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SOME ASPECTS OF THE MANAGEMENT OF INFANTILE DIARRHEAS AMONG
PALESTINE ARAB REFUGEES IN JORDAN

by

Dr. Salwa Khuri-Otaqui

This paper makes no attempt to cover all aspects of the management of infantile diarrheas, but is a practical account of what is actually being done in the mass treatment of diarrheas among Palestine Arab refugee children in Jordan, by the Health Division of the United Nations Relief and Works Agency (UNRWA). It deals only with the management of diarrheas in the clinics, infant health centres, infant feeding centres, and, most important in the homes of the refugees. The treatment of diarrheas in UNRWA Children's hospitals is not described here, and the bacteriological aspect of the problem is not discussed.

This paper is divided into two parts. The first one is in the form of a Medical Directive to all UNRWA doctors, nurses and feeding centre personnel. The second part is a simplified explanation of the principles involved in these instructions, and their adaptation to local conditions and resources.

It must be stressed that these instructions are designed for a specific situation with a definite administrative and professional pattern, and for a group of people living under special social and economic conditions. Some of the principles and practical experience described may, however, be of use in the management of diarrheas elsewhere in the region.

The strict division of the treatment into two parts, one for children above six months, and one for those below that age, is of course an artificial one, but it makes it easier for the auxiliary health workers, infant feeding personnel, and some of the new doctors who are not familiar with the problem, to deal with the situation adequately.

UNITED NATIONS RELIEF AND WORKS AGENCY
FOR PALESTINE REFUGEES

MANAGEMENT OF DIARRHEA AND DEHYDRATION CASES AMONGST CHILDREN

A detailed explanation of the principles on which these treatment methods are based is given in the attached "Notes on the Management of Infantile Diarrheas among Palestine Arab refugees", which document should be studied and thoroughly understood before the application of this Directive, which should be followed in UNRWA Clinics and O-2 Feeding Centres.

1. Treatment of diarrheas in babies over 6 months of age

In the treatment of these cases, it is most important that the closest cooperation exists between the clinic doctor and nurse, the feeding centre personnel and the IHC nurse. Each has his or her respective part to play, as is shown below:

1.1. At the clinic:

Treatment here can be subdivided into two phases:

a) Medicinal:

- i) Sulfaguanidine 0,3 gr. per Kg. of body weight daily, divided into 3 doses,
or Sulfadiazine 0.1 gr. per Kg. of body weight daily, divided into 3 doses.
- ii) Bismuth mixture - one teaspoonful 3 times daily.
Cases requiring Chloromycetin or other Anti-Biotics should be admitted to hospital.

b) Prevention and treatment of Dehydration:

- i) All moderate and severe cases of Dehydration cannot be treated properly as out-patients and these cases should be immediately hospitalized. No saline solution by injection is to be given in clinics.
- ii) For mild cases treatable in the clinics, the procedure is as follows :

Mothers of such patients are provided with the special salt and glucose powder (containing sodium and potassium) to take home. This powder is given out in packets of

15 gr. each and the contents of each packet should be dissolved in one glass of boiled water, and then the mixture given by mouth to the baby in small sips continuously all day. Recommended daily dose of this mixture for babies is as follows:

6-9 months	-2	packets	i.e.	30	gr..	daily	of	the	powder
9-12	"	-3	"	"	45	"	"	"	"
12-18	"	-4	"	"	60	"	"	"	"
18-24	"	-4	"	"	60	"	"	"	"

Mothers should be given a 3 days' supply of the powder at one time and normally this treatment as such should extend over a 9 day period. In the case of babies that are partly breast fed, the amount of the mixture can be reduced accordingly.

- iii) An important point to bear in mind is that the mother should be instructed to give the salt mixture to the baby by mouth even if the child has moderate vomiting. However, if the vomiting and diarrhea are so severe that the baby is absolutely unable to retain any fluid, it is definitely a hospital case and should be treated as an emergency for admission.

1.2. At the O-2 Feeding Centre

Food used in the dietary treatment of diarrheas must be prepared by the personnel of the Supplementary Feeding Centre and the quantities given in each case are directed by the IHC Nurse, in accordance with the attached P.D. Menus.

a) Initial period of Starvation of 12-24 hours:

At the O-2 feeding centre, normal menus are interrupted for 12-24 hours, during which time the baby should be given small quantities of the following mixture:

Rice water with salt (1 pinch of salt to 1 glass of rice water)

and or

Tea with sugar (1 teaspoon of sugar to 1 cup of weak tea).

This mixture should be given frequently by mouth, both at the centre and at home under the supervision of the IHC Nurse..

b) Post Diarrhea Menus (P.D. Menus):

Above the age of 6 months, special Post-Diarrhea Menus must be given at the 0-2 feeding centre and at home - the number of meals depending on the adequacy of breast feeding. Unless the child is very ill and needs hospitalization, these menus can be commenced immediately after the period of starvation.

The attached copy of the Post-Diarrhea Menus shows the ingredients in detail: namely carrot puree, mashed bananas and fish oil capsules, all of which are given at the centre, together with one to four meals of labanch with olive oil given for consumption at home. Again the number of meals given to babies, 6-12 months of age, depends on the adequacy of breast feeding. After the age of one year all babies are given four labanch meals and bread to take home.

These P.D. Menus should be given out from the 0-2 Feeding Centre over a period of 10 consecutive days, the child at the same time taking the special salt packets from the clinic for 9 days.

1.3. At the Infant Health Centre

Responsibility of IHC Nurse:

The IHC Nurses should have a daily list and a special register of the babies on the P.D. Menus, and should visit the 0-2 feeding centre daily, to supervise their feeding and the meals they take home. At the same time they should keep these cases under their closest observation on home visiting.

Advice to the mothers on Diarrhea cases must be given by this Nurse together with the explanation and demonstration on the method of preparation of the carrot puree and labanch.

2. Treatment of diarrheas in babies under 6 months of age

2.1. At the clinic:

- a) If these babies are adequately breast fed, no special salt mixture from the clinic is necessary, as breast milk contains all fluid and electrolyte requirements for the baby. However, doctors should nevertheless

refer all such cases to the Infant Health Centre Nurse for supervision and follow-up.

- b) If these babies happen to be artificially fed, then the routine as outlined in 1. above should be followed:
- c) Medical treatment for this category of patients is not usually required but in the severer cases hospitalization is advisable where drug therapy may be given.

2.2. At the 0-2 Feeding Centre :

- a) All cases should be put on a starvation period of 12-24 hours, during which period the baby should be given rice water with salt and tea with sugar frequently by mouth (quantities as shown in 1.(1.2.) a) above. These fluids can be given both at the centre and at home, under the supervision of the IHC Nurse, and then the following day breast feeding can be gradually restored.
- b) Cases found to be too weak to suck from their mothers should be immediately hospitalized by the Doctor.
- c) Nurses should see that mothers express their breast milk during the starvation period of 12-24 hours.
- d) In cases where breast feeding is completely adequate, no P.D. menus are required, but otherwise the P.D. menu should be given as outlined in Para 1. above.

2.3. At the Infant Health Centres:

IHC Nurses should keep all cases under their supervision until the Diarrhea has subsided and normal breast feeding has been restored. Cases failing to return to the centre for follow-up must be visited in the home.

3. Categories of children entitled to post diarrhea menus from the 0-2 feeding centres and to special salt mixture from the clinic.

For reference purposes the categories of children entitled to Post-Diarrhea Menus from 0-2 feeding centres and to the special salt mixtures from the clinic are as follows:

- a) Babies 0-2 registered at IHCs.

- b) Babies 0-2 not registered at IHCs and who are seen with Diarrhea in the clinic. No IHC chart is necessary for the 10 day period while on the P.D. Menu but this opportunity should be taken to register the baby at the IHC and encourage regular visits thereafter.
- c) Children 2-3 years of age, who are seen with Diarrhea in the clinics.
- d) Children up to 3 years of age immediately after discharge from hospital, if they have been admitted for Diarrhea, Dehydration, Marasmus or Protein Deficiency.

NOTES ON THE MANAGEMENT OF INFANTILE DIARRHEAS AMONG PALESTINE ARAB REFUGEES

As infantile diarrheas and their complications (dehydration, marasmus, protein deficiency, etc.), are among the most important causes of infant mortality in this part of the world, especially during the summer months, it is essential to have clear instructions on the prevention and treatment of these diarrheas, simplified to suit the limited facilities in the field (see copy of instructions).

These instructions apply mainly to summer diarrheas, which are mostly infectious in origin.

1. Prevention of Infantile Diarrheas.

- a) Advising on and giving of weaning diets to babies at 0-2 feeding centres and at home.

Demonstrations to mothers on certain infant diets at Infant Health Centres and on home visits.

- b) Anti-fly measures and Prevention of Infection:

- 1) Sanitation.

- ii) Health Education of the refugees at the clinics, centres and at home, on how flies carry the infection to the baby, and on infection through polluted water, milk and other foods.

- iii) Advice on boiling of milk and water at home, on home visits; and on keeping milk, water and other foods covered from flies.

2. Treatment of Infantile Diarrheas when they occur

The two most important points to keep in mind, apart from the medicinal treatment of infantile diarrheas at the clinic are:

- a) Electrolyte balance - the prevention and treatment of dehydration.
- b) Diets to be given during the diarrhoea, and for a short period afterwards, in order to get as quick and as complete a cure as possible, and to prevent recurrence and chronicity and the development of marasmus, protein deficiency or other complications, and may be death.

2.1. Prevention and treatment of Dehydration at the clinics:

It is very difficult to treat dehydration parenterally at the busy clinics with their present staff. In severe dehydration at least 16% of the body weight has been lost in fluids and salts, to replace which a minimum of 100 cc per kg. of **body weight is required**. Giving a severely dehydrated child 50 cc or a 100 cc or even 200 cc of saline parenterally at the clinic, is consequently not of much help. Such cases should be treated in hospital.

For the prevention of dehydration and for the treatment of mild dehydration at the clinic, salts and fluids should be given by mouth, both at home and at the clinic.

The following mixture, containing both sodium and potassium salts, as well as glucose, is considered the most suitable:

Sodium citrate	50 gr.
Sodium Chloride	10 "
Sodium biphosphate	25 "
Potassium Chloride	25 "
Glucose	890 "

In cool places, or in institutions where cooling facilities are available, 60 grs. of this powder are dissolved in one litre of water and the required amount is given out in one bottle.

The disadvantage of dissolving the whole daily requirement at one time, at the clinics in hot weather, is that the glucose will ferment and make the solution unfit for consumption before the end of the day. Consequently the packets which are distributed to the clinics contain 15 grs. of this salt mixture (i.e. one quarter of the amount), and one packet at a time is dissolved at home in 200 - 250 cc. i.e. in about one glass, of boiled water.

The number of packets to be given out to one baby depends on the age, weight, and on the adequacy of breast feeding. (See instructions)

The salts in this mixture will replace the sodium and potassium salts, and the fluids which are lost because of the diarrhea and vomiting. Replacing fluids alone, by giving water, tea, lemonade etc., is insufficient, as the electrolyte balance in the blood and in the tissues will be disturbed.

Moreover, replacing fluids and sodium salts, by giving ordinary salt and water, is also insufficient, as it is an established fact now that potassium salts are also important and must be replaced. Hypopotassaemia which arises from prolonged diarrhea (or from emergency rehydration by simple saline solution of an acute case of dehydration), may give rise to cardiac failure or serious paralytic effects.

This special salt mixture, containing sodium and potassium salts, should be given by mouth, even if the child has moderate vomiting, and a certain amount is absorbed, if it is given by spoon in small quantities at a time. If the vomiting and diarrhea are so severe, and the child is unable to take anything by mouth, it is definitely a hospital case, and should be treated as an emergency.

In babies under 6 months who are adequately breast fed, this salt mixture is unnecessary, and as soon as the starvation period is over, the baby should go back to breast feeding, and breast milk has all the fluid and electrolytes the baby needs.

2.2. Dietary Treatment of Infantile Diarrheas

During the starvation period of 12-24 hours, the child must have fluids and salts and some sugar.

Refugees are familiar with rice water, and with tea. During this short period, sodium salts are sufficient and it is not necessary to give potassium, consequently ordinary salt is added to the rice water prepared at the centre, and some sugar is added to the tea.

After the period of starvation, it is important to keep the baby on a bland, high protein diet, with sufficient caloric requirement, even after the diarrhea has stopped, and consequently the special menus given are called post-diarrhea menus (P.D. Menus). Unless the child is very ill and needs

hospitalization, these special menus are given immediately after the period of starvation, and should be given long enough, to prevent recurrence, chronicity, and the development of marasmus, protein deficiency or other complications.

In breast fed babies, under the age of six months, no special menus are necessary, and after the starvation period of 12-24 hours, the baby goes back to breast feeding, as the best diarrheal and post-diarrheal diet is breast milk.

Above the age of six months the number of meals of the special menus to be given to the child, depends on the adequacy of breast feeding.

The carrot puree, and the mashed bananas in these menus (see copy of the P.D. Menus) contain pectin and hemicellulose, which are well tolerated by the gastro-intestinal tract.

The rest of the P.D. Menu consists of labanah, olive oil and a small portion of bread (bread only for babies above one year of age). Vegetable oil is well tolerated in diarrhea, unlike animal fat. Labanah is a high protein diet, well tolerated by babies even before the diarrhea has stopped, does not spoil quickly in hot weather, is liked and accepted by the refugees, is less easily contaminated than milk and other special menus, and is easy to prepare.

The olive oil and bread ensure the necessary calorie requirements of the baby. The number of meals of labanah to be given to the mother for feeding the baby at home depends on the adequacy of breast feeding and on the age of the baby. The less the baby feeds from the breast, the bigger the quantity of P.D. menus it needs.

The labanah menus are very concentrated, and alone do not cover the fluid requirement of the babies especially if some diarrhea still exists. But this is of no importance, as the baby is taking the special salt mixture from the clinic at the same time it is on these menus (9 days on salt mixture dissolved in water) from the clinic, and (10 days on P.D. menus from the 0-2 feeding centre).

The Vitamin A and D requirement is also taken care of, as the P.D. menu includes one fish oil capsule daily at the centre, given along with the carrot puree and mashed bananas.

N.B. It must be stressed that if the methods of prevention and treatment of infantile diarrhea and its complications mentioned above are attended to carefully, and energetically, this will soon result in a reduction in the number of children calling again and again at the clinic, and consequently, apart from helping in improving the health of the refugee population, will also relieve the pressure of work of the medical officers and nurses at the clinic.

QUANTITIES OF FOOD TO BE USED IN POST
DIARRHEA CARROT PUREE - LABANEH MENUS

6-9 months - at feeding centre.

Carrots : 75 gr.
Rice : 20 gr.
Mashed banana : 1 = approx. 75 gr. without peel or 100 gr.
with peel.
Vit. A & D Capsule : 1

If breast feeding is not sufficient give one meal home consisting of the following:

Labaneh : 35 gr. = 25 gr. milk
mixed with oil (olive) : 5 "

Total calories 318

Calories obtained from Carbohydrates 71%

"	"	"	Proteins	13%
"	"	"	Fats	16%

9-12 months - at feeding centre.

Carrots : 100 gr.
Rice : 25 "
Mashed banana : 1 = approx. 75 gr. without peel or 100 gr.
with peel.
Vit. A & D Capsule : 1

To take home: for two meals

Labaneh : 100 gr.
Mixed with oil (olive) : 10 "
Bread : 60 "

Total calories 699

Calories obtained from Carbohydrates 65%

"	"	"	Proteins	20%
"	"	"	Fats	15%

12-24 months - at Feeding Centre.

Carrots : 125 gr.
Rice : 30 gr.
Mashed banana : 2 = approx. 150 gr. without peel or 100 gr.
with peel.
Vit. A & D Capsule : 1

To take home: for four meals

a) For one morning : labaneh : 50 gr.
Mixed with Olive Oil : 5 "
Bread : 30 "

b) For three meals in the afternoon :

Labaneh : 150 gr.
Mixed with olive oil : 15 "
Bread : 90 "

Total calories 1276

Calories obtained from Carbohydrates	64%
" " " Proteins	19%
" " " Fats	17%

25 grams of milk powder reconstituted in the normal way.

1-6 will yield 35 grams of labaneh.

35 grams of milk powder reconstituted in the normal way will
yield 50 grams of labaneh.