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Rural Health Services Project

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FINAL REPORT

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Anne-Marie Foltz, PhD.
Janet Rich, MPH

John Snow, Inc.



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EXECUTIVE SUMMARY

The Rural Health Services Project (PRSSR), financed by the Mauritania USAID mission, was designed to assist the Ministry of Public Health and Social Affairs (MSAS) of the Islamic Republic of Mauritania to improve its capacity to deliver primary care services. John Snow, Incorporated (JSI) contracted to provide technical assistance to the PRSSR. JSI provided guidance to the PRSSR's two main components: the Expanded Program of Immunization (EPI); and the development of community health workers as agents for delivery of primary care in rural villages.

Following the mid-term evaluation of the Project in July 1986, the composition of the JSI advisory team was reoriented toward integrating primary health care with other health activities in the field and, in the Ministry, toward developing health information systems as a management tool and assisting the Ministry in general management and planning. During the Project's five years, JSI provided the following field advisors: EPI advisors (3 years) primary health care advisors (3 years), health information advisor (15 months) plus short-term advisors for selected areas of need.

The Project assisted the Ministry to set up a functioning EPI program with mobile teams and fixed facilities throughout the country. The cold chain functions, for the most part, and the EPI documentation unit is capable of producing annual reports on EPI activities.

For the community health component, 273 village health workers have been trained and 258 have had refresher training. Training of health workers will soon begin for the 68 villages recently sensitized. Three regional commissions on primary care plan for supervision and training within their own borders. Central, regional, and departmental supervisors/trainers have been trained. A data collection system geared to the competency of illiterate community workers has been designed to permit departmental and regional supervisors to monitor their work. Centrally, the PRSSR unit has managed successfully this regionalization and continues to provide training and supervisory support.

Ministry personnel from directors on down have benefitted from the training program for courses in management, epidemiology, computers, health information, training, supervision, and service delivery. As a result of Project training activities, there has been an evolution in the understanding of primary health care and an active discussion of it. Although the Ministry has yet to show budgetary support to sustain the community health component of the PRSSR beyond the end of the Project, it has demonstrated its commitment to primary health care by placing all primary care services within one administrative division, the DHPS. Most importantly, the capacity of Mauritania to train new community health workers in service delivery has been established.

At the national level, the National Commission for Primary Care, formed in December 1988, is studying the potential for expansion of the program and experimenting with ways to make it self-financing by applying selected recommendations of the Bamako Initiative. This activity is receiving strong support from UNICEF.

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Some steps have been taken to integrate the various elements of the primary care system. Community health supervisors ride together with the EPI mobile teams; MCH and PRSSR work together in training traditional birth attendants. The Ministry in 1987, brought together all primary care health services under one director. Although the PRSSR was not brought into the Ministry at that time, the PRSSR director answers to the head of the DHPS. Since the beginning of 1989, the Ministry has discussed extensively how to incorporate PRSSR activities, but no decision has been made as of this writing. The recent Senegalo-Mauritanian conflict, which broke out in April, has for the time cast a damper on most development activities.

We recommend generally that (1) future projects, whether run by USAID or other donors, maintain the MSAS administrative capacity; (2) donors develop a consistent policy towards management systems which require considerable use of vehicles and thereby engender high recurrent costs; (3) the Ministry develop a means to pay for the recurrent costs of the community health worker program.

Specifically, we recommend that USAID (1) develop a policy on its payment of recurrent costs of programs and, based on this policy, allocate additional funds to sustain the EPI and community health programs; (2) continue training in management, and computer maintenance and programming; (3) protect its investment in Ministry computerization by allocating \$10,000 to purchase additional equipment necessary for maintenance. However, aid for computer equipment and training should be contingent on the Ministry making a firm commitment to find an appropriate dust-free air-conditioned environment to house the computers, and that it appoint two trained statisticians to be responsible for their maintenance.

ACKNOWLEDGEMENTS

We wish to thank the officials of the Ministry of Health and Social Affairs for their close collaboration in carrying out this Project. Our thanks go also to the USAID/Mauritania staff who followed this Project from its inception. The JSI field staff also benefitted from the assistance of their colleagues from other organizations, particularly the World Health Organization, UNICEF, and the GTZ.

LIST OF ABBREVIATIONS

AID - Agency for International Development, Washington, DC
ASC - Agent de Sante Communautaire (Community Health Worker)
AT - Accoucheuse Traditionnelle (Traditional Birth Attendant)
CEDES - Centre des Etudes Demographiques et Sanitaires
(Demographic and Health Research Center)
CPHA - Canadian Public Health Association
DHPS - Direction de l'Hygiene et de la Protection Sanitaire
(Division of Hygiene and Health Protection)
DPFC - Direction de la Planning, de la Formation, et de la Cooperation
(Division of Planning, Training and Cooperation)
EPI - Expanded Immunization Program
GIRM - Gouvernement Islamique de la Republique de la Mauritanie
(Government of the Islamic Republic of Mauritania)
HIS - Health Information System
HS - Hygieniste-Secouriste (Sanitation-First Aid Worker)
JSI - John Snow, Incorporated
JSI/Boston - JSI headquarters
MCH - Maternal and Child Health
MSAS - Ministere de la Sante et des Affaires Sociales
(Ministry of Health and Social Affairs)
MT - Mobile Team
NGO - Non-governmental Organization
OR - Operations Research
PACD - Project Assistance Completion Date
PHC - Primary Health Care
PRSSR - Project de Renforcement des Services de Sante Rurale
(Rural Health Services Project)
SOW - Scope of Work
UNFPA - United Nations Fund for Population Activities
USAID - United States Agency for International Development, Mauritania
Mission
WHO - World Health Organization



INTRODUCTION

The Rural Health Services Project, financed by the Mauritania USAID mission, was designed to assist the Ministry of Public Health and Social Affairs of the Islamic Republic of Mauritania (GIRM: Gouvernement Islamique de la Republique de la Mauritanie) to improve its capacity to deliver primary care services. Among the objectives envisioned as steps in achieving this goal were the following:

"To institutionalize a national PHC policy and structure...and develop supervision systems which are efficient...and develop management, financial and information systems which can maintain services after completion of foreign technical assistance. [p.14]

"[To support] important GIRM policy reforms aimed at the development of a national PHC system stressing preventive medicine, active community participation, development of fee for service systems, full integration of vertical delivery systems...[p.15]

"[To strengthen] institutional capabilities [through] training...Managerial, technical, and planning skills will all be reinforced...systematic collection of cost information and baseline data, and assistance in defining lines of authority and communication." [p.15]

John Snow, Incorporated (JSI) contracted to provide technical assistance to the PRSSR. JSI provided guidance to the PRSSR's two main components: the Expanded Program of Immunization (EPI); and the development of Community Health Workers as agents for delivery of primary care in rural villages.

Following the mid-term evaluation of the Project in July 1986, and in recognition of the work already accomplished in EPI, the composition of the JSI advisory team was reoriented toward assistance in integrating primary health care with other health activities in the field and, in the Ministry, toward developing health information systems as a management tool and assisting the Ministry in general management and planning issues. Meanwhile, less advisor time was allocated for EPI.

JSI carried out the technical assistance component of the PRSSR and advised the PRSSR's commodities component. This report focusses mainly on the activities of the technical advisors, but also discusses general PRSSR accomplishments when furthered by JSI team activity.²

In Part I, we present a narrative of the Project events. In Part II, we present an analysis of Project activities and results and an assessment of achievement of Project objectives. We conclude with recommendations for future policy.

¹ Project Paper Document, pp 14-15.

² JSI advisors assisted USAID officials, for example, in decisions about procurement of equipment, supplies, and training materials which were necessary for PRSSR activities but which were funded from project funds directly by USAID not through JSI contract funds.

I. NARRATIVE OF PROJECT

The Rural Health Services (PRSSR: Projet de Renforcement des Services de Sante Rurale) Project is a fused extension of two projects earlier supported by the Mauritania USAID mission: the Expanded Program of Immunization (EPI) and the Rural Medical Assistance (RMA) Project, (also referred to as the Trarza Project), which ended in December 1983. A Grant Agreement for the creation of the PRSSR Project was signed between the GIRM and USAID in July, 1983. Thus the RMA and the PRSSR Projects effectively overlapped for a period of six months. JSI's contract to provide technical assistance to the PRSSR Project was signed in May 1984. Technical assistance began in August 1984, with the arrival of Dr. Pierre Claquin, Chief of Party and Health Management/EPI Advisor. (For full list of JSI Project personnel, see Appendix 1).

During its first year, before the arrival of the JSI technical assistance team, it had been expected that the PRSSR Project would: set up the foundation for a health information system; purchase EPI equipment; train personnel for primary health care (PHC) and EPI activities; and establish a basic organizational structure to set and implement national PHC policy. USAID was to carry out a baseline study before the arrival of the JSI team.

Few of these tasks had been carried out prior to Dr. Claquin's arrival. The Midterm Project Evaluation in 1986 noted that the first year of JSI technical assistance was essentially a "catch-up" year. The primary accomplishments before the arrival of the JSI team had been the establishment of the Inter-service Committee in the Ministry of Health (MSAS: Minister de la Sante et des Affaires Sociales) which provided a forum in which such services as EPI and Maternal and Child Health (MCH) could debate primary health care implementation, and the creation of the PRSSR office with a Mauritanian director, Dr. Hacem.

The Inter-service Committee approved in September 1984 the change in the job description of the second JSI advisor from Health Education and Training Advisor to Primary Health Care Advisor. Curriculum development and training were to be shared between the primary care advisor and short-term consultants. This accord was passed to USAID with the understanding that it would be contained in a Project amendment. Dr. Cyril Pervilhac, the Primary Health Care Advisor, arrived in Mauritania in December, 1984.

With the arrival of Pervilhac, Claquin could turn his attention to the EPI program. During 1985, Claquin focussed on improving three aspects of EPI operations: organizing a reliable cold chain; rationalizing the EPI management through target setting and resource forecasting; and improving the data collection and analysis capacity of the EPI unit.

Claquin reviewed the organization of the cold chain at both central and peripheral levels. He approached UNICEF and the Pasteur Institute in Dakar to set up a vaccine potency control system. To evaluate the extant cold chain, Claquin collected BCG vaccine vials throughout the EPI regions for

testing in Dakar. As a result of this review, Claquin instituted improvements including logs and inventory systems. With the advice of Mr. Jean-Jacques Bordier, a short-term cold chain consultant who arrived in the spring of 1985, the EPI central warehouse was renovated, and the cold chain equipment for the Maternal and Child Health Centers was installed. Claquin continued to work on cold chain of vehicles in collaboration with Bordier and Medecins Sans Frontieres.

Claquin worked closely with the EPI unit to develop their accounting and vaccine management systems. Protocols were developed with both the mobile teams and the central EPI service in vaccine forecasting.

In 1985, Claquin reorganized the EPI Documentation Unit, and trained EPI statisticians in Lotus 123. He organized the first national vaccination coverage survey, which was used as a tool in setting regional vaccination coverage objectives for 1985. Claquin proposed methods to collect data that would replace the baseline survey that was to have been collected before the JSI team's arrival. USAID and Claquin never came to an agreement to carry out this work, and sustained effort to develop a national health information system did not occur until after the 1986 Midterm Project Evaluation.

Claquin and Hacen, the PRSSR director, travelled to the United States to attend a Centers for Disease Control conference and to present the Project's design and achievements to the AID Africa bureau.

In 1985, Pervilhac worked with the PRSSR community health supervisor/trainers to plan training of community health workers (ASC: Agents de Sante Communautaire³) and to sensitize villages to community health care. He helped the health education personnel of the MCH department complete a list of tasks and objectives of the first-aid/sanitation workers (HS: Hygieniste/Secouriste) and traditional birth attendants (AT: Accoucheuses Traditionnelles). With Pervilhac's advice, the MCH department set priorities for information, education and communication. The "Competency-based Approach Training Method" promoted by the USAID Health office was successfully tested by a central team in R'Kiz with Pervilhac's assistance.

In the spring of 1985, two short-term consultants were called in to design curriculum and visual aids for primary health care. Prior to their arrival, Pervilhac reviewed existing health education materials. Neither consultant performed to the satisfaction of the MSAS, USAID or JSI. Although JSI identified two new consultants to continue their work, they could not be brought in country, due to miscommunications within USAID.

³ In this document, community health workers are referred to collectively as ASC (agents de sante communautaire). However, Mauritania uses two types of ASC with the expectation that a village will have at least one of each. These are the hygieniste-secouriste (HS: sanitation/first aid worker) and the accoucheuse traditionnelle (AT: traditional birth attendant). In reviewing Project and official documents we found frequent confusion when ASC was used to refer only to the HS and not to the AT.

Pervilhac worked with Stanley Yoder, a medical anthropologist, who prepared a medical ethnography in the Guidimaka region. This study provided the basic information to develop the community health care system in that region.

Pervilhac prepared the integration of the EPI and PHC mobile supervisory teams. Frustrated by a shortage of personnel to implement the Project, Pervilhac perceived this as a lack of commitment on the part of the Ministry of Health and Social Affairs. In October 1985, a meeting was held between USAID, JSI and the PRSSR director to discuss the obstacles to the PRSSR primary health care implementation and to identify solutions. In December, the JSI team reported that few of these recommendations had been implemented, and they questioned the commitment of the PRSSR nationals. Frequent absences of both JSI and PRSSR staff and enmity between Pervilhac and PRSSR director exacerbated problems. Pervilhac decided to leave the Project; he departed in early March, 1986.

Ms. Logan Brenzel, the JSI/Boston administrator, visited the Project in November 1985, to help prepare two proposals to USAID. The first, a "Proposed Reorientation of the PHC Component of the PRSSR Project in the R.I.M.", followed a meeting with USAID in which PHC strategies were defined. This document was never formally acknowledged by USAID nor discussed with the JSI team. Meanwhile, the USAID Health Office imposed a unilateral freeze on the primary health care component of the Project until the midterm evaluation, an action to which the JSI team objected.

JSI's second proposal was the Longitudinal Epidemiological Studies, a proposed amendment to the JSI contract.⁴ The proposal was for a series of surveys at one year intervals, collecting indicators from sentinel households in Trarza. USAID postponed response to this proposal until the results of the midterm evaluation were available.

In 1986, Dr. Claquin continued to work closely with the EPI unit. Continuing problems plaguing the EPI were gas and vaccine shortages, vehicle maintenance problems, lack of a national policy definition, and poor team performance. Claquin helped the MSAS redefine its strategy to target larger villages and to narrow the age group targeted for vaccination.

One of the best "performers" in 1985 and 1986 were the National Vaccination Days, which Claquin assisted in organizing and evaluating. Claquin showed that these Vaccination Days resulted in: a dramatic increase in urban coverage, retraining for more than 500 health personnel in vaccination and cold chain techniques, and a greater awareness of the urban population of EPI services and benefits.

⁴ A previous amendment for such a study had been discussed and prepared in collaboration with USAID during the first quarter of 1985. It was cancelled by USAID in May 1985. USAID claimed conflict of interest on JSI's part, but had been unable to find another team to replace the one proposed by JSI.

Following Claquin's repeated request, UNICEF funded a cost-effectiveness study of the three strategies (mobile, fixed and National Vaccination Days) in use in the EPI program. This was effected by Ms. Brenzel in close collaboration with Claquin.

Claquin and Brenzel prepared a pre-assessment document before the arrival of the midterm evaluation team in June 1986. Before leaving in August, Claquin collaborated with the Minister of Health, the PRSSR Director, the Head of the Preventive Medicine Service, and UNICEF to plan for future EPI needs. In his End of Tour Report, Claquin maintained that, despite the progress of the community health component in elaborating a model of primary health care and communicating the conceptual premises of PHC, a practical understanding and planning had not yet taken place. He lamented that there were but a few key actors in USAID and MSAS, soon to leave the Project, who represent the de facto repositories of institutional memory of PHC and the Project. Claquin recommended that future efforts in the community health component focus on the institutionalization of a system of identification, training, and appropriate use of individuals for PHC. Concerned about the issue of sustaining the excellent results achieved by the EPI unit, Claquin recommended further technical assistance in EPI.

The midterm evaluation team, which submitted its report in August 1986, recommended a mixed EPI strategy of extending EPI services in fixed centers, using mobile teams to reach outlying areas, and resorting to National Vaccination Days only to increase public awareness. The team recommended that the mobile teams increase their responsibility to supervise community health workers. They recommended immediate extension of PHC activities to Guidimaka; strengthening the preventive components of ASC training programs; and revising a training-of-trainers curriculum development workshop. The team noted that, "No single entity or person within the MOH [Ministry of Health] represents primary health care in Mauritania and has the responsibility to operationalize it. There is no sense of urgency to respond to Project Office requests for support and no demonstration of commitment to the Project. It should be stressed that this in no way indicates a lack of commitment to PHC in general..." They recommended, among other things, that formal integration of PHC into the MSAS should be accomplished as quickly as possible. The Evaluation Team recommended three positions for technical assistants: an Operations Research (OR) Advisor, a Health Information Systems (HIS) Specialist, and EPI Consultant.

In November 1986, JSI proposed scopes of work for the three technical assistants recommended by the Midterm Evaluation. JSI recommended the amendment of its contract to include these three long-term advisors, to serve for a period of two years each. This would require the extension of the PACD to February 1989 (an extension of seven months), and the obligation of additional resources commensurate with the increase in level of effort and the costs associated with fielding this increased level of technical assistance. This proposal was presented by Ms. Brenzel to USAID/Mauritania during her visit in November 1986. Dr. Jean Francois Etard had already been identified as the EPI Advisor and Dr. Michel Vernier as Operations Research Specialist.

Upon Brenzel's arrival, USAID had already written the Scopes of Work (SOWs) for two of three long-term advisors, those in HIS and OR, for two years (the second year being subject to review). The EPI Advisor scope of work had yet to be drafted, but had already been designated by the Health Office to be position of only one year. The draft amendment stated that all three advisors would work for two years, subject to USAID review after one year. Ms. Brenzel was not shown all of the draft, and could not clarify certain points regarding benefits and the description of the operations research to be performed. JSI raised technical objections to the amendment when it was presented to them in February 1987. No amendment was signed at that time. During the hiatus of technical assistance during the last 6 months in 1986, the PRSSR office, under the direction of Dr. Sow, extended Project activities to Guidimaka region.

Dr. Jean Francois Etard arrived in January, 1987, as EPI Advisor. Working with the central EPI team, Etard revived the weekly coordination meetings, guided their analysis of the pressing problems faced by EPI and their activity plan for the central EPI teams for 1987. He trained Fatematou N'Diaye, the Project statistician, in the entry of data of the monthly 1986 EPI reports and preparing information for feedback. The EPI statistician, Corraera, was trained in the use of Symphony software.

Once the entry of the 1986 data was complete, Etard prepared the 1986 Annual EPI Report. During the first semester of 1987, the EPI Program realized between 70% and 79% of the 1986 coverage (the National Vaccination Days excluded). Although the mobile teams were vaccinating more children per sortie, they were slipping in the attainment of their yearly target for days spent in the field. In order to identify gaps in service, Etard analyzed the activities carried out by each division of the EPI Service, including the number of working days per mobile team, month and department. Etard worked with the mobile teams to research the demographics of the target populations of various vaccination units. The monthly EPI reporting forms for fixed centers were revised by Etard to reflect changes in EPI policy.

Etard initiated the discussion of epidemiologic surveillance of measles and polio through sentinel sites with the EPI Coordinator, the Division of Contagious Diseases, and with the newly arrived COP/Operations Research Advisor, Dr. Vernier. Later, Etard worked with the HIS Advisor, Dr. Tonia Marek, when she arrived in September 1987, to implement the sentinel site system.

In revising the stock management procedures for the central EPI warehouse, Etard introduced a simplified stock tracking sheet. He made recommendations on vaccine equipment procurement, improved sterilization technique, and tests of solar powered refrigerators.

Etard attempted to strengthen the EPI unit's links to outside organizations, through monthly coordination meetings between the EPI and local non-governmental organizations (NGOs). He participated in Ministry/NGO discussion of Vitamin A deficiencies and the possible distribution of

Vitamin A capsules by mobile teams. Etard co-authored a manual on the prevention of polio by vaccinations, and edited a first EPI liaison bulletin to link all vaccination units with technical updates and feedback. He also collaborated with the assistant director of the Canadian Association of Public Health to identify areas in EPI in need of financing. He left in January 1988.

Dr. Vernier, Chief of Party, arrived in May 1987. The definition of Dr. Vernier's SOW was a source of contention throughout most of his contract. Dr. Vernier was hired as Operations Research Specialist focussing on finding practicable solutions to the management and sustainability issues identified in the community health component of the PRSSR Project. Shortly after his arrival in Mauritania, Dr. Vernier identified what he considered to be a more effective position from which to promote the PRSSR Project, that of Primary Health Care Advisor to the Minister of Health. Dr. Vernier argued that from this position within the Ministry, he would be more able to effect changes and institutionalize PHC within the Ministry than from a position attached solely to the PRSSR Project. This position as PHC Advisor was formalized by the Ministry in a September 19, 1987 memo from the Secretary General. There are no minutes of a meeting between Dr. Vernier and USAID in which this change in SOW was discussed. USAID contends that Dr. Vernier was to add the PHC Advisor tasks to his SOW as OR Specialist; Vernier holds that his role as PHC Advisor was to replace his earlier OR SOW. USAID did not communicate its understanding of the outcome of this meeting to JSI/Boston. Consequently, JSI/Boston also believed that Dr. Vernier's responsibilities as OR Specialist had been replaced by those as PHC Advisor. Dr. Vernier's 1988 Workplan, which did not include plans for operations research, was accepted by USAID in early 1988.

In July 1988, the contract amendment extending the JSI contract through June 1989 was finally signed. It included the changes in scopes of work that had occurred over the life of the Project. The SOW for the PHC Advisor in the amendment agrees closely with Dr. Vernier's 1988 workplan.

As advisor to the Minister of Health, Vernier worked closely with him to upgrade managerial and epidemiological capabilities by identifying appropriate training programs and facilitating the selection of trainees, their admission and their orientation. He acted as liaison with the Canadian Public Health Association to arrange training in French. In September 1988, four senior managers in the MSAS were admitted to Masters-level public health training programs in Canada, (financed by the CPHA). Two more senior managers will be sent to the U.S. for MPH training with USAID financing in 1989. Dr. Vernier also identified regional management and epidemiology training programs appropriate for mid-level managers in Dakar, Morocco and Tunisia.

Dr. Vernier participated as advisor to the following Ministry committees:

- Committee on Epidemiological Surveillance (Vernier helped the Committee design a surveillance and contingency plan and to prepare an

technical guide and a survey tool for distribution to regional medical officers in response to an outbreak in meningitis)

- Committee on Pesticides
- Coordinating Committee on Rift Valley Fever (Vernier helped review the results of "sentinel herd" surveys, epidemiological surveys and vaccine trials)
- National AIDS Committee (Vernier helped to: define a short term plan to combat AIDS; organize the WHO Day Against AIDS; review objectives, strategy, methods and resources of the Mauritanian AIDS agenda with the WHO and UNFPA donors; chair the National AIDS Conference)
- Committee on Foreign Aid
- Committee on Essential Drugs
- Ministry Cabinet meetings (covering such topics as: regulating the registration of pharmacists; creation of a Committee on Markets; regulating private medical, surgical and dental practice; the organization and function of the National Public Health School; and formalizing the organization and functions of the MSAS)
- Technical Subcommittee on Evaluation

Dr. Vernier collaborated closely with the PRSSR Project Director, Mr. Anne Saada, to advise him on several issues, including integration, reporting, extension of PHC into the Assaba region, organizing a PHC library, the 1988 EPI Evaluation Survey, Project constraints, and sustainability of PHC. Together they elaborated a proposal to integrate PHC at the central level by attaching a PHC Advisory Unit to the Office of the Director of Hygiene and Health Protection. This proposal was submitted by the Project Director to the Minister of Health; he is currently awaiting a response.

Regionalization of MSAS functions, including PHC, was promoted by Dr. Vernier as a means of integrating PHC. Regionally, PRSSR Project activities are managed by the Chief Medical Officer, who reports to the Direction of Hygiene and Health Protection. Financial control of PRSSR community health activities is in the process of regionalization.

Another aspect of integration fostered by Dr. Vernier was the initiation of two journals to provide continuing education and to provide communication among personnel involved in different aspects of PHC. These quarterly journals, entitled "Mauritanie-Sante" and "Promotion et Action Sociale" are edited by the Social Affairs and MCH Departments, and are published in French and in Arabic. Two issues of "Mauritanie-Sante" and three issues of "Promotion et Action Sociale" have been published to date. The heads of the Social Affairs and MCH Departments are enthusiastic about this new tool.

Dr. Vernier helped the MSAS to organize the First National Seminar on PHC, held in December 1988, at which the future of PHC in Mauritania was debated and at which a National Commission on Primary Health Care was formed. He further assisted this Commission and its Subcommittee on Programming and Planning to standardize ASC management tools, and to plan and develop management tools for fixed health facilities.

Dr. Vernier provided a variety of management and technical assistance to the MSAS, including the review of reports; advice on the formulation of a sexually transmitted disease project, the CEDES "PAPCHILD" survey and the new initiative against diarrheal disease; helped interpret the role and define terms of reference for MSAS staff; acted as liaison between various agencies and the MSAS; and made himself available upon request as advisor to heads of services.

Although Vernier's rapport with the MSAS was excellent, his relationships with USAID and JSI were strained.⁵ Because of Dr. Vernier's failure to comply with administrative requirements, in April 1989, his services were terminated by USAID, with JSI's agreement.

Dr. Tonia Marek arrived in Mauritania in September 1987. Her SOW included development of a simple and reliable health data and analysis system for the community health program, including information on incidence and prevalence of disease and illnesses and on nutritional surveillance in the Project regions. She was also to assist the MSAS to improve its national health information system (HIS).

Marek conceived and designed the community health HIS to be closely allied to the existing supervision system, to permit the supervisors to transmit essential information to levels above and to be able to provide local feedback based on the data analyzed at the local level. She worked with the PRSSR team and field supervisors to produce a number of tools and guides (listed in Appendix 2) that were field tested in the course of supervision. After analysis, feedback was given to the supervisors to help improve their data collection and to take action based on identified problems. Marek completed a 12-page manual, "Illustrated Memory Aid for the Dosage of Medicines", to assist community health workers and to permit supervisors to assess the number of ASCs administering medicines correctly.

Marek collaborated with the German (GTZ) PHC Project to standardize data collection by providing them with the ASC report and supervision forms, while the PRSSR profited from the GTZ experience in health kit management. She participated in the UNICEF effort to gather the NGOs involved in PHC to discuss their methods of training and supervision. Marek designed a

⁵ Dr. Vernier maintains that he did not submit Project reports until the JSI/USAID contract amendment was signed in July 1988 because he had no "Terms of Reference" and because he was attempting to pressure USAID to amend the contract. Though JSI/Boston made it clear to Dr. Vernier that JSI considered his lack of reports unacceptable, he did not submit his first reports until August 1988.

booklet called "Handbook for Community Health Committees", to elicit the interest of the medical and paramedical community and the attention and support of national and international leaders in the PHC and its HIS. Five hundred copies have been printed in French and 500 in Arabic. They have been widely distributed.

A supervision guide for Departmental supervisors was elaborated under the guidance of Marek, and refined a training module for the HIS of the PRSSR Project for training of PHC supervisors.

At a January 1989 meeting between USAID, PRSSR director, and UNICEF to discuss the future of the PRSSR Project's work, Marek presented the analysis she had developed with Anne Saada of recurrent Project costs.

In her work with the national health information system, Marek organized a course on Introduction to Computers for 21 participants and arranged to send three MSAS statisticians to the Public Health School in Zaire for further training. She trained several MSAS statisticians in the different phases of conception, data entry and analysis of surveys and studies on health conditions, using as examples two local surveys. She initiated and organized monthly meetings of the MSAS statisticians in order to standardize and coordinate their work.

At the request of the Director of Planning, Training and Cooperation of the MSAS (DPFC: Direction de la Planning, de la Formation et de la Cooperation), Marek elaborated a summary of 1988 activities and outlined a plan for the 1989 establishment of a National Health Information System. She also advised the preparation of a proposal to reorganize the MSAS Statistical Service. With the Director of the DPFC, Marek elaborated a MSAS Computerization Plan to serve as a working document for the Ministry's discussions with donors. It seeks to standardize within the MSAS hardware, software and training in statistics and computers.

Marek worked with the MCH Service to plan a test of a simplified HIS in the MCH centers in Nouakchott, to advise the design of the MCH supervision sheet, and to propose that the supervisory team use feedback from the MCH annual reports in their tours. She and the MCH statistician conceived the pretest of a new information system using family health records. This is soon to be implemented in Ouad Naga and Nouakchott.

Marek established with the EPI a system of sentinel sites for surveillance of EPI preventable diseases. At Marek's suggestion, a meeting was held in January 1989 to discuss progress of this system; several recommendations were made. Marek worked intensively with the EPI statisticians in the analysis of 1987 statistical report and their presentation in graph form.

In January 1989 Marek accompanied the Director of the Statistical Service (Mme Dia) and the central PRSSR supervisor (Mr. Ba Bocar), on a study tour to Niger to examine their health information system.

The 1982-1986 data for psychiatric hospitalizations were organized, computerized, cleaned and coded by the MCH and National Hospital statisticians under Marek's supervision. The National Hospital statistician was trained by Marek to produce the 1987 hospitals report.

Marek's contract ended in February, 1989. JSI recommended its extension through June, but USAID cited the Ministry's opinion that they could function independent of further technical assistance.

Mr. Aly Sy joined the Project in December 1988 as Health Management Advisor. He focussed on defining the tasks and relationships between the MSAS units, working from a questionnaire for service and department directors designed to clarify management problems. Sy is formulating recommendations for the structure and function of the primary health care "cell" that is being considered by the Minister of Health. This office would be attached to the Director of Hygiene and Health Protection (DHPS: Direction de l'Hygiene et la Protection Sanitaire), and would replace the PRSSR office. Sy, working with the personnel unit of the MSAS, has developed a computerized national MSAS personnel database. This will help regularize payroll procedures and selection of candidates for further training. After the departure of Vernier in April, Sy assumed the role of Chief of Party.

In May 1989, Ms. Janet Rich, the JSI/Boston administrator, and Dr. Anne-Marie Foltz, a short-term consultant, arrived in Mauritania to produce this final JSI report and to assist with closeout of the contract which ends on June 30, 1989.

II. ANALYSIS OF PROJECT ACTIVITIES AND ACHIEVEMENTS: DEVELOPMENT OF GOVERNMENTAL INFRASTRUCTURE FOR PRIMARY CARE

A. Introduction

In the following sections we will discuss the JSI technical team's contributions to the development of governmental infrastructure for the delivery of primary care. The team used three types of input: training in technical and administrative skills; tools for management; and assistance to the Ministry to build the administrative structures necessary to manage and integrate its primary care programs.

These three elements are essential to the sustainability of any project. Skill transfer necessitates both broad training (such as communicating primary health care concepts to large audiences) and specific training (such as cold chain maintenance for technicians). Management tools facilitate work, and help ensure that the lessons learned are tied not only to individuals, but also to institutions; they may substitute for "institutional memory" when people are transferred, something which happens often in developing countries. An appropriate administrative structure is necessary to carry out the tasks and to exploit the abilities of health workers and their tools. Skills and tools are only as productive as they are well-managed, and good management can only emanate from a well-defined administration.

We will discuss each of the three inputs, and then turn to the assessment of the Project's achievements.

B. Development of skills in primary care service delivery and management

The Rural Medical Assistance (RMA) and Expanded Program of Immunization (EPI) Projects that preceded the Rural Health Services Project (PRSSR) developed a small trained cadre of professionals and paraprofessionals involved in primary health care. Nevertheless, when the PRSSR began in 1983, there was in Mauritania neither a widespread understanding of primary health care nor the technical skills to bring a national primary health care program to life.

JSI technical assistants were involved both in direct training and as advisors to training carried out by PRSSR personnel (see list in Appendix 3). This training took many forms: workshops, formal degree programs, technical training programs, and on-the-job training through close collaboration with the JSI advisors. People were trained at every level of the system: village, departmental, regional and central levels. At the lower levels, service delivery training was provided; at all levels, development of management and organizational skills was stressed.

The base of the health system pyramid is the village; 127 villages are active in community health care. The first step in the recruitment of villages to the PHC Program is their "sensitization". Sensitization sessions have been completed in 68 villages in Assaaba and Guidimaka;

training of ASCs (Agents de Sante Communautaire) will be carried out this year. Sensitizations are led by mobile teams that explain to the villages the responsibilities of the village health committee and the ASCs. Members of the health committee are trained in the basics of village health kit management, health education, simple census techniques, and record keeping. In its attempt to promote community autonomy in decision-making, the training in cost recovery and kit management may have been too non-directive, as is evidenced by the trouble many communities have had in keeping kits stocked and ASC remunerated.

Service delivery training for the two types of ASC, 89 HS (health and sanitation worker) and 184 AT (traditional birth attendant), was provided in Trarza, Guidimaka, and Assaba. Retraining was held for 258 ASCs. The HS are trained in hygiene and sanitation, nutrition, essential drugs, pregnancy risk assessment, triage and referral, first aid, oral rehydration and community participation. ATs are trained in pregnancy risk assessment, safe delivery techniques, nutrition screening and health education for women.

Central PRSSR supervisor/trainers as well as regional and departmental supervisors were crucial to this sensitization and training. JSI advisors helped the PRSSR shape and revise the curriculums which had been inherited from the RMA Project. They judged them sufficient with slight modifications for community training needs (see Midterm Evaluation). A medical anthropologist, provided by JSI under another contract, assisted the development of the ASC curriculum in Guidimaka. Dr. Cyril Pervilhac worked closely with the PRSSR supervisor/trainers in regional training-of-trainers workshops focussed on revival and recruitment of community health committees and training of HSs. Dr. Tonia Marek trained regional supervisors to instruct departmental supervisors and ASC in the health information system.

The national staff in the Project office gradually assumed responsibility for training and supervision, so that JSI advisors could be, and were, phased out for this aspect of the Project. By 1986, PRSSR supervisor/trainers were holding their own training-of-trainer workshops for regional supervisors. By 1988, the central PRSSR supervisor/trainers were able to elaborate the most recent edition of the ASC manuals without technical assistance, while training of HS was largely carried out by regional supervisors. The regional supervisor in Guidimaka communicated and implemented the community health information system throughout his region. The Trarza supervisor, unfortunately, has proved less assiduous in carrying out his supervisory duties.

In the regions and departments, the community health supervisors worked in conjunction with the EPI mobile teams. As in the community health component, the EPI mobile teams served as the vehicle for education of local and departmental officials. The EPI teams were trained by the JSI field staff to provide EPI services, to manage their own activities, and to train and supervise fixed vaccination centers (largely MCH centers). Dr. Pierre Claquin and Dr. Jean-Francois Etard reviewed with the mobile teams proper vaccination and sterile technique and taught them cold chain maintenance (for which Jean-Jacques Bordier was engaged); how to set

vaccination targets (both determination of village size and target age groups); forecasting vaccine needs; resource allocation (particularly of fuel); and coordinating field visits. JSI developed the mobile teams' ability to transfer many of these skills to the fixed facilities, supervise them, and provide them with feedback.

After the midterm Project evaluation which judged service delivery competency to be sufficient to function independent of technical assistance, JSI efforts were redirected toward the development of management skills at the central level of the MSAS.

The EPI advisors, Claquin and Etard, worked closely with the central EPI service, which was at the time a subdivision of the Contagious Disease Division. They provided one-on-one assistance to the directors of the EPI service as well as to the EPI statistician. Claquin and Etard helped the EPI to improve its target setting and vaccine need forecasting, by using demographic techniques. Management and equipment of the central vaccine warehouse was dramatically improved through the efforts of Claquin, Etard, and Bordier. Claquin and Etard communicated basic epidemiological principles which informed the EPI's evaluation of its own activities. Although Claquin and Etard did the actual analysis and evaluation of EPI performance, their training of the EPI statistician in the collection, computerization, and presentation of data paved the way for Dr. Tonia Marek's later success in helping him to analyze data and produce reports independently.

Dr. Marek's work with the MSAS and PRSSR statisticians was particularly fruitful. She was the catalyst for the cooperation between the EPI, MCH, PRSSR, and hospitals statisticians, who now represent a large part of the skills in health information in Mauritania. The result of the efforts of Claquin, Etard and Marek is that these statisticians now understand the steps in an health information system. They are able to: identify appropriate indicators for the management of services; to design data collection tools; enter and clean data; analyze data using DBase and Lotus; and present data in graph and report form. They have had practice in using data from surveys and from service statistics. The EPI statistician has begun the process of setting up sentinel sites for epidemiological surveillance. This training was accomplished in part through on-the-job collaboration with JSI advisors, and in part through technical workshops arranged by Marek. Two workshops led by CEDES provided an introduction to the functions of computers to 21 MSAS personnel. Three statisticians were selected for training in DBase and Lotus in Zaire (two of these were funded by the Project). Further training in computer maintenance would help to secure the tools of these highly motivated statisticians.

Marek's training at the central level included the central PRSSR staff as well as the heads of the Hygiene and Health Protection (DHPS) and Planning, Training, and Cooperation (DPFC) Divisions, and their MCH, EPI and Statistical services. Her assistance included helping these directors to rationalize information flow, to define their informational needs, to use information in planning, and to take cost-effectiveness into consideration. Marek accompanied the head of the Statistical Service and the PRSSR Head

Supervisor/Trainer to Niger on a study tour, funded by the Project, of the Niger health information system, enriching these decision-maker's understanding of health information systems. Marek disseminated the functions and design of a health information system through her presentations at national conferences and the publication of the Handbook for Community Health Committees.

JSI advisors. Dr. Michel Vernier and Mr. Aly Sy, have concentrated almost exclusively on developing the management capabilities of the central level of MSAS and PRSSR. Both have focussed on improving the processes of management, from task and role definition to planning based on long- and short-term objectives. Vernier's presence on a number of policy and planning committees was judged invaluable by his Ministry colleagues, who had great respect for his expertise. He helped them respond quickly to emergencies, such as meningitis and hemorrhagic fever outbreaks, taking into account epidemiological, political and resource allocation issues. Vernier guided the Ministry in evaluating foreign donor proposals, insisting they set priorities and judge proposals on explicit criteria rather than superficial review and consent. He helped the MSAS to determine the steps in the elaboration of long-term policies for AIDS and for the future of private medical practice.

Both Vernier and Sy worked with the MSAS divisions to define the functions and interrelation of their units and the roles of individuals within the units. Based on this clearer understanding of their own function and assistance in presenting information orally and in writing, the Ministry directors are more able to communicate both within and without the Ministry. This has promoted the flow of information within the Ministry: MSAS personnel have been trained to edit two Ministry journals; and the director of the statistics and documentation service has been trained to streamline report production.

Vernier and Sy have assisted USAID and MSAS to research public health masters-level programs, to identify appropriate candidates, and to solicit financial support for their studies. They have facilitated the application and orientation of these students. To date, one trainee has been sent to the U.S. (on Project funds) and four to Canada for long-term training in public health. In order to allow the MSAS to identify candidates systematically in the future, Sy has created an updated database on the Health Ministry personnel.

C. Development of tools for management of primary care implementation

Through the assistance of the JSI team, a large number of tools have been produced or procured to aid primary health care management. These include both documents (listed in Appendix 2) and equipment (particularly cold chain and computer hardware and software). One measure of a tool's value is the extent to which it is used; we will discuss the Project's most important tools in this light.

Dr. Claquin elaborated a number of methodological guides for EPI, each a chapter in what was to be an EPI Operations Manual. That the methodologies in target setting, cold chain management, vaccine forecasting, and coverage evaluation have been applied is evident in the EPI mobile team trip reports and EPI Annual Reports. In what condition these guides now exist in the EPI services is unclear; they might have been more effective as "institutional memory" had they been bound into a single volume. The cold chain equipment has proved both appropriate and adequate to deliver vaccine in good condition to health centers.

The PRSSR training manuals for community health workers are thorough without being overwhelming. Their discrete, concise lesson plans increase the chances of their being referred to by trainers. We are told that the 1988 edition of the HS training manual is being actively used.

Dr. Marek produced a library of management tools, elaborating supervision and data collection forms and guides, a health facility map, and the promotional Livret du Comite de Sante Communautaire (Community Health Committee Handbook). This handbook, which was published in both Arabic and French, has been widely distributed to promote appreciation of community health services; the French edition is already out of print. The tools for the ASC, monthly activity reporting forms and a "Guide to Drug Dosage," are illustrated for illiterate workers. For the most part, these tools are well-used and much appreciated by the ASC. The supervisory reporting forms are successfully employed in Guidimaka, although not in Trarza. UNICEF will continue the development of a community health information system based on the experience of the PRSSR and NGOs participating in community health.

The JSI technical advisors guided the selection of computer hardware and software which is essential to the data management and report preparation of several MSAS divisions. Four statisticians are sharing the computer at the PRSSR office. Their use of it is not heavy, except in rush periods of report preparation. The addition of the newly procured IBM personal computer will suffice for current needs. DBase and Lotus have been the most used software. Recommendations for procurement to complete their software library follow.

The computerized personnel database being set up by Mr. Sy should prove to be a valuable tool in regularizing the MSAS personnel compensation and management system. Its highly political nature, particularly in light of current events, may preclude its immediate use.

The documents that both Dr. Vernier and Mr. Sy elaborated have helped to define the tasks and roles of MSAS services and personnel. They are important tools to strengthen MSAS infrastructure, although the extent to which they are used will depend on internal Ministry politics.

⁶ The one exception to this was some cold chain equipment which had been recommended by a short-term consultant not provided by JSI.

The two quarterly public health journals that Dr. Vernier assisted the MSAS in publishing are of high quality and are good vehicles for education and communication. They are published in both French and Arabic and are distributed throughout the national MSAS system, serving to reduce the professional isolation of peripheral workers. The value of these journals as liaison tools will rise with the planned decentralization of the Ministry.

D. Development of administrative capacity and infrastructure to manage primary care

The study of public administration gives no hard and fast rules for how to organize the work of a Ministry, whether by function or by area, whether to emphasize programs which by their nature are vertical or to emphasize structures which cut across programmatic concerns and are by nature horizontal. Each type has its virtues and vices. Governments tend to oscillate between them.

In Mauritania, by the time this Project was launched, the emphasis on vertical programs (EPI, MCH, PHC) had left a legacy of fragmented and fragile structures. The GIRM and USAID recognized that the administrative structures for EPI and community health activities needed more support, but they also recognized that these activities would need to be integrated with other Ministry activities. The task for the JSI advisors was to build up these activities while finding ways to integrate them with other Ministry services. Meanwhile, they supported information system development as a management tool for the EPI and primary health care units.

We will discuss JSI team activity to strengthen the EPI and community health components and then the health information system. Finally, we will turn to the integrating elements which were developed during the course of the Project.

1. Expanded Program of Immunization

In 1984, the EPI program needed help in management. The EPI unit existed as a separate service within the Ministry. It needed help to organize its mobile teams (MT), to establish a reliable cold chain, a reliable method for reordering and stocking vaccines, and a method to collect reliable data to monitor its activities. It needed to coordinate the activities of the various donor organizations, and finally, it had to plan to expand vaccination coverage throughout the country.

The three years of JSI technical assistance to the EPI program provided much of this help. The first EPI advisor, Pierre Claquin, after assessing the extent of the problem both at the central warehouse and in the field, called in a specialist, Mr. Jean-Jacques Bordier, to improve and systematize the central warehouse and to develop a reliable cold storage system for the mobile teams during their field activities. Supervisors learned to monitor and record daily temperatures. Claquin's successor, Dr. Jean-Francois Etard, helped develop regional warehouses so that vaccines could be supplied

more readily to the regional mobile teams and to the increasing number of fixed facilities which provided immunizations.

The 10 mobile teams were trained to plan their field trips more efficiently by using a loop rather than a star pattern thereby covering more territory with every sortie. They learned to define the target population and to forecast vaccine needs, so that they could manage their stocks more efficiently. The advisors provided guides to help the teams manage gas consumption. They encouraged the Ministry to publish a decree limiting mobile team activity to villages of 200 persons or more. With this increased efficiency the teams were able to decrease the number of trips while immunizing more children per trip.

The major task for the EPI program was to expand its immunization coverage around the country. The JSI advisors helped the Ministry narrow the targeted children to those under three years old and to expand tetanus immunizations to all women of child-bearing age.

Given the difficulty and cost of transport in a Sahelian country such as Mauritania, it became obvious that if vaccination coverage were to increase, it would have to do so from fixed health centers. Working closely with other non-governmental organizations and the JSI technical assistants, the Ministry selected new fixed sites for immunizations. USAID and UNICEF provided funding for these sites, while the newly retrained mobile teams became supervisors and vaccine suppliers to these facilities.

The number of fixed facilities providing immunizations rose from 30 in 1984 to 66 in 1989. The number of doses of vaccine delivered countrywide rose, with fixed facilities delivering an increasing share. In 1984, fixed facilities provided 30% of all vaccinations; in 1988, they provided 60% of all vaccinations. Fixed facilities also proved more effective than mobile teams in getting children to complete the series of vaccinations. In March 1989, fixed facilities had completely vaccinated 89% of their target populations for BCG and 40% with the third dose of DTP; mobile teams had reached only 73% of their target populations with BCG and 13% with a third dose of DTP.⁸

When the technical assistance for EPI ended in January 1988, there was some discussion whether it were still needed. Some who said at the time that it was not needed, later voiced regrets as they perceived the quality of work slip without the guidance of technical assistance. But the program continues to run and some such slippage is to be expected. Of more concern is the logistical support to sustain the gains that were made. Although technical assistance ended in January 1988, the Project has continued logistical support in the form of vehicle maintenance, fuel, and per diems, while UNICEF continues aid for vaccines. EPI has the administrative capacity to carry out its work. What it lacks are sources for funding its operating costs. Eventually, this will have to come from the GIRM.

⁸ Ministry of Health and Social Affairs, Enquete Nationale de Couverture Vaccinale (Mars 1989), Nouakchott, Mauritania, 1989, p. 96.

2. Development of the Primary Care Project structure (PRSSR)

In its administrative analysis, the Project Paper of 1983 had called for a separate Project where the Project Director would derive his authority from the Director General of the Ministry of Health but would have autonomy over project affairs. The Project was to cooperate closely with the Preventive Medicine and MCH departments (see Table 1).

This project structure was already in place when the first JSI Chief of Party, Claquin, arrived in Nouakchott in mid-1984. Project documents were ambiguous on whether the JSI advisors or the Project director were responsible for project management. When it was resolved that the Project director was responsible, it clarified lines of authority between the Mauritanian project director and the JSI chief of party and placed the technical assistants clearly in the role of advisors, while the three successive Project directors managed the USAID supplied resources. Although such a structure was administratively more complicated for the advisors, it was an appropriate step for training and developing Mauritanian management capacity.

It was expected that the community health component of the Project would be simply a continuation of the Rural Medical Assistance Project, but during the interim period all the supervisory and training staff had been appointed elsewhere or sent abroad for further training. As a result, the Project office had to start again with new staff which, at first, the Ministry could not make available. The JSI advisors frequently voiced their concern about the Ministry's inability to assign personnel sufficient to permit development of community health. Leadership of the Project office was also weak, increasing concern about the viability of the community health program.

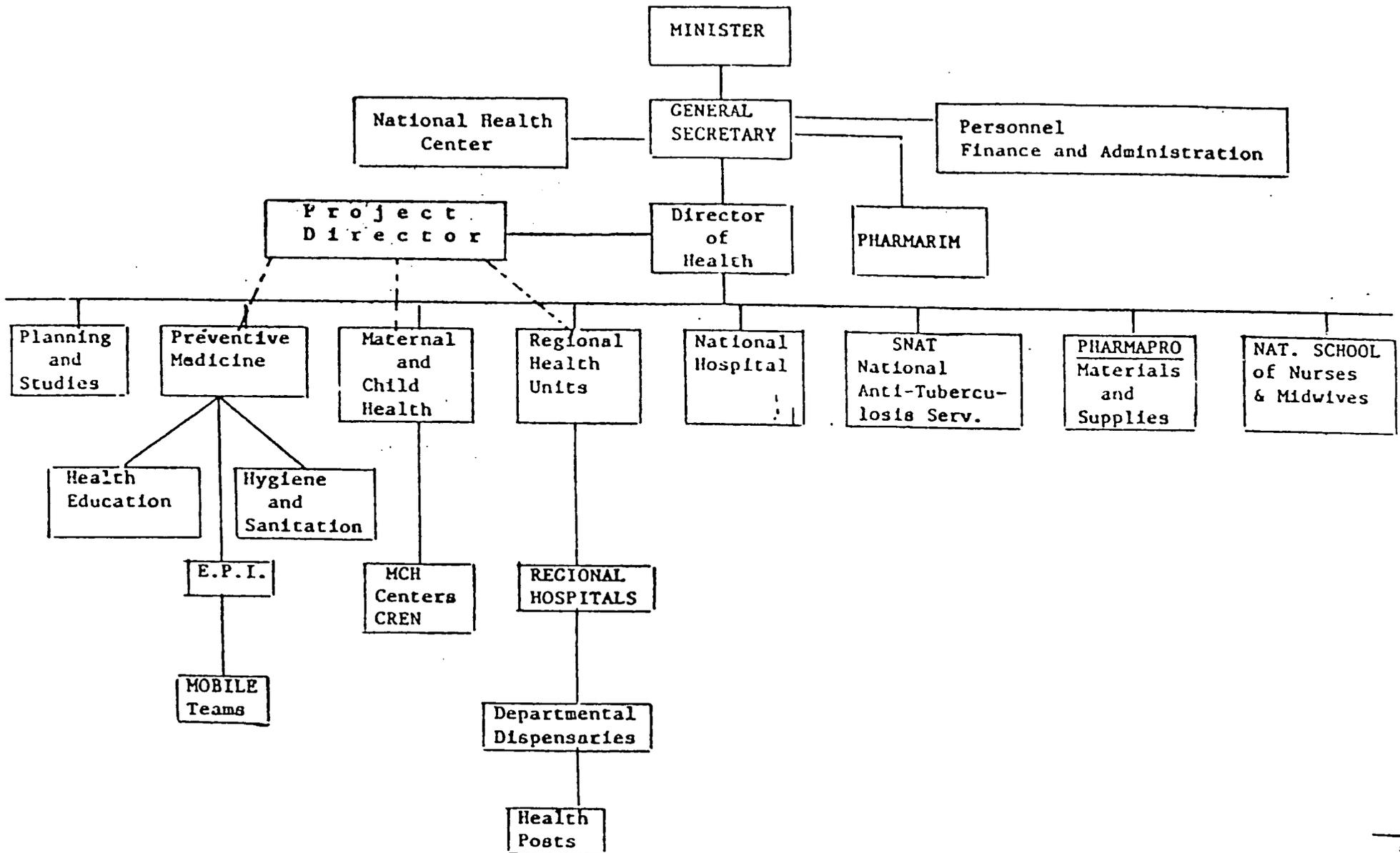
By the beginning of 1986, the USAID health officer, dissatisfied with the Project's administration and progress, had wanted to close down its community health component. However, since funds had already been allocated for the year and in order not to lose the gains which had been made in sensitizing villages to community health in the Guidimaka region, the Project director with the support of the JSI advisor, Dr. Pervilhac, managed to maintain some of the program's training and supervisory activities.

After the mid-term evaluation had recommended continuation of the community health component, the Ministry committed more staff to the project. The appointment of Mr. Anne Saada as Project director in early 1987 has provided consistent leadership and development of community health activities in close consultation with the JSI advisors.

The Project office has built up a central staff of supervisors and trainers who assist regional supervisors to plan and carry out community health training and supervision in the three regions where the Project is now operating. The nature of the central office work has changed and the amount has decreased as responsibilities for planning, supervision, and

Table 1

ORGANIZATION CHART OF THE MINISTRY OF HEALTH



100

training have passed to the regions as part of a general Ministry decentralization.

One problem which has plagued the project office is its ambiguous position in the Ministry. To accomplish much of its work, the PRSSR needs to work closely with the EPI and MCH services. Although links were forged with the EPI program, those with the MCH services have been more tenuous. Moreover, not only is the Project geographically separated from the Ministry, it also failed to appear on the organization chart after the Ministry reorganization in mid-1987 (see Table 2). Informally, the project director works through the Director of the DHPS under whose aegis are now regrouped all Ministry activities dealing with primary care (EPI, MCH, Nutrition, School Health, Family Planning).

The JSI Health Management advisor, Aly Sy, in reviewing Ministry organization at the request of the Minister, will offer some options to resolve the problem of finding a home for the community health care activities of the Ministry. The JSI advisor to the Minister, Dr. Vernier, as well as Anne Saada, the Project director, proposed to the Minister that the primary care project office be moved into the Ministry as an advisory and support unit attached to the DHPS director. Although there has been much discussion about this, no decision has been made as of this writing. The result of those discussions and the appropriation of a budget line to the community health activities would be an appropriate test of GIRM commitment to primary care.

3. Health Information System

The development of information systems was a project objective from the beginning. This information system was viewed primarily as an aid to supervising and managing those components of primary health care with which the Project was most closely involved: community health workers and the immunization program.

Dr. Claquin, the EPI advisor, assisted development of the EPI's data collection system, the program most closely linked to his responsibilities. At first, this consisted of providing technical assistance on vaccination coverage surveys in 1985 and 1986 and organizing the EPI documentation unit. In preparation for improving reporting systems, he organized weekly meetings of the central EPI team to coordinate and analyze monthly MCH and mobile team data. The monthly report forms were modified to reflect these discussions and new age groups introduced for target populations. Meanwhile, the advisors trained two statisticians to use the microcomputer to enter data.

The progression of Ministry personnel takeover of health information tasks for EPI is shown in the progression of EPI annual reports. The 1985 and 1986 reports were drafted by JSI advisors using data collected and entered by EPI statisticians. The 1987 EPI report was analyzed and drafted by the EPI statistician using the JSI advisor only as consultant for assistance in graphic presentations.

In early 1986, Etard helped EPI begin designing an epidemiological surveillance system, but this took form and was implemented only after 1987. In 1989, seven health centers serve as sentinel sites in Nouakchott providing monthly information on three diseases, polio, tetanus and measles. Ministry officials acknowledge that the quality of these data is not yet very good and that they will have to supervise the clinics more closely in order to make this a reliable surveillance system.

Only after the midterm evaluation and the implementation of its recommendation that full-time technical assistance in health information systems be made available to the Ministry, did work begin seriously on other aspects of health information within the Ministry, specifically, a data collection system for the community health component and an examination of the Ministry's total information needs and organization.

Tonia Marek, the HIS advisor, recognized that good supervision of community health workers depended on clear methods of recording their work and providing feedback. She redesigned and simplified the supervisor's data collection forms and oversaw their implantation. The forms have been well accepted and used in the Guidimaka region. In the Trarza region, the regional supervisor has shown less commitment to making the information system work even though he participated fully in its development. The PRSSR statistician, Fatematou N'Diaye, trained by Marek, now carries out the data entry and analysis for this information system.

Dr. Marek also worked with other Ministry divisions in two other areas: assisting the Ministry to design a coherent health information system; and assisting the Ministry in discrete HIS projects. She initiated monthly meetings of Ministry statisticians (all of whom work in separate divisions) so that they could discuss their common problems and coordinate their work. She elicited from services chiefs their information needs, discussing with them their objectives and their preferred indicators for measuring progress to objectives. She also developed with them flow charts showing the flow of forms from the regions and through the Ministry. Using this information as a base, she discussed with Ministry officials the reorganization of the Ministry's statistical services and developed proposals for its reorganization and for the computerization of the Ministry.

Aly Sy developed a paper presenting the options for the organization of the statistical unit and for the organization of the computers. These documents are serving as the basis of discussion as the Ministry searches for the means to sustain the development of the health information system.

4. Integrating the elements of primary care

The terms, "primary care" and "integration," took on many meanings during the course of the Project. This led to no small confusion as to what the Project was supposed to do. Primary care for some referred only to the community health component, that is, sanitation/first aid workers(HS) and traditional birth attendants(Ai) known collectively as ASC (community health workers); others understood it to include all primary care activities, for example, immunizations (EPI) and maternal and child health care, and even

first-stop curative care in clinics. Members of the JSI technical team held this larger view of primary care although each of them focussed his work on only selected components. Because each of these components was at a different stage of development, their integration was not easily achieved.

As for the term "integration" it took on the following meanings for the JSI team:

- a. Integrating primary care activities of the regional supervisory teams so that their work was coordinated at the regional level, particularly the EPI and community health components;
- b. Integrating within the central Ministry all programs and activities relating to primary care (broadly defined) under the same Division called the Division of Hygiene and Health Protection (DHPS);
- c. Integrating the community health component in regions by making PRSSR regional supervisors responsible to their regional medical director who in turn reports to the central Ministry DHPS director;
- d. Integrating the work of statisticians within the Ministry, all of whom collected and analyzed data on primary care activities;
- e. Integrating the actual collection of primary care data by getting the different services to adopt identical indicators and forms;
- f. Integrating the Project administrative unit (PRSSR) into the Ministry.

Each of these forms of integration provided the JSI advisors with opportunities to institutionalize primary care activities and to deverticalize the administrative structure which had been established through the earlier emphasis on separate programs.

- a. Integrating primary care activities of regional teams

This was the most direct form of integration at the operational level. From 1985 on, the EPI mobile teams in those regions where the community health worker program was operating (Trarza and Guidimaka) were to make their sorties accompanied by the regional or departmental community health supervisor. While the mobile team was carrying out immunizations, the supervisor would meet with the ASCs to monitor their activities. In practice, the mobile team would finish its work long before the supervisor and would be irritated at having to wait for the ASC supervisor. Nevertheless, the coordination did continue. However, the EPI teams never managed to coordinate with the MCH service which was supervising the ATs.

Although, technically, the goal of integration was met, it is a narrow notion of integration. Ultimately, as was suggested by one Ministry official, the teams will have to be not EPI mobile teams riding with primary health care supervisors, but supervisors/vaccinators who are trained to be

polyvalent and can vaccinate children and supervise HSs and ATs at the same time.

b. Integrating within the Ministry all programs and activities relating to primary care

The reorganization of the MSAS in August 1987 provided a strong administrative commitment to integration by bringing together under one division, DHPS, all the services relating to primary care. These included the following administrative services: MCH, EPI, nutrition, infectious diseases, and family planning. The Project's activities which stressed coordination of the Ministry's primary care activities contributed to this aspect of reorganization, but it would be too much to say that it directly influenced the change. Moreover, since the PRSSR office remained outside the Ministry, with its director reporting to the director of DHPS and having no formal links to the EPI and MCH services, the reorganization did not entirely meet the Project goal. The PRSSR office managed much of the logistics for the EPI mobile teams thanks to the resources made available through Project funds, but these relationships were handled informally, as were relationships with the MCH program whose supervisors trained and supervised the ATs. The office acted as an integrating factor in Ministerial activities, but it was not officially part of the Ministry.

The JSI advisors assisted the various services to coordinate the community health program, MCH, and EPI activities. They often felt frustrated by the difficulties of working through the various services. Marek, for example, in helping the MCH program design new reporting forms, found her ability to leverage change limited by the bureaucratic structure. Often, the advisors themselves provided the link among services. Thus, their positions as advisors gave the Ministry some of the impetus and structure to integrate, but since these were informal links dependent on the existence of an advisor and since they were not formalized within the Ministry during the existence of the Project, the Ministry's ability to sustain these links after the Project ends will be limited. The Ministry will continue to need technical assistance until it can stabilize this coordination within its own structure.

c. Integrating the community health component in the regions.

This form of integration is essentially part of a larger Ministry strategy to regionalize government functions. In a country where communications lines are stretched to the breaking point, giving regional officials responsibility for planning and managing their own services makes a certain amount of sense. Coordination among the services of a given region may be easier to achieve than coordination at the national level. In this case, the central government is opting to organize its activities primarily by geographic area rather than by function.

Each of the three regions where the Project is providing community health services has its own commission on primary care. This commission, whose membership includes regional supervisors in primary care (PRSSR, EPI, MCH), meets four times a year to plan training and supervisory activities

for the region. (The commission in Assaba held its first meeting in mid-June 1989.) JSI advisors assisted with the formation of these commissions and attended meetings. The advisors also assisted with planning for the distribution of funds for training and supervision directly to the regions.

In the long run, the viability of this regional coordination approach depends on the ability of the Ministry to continue to fund the regional activities. Putting the supervisory and training decisions in the hands of the regional officials has improved coordination, but it is still insufficient, given the observation that MCH supervisors, and EPI supervisors and community health supervisors can show up in the same town on succeeding days, without having coordinated their visits.

d. Integrating the work of statisticians;

e. Integrating the collection of primary care data by adopting identical indicators and forms for the whole Ministry;

We will discuss these two points together as they were closely related and occupied one JSI advisor, Marek. If the Ministry had adopted identical indicators and forms for primary health care services, the task of integrating the work of the statisticians would have followed directly from it. As it turned out, the Ministry, at the highest levels, was not ready to push for the integration of forms. Therefore, more attention and assistance went to the coordination of the statisticians in hopes that they could arrive at a generalized system of health information for the Ministry.

Dr. Marek, in reviewing the existing health information system, found much duplication. Clinics had to fill out as many as 13 different forms each month. Starting at the beginning of 1988, the statisticians met regularly with Dr. Marek to discuss the objectives and indicators used by the various services and to try to arrive at a synthesis of indicators. By the end of 1988, they had synthesized the indicators for the EPI, MCH, Nutrition, community health care, and diarrheal disease programs. Although work was completed on simplifying the forms for the MCH centers, no progress was made on simplifying and standardizing the methods of collecting data in the dispensaries, clinics, and hospitals. Marek had also developed a plan for computerizing the Ministry, a plan which would bring the statisticians working together in one place.

Certain aspects of coordination have taken place: the statisticians from the various divisions are more familiar with each other's work. Having discussed the problems of data collection together over a year, they are aware of their needs to work together to improve data collection and on helping each other with data analysis. However, it is not possible to leverage major change from below. If the Ministry wants a unified coordinated health information system for primary care, it will have to make that commitment first, and then seek the technical assistance necessary to implement it. The Project has put in place an information system for community health workers, improved the information system for EPI and assisted the MCH program to institute a new family health record. However, these and multiple other efforts at data gathering in the Ministry are

overlapping and frequently redundant. They leave the nurse/administrator who must gather the data overwhelmed and therefore uncooperative. The JSI advisors succeeded in sensitizing the Ministry to these problems. Their resolution is still in the future.

f. Integrating the Project administrative unit (PRSSR) into the Ministry

Before JSI technical assistance had begun, the Ministry with the concurrence of USAID, had set up a separate project office (PRSSR) with its own director and administrator. At the time, it was tied to the Director of Health. In 1987, when the Ministry was reorganized, it was tied informally to the DHPS director, but did not appear on the organization chart. Both Pervilhac and Marek served as advisors specifically to that office. That the Project office operated independently from the Ministry was useful for husbanding Project resources. Vehicles and equipment could be protected from being raided by the larger Ministry and from being allocated to other purposes. For USAID, it provided an easier accountability.

What to do with the PRSSR office when the Project ends on July 30, 1989, has been a source of considerable debate within the Ministry. The Ministry is aware of the need for a PRSSR to coordinate supervision and training for community health workers. Both Vernier and Sy have contributed to the discussion of how to integrate it into the Ministry: Vernier, by advising the Minister on the potential for creating a primary health care advisory cell attached to the office of the DHPS director; Sy, through his detailed analyses of the functions of the Ministry. UNICEF, with its interest in continuing support of community health workers and in experimenting to see whether such a program can become self-financing, has also advocated the formation of such a cell which would serve as the secretariat for the National Commission on Primary Health Care. The outcome of this debate remains to be seen; it will tell much about the Ministry's ability to sustain its efforts in community health care.

To conclude this section on integration, we should note that the Project has had some success in reducing verticality. The most successful is the regionalization of services by integrating functions within geographic areas. This regionalization has permitted the coordination of the training and supervisory teams for EPI and community health. Since regionalization is part of a larger governmental policy, its potential is great. However, in a country as small and as poor as Mauritania, regionalization is a costly process. Since the cost of supporting these activities cannot be borne by the regions themselves, the central government will have to be willing to shoulder them for some time.

The information system remains another, currently unexploited, source for decreasing verticalization. If the separate programs were required to use a uniform data collection system, the incentives for maintaining their separate fiefdoms would be lessened. The Ministry has only recently become aware of this potential thanks to the work of JSI advisors, but its

accomplishment will necessitate a firm commitment and renewed technical assistance.

E. Assessment of Project Achievements

JSI's technical assistance in helping the PRSSR meet its objectives should be assessed in two steps. First, the Project achievements should be measured against the PRSSR's objectives and their output indicators. Then, the objectives themselves should be measured against the Project's purpose.

The first step is presented in the logframe in Appendix 4 which compares Project achievements with output indicators. As defined in the Project Paper, these indicators focussed on EPI and the community health worker program. The Project met and, in many cases, surpassed the objectives of these two components.

For the second step, it is less clear whether the Project objectives were sufficient to meet the Project purpose and the MSAS goals. The mid-term evaluation, recognizing that project objectives were not going to result in achievement of the Project's purpose to integrate primary care, recommended that the PRSSR's objectives (and consequently the technical assistance configuration) be reoriented. The original project design, in fact, had set up competing goals: on the one hand to create strong administrative structures for promoting immunizations (EPI) and community-based primary health care; on the other hand to deverticalize and integrate all the programs involved in primary care. To do both simultaneously was not possible since the act of integrating at an early stage of development decreases the efficacy of weak institutions. Thus, the practical decision was to develop first the institutions and secondly, the means for integration.

Consequently, after mid-1986 when the EPI division and the PRSSR office had been built up, the objectives were reoriented toward integration and strengthening the infrastructure by improving management and developing a health information system. We have added to the logframe those output indicators which derive from the redefined scopes of work of the technical advisors.

This reorientation created much larger tasks than had been envisioned originally. Though congruent with the Project's broad, ambitious purpose and goal, these new objectives were set too recently to permit some of them to have come to full fruition before the end of the Project. We now examine the areas of strength and weakness in the Project.

1. Areas of Strength

The strengths of the project include a functioning EPI program with mobile teams capable of delivering vaccine to rural areas and fixed facilities throughout the country, resulting in the potential for excellent vaccination coverage. The cold chain functions, for the most part, and the EPI Documentation and Statistical Unit is capable of producing annual reports on EPI activities.

For the community health component, 273 village health workers have been trained and 258 have had refresher training. Training of ASCs will soon begin for the 68 villages recently sensitized in Guidimaka and Assaba. Three regional commissions on primary care plan for supervision and training within their own borders. Central, regional, and departmental supervisors/trainers have been trained. A data collection system geared to the competency of illiterate community workers has been designed to permit departmental and regional supervisors to monitor their work. Centrally, the PRSSR unit has managed successfully this regionalization and continues to provide training and supervisory support.

Ministry personnel from directors on down have benefitted from the training program for courses in management, epidemiology, computers, health information, training, supervision, and service delivery. One of the most fruitful inputs of the PRSSR has been its investment in training MSAS, PRSSR, and village personnel in primary health care service delivery and management. As a result, there has been an evolution in the understanding of primary health care. In 1989, there is an active discussion of primary health care in the MSAS. Although the MSAS has yet to show budgetary support to sustain the community health component of the PRSSR beyond the end of the Project, it has demonstrated its commitment to primary health care by placing all primary care services within one administrative division, the DHPS. Most importantly, the capacity of Mauritania to train new community health workers in service delivery has been established.

At the national level, the National Commission for Primary Care, formed in December 1988, is studying the potential for expansion of the program and experimenting with ways to make it self-financing by applying selected recommendations of the Bamako Initiative. This activity is receiving strong support from UNICEF.

Some steps have been taken to integrate the various elements of the primary care system. Community health supervisors ride together with the EPI mobile teams; MCH and PRSSR work together in training ATs. The Ministry in 1987, brought together all primary care health services under one director. Although the PRSSR was not brought into the Ministry at that time, the PRSSR director answers to the head of the DHPS. Since the beginning of 1989, the Ministry has discussed extensively how to incorporate PRSSR activities, but no decision has been made as of this writing. It is hard to know whether this would have been accomplished before the end of the Project had not the Senegalo-Mauritanian conflict, which broke out in April, effectively distracted Ministry officials from anything but the most urgent matters.

2. Areas of weakness

The weaknesses are particularly evident in the matter of integration and the reduction of verticality. As one Ministry official pointed out, "putting people from different services in the same car, doesn't mean integration." The different services still maintain their separate identities and cooperation is difficult to enlist. Within the Ministry,

there is neither anyone to coerce action nor anyone to encourage cooperation. In theory, the National Commission could serve a coordinating function but, so far, its attention had been directed mainly toward developing new experimental community health programs under the Bamako Initiative rather than sustaining the modest progress in integration achieved through the project.

A second weakness is that the Ministry has not yet set aside the means to pay for the considerable recurrent costs which, until now, have been borne by the project. These costs for the EPI and community health program include vehicle maintenance, fuel, per diems, training and office supplies, publications, and copying. These costs are not foreseen in the Ministry's 1989 budget.

In fact, the recurrent costs of a primary care system based on village health workers may be extremely high. To suppose that a villager will be able to bear those costs may be optimistic. There are two major areas of cost: supplies and drugs for the ASC and payment to the ASC for his services; and costs of supervising the ASC. The major costs of supervision are maintenance of vehicles and fuel, extremely expensive items in Mauritania. It is probably unreasonable to expect villages to bear this cost.

In a report on recurrent costs, Marek estimated that the cost of training and supervising ASCs ran to about \$1.37 per inhabitant covered in 1988. This may not seem high, but considering that the government is officially budgeting nationally for all health services \$5.34 per person,⁹ it is unlikely to invest 25 percent more just for those limited rural areas where the program is now operating. On the other hand, even if one succeeds in getting villagers to pay for drugs and the ACS's services, they are no more likely than the central government presently is to pay for the cost of supervision. This means one needs to introduce some realism into expectations of what community health programs can do and who is going to pay for them.

A third weakness is the uncertain future of the computers and their maintenance. At present, the two project computers are located at the PRSSR offices. No plans have been made for transferring them to a secure air-conditioned, dust-free location when the Project ends. The training and the equipment necessary for computer maintenance and trouble-shooting have not been made available. Moreover, there is no indication of which statisticians will be responsible for maintenance. Not to make these provisions would cause backsliding from the progress already achieved in computer literacy and utilization among Ministry statisticians and in coordinating the work of statisticians. At the same time, the Ministry will have to decide where, both physically and administratively, the statisticians working for different services will be housed.

⁹ Bureau of Statistics, Ministry of Health and Social Affairs. Data are for 1988.

If there is confusion about the work and placement of Ministry statisticians, it is in great part due to confusion about a national information system which is cumbersome (some health centers have to fill out 13 monthly reports) and only partially effective in getting the Ministry the information it needs for planning and management. Marek's work could address this issue only partially because the Ministry, at the highest levels, had not made a commitment to revamp the system, only to tinker with the parts. Some improvements were made, but in the long run, the Ministry will have to simplify and make more effective its data collection system, something that will require high level commitment to force the various services to agree on joint goals in gathering, analyzing, and diffusing information.

III. RECOMMENDATIONS

Our recommendations are of two types: general ones directed to the future of primary care programs in Mauritania; and specific ones directed to the reprogramming by USAID of unexpended Project funds.

A. General Recommendations

1. Maintenance of MSAS administrative capacity in primary care

One important legacy of the Project technical assistance is the gradual takeover by Ministry personnel of functions once performed by the JSI advisors. This is perhaps the most visible measure of the sustainability of any project. This has been accomplished in significant areas.

It is equally important that other donor organizations, such as UNICEF, which plan to continue this work in community health, not undermine the organizational advances which have been already made and that the technical assistance which these donors provide be used to support and extend MSAS capacity for administration, not to supplant it.

2. Development of a consistent policy towards management systems that require considerable use of vehicles which engender high recurrent costs

For both the community health care program and the EPI mobile strategy, vehicles figure as necessary part of program implementation. However, since the maintenance and operation of vehicles require high capacity for management and commitment to paying recurrent costs, the use of vehicles to sustain certain programs may be an inappropriate technology at this time.

All donors need to consider whether they want to continue to support programs in which the major technology is vehicles (e.g. mobile teams, supervision). Given the difficult terrain in Sahelian and Saharan countries and given the poor record of vehicle maintenance in Mauritania, the life of a vehicle is said to be three years.¹⁰ The capital cost is high and the recurrent costs are high. So far, governments in most lesser developed countries have been unable to assume these costs.

If donor aid for vehicles and their recurrent costs were not freely available, as they are now, it is possible that both donors and governments of developing countries would be forced to explore alternatives using more appropriate technology. These could include alternate means of transport and/or alternate means of organizing health services. Some steps toward this second alternative have already been taken by the establishment of fixed sites for vaccinations throughout Mauritania. Nevertheless, even fixed sites do need to have someone deliver vaccines to them. The recurrent costs of the alternative strategies should be compared to those of using

¹⁰The PRSSR office, however, prides itself that the average life of its vehicles has been five years.

vehicles. If any operations research were to be carried out, we recommend that it be on alternatives to using vehicles to deliver health services.

Among the alternatives to consider for the EPI program, for example, are using alternate means of transport (e.g. camels) or asking villages to pay the cost of bringing children to fixed centers for vaccination. At this time, much of the population has been highly sensitized to appreciate vaccinations for children. They might be willing to travel some distance to have their children vaccinated. At least one community in the Trarza has already taken the initiative to hire a car to bring its children to the vaccination center. If one analyzes price elasticity, one could analyze separately people's willingness to pay for highly appreciated interventions, such as immunizations, as opposed to less appreciated ones, such as latrines.

Alternatives for the community health care program could be to target only those villages where the village organization and the competence of the community health workers are such that frequent supervisory visits are not necessary. This may be a policy not in tune with achieving the goal of health for all by the year 2000, but this goal may not be within the financial means of Mauritania, even with extensive donor aid.

3. Development of a means to pay for the recurrent costs of community health worker programs

The Bamako Initiative calls for the importation at cost of essential drugs and the sale of these drugs to cover costs of health services. Although some UNICEF documents have suggested that the sale of these drugs can cover all costs for transport and health services and supervisory personnel as well as the drugs themselves, those on the ground, particularly those planning the self-financing scheme in Mauritania, suggest that, at best, it can cover only the cost of drugs and transport. We agree with this assessment. Thus, the Initiative is no panacea for covering the costs of health services, even if it may help pay the costs of drugs which hitherto have been delivered free by the government. Mauritania's experiment with this program should be encouraged but if unrealistic expectations are laid on it, it will fail as have so many other recent initiatives in primary care.

B. Recommendations for USAID

USAID should (1) develop a policy on its payment of recurrent costs of programs and, based on this policy, allocate additional funds to sustain the EPI and community health programs; (2) continue training in management, and computer maintenance and programming; (3) protect its investment in Ministry computerization by allocating \$10,000 to purchase additional equipment necessary for maintenance. However the aid for computer equipment and training should be contingent on the Ministry making a firm commitment to find an appropriate dust-free air-conditioned environment to house the computers, and that it appoint two of the computer-trained statisticians to

be responsible for their maintenance. These two would then be those trained in computer maintenance.

1. Develop a paper on USAID policy on recurrent costs

Recurrent costs engendered by this project have included vehicle maintenance and fuel, cold chain equipment maintenance and fuel, training supplies, other supplies, photocopying, and per diems for field trip staff and trainees. Funding for this Project ends in July. As of this date, no provisions have been made for these expenses by the Mauritanian government in its budget for the remainder of 1989. UNICEF plans to cover some of the primary health care costs in 1990 to maintain the program pending completion of its pilot projects in self-financing. USAID has committed to supporting the EPI program for fuel and maintenance of the cold chain equipment and vehicles. It has also said it will not support vehicle fuel and maintenance for the community health care program. Since all divisions of the MSAS use vehicles and fuel, we suggest it might be best to develop an overall strategy toward recurrent cost items and apply it to all USAID-supported Ministry activities. USAID might publish and discuss with the Ministry its policy while recognizing that certain, already committed activities, might continue on an exceptional-last-time basis. We recommend that USAID purchase 300 kits for village health workers on this basis, as well as continue, within the means available, to provide vehicle maintenance, fuel and training supplies for supervision/training in the community health program (PRSSR), and vehicle maintenance, fuel, and cold chain maintenance for the EPI program. In the long run, a consistent donor policy toward recurrent costs will be most effective only when all donors agree to it.

2. Training

We recommend three types of training: training for computer maintenance; training for computer programming; and training in management.

- a. At least two and preferably four of the statisticians in the Ministry of Health should be trained to maintain computers and do simple troubleshooting. The course preferably should be carried out in Nouakchott where the statisticians could train on the computers they use regularly. The course might last 2 to 3 weeks where students would learn schedules and techniques for maintenance of the computers and the back-up electrical system, reformatting hard disks and using Debug, small repairs to the back-up system, computers, and printers, including the replacement of fuses, disk drives, and printer heads. The person teaching the course should review with the statisticians their list of spare parts to ensure that the parts they have will be adequate to cover most small repairs.

- b. At least one person from the Health Ministry and preferably two persons should be sent for a one-to-two year course in computer programming. Having a person trained in such a course would give the Ministry the capacity to program its own computers

and not have to rely on outside technical assistance for everything except the most simple uses of packaged software. The best candidates for such a course would be either from among those statisticians who have shown the greatest aptitude in computers (and perhaps also have the baccalaureate) or newly recruited "bacheliers" who have shown good aptitude for the logical skills needed in programming.

c. As many persons for whom funds are available should be sent for short-term training in the fundamentals of management.

3. Computer supplies and equipment

We recommend that additional equipment and supplies be purchased to bring the existing equipment to level at which it can be used and maintained. The cost of such equipment will be about \$10,000. Specifically are needed a second electrical backup system for the IBM PS/2, a second printer, ribbons for the printer, tool kit, spare parts, and software for the second machine (to comply with copyright laws). The list is as follows:

Hardware

1. One Epson 2550 printer
2. 24 ribbons for Epson 2550 printer
3. One battery charger, 220 volt 30 amp (approx cost \$900)¹¹
4. 12 volt 300 amp truck battery (European manufacture), can be purchased in Nouakchott (cost approx \$100)
5. Powerinvertor (only if the second one the project has is not currently functional). If a new inverter is bought, we recommend Heart Interface DC to AC 1200 watt power inverter (\$825)¹²
6. 1 Tool kit for computers
7. 1 small air compressor to blow dust away to clean equipment
8. 1 small battery operated hand-held vacuum cleaner (approx. \$30)

Total cost, approx \$6000

¹¹ Source: Industrial Battery Engineering, Inc. 9121 DeGarmo Avenue, Sun Valley, CA 91352; tel. (213) 875-2840.

¹² Source: Heart Interface, 811 1st Avenue South, Kent, WA 98032; tel. 206-858-0640

Software:

1. Lotus 123, 3 1/2" diskettes
2. Dbase IV, 3 1/2" diskettes
3. Wordperfect French, 3 1/2" diskettes
4. Utility program (PCtools or Norton Utilities) 3 1/2" diskettes
5. MS-Dos for Compaq plus computer (5 1/4" diskettes)
6. Laplink Plus, to permit communication between the Compaq and PS/2 computers (\$90)

Total cost, approx \$2000.

Spare parts:

1. For Compaq plus: 20 mb hard disk drive
2. For compaq plus: 360k 5 1/4" floppy disk drive and card if necessary;
3. For IBM/PS/2, 20 Mb hard disk drive and card
4. For IBM PS/2, 720K 3 1/4 inch disk drive and card
5. Check to see if printer heads are needed and available for Epson 2550 and Okidata 93 printers;
6. Fuses for printers, computers, and electrical back-up system

Total cost, approx \$2000

APPENDIX 1

PROJECT PERSONNEL

JSI Technical Assistance Team

Dr. Pierre Claquin, COP, Hlth Mgmt/EPI Advisor	Aug 84 - Aug 86
Mr. Cyril Pervilhac, Hlth Trg/Education	Jan 85 - Feb 86
Dr. Jean Francois Etard, EPI advisor	Jan 87 - Jan 88
Dr. Michel Vernier, COP, PHC Advisor	May 87 - Apr 89
Dr. Tonia Marek, HIS Advisor	Sep 87 - Feb 89
Mr. Aly Sy, Hlth Mgmt Advisor	Dec 88 - Jun 89

JSI Short Term Technical Assistance

Ms. Mimi Nichter	Curriculum Development Specialist March 1 - April 28, 1985
Mr. Benedict Tisa	Visual Aid Specialist April 1985
Mr. Jean Jacques Bordier	Cold Chain Specialist May 27 - July 21 1985
Dr. Stanley Yoder	Medical Anthropologist (through JSI IQC) May-June-July 1985
Dr. Anne-Marie Foltz	Management Specialist May 24-July 13 1985

JSI/Boston Project Administrators

Ms. Robin Chase	May - Sep 1984
Ms. Jan Curtis	Sep 84 - March 85
Ms. Logan Brenzel	March 85 - Jan 87
Ms. Debbie Kreutzer	Jan 87 - Sep 88
Ms. Janet Rich	Sep 88 - June 89

APPENDIX 2

DOCUMENTS PRODUCED BY PROJECT STAFF

Expanded Program of Immunization

Document on the role of the EPI mobile teams during epidemics (Claquin, 1985)

Document on preparation and conduct of mobile team field trips (Claquin, 1985)

Document of need to transfer the seat of the Trarza mobile team to Boutilimit (Claquin, 1985)

Methodology of Vaccine Coverage Evaluation (Claquin, 1985)

Methodology to Forecast Vaccine Needs (Claquin, 1985)

Methods for Monitoring Field Fuel Consumption (Claquin, 1985)

December 1984 Vaccination Coverage Survey Report (Claquin, 1985)

Analysis by Age Group of the Antigens Administered by the Mobile Teams in the Last Months of 1986 (Claquin, 1986)

Decree Limiting EPI Target to Villages of More than 200 Inhabitants (Le Medecin Commandant N'diaye, 1986)

Orientation Document for EPI, Documenting Status of EPI Program and Recommendations for Future Directions (Claquin and WHO consultant, 1986)

Cost-Effectiveness Analysis of Immunization Strategies in the Islamic Republic of Mauritania (Brenzel, with funding from UNICEF, 1986)

1986 Annual EPI Report (Etard, 1987)

Community Health Component

Supervision Guide (Pervilhac, 1985)

Table of Primary Health Care Continuity Criteria (Pervilhac, 1985)

Table of the composition of the Work and Analysis of the Tasks of the Community Health Worker (as

part of Competency-Based Training Approach)
(Project, Pervilhac, 1985)

Task Description of the Regional Primary Health
Care Team (Pervilhac, 1986)

Division of the Tasks of the Rural Health Teams
(Pervilhac, 1986)

Statute of the Regional Primary Health Care
Committee (Circonscription Sanitaire
Regionale du Trarza, 1986)

Training Manual for Members of Community Health
Committees (Project, 1986)

Community Health Committee Handbook (Project,
Marek, 1988), including:

- Introduction to the RHS Project
- PHC Village Contract
- Essential Medicines List for CHW, w/prices
- CHW Monthly Activity Report
- TBA Activity Notebook
- TBA Prenatal Exam Report
- CHW Supervisor Management Notebook
- Health Education Notebook
- List of Contents of TBA Kit
- Supervisory Indicators for CHW
- CHW card sample
- Map of Project Sites
- List of Mauritanian Health Facilities

Synthesis of the National Primary Health Care
Seminar (Project, 12/88)

Calendar of Technical Seminar for the Definition and
Management of PHC Programs (Project, 12/88)

Analysis of Annual Recurrent Costs of the RHS
Project (Marek, Saada, 1/89)

Presentation of RHS Director to First National PHC
Conference (Saada, 12/88)

Health Information System

Objectives of the Planning and Statistical Services and
Tasks to Accomplish (Marek, 10/87)

Supervision and Synthesis Sheet for RHS
(Marek, 11/87)

Proposal to set up a National HIS

(Marek, 12/87)

Description of the HIS proposed for PHC of RHS Project, includes Project indicators (Marek, 2/88)

Supervision Sheets for Departmental, Regional, and Central Supervisors (Marek, 1988)

Feasibility of Setting Up a New System of Registers and Family Files in MCH Centers (Marek, 2/88)

List of CHWs and TBAs in Mauritania (Ba, Marek, 4/88)

The RHS HIS in Guidimaka: Report #1 of the April 1988 Supervision (Marek, N'Diaye, 6/88)

Recommendations on Computer Needs of the RHS Project (Memos to USAID/RHS) (Marek, 6/88)

Guide for the Dosage of Medicines for the CHW (Project, 9/88)

Supervision Guide for Departmental PHC Supervisors (Project, 9/88)

Guide to the Analysis of Supervision Data (Marek, 9/88)

Report of Trip to GTZ Project (Marek, 12/88)

Utility of an HIS for the National Program Combatting Blindness, with excercises (Marek, 12/88)

Review of 1988 Activities and Plan for 1989 Activities of the Statistical Service of the MOHSA (Marek, 12/88)

Training of Trainers Module for HIS (Diakite, Marek, 1/89)

Report of Niger HIS Study Tour (Marek, Ba, Dia, 1/89)

Review of the HIS of the RHS Project (Marek, 2/89)

Computerization Plan for the MOHSA (Marek, Dia, 2/89 draft)

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Central Level PHC

Final Report of the First National Primary Health Care Conference (MOHSA, 12/88)

Terms of Reference of Subcommittee on Programming and Planning of PHC (MOHSA, 3/89)

Meningitis Survey and Technical Guide
(Epidemiological Surveillance Committee, Vernier, 1/89)

Guide to the Presentation of Services to the Minister of Health (Vernier, 11/88)

Presentation of the National Hygiene and Sanitation Service (MOHSA, 1/89)

"Mauritanie-Sante" Journal
Issues 1 and 2 (MOHSA, Vernier, 1/89, 3/89)

"Promotion et Action Sociale" Journal
Issues 1,2,3, (MOHSA, Vernie, 1/89, 3/89)

Questionnaire on MSAS service management
(Sy, 1/89)

Analysis of the Functions and Characteristics of the Central Services of the Ministry of Health and Social Affairs (Sy, in progress 6/89)

JSI Proposals

Proposed Amendment for the RHS Project:
Longitudinal Epidemiological Survey (1/86)

Proposed Reorientation of the PHC Component of the RHS Project
in the R.I.M. (1/86)

2/1

APPENDIX 3

TRAINING ACTIVITIES

(Not including training or retraining sessions of HS, ATs, and Village Health Committees effected by the Project)

9/16 - 10/1/84 Selibaby	Workshop on Operational Aspects of the EPI 10 Mobile Team Leaders (Claquin)
12/84 Nouakchott	Workshop on Methodology of EPI Evaluation 5 days over month of December (Claquin)
2/2 - 2/7/85	Primary Health Care Workshop: Reinforcement Boutilimit of the Trarza Start and Preparation of Guidimaka Technicians for Implementation in their Region. 23 participants (Pervilhac)
3/16 - 3/18/85 Selibaby	Training of Trainers Workshop: Guidimaka Supervisors: Choosing Villages and Sensitization. 5 participants (Pervilhac)
4 - 5/85 Nouakchott	Training in Lotus 123 2 Project Statisticians (Claquin)
	Training in Presentation and Interpretation of EPI, MCH, and Mobile Team Monthly Reports EPI Statistician (Claquin)
5/85 Rosso	Workshop on "Revitalization of Village Health Committees" Trarza regional supervisors (Pervilhac).
4/85 Nouakchott	Workshop on EPI, PHC and Implementation of KAP Surveys 3 day training for Peace Corps Volunteers (Pevilhac)
10/85 Rosso	Workshop on the 3rd Supervision Tour and the Training of Village Health Committees. 6 day workshop Medecin-Chefs, supervisors of PHC and MCH, mobile team leaders, regional supervisors for Guidimaka, trainers from Project headquarters (Project).
2/86 Rosso	Workshop on Training of Trainers of Village Health Committee Members. 5 day workshop for 2 Medecin-Chefs; 4 departmental supervisors, 1 regional supervisor, 1 regional midwife supervisor, and 2 mobile team leaders (10 total) (Pervilhac).

HP

2/86 Trarza	Training of Village Health Committees (Project Supervisors).
3/86 Nouakchott	National Health Education Workshop Funding and participation of Project.
4/86	Training in Vaccination Rate Coverage Survey Nouakchott Medecins-Chefs (2 days), surveillance teams, and selected local health workers (1 day) (Claquin).
1-6/87 Nouakchott	Training in data entry for Project statistician (Etard).
	Training in vaccination practice for staff of new fixed vaccination centers in Nouakchott (Etard)
10/87 - 1/88 Nouakchott	Training of EPI statistician in Symphony software (Etard).
	Presentation on Polio to National Seminar on Rehabilitation (Etard)
11/87 Nouakchott	Training of RHS secretary and Central Supervisor in Lotus (Marek)
1 - 2/88 Nouakchott	Introduction to Computers 144 hours of instruction for 12 people (trainers from CEDES; arranged by Marek)
6 - 7/88 Nouakchott	Further Introduction to computers 116 hours of instruction for 14 people (trainers from CEDES; arranged by Marek)
9/88 Rosso	Training of Trainers in RHS HIS, lesson and exercices designed by RHS Central Supervisor
8/88 Kinshasa	Training in DBase and Lotus RHS, MCH and EPI statisticians (3) for two weeks
9/8 - 2/89 Nouakchott	Training of Hospitals statistician in computerization and analysis of Hospitals data and report production (Marek)
	Training of MCH and RHS statisticians in surveys, treatment and analysis of data (Marek)
11 - 12/88 Nouakchott (Marek)	Training of EPI statistician in analysis and presentation of results in graph form
12/88	National Primary Health Care Seminar

HA

Nouakchott	(Project, Marek, Vernier) 86 participants
	National Seminar on Blindness Session on calculating target populations and identifying program indicators (Marek)
	Training for regional supervisors in Assaba and Guidimaka in calculating target populations and coverage (Marek)
9/88 - 5/89 Montreal	Community Health Masters Program University of Montreal Two MSAS managers
9/88 - 5/90 Montreal	Health Services Management Masters of Science Program University of Montreal Two MSAS managers (one left early)
9/88 - 5/90 Montreal	Epidemiology Masters Program University of Laval, Quebec One MSAS manager
12/88 Nouakchott	National AIDS Conference (MSAS, Vernier)
8/89 (planned) Kinshasa	Training in SPSS PRSSR statistician
	Training in DOS and DBASE Mid-level manager from MSAS personnel department
?? - 1988 USA	Epidemiology Masters Program One MSAS manager

1/2

MAURITANIA

Rural Health Services Project

Contract no.: 682-0230-C-4060-00

FINAL REPORT

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Anne-Marie Foltz, PhD.
Janet Rich, MPH

John Snow, Inc.

APPENDIX 4

LOGFRAME: JSI ASSISTANCE TO RURAL HEALTH SERVICES PROJECT

<u>Project Purpose/Output Indicator</u>	<u>Achievements</u>
PRIMARY HEALTH CARE	
<u>Project Purpose Indicators:</u>	
1. Community-based primary health care services are available to a larger percentage of the rural population in three selected regions	Such services are currently available in the two project regions: Trarza and Guidimaka. They will be available in Assaba after June 30. In Trarza, 43 percent of the villages qualified for PHC are covered, 20 percent in Guidimaka. 80 percent of the villages anticipated for coverage are receiving services in Assaba.
2. Supervision and village sensitization programs are operational	Village sensitization is complete in Trarza and Guidimaka and Assaba. Supervisory missions are carried out four times per year. There is one regional supervisor in Trarza, Guidimaka and Assaba, 6 departmental supervisors in Trarza and Guidimaka and one departmental supervisor in Guidimaka. Departmental supervisors are being trained in Assaba. At the central level there is a national supervisory team.
3. Serious illnesses are referred to next higher level of treatment	This is true to a large extent. It is also true that many non-serious illnesses are treated at higher levels.
4. EPI and drug distribution systems are effective (See also under EPI)	The drug distribution system in Trarza is effectively functioning. In Guidimaka, however, there is a problem of drug availability. No problems are anticipated in the Assaba region. The MOHSA is in the process of elaborating a national essential drug program. This should facilitate the resupply of village medical kits.

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Output Indicators:

i. Commission coordinating and guiding integration of various levels of primary health care network

Regional PHC commissions are meeting every four months in Trarza and Guidimaka. A national commission was established in December 1988 and is meeting regularly.

ii. Health education curriculum and visual aids developed and approved

Curriculum and visual aids have been developed for TBAs and CHWs.

iii. 4 PHC nurse supervisors and 4 trainers are trained

Training for four nurse supervisors and four trainers was conducted in Lome, Togo. Sixteen supervisors have been retrained in Rosso--three regional and 13 departmental.

iv. 200 community-level committees are retrained and/or upgraded

249 committees have been trained or retrained, with an additional 60 to be trained in 1989.

v. 175 new CHWs and 150 new TBAs

89 new CHWs and 184 new TBAs have been trained. Retraining of midwives (TBAs supervisors) was also offered.

vi. Inservice training for 250 CHWs, 150 TBAs and 15 trainers

The project has provided inservice training for 258 ASCs and ATs. Inservice training for 16 trainers was held in 1988.

vii. Recommendations to Pharmarim on means of creating private pharmacies, site selection criteria, drug procurement and drug price structure

Pharmarim has closed and private pharmacies have appeared. A price list for private pharmacies has been distributed by the GIRM. The project has asked the government to regulate essential drug list prices, to be made available to village health workers.

EXPANDED PROGRAM OF IMMUNIZATION

Project Purpose Indicators:

1. EPI program reaches 60 percent of target population

It is currently estimated that 25 percent of the target population are completely vaccinated. In March 1989 fixed facilities had vaccinated 89% of their BCG target and 40% with the third dose of DFT; mobile teams reached 73% of their BCG target and 13% with a third dose of DPT.

2. EPI cold chain system being maintained

Of the 66 fixed centers being maintained 30 are financed by USAID through the EPI program, 34 by UNICEF and one by an NGO. There are 10 mobile EPI teams financed by USAID.

3. EPI and drug distribution systems are effective

This is true for EPI.

Output Indicators:

i. 25 EPI nurses trained for mobile teams

An annual training session is held for 20 EPI nurses (heads of each mobile team and their deputies). Retraining sessions have also been held for these nurses.

ii. 60 fixed center EPI nurses are retrained and skills periodically upgraded

This is true for 66 fixed center EPI nurses.

iii. 5 specialized workshops

In July and August, 1986, two specialized workshops were held for EPI. One health education workshop was held in Aleg.

iv. 6 EPI only mobile teams in other regions

yes

v. 30 EPI fixed centers re-equipped for functioning

yes

vi. 10 regional EPI and central EPI depots with cold chain equipment

yes

vii. 13 dispensaries in 3 regions re-equipped

In Trarza, 17 "health structures" have been re-equipped (Polycliniques, PMIs, Health Centers, Dispensaries)

Project Purpose Indicators:

1. EPI and CHW teams are functioning in collaborative activities in three selected regions

EPI and CHW teams are collaborating in two regions and commencing in the third. EPI activities are ongoing throughout the country.

2. Community-level primary health care services are providing selected interventions including treatment of diarrhea, immunizations, first aid, maternal and child care, health education

These services are being provided in 127 villages in Trarza and 32 villages in Guidimaka. In addition, 50 villages in Assaba and 18 in Guidimaka have been sensitized.

Output Indicators:

i. 3 long-term public health training courses

The project has one participant in the U.S. training for an MPH in epidemiology and anticipates sending a candidate each in health education and health management in 1989. The short-term training opportunities envisioned became long-term (18-24 month courses in Benin and Senegal). Applications of two more long-term trainees are pending. Other donors are sending five long-term trainees in public health, one of which has returned early.

ii. Annual integration seminar for national, regional and departmental health personnel

Seminars are held quarterly in each region. There have been four seminars in Trarza and one in Guidimaka. In December, 1988, a National PHC conference was held in Nouakchott.

iii. 4 integrated mobile teams functioning in Trarza, Guidimaka and third region

Two integrated teams are functioning in Trarza, one in Guidimaka, and one being developed in Assaba.

iv. To provide management and logistical advice to the central, regional, and district levels of the MOH as well as the RHS Project. To facilitate integration of the project's primary care focus and activities into the Ministry

Since mid-1987, technical assistants have advised the Minister of Health on a broad range of organizational issues, including the promotion of PHC services. Technical assistants have helped the RHS Project director elaborate a proposal for the placement of a PHC cell within the MOH.

v. Analyze management and logistical weaknesses and propose remedies to MOH managers

Questionnaire responses from MOH directors revealed areas of management weakness. In the process of defining MOH unit functions, remedies have been identified in collaboration with directors. Their implementation relies on future Ministerial decisions.

vi. 14 short-term training courses

15 participants have been funded for short-term training in third countries in management and computers. Other training opportunities being sought, particularly in HIS and EPI.

vii. 5 international conferences

7 participants have been sent to five international conferences (Abidjan, Brazzaville, N'Djamena, Yamoussoukro, and Atlanta)

HEALTH INFORMATION SYSTEM

Project Purpose Indicator:

1. Appropriate data on morbidity, treatments, immunization, maternal and child health activities are being collected at and reported to the Ministry of Health from all levels of the health system

From September, 1987 to February 1989 full-time technical assistant facilitated development of information system. In place are systems for EPI activity data collection and analysis; community health worker data; infectious disease sentinel sites.

Output Indicator:

i. Baseline study completed during first year of project, follow-up in year 3 and 5

An ethnomedical study was undertaken in Trarza and Guidimaka in August 1985. There have been no updates.

ii. Flow of information provided on patient load, disease, and referrals etc. from village to departmental to regional to the national levels

System designed and functioning fully in Guidimaka and fitfully in Trarza. After CHWs are in place, an HIS system will be installed in Assaba.

iii. Perform information needs assessment at several levels of primary health care network including Preventive Medicine Service, MCH Service, regional and departmental providers. To assist GIRM/MOH to improve its national system for gathering and analyzing information on disease prevalence and on patient loads.

Assessment completed in 1988 for most primary care services. Design of integrated system needs Ministry decision to proceed.

APPENDIX 5

PERSONS INTERVIEWED

NOUAKCHOTT, MAURITANIA, MAY 23-JUNE 14, 1989

Ministry of Health and Social Affairs

Mme. Seye, Secretary-General, May 27, 1989
Ibrahima Kane, Acting Director, Direction of Health Services and Preventive
Medecine, June 12, 1989
Mme. Ba Khady Sy, Chief, Maternal and Child Health Services, May 28, 1989
Kone Bassirou, Chief, Expanded Program of Immunizations, May 29, 1989
Correra Chouaibou, Statistician, EPI, May 30, 1989
Mme. Aissatou Dia, Chief, Statistical Service, May 29, 1989
Doucoure, Statistician, MCH Service, May 30, 1989
Alpha, Statistician, Hospital Service, May 30, 1989

Ministry of Finance

Younes Zoughlami, Technical Advisor, CEDES, June 5, 1989
Fall Amadine, Statistician, CEDES, June 5, 1989
Sidi Ould Eleyatt, Statistician CEDES, June 5, 1989

PROJECT: Project for Reinforcing Rural Health Services (PRSSR)

Anne Saada, Director, May 27, 1989
Fatematou N'Diaye, Statistician, June 3, 1989

US EMBASSY

John Vincent, Deputy Chief of Mission, May 24, 1989

USAID

Glenn Slocum, Director, May 24, 29, 1989
Walter Boehm, Deputy Director, May 24, 29, 31, 1989
Delia Pitts Vincent, Health Development Officer, May 24, 29, 31, 1989

UNICEF

Deborah Dishman, Assoc. Director, May 30, 1989
Dr. Herve Peries, Bamako Initiative, May 31, June 1, 1989
Dr. Guido Borghese, May 30, 1989