics Resident, University Hospital
Dr. Abdul Tawab Khan, Pediatrician, King Edward Medical College, Lahore, Pakistan
Dr. Asifa Murtaza Syed, Pediatrician, King Edward Medical College, Lahore, Pakistan

Nurses

Miss Haddad, Chief Nurse, Pediatrics, Al-Bashir Hospital
Ms. Afaf Salayta, Staff Nurse, Al-Bashir Hospital
Ms. Frocina Haddadin, Staff Nurse
Ms. Noha Haddad, Practical Nurse
Ms. Magdolin Yosef, Practical Nurse
Ms. Reem Abu Dahab, Practical Nurse
Ms. Mariam Rimawi, Student Nurse
Ms. Fatmeh Zubi, Student Nurse
Ms. Basim Ali, Student Nurse
Mr. Faiez Katrawi, Student Nurse
Mr. Diab Yosef, Student Nurse

Appendix C

LIST OF FORMS USED AT CENTER

Appendix C

LIST OF FORMS USED AT CENTER*

1. Inpatient Admission Form
2. Treatment Form (Inpatient)
3. Outpatient Record
4. Follow-up Card (In- and Outpatient)
5. Patient Follow-up Record (In- and Outpatient)
6. Medical Cost Survey Prior to Admission

---

* In addition to routine hospital forms.

Appendix D

PRELIMINARY REPORT ON FIRST PHASE OF ESTABLISHMENT PROJECT FOR AL-BASHIR HOSPITAL REHYDRATION CENTER

AL BASHIR HOSPITAL

ORAL REHYDRATION CENTER

IN-PATIENT ADMISSION FORM

Name: _____ Sex: _____ Birthdate: _____

Date Admitted: _____ Time: _____ Discharged: _____ Time: _____

ADM. No: _____

Mother's Name: _____ Occupation: _____

Father's Name: _____ Occupation: _____

Address - (Where Staying): _____

No. of Siblings: _____ Order of Infant in Family: _____

1. Chief Complaint: _____

2. Diarrhea

Date of Onset _____ Time of Onset _____ AM PM

Frequency -

Odor - Foul _____

Fishy _____

Unremarkable ___

Other _____

Consistency -

Normal Formed Stool (I) _____

Soft Pudding-Like (II) _____

Thick Fluid - Takes Shape of container (III) _____

Thin, Completely Watery, (IV) Opaque _____

Completely Watery, Clear (V) _____

Appearance -

Blood present _____

Mucus Present _____

Yellow _____

Brown _____

3. Felt Feverish - Yes _____ No _____

4. Had Chills - Yes _____ No _____

5. Cought - Yes _____ No _____

6. Irritable - Yes _____ No _____

7. Last urine passed (date and time) Yes _____ No _____

8. Vomited - Yes _____ No _____

If yes, Date _____ Time of Onset _____

Frequency _____

Type: Clear Water _____ Food _____ Blood or Coffee grounds _____

Other _____

9. Belching - Increased _____ Decreased _____ No Change _____

10 Appetite -

a. Diet before diarrhea began (describe)

1. Breast milk alone _____
2. Other fluids (describe) _____
3. Soft or solid foods (describe) _____
4. Water - frequency per day (estimate) _____

b. Appetite after Diarrhea - Increased _____ Decreased _____ No change _____

11 Are there other children in family: Yes _____ How Many _____

No _____ Ages _____

12 Were there other cases in: a) Family Yes _____ No _____

b) Neighbourhood Yes _____ No _____

13 How was infant treated before arriving at hospital? (Describe)

a. Tablets _____

b. Injections _____

c. I.V. Fluids _____

d. Oral Fluids _____

e. Mixtures _____

f. Folk Remedies _____

14 Which of the following advised on therapy before arriving at hospital?

Doctor _____

Folk Healer _____

Family Member _____

Other (describe) _____

15 What are the sources from which drinking water is obtained at home?

Piped Water supply _____

Hand Pump well _____

Open well _____

Rain water _____

Surface Water _____

Other (name) _____

_____

16 Name any serious diseases (including those requiring hospitalization) infant had in the past? _____

_____

17 What was the first sign that indicated to the parents (guardian) that the child had to be brought to hospital?

a. Diarrhea alone _____
b. Weakness (describe) _____
c. Fever _____
d. Vomiting _____
e. Decreased appetite _____
f. Other (describe) _____

PHYSICAL EXAM:

Radial Pulse	Respirations	Rectal Temp. _____
a. Quality	a. Quality	B. P. _____
b. Rate	b. Rate	

Admission Weight: _____ Height: _____ Stated Age: _____

Nutritional Status:
Obese/Normal/Thin/Malnourished

	Yes	No
Pallor	___	___
Cyanosis	___	___
Edema	___	___
Jaundice	___	___

Skin Turgor is	Normal	-	Poor
Eyes are	Normal	-	Sunken
Fingers are	Normal	-	Wrinkled
Tongue is	Moist	-	Dry
Fontanelle	Normal	-	Sunken
Dehydration	Absent		
	Minimal		
	Moderate		
	Severe		

Vaccination:
- DTP
- BCG
- Others (specify)
- OPV
- Measles

SYSTEMS EXAM: (Describe Pertinent Findings. Mark "NAD" or "O" where no abnormalities are detected. Systems and organs not examined are to be left blank.)

EYES

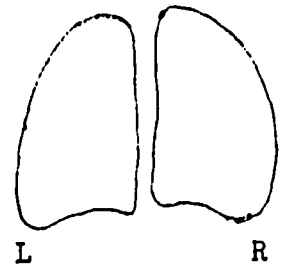
Cornea

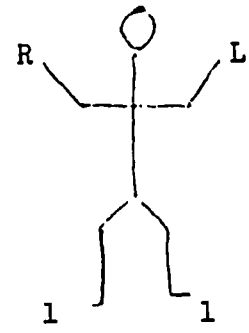
Pupils

Conjunctivae

Fundus

EARS	T.M's
Locomotor System	
(Bones, Joints & Muscles)	
GI	Abdomen
	Liver
	Spleen
	Bowel Sounds
CVS.	Location of Apex-Beat
	Sounds
RESP.	Chest
	Breath Sounds
	Rales
	Rhonchi
	Others
GU.	Kidneys
	Genitalia
NS.	Mental Status
	Cranial Nerves
	Motor Function
	Sensory Function





1 + Hypoactive
2 + Normal
3 + Hyperactive
4 + As N. 3 with clanus

DOCTOR'S NAME

AL BASHIR HOSPITAL

ORAL REHYDRATION TRAINING CENTER

TREATMENT FORM

Sheet # _____

CASE # _____

NAME _____

SEX _____

AGE _____

DATE AND TIME OF ARRIVAL (AM or PM) _____

DATE AND TIME OF DISCHARGE (AM OR PM) _____

DATE	BOTTLE Number	AMOUNT (CC)	TYPE of FLUID (ORS, water, milk)	TIME STARTED	TIME ENDED	VOMIT yes/no	Skin Elasticity (decreased/normal)	STOOL GRADE

CHECK:

_____ MOther given leaflets

_____ Mother instructed

_____ Mother given packets _____ Number

_____

DR'S/ NURSE's SIGNATURE

D-7

BEST AVAILABLE DOCUMENT

Al Bashir Hospital Oral Rehydration Center
Out-Patient Record

1. Case No. _____ Date _____ Time In _____ Time Out _____
2. Patient's Name _____ Age _____ Sex _____
3. Address _____
4. History and Complaints:

a. Diarrhea -

Onset _____
Duration _____ Days
Frequency _____
Grade of Stool _____

STOOL GRADING
GRADE I [illegible]
GRADE II [illegible]
GRADE III [illegible]
GRADE IV [illegible]
GRADE V [illegible]

b. Vomiting -

No. of times since onset _____ times

c. Fever _____ Yes _____ No

d. Cough _____ Yes _____ No

NUTRITION STATUS { _ NORMAL _ POOR _ MARASMIC

e. Other complaints (specify) _____

5. Previous Treatment -

a. I.V. Fluids _____ Yes _____ No
b. Antibiotics _____ Yes _____ No
c. Antidiarrhea _____ Yes _____ No
d. Antiemetics _____ Yes _____ No
e. _____ drops _____ tablets _____ capsules _____ folk med. _____ others

6. Examination -

Pulse - palpable? _____ Yes _____ No
- volume _____ Weak _____ Strong

Temperature _____

Dehydration -

- skin elasticity _____ Normal _____ Decreased
- eyes _____ Normal _____ Sunken
- fontanelles _____ Normal _____ Depressed
- mouth _____ Moist _____ Dry
- ENT _____
- chest/lungs _____
- abdomen _____
- CNS _____
- heart _____

7. Oral Therapy at OPD or Center

- Amount of ORS taken at OPD/ORC _____ cc.
- Length of stay at OPD _____.
- Instructions on ORT administration at home given? _____ Yes _____ No
- Appointment for follow-up at OPD/OR Center _____ (date)

8. ORS for Home Therapy:

No. of ORS packets given _____
Measuring bottle given _____ Yes _____ No
Instructions/Instruction sheets given _____ Yes _____ No
To whom instructions given to - mother _____
- father _____
- others _____

The following information were explained to the mother:
How to mix the solution _____ Yes _____ No
How much solution to give _____ Yes _____ No
Don't starve the baby _____ Yes _____ No
What to do when vomiting occurs _____ Yes _____ No
How to check skin, eyes, etc. for dehydration _____ Yes _____ No
That rehydration is more important than stopping diarrhea _____ Yes _____ No

In my opinion the mother understand the above instructions:

Very well _____
Poorly _____

_____
Name & Designation

Al Bashir Hospital Oral Rehydration Center

Patient Follow-up Record

1. Case No.____ Inpatient ____ OPD ____

2. Patient's name _____ Age ___ Sex ____

3 Date brought in for follow-up _____ Date told to bring baby back _____

4. Result of Oral Therapy at home:

   a. Oral Therapy continued at home? ____Yes ___no

   b. If Oral therapy was given at home,

   - for how many days? _____ days

   - was solution mixed correctly? ___Yes ___No

   - How many packets (ORS) did the baby take? ____

   c. If Oral Therapy was NOT given ay home, WHY?

   ____baby vomited

   ____baby refused to suck or drink

   ____Mother did not understand instructions

   ___other reasons (specify)

5. Did the baby have watery diarrhea in the home? ____Yes ____No

6. Was the skin elasticity normal or decreased? ___Normal ___Decreased

7. Was baby brought back to Emergency/ORT Center? ___Yes ___No

8. If brought back to Emergency/ORC, was I.V. given? ___Yes ___No;
   was baby admitted? ___ Yes ___No

9. What does the mother think of Oral Therapy as a treatment for diarhhea? _____

_____

By: _____

(Name/ designation)

D - 9

Al Bashir Hospital Oral Rehydration Center
Follow-up Appointment Card For
Discharged or OPD Cases

1. Case No. _____

2. Patient's Name _____ Age _____ Sex _____

3. Date Discharged _____ Or Date of OPD Visit

4. Appointment Date For Follow-up _____

D - 10

Al Bashir Hospital Oral Rehydration Center

Patient Follow-up Record

1. Case No.____ In-patient ___ OPD ___

2. Patient's name _____ Age ___ Sex ____

3. Date brought in for follow-up _____ Date told to bring baby back _____

4. Result of Oral Therapy at home:

   a. Oral Therapy continued at home? ____Yes ___no

   b. If Oral therapy was given at home,

   - for how many days? _____ days
   - was solution mixed correctly? ___Yes ___No
   - How many packets (ORS) did the baby take? ____

   c. If Oral Therapy was NOT given ay home, WHY?

   ____baby vomited

   ____baby refused to suck or drink

   ____Mother did not understand instructions

   ___other reasons (specify)

5. Did the baby have watery diarrhea in the home? ____Yes ____No

6. Was the skin elasticity normal or decreased? ___Normal ___Decreased

7. Was baby brought back to Emergency/ORT Center? ___Yes ___No

8. If brought back to Emergency/ORC, was I.V. given? ___Yes ___No;
   was baby admitted? ___ Yes ___No

9. What does the mother think of Oral Therapy as a treatment for diarhhea? ___

_____

By: _____

(Name/ designation)

Medical Cost Prior to Admission.

Name:---------- Case No.----------

Duration of Illness (Days):----------

How Many Doctors were seen: ----------

Other Non medical consultations ----------

COSTS: Doctors Fees:----------J.D.

Non medical Fees:----------J.D.

Injection of Drugs:----------J.D.

Injection of Drip solutions:----------J.D.

Syrups: ----------J.D.

Suppositories:----------J.D.

Drops:----------J.D.

Capsules:----------J.D.

Tablets:----------J.D.

Oral fluid solutions:----------J.D.

Home Remedies:----------J.D.

Total Costs ----------J.D.

BEST AVAILABLE DOCUMENT

DRAFT 9/15/80

PRELIMINARY REPORT ON FIRST PHASE OF ESTABLISHMENT PROJECT FOR AL BASHIR HOSPITAL REHYDRATION CENTER.

David R. Nalin, M.D., F.A.C.P., and Enriqueta Sullesta, R.N., M.P.H.

I. Background of Project:

In accordance with the directives of His Excellency the Minister of Health, Dr. Zuhair Malhas, it was decided to establish a Jordanian National Oral Therapy Training Center at Al Bashir Hospital as the nucleus of a Jordanian National Diarrheal Diseases Control Program. This Center is the first such National Oral Therapy Training Center to be established in the Near East/Eastern Mediterranean region. Dr. Nalin arrived August 30 from Lahore, Pakistan as a short-term consultant to organize the project together with Miss Sullesta, in collaboration with the Ministry of Health and with the Administration and the Department of Pediatrics of the AL BASHIR Hospital. Further background material is contained in the Consultant's Report for the preliminary visit and the Diarrheal Diseases Seminars in Jordan which were carried out two months earlier.

II. Schedule of Activities:

Activities were divided into the following phases:

August 30 - Sept. 2.

a. Meeting with Dr. Sami Khoury and Introduction by Dr. Abu Dahab, Chief of Pediatrics, Al Bashir Hospital, to His Excellency the Minister of Health Dr. Malhas, and to officials of Al Bashir Hospital and members of the hospital medical and nursing staff,

particularly Miss Haddad, Chief of Nursing in Pediatrics. Introduction to University Pediatricians. Review of Personnel, supply and equipment needs and physical plant requirements. Discussion of research and evaluation goals and design of protocols and data collection systems.

Sept. 1 - Sept. 3.

b. Assembly and/or procurement of supplies and equipment and space allocation at the Oral Therapy Center Ward at Al Bashir Hospital, Department of Pediatrics. Development of text and proposed illustrations for leaflet of instructions to mothers on oral rehydration therapy and post-diarrheal menu, in collaboration with Dr. Subehi, Dr. Abu Dahab, Dr. Abdul Rahim, Dr. Saleh, and others. Assignment of physician and nursing staff work schedule with Miss Haddad, Chief of Nursing Pediatric Section.

Sept. 2 - 4.

c. Lectures and demonstrations for the pediatrics medical and nursing staffs, including Arabic summary and review by Dr. Nalin and Dr. Abdul Rahim. Meeting with His Excellency the Minister of Health at the Health Ministry and visit by His Excellency to the Oral Therapy Center at Al Bashir. Planning and initiation of scientific evaluation of oral therapy efficiency by comparison of two different oral solutions (Unicef's Oralyte with or without glycine).

Sept. 5 - 6. Practical pilot demonstrations of oral therapy methodology on Oral Therapy Center Ward.

Sept. 6 - 10.

e. On-the-job practical training of medical and nursing staff and nursing students in management of moderately severely dehydrated (5-10% loss of body weight) infants with acute watery diarrhea. Fifteen infants admitted during this phase, representing all infants arriving at Al Bashir with significant dehydration during this period. Arrival of Dr. Tawab and Dr. Asifa, Pediatricians from King Edward Medical College, Lahore, Pakistan, as observer/participants to assist Dr. Nalin. Visit of television reporters to Al Bashir Oral Therapy Center and presentation of Arabic and English Language coverage that night on Amman TV.

Sept. 10 - 14.

f. Continuation of scientific project and addition of other trainees, including pediatrics residents from University Hospital, additional nursing students, etc. Plan developed for three-week Oral Therapy Center Traineeship for doctors, nurses, midwives and other paramedicals from all parts of the country.

Sept. 13 - 15.

g. Addition of second Outpatient Unit in separate room of Oral Therapy Center adjacent to In-patient ward. Development of teaching procedures for staff and instructions on how to teach mothers. Development of evaluation forms for Outpatient program. Development of teaching curriculum outline for

training of 3-week trainees from all parts of the country in collaboration with Dr. Abdul Rahim. (APPENDIX A).

Sept. 15.

h. Lecture to staff and residents of Pediatrics Department, University of Jordan, on diarrheal pathophysiology and therapy, including method of oral rehydration. Total of 27 infants with moderately severe dehydration admitted to date, of which only one received any I.V. (a premature baby with coexisting septicemia). Review of all Al Bashir patient charts for 4 months preceding the project (charts collected based on Dr. Abu Dahab's records and analysis supervised by Dr. Tawab).

FINDINGS

1. Level of Staff Cooperation and Results of Oral Rehydration Therapy. The level of cooperation by Ministry officials and the Al Bashir staff was superb, and the consultants wish to express their compliments to the staff on their degree of interest and their excellent adaptation of the methods taught in the practical aspects of oral rehydration. This keen interest was reflected by the fact that whereas during the four months preceding the project 100% of 160 infants who were admitted for dehydration due to acute water diarrhea received intravenous therapy, only 1 of 27 infants admitted to the project ward who were begun on oral therapy required any I.V. fluids (4%), a reduction in intravenous fluid utilization of 96% ! The staff was also very helpful in assisting in the teaching functions

of the center, particularly in informal ward demonstrations for visitors and students.

In addition to the success of oral rehydration as a method, the cooperation of mothers and the instruction of mothers in oral rehydration and nutritional rehabilitation was amply demonstrated, and mothers took an active part in the therapy of a high percentage of infants.

2.Teaching.

The medical and nursing staff were taught scientific methods of therapy and methods of evaluating therapy, using intake and output technique, monitoring plasma proteins by bedside refractometry and hematocrits, stool grades, blood electrolytes, etc.

They in turn participated in explaining procedures to students and visitors and guest participants, who included:

His Excellency Dr. Zuheir Malhas, Minister of Health and Mrs. Malhas
Dr. Razzak Rajdan, Undersecretary, Ministry of Health
Dr. Suleiman Subehi. Chief, Preventive Medicine, MOH
Dr. Muftafa Shunnak, Chief, Internal Medicine, Al Bashir
Dr. Md. Khatib, Dep't of Internal Medicine, Al Bashir
Dr. Saleh King, Senior Pediatrician, Al Bashir
Mr. Jack Thomas, USAID Program Officer
Dr. James Thurman, USAID
Dr. Saleh Shajrawi, Pediatrician, Man.
Dr. Najwa Khoury-Bulos, Dep't.of Pediatrics, Univ.Hospital
Dr. Akram Hilaly, Chief of Labs, Al Bashir
and many others.

The procedures demonstrated and put into practice by the trainees included:

accurate weighing of infants
collection of diarrhea and vomitus quantitatively
12 hr urine collections (males)
methodology of oral rehydration and maintenance therapy (including evaluation of extent of dehydration, mode of administering the solution, monitoring clinical improvement

how to instruct mothers in oral therapy, what to do about vomiting, when to begin milk, and other relevant practical subjects.

intake and output and balance calculations.
management of complications
outpatient oral therapy.
methods of data collection and recording
data analysis
guide to literature references
adaptation of oral therapy to routine ward procedures

3.Results of Scientific Study.

At this time the results are preliminary, as analysis is still under way and data on only 27 of the proposed 60 cases are as yet available. Thus a definitive statement of results would be premature. However the preliminary data will be discussed at a seminar at Al Bashir on the 18th Sept. At this point in time, the following remarks can be made:

a.Both solutions tested, with or without glycine are highly effective. Their compositions are given in Table I.

Table I : Compositions of Oral Solutions (g/l)

	A	B
Glucose	20.0	20.0
Glycine	8.2	0
NaCl	3.5	3.5
$NaHCO_3$	2.5	2.5
KCl	1.5	1.5

b.One of the two solutions does appear to be associated with more rapid rehydration during the critical first 6 hours' rehydration period; however, further data are needed to confirm this finding and subject it to statistical analysis.

4.Problems

The single largest problem encountered was an extremely high prevalence of grave malnutrition, chiefly marasmus of Gomez' grade 2 or 3; the remaining infants were nearly all malnourished,although of milder (Gomez I) form; few infants were eutrophic.

The close relationship of diarrhea to malnutrition, both

as cause and effect, and the high prevalence of malnutrition in severe form among the infants presenting with diarrhea at Al Bashir, make it an objective of the highest priority to establish close coordination between the acute rehydration program and post-rehydration nutritional rehabilitation. Therefore the following recommendations are made to facilitate such coordination and to provide comprehensive therapy, i.e. rehydration followed by nutritional rehabilitation for the typical diarrhea patient seen at Al Bashir. Such rehabilitation, carried out at a proposed nutritional unit of the Oral Therapy Center, should be regarded as perhaps the most important remaining step in the control of diarrheal disease and its aftermath in Jordan. If malnutrition if ignored or inadequately dealt with, we can expect that these children will be readmitted repeatedly with multiple diarrheal episodes and numerous other grave infections arising from their poor nutritional state and heightened susceptibility to disease. This subject is discussed in more detail in APPENDIX B. On the other hand, by correcting malnutrition we can expect significant progress in the control and prevention of subsequent attacks, by restoring normal thymus function and normal stomach acid barrier to bacterial penetration into the intestines, both of which are defective in malnourished children.

RECOMMENDATION FOR NUTRITIONAL REHABILITATION UNIT OF ORAL THERAPY CENTER AT AL BASHIR HOSPITAL.

The present Oral Rehydration Center consists of an inpatient (intensive) unit for moderate and severely ill cases and a separate outpatient and convalescent unit for mild cases.

IT IS RECOMMENDED that a third room be added to function as a Postrehydration Nutritional Rehabilitation Unit of the Center, supervised by

a nurse and a physician, both with nutritional training and experience in the management of malnutrition.

The purpose of this unit would be therapeutic nutritional intervention to correct clinical malnutrition, on an inpatient basis for grades 2 and 3 (Gomez) and on an outpatient basis for Grade I.

The unit should also eventually include a mobile field component for household visits, including a driver, vehicle and a nutritionally trained public health nurse to provide adequate followup when necessary.

Specific goals would include:

a. Use of high-caloric vitamin and mineral supplemented special formula feeds to correct protein-calorie malnutrition.

2. Development of comprehensive regimen, including immunologic and infectious disease control measures to combat secondary infections in malnourished children.

3. Survey of home environments to determine educational needs, socioeconomic factors, dietary and psychological factors and susceptibility, causative and risk factors relevant to malnutrition, and to develop appropriate preventive intervention strategies.

5. Current and Future Plans and recommendations for Center Operations.

1. The major goal of the Oral Rehydration Center is training in modern methods of control of Diarrheal Diseases, with emphasis on elimination of deaths due to diarrhea. To this end, His Excellency the Minister of Health has requested that a list of candidate institutions be drafted from which candidates can be selected for training at the Al Bashir Center from all parts of Jordan (as well as regional friendly countries) The trainees would enroll in a three-week course at the Al Bashir Center, in order to learn how to set up Oral Rehydration Therapy Centers at all existing health facilities. APPENDIX C lists the summary of the curriculum of the course, with a strong emphasis on acquiring practical skills and adequately wide experience under supervision in the field of the clinical management of moderate and mild dehydration (5-10% and 0-5%) , and outpatient management methods for milder cases. The geographic scope of the program, expected to last about 6 months, is also given in the Appendix.

6. Expected Results.

a. It is expected that the quality of medical management of dehydration secondary to acute watery infantile diarrheas in Jordan will markedly improve during the coming year wherever treatment facilities with Oral Rehydration Center Trainees exist.

b. Oral Rehydration Salts Packets supplied by Unicef are to be distributed to all health facilities with priority to those staffed by Al Bashir Trainee "Alumni"

c. It is also expected that the level of oral rehydration and maintenance skills in the maternal repertoire of mothers who participate in Center programs will increase in all areas where Oral Rehydration Centers are established. This should as in other areas result in decreased hospital visits, decreased hospitalizations and dec reased costs and time expenditure by medical and nursing personnel related to diarrheal diseases. These results should be evident within a 1-2 year period, and can be quantitated by comparitive sequential review of hospital charts and evaluation records of the Training Center and satellite Centers.

d. Case-fatality rates and mortality from diarrheal diseases should decline significantly over a 1-2 yr period if the program is completed as planned; however maximal impact will require the addition of nutritional rehabilitation as a basic function of the Center.

7. Additional recommendations: Supervision of Training and Care at Center.

a. Need for full-time coordinator/supervisor for the first six months activities, during the intensive training period.

During the period of training of national staff there is a need for 24-hr day and night coverage and spot-checking by regular rounds to provide the minimum of necessary supervision of the teaching program and the quality of therapy and case management. It is expremely important that, as visualized in the previous project plan, one individual should be assigned the responsibility of supervision, particularly of the afternoon and late-night shifts. This individual must make regular appearances on the ward to check activities at night, and must be available on call whenever needed. He or she should be free of other major responsibilities (e.g. university clinical duty, teaching or private practice which might conflict with availability).

b. Daily administration of the Center.

The daily administration of the Center, including its treatment, teaching and other programs, are under the supervision of Dr. Abu Dahab, Chief of Pediatrics, and Dr. Abdur Rahim, Senior Pediatrician, Al Bashir Hospital. Mrs. Haddad, Chief of Pediatric Nursing, Al Bashir, is in charge of Center Nursing schedules and nursing supervision.

10.

It is recommended that Mrs. Haddad assign one responsible nurse or admins trative officer to spot-check Center activities in coordination with medical staff, particularly at night when case management needs as much attention as during the more heavily manned day shifts.

c. It is recommended that a library of standard reference papers dealing with oral therapy, nutrition and diarrhea be formed at the Cent

8. Participating Staff. See APPENDIX D.

9. Copy of instructions to mothers in Arabic (edited version with illustrations to be available soon from Dr. Subehi. APPENDIX E.

10. Samples of data collection forms employed for outpatient evaluation. APPENDIX F.

D: 22

APPENDIX A: TRAINEES CURRICULUM OUTLINE FOR NATIONAL TRAINING PROGRAM, INCLUDING LEVELS AND GEOGRAPHIC ORIGIN. FOR PERIOD Oct.-April, 1980-81.

1.Period of each traineeship: THREE WEEKS.

2.Schedule of activities:

a.Arrival and registration.

b.Introductory lecture:

General scope and impact of problem of diarrheal diseases, including morbidity and mortality, relationship to malnutrition, costs to society and to the government and families.

Epidemiologic aspects: the diarrhea "iceberg"

Recent advances in etiologic and pathophysiologic studies
-new etiologic agents; virulence factors; mechanism of diarrheagenesis; principles of therapy.
Rationale and methods of therapy
Method of oral rehydration
Post-diarrheal menu and nutritional rehabilitation.

Role of other therapies (antibiotics, antidiarrheals, etc.)

LUNCH

c.Afternoon lecture:

Details of oral rehydration method (on WARD: LECTURE AND DEMONSTRATION).

Assessment of % dehydration
Administration of fluid, including composition, mixing, rate, 2:1 regimen, warming, importance of gastric dilatation, vomiting control, checking skin and eyes, when to give milk, stool grading and its significance, special tricks of the trade.

d.Day 2. Demonstration/lecture.

Inpatient vs outpatient oral therapy.
Role of mother; how to interact with mother; what to teach mother; post-diarrheal nutritional needs.

e.Day 3 Demonstration/lecture: How to evaluate new programs
Techniques of data collection; forms; types of data; data evaluation; followup results.

f.WEEKLY SCHEDULE OF ACTIVITIES, INCLUDING WARD PRACTICE

WEEKLY SCHEDULE OF ACTIVITIES

FIRST WEEK

	FRIDAY	S	SU	M	T	W	TH
MORNING	XXXXXXXXXXX	Regis Lect.	Ward QA	ASSIGNMENT IN ROTATION TO SPECIAL ~~ACTIVITIES ON WARD~~			
		L	U	N	C	H	
AFTERNOON	XXXXXXXXXXX	Lect. Demo. Sem.	Ward QA	WARD PRACTICE & PARTICIPATION			XXXX

Abbreviations.

Regis.=registration
Lect.=lecture
Demo.=demonstration
Sem.=seminar
Ward.=ward participatio
QA=question/answer sess

	FRIDAY	S	SU	M	T	W	TH
MORNING	XXXXXXXXXX	OPD PRACTICE AND PARTICIPATION UNDER SUPERVISION					
		L	U	N	C	H	
AFTERNOON	XXXXXXXXXX	opd PRACTICE AND PARTICPATION UNDER SUPERVISION					XXXXX

	FRIDAY	S	SU	M	T	W	TH
MORNING	XXXXXXXXXXX	ELECTIVE ASSIGNMENT TO WARD OR OPD: CONTINUED CASE MANAGEMENT UNDER SUPERVISION					
		L	U	N	C	H	
AFTERNOON	XXXXXXXXXXX	ELECIVE ASSIGMENT TO STUDY AND EVALUATION SPECIAL PROJECTS.					XXXXX

3.Special seminar (second week): how to teach oral therapy to other health workers.

GEOGRAPHIC ORIGIN AND LEVEL OF TRAINEES.

1.Level . Trainees shall include doctors, nurses, practical nurses, ~~nursing~~ and midwifery students. Paramedicals when available.

2.Geographic distribution. The following areas are suggested for traineeships:

a. AMMAN (Ashrafiya staff, UNWRA, University Hospital, Army, MCH Clinics, Midwives, Nursing School and Medical School personnel and students.

b.Irbid (hospital and MCH staff).

c.Zerka (Hospital and MCH staff).

d. Salt (Hospital Staff).

e.Kerak "

f.Tafileh "

g.Man "

h.Ramtha "

i. Jerash "

k.Mafah "

l. Aqaba (Military Hospital).

3.Number of trainees per unit period: TWO DOCTORS AND FOUR NURSES or equivalent numbers of other levels.

APPENDIX D. PARTICIPATING STAFF.

Physicians: Dr. Abu Dahab, Chief of Pediatrics.

1. Dr. Abdel Rahim Jalal, Senior Pediatrician, Al Bashir and Acting Director, Pediatrics.
2. Dr. Najwa Khoury, Pediatrician, University Hospital
3. Dr. Auuini Hamdan, Pediatrics Resident, Al Bashir
4. Dr. Kamal Gharaibeh, Pediatrics Resident, Al Bashir
5. Dr. Mohammad Hussein, Pediatrics Resident, University Hospital.
6. Dr. Salwa Bitar, Pediatrics Resident, University Hospital.
7. Dr. Abdul Tawwab Khan, Pediatrician, King Edward Medical College, Lahore.
8. Dr. Asifa Murtaza Syed, Pediatrician, King Edward Medical College, Lahore.

Nurses

1. Mrs. Haddad, Chief Nursing Supervisor, Pediatrics
2. Afaf Salayta, Staff Nurse
3. Frocina Haddadan
4. Noha
5. Magdaline Yosef, Practical Nurse
6. Reem Abo Dahah, Practical Nurse
7. Mariam Remowi, student nurse.
8. Diab Yosef, student nurse
9. Faiez Katrawi, student nurse
10. Fatmeh Zubi, student nurse.

and others.

APPENDIX C

LEVEL	DEMONSTRATIONS	LECTURES	FILM	WARD PARTICIPATION	FIELD	Q/A	MODELS
COMMUNITY HEALTH WORKER PARAMEDICAL LHV	1.Practical steps in maintaining hydration and in rehydration. How to teach proper mixing of ORS fluids; Use of measuring vessels and modes of administering fluids to infants. Assessing hydration status. How much to give. 2.When to refer; identifying emergencies. Management of vomiting; role of I.V.'s. Stool grading system. 3.Access to system. Packet supply; integration with other services; ordering and stockpiling; distribution.	Causes of diarrhea; effects of diarrhea; reducing diarrhea; environmental control; oral therapy vs I.V.'s. Treatment of diarrhea; Emphasis: dehydration signs; 2:1 regimen; endpoints of rehydration; milk switch; monitoring progress; referrals; nutrition. How to integrate with other health services and how to raise community awareness (emphasize mechanics).	Cholera; local ORS film Slide show	Three days participation in case management (or extend to 7 days if appropriate in particular cases). Under staff supervision.	Enrollment in field activities and outreach programs in locality. Packet supply Educational materials supply Record keeping.(forms) Packet demand and distribution rates Failure rates	Daily in p.m. and ad lib	NA

BEST AVAILABLE DOCUMENT

LEVEL	DEMONSTRATIONS	LECTURES	FILM	WARD PARTICIPATION	FIELD	Q/A	MODELS
MOTHER and COMMUNITY VOLUNTEER	1. (With Physician and Ayah or Child Health Worker): How to examine infants' eyes and skin, etc., for signs of hydration/dehydration. How to replace fluid losses: How much ORS to give; need for extra water; frequency of administration. Vomiting mgmt. 2. When to switch to breast milk (or formula if previously weaned) or other foods; need for continued nutriture; role of K+rich foods What to feed infant in convalescence and afterward. 3. Measuring and mixing ORS: water, container, volumes, packets; alternatives to packets; (AYAH). Delivering fluid via bottle with nib vs cup and spoon. How to check progress of ORT; when to seek hospitalization.	1. Cause of diarrhea; hygiene and health; breast milk; weaning foods; food preparation; body cleanliness; household cleanliness; dirt, nibs, hookworm, feces and interrelationships. (NURSE, PHYSICIAN) 2. Enrollment in followup and well-baby clinics; info on EPI programs in community; info dissemination on available community health resources; creating felt need and demand; importance of rapid treatment for common childhood diseases, including diarrhea and otitis, worms, eye infections, eye injuries and skin care. Soap. (OUTREACH SPECIALIST).	FILM on diarrhea treatment (local language) SLIDE SHOW during clinic waiting periods	Will be accomodated and facilitated on ward or in OPD for period of rehydration of infant, depending on duration of need for therapy, etc., and will carry out rehydration working together with ayas, CHW and other personnel under supervision of NURSE and Physician. Focus: ORS rate; monitoring hydration; vomiting; when to given milk.	Household followup; Link with household packet supply Management of 2° episodes. Information diffussion 2° demand generation (histories)	ad lib plus after initial therapy also: during followup clinic in group	NA

BEST AVAILABLE DOCUMENT

LEVEL	DEMONSTRATIONS	LECTURES	FILMS	WARD PARTICIPATION	FIELD	Q/A	MODELS
NURSE-AUXILIARY AYAH NURSE'S AIDE CHILD HEALTH WKR	1.How to evaluate the clinical state of patients on admission. Need for rapid therapy. "Problem babies" and their management. Vomiting and how to control it. "Poor takers", complicated cases, modes of ORS administration. 2.Recording intake and output; significance of stool grading system; monitoring of changes in patients' condition; when to begin milk and other foods; when to repeat oral therapy regimen. 3.Relating to mothers; rapport; ensuring effective communication; helping mothers to learn and participate in therapy; teaching ORS mixing; adapting ORS to home setting; anticipating mothers' problems; how to teach mixing of ORS; teaching difference between diarrhea and dehydration; teaching endpoints of ORS therapy; nutrition education inputs; breast milk; weaning foods; K+sources. 4.Mechanics of registering patients; scheduling followup visits; bringing patients and mothers into the existing health structure more effectively; access to health resources.	1.Basics of therapy: physiologic, pathologic; therapeutic principles; ORS vs IV; practical steps reviewed; 2.Mothers' psychology and folk beliefs; attitudes towards diarrheal diseases and towards health services. Effective and ineffective teaching techniques. What to emphasize; importance of followup.	Cholera Today Slide show	Four weeks of case management on regular shift schedule under supervision of ward staff and physicians.	1 field visit	Daily hr 1st 5 days; ad lib; also once/wk 1 hr	-NA

5.12A

LEVEL.	DEMONSTRATIONS	LECTURES.	FILM	WARD PARTICIPATION	FIELD	Q/A	MODELS
ASS'T NURSE NURSE NURSE SUPERVISOR	1.Practical ORS methods. Steps from dehydration to rehydration; enlisting mothers' in process. 2.Following course of patients; followup visits and how to manage them. Ward vs OPD settings for ORS. Setting up ORS in OPD. Monitoring outputs; record-keeping; 3.Maternal/staff communication and other interactions; facilitating effective and satisfactory learning experiences on ward and in OPD. PR and information diffusion. Reeducation of mothers and of trainees .	1.Diarrhea:etiology, epidemiology; pathophysiology and therapeutic principles. 2.Practical aspects of therapy. 3.Management aspects of therapy and recording on ward vs OPD. 4.How to demonstrate and teach constructive approaches to problem solving.	Cholera Today Slide show	1.5-7 days ward participation tandem to supervisor in charge of ward.	1 visit	Daily PM 1 hr and ad lib	Discussion group on setting up ORS wards and OPD um

D-29

LEVEL	DEMONSTRATIONS	LECTURES	FILMS	WARD PARTICIPATION	FIELD	Q/A	MODELS
PHYSICIANS	1.Practical steps of ORT. ORT vs IVT. Clinical signs and symptoms; significance of stool grading; rate of therapy;monitoring patients; enlisting proper assistance of mothers and ward personnel; combining instruction with therapy. Analysis of manpower needs and man/hours of work with ORS and IV. Costs. Ward work load. Followup 2. Aspects of supervision of therapy. Records, followup and monitoring. Facilitating effective communication and information-dissemination. Reeducation approaches. Ward administration. Teaching techniques.	1.Diarrhea:etiologic agents, pathophysiologic mechanisms; epidemiologic significance and modes of spread; control measures. 2.Therapy:basis, techniques, practical steps. Oral therapy and its role. Technical details of ORT. 3.Complications of diseases and therapy. Management problems. Results of therapy and how to monitor them in individual cases and from epidemiologic viewpoint. 4.Ward management: correct and incorrect.	Cholera Today Slide show ORS film	2½ weeks minimum (prefer 3) direct responsibility for and participation in ward management of clinical cases under supervision of staff and physician -in -charge. Regular shift basis. Should have treated at least 20 cases with 5+% dehydration before certificate issued.	OPD duty for followup 3 days. 1 field visit 1 mothercraft session	Daily PM and ad lib	How to set up ORT unit Physical plant; Staff; Supplies; Equipment; Community Relations.

D-30

LEVEL	DEMONSTRATIONS	LECTURES	FILM	WARD PARTICIPATION	FIELD	Q/A	MODELS
HOSPITAL OR HEALTH ADMINISTRATOR OR SUPERVISOR	1.Practical ORS on a ORT ward. 2.How to organize demonstrations:time,staff, audience; patients; supplies 3.How to set up ORT wards:staff, material , involving mothers; physical plant; lab support, role of diagnosis; records and retrieval; manuals. 4.Keeping up with new developments. Evaluating and improving therapy and quality of care. Role in reducing diarrheal disease and hospitalization loads. Importance for economy and workload.	1.Diarrhea:etiologic agents pathophysiology epidemiology; control. 2.Therapy:principles and practical methodology. 3.Agents of change; teaching, demonstration; resistance to change. Need to change;How to change. 4.Administrative aspects of program development: implementation and maintenance of programs. Field services. 5.Existing practices vs. alternatives; public health and economic viewpoints. Patient-care viewpoint (nosocomial infections; case-fatality rates,etc.) 6.Record keeping and program evaluation and reporting. 7.Keeping up with new development.s	Cholera Today ORS film Slide show	Four visits, one hr each, with 4hr followup each.	Two visits OPD:3 visits	Daily PM	Workshop: Implementation Targets Needs Training Supplies Manpower

Appendix E

PROPOSED PROTOCOL:
COMPARISON OF GLUCOSE VS GLUCOSE PLUS GLYCINE
IN THE ORAL REHYDRATION SOLUTIONS
FOR THERAPY OF INFANT DIARRHEAS

PROPOSED PROTOCOL

Comparison of glucose vs glucose plus glycine

in oral rehydration solutions for therapy of infant diarrheas

BEST AVAILABLE DOCUMENT

INTRODUCTION

The abnormal losses of body water and electrolytes in diarrheal stools can lead to dehydration in infants, followed by renal shutdown, acidosis, shock and death. Intravenous replacement of fluid and electrolyte losses is highly effective and is often a life-saving form of therapy. However, intravenous fluids are expensive and require fixed facilities and highly trained personnel.

In 1968 it was discovered at the Cholera Research Laboratory in Dacca that if cholera patients drank a solution containing 2% glucose and electrolytes, the requirements for intravenous fluids could be reduced by 80%, even in severe cases.[1-5] Mild cases could be treated with oral therapy alone. This therapy was based on earlier observations that glucose, potassium and bicarbonate were normally absorbed even during cholera or other diarrhea, provided that glucose was present.[6-7] Additional studies have demonstrated that glycine, which enhances Na^+ transport by a mechanism different from that of glucose, is also absorbed during diarrhea, and glycine and glucose are more effective than glucose alone in oral therapy solutions for adults.[8-9]

The W.H.O. glucose-electrolytes formula used in adults and children with cholera contains: (g/l) glucose, 20; NaCl, 3.5; $NaHCO_3$, 2.5, KCL, 1.5. In mEq/l, this represents: 90 (Na), 20 (K), 80 (Cl) and 30 (HCO_3) with 110 mmol/l. glucose. This glucose formula has been proposed to serve as a rehydration formula for all ages and all etiologies of diarrhea,[10-11] and two recent studies conducted under WHO auspices in Costa Rica[11] revealed that a regimen of two parts of this formula followed by one part free water, given orally, is a satisfactory form of therapy for infants with a variety of bacterial diarrheas or with

rotavirus diarrhea. However, the glucose plus glycine solution has not been tested in infants, who represent a group at great risk of diarrheal dehydration. A demonstration of a glycine-linked reduction in rehydration time, increase in absorption and decrease in diarrhea duration in infants would potentially facilitate the extension of oral therapy to rural treatment centers, where available personnel are limited and time for treatment of each patient must be economically utilized. Therefore, we propose to compare, in a controlled, double-blind manner, the absorptive efficiency of glucose-electrolyte solutions with and without glycine.

SPECIFIC AIMS OF THIS STUDY

1. To determine the efficiency of glucose vs glucose + glycine formulas for oral rehydration of infants with 5 - 10% dehydration due to acute watery diarrhea, by measuring rate of weight gain and improvement in plasma specific gravity and electrolyte abnormalities in such infants receiving either of the two formulas.

2. To compare the rates of absorption of the two solutions and their component electrolytes by careful balance technique.

3. To compare duration of diarrhea and of therapy associated with each solution.

STUDY FACILITIES

The study site and facilities will include access to hospital wards where dehydrated infants with acute watery diarrhea are admitted for rehydration. The treatment facility should have adequate laboratory facilities available for measurement of stool, blood and urine electrolytes (Na^+, K^+, Cl^-, HCO_3^-) and glucose, urea and specific gravity. This should include hematocrit, micro-centrifuge, accurate pediatric scales, routine lab centrifuge, access to freezer space, etc. Personnel should have an active interest in the participation of

PMRC and WHO in such studies. Nursing and auxiliary personnel should be available, 24 hours a day, during the period of the study (1-2 months, estimated). Diagnostic facilities or a system for transfer of specimens to a diagnostic laboratory should be available. Supplies and equipment required, including test tubes, pipettes, reagents for preserving specimens, disposable diapers, etc., will be provided for in the specific budget for this joint grant request, to be submitted to the funding agency.

STUDY SUBJECTS

Infants and toddlers from 2-15 months of age with dehydration due to acute watery diarrhea, who have no major complicating disorders (such as pneumonia, convulsions, etc.), will be eligible for admission to the study. Only children with clinical signs of dehydration will be included. All aspects of the study will be explained to the parent and written and informed consent will be obtained prior to admission of the infant to the study ward. Infants in shock (no perceptible radial pulse or barely perceptible pulse) will receive immediate routine intravenous rehydration and will not be study candidates.

METHODS AND STUDY DESIGN

I. Baseline procedures

Upon admission, the following will be obtained:

a) Body weight (without clothing).

b) Brief clinical history (see appended form A).

c) Rapid screening physical examination to assess the degree of dehydration and to rule out complications such as pneumonia, meningitis, etc.

d) Randomized assignment to "glucose" or "glucose + glycine" oral therapy groups.

e) Clinical specimens.

II. Clinical assessment

Dehydration will be defined and graded as follows:

a) Mild dehydration ($\leq 5\%$): Dry muco membranes and history of acute diarrhea; may have slight decrease in skin turgor.

b) Moderate dehydration (6-9%): Moderate loss of skin turgor, slightly sunken fontanelle, slightly sunken eyes, rapid but palpable pulse, no signs of shock.

c) Severe dehydration ($\geq 10\%$): Deeply sunken eyes and fontanelle, radial pulse imperceptible or very weak and thready; marked diminution in skin turgor. IV required.

(Infants with moderate dehydration - Group b - will be selected for the oral therapy study.)

III. Initial therapy

1. Oral therapy composition. Both oral solutions (GES) will be constituted with potable (boiled and cooled) drinking water and will contain (in mmol/l): glucose, 110, K^+, 20; HCO_3^-, 30; and Na^+ of 90 (Cl^- = 80). The solution with added glycine will in addition contain 110 mmol/l glycine.

Assignment to either group will be by random choice of numbers on tickets within a box. Of 60 tickets, half will indicate the code for glucose formula and half the glucose + glycine formula. The formulas will be prepared in the pharmacy and colored with two distinct acceptable (F.D.A. approved) vegetable colorants to distinguish them. Ingredients will be prepared as a 10x concentrated syrup; final concentration will be achieved by diluting 10 fold with boiled drinking water. If patient admission rates are not very high, the diluted, ready-to-use solution can be stored in a ward refrigerator.

Before giving the solution to children in baby bottles (240 cc size preferred), the solution should be warmed to 37°C as is done with milk formulas. A bottle warmer is therefore needed. Mothers will be taught how to help with oral therapy.

2. Administration of oral GES: volume and rate of therapy. Therapy with both oral solutions will be the same and will commence immediately following collection of baseline specimens. The body fluid deficit (% dehydration) will be estimated based on the clinical assessment at the time of initiation of oral therapy. For example, an infant of 10 kg weight with 6% deyhdration has a total fluid deficit of 600 ml.

During the first 6 hours of oral therapy, TWICE the estimated initial deficity will be given as oral rehydration solution followed by plain water (2:1 regimen) BOTH GROUPS will receive twice the estimated initial deficity as oral therapy plus water (2:1) alone. For example, a 10 kg infant with 6% dehydration would receive 1.2L. total fluid by mouth during the first six hours, of which 0.3L. would be ORS and 0.4L plain water.

In practice, most 3-15 m. old infants will receive initially two bottles containing 240 ml each of oral solution, followed by one 240 ml bottle of plain water during a 3 hr. period. This 2:1 regimen will be repeated until signs of dehydration are gone and skin elasticity is normal.

When after beginning treatment, hydration appears normal and skin elasticity becomes normal, the child will be given 1/2 strength milk formula (13 cal/oz); 8 oz q.4-6h) and the oral solution will be stopped. After milk formula is

resumed, the child will receive additional oral therapy according to the above regimen ONLY if diarrhea of sufficient volume continues and again leads to diminished skin elasticity. If oral therapy is resumed, it will continue until skin turgor and other physical signs are again normal. Then milk will be resumed.

To preserve the double-blind character of the study, vegetable colorants will be used, and an individual not directly participating in the clinical phase will supervise coloration. Samples of all ORS lots will be labelled with

lot, color, hour and date, and will be frozen for future analysis.

The color scheme will be as follows:

Solution A: Red Solution B: Green

IV. Evaluation of therapy

On completion of 6 and 24 hours of oral therapy, the succes of rehydration will be measured by the following:

a) Precise weight of infant (no clothes; same observer, double weighings).

b) Clinical assessment of the state of hydration, and balance calculations.

c) Collection of blood for measurement of Na^+, K^+, Cl^-, HCO_3^-, urea, plasma proteins and hematocrit.

For balance calculations, diapers will be weighed to establish total fecal loss and fecal samples will be collected every 3 hours for 24 hours by soft rectal catheter and frozen in sealed polyprophylene tubes for later analysis of stool Na^+, K^+ and Cl^-. No antibiotics will be given except if a specific indication exists.

V. Duration of study

It is estimated that most infants will be involved in intensive therapy and clinical study as described above for approximately 24-36 hours. The time of the termination of diarrhea will be recorded. When diarrheal purging stops, infants will be moved to another area for convalescence, under routine care of hospital personnel, or will be discharged, as appropriate. A stool grading system will be used to monitor the end of diarrhea (Table 1).

VI. Clinical and laboratory techniques

a) Stool specimens. Diarrheal fluid will be obtained by inserting a soft sterile disposable catheter per rectum and fluid will be processed as follows: Electrolyte analyses will be carried out on fecal supernates stored frozen and sealed with Paraffilm in chemically clean disposable

plastic test tubes after centrifugation; actual analyses will be done later from frozen supernates of these specimens, for Na, K and Cl.

b) Urine output. In males, plastic pediatric urine collectors will be used to collect urine and keep it from wetting diapers. Urine during each 12 hour period of the first study day following admission will be saved separately in appropriate sealed plastic bags in one container; the 12 hour volumes will be carefully weighed, and a 10 cc aliquot will be saved frozen in a chemically clean plastic tube for later analysis (Na^+ and K^+).

VII. Number of study patients

It is expected that a total of 60 infants with 5-10% dehydration due to acute diarrhea, thirty each treated with the glucose or glucose plus glycine solutions, will suffice.

VIII. Risks

None of the procedures outlined will out the infants at risk beyond that of routine treatment for their dehydration. Throughout the clinical studies, infants will be closely monitored by clinical and biochemical parameters. Any infant found to develop increased dehydration despite oral therapy, will be given intravenous therapy. Approximately 1-2% bf infants treated with GES may have intolerance to glucose and may not absorb the solution and thus require intravenous fluids. Use of the soft catheter for stool specimen collection and of venepuncture for blood specimens, are standard procedures without undue risk. Experience in Costa Rica, Jamaica and elsewhere, indicated that these procedures were associated with an occasional hematoma which resolved, but caused no serious ontoward effects.

IX. Benefits

The oral therapy method is far less traumatic for infants with diarrhea

than the usual alternative of multiple intravenous needle punctures with attendant hematomas, infiltrations and small risk of infection. The psychological benefits of the decrease in trauma have not been evaluated but would appear to be substantial.

Infants will also receive the benefit of meticulous close supervision of their therapy during the acute phase of the disease. The relative advantages and disadvantages of the solutions with and without glycine will be compared and will yield information essential to national health policy planners in developing countries, who need to know the optimal oral therapy formula.

REFERENCES

1. Nalin, D.R., Cash, R.A., Islam, R., Molla, M., Phillips, R.S. Lancet, 1968. ii:370.

2. Cash, R.A., Nalin, D.R., Rochat, R., Reller, B., Haque, Z., Rahman, M. Am. J. Trop. Med. 1970. 19:653.

3. Cash, R.A., Nalin, D.R., Forrest, J., Abrutyn, E. Lancet, 1970. ii: 549.

4. Nalin, D.R., Cash, R.A., Rahman, M. Yunus, M. Gut, 1970. 11: 768.

5. Nalin, D.R., Cash, R.A. In: Cholera (Ed. by D. Barua and W. Burrows) Philadelphia, 1974. p. 253.

6. Phillips, R.A. Fedn. Proc. 1964. 23: 705.

7. Hirschhorn, N. Kinzie, J., Sachar, D., Northrup, R., Taylor, J.O., Ahmad, S. Phillips, R.A. New Eng. J. Med. 1968. 279: 176.

8. Nalin, D.R., Cash, R.A., Rahman, M. and Yunus, M. Gut, 1970. 11: 768-772.

9. Nalin, D.R. and Cash, R.A. Trans. Roy. Soc. Trop. Med. Hyg., 1970. 64: 769-771.

10. Treatment and prevention of dehydration due to diarrheal diseases. WHO Scientific Publication No. 336, 1977. Geneva.

11. Nalin, D.R., Levine, M.M., Mata, L., de Cespedes, C., Vargas, W., Lizano, C., Loria, A.R., Simhon, A. and Mohs. E. Lancet, 1978. ii: 277-279.

CONSENT FORM FOR ORAL REHYDRATION STUDY

(To be used in addition to routine forms for consent)

Patient's Name_____Sex:_____Age:_____

I, _____(name of parent or guardian) hereby confirm that I have been informed that the above patient will receive all necessary treatment according to the usual hospital.

I have also been informed that at this time a new treatment for diarrhea which has been successfully tested in many hospitals is undergoing further study at the Hospital, and I agree to give permission for the above patient to be treated with the new method.

I have been told that the new method uses a solution made with water, a sugar (glucose), salts, with or without glycine, which comes from protein, and that it is readily absorbed when given by mouth to the patients with diarrhea. During the study a limited and safe number of blood specimens, and urine and diarrhea specimens, will be taken for tests.

I have also been told that, as part of the study, the patients will receive special intensive treatment, and that the patient will also receive all other medications and care which may be deemed necessary. If I choose not to give permission, I understand that the above patient will still receive all the usualy treatments necessary from the staff.

Signed: _____ Date: _____

Witnessed (Dr.) _____ Date: _____

Witnessed (nurse):_____ Date: _____

BEST AVAILABLE DOCUMENT