



Ministry of Health 003736  
National Control of Diarrheal Diseases Project  
1053 Korniche El-Nil Street  
Cairo — Egypt

## NOTE TO THE TEACHING SLIDE PROGRAM (SUITABLE FOR A 45-MINUTE LECTURE)

### SLIDE NUMBER:

1 — This is the symbol of the National Diarrheal Diseases Control Program of Egypt. It shows a traditional Egyptian mother giving oral rehydration therapy by cup and spoon to her child. Oral rehydration therapy can save this child's life.

2 — This scene may be found anywhere: in Egypt, in Asia, even in parts of America. As long as such conditions exist, children will continue to have life-threatening diarrhea. Someday Egyptians will have clean water and proper sewerage; until that time we must be able to help the children who get sick.

3 — Children in Egypt may suffer seven to ten serious attacks by age five; some suffer diarrhea even more often.

4 — Remember the three "Ds": diarrhea leads to dehydration which leads to death. Only rehydration prevents or cures dehydration with but few exceptions. Other medicines (antibiotics, antidiarrheals, antiemetics) do not do anything for dehydration.

5 — Until a few years ago dehydration, moderate and severe, was combated by intravenous fluids exclusively. But intravenous fluids lead to complications: here a child has pulmonary edema.

6 — Infections and continued dehydration also are complications of intravenous therapy. Infections are often caused by re-use of expensive scalp vein needles.

7 — Intravenous therapy also denies the mother a role in caring for her child.

8 — Oral rehydration is now being used in major teaching hospitals, and health centers, around the world, and in Egypt also. Now intravenous fluids are reserved for those in shock or who do not tolerate oral rehydration. 90 - 95% of those children strong enough to drink may be rehydrated entirely by oral rehydration.

9 - Oral rehydration is done with a solution of salts (sodium chloride, sodium bicarbonate, potassium chloride) and sugar (glucose or sucrose). In the normal person saline is absorbed by the intestine to a small degree (first bar). When glucose is added salt and water absorption increases up to ten times as long as glucose does not exceed a concentration of 2% (25 grams per liter).

10 - The way glucose works is by coupling directly to sodium at the cell membrane. Glucose stimulates the active absorption of sodium. Water, potassium, bicarbonate, chloride then follow by electro-osmotic forces created by sodium absorption.

11 - Here is a perfect example how glucose-stimulated absorption of sodium works. A patient with cholera puts out nearly 600 milliliters of watery stool each hour (first bar). When he is given saline only by mouth there is no change in stool output (second bar) except for the normal decline over time. When glucose (here 1%) is added to the oral saline there is a dramatic drop in stool output, absorption takes place (third black bar). The effect of saline alone and glucose-saline can be repeated at will. Glucose and saline must be given by mouth. The effect on absorption does not occur if glucose is used intravenously.

12 - The ideal composition of Oral Rehydration Solution is the one sponsored by the World Health Organization; it has enough sodium, potassium, bicarbonate to restore a child if the child is offered Oral Rehydration Solution as much as it will take.

13 - The diagnosis of dehydration is based on a series of observations. If a history of watery diarrhea and thirst are present but no other signs, this is mild dehydration. If the eyes are sunken and skin elasticity is decreased but there is no shock, dehydration is moderate. If shock or coma are present dehydration is severe. Nearly all cases of mild and moderate dehydration are treated with oral rehydration. Intravenous rehydration is usually needed in severe dehydration but the child may be offered sips of oral rehydration solution at the same time.

14-16 - The next three slides show an Egyptian child with moderate dehydration getting oral rehydration therapy, becoming well hydrated in 2-4 hours.

17 - If possible rehydration should begin before signs of dehydration appear as the signs of dehydration show up after a considerable amount of fluid is lost (5-9% of body weight in moderate dehydration, 10-12% in severe dehydration).

18 - Here again is the sequence: a dehydrated child, strong enough to drink, takes as much fluid as its thirst mechanism dictates and recovers in about 4 hours. This 12 Kilogram child took about one liter of fluid.

19 — Oral rehydration actually helps stop vomiting over one or two hours. This slide shows fewer and fewer patients vomiting as oral rehydration progresses. Most of the time vomiting means that rehydration should be slowed a little. Wait 10 minutes and then try again, persistent vomiting may be managed by nasogastric tube with oral rehydration solution, dripped slowly ( 5 milliliters per minute ), or intravenous fluid may be used.

20 — Hypertonic, isotonic and hypotonic dehydration are all treated successfully with the same oral rehydration solution, and normal sodium balance is restored.

21 — Oral rehydration therapy has been used in hundreds of thousands of children around the world. It is being increasingly used in Egypt in teaching Hospitals MCH Centers and Rural Health Units. Oral rehydration is 90-95% effective in all age groups, including newborns ; all causes of diarrhea ; all types of dehydration ; acidosis ; diarrhea with fever, vomiting and moderate dehydration.

22 — The following slide summarizes the advantages of oral rehydration therapy over intravenous ( for those strong enough to drink ). Point five indicates that it is more physiologic than intravenous therapy.

23 — Diarrhea is more than loss of fluid. It is also a nutritional disease. Each time a child gets diarrhea it loses nutritional weight as shown on the growth chart to the right. If a child has repeated bouts of diarrhea it may never catch up and it becomes malnourished, as here on the left.

24 — The practice of withholding breast milk and food from a child with diarrhea is absolutely harmful. Fasting makes for weight loss, impairs intestinal absorption, and causes metabolic derangements. Continued feeding and oral rehydration actually reduce stool output as shown in studies in Egypt and elsewhere.

25 — Feeding with artificial formula from a bottle is a major cause of chronic malnutrition throughout the world.

26 — For this reason we do not even use a feeding bottle to give oral rehydration for fear of encouraging bottle feeding.

27 — Diarrhea causes malnutrition. Malnutrition makes diarrhea more frequent and worse.

28 — Oral rehydration therapy can protect nutrition as shown by studies in Egypt and elsewhere. The ways ORT protects nutrition are given on this slide.

29 — This is why we say oral therapy means rehydration with the salt-sugar solution and continued feeding.

30 — Breastmilk, soft foods like mahalabiyya, potato, mashed beans, banana are all good foods in the therapy of diarrhea.

31 — In Egypt, oral rehydration is being scientifically applied in hospitals and Rural Health Units alike.

32 — No longer need mothers sit by helplessly while their children lie still with intravenous drips .

33 — They now participate in rehydration and at the same time can learn how to prevent diarrhea and dehydration the next time.

34 — This symbol shows an equal dialogue between health worker and mother. The mother tells the worker her concerns and the worker educates the mother face — to — face.

35 — The National Diarrheal Diseases Control Program has prepared this set of slides to assist doctors and doctors — to — be care better for the mothers and children of Egypt.

If you have any technical questions or wish to share ideas and clinical experiences, please write to :

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( letters will be answered promptly ).