ous matters relating to national diarrheal disease control programs. The specific areas covered were (1) strategies for health care delivery; (2) promotional, educational, and organizational strategies at the community level; (3) planning, management, monitoring, and evaluation; (4) training needs; and (5) surveillance.

The formal conclusions of the meeting were:

1) Interested Member Countries and territories should make firm, clear commitments to developing national diarrheal disease control (CDD) programs.

2) This commitment should entail the formation of an interdisciplinary national (CDD) committee, the designation of an appropriate national program manager, and the development of a national CDD program document.

3) National CDD programs should be integrated with existing national primary health care delivery systems on a country-specific basis.

4) Norms, training materials, and promotional materials for national CDD program activities should be based on WHO-recommended guidelines and should be adapted to local needs and customs.

5) Member Countries and territories are encouraged to support local or area-level production or procurement of the WHO-recommended oral rehydration salts (ORS).

6) PAHO, UNICEF, the Caribbean Epidemiology Center, and the Caribbean Food and Nutrition Institute are prepared to offer technical assistance to interested Member Countries and territories in all aspects of national CDD program development.

7) In light of the *Strategy and Plan of Action to Combat Gastroenteritis and Malnutrition (SPACGEM)*,[6] the participating Member Countries and territories urged that the annual Conference of Ministers Responsible for Health in the Caribbean consider the development of national CDD programs as an agenda item at their next meeting.

[6] A document produced by a working group meeting on St. Vincent in January 1974 that has heretofore provided the basis for policy on control of infant diarrheal diseases in the Caribbean.

Administration of Oral Rehydration Therapy[7]

by Angela M. Ramlal[8]

A major breakthrough in our understanding and management of diarrheal disease has come with the recognition that there appears to be a factor in the brush border membrane of the small intestine that facilitates absorption of sodium, provided the sodium is coupled to glucose. This mechanism remains functional during diarrheal episodes of varied etiology and is applied clinically to the management of diarrhea by

[7] Abstracted from a paper entitled "Pathophysiology, Therapeutic Principles, and Local Clinical Research in Diarrheal Disease," presented at the Caribbean Seminar-Workshop on Diarrheal Disease Control (Kingston, Jamaica, March 1980).

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means of oral fluid therapy in many countries. When the concentrations of glucose and salt in the therapeutic rehydration fluid are optimal, oral rehydration therapy (ORT) can effectively replace the water and electrolyte losses that endanger life.

The electrolyte content of stools from patients with different types of acute watery diarrheas varies. Some typical stool electrolyte levels (in mmol per liter), compared to the levels of glucose and electrolytes in the oral rehydration solution recommended by WHO, are as follows:

	Na^+	K^+	Cl^-	HCO_3^-	Glucose
Cholera (adult)	140	13	104	44	
Cholera (child)	101	27	92	32	
Enteritis (child)	56	25	55	14	
Normal plasma	142	4.5	105	25	
WHO oral rehydration fluid	90	20	80	30	110

Source: Pierce, N. F. and N. Hirschhorn, *WHO Chronicle* 31:87-93, 1977.

The oral rehydration solution indicated is adequate to correct an initial isotonic deficit and to replace stool losses when these are moderate to severe. Plain water or breast milk should be provided after the second feed of solution to minimize the already small risk of hypernatremia:

1st feed	2nd feed	3rd feed	4th feed
ORS	ORS	Plain water or breast milk	ORS

This is an appropriate regimen for the child with mild (under 5 per cent) to moderate (5-9 per cent) dehydration. For the severely dehydrated child or the child in shock we recommend intravenous therapy (e.g., iv Hartmans) at a rate of 40 ml per kg over 2 hours. If the latter therapy is not available, personal experience indicates that oral rehydration could be used even in this group.

ORS Volume

A simple rule of thumb for the child over 6 months of age is to administer 1 cup of fluid (180 to 240 ml) every hour for the first 4-6 hours. There should be a 2:1 ratio between the ORS given and the water or breast milk given, as indicated above. More specific guidelines are as follows:

Admission weight	Approximate age	Mild dehydration (50 ml per kg)	Moderate dehydration (100 ml per kg)
3 kg	1-2 months	150 ml in 4 hrs.	300 ml in 6 hrs.
5 kg	3-4 months	250 ml in 4 hrs.	500 ml in 6 hrs.
7 kg	6-9 months	350 ml in 4 hrs.	700 ml in 6 hrs.
10 kg	1-2 years	500 ml in 4 hrs.	1,000 ml in 6 hrs.
12 kg	2-3 years	600 ml in 4 hrs.	1,200 ml in 6 hrs.

Source: Treatment and prevention of acute diarrhea: A guide for physicians and senior health workers. Geneva, World Health Organization, unpublished document, p. 10, 1980.

Some Practical Guidelines

1) The child should be allowed to drink slowly. Thirst is a useful clinical guide to the child's needs. But if the child drinks too quickly vomiting may occur. Therefore, we try to let each feed last for about 15-20 minutes, and to follow it with a rest period of 40-45 minutes. Cup-feeding is ideal.

2) The angle at which the child is held influences the likelihood of vomiting. Therefore, the child should be supported comfortably in a semi-sitting position, preferably on his mother's lap, while she feeds him ORS under supervision.

3) Small amounts of vomitus can be ignored without deferring administration of ORS. However, when large amounts of vomitus have been regurgitated twice we have deferred ORS therapy, gone on to iv therapy, and returned to ORS when the vomiting phase was over.

4) During ORS therapy it is necessary to check the child's clinical state of hydration at intervals (say 2, 4, and 6 hours after starting). If the skin turgor is still depressed after the first 6 hours we continue ORS until it is near normal. We also review the number, volume, and consistency of the stools during this time.

5) ORS therapy does not stop diarrhea. It merely replaces losses and maintains hydration. Mothers and health workers must appreciate this.

6) If a child under 1 year of age develops puffy eyes, as occasionally happens, stop the ORS therapy temporarily and give the child breast milk or plain water. (Breast milk, unlike cow's milk, has a low salt content.) Alternatively, half-strength formula may be used.

7) After the initial rehydration phase, quick reintroduction of nutrients is important. If diarrhea increases after the introduction of a cow's milk formula in this phase of management, offer semi-solid foods, cereals, porridges, fish preparations, or bean preparations instead of cow's milk. Potassium-rich foods should be encouraged. Breast-feeding, of course, should be continued. Hyponatremia associated with low-solute feeds may be a cause of poor appetite.

8) Packets of ORS can be reconstituted daily with any source of potable water. It is not essential to boil the water, and the reconstituted fluid must not be boiled.

9) Antibiotics are used only for complicated cases in newborns and shigellosis cases.

10) Neither antidiarrheals nor kaolin are used.