

XO-AAQ-002-13
LSN= 36755

March 16, 1982

MEMORANDUM

TO: S&T/ED, C. Block; D. Sprague; Staff
S&T/HEA, D. Ferguson; C. Pease
S&T/HR, R. Zagorin
LAC/DR, L. Morse; R. Martin
Honduras Desk (M. Schwartz)
USAID/TEGUCIGALPA, R. Witherell; J. Massey; Barry Smith;
Bill Smith
AED, Bill Smith
Stanford Univ., D. Foote

FROM: A. Meyer, S&T/ED *AJM*

SUBJECT: Trip Report: Site Visit to Mass Media and Health
Practices Project, February 8-11, 1982

The purpose of the trip was to examine the evaluation component of the Mass Media and Health Practices Project being conducted by Stanford University. The trip also provided an opportunity to observe progress under the implementation contract with the Academy for Educational Development (AED); to foster the process of institutionalization of project methodology within the Ministry of Health and to coordinate the project with aspects of the Mission Health Sector I Project.

Highlights of the trip included a meeting with the newly appointed Minister of Health and a visit to the field to observe a series of anthropometry measurements by a newly trained project interviewer.

The Evaluation Component. The Stanford data collection effort includes a survey of 750 randomly selected families at 18 sites in Health Region I (some 350,000 population), some of whom at each site are visited approximately once every six weeks by one of three interviewers living within their cluster of 6 sites each and are interviewed to provide data on a variety of program elements (1 to 5 instruments each visit). In addition, the evaluation includes surveillance of the population-at-large for diarrhea related deaths; surveillance of the sites every six weeks for the presence of project intervention elements, using an instrument designed for recording structural observations; in-depth interviewing of professionals; an ethnographic study; and a case study of the administrative/decision making history of the intervention.

The survey will have administered 15,000 questionnaires and collected 1.5 million data points by its conclusion. The 750 families provide a 5,131 n for the study, 1,196 of whom are less than five years of age. So far there is less than a 1 percent dropout rate (4 families have refused to continue); 16 families have migrated. The two-year, three-month data collection effort will be completed May 1983.

The machine set up to handle this survey is impressive. Interviewers live among the people they interview and have repeated contact with them.* The interviewers have a re-training session every four weeks; reliability on the anthropometric measures is continually monitored (interviewers take a second blind set of measures for each subject measured; the form is attached); occasionally a new instrument will be introduced. Five percent of the interviews are validated by a field visit by the interviewer supervisor. Key punching and initial data cleaning are done at the Mission computer; all questionnaires are stored in excellently maintained files coded by numbers for each site, family, and family member. The key punching is virtually error free (the computer program will kick out values outside of a fixed range for each variable). The data set looks healthy: the frequencies are reliable; there is broad variation among sites on appropriate variables. There will be a good SES index. Standardization of anthropometry methods have produced remarkable reliability.

Nothing the evaluation has discovered reveals any inappropriate element of the program implementation. Radio ownership is 77.2%; 94% of these were observed to function at the time of the interview. The literacy test card was presented upside down; 34% did not turn it over (75% of the 34% produced another person in the household who could pass the test); 57.5% read the entire card correctly, including the instruction sentence. Thus, 120 homes of the 742 (ca. 18%) could not produce a person who could read at the time of the test.

Early results of knowledge about radio spots and different program elements is high. For example, no one knew the word "dehydration" at the start of the intervention; at last analyzed response, virtually 100% knew something about the word and 50% knew its meaning accurately; virtually 100% knew what Litrosol is. Litrosol's image is very positive; it is associated with regaining appetite and vitality (as our intervention advertises) and, for better or worse, with stopping diarrhea (as our intervention explicitly counter-argues!)

*We feel that this de-sensitizes the respondents to the interviewers' presence and increases the reliability of responses as well as provides an opportunity for repeated measures at low cost. We feel that this outweighs the risk of increasing the respondents awareness of the project intervention by the interviewers' presence.

All births and deaths at each site, in the sample or not, are recorded and the house visited. In preparation for this, 325 cases of pre-study death were described; the resulting interview schedule in use probes the mother's description of what she did and the symptoms of what happened before death. During the 11 months for which data were available, one death due to diarrhea was recorded; approximately 27 would have been expected at the 18 sites based on prior regional averages; 54 in the broader population including the city of Danli. Clearly, this preliminary report will be refined and corrected; but the initial report was promising enough for me to have encouraged Stanford to increase the level of mortality study consultant time to reduce the chance of false reporting here.

The morbidity interview obtains a two-week recall of diarrheal incidents every three months for each infant in the sample. A highly descriptive report of the progress of each incident is obtained. A set of observations are made of each infant discovered at test time to have diarrhea.

In addition to the demographic, anthropometry, morbidity, mortality, and communication data being collected, nutrition and health practices instruments are also included in the survey according to plan.

The evaluation will provide continuous data points at all sites. By virtue of the large geographic area in the study, three sites will have virtually no program elements except radio due to remoteness; three sites will have a high exposure to all program elements; other will have varying exposure to a varying mix of the elements. Thus there should be an excellent opportunity to co-vary treatment mode with dependent variables and to study this co-variation against a broad array of highly reliable context variables. There should also be an excellent opportunity to map data against the process model projected by Stanford in their original evaluation plan for Honduras.

I recommended to USAID/TEGUCIGALPA that they take advantage of this excellent data collection machine and of the depth of baseline information in their evaluation of Health Sector I. There would be only marginal cost to extend the time of data collection and/or to re-establish the machine after 3-6 months of down-time.

Dr. Maria del Carmen Miranda is in charge of the administrative history of the project. She is highly respected in the Ministry and had formerly been Director of Health Region I. Dr. Maria del Carmen Miranda attends all major implementation contract meetings and functions easily with both Academy and Ministry staff. I directed a fair amount of discussion toward making sure that all parties understood the critical event and decision-making emphasis that we would like to see in the administrative history. As far as I could tell, an acceptable level of progress was being made with this dimension of the evaluation.

Institutionalization in the Ministry and Coordination with Health Sector I.

On the positive side, the Academy's work and the influence of the joint AID/PAHO regional workshop on diarrhea control held last fall in Tegucigalpa has led to the Ministry of Health going nationwide with a diarrhea control program modelled largely after the project in Health Region I. The attached clipping (January 20) from La Tribuno makes the announcement and indicates the role of the AID-funded project in this decision.

On the down side, economic conditions in Honduras have been so poor that new positions in the Ministry, including the permanent counterpart positions on the project, are not being created. This announcement from the Ministry and the letter from the Academy indicating the project's inability to continue paying the counterparts are attached. In discussions with the new Minister and with USAID, serious attempts will be made to remedy the situation. Our suggestion is that these counterpart positions be negotiated again (they were already negotiated at the time of the Project Letter of Agreement), in conjunction with discussions related to Health Sector I and as part of the overall rationalization and improvement of health education activities within the Ministry. A.I.D. contingency monies within Health Sector I might be able to play a role in arriving at a solution.

Attachments:

CONTINUA LA DIRECCIÓN INSTITUCIONALIZADO

La Dirección General de Salud ha decidido institucionalizar y dar identidad propia al Programa de Control de Diarreas, informó el doctor Juan de Dios Paredes, subdirector general de Salud.

Tal programa -continuó- ha sido objeto de un mayor apoyo por parte del Ministerio de Salud Pública y Asistencia Social debido al alto índice de este problema de salud, el cual tiene mayor recurrencia entre la población infantil de Honduras.

Durante el año pasado, en el cual se presentaron 189,165 casos de la enfermedad, comenzó un proyecto piloto en los departamentos de Francisco Morazán y El Paraíso, cuyo éxito en el combate de la dolencia ha sido la causa para su ampliación a nivel nacional.

En la actualidad -informó el doctor Paredes- una comisión técnica se encuentra estudiando los aspectos normativos y operacionales del programa que estará ubicado dentro de la División de Epidemiología y será implementado el primero de marzo de este año.

Los fondos necesarios para el desarrollo de este programa provienen de la Agencia para el Desarrollo Internacional del Proyecto de Desarrollo y Mejora del Recurso Humano en salud y además se contará con la colaboración del Patronato Nacional de la Infancia (PANI) quien continuará elaborando los sobresitos de Litrosol que son usados como parte del tratamiento de la diarrea.

Su implementación será hecha a todos los niveles de salud desde las comunidades y Centros de Salud Rural (CESAR) hasta los hospitales nacionales como el Materno Infantil pero debido a los problemas de entrenamiento involucrados en un programa de esta naturaleza, su ejecución se hará primeramente a nivel clínico en los hospitales que ya cuentan con el recurso humano adecuado.

APPENDIX D

COUNTERPART CORRESPONDENCE

March 16, 1982

MEMORANDUM

TO: USAID/TEGUCIGALPA, R. Withereil; Barry Smith;
J. Massey

FROM: ST/ED, Anthony Meyer *AM*

SUBJECT: Mass Media and Health Practices Project.

I would like to ask your help along the lines suggested during my recent site visit (trip report attached). My starting focus is the need for permanent counterpart staff related to the subject project as part of the attempt to institutionalize a systematic approach to health education in the Ministry--because that is one of the outputs of the project.

But the announcement of the expansion of diarrhea control to a nationwide effort and the startup of Health Sector I activities underscores the substantive importance of hashing out a rational and high quality systems approach to health education in the Ministry, with appropriate people to do the work. There seem to be some opportunities to work toward this end:

- the discussions with the Ministry of overall Health Sector I personnel;
- the possible use of Health Sector I contingency monies;
- the review at the Ministry and at A.I.D. of the technical proposal to be submitted by AED in response to the Scope of Work in your PIO/T to amend the AED contract.

The problem has come to a head with a very specific focus. The Ministry had promised to pick up three counterparts in the project Letter of Agreement. We then agreed to pay the first year's salary of the counterparts under the project. The Ministry has paid one partial salary, although this has not been for a permanent counterpart position. The Ministry has recently announced (January 1982; announcement attached) that the slots for the three counterparts will not be available for 1982. Dr. William Smith of AED has written to inform me (letter attached) that the subject project can no longer afford to fund these

(-2-)

individuals. I request your assistance in representing the project's needs to the Ministry and in making the personnel problem one of the issues in integrating the effort of the subject project with Health Sector I and the national diarrhea control plans during the coming months.

I believe that it would be a great misfortune to have to lay off the Honduran staff of the project for the final phases of the intervention.

Clearance: ST/ED, Dr. Clifford Block

CH Block

Attachments: a/s

Academy for
Educational
Development

MASS MEDIA AND
HEALTH PRACTICES

AED
International Division

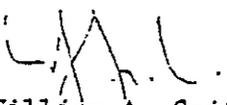
February 12, 1982

Dr. Anthony Meyer
DS/ED
1601 N. Kent Street
Room 320 E
Rosslyn Plaza C
Rosslyn, VA 20523

Dear Dr. Meyer:

The purpose of this letter is to officially inform you that I have received notification from the Director of Personnel of the Ministry of Health in Honduras that the personnel slots we requested for three Honduran counterparts within the Ministry of Health will not be available for 1982. At the same time I regret to inform you that we are presently unable to continue funding these individuals from existing MM & HP resources. The loss of these individuals will significantly debilitate the project's ability to maintain project activity at the required levels and more important will reduce the practical possibility of institutionalize the program's methodology within the Ministry of Health.

Sincerely,


William A. Smith

WAS/vp

2/16/82



DIRECCION GENERAL DE SALUD

DIRECCION CABLEGRAFICA
"DIGRALSA"

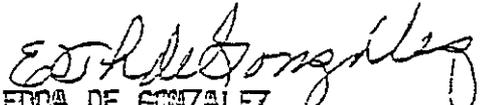
TELEFONOS NUMEROS:
22-5770 Y 22-5772

OF. No.

CON ST A N C I A

A QUIEN INTERESE:

La Suscrita Jefe de la División de Personal del Ministerio de Salud Pública y Asistencia Social, por medio de la presente HACE CONSTAR-QUE: en el desglose de sueldos y salarios permanentes que corresponden al Ramo de Salud Pública para 1982, no aparece creación de plazas nuevas en la DIVISION DE ENFERMERIA y en la DIVISION DE EDUCACION SANITARIA ubicadas en el Programa 1-06, Actividad 03. Y para los fines que se persiguen se extiende la presente en la ciudad de Tegucigalpa Distrito Central, a los ocho días del mes de febrero de mil novecientos ochenta y dos.


EDDA DE GONZALEZ
Jefe de Personal

cc: Dr. Reynaldo Pareja
Coordinador Proyecto PROCOMSI
Archivo.

APPENDIX E

APPROVAL OF IMPLEMENTATION PLAN FOR THE GAMBIA

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D.C 20523

April 29, 1982

Dr. William Smith
Academy for Educational Development
1414 Twenty-Second St., N.W.
Washington, D.C. 20037

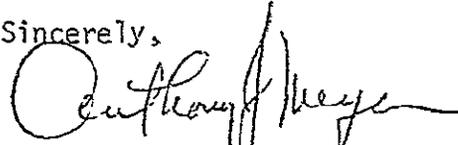
REF.: Contract AID/DSPE-C-0023

Dear Bill:

You are to be congratulated on an excellent technical proposal for The Gambia intervention under the referenced contract. This letter constitutes our approval of the plan as required under the contract, pending our receipt of a letter of clarification from you which describes the process of institutionalization of the methodology in The Gambia in relation to the approved plan.

Please pass on our thanks and appreciation to Mark Rasmussen and the consultants who have contributed so much to the effort.

Sincerely,



Dr. Anthony Meyer, Ph.D.
International Education Specialist
Office of Education
Bureau for Science and Technology

Clearance:

ST/ED, C. Block C15

ST/HEA, D. Ferguson 9248

CC: SER/CM, J. Pittenger
R. Ware
ST/ED, D. Sprague

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D C 20523

April 29, 1982

Dr. William Smith
Academy for Educational Development
1414 Twenty-Second St., N.W.
Washington, D.C. 20037

REF.: Contract AID/DSPE-C-0023

Dear Bill:

I have received your April 1, 1982 letter requesting a 12-month extension of The Gambia site activities under the referenced contract. I recognize that this was also a unanimous recommendation of the project advisors during the March management review of the project. We will give the request serious consideration.

Sincerely,


Dr. Anthony Meyer, Ph.D.
International Education Specialist
Office of Education
Bureau for Science and Technology

Clearance:

ST/ED, C. Block CR

cc: ST/ED, D. Sprague
ST/HEA, D. Ferguson

APPENDIX F

IMPLEMENTATION PLAN: THE GAMBIA

MASS MEDIA & HEALTH PRACTICES

PROJECT IMPLEMENTATION

PD-APP-999.

Academy for Educational Development, Inc.

Sponsored by the Office of Health and Office of Education
Development Support Bureau
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

DOCUMENT # 19

IMPLEMENTATION PLAN

THE GAMBIA

Project Director

Dr. William A. Smith

Project Field Coordinator

Dr. Mark Rasmuson

February 1982

ACKNOWLEDGEMENTS

The Academy wishes to express its sincerest gratitude to the Ministry of Health of The Gambia, especially Dr. Philip Gowers and his staff, for all their support and assistance in developing this plan.

We also wish to acknowledge the special assistance of Dr. Michael Rowland and Dr. Anthony Tomkins of the Medical Research Council staff who so kindly volunteered their time during the planning stages of this program.

Special thanks also go to Laurel Elmer for her research and writing assistance.

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INTRODUCTION

This document is one of a series of reports prepared by the Academy for Educational Development, Inc. under its Mass Media and Health Practices Project contract with the United States Agency for International Development. It represents the results of a six-month field investigation in The Gambia and draws upon information detailed in several of the previous documents in this series. To avoid restating much of what has already been written, the author will make frequent references to several earlier documents in the series. The full series includes:

Document #1	<u>Scope of Work - Technical Proposal</u>
Document #2	<u>Contract Scope of Work</u>
Document #3	<u>Semiannual Report No. 1</u>
Document #4	<u>Project Agreement with Honduras</u>
Document #5	<u>Semiannual Report No. 2</u>
Document #6	<u>Honduras Target Region Selection Process</u>
Document #7	<u>Semiannual Report No. 3</u>
Document #8	<u>Principal Health Considerations</u>
Document #9	<u>Developmental Investigation Protocol</u>
Document #10	<u>Institutional Review Board</u>
Document #11	<u>Honduras Regional Background Paper</u>
Document #12	<u>Description of Field Investigation Activity: Honduras</u>
Document #13	<u>Communication and Development</u>
Document #14	<u>Results of Honduras Field Investigation</u>
Document #15	<u>Implementation Plan: Honduras</u>
Document #16	<u>Semiannual Report No. 4</u>
Document #17	<u>Semiannual Report No. 5</u>
Document #18	<u>Semiannual Report No. 6</u>
Document #19	<u>Implementation Plan: The Gambia</u>
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Field Notes#2	<u>Packets: More Questions and Few New Answers</u>
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Field Notes#4	<u>Selecting Campaign Message</u>
Field Notes#5	<u>Building a Network of Effective Providers</u>

CAMPAIGN SUMMARY

I. THE PROBLEM

The Gambia reports that gastroenteritis and malnutrition account for 21.3% of all deaths in children under five years old in Banjul when health statistics are most reliable. It is estimated that rural areas of the country experience comparable or more serious mortality rates due to the same two causes. This represents the most significant cause of death for children of this age group. Existing prevention and treatment methods vary widely within the country and are generally considered inadequate to meet the problem.

II. COMMUNICATION OBJECTIVES

- A. Substantially reduce the number of deaths among children below the age of five from diarrheal dehydration.
- B. Establish one sugar/salt rehydration regimen as a standard for village-based prevention of dehydration.
- C. Differentiate the village level management of diarrheal disease to meet the seasonal characteristics of the wet and dry season diarrhea/malnutrition complex.
- D. Establish a regular faeces clean-up campaign within a significant number of rural family compounds.

III. AUDIENCE DEFINITION

- A. The primary audience is rural mothers, grandmothers and older female siblings of children under five.
- B. The secondary audience includes Rural Health Inspectors, Community Health Nurses, Health Peace Corps Volunteers, Leprosy Inspectors, Maternal Child Health teams, and Primary Health Care Workers.
- C. A tertiary audience includes general physicians, dresser/dispensers, local leaders (alkalos) and rural fathers of children under five.

IV. COMMUNICATION STRATEGIES

A. Teach the primary audience:

1. To properly mix the simple sugar/salt rehydration solution (S/S).
2. To administer the solution casually along with breast milk and adult foods during episodes of wet season diarrhea.
3. To administer the solution intensively along with breast milk during episodes of dry season diarrhea.
4. To seek outside assistance if the child shows signs of listlessness and/or dark sunken eyes.
5. To identify one member of the family to regularly clean up human and animal faeces from the family compound floor.

B. Teach secondary audience:

1. To properly mix and administer S/S rehydration solution.
2. To properly manage moderate and severe dehydration in the health centers using UNICEF packets.

C. Motivate the tertiary audience:

To support and praise mothers who properly use S/S solution for diarrhea.

V. MESSAGE TONE

The tone of the campaign will be serious and straight forward promoting a remedy, the basics of which is built upon existing widespread recognition and concern over "dryness" in small children; offering a potentially powerful prevention for such "dryness." S/S will be presented as part of a complete "diet for dryness" which includes specialized feeding and continued breastfeeding.

VI. EXECUTION

Radio, print, and health worker training will be combined to provide the same message over multiple channels. Radio spots, mini-programs and magazine format radio programming will deliver a seasonally structured series of messages. A national rural lottery which uses radio to teach the audience how to use a color-coded mixing flyer will be the central element in a program

to teach S/S mixing to rural women. This will be strengthened by trained Traditional Birth Attendants (TBA) in a significant percentage of rural villages. These TBA's will provide back-up support to mothers in remembering and applying S/S therapy. Simultaneously, UNICEF packet rehydration will be introduced at the rural health center level as the preferred treatment for moderate and severe dehydration. Also simultaneously, a faeces clean-up campaign relying heavily on radio will be conducted to link the concept of cleanliness during prayer, advocated by Islamic principles, to the need to maintain the floor of the family compound as a clean place upon which to pray.

SECTION I

PROJECT OVERVIEW

A. PROJECT OBJECTIVES

On September 30, 1978, the Academy for Educational Development, Inc. was contracted by the United States Agency for International Development (USAID) to implement a five-year mass communication project. The project, which is a joint initiative of the Office of Education and Office of Health within the USAID Development Support Bureau, seeks to develop a methodology for the application of mass communication to the prevention and treatment of acute infant diarrhea in the rural areas of two developing countries. The long-term development goal of the project is to strengthen the health education capacity of the cooperating Ministries of Health. The overall project is divided into three sequential phases: Phase One - a public education campaign in each of the two host countries using radio, graphic material, and face-to-face support; Phase Two - an analysis of project results; and Phase Three - dissemination of those results to the world community of development communication professionals. Stanford University was contracted by AID to simultaneously evaluate the project.

B. PROJECT ADMINISTRATION AND OPERATION IN THE GAMBIA

The field project in The Gambia is a two-year portion of the overall Mass Media and Health Practices (MM&HP) project, which includes a 36-month intervention in Honduras as well. The Gambia activity is subdivided into two distinct activities: a six-month pre-program research activity and the actual execution, monitoring, and revision of the public education campaign. The project has modest financial resources to develop and produce the radio, graphic, and in-service training materials required. The MM&HP project also provides one expatriate technical assistant to the Health Education Unit of the Medical and Health Department.

The Gambian Ministry of Health (MOH) provides one full-time counterpart and office space, and the national radio system is covering all broadcast costs. A coordinating committee has been established by the Ministry to review project activities and to ensure that the project is consistent with the Government's overall health priorities. Dr. Philip Gowers, Medical Officer of Health, has been identified as the program's principal supervisor.

C. PRINCIPAL COMPONENTS

The MM&HP project has three principal components: the specific health problem, a defined set of basic instructional tools, and a systematic instructional development process. Each of these elements contributes to the overall organization of the health campaign and is reflected in this implementation plan.

The health problem being addressed involves both prevention and treatment behaviors associated with acute infant diarrhea in primarily rural areas. The range of appropriate treatment behaviors is relatively small, and there remains a significant controversy among medical experts as to the exact way in which these few treatment alternatives should be promoted at the rural community level. The MM&HP project in The Gambia will seek to reduce infant mortality by promoting UNICEF-packaged oral rehydration therapy (ORT) through existing health facilities, and early administration of a home-mix S/S rehydration solution in the home.

The selection of prevention behaviors presents a somewhat different problem. There are so many potential sources of contamination in a rural community that the number of necessary intervention points is overwhelming. The problem is compounded by a general skepticism that health education alone is sufficient to convince rural people to make the kind and number of changes needed to produce any measurable reduction in diarrheal morbidity. Project staff have determined that one key prevention behavior should be included however, because it provides an opportunity to investigate media's potential to affect a behavior which is of special interest to the health community. A faeces clean-up campaign within family compounds has been selected as one behavior susceptible to influence by the proposed public education campaign. We believe that if the project is able to demonstrate that this critical behavior has been changed by the program, even in the absence of any demonstrated reduction in diarrheal morbidity, the project will have made an important contribution to health education.

The basic instructional tools, as defined in the project contract, include radio combined with graphic materials and some face-to-face support of health workers and local opinion leaders. Radio will be emphasized because of its capacity to reach large audiences efficiently. In The Gambia this emphasis is consistent with the existing rural communication system and the MOH's own health education priorities.

The instructional development process relies upon past experience in mass communication and combines systematic pre-program research with experience drawn from such fields as social marketing and behavioral analysis. This process rests upon a clear understanding of three principal areas: the behaviors to be promoted; the personal, family, and community context in which these behaviors are elicited; and the ability of the

instructional tools to promote the widespread adoption of the selected behaviors.

The working premise which makes these principles relevant is that prevention and treatment of infant diarrhea can be positively affected by altering the way in which rural people now behave. Improvement does not necessarily require significant new investments in health infrastructures such as water systems, latrines, or new health centers. This project is not attempting to install new mechanical technologies, nor promote sophisticated cognitive conceptualizations. Our task is to increase the probability of people doing things which are well within their capacities, but currently unlikely. The emphasis is on behavior; attitudes, even those which may contribute to what people do, are of secondary interest.

From a behaviorist point of view, there are five circumstances which singly or in combination account for absent behavior. First, necessary materials or implements (like sugar and salt) may be unavailable. Second, prerequisite skills, discriminations, or knowledge may be lacking. (For example, rural mothers may know that S/S solutions are good but not understand how to mix them properly.) Third, there may be no incentive (like immediate improvement in their child's health) to engage in the behavior. Fourth, there may be incentives to engage in incompatible behavior (like giving kaolin or withdrawing food from the sick child). And fifth, there may be punishing consequences which discourage the desired pattern. (A child may vomit, for example, or his diarrhea may actually appear to increase.) An understanding of these factors is absolutely critical in the development of an effective instructional intervention.

Behavioral analysis also makes an important contribution to our understanding of how to change behavior patterns, whether it be altering an existing pattern, or creating a new one. Many health messages, for example, carry an implicit or explicit threat. This approach has been shown to be less effective than providing rewards for approximations of the desired behavior. Use of approximations requires that we identify a relevant existing behavior to reinforce and may mean including a few behaviors in the instructional campaign which we know rural mothers are now doing correctly; rather than telling mothers to stop bottle-feeding, for example, we may want to reward mothers when they do breast-feed.

Another important point to emphasize is effective delivery of positive consequences or rewards. Behavior does not change unless rewards are actually applied to the desired behavior pattern or some reasonable approximation. It is not sufficient, for example, for nurses to tell trainers how important it is that rural mothers be praised for administering ORT. We must be certain that the nurses are in fact praising mothers, and that the mothers perceive the nurses' actions as praise or support.

This project may be one of the first efforts to use mass communication primarily to support positive, existing behaviors rather than extinguishing negative patterns or creating entirely new ones. It is also important to develop within the target audience the ability to discriminate between appropriate and inappropriate performance of a desired behavior. If health workers, for example, can be sensitized to the potential for critical mistakes in mixing a S/S solution, there is a greater chance they will remember correctly and avoid these mistakes when isolated in their rural communities.

To determine how these principles could be applied within the specific cultural context of The Gambia a four-month pre-program investigation was conducted. This "developmental investigation," is comprised of the following elements:

1. Interviews with groups of rural Gambian mothers to learn how they perceive and deal with diarrhea in their children, their general feeding and child care practices, and their use of radio and other media.
2. Direct, structured observation of rural Gambian villagers to corroborate the information provided by mothers in the group interviews.
3. Interviews with staff at health centers, dispensaries, and subdispensaries to measure the level of knowledge among health staff about diarrhea disease and to define the way it is currently being managed within the health system.
4. Rural mixing trials of S/S solutions.
5. Review of existing literature drawn from extensive work done at the Medical Research Council facilities in The Gambia.
6. Reception studies to determine the effective broadcast range of radio signals in rural areas throughout the country.

Detailed results of this investigation are described in Appendix E. The most salient findings, however, are summarized below.

1. An annual seasonality of diarrhea characterized by a long wet season during which rapidly dehydrating diarrhea is not a critical problem and a shorter dry season with significant, intense bouts of watery diarrhea.
2. The penetration of rural areas by health services, permitting effective widespread distribution of simple print materials and providing back-up for treating moderate dehydration.

3. The recognition by rural people of "dr concept, used to describe general wast results from malnutrition and which ha similar to diarrheal dehydration.
4. The widespread confusion on how to mix and salt solutions, often with ineffec sometimes dangerous consequences.
5. The significant absence of print mater areas and a resulting inability of rur easily decipher visual messages.
6. A village society which gives women a disproportionate share of family work, isolates women from easy access to rad separates mothers from children during difficult wet season, and which is pre female participation in basic family
7. Despite the poor signal quality and re rudimentary programming now available penetration of radio as a significant village information.
8. The lack of published studies on basi linguistic characteristics of major in the country.

SECTION II

CAMPAIGN ELEMENTS

A. OVERALL STRATEGY

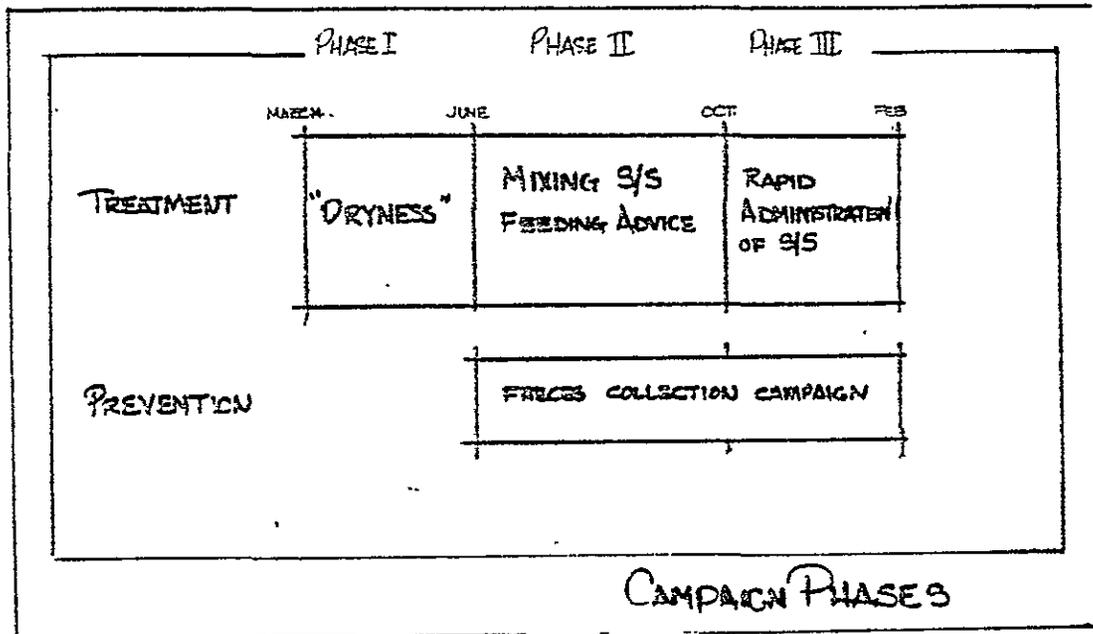
The proposed public education campaign on treatment and prevention of acute infant diarrhea in The Gambia will promote the preparation and administration of home mix (S/S) solution as an ORT by rural mothers in their homes during mild bouts of diarrhea. Rural mothers will be told that if the diarrhea becomes worse and "dryness" begins they should take their child to a fixed health facility or village health care worker. In these places, complete formula UNICEF packets will be administered.

Three basic treatment messages: how to properly mix S/S solution, how to correctly administer the solution, and where to seek help if the child gets worse, will be the central themes of the campaign. These themes will be supplemented by a single prevention focus, a daily faeces clean-up campaign within the family compound.

Treatment messages will be stressed over prevention messages for the same three reasons used in the Honduran segment of the MM&HP program: (1) ORT offers the most significant and immediate contribution to the health needs of the rural population, (2) the behaviors required to make ORT successful in rural homes represent an optimal range of instructional complexity which will permit evaluators to determine the ability of mass communication to significantly affect various aspects of an important health behavior, and (3) a general skepticism surrounding the ability of health education alone to make any significant impact on rural diarrheal morbidity through prevention compliance.

The primary target audience in the campaign will be rural mothers, grandmothers and older female siblings of children under five. A secondary audience will include primary health care workers such as: Health Inspectors (HI), Community Health Nurses (CHN), Health Peace Corp Volunteers (PCV), Leprosy Inspectors (LI), and Traditional Birth Attendants (TBA). Several other groups including rural fathers, physicians, and dresser/dispensers will receive a small number of specialized messages designed to help them reinforce and support the primary target audience in the correct application of ORT.

The campaign is a one-year broadcast effort divided into three sequential phases timed to coincide with the seasonal variations in diarrhea (see graph below).



Phase I, which precedes the wet season diarrheal peak (characterized by prolonged, debilitating bouts of diarrhea), will emphasize the relationship between diarrhea, dryness and malnutrition, establishing the concept that "dryness," or dehydration, can be prevented through a special diet of S/S solution, breast milk, and adult cereals given to young children during bouts of diarrhea. Phase I will include an intensive face-to-face training program for rural health workers (HIs, CHNs, PCVs, LIs, and MCH team members) in the proper management of diarrhea including S/S solutions, UNICEF packets and intravenous/intraperitoneal (IV/IP) therapy. These health workers will in turn train TBAs in 1000 villages in the proper mixing and administration of the S/S solution, leaving a red sash on the hut of the trained TBA as an identifying marker.

Phase II, which corresponds to the wet season diarrheal peak, will emphasize proper mixing of the S/S solution in the home along with casual administration and specific feeding advice. During this period a national rural lottery will be operated to publicize and popularize the S/S mixing instructions.

Phase III, which immediately precedes and coincides with the dry season diarrheal peak (characterized by short, intensive and rapidly dehydrating bouts of diarrhea), will reinforce the S/S mixing behavior stated in Phase II and will emphasize the rapid, systematic administration of the S/S solution from the on-set of the diarrheal episode in children under five.

Prevention messages focusing on the daily collection and disposal of all faeces, animal and human, within the family compound will begin during Phase II as a complementary theme. They will link the general cleanliness excoled by Islamic teaching to the specific place of prayer -- the compound floor -- and advocate that one family member be assigned to clean the compound floor of faeces daily.

B. CONCEPTUAL RATIONALE

The overall campaign strategy emerges from a perception of five critical aspects:

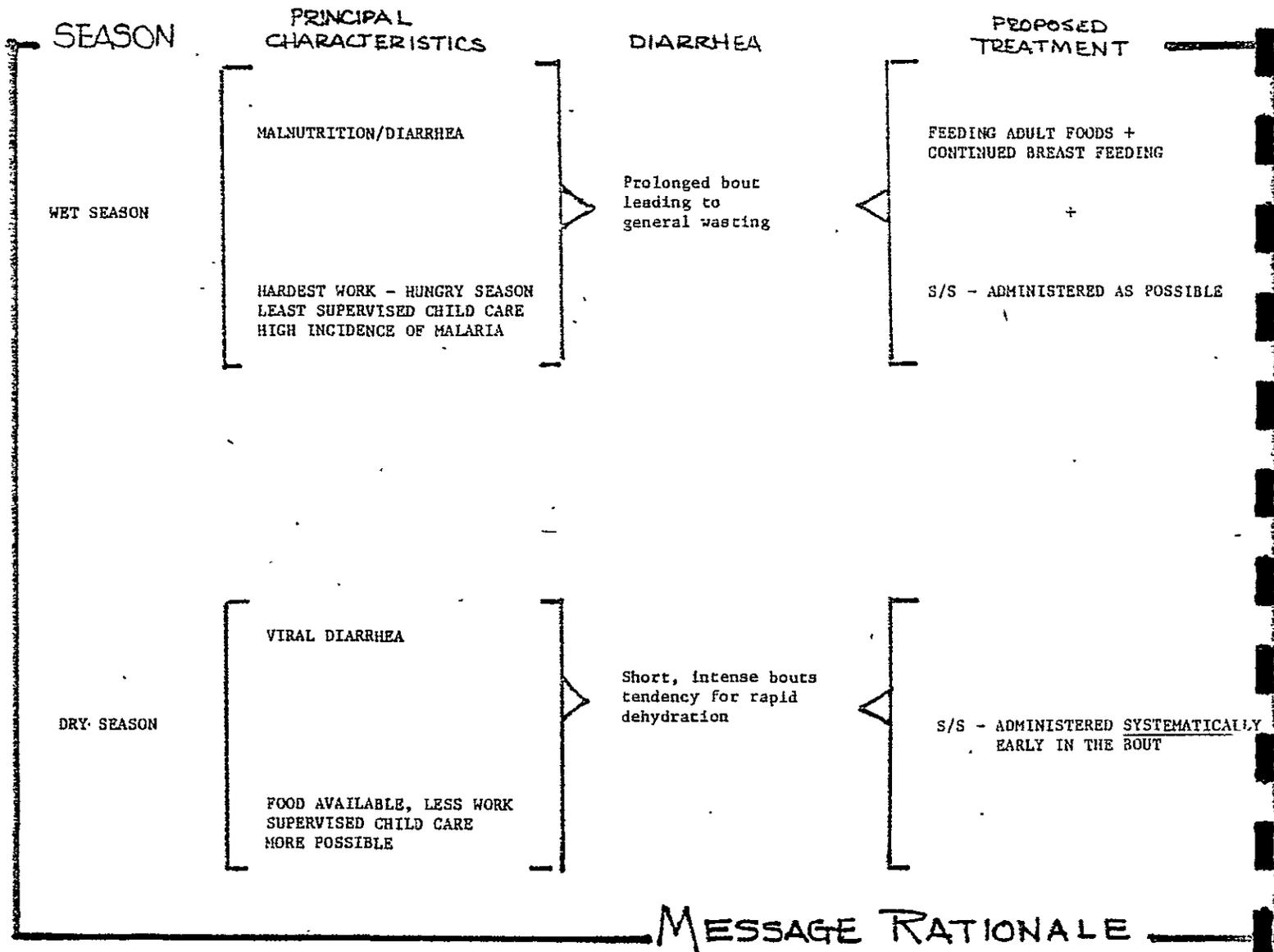
- the seasonality of diarrhea in The Gambia
- the national policy on management of acute diarrhea
- the structure of the family life in a closed compound
- the paucity of print materials
- the role of radio and the rural penetration of the health system

Seasonality of Diarrhea: Unlike Honduras, rapidly dehydrating (2-3 day) and watery diarrhea is not the principal cause of diarrhea-related death in The Gambia. During the prolonged wet season, diarrhea interacts with malnutrition, reduced food availability and poor child care practices to produce a general wasting, widely characterized as "dryness," which often leads to death in young children. Traditional home therapy (three-day administration of a litre volume per day), is impractical and probably not effective in this setting. A more reasonable intervention is an emphasis on diet which includes S/S solution (giving as much as a child will take), adult food (rather than watery paps) after an episode ends, and breast-feeding. This, coupled with a specific cue for severity (sunken eyes and general weakness) which leads the mother to outside help, appears a more reasonable treatment intervention during the wet season.

During the shorter dry season, watery diarrhea does appear to be a more common problem resulting in rapid dehydration and making oral therapy a more powerful positive intervention. This rationale is illustrated in the diagram on page II-4.

From a purely instructional view, the campaign first focuses on an idea already present in the target population--"dryness is dangerous"--then stresses what to do about "dryness"--administer properly mixed S/S solution early in an episode along with feeding advice. Once S/S mixing has been "mastered" during the wet season, the campaign stresses the intensive administration of S/S necessary during dry season watery diarrhea. The project has

been fortunate that diarrheal seasonality coincides with a practical, if somewhat hurried, production, training, and distribution schedule.



National Management Policy: Lengthy deliberations including one WHO mission, regular contact with experts at MRC, and interchange with the Medical Advisory Board of the MM&HP project have given the Ministry of Health's leadership ample opportunity to consider every aspect of a national diarrheal management program. A number of possible management systems have been analyzed, including home administration of pre-packaged ORT salts. Ultimately, the decision was made to develop a three-step treatment program relying on simple S/S in the home, UNICEF packets at fixed facilities, and IV/IP at selected fixed health facilities for severe dehydration. The overall regimen is summarized on the chart below, taken from the recently produced Health Worker's Manual for the Management of Acute Diarrhea in The Gambia, which constitutes the national policy on diarrheal management in The Gambia.

TREATMENT PLAN SUMMARY

NORMAL HYDRATION STATUS	* For 24 hours, between breastfeeds, give:
	Child weighing LESS THAN 5 Kg (0-6 months old) 300 ml (2 Julpearl bottles)
SUGAR-SALT MIXTURE	Child weighing MORE THAN 5 Kg (6-18 months old) 600 ml (2 Julpearl bottles)
	Child weighing MORE THAN 10 Kg (18 months and older) 900 ml (3 Julpearl bottles)

MODERATE DEHYDRATION STATUS	* For the first 4-6 hours, give: 20 ml/Kg/Hour
	Reassess after 4-6 hours. If worsening go to Treatment Plan III If improving give 100 ml/Kg Overnight
W.H.O. SOLUTION	Reassess the next morning If Hydration Status is normal → T. Plan I If Moderate Dehydration persists → T. Plan II If Severe Dehydration develops → T. Plan III

SEVERE DEHYDRATION STATUS	* For the first hour, give: 20 ml/Kg of W.H.O. Solution (use nasogastric tube if necessary)
	Meanwhile, transfer to facility with I.P. or I.V. On arrival, begin I.P. rehydration
W.H.O. SOLUTION	* For the first hour, give intraperitoneally: 50 ml/Kg of I.V. Solution
I.V. SOLUTION	Reassess after one hour If improving → continue till rehydrated If worsening → transfer to I.V.
	* Immediately, give, intravenously 20 ml/Kg of I.V. Solution
	*Then, give: 10 ml/Kg/Hour till rehydrated
	With I.P. or I.V. Therapy, continue giving O.R.T. if the child can drink: 20 ml/Kg/Hour

The rationale for the government's policy rests upon several facts. First, The Gambia has ten years of experience with S/S solutions. The concept, however, is widely recognized but poorly implemented at all levels of the health system. Secondly, resource projections indicate that the country is presently unable to import sufficient stocks of packets, or to produce sufficient quantities locally, to effectively supply a long-term, home-based packet system. At this time, the Ministry is reluctant to experiment with a system they feel is beyond their capacity to sustain. Finally, the prolonged bouts of wet season diarrhea do not require the same intense level of administration as widespread watery diarrhea. Properly prepared and administered S/S solution combined with slightly altered feeding practices may be the most effective intervention for dehydration during this season.

Given these priorities, the MM&HP project will support the Ministry's overall program in several critical ways; first, by popularizing a properly mixed S/S solution at the village level; second, by training health workers in the proper preparation and administration of UNICEF packets at fixed facilities; and finally, by promoting dietary practices which may potentially effect the wet season wasting of young children.

Rural Family Life: The structure of rural family life around a single, enclosed compound which includes numerous mothers suggests the possibility that successful innovation by one mother in a compound may spread to other mothers in that compound. A disturbing lack of communication among mothers within a compound has been reported by some experts, however. This problem is compounded by the fact that female access to radio is severely limited. Additionally, child care is often delegated to older female siblings and grandmothers, frustrating the project's ability to focus on mothers alone as the principal target audience. To meet these realities, a strategy has been developed which uses radio to mobilize rural females. The intervention will cut across female age differences and provides a practical justification for female access to the radio, at least during selected listening times. A radio lottery, open only to females and limited to one winner per compound has been devised. The main prize, an expensive radio/cassette recorder, will be awarded during specially prepared radio programs which will also teach how to mix S/S solutions, why these solutions are important, and how to use the drawings on the "lottery ticket" as a reminder of how to mix the S/S solution.

Paucity of Print Materials: Visits to rural villages demonstrated the paucity of print materials in rural villages. Literacy is extremely low. Arabic seems to be the only written language which is reliably read by a small but dispersed number of rural Gambians. Equally significant is the absence of graphic images in rural villages. Publicity, photographs, posters, and drawings are almost totally absent from homes, meeting places, and stores. Additionally there is little existing information on

the level of visual literacy in the countryside, making the rapid creation of effective visual messages extremely difficult. This was one of the important reasons that 1) limited print material was included in the campaign and 2) the lottery/flyer was designed in such a way that radio could be used to "teach" the meaning of each picture. Essentially, the project team is somewhat pessimistic about our ability to develop a visual which will effectively convey the mixing message without direct verbal support.

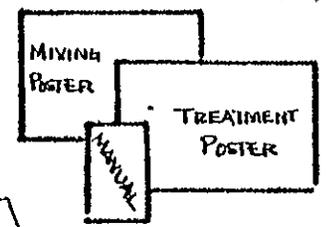
Penetration of the Health System: The mobility of rural health workers in The Gambia suggests that they can be an effective distribution vehicle for specific mixing instructions and for the lottery/flyer. The workers are both widely accepted and available through regular "treks" to surrounding villages. The large number of villages in The Gambia, estimated at some 2000, and the concentration of the rural population in these village clusters make it possible in the time available to provide minimal face-to-face support through the TBAs in at least half of the total villages; perhaps reaching as much as two-thirds of the population.

C. THE CAMPAIGN STRATEGY

The following diagram illustrates how the three principal components of the program relate to form a single, cohesive campaign.

RELATIONSHIP of CAMPAIGN ELEMENTS

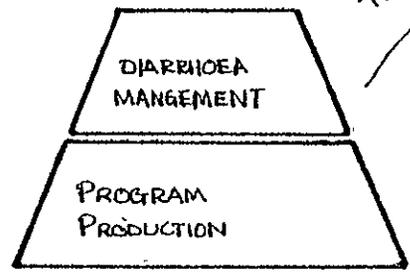
PRINT



DISTRIBUTE

DISTRIBUTE

TRAINING



TRAINING

RADIO



HI-CHN-PCV LI

TRAIN



TEACH



DISTRIBUTE

TRAIN

TRAIN



IDENTIFY



• TEACH MIXING FEEDING SIGN
• INFORM ABOUT TEA ALKALINE

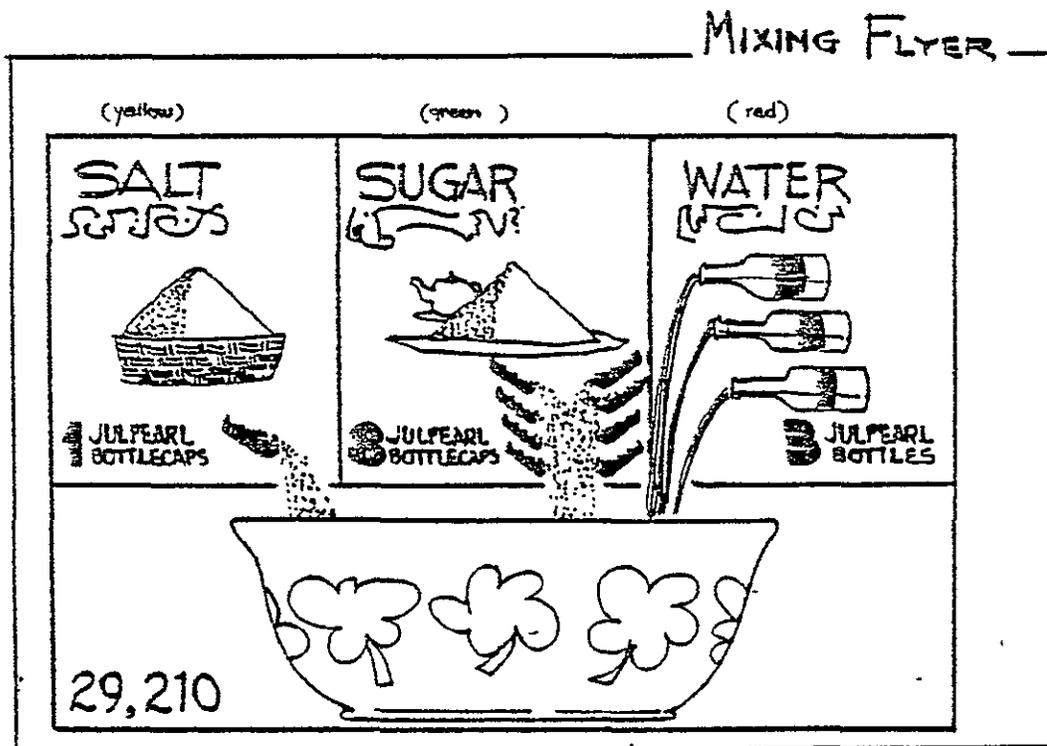
POPULARIZE

(II-8)

F-21

Training will be provided to the health workers through eight three-day workshops. During these workshops a flyer carrying color-coded mixing instructions will be handed-out for mass distribution to rural mothers through the health workers. In addition, health workers will receive a large treatment poster summarizing the critical treatment steps, a manual providing additional management details and a supply of red sashes to identify the TBAs who they subsequently train. Upon return to their health centers and dispensaries the health workers will travel to pre-determined villages and identify a receptive local TBA worker who they will train in the S/S mixing process. Health workers will leave the red sash on the roof of the TBA's home. They will also distribute a stock of the mixing flyers to the TBA.

After a period of several weeks, permitting the TBAs to be contacted and trained, radio broadcasts will begin announcing a national rural lottery focusing on women with children under five as the primary participants. The color-coded mixing flyer will act as the lottery ticket. Each flyer will be numbered in bold type at the bottom (see below).



By late June the radio will begin the lottery announcements informing mothers when to listen to the lottery program and to have their lottery flyer with them to determine if they are a winner. During the award program, radio will teach mothers to read and decipher the flyer. Using the color-coded sections, a slogan will be developed to relate color, volume, and substance.

Example:

- Yellow square, 1 capful, salt
- Orange square, 8 capfuls, sugar
- Red square, 3 bottles full, water

At the same time radio broadcasts will identify the red sash as a place to go for help if a mother forgets the mixing instructions. Radio will also stress that a special diet for dryness, S/S plus adult cereals and breast milk, is a way to help prevent "dryness." The mothers cue to prepare the "dryness diet" is the episode of diarrhea itself. Two signs, dark sunken eyes and weakness, are cues to seek help because "the dryness is too strong."

Radio will play several key roles. It will identify the TBAs, popularize the lottery, teach the meaning of the flyer, and carry the primary messages on when to seek help, and what to feed during diarrhea.

Print materials will remind health workers of their key treatment behaviors and, through the lottery ticket/flyer, generate excitement and provide concrete instruction on the S/S mixing regimen.

Training will create the basic face-to-face support needed to ensure success. First generation training of health workers will standardize the process of diarrheal management in health centers and train health workers to teach S/S mixing to TBAs. Second generation training of TBAs will provide a local level guide and support for mothers unsure of what they have heard on the radio or how to read the flyer.

In addition to the focus on diarrheal management, a series of special radio messages will be developed around the theme of cleanliness during prayer. These messages will focus on the need to regularly (once a day) clean up faeces of all kinds within the family compound. The physical boundaries represented by the walled or fenced family compounds make adoption of this message feasible.

The presence of faeces, both human and animal, is one of the principal sources of bacterial contamination and a primary link in the infection process. While latrines are quiet common, they are reserved almost exclusively for adults, leaving both child and animal faeces widely dispersed within the compound. The strong Muslim tradition of cleanliness and the association of the floor as a place of prayer appear reasonable foci around which to build the message theme. In addition to radio programs, local leaders will be involved in discussing the clean-up during bantaba (male conversation/decision) groups, building upon a strong tradition of "obedience" to stimulate compliance with the campaign.

D. PRINCIPLE CAMPAIGN OBJECTIVES

The principle campaign objectives, expressed in measurable values are described below. These quantifiable goals have been identified as behavioral targets rather than changes in health status. This reflects a certain pessimism about our ability to exclude secular factors as casual agents for any health status change over such a short period of time. In reality, we are unsure what levels of compliance are feasible in a campaign influenced by such complex variables as exist in The Gambia. We do believe, however, that the program will impact significantly in each of the following areas.

1. 1000 villages will have at least one resident volunteer, identified by a distinctive red flag, who is able to correctly mix a S/S solution as measured by an acceptable sodium level of 60-110 m/equiv.
2. All HIs, CHNs, Health PCVs and LIs will be able to:
 - Properly mix a S/S solution as measured by the sodium level criterion.
 - Determine when a child is listless, can't sit up, is weak, and has sunken eyes; and subsequently administer a complete formula OR packet properly.
 - Properly mix an OR packet as measured by the sodium level criterion.
 - Properly administer an OR packet in the follow way:
 - If a child has moderately sunken eyes, give him/her 20 ml/kg of WHO formula for 4-6 hours;
 - Reassess the child's status after 4-6 hours. If normal, continue treatments with S/S solution; if same, or improved, continue 20 ml/kg of WHO formula for another 4-6 hours; If worse and very limp, give 20 ml/kg of WHO formula while transferring child to a facility with IP or IV, if possible.
3. At least one mother with a child under five in 20% of all compounds will be able to properly mix a S/S solution as measured by the sodium level criterion.
4. The number of mothers with children under five who feed adult foods (solid rice and millet) to children with diarrhea will increase by 10%.

5. The number of mothers with children under five who give additional food to a child recovering from diarrhea for at least two days after the bout will increase by 10%.
6. When asked, at least one mother with a child under five in 30% of the compounds will be able to say that:
 - she believes a child under five with diarrhea needs S/S solution and adult food
 - S/S solution and adult food can help prevent dryness
 - dryness is especially dangerous in children under five (young children)
 - a red sash identifies a person in the village who knows how to mix the S/S solution properly
 - sunken eyes are a sign of dryness, which requires that she take her child to a health center
 - that faeces of all kinds should be cleaned from the family compound at least once a day.

Expressed graphically the principal goals can be divided into seven areas. The boxed area below represents those behaviors of central concern, while the three sections outside the box are behavioral areas where a greater degree of noncompliance is acceptable.

DRYNESS

ORAL REHYDRATION

FEEDING

PREVENTION

Recognize dryness as a problem which S/S and special feeding can prevent.

Recognize sunken eyes as primary sign to seek help at Health Center.

PROPERLY MIX S/S
HI, CHH, PCV, LA,
TDA, Mothers

Continue breast feeding & give as much adult food during bouts as possible.
Avoid popo.

Give additional adult food after bout.

"Clean-up" feces within family compound at least once a day.

HI, CHH, PCV
Will properly prepare and administer UNICLIF packet.

PRINCIPAL
CAMPAIGN
OBJECTIVES

TI-13

E. SEGMENTATION OF TARGET AUDIENCE BY CAMPAIGN THEMES

The objectives described above translate into four general campaign themes and each theme has been sub-divided into specific message themes as follows:

PRINCIPAL CAMPAIGN THEMES

MALNUTRITION, DEHYDRATION (DRYNESS)

Dryness is most dangerous in small malnourished children with diarrhea.

- Three signs of dryness are especially important
 - A. DIARRHEA for more than 3 days
 - B. SUNKEN EYES
 - C. WEAK, LIMP, LISTLESS CHILD
- If a child gets sunken eyes he needs special care - take him to a health center right away.

ORAL REHYDRATION

- Mix S/S - 1 Juipari cap salt, 8 Juipari caps sugar, 3 Juipari bottles clean water
- Give all your child will take slowly - all day long. Make new receipt each day.
- (During dry season) Be sure to give one litre of S/S solution a day as soon as child starts having diarrhea.
- Go to TEA with red sash if you forget how to mix S/S
- (For Health Worker)

Prepare packet in 1 litre of clean water. (weighing child) (ml measure)

Monitor and manage moderate and severe dehydration

FEEDING

- Mothers should start giving adult food when baby is 5 months old.
- Mothers should give some solid rice (millet) when the baby is sick, even if the baby doesn't like it.
- Raps are not as good a food for child as adult foods.
- When baby recovers from diarrhea he needs extra food to make him powerful again. Give him adult food for several days.

PREVENTION

- To be clean is our obligation to God.
- It is an affront to God to pray on dirty floors.
- Faeces of all kinds are not clean, they cause disease
- It is our duty to keep the faeces away from small children and from food.
- Make someone in the family responsible to collect and bury faeces at least once a day.

These themes have been subsequently segmented by audience type.

- Rural mothers with children under five, older women and female siblings.
- First generation health workers (HIs, CHNs, PCVs, LIs, and MCH teams).
- Second generation health workers (TBAs, D/Ds, Ns, ANs).
- Rural opinion leaders (alkalos, fathers, Imans).

(Generation, as used here, refers to the source of training a health worker receives. First generation health workers are trained directly by project staff, while second generation health workers are trained by first generation trainees.)

The rationale for the proposed audience segmentation is quite similar to that used in Honduras. Children under five are at greatest risk. Their mothers continue to be the central figure in their lives, although the role of siblings and older compound women is an important one, particularly during the wet season when able-bodied women are consumed by agricultural chores. For this reason, a radio strategy has been developed which potentially impacts on all women. Messages will not be directed exclusively at mothers, but will adopt a tone which influences older women as well. It is hoped that an event as dramatic and novel as a lottery will cut across age groups and bring older siblings, child-bearing women, and older women together around the radio.

Health workers have been segmented into two groups based upon the potential impact on villages which surround the fixed facilities in which they are based. Essentially, the most mobile members of the rural health worker team have been selected--first generation trainees. They have been given the special role of teaching TBA's how to mix and administer the S/S solution. The TBAs were singled out as the most likely village contact because of their acceptance by village people and their utility in rural areas. They are relatively easy to identify and amenable to involvement in the program.

Finally, the key opinion leaders--alkalos, fathers, and Imans--represent a pervasive power structure in the rural village. As "gate-keepers" of village behavior, their support is critical, particularly for the prevention campaign which depends heavily upon religious and obedience themes.

The following chart illustrates how the campaign themes have been segmented by target audience.

MESSAGE EMPHASIS
BY TARGET AUDIENCE

		PRIMARY AUDIENCE <small>PARENTS CRAMPTONS OLDER SIBLINGS</small>	SEC. AUDIENCE <small>HEALTH WORKERS & PHARMACISTS</small>	TER. AUDIENCE <small>TITLARS OPTIMISM STUDENTS</small>
DRYNESS		5	5	3
ORAL THERAPY	S/S	1	1	1
	SIGNS	2	3	3
	PACKET	1	2	
FEEDING		3	4	4
PREVENTION		4	6	2

1 - MOST IMPORTANT
5 - LEAST IMPORTANT

Other audiences were also included. Physicians, for example, will receive a specially prepared packet of readings along with a letter from the Ministry of Health informing them of the new diarrheal management program and enlisting their assistance. They will receive two copies of the treatment poster for their offices or dispensaries.

F. MESSAGE PHASES

The graph on page II-17 illustrates how seasonal peaks, campaign messages and campaign elements are related over time. The radio messages are scheduled to begin in April. February and March will focus on program production and pre-testing, first generation training, and print materials preparation. Print materials and the red sashes will be distributed through the second generation training while radio is stressing the cluster of enabling behaviors around "dryness" and its relationship to diarrhea and feeding. By mid-June the bulk of the second generation training will have been completed and the widescale lottery promotion will begin on radio. From June through October mixing and feeding advice will dominate with prevention messages beginning in mid-August. During the November and December period new radio programs will be prepared around systematic mixing instruction, changing the focus to dry season diarrhea and intensive application of the S/S solution. During the dry season peak and through March, administration, along with additional mixing messages, will be stressed.

This phasing allows program planners to stress the critical skills sequentially. Mixing will be first. It is perceived as the most difficult behavior to modify because 1) it is already being done incorrectly by so many people, 2) its past use has not produced dramatic positive effects perceived by the target audience, 3) it involves correctly associating three different volumes and substances, 4) all ingredients have to be supplied by the mother, and 5) it has little inherent appeal; there is no color, it has a salty, unappealing taste, and it lacks face-value potency. Intensive, systematic administration need not be pushed during the wet season, but should wait until the dry season watery diarrhea is more common. This coincidence allows us to spend more time on the most difficult task (mixing) and to focus almost exclusively on it for a considerable portion of the entire broadcast time.

G. INSTRUCTIONAL ELEMENTS

The proposed campaign is composed of three instructional elements; radio, print, and face-to-face training. These elements act together to inform, train, provoke initial trial, stimulate interpersonal opinion leadership and reward the various target groups for acceptable compliance. In the following graph the relative importance of each element as related to campaign themes is identified. It is clear that S/S solution mixing will receive the most sustained and comprehensive emphasis. Major radio programs, print material and health worker training will be focused on this critical set of behaviors.

**MESSAGE EMPHASIS
by CAMPAIGN
MEDIA**

	RADIO			PRINT				TRAINING	
	SPOTS	MINI-PROG.	MAGAZINE	FLYER	MIXING POSTER	TREATMENT POSTER	PHYSICIAN'S WALLER	1 st GENERATION	2 nd GENERATION
DRYNESS	✓	✓	✓				✓	✓	✓
ORAL THERAPY	S/S	⊙	⊙	⊙	⊙	⊙	✓	⊙	⊙
	SIGNS	⊙	✓	✓			⊙	⊙	⊙
	PACKET						⊙	⊙	⊙
FEEDING	✓	✓	✓				✓	✓	✓
PREVENTION	⊙	⊙	✓					✓	

✓ EMPHASIS
 ⊙ PRIMARY EMPHASIS

1. Radio

Radio programming will play a particularly critical role in the overall campaign. It will have the primary burden of teaching how to use the color-coded sections of the S/S solution mixing flyer to identify and popularize the visual mixing instructions.

Eight message clusters have been identified for radio. Clusters I through V provide direct information on preparation and administration of the S/S solution. Clusters VI through VII are used to popularize key aspects of the campaign; the lottery and the TBA depot. Cluster VIII focuses on faeces clean-up. Each of the eight message clusters are described below:

RADIO MESSAGE CLUSTERS

I. Danger of Diarrhea

Dryness is a dangerous problem in diarrhea and malnutrition. The greatest danger is with young children under two.

II. Diet for Dryness

- Prevent dryness with a special diet when children get dehydrated.
- The diet consists of adult food (solid rice and millet) and a special S/S tea.
- Give as much adult food and S/S tea as the child will take, and keep breast-feeding during diarrhea.
- Paps are not as good as adult foods to give the child strength to fight the diarrhea.
- When diarrhea stops and child wants to eat, give him extra adult food for one or two days. This gives him extra strength and power.
- Learn to make S/S tea on the radio or from your health worker or from the "lady with the red sash".
- Don't store the S/S tea for more than one day. Make a new solution fresh everyday.
- Give the child a lot of the tea and use what is left to cook with his food.
- Make a new solution fresh every day.

III. Mixing S/S Solution

- Get 1 Julpearl bottle, 1 bottle cap, some sugar, salt, and the cleanest water you can find.
- Mix 3 Julpearl bottles of water, 1 cap of salt, and 8 caps of sugar together to make the tea.
- Be sure to make a powder of the sugar if you use sugar cubes.
- When you measure the S/S, use a "chew stick" to level the cap. Don't use a heaping cap; that makes the tea too strong for the baby.
- Give the child as much as he will drink. Give it slowly with a spoon, or the child might vomit. Give a loc. as much as possible, and don't give up if the child vomits a bit; continue, but go a bit slower.

IV. Seek Help

If your child has diarrhea for more than five days and is getting sunken eyes, then dryness is taking over; take the child immediately to a health center.

V. Dry Season Message

- During the dry season dryness comes very to the child quickly, the S/S tea must be given in a special way. During the dry season it is important to give at least one Julpearl bottle a day and more if the child is more than one year old.
- Make a new solution fresh every day and be sure and give at least one Julpearl bottle a day for three days.
- If your child starts to get listless and has sunken eyes, be sure to take him to a health center.

VI. Lottery Identification

- The Medical and Health Department is offering a special lottery for rural areas.
- Your ticket/flyer is available now -- free -- from your local health worker.
- You can win wonderful prizes--a radio, a tee shirt, or a special one-litre cup--by listening to Radio Gambia on (day) at (time).
- Keep your ticket in your home and have it with you when you listen to the radio.
- Many people will have a chance to win a wonderful prize.
- The ticket will be given to all those who contact the health worker first, one ticket per compound.
- This ticket also teaches you how to mix the special S/S tea. Listen to the radio on (day) at (time) to learn how to mix the S/S tea and to see if you are one of the lucky winners.

VII. Depot Identification

- The Medical and Health Department believes that the S/S tea is so important that we have trained a group of special helpers and given them a big red sash so that you can find them easily in your village.
- Go to the compound with the red sash if you forget how to make the S/S tea. There you can find help if you forget.
- If you don't have a flag in your community, go to your health workers or PCV for assistance.

VIII. Faeces Clean-up

- We all know that cleanliness is the will of God.
- It is hard for us to be clean all the time, we work hard and have little, but where we pray, inside our compound, must be kept clean for God.
- Faeces are the dirtiest of all dirt.
- They bring disease, make our children dry and wither, and it offends God.
- It is our duty to name one member of the family to clean the floor of the compound at least once a day, so that when we pray the ground is clean of all faeces.
- All faeces (human and animal) must be kept away from where we cook, where we eat, and where we pray.

Three kinds of radio programming will be used, spots, mini programs, and magazine programs. All programs will be broadcast in both Mandinka and Wollof, with special programming also included in English and French. The following schedule illustrates the maximum number of each program type per month by principal broadcast language.

Spots (3 minutes)

- Wollof (four different programs) 4 weeks x 12 transmissions per week = 48 transmissions per month
- Mandinka (four different programs) 4 weeks x 12 transmissions per week = 48 transmissions per month
- Total Airtime: 96 transmissions x 3 min = 288 minutes or 4.8 hours per month

Mini-Programs

- Wollof (four different programs) 4 weeks x 2 transmissions per week = 8 transmissions per month
- Mandinka (four different programs) 4 weeks x 2 transmissions per week = 8 transmissions per month
- Total Airtime: 16 transmissions x 10 minutes = 160 minutes or 2 hours per month

Magazine Programs

- Wollof (four different programs) 4 weeks x 2 transmissions per week = 8 transmissions per month
- Mandinka (four different programs) 4 weeks x 2 transmissions per week = 8 transmissions per month
- Total Airtime: 16 transmissions x 30 minutes = 480 minutes or 8 hours per month

At present it is proposed that only one broadcast channel, Radio Gambia, be used. While Radio Syd has a significant following in the Banjul area, its signal does not appear to penetrate the interior of the country. The results of future listenership studies may alter this division.

The chart on page II-23 illustrates the distribution of program content by program type over the first year of broadcasts. The letters A, B, and C represent the three types of broadcasts: spot, mini-programs and magazine programs, respectively, and are followed by a number (1-4) indicating the number of different programs of that type broadcast each month.

The chart on page II-24 shows a typical distribution pattern for programming during an intensive month of broadcasting. The letters again indicate the type of program.

Each number represents a different program. Numbers are repeated to show the frequency that individual programs would be repeated during a given month.

It is anticipated that all programs will be produced at Radio Gambia's facilities, although back-up facilities are available at Radio Syd should production time be impossible to get at Radio Gambia. The personnel of the MOH Health Education Unit, in collaboration with the personnel of the Rural Broadcasting Unit of Radio Gambia, will be responsible for all program production.

The project will provide consultants to train three individuals in program design, script writing, and final program production. One consultant, Ms. Esta de Fossard will work with local producers for two weeks in March to produce the programs scheduled for April, May, and June. A full-scale workshop scheduled for June under the AID-sponsored "Studies in Facilitating Learning" contract with the Academy, will provide additional assistance in the preparation of programs for June, July, August, and September. The remaining programs will be developed after an analysis of the first field monitoring information.

2. Print Materials

Six print materials will be developed for the initial two phases of the campaign. The graph on page II-25 lists each material, and describes the number of distribution points plus the number of each material to be distributed by unit.

RADIO PROGRAM SCHEDULE

MESSAGE CLUSTER	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH
DANGERS of DRYNESS	B4	B4	B1									
DIET for DRYNESS	A4	A4	B3 A1 C1	B2 A1 C1	B3 A2	A1	A1	A2				
PREPARING S/S sol. (LOTTERY)					C4 A2	C4 A3	C4 A3			A2	A1	A1
SEEK HELP at HEALTH CENTER												
DRY SEASON MESSAGES								A2 B2	A4 B2	A2 B3 C2	A3 B3 C2	A3 B3 C2
PUBLICIZE LOTTERY			A3 C1	A3 C3								
IDENTIFY TBA w/ RED SASHA												
FAECES CAMPAIGN				B1	B1	B1	B1	B1	B1	B1	B1	B1
TOTAL	A4 B4	A4 B4	A4 B4 C2	A4 B4 C4	A4 B4 C4	A4 B4 C4	A4 B1 C4	A4 B5	A4 B3	A4 B4 C2	A4 B4 C2	A4 B4 C2

MONTHLY PROGRAM DISTRIBUTION

Prog. Type	M	T	W	Th	F	S	S
A	4	1 2	2 4	2 3	3 4	3 1	1
B	1			3			
C		1				3	

Prog. Type	M	T	W	Th	F	S	S
A	4	1 2	2 4	2 3	3 4	3 1	1
B	2			4			
C		2				4	

Prog. Type	M	T	W	Th	F	S	S
A	4	1 2	2 4	2 3	3 4	3 1	1
B	3			2			
C		3				2	

Prog. Type	M	T	W	Th	F	S	S
A	4	1 2	2 4	2 3	3 4	3 1	1
B	4			1			
C		4				1	

(II-24)

The Ministry's Treatment Manual (s widely distributed as the principle ref workers and professionals at all levels contains more detailed instruction on a including advice to mothers on recovery

A long red sash will be prepared a identifier for Traditional Birth Attend solution mixers. The sash will act as broadcasts can reference and use to gui assistance.

Finally a physician's mailer will includes a letter from the Chief Medica Ministry's Treatment Manual, the Popula Rehydration Therapy, the WHO guidelines and an article examing the role of anti management. These will be bound in a t delivered to all physycians in The Gamb the Treatment Poster. The letter accom stress the new roles for oral therapy i and solicit the physician's cooperation key advice.

- Continue breast-feeding during
- Promote solid foods as soon af possible.
- Avoid antibiotics as routine t
- Use ORT in most cases of moder dehydration.

The materials described in this se in three ways. Those materials being u (the two posters and the manual) will b training sessions scheduled for March-J flyer and red sash will be given to par through TBAs and directly during regula schedule of village visits will be work worker at the end of the training perio to communities can be avoided.

The radio will announce the flyer' centers. Mothers will be told to pick one to a compound, free, from these dis addition, the MCH team and Leprosy Insp communities not being adequately served

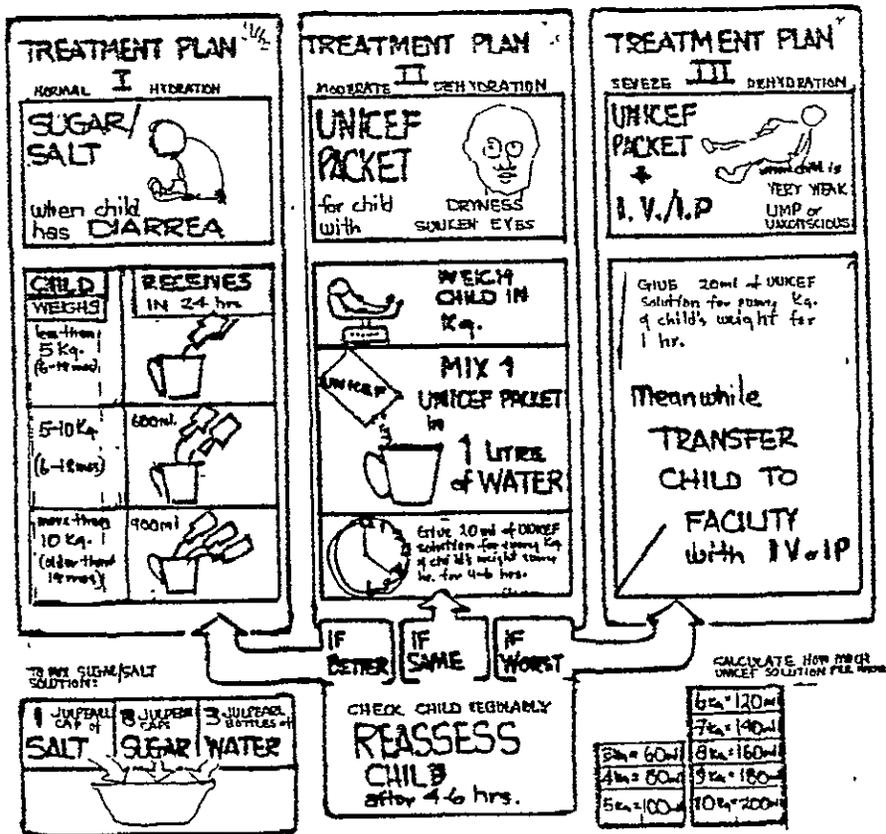
The physician's mailer will be del staff to the local medical association their regular channels.

The mixing flyer/lottery ticket illustrated on page II-9 is the single most critical print material being developed. The two-sided single sheet will carry two important instructional messages, the S/S solution mixing instructions and the indication to level the bottle cap when measuring the S/S solution. The instructions are color-coded so that radio messages can more effectively describe each element of the mixing process. The flyer also carries a lottery number (in the lower left hand corner) which provides the critical motivation for rural mothers to acquire the flyer and listen to the radio programs.

A large version of the flyer will be printed as a Mixing Poster and distributed to all health centers and given to as many Traditional Birth Attendants as possible. Several copies of the same poster will be placed together on a common wall within the health facility to increase its visual impact.

A treatment poster (see below) has been prepared for the fixed health facilities which summarizes the key points suggested in the Ministry's treatment manual. This poster is designed as an agile reminder of key points in all three rehydration regimens and will be distributed to private physicians as well as government facilities.

DIARRHOEA MANAGEMENT



Most print materials will be produced locally at the Book Production Unit of the Ministry of Education. Working with the Health Education staff, they will design and pre-test the initial print materials. The treatment poster will be printed in the United States due to the local impossibility of large-format printing. The mixing poster will be printed in Dakar, allowing the Book Production Unit to test the reliability and quality of regional large-format printing capacity.

3. Training

The training segment of the program takes place at three levels, first generation training of selected health workers by project staff, second generation training by first generation trainees of their fellow health workers and of selected TBAs in 1000 rural communities, and direct orientation of rural mothers by TBAs and health workers on mixing S/S solution in the home. The basic training objectives have been described on page II-11 of the plan. The following schedule illustrates how these objectives will be achieved over time.

*TRAINING SCHEDULE for
PRIMARY Health Workers*

	MARCH	APRIL	MAY	JUNE	TOTAL
New PCV's	10				10
HI, CHN, PCV	5	15 15	15 15	15 15	95
L.I.				15	15
MCH Team	5				5
PHCW	13	6	6	6	36
TOTAL					161

An initial training design will be tested during March on groups of trainees composed of new PCV's, Health Inspectors from the Banjul areas, MCH team members and the new group of PHCWs now in training. In April, a series of five-day workshops for 15 individuals per session will be conducted. The workshops will bring together HIs, CHNs, and PCVs from the same region for an intensive orientation to diarrheal management. Each day is structured in the following way:

- A rationale for the target behavior is provided.
- The behavior is modeled expertly by a trainer.

- Participants practice the behavior.
- A discrimination game allows participants to learn differences between correct and incorrect performance, especially on key areas where critical mistakes are likely.
- Intensive individual practice (aimed at greater fluency and skill) in performing the behavior and gradually performing the behavior under increasingly realistic conditions.
- Review of program rationale and the discussion of village constraints to performing the behavior under actual field conditions.
- Self-corrected testing and review of principle knowledge and skills to be acquired.

The first two days of the workshop will focus on broad health education materials while the last three days will be focused exclusively on diarrheal disease management. Day 3 will emphasize S/S solution mixing and administration. Day 4 will focus on moderate and severe dehydration management with UNICEF packets and Day 5 will stress teaching S/S solution mixing to TBAs and rural mothers. A tentative training design has been included in Appendix C.

The training approach being proposed is illustrated in the following diagram.

BASIC TRAINING CONTENT & APPROACH

	<u>DAY 3</u>	<u>DAY 4</u>	<u>DAY 5</u>
OBJECTIVE	S/S	PACKET	TEACHING S/S
APPROACH	<ul style="list-style-type: none"> ° Model Mixing & Administration Skills ° Discrimination Game ° Small Group Practice 		<ul style="list-style-type: none"> ° Role Playing ° Individual Practice ° Comprehensive Review ° Self-Corrected Test ° Planning to return to village
KEY IDEAS	<ul style="list-style-type: none"> ° Prevents Dryness ° Feeding/Breastfeeding ° Wet Season/Dry Season Difference 	<ul style="list-style-type: none"> ° Rehydrates ° Give S/S after improvement ° Continue Feeding/Breastfeeding 	
REVIEW	<ul style="list-style-type: none"> ° Individual Practice/Testing 		

This training approach builds upon several key learning principles which have influenced the entire campaign and which are listed below.

Standardize all Terminology and Procedures. Special care has been taken to ensure that the same language and visuals are used through radio, print, and training materials.

Develop Constancy Through Fluency. The training program includes an exercise which motivates trainees to mix a S/S solution "as fast as they can" to promote smooth, fluent, and quick performance of this key skill. Fluency has been shown to correlate positively with the ability to maintain a skill over time.

Emphasize Discriminations between Correct and Incorrect Performance to Ensure Continued Self-Reinforcement. A "discriminations game" has been developed so that trainees can "catch the trainer's mixing mistakes" and consequently become aware of simple but key mistakes that are possible (Appendix C).

Gradually Increase Salience of Practice Settings from Ideal Conditions to Real-life Conditions. The training design gradually puts trainees in situations of increased difficulty similar to that which they will find at the rural health center.

Emphasize Cueing and Consequences as much as the Behavior Itself. Radio has been given an important cueing role. Regular broadcasts will cue health workers to teach the S/S solution treatment and remind mothers when to seek outside help. Print materials and radio combine with the lottery to provide an important regular cue to mixing the S/S solution properly and a positive consequence for listening to the radio lessons.

Provide Immediate Post-Training Application and Rewards. The final training session will require trainees to develop a specific schedule for visits to surrounding villages to apply their newly acquired skills. They will receive materials to distribute which act as a reward in a print-starved environment and will be praised by visiting MCH teams for effective distribution of materials.

Reward Approximations as well as Full Compliance. This principle has been included in both radio and direct face-to-face training. The campaign is to have a positive, rewarding tone; avoiding scare tactics or a heavy, serious tone. Trainers will provide direct praise during the training course.

Provide Multiple Channels for the Same Information. Radio, print, training, and opinion leadership will all receive and transmit the same messages - focusing specifically on mixing the S/S solution.

Workshop training will be conducted in English, using project staff, members of the Health Education Unit, and physicians from the British Medical Research Council in The Gambia as trainers. Training sites will be scattered throughout the country and will follow the regular logistical and administrative norms of the Ministry of Health.

H. MATERIALS DEVELOPMENT AND TESTING

The project will rely on a systematic materials development process, stressing materials testing and revision. Because broadcast and print materials for rural mothers play such an important role in the overall success of the campaign, priority will be given to testing these materials. Pre-testing of draft materials (audiotapes of radio programs and visual mock-ups of print materials) for these audiences will be conducted in five villages outside Banjul. While these villages are not absolutely typical of those in the most isolated sites in the region, they do provide convenient and representative sites for testing. Care will be taken to test some materials in each of the three prominent language groups, Mandinka, Fula, and Wollof.

Not all materials will be pre-tested. Selected formats which provide representative samples of message approaches will be tested first. Critical questions related to each test material will be developed before each test and used to guide the interviewers (see Appendix D). Materials will be chosen for testing based on their novelty, complexity and relative importance in the overall campaign. The lottery ticket/mixing flyer, for example, will undergo the most rigorous testing because of its importance in teaching the basic mixing instructions.

I. MONITORING CAMPAIGN COMPONENTS

Regular meetings with MCH "trek teams" and with the rural health inspectors, as well as sporadic visits to rural communities, will be used to monitor project components on a regular basis. A mid-program sampling of rural villages is scheduled for late August. The important issues to be investigated include:

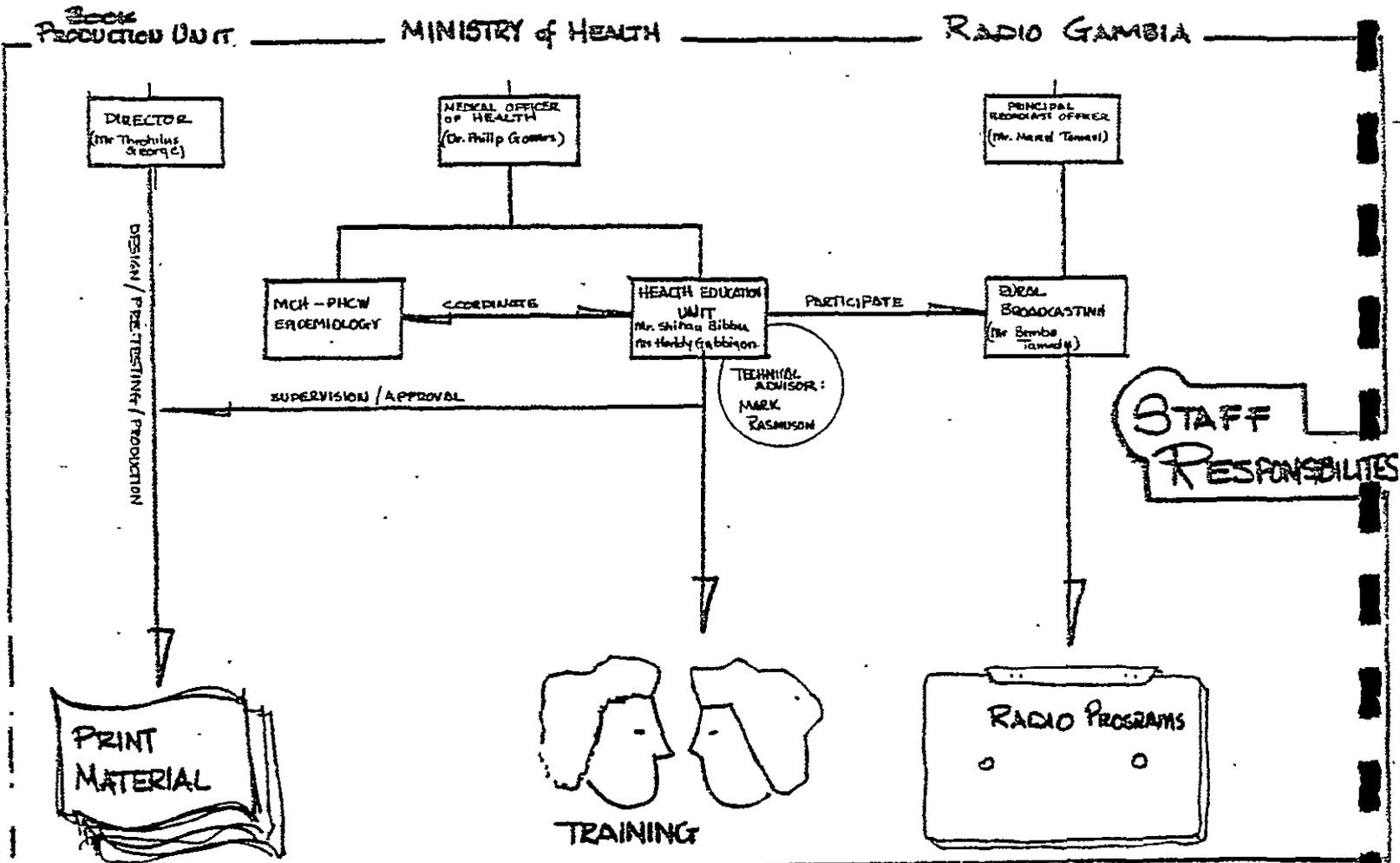
1. Is the mixing flyer being distributed with relative evenness throughout a village?
2. Are women listening to and understanding the radio programs?
3. Are there any unexpected obstacles to the acceptance of the S/S solution and feeding advice?
4. Are lottery winners getting special attention in their communities?

5. What effects is the program having on health workers? (demand for flyers, etc).

In addition, the Evaluation Contractor will provide the project team with as much anecdotal information as possible on acceptance and compliance with key behaviors. Realistically, however, it is not expected that significant quantitative data from this source will be available in time to permit substantive changes in the campaign design.

J. PROJECT STAFF RESPONSIBILITIES

The following graph illustrates the distribution of staff responsibilities among the several local ministries and the technical assistance personnel being provided by the Academy.



The key personnel include:

Dr. Philip Gowers: Medical Officer of Health, Ministry of Health

Mr. Saihou Dibba: Head, Health Education Unit

Ms. Haddy Gabbigon: Health Inspector, Health Education Unit

Mr. Theophilus George: Director, Book Production Unit

Mr. Marcel Tomasi: Principal Broadcast Officer, Radio Gambia

Mr. Bemba Tomadu, Chief of Rural Broadcasting

Mr. Mark Rasmuson: Academy Field Coordinator

Dr. Gowers will have overall responsibility for guiding and approving project activities and ensuring that the program is consistent with the Ministry's overall health priorities.

Mr. Gibba will coordinate all project activities within the Ministry of Health with special emphasis given to overseeing the training of health workers and the integration of radio production skills within the Health Education Unit. It is considered that the Health Education Unit will be the entity responsible for future campaign planning and supervision.

Ms. Haddy Gabbigon is assigned full time to the project and will have full responsibility for coordinating training of health workers and supervising the collection of village research information.

Mr. George will direct all testing and production of print materials for the campaign.

Mr. Tomasi will be responsible for approving all radio materials and ensuring that the program is consistent with national broadcast policies.

Mr. Tomandu will coordinate all radio production within Radio Gambia and ensure that programs are produced in a timely and effective manner.

Mr. Rasmuson will oversee the expatriot contribution including both financial resources and the planning and administration of specific consultants. He will oversee the timely progress of the implementation plan, ensuring that scheduled events take place at the planned times.

SECTION III

COMPARING HONDURAS AND THE GAMBIA

The MM&HP project is a two-site program. The original conception of the project included two sites so that comparisons could be made between a single methodology applied to two different environments and cultural settings. The Gambia and Honduras were chosen largely because of their differences. In essence, the question is: does a systematic, mediated campaign work effectively in both an African and a Latin American setting?

With the development of this implementation plan the parameters of difference between the two countries are clear. The chart on page III-2 illustrates the most relevant differences and suggests that in fact the two sites and the two intervention plans are significantly different.

SOME DIFFERENCES BETWEEN THE TWO SITES

	The Gambia	Honduras	
EXISTING ENVIRONMENT	The Health Problem	Striking seasonal variation between snort dry season of watery diarrhea, and longer wet season of prolonged diarrhea interacting with malnutrition.	Seasonally prominent watery diarrhea.
	Target Audience	Striking linguistic and cultural differences between major sub-groups.	Homogeneous cultural groups
	Health System	Limited central resources, with significant potential for rural coverage	Significant central resources with relatively limited rural outreach.
	Radio	Single , centralized government broadcast channel. Limited potential coverage.	Multi-channel commercial broadcast system. Excellent potential for coverage.
	Print Media	Practically unknown at village level	Limited availability, but some exposure.
PROPOSED INTERVENTION	Rehydration Regimen	S/S in the home-Packet and IV in the health center.	Packet in the home. Packet and IV in the health center.
	Treatment Strategy	Reinforce significance of dryness. S/S means to prevent dryness. Teach signs of mild dehydration as point to seek help.	Teach significance of dehydration. Teach signs of mild dehydration as point to seek help.
	Principle Treatment Objective	Standardize and popularize proper mixing and use of S/S solution in the home.	Popularize appropriate application of the packet in the home.
PROPOSED INTERVENTION	Principle Prevention Objective	Regular eces campaign within compound.	Cluster of prevention behaviors.
	Campaign Structure	High impact radio lottery targeted at rural women with print and health worker support.	Multiple, intensively repeated short radio messages, broad print material and health worker focus.
	Time	24 months total/12 month broadcast cycle.	36 months total/24 month broadcast cycle.

To understand the MM&HP program it is also important to note the commonalities, not of setting, but of approach, which characterize the project in both countries.

In both countries:

- A significant pre-planning investigation of the medical problem, the social context, and the instructional tools was conducted.
- Focused instructional goals were established, avoiding a broad and superficial treatment of diverse development objectives.
- The ultimate criteria against which design decisions were made was the feasibility, practicality and reliability of audience adoption.
- Behavioral design principles were used to select target behaviors, develop the training design, and orient the campaign structure.
- Radio, print, and face-to-face support were designed as integrated, mutually supportive, and interactive components.
- Significant use was made of radio for direct instruction as well as information dissemination and popular mobilization.
- Systematic materials testing and on-going component monitoring were included as fundamental elements.

SECTION IV

ANTICIPATED LOCAL CAMPAIGN COSTS

A.	<u>Local Consultants</u>	
	7 person/months	7,000
B.	<u>Local Travel & Per Diem</u>	1,704
C.	<u>Other Direct Costs</u>	
	Training Seminars	10,000
	Printing	
	Treatment Poster	3,000
	Mixing Flyer/Lottery Ticket (50,000)	1,500
	Mixing Poster	1,000
	Manual	500
	Physician's Mailer	<u>200</u>
	Subtotal	6,200
	Lottery Prizes	
	Radios (5)	440
	Tee-Shirts (200)	600
	Litre Cups (1,000)	<u>500</u>
	Subtotal	1,540
	Field Taping Equipment	
	Cassette Deck	300
	Casette Recorder	200
	Tapes	<u>300</u>
	Subtotal	800
	Broadcast Time	1,000
	SUBTOTAL OTHER DIRECT COSTS	<u>9,540</u>
TOTAL		<u>\$28,244</u>

APPENDIX A

HEALTH WORKER'S MANUAL
for the
MANAGEMENT OF
ACUTE DIARRHOEA
IN THE GAMBIA



HEALTH WORKER'S MANUAL
for the
MANAGEMENT OF
ACUTE DIARRHOEA
IN THE GAMBIA

HEALTH EDUCATION UNIT
DEPARTMENT OF MEDICAL AND HEALTH SERVICES

INTRODUCTION

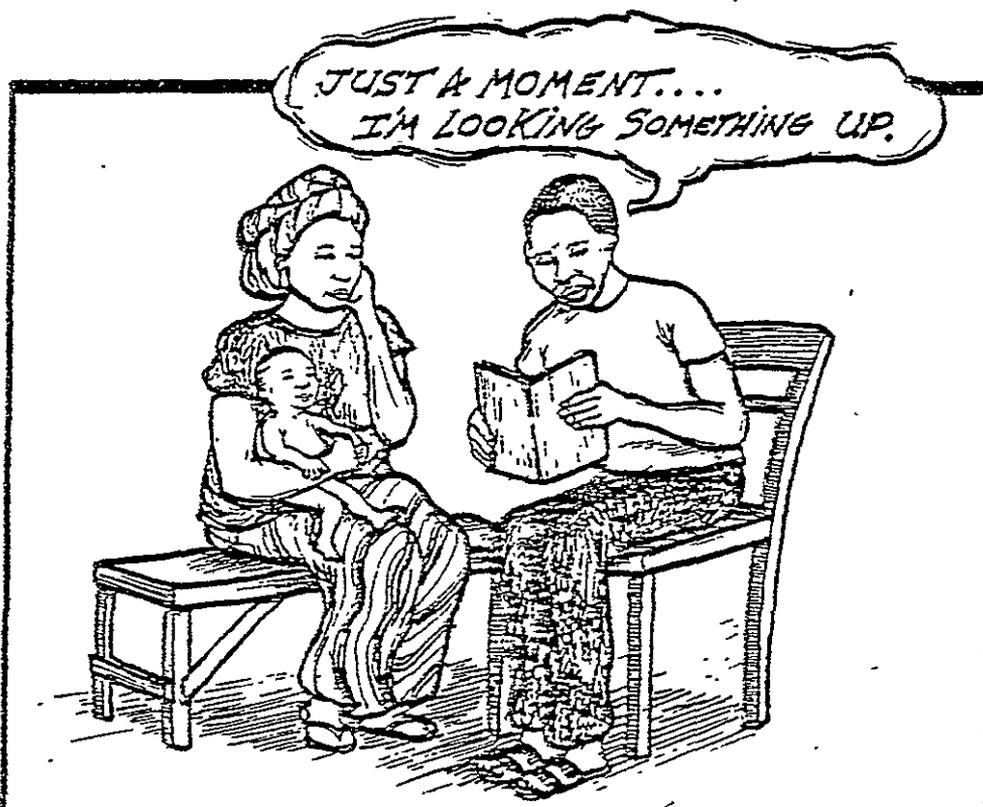
This manual has been prepared for all Health Care Workers to use when managing cases of acute diarrhoea. While the Manual focuses on management of diarrhoea in children, the principles equally apply to adults. It is a statement of policy and an authoritative guide for members of the Medical and Health Department and as such supersedes and replaces all previous circulars and books on the subject.

We know you will find it helpful and useful, and trust that you will feel free to write in with your own suggestions for its improvement. . .

We acknowledge, with thanks, the work of Dr. Andrew Tomkins from the Medical Research Council in preparing this book.

P. R. S. GOWERS

National Programme Coordinator/Manager for D.D.C.



ACTION PLAN FOR THE MANAGEMENT OF DIARRHOEA

STEP 1

Explain to the Mother the Dangers of Diarrhoea P. 2

STEP 2

Assess Hydration Status P. 4

STEP 3

Determine Which Treatment Plan to Use

~~Treatment Plan I P. 6~~

~~Treatment Plan II P. 6~~

~~Treatment Plan III P. 6~~

Treatment Plan Summary P. 13

STEP 4

Consider and Treat Special Types of Diarrhoea P. 14

STEP 5

Tell the Mother How to Prevent Diarrhoea P. 16

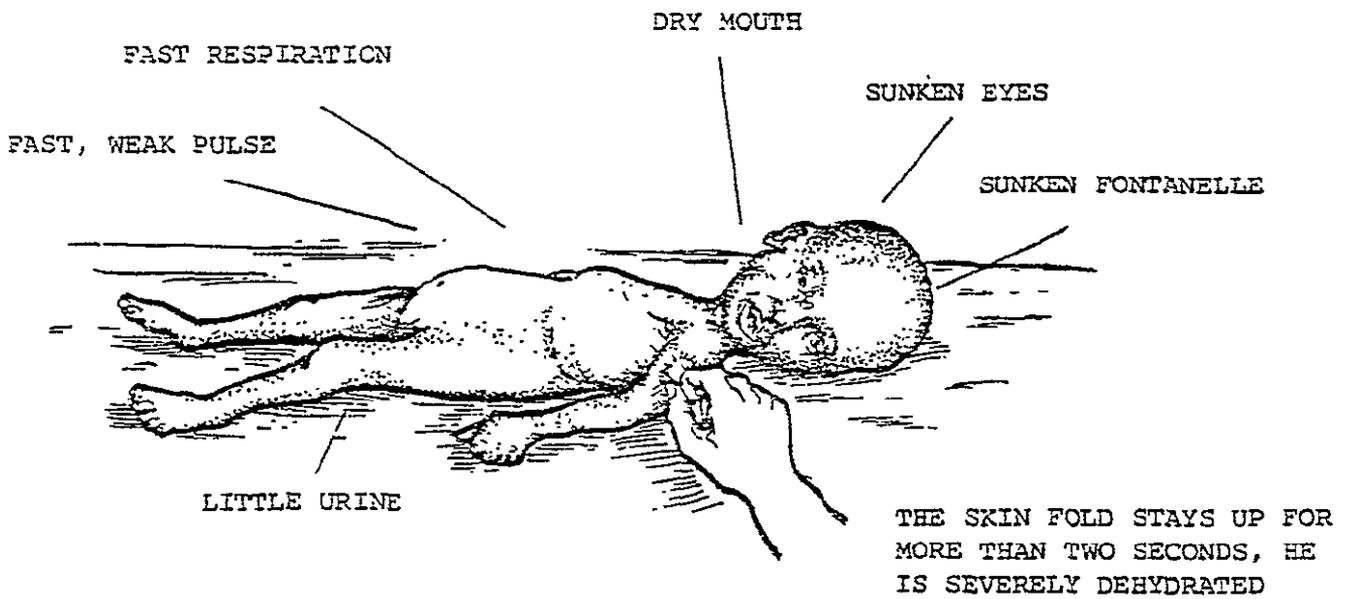
Step 2

ASSESS HYDRATION STATUS

Before beginning treatment, we must examine the child in order to determine his "Hydration Status". Hydration Status indicates how much water the child has lost. Once we know this, we will know which Treatment Plan to follow. The more often this Assessment Table is referred to, the more quickly and accurately the Health Workers will be able to diagnose Hydration Status.

ASSESSMENT OF HYDRATION STATUS

	NORMAL	MODERATE	SEVERE
GENERAL APPEARANCE	Well	Restless or floppy	Very limp or unconscious
SKIN ELASTICITY (test to pinch-up skin above clavicle)	Normal elasticity	Reduced elasticity	Severely reduced elasticity
YES	Normal	Slightly sunken	Severely sunken
URINE OUTPUT	Good volume Less than 120/min.	120-140/min.	Very weak or absent More than 140/min.
RESPIRATION	20-30/min.	30-40/min.	More than 40/min.
URINE OUTPUT	Normal	Decreased	Almost absent



DEHYDRATION MEANS LOSING FLUID:

This child is severely dehydrated. Everyday he is losing as much as 10% of his body weight in fluids and salts. If the fluids and salts are not returned to his body, he will surely die - he needs help fast!

Step 3

DETERMINE THE TYPE OF TREATMENT PLAN

AFTER ASSESSING THE CHILD'S HYDRATION STATUS, THEN BEGIN TO IMPLEMENT THE APPROPRIATE TREATMENT PLAN. THERE ARE THREE TREATMENT PLANS, TREATMENT PLAN I IS TO BE USED FOR PATIENTS WITH NORMAL HYDRATION STATUS, TREATMENT PLAN II FOR PATIENTS WITH MODERATE DEHYDRATION, AND TREATMENT PLAN III FOR PATIENTS WITH SEVERE DEHYDRATION.

TREATMENT PLAN I

NORMAL HYDRATION STATUS

AIM: To ensure that Hydration Status remains normal, thus preventing dehydration.

1. Weigh the child.
2. Show the mother how to make and administer the Sugar-Salt Mixture.
3. Tell her the amount to give the child, using the information in the Box below.
4. Tell mothers to give more than normal amounts of breast milk, tea, water, and fruit juice. Orange and lemon juices are particularly good.
5. Advise her to return if the child's condition worsens.

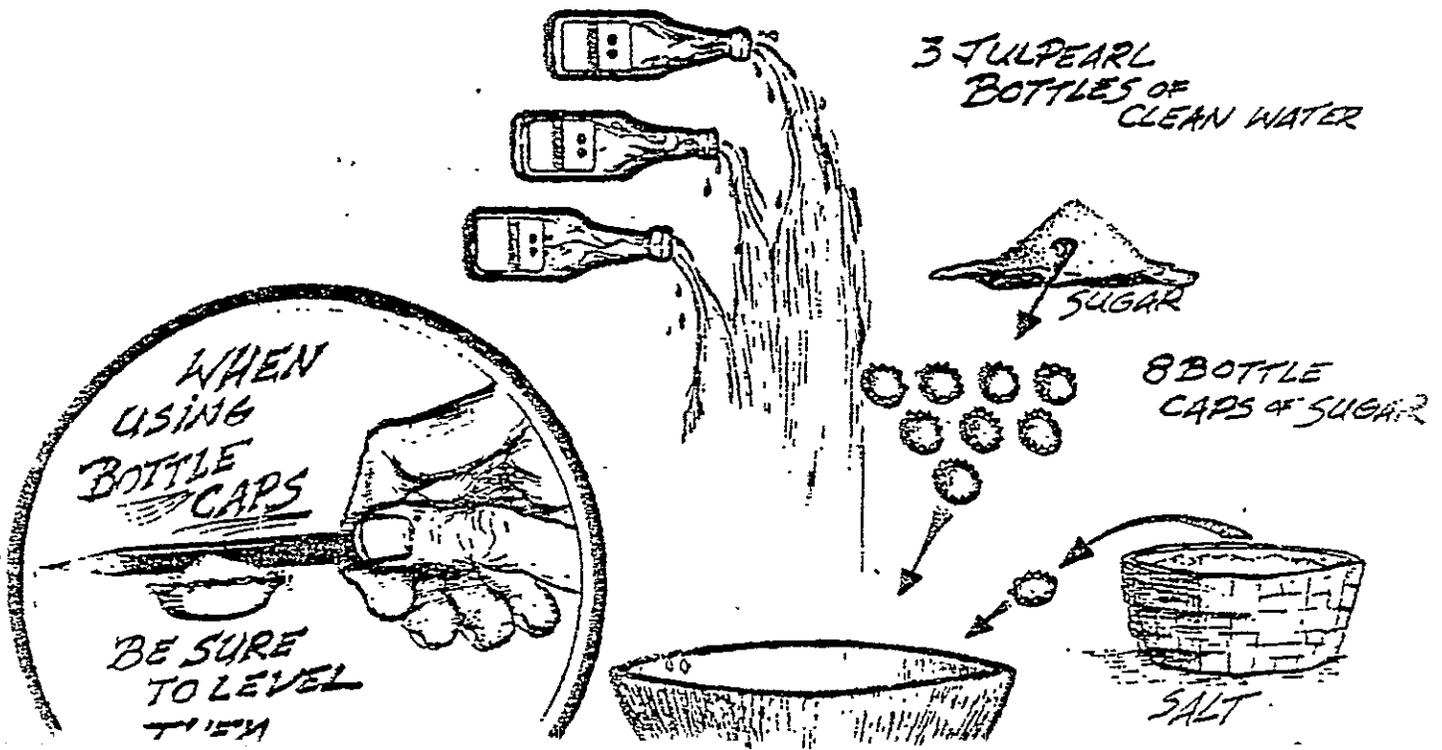
HOW MUCH SUGAR-SALT MIXTURE TO GIVE

* For 24 hours, between breast feeds, give:

Child weighing LESS THAN 5 kg (0-6 months old)	-	300 ml (1 empty Julpearl bottle)
Child weighing MORE THAN 5 kg (6-18 months old)	-	600 ml (2 empty Julpearl bottles)
Child weighing MORE THAN 10 kg (18 months and older)	-	900 ml (3 empty Julpearl bottles)

SUGAR-SALT SOLUTION: TEACHING PROCEDURE

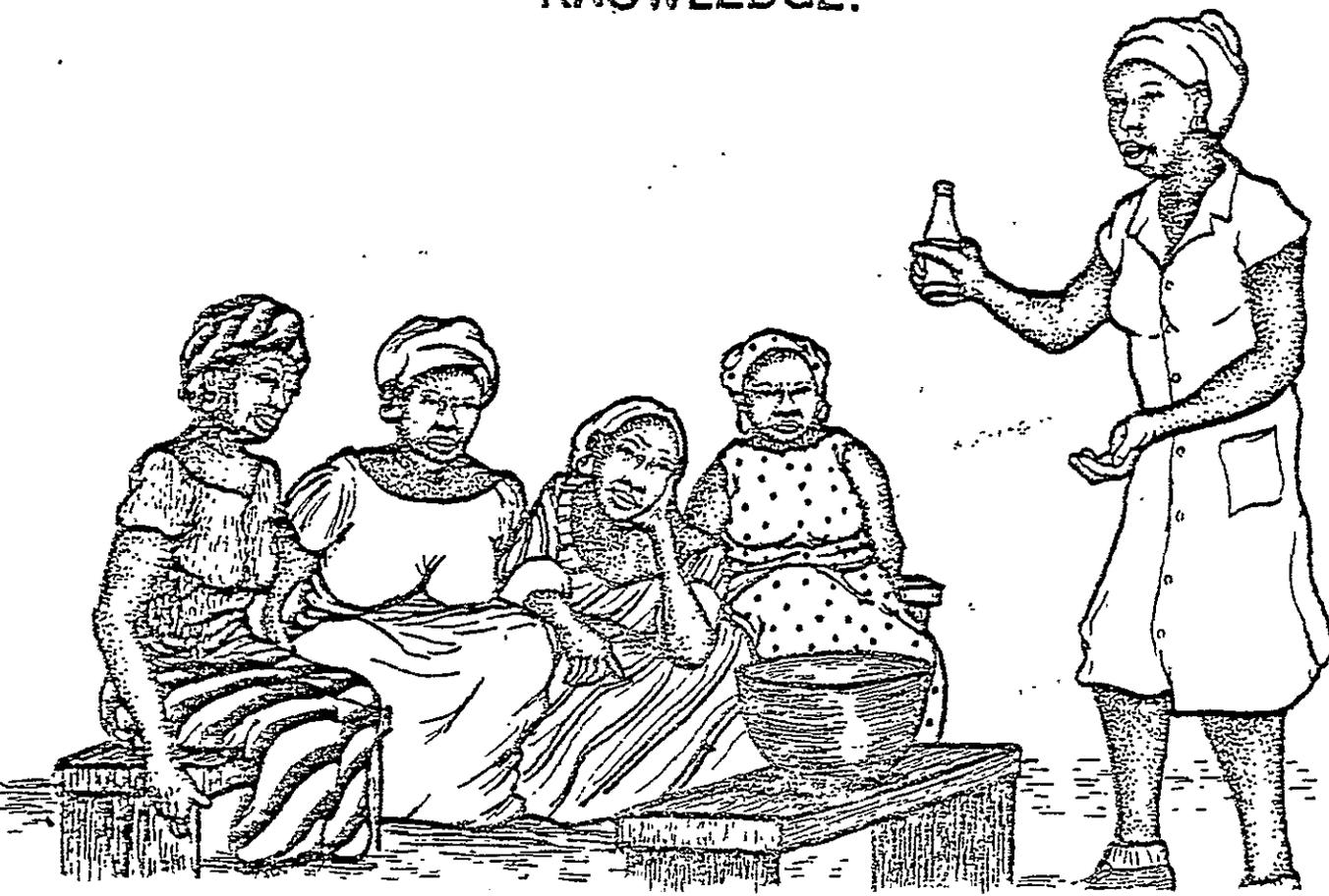
1. Wash hands with soap and water.
2. Use clean utensils and the cleanest water available.
3. Pound coarse salt so that it will dissolve easily.
4. Do not make Mix yourself. Instruct and supervise only.
Involve the mother (or mothers, if you are instructing a group) in the process.
5. Teach the following RECIPE:
 - * Measure out 3 JULPEARL BOTTLES of clean WATER into clean container.
 - * Measure out 1 level JULPEARL CAP of SALT.
 - * Measure out 8 level JULPEARL CAPS of SUGAR.
 - * Stir until Sugar and Salt are completely DISSOLVED.
6. Ask the mothers to count out loud as each measurement is being added to the container.
7. Review the measurements of each ingredient until you are sure the women remember them.
8. Get the mothers to taste the mixture so that they recognise the correct taste.
Tell them to always taste the mixture before giving it to their babies.



THINGS TO REMEMBER WHEN TEACHING THE MOTHERS

- * Explain to the women that the child is weak because he has lost water and salts and may die if this continues.
- * Tell the women that Sugar-Salt Mixture is a medicine that will replace the lost water and salts, and will help make the child strong again.
- * Advise the women to continue with treatment even if the diarrhoea does not stop immediately. The stools should eventually lessen.
- * Advise the women that the mixture should be given even if vomiting occurs. They should wait ten minutes and then continue giving it.
- * Advise the mothers to return if they think the child's condition is worsening.
- * Emphasize that it takes time to get a child to drink as much mixture as he needs. It must be given at frequent intervals, in an upright position, with a suitable container. No feeding bottles!
- * Explain that Sugar-Salt Mixture must be stored in a clean container with cover, and must be mixed fresh every day.
- * Warn the women that giving laxatives or purgatives to their children can be very dangerous, and even fatal.
- * Encourage the women to continue breastfeeding.
- * Encourage the women to give their children food rich in calories and protein, and fruits such as oranges, limes, papayas, and bananas if available.

**HEALTH WORKERS, LOOK FOR WAYS TO SHARE YOUR
KNOWLEDGE.**



MODERATE DEHYDRATION STATUS

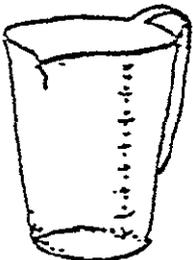
Aim: To replace present losses and to anticipate losses in the next 24 hours.

1. Weigh the child to determine how much W.H.O. Solution he needs.
2. Mix the W.H.O. Solution yourself using a UNICEF packet. DO NOT give a mother a packet to mix herself.
3. Supervise the mother in administering the Solution for 4-6 hours in the Health Centre. If the child doesn't drink enough volume, use a nasogastric tube if available.
4. After 4-6 hours, reassess Hydration Status. If worsening, begin implementing Treatment Plan III. If improving, give the mother enough Solution to last overnight, using the amounts given in the Box below. Instruct her to return in the morning for reassessment and further treatment.
5. Review "Things to Remember When Teaching the Mother" on the opposite page. They apply to the use of the W.H.O. Solution as well as the Sugar-salt mixture.

HOW MUCH W.H.O. SOLUTION TO GIVE

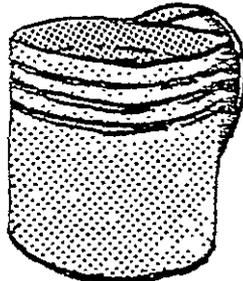
- * For the first 4-6 hours, give:
20 mls/Kg /Hour
- * Reassess after 4-6 hours
If worsening, go to Treatment Plan III
If improving, give 100 mls/Kg /Overnight
- * Reassess the next morning
If Hydration Status is normal → Treatment Plan I
If Moderate Dehydration Persists → Treatment Plan II
If Severe Dehydration Develops → Treatment Plan III

TO HELP YOU MEASURE VOLUME, REMEMBER:
EACH OF THESE CONTAINERS HOLDS
ABOUT 1 LITRE OF FLUID



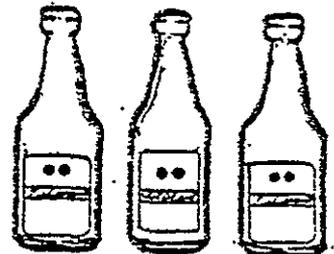
a 34 fl. oz.
measuring
pitcher

OR



a large
plastic
drinking
cup

OR

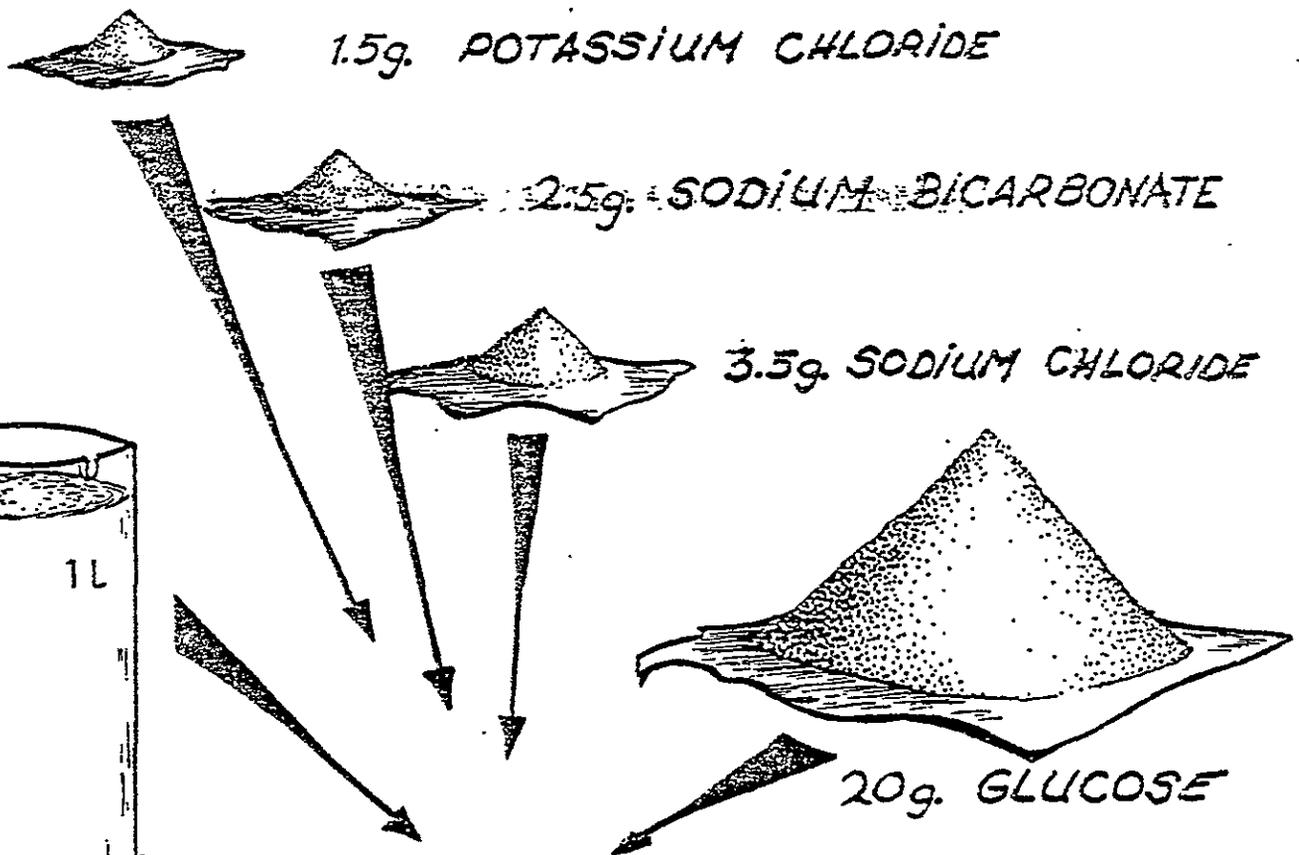


3 1/2 fl. oz. bottles

W.H.O. SOLUTION

All medical facilities will be provided with supply of the W.H.O. Solution packets, usually the UNICEF packets. In the event that these supplies run short, the correct mix can be made by dissolving the following in one litre of water:

Sodium Chloride	3.5 g
Sodium Bicarbonate	2.5 g
Potassium Chloride	1.5 g
Glucose	20 g
OR Sucrose	40 g



TO BE MIXED
INTO 1 Litre
OF CLEAN
WATER.

SEVERE DEHYDRATION STATUS

Aim: To immediately and urgently replace present losses and to keep pace with losses over the next 24 hours.

TO HEALTH WORKERS WITHOUT INTRAPERITONEAL (I.P.) OR INTRAVENOUS (I.V.) EQUIPMENT

1. Begin Oral Rehydration Therapy (O.R.T.) immediately. Do not wait!
* For the first hour, give:
20 mls/Kg of W.H.O. Solution, using the nasogastric tube if necessary.
2. Arrange for speedy transfer to a facility that is equipped to rehydrate with an I.P. or an I.V.
3. Appoint an escort to continue O.R.T. en route and to ensure speedy admission.



A SEVERELY DEHYDRATED BABY
MUST BE RUSHED TO THE NEAREST MEDICAL CENTER.

TO HEALTH WORKERS WITH INTRAPERITONEAL (I.P.) AND/OR INTRAVENOUS (I.V.) EQUIPMENT

1. Begin intraperitoneal rehydration immediately. Do not wait!

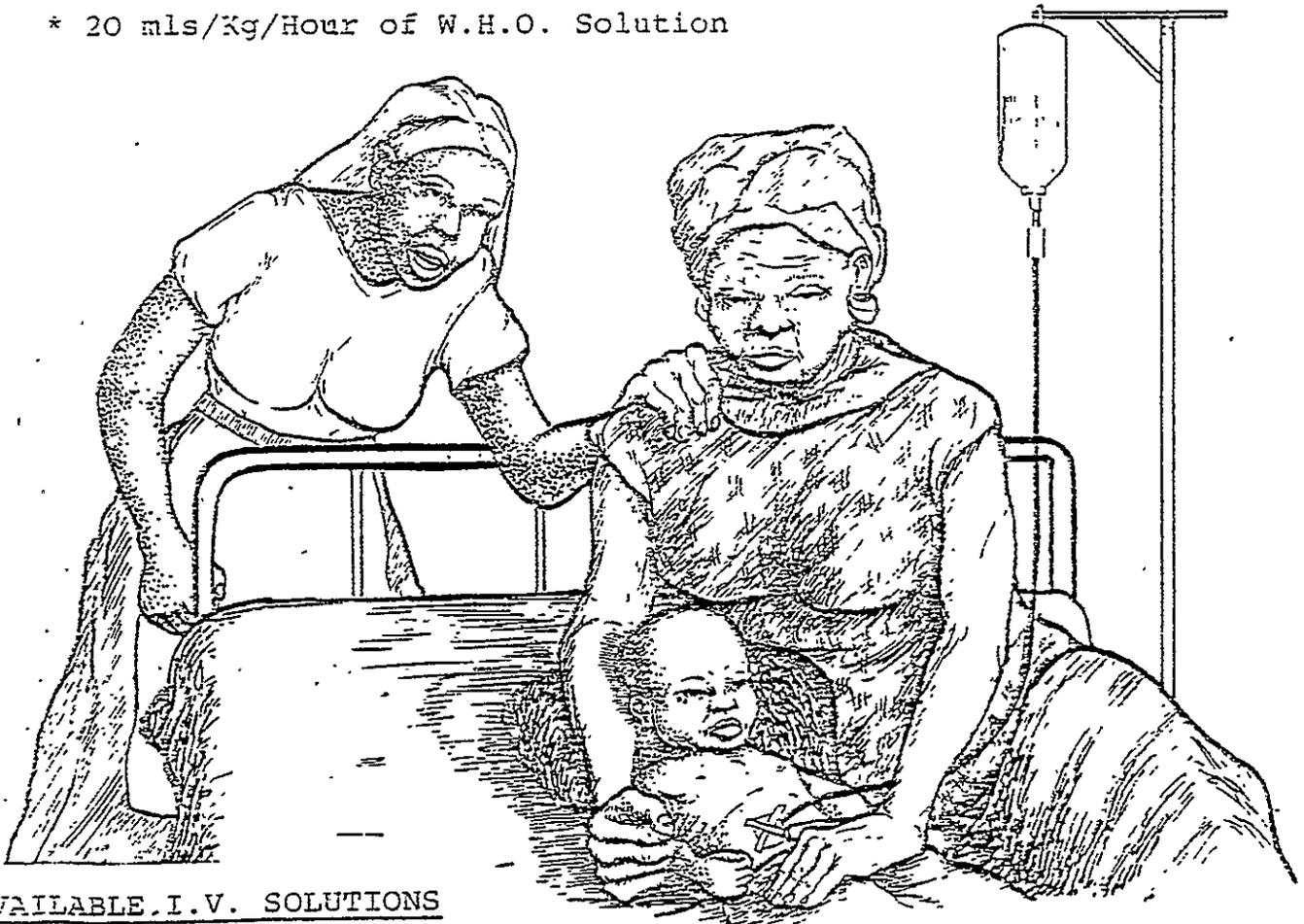
I.P.: * For the first hour, give:
50 mls/Kg of I.V. Solution

2. Reassess after 1 hour. If improving, continue the above Oral Therapy until rehydrated. If not improving, transfer to I.V.

I.V.: * Immediately, give:
20 mls/Kg
* Then, give:
10 mls/Kg/Hour until rehydrated

3. Even while using I.P. or I.V., continue with O.R.T. if the child can drink.

* 20 mls/Kg/Hour of W.H.O. Solution



AVAILABLE I.V. SOLUTIONS

(Only Available at Selected Centres)

In order of preference:

* $\frac{1}{2}$ STRENGTH DARROW'S SOLUTION WITH 2.5% GLUCOSE

TREATMENT PLAN SUMMARY

TREATMENT PLAN I:

- * For 24 hours, between breastfeeds, give:
- | | |
|--|--------------------------------|
| Child weighing LESS THAN 5 Kg
(0-6 months old) | 300 ml
(1 Julpearl bottle) |
| Child weighing MORE THAN 5 Kg
(6-18 months old) | 600 ml
(2 Julpearl bottles) |
| Child weighing MORE THAN 10 kg
18 months and older) | 900 ml
(3 Julpearl bottles) |

NORMAL HYDRATION
STATUS

SUGAR-SALT MIXTURE

TREATMENT PLAN II:

- * For the first 4-6 hours, give:
20 ml/Kg/Hour
- Reassess after 4-6 hours.
If worsening go to Treatment Plan III
If improving give 100 ml/Kg Overnight
- Reassess the next morning
If Hydration Status is normal → T. Plan I
If Moderate Dehydration persists → T. Plan II
If Severe Dehydration develops → T. Plan III

MODERATE DEHYDRATION
STATUS

W.H.O. SOLUTION

TREATMENT PLAN III:

- * For the first hour, give:
20 ml/Kg of W.H.O. Solution
(use nasogastric tube if necessary)
- Meanwhile, transfer to facility with I.P. or I.V.
On arrival, begin I.P. rehydration
- * For the first hour, give intraperitoneally:
50 ml/Kg of I.V. Solution
- Reassess after one hour
If improving → continue till rehydrated
If worsening → transfer to I.V.
- * Immediately, give, intravenously
20 ml/Kg of I.V. Solution

SEVERE DEHYDRATION
STATUS

W.H.O. SOLUTION

I.V. SOLUTION

Step 4

CONSIDER AND TREAT SPECIAL TYPES OF DIARRHOEA

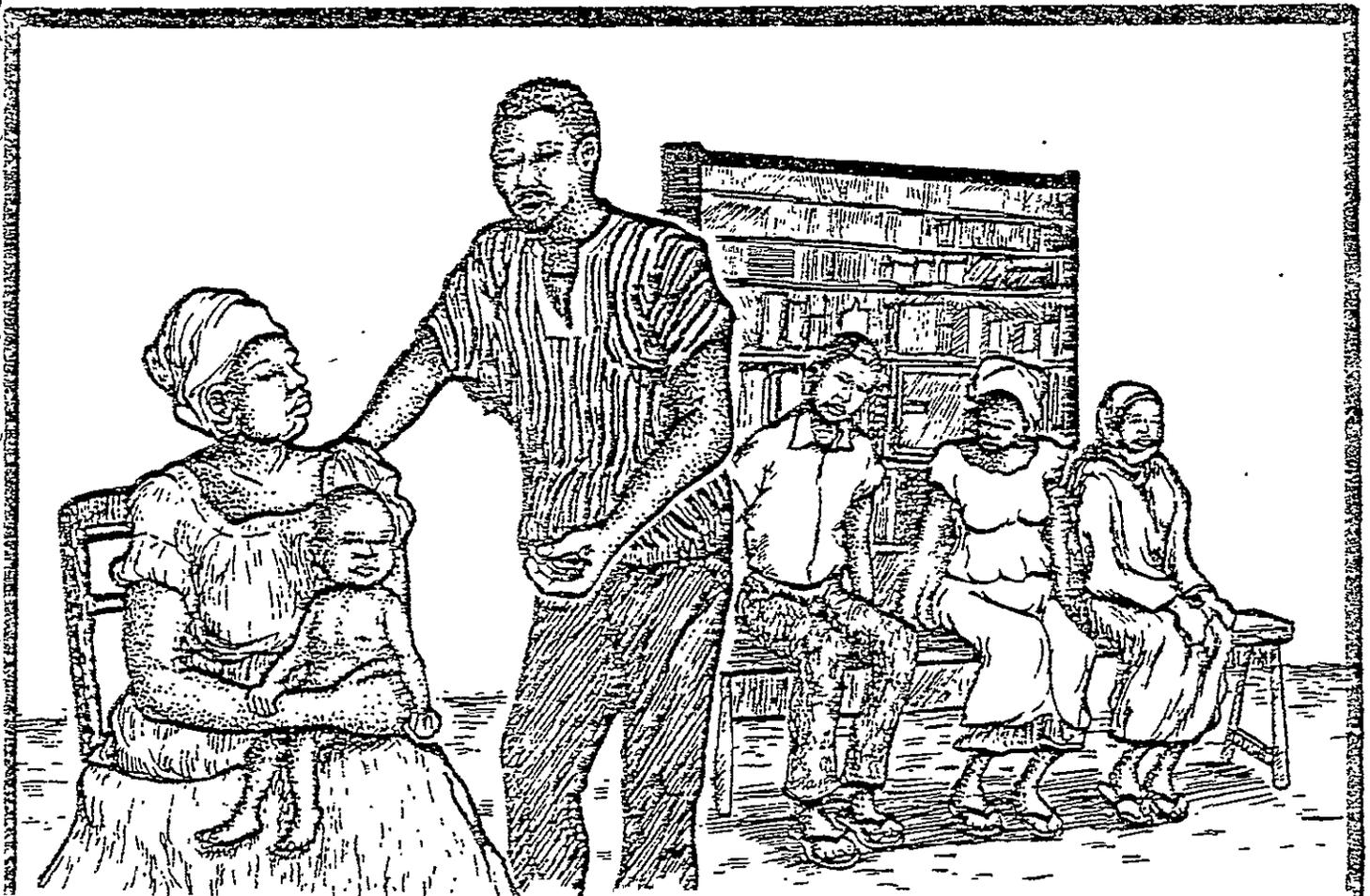
ONLY do this after you have started rehydration therapy

- (1) Dysentery - If the child is febrile and you are sure there is blood and mucus in the stool, treat with antibiotics (e.g. Tetracycline; children need 62.5 mg, 5 ml of paediatric elixir) every 6 hours for five days.
- (2) Chronic diarrhoea - This may be caused by parasitic infections such as giardia or ascaris. Microscopic diagnosis is essential before treatment with Mepacrine or Metronidazole for giardia, or Piperazine for ascaris.
- (3) Severe watery diarrhoea in epidemic form - Suspect cholera, continue intensive oral rehydration, and report to Medical and Health Department immediately.
- (4) Diarrhoea associated with systemic infection - Do not forget to treat underlying conditions such as malaria with Chloroquine and severe respiratory infections (pneumonia or otitis media) with antibiotics.

MEDICINES WHICH HAVE LITTLE USE IN TREATING DIARRHOEA

- * EXPENSIVE AND DANGEROUS - Neomycin and Streptomycin may damage the intestine. Lomotil may alter bowel motility sufficiently to delay clearance of the infective agent.
- * MODERATELY EXPENSIVE AND USELESS - Non-absorbable sulphas such as Phthalylsulphathiazole.
- * CHEAP PLACEBO - Although Kaolin makes the stool more solid, it does not decrease the total amount of fluid loss and may increase the electrolyte loss. The danger is that if Kaolin is prescribed without Oral Rehydration Therapy the child may still develop severe dehydration.

N.B. Oral rehydration must be given to adults and children with diarrhoea.
Kaolin may be given to adults only. Do not give to children!



Step 5

DON'T FORGET TO HELP PREVENT DIARRHOEA!

It is easy to tell ourselves, "Oh, these people will never understand what I'm telling them. It's hopeless - they'll never change." Indeed, it is difficult to convince a group of women that their children need fluids, not an injection! Traditional attitudes toward medicine do not change quickly. But we must begin somewhere.

The mother who understands the importance of rehydration is a valuable member of the Health Team. As we help women to understand that they can often treat children who have diarrhoea at home, we will see fewer of these children at the clinics. Fewer children will need I.V.'s, and fewer children will die from dehydration.

While we are teaching mothers to prevent dehydration with sugar-salt mixture, we should not forget to teach them to prevent diarrhoea itself. We can do this by teaching them about the importance of good hygiene and good nutrition. Infection is one of the major causes of diarrhoea, and good hygiene helps to reduce the incidence of infection. Therefore, several practices should be encouraged.

The use of soap with water is indispensable to good hygiene. While most people wash their hands before eating, they do not use soap. They just swish their hand around in a bowl of water and are done with it! Encourage people to wash with soap and water before cooking and eating, and before and after going to the latrine.

Also, we see many small, naked children playing around in the dirt. Discourage this! Children should be playing on mats, and if their mothers cannot keep them out of the dirt, they should put protective clothing on them. Children who are always getting dirty should have a soapy bath more than once a day.

These areas of hygiene fall under the responsibility of the women, but the men also have to be encouraged to improve the safety of their compounds. Every compound should have a pit latrine with cover. And if the compound owner has animals, he should build sheds for them instead of keeping them in his wife's kitchen.

A child who is poorly nourished is often sick. He is troubled with infections because his resistance to disease is low. So in order to prevent diarrhoea, we must not only encourage good hygiene, but also promote good child nutrition.

The first key to good infant nutrition is: BREAST IS BEST. If we ever see baby-bottles in people's compounds, it is time to sit down for a serious discussion. Baby-bottles are one of the biggest carriers of bacteria that cause diarrhoea.



As mothers breastfeed, they should begin to introduce weaning foods by the time a child is about four months old. Rice and coos pap is good for starters, but mothers should gradually add other foods to the pap - like eggs, and pounded groundnuts. Fruits and vegetables, mashed banana, mango, paw paw, potato, pumpkin, and beans are also important to the growing child's diet; Fish is an excellent source of protein for babies; as fish is soft, it is easier to eat than chicken or meat. By his first birthday, the child should be eating everything that his family does - except pepper.

Whether at the dispensary, at the Health centre, or at the hospital, we should always try to find ways to share our knowledge with the people we are serving. It is our responsibility to teach the people how to prevent diarrhoea, as well as how to prevent death caused by dehydration.

Gambian women will not realize the importance of Oral Rehydration Therapy - and their role

APPENDIX B

MIXING TRIALS OF THE SUGAR/SALT SOLUTION USING RECORDED INSTRUCTIONS

APPENDIX B

MIXING TRIALS OF THE SUGAR/SALT SOLUTION USING RECORDED INSTRUCTIONS

METHODOLOGY

Instructions for preparing the sugar/salt (S/S) oral rehydration solution using Julpearl bottles and bottle caps for measuring were recorded in Wolof and Mandinka. These were played for mothers in health facilities providing all of the necessary materials; and in village compounds, having mothers provide all of the materials themselves. The first part of the instructions asked the mother to gather all of the necessary materials and the second part gave her mixing instructions. The basic purpose of the experiment was to see how much a mother could do using only recorded instructions with no face-to-face training; how many repetitions of the tape would the mothers need to correctly make the solution. The results were needed in order to answer the following:

- 1) Can radio be used to teach the complicated sugar/salt recipe?
- 2) How frequently will these instructions need to be given so that mothers correctly mix the solution and don't make significant mistakes.

Mixing trials were performed in one health facility and in several village compounds.

The mixing trial in a fixed health facility took place in Kunteng, a village of approximately 350 people. The home-mixing trials, with mothers providing all materials, were conducted in the following areas:

Brikamaba:	a large village on the paved road with a health center	1 Wolof compound 1 Mandinka compound
Changai:	a small village on a dirt road with no health facility	1 Wolof compound
Bakadaji:	a medium-size village on the paved road	2 Mandinka compounds

Mixing Trials in the Home

1. Availability of Materials

All of the mothers were able to produce the necessary materials except lemons and oranges which were unavailable in almost all of the sites. However, it frequently took quite a while, up to 30 minutes, to gather all of the necessary materials, sending out to purchase sugar or borrow a lemon or bottlecap from a neighboring compound. The bottlecap was almost always the last thing to appear. The gathering of materials "cost" the others a lot more than the actual mixing.

2. Cleanliness

Water was always taken from the covered drinking pot.

Washing of hands and utensils was sometimes with soap as the instructions called for, but frequently only a rinsing with water. Sometimes the utensils were washed in very dirty water with a final rinsing with "clean" drinking water. Flies were frequently on utensils and ingredients.

This indicates that even though the mother boils the water, the unsanitary conditions of the mixing may re-contaminate the mixture.

3. Mixing

Almost all of mothers correctly gathered the materials and mixed the solution using only recorded instructions, even though none of the mothers had prepared the solution before. Only one older woman used four Julpearl bottles of water. However, mothers needed to hear the first part about three times to gather the necessary utensils and ingredients and the second part (the recipe) three times to make the solution.

In general there is a lot of group interaction as several men and women in the compound group around the demonstration. Other women would remind the mixer of forgotten details and help her gather the ingredients.

Suprisingly, the mothers generally had no trouble counting the eight capfuls of sugar even with interruptions. They never confused the proportions of sugar and salt.

Most mothers heaped the capfuls as full as possible creating the possibility of a solution high in saline. The instructions should be re-written to say the caps should be level.

In general mothers tended not to stir the solution or not to stir it enough to dissolve the sugar and salt. The instructions should emphasize that the ingredients should be mixed well until the sugar and salt dissolve completely.

3. Mixing (continued)

The instructions in Mandinka need to be changed to say squeeze the orange/lemon into the water, not place them in the water.

4. Questions

Questions mothers asked included:

- a) Should I boil the water? (two mothers).
- b) Is only one person going to make it?
- c) Should I pound the salt?
- d) Should I boil the water or warm it?
- e) Should I measure the water before or after I boil it?
- f) How old a child can be treated with this remedy?
- g) How important is lime or lemon?

MIXING TRIALS IN THE HEALTH CENTERS PROVIDING ALL THE MATERIALS

This trial was only carried out with three mothers because the noise level in the dispensary made it impossible to hear the tape recorder. As expected, two of the mothers had an easier time preparing the solution when all the materials were provided. These two required only two repetitions to complete the mixture.

The first mother did everything correctly but stir the solution and the second mother did everything but put in four oranges (she put in two) after hearing the instructions one time. However, the third mother was completely unable to make the solution because she was frightened and unable to concentrate; we must assume there are mothers who are unable to learn without face-to-face instruction.

The same patterns occurred in the Health Center as in the home:

- 1) improper washing of hands
- 2) ability to count bottlecap proportions correctly
- 3) heaping of sugar and salt in the bottle caps
- 4) not enough or no stirring

Several mixing trials were also conducted using face-to-face instruction in place of recorded audio instructions. These trials were conducted in the Basse Health Center, with a Community Health Nurse giving three mothers a single set of verbal directions (no demonstration) for making sugar-and-salt solution. All ingredients were provided except oranges.

As with the other trials, the three women had no difficulty counting out the correct number of bottles of water or capfuls of sugar. They also followed the Community Health Nurse's instruction to use level capfuls of sugar and salt by either levelling the capful with a finger or shaking it until level.

Their major difficulty was in the selection of the proper volume of water. Instructed only to use one litre of water and presented with a variety of different sized containers, one of the three women chose a medium-sized Nescafe coffee can and one chose a Fanta bottle. The third woman correctly chose a large one litre plastic drinking cup, but filled it only three-quarters full of water.

CONCLUSIONS

1. More mixing trials should be carried out in homes in other parts of the country to confirm these results.
2. These trials indicate that mothers can mix the solution using only the radio for instruction, with lots of repetition. The radio formats should capitalize on the group phenomena, perhaps asking mothers to listen in a group. Perhaps at the beginning of the program mothers could be asked to gather materials, repeating the ingredients between interludes of music. After a time (30 minutes) the mothers could prepare the solution together, with the radio repeating the instructions. Perhaps each compound could select two or three of their brightest most vocal elder women (the musakaba or nansingba) to be their diarrhea experts. All of the women in the compound could participate in the listening groups but these mothers could be responsible for showing others how to prepare the mixture.
3. Oranges and lemons should be excluded from the recipe. Mothers were very concerned when they weren't available. Mothers may not use the recipe at all because they think it won't be effective without all the ingredients. Will telling them that they don't have to use oranges make them lose confidence in the entire mixture? (Maybe I don't have to use sugar either!)
4. Since gathering of materials is so difficult, perhaps mothers could be encouraged to keep a "dryness kit" during diarrhea season (especially if one or two mothers could be responsible), where they would keep in one clean, covered place the ingredients and measuring utensils to make the solution.
5. The fact that all of the mothers in the Health Center and many mothers in the compounds wanted to take and use the solution indicates that mothers will accept the sugar/salt remedy, at least initially. However, mothers must understand that they are treating dryness (dehydration) and not stopping diarrhea.
6. The process of recording instructions indicates that it is going to be difficult to make announcers "stick to the script: without adding their own embellishments. Another problem is using the exact words to convey the concept since even native speakers use different words in different parts of the country. A suggestion is to have at least two other people translate as literally as possible recorded materials before taking them to the field.
7. The recorded instruction must be improved to include:
 1. Squeeze, not put, the orange/lemon (Mandinka version).
 2. Use level capfuls.
 3. Stir well until all the sugar and salt are dissolved.

CONCLUSIONS (continued)

4. The Julpearl bottlecap should be added to the first part which explains what materials the mother needs to prepare the mixture. (Mandinka version)

In the Wolof version, the embellishment of squeezing the oranges in a separate cup and picking out the seeds should be taken out.

8. All instructions recorded, and face-to-face, should tell mothers to taste the solution so they know what it should taste like. They should always taste every mixture so they haven't confused the proportions of sugar, salt and water.

ANALYSIS OF THE PRODUCT PREFERENCE TRAILS

METHODOLOGY

Seven mothers at a large Health Center and fourteen mothers at a small village Dispensary were individually shown various products and packaging including:

LITROSOL packet with instructional lable

LITOROSOL packet without instructional sticker

Instructional envelope with two LITROSOL packets inside

Packet of UNICEF Oral Rehydration Salts

Bottle with clear liquid

Bottle with brown liquid

White pills

Hyperdermic needles

Each mother was told that all of the products are good treatments for diarrhea and asked to select the one she would prefer to use.

She was then asked to select the product she would prefer if her first choice were not available. The interviewer made no indication of her own preference, even if the mother asked her to. The mothers were from various tribes: Fula, Mandinka, Wollof and Serehule.

RESULTS

1. There seemed to be no differences by tribe in the selection of the product.
2. The biggest difference seemed to be location. Mothers in the village Dispensary preferred the packets while mothers in the Health Center preferred bottled liquids.
3. The most frequently selected single product was the the pills (eight mothers).

Pills were selected in both the Health Center and village Dispensary.

The second most frequently selected single product was the LITROSOL packet with the instructional sticker (seven mothers). However, this packet was only selected in the village Dispensary; it was never selected in the Health Center. Many of the mothers in the Dispensary who selected

RESULTS (continued)

this packet as their first choice selected the UNICEF packet as their second choice. Both are white packets.

Surprisingly, the bottle with the milky liquid (kaolin, the present treatment for diarrhea in health facilities) was only chosen by five mothers.

Sugar/salt was selected by three women who had previously used it, although these mothers were at a health facility seeking other treatment.

4. PACKAGING: Surprisingly packets (LITROSOL with and without the instructional sticker and the UNICEF packets) were the most frequently selected packaging for a diarrhea medicine. Packets were selected 16 out of 42 times. Some of the mothers had seen and used packets before.

Bottles with white, milky, clear and brown liquids were selected 13 out of 42 times.

Surprisingly, the hyperdermic needle was only selected by one mother although Health Workers have reported that mothers prefer injections over other treatments.

CONCLUSIONS

1. Fortunately, there seems to be no single product or packaging which is preferred by mothers to treat diarrhea.
2. The results indicate that mothers will accept packets as a "good" treatment for diarrhea.
3. It is questionable where mothers will accept sugar/salt as a good remedy for diarrhea since even the three mothers who selected it were seeking other treatment at the health facility.

RESULTS OF THE LITER IDENTIFICATION TRAILS

METHODOLOGY

Twenty one mothers, seven in a large Health Center and fourteen at a small village dispensary, were asked to identify a liter container from amongst nine cans and bottles of various sizes. Those containers included three liter measures - a Nestle milk can, a common plastic drinking cup and a oil bottle. The interviewer made no gesture towards or identification of the correct answer even if the mother expressed doubts.

Results

Surprisingly, almost all the mothers (16 out of 21) could identify at least one of the liter containers and many could identify more than one. However, it is important to note that the five mothers who could not identify the liter were all at the village Dispensary indicating that recognition of a liter is correlated to distance from a population center. This may mean that mothers in rural villages, the majority and the ones who most need this knowledge, may not know this critical measure causing fatalities from high saline solution. Most mothers who could not identify the liter selected the small Nescafe can which holds only 250 millimeters.

Conclusions

1. If a liter measure is selected, radio messages should first teach the various ways of measuring a liter.
2. In any case all instructions - from Health Workers, graphics (manual) and radio must be standardized. There are too many recipes being taught and mothers are confusing the proportions.

APPENDIX C

TRAINING PLAN

APPENDIX C

TRAINING PLAN

Days 1 and 2:

Days 1 and 2 are the primary responsibility of Medical and Health Department. You should individually interview all participants concerning their formula for S/S solution, however, and record and analyze differences between formulas.

Day 3: Mixing Skill for S/S Solution

I. General Explanation (10 Minutes)

- Purpose of the program is to reduce the number of children who die from dehydration
- It is a special effort of Medical & Health which uses radio, print material and training to put an effective management system in place
- You are a special part of this program - you will 1) teach mothers a special new diet for diarrhea and 2) treat dehydration in the health center
- We've all worked for years on diarrhea, we know about S/S, but some of the latest medical findings have given us clues to a new approach
- We are one of two countries in the world trying this new idea-- we are among the leaders in the world
- Dr. Rowland/Tomkins are going to explain the scientific side of the new approach and then we will spend the next three days learning how we can contribute to the program. We have a manual, some posters, and some packets to give you.

II. Rowland/Tomkins (45 Minutes)

- Sources of contamination (Use Chart A)
- Contamination leads to diarrhea, diarrhea to dryness, malnourishment, and finally death
- Key signs of diarrhea - sunken eyes, limp, lifeless

(-2-)

- We can break the cycle at dehydration and malnourishment
- Suggest a new diet for a child with diarrhea - because children are most delicate
- Our job is to teach mothers to replace liquids early and keep feeding solid foods
- If that doesn't work to administer properly the UNICEF medicine
- But what we know now is that S/S, if it is properly mixed and administered, will keep many children from getting severely dry.
- It works like this: (use plastic bottle to demonstrate process)
 - Normal baby will take and absorb liquids
 - With diarrhea, the child loses the ability to absorb or retain all the liquids
 - S/S restores the ability to absorb liquid; even though the diarrhea continues the baby now has liquid
 - A child who is sick loses his appetite. We all think that watery soft foods are best and this is O.K. for one or two days when the child just refuses solid food.
 - But a child with diarrhea needs solid foods along with breastmilk to fight the disease, remain strong and get well. Remember we are not giving any medicine for diarrhea, but for dryness. The best medicine against diarrhea is a strong child - get mothers to give solid foods as soon as the child will take them.
- Now I want to turn you over to a team of friends who will show you all exactly how to mix and give the S/S solution. I know you've all used S/S, but we found very different formulas. It is critical that we all leave this week knowing the correct formula - some formulas do not work and others can even be dangerous. Before I introduce your training team let me just ask you again.
 - Where do we get diarrhea from?

Acceptable answers: (faeces - food - water - hands - flies)

- Do we get it from breast milk? Do we get it from touching other family members? (No)
- Who in the family is most susceptible? (Young children)
- What is the greatest danger from diarrhea? (Dryness)
- How can we prevent dehydration (dryness)? (S/S plus diet)
- What does S/S do? (Let's child absorb liquid)
- What kinds of foods should we give? (Solid foods as soon as possible and breast milk)

OK. wonderful - I've enjoyed being here so much - now let me introduce my friends.

III. Demonstrate How to Prepare the S/S (30 Minutes)

- I'm really glad to be here today and I want to thank all of you for coming
- Dr. Rowland/Tomkins has explained why the S/S is so important. Why is that again? (If they say for diarrhea - correct them to say dehydration or dryness)
- And that S/S is the best way to prevent dehydration. What are some good words for dehydration - (write them on blackboard) - Talk about what each word means to the group.
- We want to keep the child, especially the young child, from becoming dehydrated (repeat their words for dehydrated).
- S/S is well known to you all. But yesterday we asked each of you for your own S/S recipe and look what we got. This is true all over the country. We are not all mixing it the same way and it is important that today we learn how to do it right - if we forget everything else we learn here today we want to know exactly how to mix the S/S solution correctly.
- Show mixing flyer - (large version) and point out flyer
First, the ingredients - sugar, salt, water
Second, the proportion - 8 caps, 1 cap, 3 bottles
- Demonstrate mixing - (points to make)
 1. Show all utensils needed
 2. Ingredients and proportion (too much sugar increases diarrhea, too much salt - dangerous to child, too much water-won't work.
You need all three ingredients.

4. Level bottle cap
5. Stir well to dissolve
6. Cover if possible - and ask group what is best container for mother to use?

IV. Discrimination Game (30 Minutes)

- OK - that's easy right! I'm going to do it again but I'm going to make some mistakes - you see if you find my mistakes.

Possible Mistakes:

- don't level cap
- don't powder the sugar
- add too much sugar, salt
- use a basin too small to hold 3 bottles of water
- use four bottles, etc.
- Who would like to come up and do it right for us - and we'll see if we can catch any mistakes (volunteer from group mixes)
- I'll do it once more with mistakes - you tell what the mistake is - and why it's important

V. Individual Practice (1 Hour)

Now we are going to break up into five groups of three. All of you will have a chance to practice mixing while your two friends watch for any mistakes this time. If mistakes are made, start all over from the beginning until you can do it perfectly - all the way through - with no mistakes. Then we're going to see who can do it the fastest. Look at your flyer or the poster if you want. But during the contest we'll take the visuals away.

VI. How to Administer the Solution (30 Minutes)

Now we know to mix it - but how much do we tell the mother to give?

- The basic principle is the smaller the child the less he/she needs - so there is a simple formula here on this graph.

Child under 6 months - as much as he will drink

Child between 7-12 months - one bottle

Child between 1-2 years - two bottles

Child older than 2 years - three bottles

• There are three key points to remember:

1. Give the S/S solution slowly with a spoon - ask group who might give it if the mother is busy?
2. Don't stop if the child vomits - wait a bit and continue more slowly? Even if the child vomits he will keep more in than he vomits out.
3. Give enough - even if the child doesn't want to take it - the amount you give is as important as the right mixture itself. If he doesn't get enough - it won't help him!

• There are two more important things to tell the Mother

1. Don't store the S/S for more than one day - use the remaining part to cook the child's food the next day. Make it fresh every day.
2. Give breast milk - and as much solid food (rice - millet) as the child will eat.

VIII. Discussion (60 Minutes)

- What has your experience been with S/S in the village?
- What do you think will be the biggest problem?
- Do you think mothers understand the idea of S/S as a cure for dryness rather than as a cure for diarrhea?
- What about Kaolin? - is it good?
- What about feeding solid foods? - How can we best explain this idea to a mother so she accepts the idea?

IX. Performance Review - break group into three groups of five; each group with a trainer. Each person in the group answers the questions in rotation, who will be first?

OK let's go over the most important points

- Why is diarrhea harmful? (dehydration/dryness)
- What are the sources of diarrhea (food, water, flies, faeces)
- Who is at most risk in the family (small children less than two)
- What can we do to prevent diarrhea? (very little)
- What then should we try to do? - (prevent dehydration)
- How can we prevent dehydration in a small child? (diet of S/S, solid rice and millet and breastmilk)
- What does the S/S do for the baby? (gives strength, prevents dryness)
- How do we mix the solution? (8 sugar - 1 salt - 3 bottles water)
- Which of these ingredients is less important? (all are equally important)
- How much do we give? (depends on age)
- What is important to tell mother? (storage and feeding)
- What foods should the mother give? (solid foods as much as possible)
- Why? (strength)
- O.K., let's look at their drawings? (Used during training) What does this one tell us? - A, then B, C. Look over each one letting one individual explain to the rest of the group. Have each individual correct mistakes gently.

Day 4: Packet/Training Manual

- I. Repeat Performance Review Rapidly--have entire group go over graphic material.
- II. Clinical Rehydration: What to do if the prevention doesn't work.
- III. Follow--Honduras training design from this point on.

IV. Review Manual

Distribute Health Worker's Manual (do not distribute before); go over in large group, page by page, letting participants underline key ideas from previous two days.

V. Performance Review - in small groups like previous day.

Day 5: Teaching S/S to Traditional Birth Attendants. (TBA)

I. Repeat Performance Review quickly with whole group (10 minutes).

II. Explain that as soon as they return they should start visiting villages and find a TBA to train. They will work with this person for one hour or so and leave a flag; while they are there they will locate three bottle caps and one Julpearl bottle. They will teach the TBA to mix the solution and ask if the TBA would be willing to teach village mothers who ask them for help. They will tell the TBA that they will be mentioned on the radio as "the person with the flag." If they agree, prepare the materials and train them as explained in III below.

III. Model Role Playing (30 Minutes)

Trainer plays role of Health Worker (HW)

Member of group plays TBA

TBA Training Scheme.

- Ask if TBA knows about S/S. If yes, ask what recipe they use. Say that there is now a better recipe that works to stop dryness in a child with diarrhea. M & H wants them to know this recipe in their communities and help others to learn it.
- Give flyer and explain it--tell them that radio will be talking about the flyer.
- Mix solution using Mixing Proverb; explain color on flyer and quantity of ingredients.
- Ask TBA to mix solution using the flyer as reminder
- Ask TBA to mix solution again without flyer available; praise them often but do not tell them what to do.

- Health Worker should then mix the solution and make some critical mistakes. Get TBA to describe the mistakes.
- Review flyer again and clarify any misunderstandings.
- Leave 50 flyers with TBA.

V. Practice Session (60 Minutes)

Break group into groups of three - to practice the play

VI. Discuss Problems (30 Minutes)

Discuss problems, then proceed with teaching TBA. Try to identify solutions from group.

VII. Quickly Review all Key Points (15 Minutes)

Afternoon

- Map catchment areas and assign villages - assign one TBA to be trained during the following week.
- Distribute Materials
 - 1 Box packets per Center
 - 1 Set of graphics per participant
 - 1 Manual per participant
 - 500 Flyers (50 per each TBA)
- Final Review - go over all the graphs used during the course with the group. Any problem areas should be reviewed again.

APPENDIX D

FLYER PRE-TEST

drawn it to make it look more like sugar?

10. Does the water really look like water to you? How could I have drawn it to make it look more like water?

11. Can you read the words here?

What language is this? (English)

What language is this? (Arabic)

12. If no to number eleven:

Do you know anyone in the village who can read either English or Arabic?

If yes:

Could I ask you to take this to them and have them tell you what it says?

(Give them time to comply; while that is happening conduct another interview)

13. Once they return: Now, could you tell me what the picture is all about?

FLYER PRE-TEST
INTERCEPT QUESTIONNAIRE

Identifiers:

Male _____ Age 15-20 _____ 30-40 _____ Can read Eng _____ Arabic _____ Both _____
Female _____ 20-30 _____ over 40 _____ Cannot read Eng _____ Arabic _____ Either _____

Show the flyer and ask the following questions:

1. Do you see any salt in this picture? Yes _____ No _____
2. Where? Right _____ Wrong _____
3. Do you see any water in this picture? Yes _____ No _____
4. Where? Right _____ Wrong _____
5. Do you see a little boy in the picture? Yes _____ No _____
6. Where? Right _____ Wrong _____
7. Do you see any sugar cubes in this picture? Yes _____ No _____
8. Where? Right _____ Wrong _____
9. Do you see any powdered sugar in this picture? Yes _____ No _____
10. Where? Right _____ Wrong _____
11. Do you see a basin? Yes _____ No _____
12. Where? Right _____ Wrong _____

APPENDIX D

FLYER PRE-TEST

Overview

Materials Needed:

1. Several copies of flyer (full color, laminated)
2. Tape-recorded messages and tape recorder
3. Questionnaire

Phases:

I. Unaided Significance

With 20 village people; try to get at least 10 village mothers with child under five.

If changes are needed, make them and repeat unaided significance until satisfied with results.

II. Intercept Interviews

Using corrected version, with at least 50 village mothers with children under five.

Make changes if needed.

IV. Aided Significance

With 20 village mothers with child under five.

FLYER PRE-TEST
INTERCEPT QUESTIONNAIRE

Identifiers:

Male _____ Age 15-20 _____ 30-40 _____ Can read Eng _____ Arabic _____ Both _____
Female _____ 20-30 _____ over 40 _____ Cannot read Eng _____ Arabic _____ Either _____

Show the flyer and ask the following questions:

1. Do you see any salt in this picture? Yes _____ No _____
2. Where? Right _____ Wrong _____
3. Do you see any water in this picture? Yes _____ No _____
4. Where? Right _____ Wrong _____
5. Do you see a little boy in the picture? Yes _____ No _____
6. Where? Right _____ Wrong _____
7. Do you see any sugar cubes in this
picture? Yes _____ No _____
8. Where? Right _____ Wrong _____
9. Do you see any powdered sugar in this
picture? Yes _____ No _____
10. Where? Right _____ Wrong _____
11. Do you see a basin? Yes _____ No _____
12. Where? Right _____ Wrong _____

FLYER PRE-TEST
UNAIDED SIGNIFICANCE

Identifiers:

Male _____ Age 15-20 _____ 30-40 _____ Can read Eng _____ Arabic _____ Both _____
Female _____ 20-30 _____ over 40 _____ Cannot read Eng _____ Arabic _____ Either _____

Show the picture for a few minutes and explain you want to know what they see in the picture?

1. What do you see in this picture. Could you just describe what you see? (Write down response)
2. What do you see in the red area? _____
the yellow area? _____
the green area? _____
3. What is this thing here (basin)?
4. Can you tell me what these (sugar, bottle caps) are? What do you think it has in it? How many do you see in the yellow area?
5. And what are these (bottles)?
6. What do you think this is (liquid coming out of bottle)?
7. What do you see on this side of the picture (show back side)?
8. Does the salt really look like salt to you? How could I have drawn it to make it look more like salt?
9. Does the sugar really look like sugar to you? How could I have

13. Do you see something going into the basin? Yes _____ No _____

14. What? Right _____ Wrong _____

15. What are these (bottle caps)? Bottle caps _____

Other _____

16. How many of these (bottle caps)
do you see?

8 _____

Other _____

millet--the grain considered to be the most filling. With general shortages of ingredients for sauces, the dryness of steamed millet may contribute to a lack of appetite.

When mothers leave for the nearer swamps to work, they usually take their infants with them, leaving behind the pap that had been prepared for their infants not yet on a full diet. In time of plenty, leftovers are given to the animals; however, older children eat these left-overs which are dried and recooked in times of scarcity. Some of the diarrhea during this season may be due to the contamination of the food that is left precooked and uncovered in a humid, hot, and contaminated environment.

The Keneba villagers asserted that all mothers continue to breast-feed for at least two years, and that coitus is taboo during lactation. Their customary practices, however, prove these to be oversimplifications. Thomson's study indicates that only 14 of the 44 children who were fully weaned during the time of the study had been breast-fed for at least two years. There appears to be a seasonal variation in the cessation of breast-feeding. A child born in the beginning of the year is likely to be taken off the breast earlier in light of the tendency for women to stop lactating earlier during the busy farming season (July-December). For example, a child born in January would be 18 months old by the beginning of its second rainy season, old enough to be fully weaned. The study reported that 7 out of 10 children taken off the breast during the agricultural peak (July, August, September) were all less than 21 months old.

A child's age determines the arrangements made for its care during the rainy season. Infants under six months accompany their mothers to the swamps, while older ones stay behind in the village. A mother sometimes works with the infant on her back, but mostly the infant is looked after by a "nursemaid" under a shelter near the farm. Nursemaids, who are generally female relatives aged 6-9 years, have general responsibility for one child (rarely two) for the duration of the farming season in return for free board and lodging. Infants and nursemaids are supervised in the village during the day by the old, disabled, or sick, with each supervisor looking after no more than six children. Because some of the supervisors are relatively ineffective due to illness or infirmity, and responsibilities of nursemaids often extend beyond their capabilities, infants are less well-cared for when their mothers are farming. Sometimes mothers go for days without seeing their children properly as they must leave early in the morning and return after sunset.

Thus, seasons are seen to directly influence the patterns of child growth and mortality in Keneba. Adverse factors of shortage of food, high humidity, prevalence of disease, and absence of mothers who are working the fields are concentrated during the rainy season. The effects of these factors often depend on when the child was born in relation to the rainy season.

FLYER . PRE-TEST
AIDED SIGNIFICANCE

Identifiers:

Male _____ Age 15-20 _____ 30-40 _____ Can read Eng _____ Arabic _____ Both _____

Female _____ 20-30 _____ over 40 _____ Cannot read Eng _____ Arabic _____ Either _____

Give flyer to interviewee. Ask interviewee to listen to the tape and watch the drawing for you.

Do not point to anything in the picture during the recording. Do not answer any questions about the drawing. When the recording is completed, ask the mother to mix a solution like that described on the recording and record the mistakes she makes. The mother may use the drawing as a reference, but don't answer any questions about it for her. After she has mixed the solution ask her to explain the drawing to you. Note any mistakes she makes. Then ask her the following questions:

1. Did you understand what the radio said?
2. Was there something you did not understand?
3. Was there something you did not believe?

APPENDIX E

SUMMARY

of the

DEVELOPMENTAL INVESTIGATION

APPENDIX E

SUMMARY OF THE DEVELOPMENTAL INVESTIGATION

Because the results of the developmental investigation are so central to the design decisions reflected in this implementation plan, a brief summary of the most critical findings is presented here. Readers are cautioned that the statements below are highly generalized. Many constitute hypotheses still to be tested rather than facts to be accepted.

A. BACKGROUND DESCRIPTION OF THE GAMBIA (Much of the following information is drawn from Oyeyemi Haffner, A New Geography of Senegambia, Banjul, 1981.)

The Gambia, situated on the west coast of Africa, forms a narrow band on either side of the River Gambia with a surface area of 11,600 square kilometers (24 km in width x 487 km in length). The Gambia is almost entirely surrounded by Senegal except for the short Atlantic coastline on the west coast. The population in 1980 was estimated at 631,000 of which over 80% lived in rural areas outside the capital city of Banjul and its periurban communities (Annual Report, Medical and Health Dept.). The population density of the country is 50 persons per sq. km making it one of the most densely populated countries in Africa. Children under five years of age account for 17.4% (109,794) of the population.

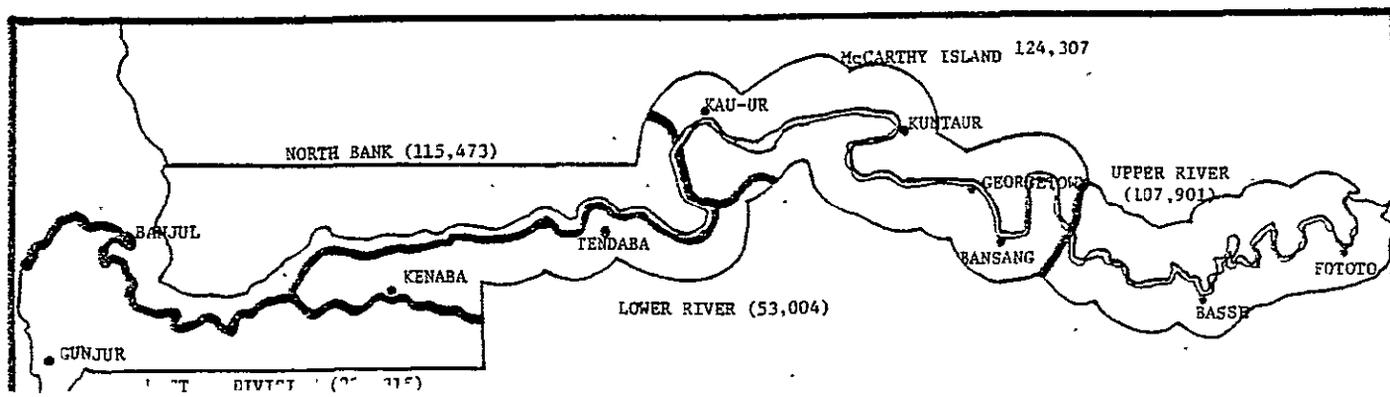
The last national census in The Gambia (1973) showed that 89.3% of the total population are native Gambians, with other Africans comprising 10.3%, and non-Africans making up the remaining 0.2% (0.2% unstated). Native Gambians belong to nine major ethnic groups, 42.2% are Mandinka, followed by Fula (18.2%), Wollof (15.7%), Jola (9.5%), Serahule (8.7%), Serere (2.1%), Manjago (1.3%), Aku (1.0%), Bambara (0.4%), and other Gambians (0.9%). Belonging to the wider Senegambian geographical and cultural region, the major ethnic groups in the country share much in common. They are characterized by hierarchical social and political systems ordered on the distinction between free-born and slave, founder and stranger, and the priority of seniors and men over juniors and women. Since the late 19th century, The Gambia has been predominantly Muslim and, as such, it is characterized by conservative values. A small, influential Christian community centered in the urban area shares many customs, values, and attitudes with the Muslim majority. The basic family unit is the extended family in which polygamy is frequently practised. Traditional values related to family and social relationships, family occupation, and views on moral issues play important roles.

Economically, The Gambia depends almost entirely on agriculture, with groundnuts (peanuts) accounting for well over 90% of total exports. Groundnuts have been the main cash crop

and major source of foreign exchange since the first part of the 19th century. Cotton, currently subsidized by the government, provides an additional export crop. Millet, rice and sorghum are the staple food crops. The emphasis on groundnut cultivation (primarily by men) has contributed to a decline in millet cultivation, as the two crops are competitive for land and labor. The decline in millet production has been accompanied by an increase in the cultivation of rice, primarily by women. The dominance of groundnuts, however, has major implications for the Gambian economy. Groundnuts are subject to sharp fluctuations in price on the world market and in production due to climatic conditions, which puts the economy in a vulnerable position. Also, the flow of cash is concentrated in the "trade season" which coincides with the dry season. Furthermore, the emphasis on groundnut cultivation has diverted production from other food crops so that the area is not self-sufficient in food. Consequently, food must be imported, especially rice.

The River Gambia, which has a depth of 2.5 meters at the eastern border and 25 meters at the entrance, is navigable for regional steamers (i.e., vessels not exceeding 23 meters in draft) to Fatoto, 560 kms from Banjul. There are about 33 wharf towns at which government vessels call. The roads in The Gambia generally follow the length of the country paralleling the river on either side (north and south), and carry limited bus and commercial lorry traffic. While the southern bank road is paved from Banjul to Basse, the northern bank road is laterite. Feeder roads linking remote settlements with these main roads have been and continue to be developed all over the country. During the rains, however, many of these smaller roads became impassable. The Transgambian Highway forms a link between the north and the south bank roads at Farafenni and Soma which proceed respectively to the northern region of Senegal (Dakar), and the Casamance of southern Senegal (Ziguinchor). There are no bridges crossing the river; rather, a number of ferries operate at various points along the river--Barra, Kerewan, Ferefenni, Kuntaur, Georgetown, Bansang, Basse--and are not always reliable. Although the number of cars registered has increased dramatically, their use is largely concentrated in the Banjul/Kombo area. A recent rise in petrol prices has further inhibited the widespread use of vehicles. The Gambia continues to be predominantly a pedestrian society where footpaths are widely used.

The following map illustrates the five Divisions of the country and identifies the principle population centers.



In July of 1981 The Gambia experienced a major coup attempt resulting in a significant loss of lives and a prolonged disruption of national life. One apparent result of the coup has been the announced confederation of The Gambia and Senegal called Senagambia. The specific implications of this confederation are not yet clear.

3. MRC's RESEARCH IN THE GAMBIA

The British Medical Research Council (MRC) laboratories in The Gambia at Fajara--originally a field station of MRC's Human Nutrition Research Unit--were established in the late 1940's to carry out research on various aspects of tropical medicine, particularly in rural communities. In 1949, MRC selected the village of Keneba some 100 miles away from Banjul (then Bathurst) for the construction of a field laboratory with living quarters to conduct entomological and medical investigations relating to the health and growth of young children. Keneba was chosen because of its relative isolation from Western resources, customs and values. Despite the construction of an all-weather road passing within 12 miles of Keneba, its traditional subsistence economy and manner of living still persist. Since 1950, MRC has conducted a series of studies on growth and the nature and causes of morbidity and mortality in young children using anthropometric, medical and sociological observations. Although Keneba by itself, and especially in light of MRC's longstanding presence there, cannot be presumed to represent The Gambia as a whole, it does typify many aspects of rural Gambian village life. MRC's Keneba studies continue to provide the best source of data on childhood health and illness in The Gambia. The following is a summary of several of these studies of particular relevance to the MM&HP project: 1) A.M. Thomson and W.Z. Billewicz, B. Thompson and R. Illsley, A.K. Rahman and I.A. McGregor, "A Study of Growth and Health of Young Children in Tropical Africa," Transactions of the Royal Society of Tropical Medicine and Hygiene, Vol. 62, No. 3, 1968; 2) B. Thompson and A.K. Rahman, "Infant Feeding and Child Care in a West African Village," Journal of Tropical Pediatrics, (September) 13, 3, 1967; 3) R.A.E. Barrell and M.G.M. Rowland, "Infant Foods as a Potential Source of Diarrheal Illness in Rural West Africa," Transactions of the Royal Society of Tropical Medicine and Hygiene, Vol. 73, No. 1, 1979; and 4) I.A. McGregor and A.K. Rahman, B. Thompson, W.Z. Billewicz and A.M. Thomson, "The Growth of Young Children in a Gambian Village," Transactions of the Royal Society of Tropical Medicine and Hygiene, Vol. 62, No. 3 1968.

The Gambia has distinct wet and dry seasons. The dry season (November to May) is characterized by low humidity and relatively cool temperatures. The rainy season (June to October) is marked by high humidity and temperatures. Rainfall, averaging 40 inches, varies from year to year. It reaches a peak in August and September and subsides in October and November. Agricultural

activities are concentrated in the rainy season when all who are able are out working in the fields during the day. The rainy season is also referred to as the "hungry season" as the previous year's grain stocks become depleted and, usually by August, families become dependent on imported rice. It is also during the rainy season when disease is widespread, particularly malaria. Thus, the rainy season is characterized by high humidity, a relative food shortage, a concentration of disease and an intensification of agricultural activity.

Description of the Village (summary from A.M. Thomson et al., 1968). Keneba consists of mud huts with thatched or corrugated iron roofs with dirt paths dividing family compounds. The compounds are surrounded by savannah bush some of which is cleared for cultivation in nearby areas. Otherwise, salt flats and rain-fed paddies are a mile or two from the village, while additional rice fields are cultivated at tidal swamps some five to eight miles away. Most of the 800 people are Mandinkas and predominantly Muslim. A few are literate in Arabic; fewer in English. The men are polygamous and although the women are subservient, they are not kept in isolation. As the inhabitants are primarily agriculturalists, their farming and village activities are subject to the demands of seasonal change. Agriculture is concentrated during the rainy season and is sharply divided between sexes. While the men are responsible for growing groundnuts--their only cash crop and source of income--cultivating millet, sorghum, maize, and findo (a grass hay), the women are primarily responsible for growing and harvesting rice. Hand implements are used and there is no mechanized transport. The fields, which are several miles away, are prepared in May/June, transplanted in August/September, and harvested in November/December. Pregnancy, lactation, and even illness rarely excuse women from working the fields a job which is arduous at the height of the season. The women are also responsible for helping to cultivate other foods, preparing and cooking the food, cleaning and other domestic chores, and caring for their children.

Each family unit produces enough food for its own consumption, which is mostly vegetarian. Cattle, sheep, and goats are killed for food only on feast days, and they give little milk. The villager's basic diet consists of rice and millet as staple grains, supplemented by maize and sorghum, some game and fish, garden produce, and leaves and berries from the bush. Groundnuts provide sauces. Food is plentiful during the dry season, but acute shortages are common half way into the rainy season, when agricultural work is at its peak.

Illness follows a seasonal pattern, being more prevalent during the rainy season (June-October). Malaria and other vector-borne diseases rise to maximum proportions during the latter half of the rains, while falling to low levels as the dry season advances. Malaria is particularly serious in young children whose passive immunity has been lost and active immunity

not yet acquired. Filarial worm infections, respiratory and alimentary disorders, and heavy loads of roundworms are common during the rainy season. Whooping cough is often epidemic, septic lesions are widespread, and anemia is common. "In young children it (anemia) shows an interesting cyclical pattern which is probably related to seasonal variation in the onslaught of malaria." (p. 337) Other indefinite illnesses are often encountered and, in many cases, viruses are suspect as the pathogenic agents.

To the people of Keneba, disease is ultimately attributable to Allah's will. Most causes of disease are believed to have a mystical origin. "Delirium indicated that the Devil was inside the patient and therefore recovery might be undesirable....Thus, instead of taking curative action, they considered it appropriate to take measures which would ease the sufferer's passage to paradise." The villagers have faith in their local general practitioners, some of whom had various specialties. While witch doctors exorcise spirits and "Bad Satans," soothsayers (or marabouts, as they are also known) are fortune-tellers and herbalists. They prescribe jujus--writings from the Koran enclosed in a leather case and worn on the body; and they prepare herbal medicines or rinses such as naso, a verse from the Koran written on a slate with a mixture of soot which is rinsed off and either drunk or used for bathing. Jujus and such rituals as the preparation of food for charity, prayers at the Mosque, or women's dances are considered preventive medicine.

Contact with Western medicine was found at the government dispensary and the research laboratories. However, the supplies of the former were old-fashioned mixtures; and treatment at the labs was administered only in cases of great need--and the research staff was not always there. Although the villagers seemed not to have any objections to Western medicine (excepting the Imam's family whose sons were potential Imams, or religious leaders). They were reluctant to give up their traditional remedies.

Feeding and Child Care (summary from Thompson & Rahman, 1967). Infants are breast-fed soon after birth and on demand for the first few months. Wet nursing by other lactating women is practised for the first few days and whenever necessary after that. Most infants are given watery pap--sometimes sweetened and/or with pieces of any available fruits (mangoes, oranges)--at 4-5 months. Some don't start weaning until 7-8 months, but usually most are eating boiled rice at this age and working up to steamed millet, corn, or findo a month or two later. By 11 months, infants are given groundnuts and sauces. Most children are eating small shares of any food except for very hot dishes at the beginning of their second year.

Children commonly seem to experience a loss of appetite during the rainy season. This may be attributed to widespread illness and the monotony of meals which usually consist of

Weaning Food Contamination (summary from Barrell and Rowland, 1979). Items of food are usually referred to with two names: the first indicating the staples, and the second the mode of preparation. The following list of foods was taken from the report on a study carried out in Keneba on the problem of bacterial overgrowth.

Mono: This is a thin gruel prepared by adding cereal to hot water. Millet, rice, maize, sorghum, or findo may be used. Sour milk, sugar, honey, baoba extract, fish or palm oil may be added.

Fajiringo: Rich grains are washed, steamed and boiled. The water is drained off and the grains steamed until dry. Groundnut sauce is frequently added and occasionally various leaf preparations.

Churo: Unpounded grains of rice are boiled and served with boiled water. A refinement is tekere churo, in which raw groundnuts and whole rice grains are pounded and boiled with salt.

Nyelengo: Millet or findo are pounded and steamed twice. Water is added during steaming. It is usually served with groundnut sauce.

Futo: This is prepared from millet and is steamed in a similar manner to nyelengo but uses more finely pounded grains. The final product is a dry powder which is mixed with water prior to consumption.

Nyankatango: This is a refinement of Fajiringo, in which the rice is steamed with pounded raw groundnuts, dry fish and shell fish and is flavored with locust bean seeds, chili peppers, and onions, or some combination of these.

Netto: Locust bean seeds, available only during the wet season, are mixed with unboiled water and occasionally flavored with sugar.

Barrell & Rowland's study showed that most of the food consumed by children in Keneba had a hazardous degree of bacterial overgrowth. "Even the more thorough cooking methods fail to produce an adequate improvement." While recommending that food be eaten immediately after preparation, the study suggests that even so, one third of the foods consumed in the rainy season would be contaminated. A study of netto, which is prepared with unboiled water, indicated that the well water in Keneba is contaminated with faecal coliforms. This same water which is used during the pre-cooking preparation of cereals was associated with traces of E. coli in monos after cooking. Samples of mono with sour milk added contained unacceptable levels of E. coli which seems to indicate that milking of cows and souring of milk is done under grossly unhygienic conditions.

The peak of diarrheal disease during the rainy season may be attributed in part to the high level of food and water contamination at this time of year. An additional factor leading to an increase in the degree of bacterial overgrowth in food consumed by children during the wet season is that food is likely to be prepared less often and carried over from one meal to another as mothers spend most of the day working in the fields. Although Barrell and Rowland concede that the effects of repeated consumption of contaminated food are speculative, they suggest that "the poor bacteriological quality of infant foods is a significant causal factor in the etiology of weanling diarrhea, even in a community where weaning almost exclusively entails the use of traditional foods in a cooked form."

C. DIARRHEA IN IN THE GAMBIA

The 1980 Annual Report of the Medical and Health Department places the infant mortality rate at 300 per 1000 population, and life expectancy at 32 years for males, and 34 years for females. Major medical problems include the following in descending order of reported case prevalence:

<u>Disease</u>	<u>1980 Total</u>
1. Coughs/Chest Pains	69,648
2. Indigestion & Abdominal Congestion	68,165
3. Malaria	60,014
4. Muscular/Joint Pains	40,123
5. Dysentery & Diarrhea	39,883
6. Indefinite Fever	32,787
7. Pneumonia/Bronchitis	30,783
8. Scabies	24,954
9. Eye Diseases	23,764
10. Gonorrhoea	17,444

The country demographically is characterized by high birth and childhood death rates. Infant and under-five mortality rates are very high, as illustrated in Table 1 below. These figures are from the MRC'S field study area of Keneba and are probably the most accurate figures available.

TABLE 1

Mortality Rate Per 1000 Births in Keneba

1951-1975

<u>Years</u>	<u>Infants (¼-12 months)</u>	<u>One- to Four-Year-Old Children</u>
1951-55	245	83
1956-60	231	101
1961-65	309	105
1966-70	298	124
1971-75	174	109

Cause-specific mortality data is limited, but data on the causes of death derived from surveillance activities and special surveys provide an indication of the important causes of death. The specific sources from which this information was obtained include the following:

- "Statistical Medical and Health Report," prepared by The Gambian Ministry of Health, Labor, and Social Welfare, 1979.
- "Surveillance in The Gambia," prepared by epidemiologist Dr. Harry Hull for the Gambian Ministry of Health, Labor, and Social Welfare.
- "National Tetanus Survey," conducted by Pap John Williams and Harry F. Hull, M.D.s.
- "Primary Causes of Death in Banjul," a combination of classified correspondence to the new code (mostly in-patients from the Royal Victoria Hospital and from Westfield Clinic), 1979.

Gastroenteritis and malnutrition accounted for 21.3% of all deaths for children under five years of age in Banjul in 1978. This represented the most important specific cause of death for this age group. Based on 1979 figures from hospitalized patients of all ages in Banjul, diarrhea was said to account for 7.6% of all deaths in 1979. Based on information extracted from the death register in Banjul in 1979, gastroenteritis accounted for 8.7% of all deaths (infants - 10 percent, children - 16 percent, and adults - 5 percent).

Diarrhea is one of the most frequent reasons for visits to dispensaries and health centers. Among patients of all ages visiting health facilities in 1979, 34,963 visits were for dysentery and diarrhea. This represents nearly 8% of all outpatient visits. The reported visits from dispensaries and sub-dispensaries may be an inaccurate reflection of total visits

primarily because of incomplete or delayed reporting. Even though possibly underestimated, this data indicates a relatively high incidence of visits to the dispensaries for diarrhea.

The incidence of diarrhea ranges from 19 per 1,000 population in Kambo St. Mary, to 173 per 1,000 population in Banjul. Although the differences between these areas may be a result of reporting procedures, the overall high incidence of dispensary visits for diarrhea indicates both a high diarrhea incidence in children and a high utilization of dispensary services for this illness.

The strong seasonal variation in diarrheal prevention is clearly demonstrated in the following table.

Seasonal Variation of Infant Mortality Rate
Per 1000 Births in Keneba

<u>Months</u>	<u>Infant Mortality Rate</u>
November-January (Dry Season)	260
February-April (transition)	175
May-July (wet season)	179
August-October (wet season)	378

Diarrhea was consistently one of the two illnesses mothers, interviewed during the developmental investigation, mentioned first, and described it as especially frequent during the rainy season (June-October) and particularly at the start (sangifallow) and the finish (kunchamarrow) of the rains. All mothers believed diarrhea to be a serious illness from which their babies could die. Following a parallel investigation the evaluation team from Stanford concluded: "The recognized killer diseases are diarrhea and a disease called kris in Wollof and jarala in Mandinka. This latter disease may be cerebral malaria, though we will leave medical inferences to those qualified to make them. Malaria is recognized, too, and is said to lead to kris/jarala. The reader is advised that 'disease,' 'causes,' and 'treatments,' are English words struggling to convey the spiritist associations that make up the framework of most villagers' thinking."

Mothers differentiated between less and more serious types of diarrhea, with blood and/or mucus in the stool signaling the more serious (dysentery). Frequent and watery stools were most commonly named as symptoms of common diarrhea. Most mothers also mentioned weakness, dryness, and sunken eyes as symptoms. Some named vomiting, fever, refusal to eat, and a distended stomach.

Mothers were also able to distinguish different degrees of dehydration or dryness in babies sick with diarrhea. Mandinkas use the words baloboritali, balodjiatta, labaratta, lanfuta, and facetta to describe general dryness and djiatta for severe

dryness. In Wollof, lapa is the word for general dryness, raga for severe dryness, djerx for dry and drained, and iyoi for weak. Fulas call dryness fodjugol, bandomakohori, and fodji, and severe dryness xorogol. The word for dry in Serrehule is ahatengkareng.

Most women attributed the dryness to the diarrhea although some of the symptoms seemed related to a general wasting associated with malnutrition.

A variety of causes of diarrhea were cited by mothers, with no single explanation predominating. Many women mentioned dirt -- dirty food, dirty water, dirt in the environment in which the baby lives -- as a cause of diarrhea. In the same vein, some mentioned inadequate care of the child in general, careless preparation of a baby's food, and breast milk and flies carrying dirt as causes. Spiritual and magical reasons were also given frequently.

Most women said that they usually sought treatment at the government health centers and dispensaries when their babies had diarrhea. Marabouts and local healers were also mentioned as sources of treatment, but they are more likely to be sought for such maladies as fits, nightmares, when the child is believed to be bewitched, when his fontanelle is sunken and hard or his hair is falling out, and when the child is not improving from treatment given at the health center. Local pharmacies were also named as occasional sources of treatment.

The Stanford evaluation team reports that the mother's first response to an episode of diarrhea is village-based healers. Health centers are used when local remedies fail, except where health centers are nearby and then they may be used much earlier in an episode. The penetration of the Expanded Village Program of Immunization (EPI) has apparently increased the confidence in the formal health system.

The most common treatment at the health center and dispensary, according to the women interviewed, is a white mixture (probably kaolin) and pills or tablets (probably sulphadimidine). A brown mixture (guanamycin) was mentioned in some groups. Several mothers mentioned being advised at the health center to mix S/S in boiled water. Injections were named in one group. In describing "water medicine," which seemed usually to refer to liquid kaolin, the words lekindyang (Fula) and boridjioo (Mandinka) were used.

Among the treatments prescribed by local healers for diarrhea are a dose of straight palm oil and tea made from guava leaves and sweetened with sugar. Certain marabouts are said to treat the illness by preparing a special naso; writing a verse from the Koran in chalk on a slate, rinsing the slate with water, and having the child drink the water. Additional information on these and other traditional remedies has been collected by the Stanford evaluation team.

Most of the mothers claimed to take their sick infants for treatment immediately upon the onset of illness, though some acknowledged that they wait until the infant is restless and others, that if the clinic is faraway, they wait a day. Some consult a marabout before going. When asked what they do for the baby before seeking outside treatment, women in 6 of the 11 groups interviewed reported giving the baby salt and/or sugar in boiled water, presumably prescribed by the health staff but rarely mentioned by women as a treatment their babies receive at the health center. Some mothers, primarily Fulas, give the sick baby sour milk. Giving codeine and liquid mixtures from local pharmacies was also mentioned, as was giving herb teas. Not a single mother said she gave her baby a laxative or purgative (nandal), which are given only for constipation. In general, mothers acted surprised to be asked this question, and some volunteered that nandal would only increase the diarrhea.

With regard to the feeding of a baby with diarrhea, all groups responded that mothers should continue to breast-feed the baby. Most women felt they should continue to feed the child other food as well. Most also said the child should be forced to eat if he refused, though some thought he should be left alone.

Of the types of food the baby should be fed, coos pap was mentioned the most. Eggs, oranges, and rice were mentioned next most frequently. Cow's milk or Cerelac, tea and bread, and Fanta or Sprite were mentioned by some. Salt and sugar in water was mentioned once, as were potatoes and Ovaltine. Of the foods that should not be given to a baby with diarrhea, rice was mentioned most frequently. Other foods that the women said shouldn't be given to the sick infant included bananas, oranges, and sour milk.

D. DIARRHEA TREATMENT

The Government of The Gambia and the medical profession recognize the critical importance of fluid replacement to treat dehydration caused by diarrhea. This is done primarily by oral sugar-electrolyte solutions and limited use of intravenous fluids. The method of treating diarrhea varies depending on the setting and will be described during a discussion of each therapy site.

Royal Victoria Hospital, the main hospital in the country (located in Banjul), treats children with diarrhea, primarily in the general in-patient pediatric ward. For most children, therapy begins with oral rehydration (OR) solution. This solution is prepared from UNICEF-supplied packets by the nurses on the pediatric ward. The contents of six packets are added to ten litres of boiled water. This solution is used for older children (usually 12 months), but it is diluted to half-strength with water when used for younger children (resulting in a solution with 30% of the expected concentration of salts and glucose). The solution is ordered by the pediatrician, roughly

in proportion to the degree of dehydration and the size of child, but the volume is usually one litre over the first 24 hours (for a one- to two-year-old child). The child's mother administers the solution with little nurse supervision and without records of actual consumption. Children are discharged when the pediatrician feels that they are no longer dehydrated.

Other medications may be used to treat the diarrhea, including kaolin and combination products which include antibiotics and kaolin. The pediatricians generally feel that these are not necessary but may help symptomatically and/or are expected by patients. If diarrhea is continuing at the time of discharge, mothers are told to prepare a solution with a pinch of salt, a scoop of sugar, a squeeze of lemon and a glass of water and give it to the child. Packets of OR solution are not given to mothers to use at home.

Dispensaries and some sub-dispensaries may treat diarrhea with solutions prepared from UNICEF packets. Children may be kept in the dispensaries during the day for supervised oral rehydration therapy. On discharge, mothers are told to prepare S/S solutions in their home. Kaolin is also distributed by dispensaries.

It is established Medical and Health Department policy to promote home-mix S/S rehydration fluids at the home level. This policy has been defined clearly in the Health Worker's Manual for the Management of Acute Diarrhea in The Gambia (see Appendix A).

When queried about the S/S medicine for diarrhea, many mothers responded that they had prepared the solution themselves at home. The solutions they reported, with one woman usually speaking for the entire group, include the following:

- 1 tsp. salt and 1 cube sugar to 1 litre of boiled water
- 5 mls sugar and 1 pinch salt to 1 glass of boiled water
- 1 pinch sugar and 1 pinch salt to 1 Julpearl* bottle of water
- 1 tsp. sugar and 1/2 tsp. salt to 1 cigarette cup of boiled water
- 1 tsp. sugar and 1/2 tsp. salt to 1 small glass of boiled water
- 1/2 tsp. sugar and 1 pinch salt to 1 small glass of boiled water
- 1 pinch sugar and 1 pinch salt to 1 litre of boiled water
- add equivalent pinches of S/S to boiled water

* A local carbonated beverage.

- 1 pinch salt and 3 pinches sugar to 1 Julpearl bottle of boiled water
- 1 tsp. sugar and 1 pinch salt to 1 litre of boiled water
- 1 1/2 cubes sugar and 1 pinch sugar with hot water
- 1 tsp. salt and 1 pinch sugar with hot water
- 1 packet of salts from clinic with 1 litre of boiled water

As indicated by these reported solutions, most women answering correctly identified that more sugar was needed than salt. In only one case was more salt recommended by a woman who explained that more sugar would increase the diarrhea, and several of the solutions call for equivalent amounts of sugar and salt. Most of the solutions call for boiled water, although the volume of water varied significantly.

The most commonly mentioned containers for measuring water were the larte (1 litre) plastic drinking cup and the Julpearl bottle (one third litre). Other containers mentioned were small glasses, cooking oil (e.g. Niani) bottles, British cigarette tins, mineral bottles, and tomato paste cans.

Most mothers said they had a teaspoon and bottle cap in their homes. With all of the above, however, there were few opportunities to verify the reported information by having the women actually produce a bottle, cup, spoon, etc. to show the interviewers.

Mothers were also asked about the availability of the ingredients necessary to make a S/S solution, with the following results: Coarse salt is usually available at a cost of from 4 to 12 bututs* a cup, but fine salt is rare or not available at all. Granulated sugar is usually available in most villages at a cost of 50 to 60 bututs a cup; sugar cubes, costing 6 bututs for 4-5 cubes, were less available but not uncommon. Oranges and mandarins were usually available in most villages, but limes were available in all. Papayas, bananas, and coconuts tend to be much less commonly available, especially in the villages furthest up-country, and are always more expensive.

When making S/S solutions, mothers said they stored the liquid in a covered basin or bottle with a stopper, and let it cool before administering it. They then would give it to the baby, usually using a cup and spoon, whenever the baby needed a drink over one day's time. When asked how much of a Julpearl bottle filled with water a baby could drink in one hour, most mothers said a baby could probably drink half of it but no more.

* 2 bututs is equal to approximately 1 U.S. cent.

When asked whether they thought a S/S solution was a good medicine for diarrhea, most answered yes. But when asked what they thought was the best medicine for diarrhea, the women consistently named the white mixture (kaolin). Tablets were mentioned as second best, along with the S/S solution. Other answers included injections, guanamycin, codeine, and paracetamol.

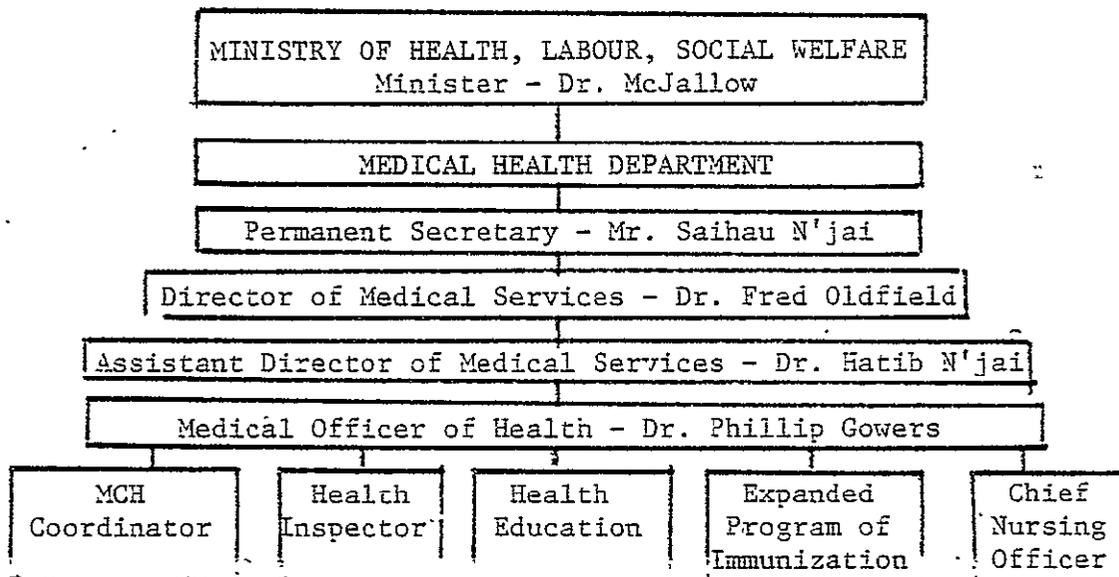
In all cases, mothers said they know that a diarrhea medicine is working when the diarrhea stops.

A series of mixing trials using bottlecaps as measures of sugar and salt and a local soda bottle as a measure of water were conducted using tape recorded mixing instructions. The full results of the trials are described in Appendix B but the most relevant conclusions are listed below:

- It was necessary for mothers to hear the recorded instructions several (3-4) times to remember and collect all the ingredients needed.
- Counting the correct number of bottle caps did not prove to a major problem.
- Heaping of bottle caps with both sugar and salt was common. This practice increases the concentration of both sugar and salt above optimal levels.
- Selecting a litre container was less a problem than the tendency to fill it to less than the capacity with water.
- Stirring the solution was often either omitted altogether or insufficient to properly dissolve the sugar and salt.
- The suggestion to add fruit juices created consternation among several mothers because fruit is not easily available.

E. THE MINISTRY OF HEALTH

The health care system is under the direction of the Division of Health and has the following administrative positions:



The health care services provided by the Ministry of Health, Labour and Social Welfare in The Gambia consist of two government general hospitals: Royal Victoria Hospital in Banjul (240 beds), and Bansang Hospital (100 beds); long stay hospitals for mental, tuberculosis and leprosy patients (120 beds); a home for the old and infirm; and 12 health centers (104 beds), 17 dispensaries, and 55 sub-dispensaries throughout the country. The Ministry additionally operates 8 mobile Maternal and Child Health (MCH) teams that service 68 localities, some of which are based at the dispensary and sub-dispensary areas and others where no health services are available.

Whereas health centers and dispensaries are regularly staffed and operate daily, sub-dispensaries are visited once a week by the dresser-dispenser (a trained, state registered nurse) and his tema from the nearest dispensary, who provide medial services to the patients in the area. The principal health personnel working at the rural level in The Gambia include:

- | | |
|---------------------------------|---|
| <u>Dresser/Dispensers</u> (D/D) | - Responsible for primary treatment |
| <u>Auxiliary Nurses</u> (AN) | - Assist Dresser/Dispensers |
| <u>Community Health Nurses</u> | - Travel regularly to surrounding villages to provide treatment as well as health education (56 in the country) |
| <u>Nurse Midwives</u> (NM) | - Maternal child care focus (29 in the country) |

- Health Inspector (HI) - Prevention, and environmental sanitation inspectors. Travel extensively. (50 total, 15 in rural areas)
- Orderlies - Maintenance of Centers, dispensaries, and sub-dispensaries (90 in country)
- Health Laborors (HL) - Community well construction
- Traditional Birth Attendants (TBD) - Village-based traditional midwives who have been given modern training
- Peace Corps Health Volunteers (PCV) - Expatriate volunteers often working with health centers or dispensaries to non-dispensary communities. A new group of volunteers to arrive in February/March (25 in country)
- Leprosy Inspectors (LI) - Itinerant group of professionals who distribute leprosy control medication throughout the country (15 in country)

In addition to these individuals, a Primary Health Care Action Plan is currently underway, prepared by the MOH with assistance from WHO. The national program calls for the selection and training of 200 village primary health care workers (PHCW) by 1986 to provide services for 200 villages with 400 people or more, which are not currently being serviced by a health unit. Presently, 18 PHCWs have been trained and 18 more are now in training. The program is now limited to the Lower River Division. This primary health care strategy is focused on the prevention and control of endemic communicable diseases such as malaria, diarrhea, schistosomiasis, yellow fever, measles, and other childhood diseases.

The Department of Medical and Health Services of the Ministry also runs the EPI, an Epidemiology Department, the Maternal and Child Health Unit which trains Traditional Birth Attendants and Community Health Nurses, a Health Inspectorate, and a recently constituted Health Education Unit.

The government health services are supplemented by several missions and private institutions. The British Medical Research Council runs a hospital (40 beds) at Fajara and a Nutrition Center field unit at Keneba. A private hospital, Westfield Clinic in Serrekunda, provides 28 beds.

F. RADIO

Reported radio listenership by mothers was consistent with the information gathered from anecdotal sources. Most mothers interviewed said they had access to radios. Those with access said they listen to Radio Gambia in the evenings between 8:00 p.m. and 9:00 p.m. The most popular programs are reportedly the "Women's Programme," "Agric-Bantaba" and "Jatta Kendeya" (the health program). However no women were observed listening to the radio in any of the field investigation visits, although many men with radios were observed. Unfortunately, it was not possible to visit rural village compounds to observe listening habits during prime time. However, based on observations of other sources, there appears to be some question about whether mothers really have access to, or control of, the radio, or if the men actually control the radio while women listen peripherally.

There seemed to be evidence that radio broadcasts were an important topic of discussion at the traditional bantaba (male forum) meetings. This suggests that radio is an important source of village information, and that the role of men may be extremely important to the information received by women.

There are two radio broadcasting facilities in The Gambia, Radio Gambia and Radio Syd. Radio Gambia is the national radio station, and is divided into five sections

- Rural Broadcasting
- School Broadcasting
- English and General Programs
- Local Language and Islamic Programs
- News and Current Affairs

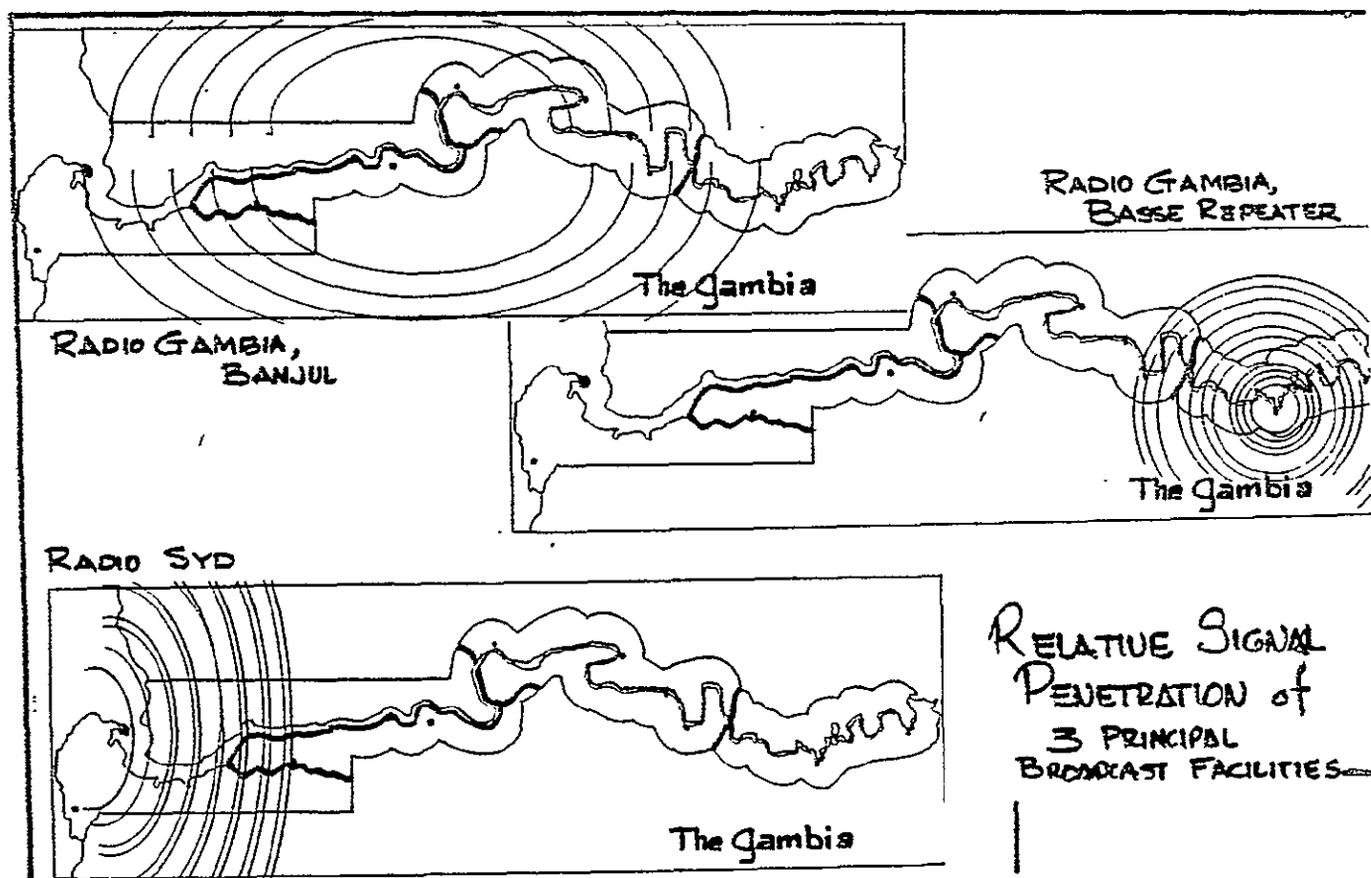
Rural Broadcasting has been given responsibilities for the MOH programs. Presently, it coordinates regular half-hour weekly programs directed at rural areas from the Departments of Agriculture, Animal Health, Fisheries, Health, Community Development, Forestry and Cooperatives.

The following graph illustrates the basic equipment now available at the national radio facility.

Studios	Turntables	1st Generation		2nd Generation		Mixer	Microphone
		Ampex Reel to Reel		Ampex Reel to Reel			
		Tape Decks		Tape Decks			
Large Choral Studio	1	2	2	2	4 Channel	1	
Direct Broadcast	2	2	2	1	Working	1	
Studio A							
Small Studio B		2	2	1		1	
New Studio (to be built)	(2)	(2)	(2)	(1)	(6)		
New Studio (to be built)	(2)	(2)	(2)	(1)	(6)		
In Maintenance	3	6	6	8			

It should be noted that Radio Gambia has no telex facility or cassette recording capability. The two new studios planned for 1982-83 are contributions of the West Germany Government. A new broadcast channel was originally scheduled to open in 1982, but due to political decisions following the recent coup attempt, only one broadcast channel will be used in the foreseeable future.

Radio Gambia's main production facility is outside Banjul, its main transmitter is in Bakau and the only repeater station is located in Basse (see map below).



The Radio Gambia broadcast format is basically 15- to 45-minute educational programs in various languages interspersed with music. A complete list of prime-time programming has been prepared by the project staff. Radio Gambia also has limited commercial advertising, similar to that described below at Radio Syd. Broadcast hours are 6:30 a.m. to 2:00 p.m. and 5:00 p.m. to 12:00 a.m. daily. The facility shuts down from 2:00 p.m. to 5:00 p.m. due to lack of funds.

Radio Syd is a more commercial, urban and tourist-oriented, private facility. Programming includes a music program in Swedish, a jazz show (Sunday), an English magazine show and various music programs interspersed with spots. They also simulcast the Radio Gambia newscasts in all the local languages. At least half of the commercials are produced overseas with cigarette, soap, soft drink, and battery promotion dominating the advertisement time. (Berek Battery has a strong campaign going on presently in which they have set their musical theme with a basic script allowing the station to put the spot in many languages with the same music. They sometimes play the spot in two different languages back-to-back which sounds very effective.) Local production consists basically of voice over music in various languages. Spots last between 30 and 60 seconds.

An inventory of radio reception was taken in Banjul, Bansang, and Basse, in order to assess what stations could be heard and what programming they used. During a field trip project staff also talked with rural women about radio usage and observed local listening habits.

In Banjul, only four stations, Radio Gambia, Radio Syd, Radio Enturr and Sen-National, were received during the day, while 16 stations could be heard during prime-time (7:00 p.m. - 9:00 p.m.). These stations included two Senegalese stations, the two Gambian stations (Radio Syd and Radio Gambia), Radio Guinea and various Spanish-speaking stations from the Canary Islands.

Up-country the number of stations received was noticeably fewer. In Bansang, located in the center of the country, only ten stations could be heard during prime-time. The strongest signals were from Radio Guinea and Sen-National (from Senegal) and from Sierra Leone. Less strong but still audible were Radio Gambia and Radio Enturr (from Senegal).

In Basse, in the northern part of the country, the number of stations which could be heard dropped to eight. Radio Guinea and Sen-National had the strongest signals. A critical problem is that Radio Gambia's signal drops dramatically after 8:00 p.m. although it is strong at 6 p.m. and excellent at 7:30 a.m. A visit to a Radio Gambia relay station located in Basse revealed that at 8:00 p.m. Radio Morocco's signal cuts into and drowns out Radio Gambia. The Basse engineer then switches off microwave contact with the station and plugs his personal radio, tuned to

Radio Gambia, directly into the transmitter on a slightly different frequency. The signal is weak, but audible. The engineer reported that when the signal fails he plays cassettes. Both the cassettes and radio belong to the engineer. This correlates with focus group reports that Radio Gambia can frequently not be heard up-country, especially in the far eastern part of the country.

Programming specifics on the Senagalese stations was difficult to ascertain but they are reported to use commercial spot announcements. Sen-National is particularly respected by Gambian radio professionals for their educational work in agriculture.

G. PRINT MEDIA

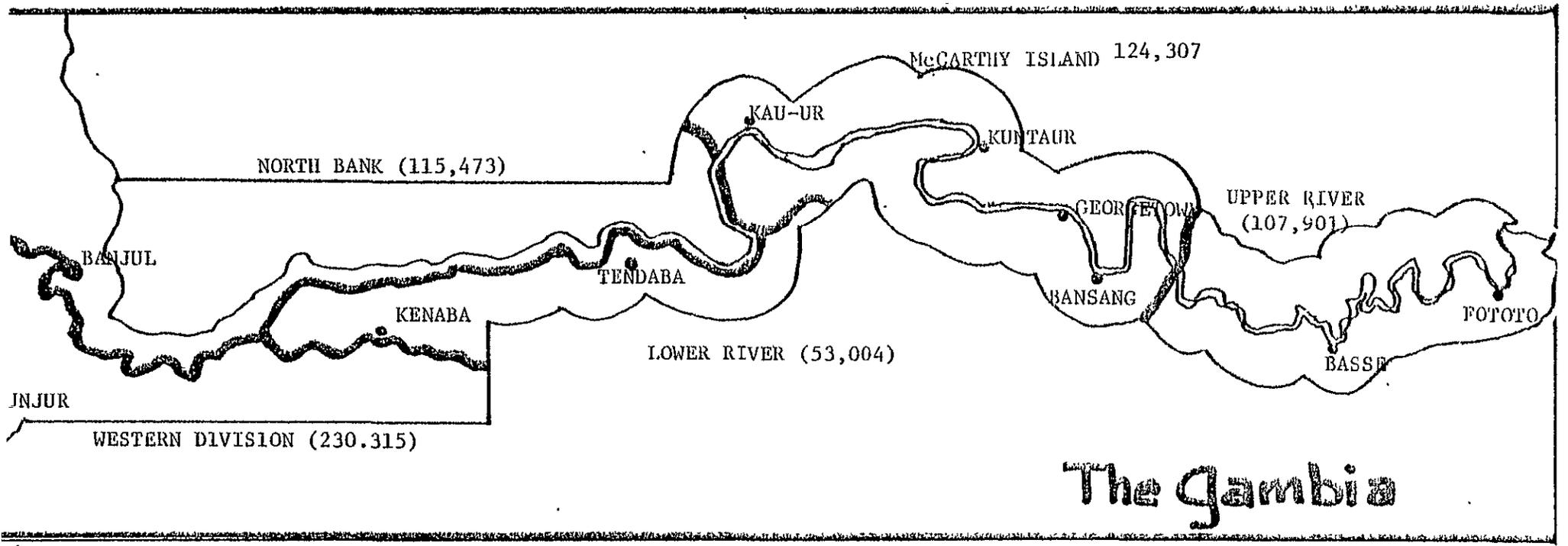
Investigation of print media in the rural areas showed a remarkable lack of any printed matter. Literacy rates are very low. Arabic seems to be the language most likely to be read by a small cadre of Islamic students in almost every village, and traditional tribal languages have no indigeneous written form. Posters, signs, calendars, etc., are very uncommon in family compounds, but compound walls are sometimes used as practice slates by children doing their school work or demonstrating their newly acquired writing and drawing skills.

Printing facilities are very limited and no large-format off-set press is available locally. Printing in Dakar is possible and prices seem to be reasonable, although concrete experience with commercial firms there is lacking.

H. KEY FINDINGS

1. Marked seasonality of diarrhea, seasonal significance of malnutritional, and relative infrequency of rapid dehydration from watery diarrhea during the wet season.
2. Extensive penetration of rural areas by health services as evidenced by 85% of mothers with young children reported to have EPI cards.
3. Apparent prevalence of "dryness" as a concept used by rural people to describe general wasting which carries symptoms similar to diarrheal dehydration.
4. Relatively widespread, but highly variable, understanding of how to mix the S/S rehydration fluid.
5. Marked absence of print material in rural areas, with Arabic as the most prevalent written language.

6. Despite poor signal quality of Radio Gambia in approximately one quarter of the country, the relative acceptance of Radio Gambia as an important source of information in rural areas, especially among men.
7. Lack of systematic studies on tribal and linguistic characteristics of major ethnic groups in the country. Continued dependence on anecdotal, and often seemingly superficial, generalizations about local culture.



APPENDIX G

CONSULTANT REPORT