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Mauritania Rural Health Services

Project Evaluation

April, 1989

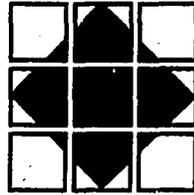
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During the eight-day field trip "enbrass" the same role was played by the following MOHSA staff:

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Moctorould Mamah	Professeur a l'Ecole National de Santé Publique.

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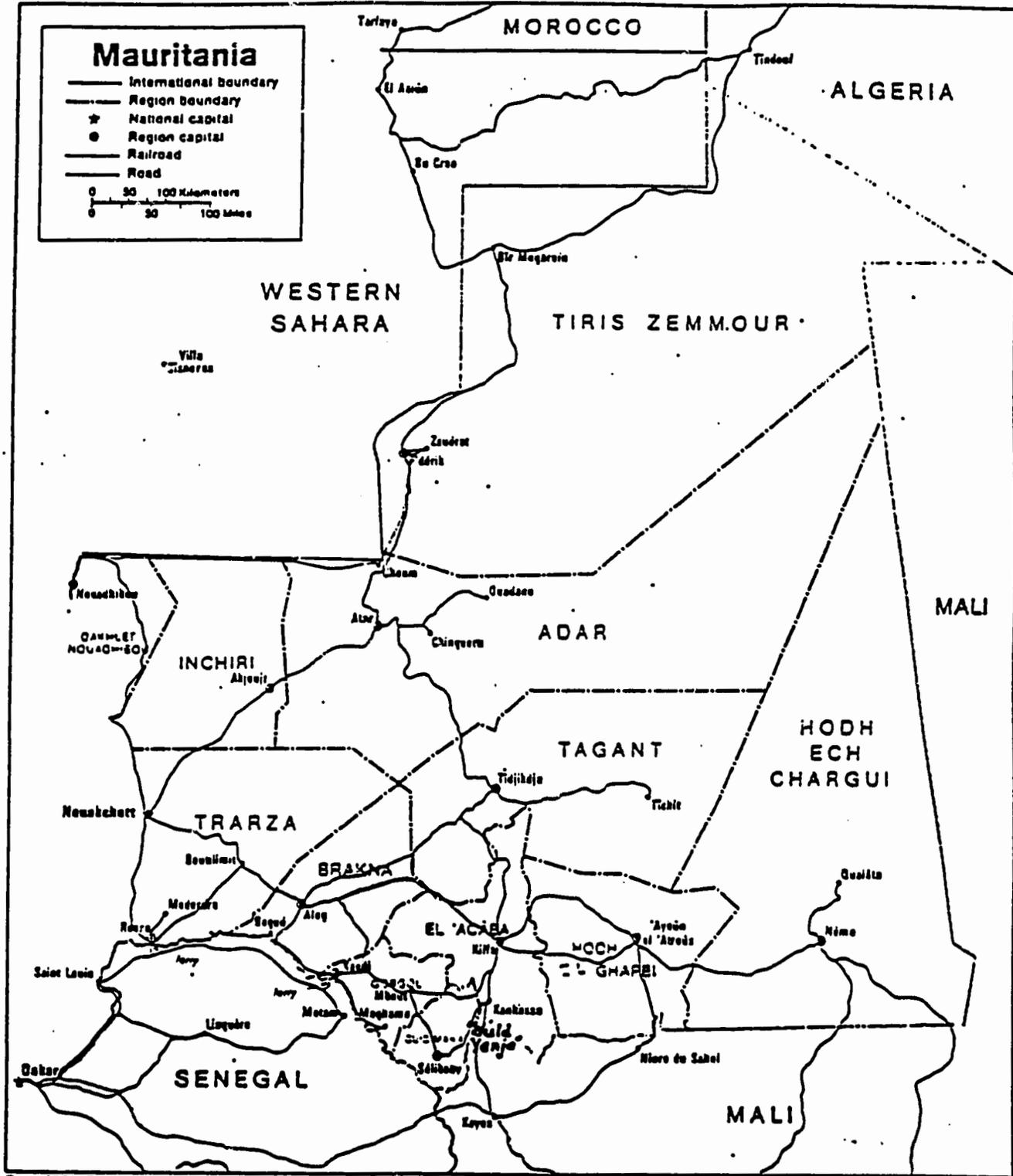
List of Acronyms

ADB	African Development Bank
A.I.D.	Agency for International Development
ARI	Acute Respiratory Infection
ASC	Agent Sanitaire Communautaire
AT	Accoucheuse Traditionnelle/Traditional Midwife
CDC	Centers for Disease Control
CCCD	Combatting Childhood Communicable Diseases
CHC	Community Health Committee
CHW	Community Health Worker
CIS	Interservices Committee
COP	Chief of Party
CREN	Centre de Rehabilitation et d'Education Nutritionelle
CSC	Livret du Comite de Santé Communautaire
CRM	Red Crescent Society of Mauritania
CRS	Catholic Relief Services
DHPS	Direction de l'Hygiène et de la Protection Sanitaire
DMH	Direction de la Médecine Hospitalière
DPFC	Direction de la Planification, Formation et de la Cooperation
EOP	End of Project
EPI	Expanded Program of Immunization (also called PEV)
FED	European Development Fund
GIRM	Government of the Islamic Republic of Mauritania

HIS	Health Information Systems
HIV	Human Immunodeficiency Virus
HF	Health Facility
HDO	Health Development Officer
JSI	John Snow, Inc.
KAP	Knowledge Attitudes and Practices Survey
LOP	Life of Project
LWF	Lutheran World Federation
MCH	Maternal and Child Health (also called PMI or SMI)
MOHSA	Ministry of Health and Social Affairs
MSF	Médecins sans frontières
MT	Mobile Team
NCPHC	National Commission on Primary Health Care
NGO	Nongovernmental Organization
NHC	National Health Center
NVD	National Vaccination Day
OAR/M	Office of the Representative of USAID/Mauritania
PC/M	Peace Corps/Mauritania
PEV	Programme Élargi de Vaccination (EPI)
PHC	Primary Health Care
PMI	See MCH
PNLMD	Programme National pour la lutte contre les maladies diarrhéiques
PRSSR	Rural Health Services Project of MOHSA

RHS	Rural Health Services Project (682-0230)
RMA	Rural Medical Assistance Project (682-0202)
SEM	Structure d'Education des Masses (new GIRM political structure)
SMI	National MCH Service
TA	Technical Assistance
TBA (AT)	Traditional Birth Attendant (Accoucheuse Traditionale)
TT	Tetanus - Typhoid Vaccine
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations International Children's Emergency Fund
UNIPAC	UNICEF Packing and Assembly Center
UNV	United Nations Volunteer
USAID	Country Mission of the United States Agency for International Development
WHO	World Health Organization
WVI	World Vision International

Map of Mauritania



I. Executive Summary

The Rural Health Services (RHS) Project (682-0230) has made good progress toward meeting its objectives and has served as a prototype for a national Primary Health Care (PHC) program in Mauritania.

A. Project Goal and Purpose

The goal of the RHS Project is to improve the health status of the Mauritanian people in order to enhance their productive capability. The purpose of the project is to improve the effectiveness of the national Expanded Program of Immunization (EPI) and to develop an expanded and integrated community-based PHC system in three selected contiguous regions.

Included in this integrated approach to PHC are the following objectives:

1. Extend basic health services to a large percentage of the rural population of three regions, with EPI covering 60 percent of the target population nationwide.
2. Deliver selected PHC interventions to the three regions through Community Health Worker (ASC) teams with drugs and services financed by the communities.
3. Foster collaboration between EPI and fixed health center personnel in implementing supervisory and referral mechanisms.
4. Develop a uniform national PHC.
5. Design and implement a data base and information system.

B. Project Accomplishments

1. Basic health services have been significantly expanded in two regions, Trarza and Guidimaka, and will be operating in the Assaba Region before the end of project (EOP). More than 200 villages in the three regions will have PHC services by the EOP.
2. Selected PHC interventions are being delivered by CHW teams consisting of an Agent Sanitaire Communautaire (ASC) and an Accoucheuse Traditionnelle (AT). They have appropriate medical kits replenished through funds raised by the Community Health Committee (CHC) or by sale of medicines. Most receive a salary from the same source.
3. Collaboration between EPI and fixed center personnel, and transportation by EPI mobile team vehicles, provides the basis for supervision and referrals. Supervision is well planned but often lacks complete execution due to failure of transport. As the Bamako Initiative is adopted, a simpler and less expensive scheme of supervision may be developed.

4. A uniform national PHC curriculum has been developed and published in individual manuals used for training ASCs, ATs, Village Committees, supervisors and trainers. Retraining programs have been developed for the lower level auxiliary health staff.
5. The data base and information system have been attempted but not perfected. The operational research contemplated on demographic and epidemiological baseline data has been done only superficially. The Health Information System (HIS) has developed health information forms and a collection system. The forms are still being received and information is still too incomplete to provide reliable overall data. The EPI information system is much more developed and the concurrent EPI evaluation should give more reliable data.

C. Project Consequences

As a result of the RHS Project and the efforts of other donors, particularly UNICEF, PHC has been accepted by the Ministry of Health and Social Affairs (MOHSA) as the preferred way to provide rural health services. The populace and the Government of the Islamic Republic of Mauritania (GIRM) at village, department, regional and central levels accept and appreciate PHC services. PHC is now well integrated into the MOHSA, and the Ministry's acceptance of the Bamako Initiative should make PHC sustainable (See Appendix I).

II. Summary of Major Findings and Recommendations

1. The RHS Project is meeting most of its major objectives. Functioning PHC systems have been established in two regions and another system started in a third region. PHC has been demonstrated to be feasible and technically acceptable to the MOHSA at all levels and popular among both the population and government officials. This has been accomplished in spite of many problems detailed in the body of the report.
2. The team supports the reorganization of MOHSA, which integrates the Ministry's *Projet de Renforcement des Services de la Santé Rural (PRSSR)* into the Directorate of Hygiene and Public Health (DHPS). Further reorganization of MOHSA to decentralize administration and give more responsibility to the regions has been started in Trarza and Guidimaka and is expected to be extended to all 11 regions. This will provide the Regional Chief Medical Officers clear authority and time to supervise PHC.
3. The Bamako Initiative is applicable to Mauritania's PHC programs.
4. The ASCs and ATs need to be able to purchase low-cost, generic, essential drugs in a health facility located at their regional or preferably department center. This might be accomplished if the drugs were purchased in bulk through UNICEF, imported tax free, and distributed by the MOHSA to the regional or departmental health facilities.
5. Cost recovery is essential to finance this PHC program. Low-cost drugs should be sold at a sufficient mark-up to generate funds to pay the CHW teams, resupply the kits and perhaps assist with operating expenses. If the drugs were bought at a low price, as suggested above, they might be sold at a profit and still have a price below the current cost for proprietary drugs bought retail from private profit-motivated pharmacies.
6. Although some studies on pharmaceutical marketing have been done, more intensive operations research on drug logistics and cost recovery, as planned in the Project Paper, is needed to test the validity of the above suggestions.
7. PHC must have a reliable transportation system for supervision, logistics and mobile EPI teams. The present system often has vehicles off the road for periods of three to six months. Some vehicles are useless after three to five years and the present fleet is overused.

While there is no simple and economical solution to the transportation problem, it must be resolved to assure PHC sustainability. Considering the rough terrain and bad roads and tracks over which vehicles must travel long distances, it is clear that vehicles need to be replaced periodically.

Two approaches to vehicle maintenance should be studied by donors:

- a) Improve maintenance by assuring adequate available spare parts and streamlining the bureaucratic approval process when private repair facilities are used.

- b) Convince donors to cooperate in supporting a consolidated maintenance system within the MOHSA, complete with a garage for repairs and technical assistance for training local mechanics and developing specifications for vehicles, spare parts, tools and safe storage.
8. The PHC program has been hampered by inadequate technical assistance. Technical assistance to EPI and HIS was not completed before departure of the relevant technicians, even though their contracts were fulfilled. PHC would have benefitted by an extension of their contract. Even more serious was the hiatus in critical technical assistance when the Chief of Party (COF) from John Snow, Inc. (JSI) was permitted to change his duties from Operations Research to Public Health and assume the role of Counselor to the Minister of Health. Although he may have been useful in that role, he left a serious void in technical assistance to the PHC program from the PRSSR office to the level of village operations.

The current JSI Management Technician should be directed to focus on field operations management problems in order to have some technical input into field operations. The team recognizes that with an EOP of June 30, 1989, it is too late in the project to add new technical assistance.

9. Available project funds as of June 30, 1989 should not be deobligated and used for other purposes. Some \$350,000 is estimated to be required to support minimum assistance to EPI and PHC-PRSSR for the two years MOHSA needs to put the proposed reorganization into effect and to conform to the Bamako Initiative. It has been suggested that these funds be programmed through UNICEF. This is under active consideration by the Office of the Representative of the U.S. Agency for International Development/Mauritania (OAR/M).
10. There is evidence that EPI activities have deteriorated since the relevant JSI technicians departed post. The HIS specialist's tour ended before implementation of her work plan and before a satisfactory HIS system was in place. If funds are found to be available, OAR/M should consider continuing technical assistance to PHC, EPI and HIS.
11. Both in-country and external training have been extensive and well done. However, there is a continuing need for more training, retraining and external training. After June 30, 1989 some of the above proposed \$350,000 would support needed in-country training. The proposed \$400,000 of the Human Resources Development Funds, which OAR/M projects for health training, are essential for the overseas training needed to make PHC sustainable in Mauritania.
12. The PHC program, including EPI, is not sustainable in its present form without continued donor support. Modifications to the program, proposed MOHSA reorganization and adherence to the Bamako Initiative should make the PHC program sustainable. This project has served as a demonstration program and is leading to the development of a nationwide PHC system supported by the MOHSA and various donors.

III. Evaluation Methodology

OAR/M selected a team of four persons provided by the Pragma Corporation and comprised of the following:

- o Primary Health Care Consultant - Team Leader
- o Health Information Consultant
- o EPI Technical Officer
- o Health Economist

Two members arrived in Nouakchott March 7 and two March 9. The team spent the first week gathering and reading documents pertinent to the Project (See Annex B) and contacting relevant people in OAR/M, JSI, PRSSR, MOHSA and collaborating organizations such as WHO and UNICEF (See Annex A). Unfortunately, because a joint A.I.D.-UNICEF evaluation of EPI was performed concurrently with the PHC evaluation, many relevant people were unavailable or forced to postpone appointments.

The team then undertook an eight-day field trip to see what progress had been made at the working level. The team was accompanied by seven Mauritians from PRSSR and MOHSA and a member of the USAID health staff. No one from the contractor team participated in the field trip. The trip enabled the team to see how the PHC system functions at the working levels, the difficult terrain which poses many challenges to health workers, the underdevelopment of the countryside, the remarkable PHC infrastructure which has been developed, and the problems which have been solved or continue.

The team met political and medical leaders in the regions of Trarza, Guidimaka and Assaba and at six departments within these three regions. Twelve villages were visited and meetings were held with the CHWs. The ASCs and ATs were questioned and their medical and obstetric kits were inspected and records reviewed.

The final nine days were spent in completing interviews, checking data, writing the report and debriefing OAR/M and MOHSA. Two sessions were held with the Mauritanian staff who participated in the field trip.

The body of the report follows the outline provided by the OAR/M Statement of Work (See Annex C).

IV. Project Background

The RHS Project is a follow-on to a previous project supported by A.I.D., the Rural Medical Assistance Project. It was originally (July, 1983) a five-year project supported by \$5 million in A.I.D. grant funds and \$2.5 million in local funding from GIRM. UNICEF and A.I.D. jointly supported the EPI segment and WHO provided some technical support and training. The major technical assistance was provided by JSI through a \$1.75 million contract with A.I.D. JSI has provided approximately 95 person months of long-term technical assistance in health education/training, health management, EPI, public health, HIS and health management. It also provided 11 person months of short-term technical assistance in curriculum development, visual aids, cold chain management and maintenance, and mass media.

The RHS Project has six major objectives:

1. Develop a PHC program including administration, training, supervision and services in three of the 11 regions of Mauritania--Trarza, Guidimaka and Assaba.
2. Extend basic health services, including preventive services, to a large percentage of the rural population of the three regions, with EPI covering 60 percent of the population nationwide.
3. Integrate PHC and EPI at national, regional, departmental and village levels.
4. Perform epidemiological and social baseline studies and operational research on subjects relevant to the project such as pharmaceutical marketing, nutrition and cost recovery.
5. Develop an operating HIS at all levels of the program to promote national management.
6. Formalize a national policy and program for coordinating PHC.

The project is managed for A.I.D. by the Health Development Officer (HDO) of the OAR/M with a local-hire U.S. citizen and one Mauritanian. MOHSA established PRSSR as a new and separate entity to execute the Project. Although not one of the regular services of MOHSA, the PRSSR reports to the Director of the Division of Hygiene and Public Health.

Additional project details can be found in the Project Paper. The first three years of the project are detailed in the 1987 Midterm Evaluation, Project Evaluation Summary of the Rural Health Services Project (682-0230).

Since the Midterm Evaluation, the EOP date was extended to 6/30/89 and then again to 6/30/90. The first extension was necessitated by residual funds remaining in the project which could not be spent by the original PACD. The second extension was made to accommodate participants in long-term training in the U.S.

The remainder of this report includes a Log Frame, followed by reports by the respective team members for PHC, HIS, EPI and Health Economy.

V. Logframe

The following logframe was prepared by the OAR/M Health Office based on information made available by PRSSR.

<u>Planned Outputs</u>	<u>Actual Outputs</u>
Logframe	Track Output Status (Quantify)
<u>Project Purpose Indicators:</u>	<u>Quantification of Progress:</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 two regions, Trarza and Guidimaka, and the project is commencing activities in a third region, Assaba. In Trarza, 43 percent of the villages qualified for PHC are covered, 20 percent in Guidimaka.
2. 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.
3. Community-level primary health care services are providing selected interventions including treatment of diarrhea, immunizations, first aid, maternal and child care, and health education.	These services are being provided in 147 villages in Trarza and 32 villages in Guidimaka. In addition, 42 villages in Assaba and 18 in Guidimaka have been sensitized with ASC and AT training to start in May, 1989.
4. EPI program reaches 60 percent of target population.	It is currently estimated that 25 percent of the target population are completely vaccinated. Data of current EPI evaluation are not yet available.
5. EPI cold chain system being maintained.	Of the 65 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 A.I.D.

6. 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, the project, under the JSI contract, has engaged a full-time technical assistant to facilitate the development of this information system. It is expected to be fully in place and autonomous by mid-1989.
7. Supervision and village sensitization programs are operational.

Village sensitization is complete in Trarza and Guidimaka. In principle, supervisory missions are carried out four times per year. There is one regional level supervisor in Trarza and Guidimaka and a supervisor for each department (six in Trarza, one in Guidimaka). Village sensitization has been completed in 42 villages in Assaba and there is a regional supervisor. Department supervisors are being trained in Assaba. At the central level there is a national supervisory team.
8. EPI and drug distribution systems are effectively functioning.

This is true for 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 Assaba region. The MOHSA is in the process of elaborating a national essential drug program. This should facilitate the resupply of village medical kits.
9. 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.

Output Indicators:

1. Commission coordinating and guiding integration of various levels of primary health care network.
- 2A. Health education curriculum and visual aids developed and approved.
- B. Four PHC nurse supervisors and four trainers are trained.
- C. 200 community-level committees are retrained and/or upgraded.
- D. 25 EPI nurses retrained for mobile teams.
- E. 60 fixed center EPI nurses are retrained and skills periodically upgraded.
- F. 175 new ASCs and 150 new ATs trained.
- G. In-service training for 250 ASCs, 150 ATs and 15 trainers.
- H. 14 short-term training courses.

Quantification of Progress:

Regional PHC commissions are meeting every four months in Trarza and Guidimaka. A national commission has been established this year.

Curriculum and visual aids have been developed for ATs and ASCs.

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.

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

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.

This is true for 65 fixed center EPI nurses.

66 new ASCs and 128 new ATs have been trained. In 1988-89, the project anticipates training an additional 74 ASCs and 62 ATs. Retraining of midwives (ATs supervisors) has also been offered.

The project has provided in-service training for 227 ASCs and ATs, with another 83 to be retrained in 1989. In-service training for at least 15 trainers is anticipated for 1988-89.

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

- | | | |
|-----|--|---|
| I. | Five international conferences. | Six participants have been sent to four international conferences (Abidjan, Brazzaville, N'Djamena and Yamoussoukro). |
| J. | Three 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 months courses in Benin and Senegal). Applications of two more long-term trainees are pending. Other donors are sending six long-term trainees in public health. |
| K. | Five specialized workshops. | In July and August, 1986, two specialized workshops were held for EPI. One health education workshop was held in Aleg. |
| L. | Annual integration seminar for national, regional and departmental health personnel. | Four seminars are held each year in each region, once a quarter. There have been four seminars in Trarza and one in Guidimaka. In December, 1988, a National PHC conference was held in Nouakchott. |
| 3A. | Four 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. |
| B. | Six EPI only mobile teams in other regions. | yes |
| C. | 30 EPI fixed centers re-equipped for functioning. | yes |
| D. | Ten regional EPI and central EPI depots with cold chain equipment. | yes |
| E. | Thirteen dispensaries in three regions re-equipped. | In Trarza, 17 "health structures" have been re-equipped (Polycliniques, PMIs, Health Centers, Dispensaries). |

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

5. Baseline study completed during first year of project, follow-up in years three and five.

An ethno-medical study was undertaken in Trarza and Guidimaka in August, 1985. There have been no updates. There are plans to do an epidemiological survey in Assaba.

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

An HIS exists in Trarza, its weaknesses being improved. In Guidimaka, an HIS has been functioning since April, 1988. After CHWs are in place, an HIS system will be installed in Assaba.

VI. Primary Health Care

A. PHC - Overview

The RHS Project has successfully demonstrated the efficacy of PHC in Mauritania. As a consequence of this and the preceding PHC project, the validity of the PHC approach has been established and an ongoing program is operational in two regions with a start in a third region. The progress toward the project objectives has been satisfactory considering the scarcity of economic and human resources in Mauritania, the difficult geography and the management problems which have occurred.

During the past five years OAR/M has had a lack of continuity in management. There have been four directors and two USAID health officers with a five month gap between them. JSI has had some difficulty in maintaining staff, and there have been at least two staff members who proved to be unsuitable for their assignments. One of the original technicians was ineffective in his assignment. The second COP is acting as Counselor to the Minister of Health. In that role he is doing valuable work by encouraging the ministry to reorient its program to encompass a PHC approach. With more than 80 percent of the budget going for personnel and medicine, including materials, there is little opportunity for financing new initiatives. However, staff have been assigned to PHC, training has emphasized PHC, and the philosophy of PHC has been accepted at all levels.

When OAR/M made the decision to permit the COP to become Public Health Advisor and Counselor to the Minister rather than Primary Health Care or Operations Research Advisor, as envisaged in the original project plan, the project was left without a technical advisor to monitor and evaluate operations in the field or carry out essential operational research. The decision to change the COP's assignment could have been justified by adding another technician to do the original operational research work. Funds were adequate and the JSI contract could have been amended to provide more person months. Although the OAR/M and the JSI/COP agreed to broaden the COP's terms of reference to include a role as counselor, PHC and operations research objectives were to have remained in force. However, the OAR/M seemed unable to keep the COP from favoring his work as counselor and minimizing his PHC and operations research duties.

Another major managerial difficulty has been the inability of the JSI/COP and the OAR/M/HO to establish a good working relationship. The JSI-COP also seems to have had other difficult interpersonal relationships. This situation was aggravated by the A.I.D. decision to permit the COP to bypass the USAID-HO and report directly to the OAR/M Deputy. Thus the HDO was placed in the untenable position of being the responsible project manager without direct liaison with and control of the COP, the chief technical resource for improving project operations.

MOHSA originally had managerial problems in getting staff to concentrate on the project. Currently, the MOHSA Project staff seem satisfactorily engaged in their work and accepted by their health colleagues in the health system.

1. Commitment

MOHSA and the GIRM may have been a little reluctant to accept PHC originally, but they seem enthusiastic about it at all levels now. The original National PHC Committee was composed of high level officials but was generally inactive. In 1986-87 this group was replaced by an Interservices Committee (CIS) chaired by the Director of Preventive Services and attended by directors of eight operational services concerned with PHC, the Project Director, and representatives from OAR/M and other interested donors. This CIS seemed to be more concerned with current operational problems than policy. It last met in 1987, and has since been replaced by a National PHC Commission which meets every two weeks to make policy pertaining to regionalization, integration, drug supply and coordination of donor inputs. There is a broad representation of up to 40 people from MOHSA services, the project and UNICEF.

2. Coverage

The major objectives for PHC coverage should be about met by the RHS Project. Of the projected 150 CHW teams in the Trarza Region, the site of the first PHC Project, 149 ASCs and 93 ATs have been trained in the new standard curriculum and are at work. The objective for the Guidimaka and Assaba Regions is 100 CHW teams. In Guidimaka 32 CHW teams were trained and 29 are now operating. Another 18 villages have had sensitization visits to form village committees and to select ASC and AT trainees. Thus almost 50 villages should have PHC services in Guidimaka by the EOP. In the Assaba Region 42 villages have been sensitized and thus nearly 50 should have an ASC and an AT to give PHC by the EOP. During the field trip the evaluation team found good acceptance and usage of ASC and AT services, although no reliable statistics on utilization are available overall.

3. Integration - Central

The MOHSA organization chart (See Annex D) shows eight services under the Directorate of Hygiene and Public Health:

- Communicable Diseases
- Vaccination Program (EPI)
- TB and Leprosy
- Nutrition
- Maternal and Child Health (MCH)
- Health Education
- Hygiene and Sanitation
- School Health

The PRSSR is not included but is physically in a building away from the MOHSA. However, it does report to the Chief of the DHPS, who coordinates all activities relevant to PHC in his official position as well as by virtue of being the President of the National Commission for PHC. He is thus in a position to assure that EPI and MCH actively coordinate their work as they must if their activities are to be integrated as planned. He is also able to coordinate PHC with his colleague, the Chief of the Direction de la Planification, Formation et de la Cooperation (DFPC), who is responsible for training and health statistics which are

essential to PHC. Because both of these Directorates report to the Secretary General and the Minister, the role of the JSI/COP as Counselor to the Minister becomes important. As counselor he is in a good position to influence any high-level administrative or policy decisions relating to PHC. At present, the MOHSA is well reorganized to integrate all aspects of PHC under the DHPS.

4. Integration - Regional

At the regional level PHC is well accepted and supported by the Regional Governors who control all regional activities. They find it politically attractive and are able to keep control of PHC activities, since it is the governors who issue permission papers for travel. Regional PHC Committees have been organized with representation from central MOHSA and PRSSR as well as from regional political and public health staff. The committees are active, meeting every three months.

Under the new regionalization plan to strengthen PHC, the Regional Chief Medical Officer has overall control of PHC as one of his principal duties. A physician has now been assigned as chief of the regional hospital, under his supervision, so that the Regional Chief Medical Officer can give adequate attention to his PHC duties. He can thus do more to supervise PHC activities, ensuring that the mobile MCH teams cooperate with the regional PHC supervisor (a nurse trained in public health) and that the MCH and dispensary units cooperate with the village ASC and AT. The greatest weakness at the regional level is a lack of medicine and operating vehicles. The theoretical six months' supply of drugs usually lasts about a month or two, and even that amount may not come on schedule. Vehicles are often out of order for months and this prevents the supervisory visits to the villages scheduled monthly for new villages and quarterly for old villages.

The new regionalization scheme is in effect in Trarza and Guidimaka Regions and is expected to become national soon.

5. Mobile Teams

The mobile teams which formerly did only immunizations now include a nurse-supervisor. Theoretically, while the EPI unit does immunizations the nurse-supervisor works with the ASC and AT to do supervision and on-site training, treat sick people, provide epidemiological intelligence and gather data for the HIS. The team could not see the mobile units in operation because all of the vehicles were being used in a concurrent EPI evaluation by teams jointly supported by USAID and UNICEF. The team did hear considerable complaints about coordinating the EPI and PHC work at the mobile team level. The supervisors of PHC need more time in a village than the EPI. The older EPI teams resent the delays necessitated by the integration.

6. PHC Services

The activities of the ASC and AT were observed in 12 villages during the eight-day field trip. Both the quality and quantity of PHC services were quite variable, as would be expected. Everywhere, the PHC services were appreciated by the villages.

In all cases the standard kit originally filled with 13 essential drugs and basic medical equipment was inspected. In all but one case there was an attempt to replenish the kit with medicines either by charging for drugs or by donations when the kits lacked medicines. Usually, the entire community or the PHC Committee decided which method or combination to use. In general, the amount of money raised was inadequate to resupply the kit. Many villagers requested more money for medicines from donors, as the curative services are very popular. Even when the ASC had funds to replenish the kit, he had to make long, arduous and expensive trips to a pharmacy at a department or regional town. The private pharmacies charge high prices for proprietary drugs. A vital need is for a resupply of essential drugs originally given in the kit, at a reasonable price and with ready accessibility.

Most ASCs gave a reasonable number of curative services (see HIS section) and seemed to know how to use their medicines.

The preventive services varied even more than the curative. Each village committee had one member who had received two to four days of training in health education at the department or regional level. Some led group discussions on health problems, but only a few had health education materials or made home visits. In several instances the ASC and/or health educator encouraged such preventive activities as using mosquito nets, cleaning the village periodically, ensuring potable water, sanitary disposal of wastes, promoting immunizations, providing epidemiological intelligence and providing ORS for diarrhea.

In one notable instance an ASC reported an epidemic of cholera to the Regional Chief Medical Officer, who used ORS to save seven of nine cholera victims, who then received appropriate follow-up drug treatment.

One important and necessary PHC service was entirely lacking, namely family planning. This service is only now starting at a few urban MCH units and may meet some resistance in rural areas. An inquiry about contraceptives at a pharmacy brought an abrupt negative response that contraception is not Islamic.

The villages visited were all served by EPI. However, the mobile teams are not always able to come often enough to give all three DPT injections. Some villages took the initiative of going to the nearest MCH unit to finish immunizations and some raised money to pay a MCH midwife to come to their village to give immunizations. Some MCH unit staff voluntarily went to villages to give immunizations. Thus the villagers and health staff have been so well educated on the value of immunizations that they will sometimes take the initiative at considerable cost when the mobile teams are not adequate.

Nutrition is relatively neglected since the demise of the Centres de Rehabilitation et d'Education Nutritionelle (CREN). The ASCs all have red and green armbands to measure nutritional status. One ASC measured every child's arm circumference every two weeks.

ASCs take their referral duties seriously and often accompany patients to the nearest dispensary. This trip may cost 3,000 UM by donkey cart or 4,000 by a motor vehicle. Before the PHC program this trip had to be made even for minor illnesses unless a traditional herb doctor was available.

All of the ATs had the prescribed 30 days of training and had received a UNICEF midwife kit. Inspection of the kits revealed considerable variation in their condition but usually there was equipment to permit a relatively aseptic delivery. Instruments were washed and then sterilized by flaming alcohol or sunshine. Cord ties were always present. Prenatal visits to the AT were frequently neglected as many villagers see no sense in going to a midwife when they are well. Most of the trained ATs are well accepted, but there are still some women who prefer their untrained but familiar AT. A regular supply of iron and vitamins for prenatal care might stimulate more prenatal visits, which are so important to ensure tetanus immunizations and detection of high risk patients.

7. Training

All ASCs are trained for 45 days at the departmental or regional level, during which time they receive per diem. A large training manual has been developed which contains the information they need. If anything, it tries to cover too much ground in view of the educational level of the ASCs. It could be improved by more pictures and diagrams. Practically all ASCs have had one or more retraining sessions of a week or two. In addition, the supervisor gives some refresher information and the illustrated record developed for the HIS is excellent for reminding the ASC of his duties and of the techniques to carry them out. In spite of all this, the ASCs still need more supervision and retraining to perfect their work. This is true in every PHC program; lower level auxiliaries require constant supervision and retraining as well as a reliable supply system to be effective.

The ATs are trained for 30 days, usually along with the ASCs. A training manual with appropriate material has been produced. The UNICEF kits are given only after the standard training course. Most ATs have had one or two retraining courses of one or two weeks.

Each CHC has at least two members, besides the ASC and AT, who have attended a 2-4 day training session at the department or regional level. A booklet with illustrations has been printed to assist them in their work.

All supervisors have had basic nursing training and at least one short course in public health such as the WHO training course in Dakar. All have been through a specific two-week course in Mauritania which focused on their duties as supervisors.

Since the team was not able to attend any training courses, it is difficult to assess the quality. Observing field operations for eight days gave some indication of the results of the training. The training system seems to be appropriate and has produced as good results as could be expected, but the material is too comprehensive for the trainees and would benefit by more illustrations, diagrams and simplified summary statements, especially regarding treatment.

B. Public Health Advisor

The role of the JSI/COP since the summer of 1987 has been controversial. The midterm evaluation recommended a change to the technical advisors from JSI: A COP-Operations Research Advisor, an EPI Advisor and an HIS Advisor. All were recruited by JSI and accepted by OAR/M.

pertinent to PHC. Most importantly, the COP serves on the committee that judges donor proposals, thus helping to coordinate and determine what gets done.

The COP seems to have established a good rapport at the upper levels of MOHSA and is frequently consulted about health topics. He has not and does not intend to get involved in the field activities of PHC. His role as counselor has served a useful purpose. However, in hindsight, OAR/M should have recognized the hiatus in technical assistance at the PHC field level. This could have been rectified by adding another technical advisor for that purpose. If the COP will not report OAR/M through the OAR/M-HDO, he could be replaced as COP by the above recommended PHC Technical Advisor with operations research capability.

C. PRSSR Organization

The PRSSR is a separate organization physically apart from the MOHSA and is not included in its organizational chart. It was set up to administer the PHC Project financed by A.I.D. It has a staff of four professionals seconded from the MOHSA and 11 others funded by A.I.D. The PRSSR Director reports to the Director of the Direction of Hygiene and Public Health, one of MOHSA's six directorates (See Annex D). Since all eight services report to the Director of Hygiene, the PRSSR Director is able to coordinate and direct the relationships between PRSSR and the relevant services such as EPI, MCH, Health Education and others.

PRSSR controls its own budget, personnel and vehicles. A.I.D. project funds go to PRSSR. It has its own vehicle repair system, including warehousing of small parts. PRSSR has the operating responsibility for the PHC program down to the village level but has to work with other MOHSA and regional and department level officials to accomplish its task. PRSSR has developed its own in-country training program for all its staff.

Apparently there was some friction in the system when the PRSSR, headed by a non-physician, had to deal with Chiefs of Medicine. But it appears that the role of PRSSR in managing PHC is generally well accepted. When the reorganization and regionalization of MOHSA is completed and the A.I.D. project ends, what is now PRSSR will become integrated into the Direction of Hygiene and Preventive Health. This will facilitate the integration of PHC into the general MOHSA health system, as recommended by the midterm evaluation.

D. Sustainability

The RHS Project's PACD is July, 1990 allows for completion of long-term participant training. But the EOP is June 30, 1989 as regards technical assistance. It is too late to rectify the deficiencies in technical assistance, i.e. the lack of a PHC technician to do operational research as planned and the premature ending of the EPI and HIS technical assistance.

The estimated \$200-300,000 of funds remaining as of July, 1989 should not be deobligated but should be split between supporting EPI activities with UNICEF technical support and PRSSR. When A.I.D. assistance ends there is no way the existing scheme of PHC can be maintained and expanded to cover the country unless Mauritania strikes oil or donors became unexpectedly generous.

The COP came to Mauritania without a signed contract or scope of work. A proper relationship did not develop between the COP and the OAR/M-HDO and interpersonal communication became difficult. There is hearsay evidence that the COP also had difficult relations with other JSI and OAR/M staff. The COP decided that PHC activities needed little operational guidance and established a working relationship with the Minister of Health, such that the Ministry requested he become Counselor to the Minister.

The JSI contract was amended to relieve the COP of quarterly reports and change his title to Public Health Advisor rather than Operations Research Advisor or even PHC Advisor. He was also permitted to report to the Deputy of OAR/M rather than directly to the OAR/M-HDO. He was allowed to be Counselor to the Minister with the understanding that it would not interfere with his PHC duties.

As a result, the COP has devoted most of his energy to his duties as Counselor at the expense of neglecting to give technical assistance to the PHC Project below the level of the Project Director. He has done nothing about the proposed operations research nor has he participated in PHC field operations. The COP has never made a field trip to determine on site how the PHC program is operating, depending instead on information at the Project Headquarters. It is difficult or impossible to give technical advice or assistance to a PHC project without making site visits to see the real day-to-day problems often obscured in official reports. Thus there has been a lack of technical assistance at the PHC working level, contrary to the clear intentions expressed in project documents.

On the other hand, as Counselor to the Minister, the COP has been in a position to influence decisions vital to the PHC program. MOHSA has adopted a favorable attitude to PHC and accepted it philosophically. This is important because without such acceptance, donor inputs for PHC could be stymied at the higher levels of the ministry. The COP recognizes this and uses his influence to affect policy favorable to PHC, a significant accomplishment.

Some actions include the current serious consideration of the Bamako Initiative to make PHC feasible in Mauritania. The whole concept of cost recovery took some lobbying within the GIRM. Staff changes have resulted in shifting manpower to PHC. Current plans for regionalization will decentralize health administration and favor PHC. MOHSA is accepting donors' offers for many long- and short-term training grants and selecting trainees to reinforce the manpower needed for a PHC program. Although the COP can not be considered responsible for all of the above, he has an understanding of PHC as well as a position to influence policy and has contributed to these positive developments.

The COP has also been active in reviving the National PHC Commission and in establishing a social affairs journal and a medical journal. As editor he has stimulated and selected articles relevant to the medical needs of Mauritania, especially PHC. He expects this journal to develop into an important source of information and retraining of PHC workers in the field. This will help overcome the usual feeling of isolation felt by PHC staff and will be an instrument for feedback of program progress when the HIS can provide reliable statistics.

The COP's participation on several commissions is useful but time consuming. Some, such as locust control, are of marginal value. But others, such as essential drugs, are very

The PHC program must follow the Bamako Initiative and develop cost recovery along with making economies in the program. Fortunately, the MOHSA planning seems to be oriented in that direction.

To keep people interested in the program, the problem of drug supply must be solved. To do this only a basic list of essential generic drugs must be adhered to. They should be purchased wholesale through UNICEF and delivered to the regional or departmental levels. In that way, the ASC and AT could obtain the needed drugs at a low price to replenish their medical kits. The villages seem able to raise enough money to pay for ASCs to go to the department town and purchase enough essential generic drugs at a low price. Sale of drugs at a mark-up from a reduced price could generate money for salaries and transportation. Enormous savings in drugs can be obtained by proper purchasing in bulk. For example, A.I.D. buys oral contraceptives for 15 cents that cost more than \$10 in a drug store in the U.S. Operations research was planned to test this thesis but was never done due to the change in technical assistance provided by JSI.

Another essential item for a PHC program is transportation for logistics, supervision and EPI activities. While vehicles will probably be supplied by donors, current experience shows many are off-road for months at a time for repairs. There is no easy solution. The development of a consolidated repair and maintenance system for all MOHSA vehicles would help. Technical assistance by trained mechanics is required to establish a central garage, to order spare parts and tools and to train local staff as mechanics. UNICEF and A.I.D. have done this in several countries. It would be feasible through a joint effort by all the donors interested in PHC, such as UNICEF, World Bank-ADB, World Vision, and the German, French and Italian donors.

Supervision is even more essential for low level health auxiliaries than for fully trained professionals. PRSSR has good plans for supervision. Unfortunately, they are not carried out as planned, usually due to lack of transportation. The mobile teams don't like to wait for supervisors to complete their work, they cannot get to all villages often enough nor keep their vehicles mobile. A proper repair and maintenance system plus some of the cost recovery money from drugs would help to provide reliable transportation for supervision.

The training schedules in the PHC program are good. Training manuals have been produced. Field observations indicate that perhaps the curriculum needs further simplification, with more pictures, diagrams and specific treatment schedules, as well as even more retraining and supervision.

The mobile team units for immunizations are expensive, although operational research to document their cost effectiveness was never done as originally planned. When A.I.D. assistance ceases, the mobile teams will probably be replaced by immunization at fixed health facilities. There are now 65 in the country and they may be expanded. There has already been some initiative to do outreach immunizations from MCH units. Some village populations have traveled long distances to reach a MCH unit to obtain immunizations. This is another area of neglected operational research.

VII. Health Information Systems

A. Objectives and Scope of Work of HIS Advisors

A review of the Project Paper and logistical framework, the midterm evaluation and the JSI contract shows that the HIS technicians provided by JSI were intended to assist the GIRM/MOHSA to establish an HIS which will document patient load, incidence and prevalence of disease, patient referrals, etc. at the village, departmental, regional and central levels of the RHS Project. This HIS system would include basic health facilities such as health centers, but would exclude data from hospitals, from other PHC programs and health facilities, and from other sources such as surveys and data on financing, personnel, infrastructure, equipment, medicines, etc. In order to reach these objectives, a broader scope of work for a national statistical system evolved for all health-related activities. The JSI HIS Advisor eventually became involved in assisting this broader HIS, although many of the tasks were distributed to MOHS ^ staff or technical assistance personnel from other coordinating agencies, as in the MCH/FP services provided by UNFPA.

B. Previous Action Plans and Assessments

Several progress assessments and Action Plans have been made, including distribution of tasks among the different MOHSA personnel and TA advisors involved in setting up a national HIS system. The dates and documents are:

o October, 1987:

Plan for conception of the supervision tools ("fiches de supervision") and data collecting tools ("rapports d'activités des ASC").

o December, 1987:

Proposal amended and agreed upon (except for the timing) by DPFC Director Dr. Tolba, Training and Control (DPFC) and representatives of the ADB. Further work and progress assessments were based on this Action Plan. It was far too optimistic in its timing, especially concerning the tasks to be performed by staff outside the PRSSR.

o February, 1988:

Action plans for implementation of HIS, using data from MCH clinics working with UNFPA, WHO and UNICEF funds which will provide three to four months of TA.

o September, 1988

- A new Action Plan with a revised schedule for the indicators for the nine months through May 31, 1989.

- A calendar for the supervision needed to implement HIS in the Trarza and Guidimaka regions.

This plan is more realistic (excepting its expectation of a contract extension) and focuses on activities within the PRSSR and on the work to be done by the JSI TA.

- o October, 1988:

In response to a memo from the JSI COP, the JSI HIS advisor reviewed the tasks performed and those remaining to be done.

- o December, 1988:

The Progress Assessment for 1988 and Action Plan for 1989, presented by Tonia Marek and Mme. Dia Aissata, head of the Statistics and Documentation Service of the DPFC. (The Action Plan for 1989 will extend beyond 1990.) The Action Plan concerns the overall national HIS, including activities to be undertaken by HIS operators, MOHSA personnel and TA. It also addresses funding and equipment needs. Some of these needs are already promised or under way, while others still have to find approval and funding. The Action Plan has not yet been approved by the MOHSA. It includes some of the same recommendations made by this evaluation.

- o February, 1989:

Final progress assessment.

C. Quality and Quantity of Supervision at Central, Regional and Departmental Levels

1. Quantity of Supervision

In principle, the PRSSR supervisor visits each region at least annually to provide TA and to accompany the district supervisor during his visits to each district. Each district supervisor, in principle, supervises each CHW team each month for three months initially and thereafter every three months.

In Guidimaka, a regional and departmental supervision was completed in November, 1987 and April, 1988. Village-level supervision of the CHW team was done in January, 1988 in 20 of the 30 participating villages by a team with central, regional and district supervisors.

In Trarza there was regional supervision by central staff in March, 1988. Each of the six departments were supervised once between March, 1988 and April, 1989. In the Rosso area, where access is relatively easy, scheduled village supervisory visits are done regularly, especially in an area where an NGO participates in the program.

2. Problems and Methods of Evaluation

Departmental supervisors do not have vehicles with which to make trips to villages. They have to depend upon central or regional vehicles, EPI mobile teams or on whatever vehicles may be going to the villages. Too frequently, scheduled supervision is not done due to vehicle breakdown, common because of the difficult terrain and maintenance. Poor attitudes and driving practices, despite training, also contribute. The Trarza regional supervisor's vehicle broke down beyond repair more than a year ago. Guidimaka's vehicle is almost new but broke down in December, 1988 and still awaits a spare part. Using mobile team vehicles can cause problems because the time needed for a vaccination round in a village is shorter than that needed for supervision. Moreover, mobile team vehicles also break down frequently.

Departmental supervision at the village level is limited except in conjunction with central or regional supervision. When central and/or regional supervisors come to a department they have an "intensive supervision." The departmental supervisor performs his task while being overseen and assisted by the regional and/or central supervisors.

Another supervisory opportunity occurs when a department supervisor visits a village by joining an outreach vaccination team provided transportation by the village itself. There are also contacts with the ASCs or ATs when they come to the department town to purchase drugs or accompany a referred patient. These casual opportunities for discussing problems and follow-up training vary greatly from one village and department to another.

3. Demand and Quality

Frequent supervision is much needed and appreciated by the CHW teams. Most ASCs regularly see their department supervisors when they visit town to purchase drugs. But when questioned, most thought it would be difficult to organize regular meetings for days when they come in for drug supplies.

When supervision is organized from the central and/or regional level, it follows the supervision guidebook. The occasional supervision is less formal and organized without recourse to the guidebook.

In Guidimaka, supervision has followed the guidebook since its publication. Village files are kept at the regional and department levels. The data collection sheet is utilized but has to be sent to Nouakchott for analysis.

In Trarza, neither the data collection sheet nor the supervision guidebook are used. Supervision nevertheless appears to be thorough, although supervisory visits are too infrequent to be effective.

D. Development and Use of Health Information Records, Brochures and Other Documents

1. MOHSA Newsletter

A quarterly newsletter published by the MOHSA published its second issue in April, 1989. The JSI/COP has had an active role in initiating this project, and he is counselor to the publishing committee. The newsletter publishes articles of a general health interest, recent MOHSA decrees, technical updating, and so forth. UNICEF helps fund production. The newsletter is meant to be disseminated to all MOHSA personnel and other interested parties. When the HIS is able to produce reliable and timely information, the newsletter may well prove to be an appropriate tool for providing information to field staff.

2. Documents and Reports Produced through the Project

a) Livret du Comité de Santé Communautaire (CSC):

- o An updated list of national health facilities.
- o A list of indicators used for supervision and evaluation of PHC programs.
- o General information on the PRSSR.
- o Description of the roles of each CSC member.
- o A copy of the PHC contract between PRSSR and the villages.
- o List of drugs.
- o HIS records used for registering data at village level (published in French and in Arabic). This document is distributed to all villages with PHC and to different health staff to make the PRSSR known and to allow for coordination of PHC activities at central level.

b) Rapport d'Activites de l'ASC (training for use of this is described in Section D)

After two supervision rounds, proposals for modification of this report have been made but not yet implemented. If correctly completed, the report gives a comprehensive view of the health-related activities of a village. The evaluation team's findings in the field regarding this document are compatible with the HIS Advisor's comments on the last supervision tour in Guidimaka. Our general comments on the Rapport d'Activites de l'ASC are:

- o This and all data recording sheets ought to have precise, written instructions on how to fill them out. Even if those filling out the form are illiterate, the instructions would enable someone else in the village to assist the person.

- o An Arabic text might be added to the French, as we found several ASCs who read Arabic well.
- o Regarding the number of children aged 0-5 years old, instructions were to divide the total population by five. But it is easier to count the children than the whole population. It is also better not to rely on census data in smaller villages. The actual percentage of children aged 0-5 may well differ from the 20 percent figure cited by the census. Most ASCs we visited actually did count the children by home visits. They also corrected for deaths and births, but not for fifth birthdays. There are instructions that children have to be counted only once a year. The birth date is shown on the vaccination card.
- o Regarding the number of children vaccinated, some ASCs filled this in every time a child was vaccinated. Others checked all children. If, as is recommended in the corrected version, all children are to be checked once a year, then the denominator isn't correct.
- o Nutritional status: It is not clear how this has to be filled in and it is done in various ways. One ASC measured all children every fortnight, others only the children who were brought for consultations. Some ASCs change the data as the nutritional status of followed-up children changes. As a result, data on nutrition are not reliable. The most recent supervisory visit reported nutrition status for the region as follows: severe malnutrition four percent, moderate 20 percent, good nutrition 77 percent.
- o Data are lacking on referrals, and this is essential if the PHC activities are to be integrated in the general health providing system.

c) Rapport d'Activites de l'AT

These reports give a comprehensive view of the ATs' activities in prenatal care and deliveries. The previous section on the number of women seen in prenatal care was poorly understood, but has been made easier now.

The deliveries record serves as a birth register and is proposed to serve as an official birth certificate. It has to be filled in by a literate person. We found that this was done poorly in one village where an AT had asked a pupil to help her. Most ATs said that they preferred to register on a booklet rather than a sheet of paper.

d) Cahier d'IEPS

Registration of health education sessions. This was not used in the villages we visited.

e) Cahier du gestionnaire

Counts the number of controls of cash done every month; no data was available on this.

- f) Fiche de supervision (to be filled in by the department supervisor in the village)

The improved version proposed by the HIS Advisor after the last supervision tour in Guidimaka addresses most of the problems we found in the field and the comments by the regional supervisor of Trarza region, who refused to use the former model. A sheet has been added to collect financial data, but as this is a new effort, some training will need to be provided.

- g) Fiche de Supervision/Departmental Level

The results of different villages are aggregated on an fiche de supervision for the department. The same process can aggregate the data for the region.

- h) Fiche de Supervision pour Posologie

Check each village to determine if the ASC knows the correct dosage of drugs.

3. Other

- o With the help of TA, the Division of Ophthalmology developed a new data collection form now in use.
- o The other data recording and collecting forms of MOHSA have not been changed by TA. They were evaluated in 1987 and have been considered out of the scope of this work.

E. **Training of Central, Regional and Village Health Personnel in Collecting and Evaluating Health Information**

1. PRSSR Central Level Supervisory Staff and Statistician

- a) PRSSR Statistician

The PRSSR statistician has been trained to use the computer DOS - Lotus 123 at the PRSSR in Nouakchott and DBase III+ including programming in Kinshasa (three weeks training). She is using the computers in her work and plans to modify the data entry format to DBase III+. She has been participating in meetings with other MOHSA statisticians during which they have learned, with technical assistance, how to evaluate the quality of information and how to choose and collect the indicators for the PRSSR.

- b) PRSSR Central Supervisors

All the PRSSR Central Supervisors have received one year of PH training in Cotonou or Dakar. However, they have no training in the use of computers. One supervisor wrote the text for the training of trainers module on supervision and HIS, but it is more a general presentation than a set of specific guidelines, although two exercises have

been added to teach how to compute percentages. The evaluation team has the following observations about training of trainers in the field about HIS:

- o In Trarza, training has not been practical and persuasive enough to make the regional and departmental supervisors use the HIS.
- o In Guidimaka, the HIS was implemented before the training of trainers session, so the actual effect of this session is difficult to evaluate. Generally, the departmental supervisors have a good knowledge of how to register the village data on their departmental "fiche de supervision." These departmental supervisors were also able to evaluate the quality of the CHW registration, although this could not be thoroughly checked because the fiches de supervision had all been sent to Nouakchott for aggregation and analysis on computer.
- o Two other Central Supervisors were trained by the HIS Advisor during her supervision tours and in Nouakchott, but they have since left the project for other positions.

2. Regional Supervisors and Departmental Inputs and Processes

Three regional supervisors have been trained as follows:

- Trarza: PH 1 year in Cotonou
- Guidimaka: PH 1 year in Cotonou
- Assaba: PH 1 year in Cotonou

Eight departmental supervisors have been trained, two in Guidimaka and six in Trarza.

a) Training of Trainers

The departmental and regional supervisors received a training of trainers, in June, 1988 (Trarza) and September, 1988 (Guidimaka). In Guidimaka, health post nurses were included as well. The training of trainers curriculum had six modules, including:

- o A module on supervision in which a one page "guide de la supervision" has been distributed. Work has been done to make a "guide à l'utilisation des données par les superviseurs" for the utilization of data by the supervisors, but this guide is yet to be completed.
- o A general module on HIS is given in less than half a working day. Two exercises are included on how to compute percentages, but no information is provided on how to criticize the data sources. There are no precise written guidelines for either the "rapports d'activités de l'ASC et de l'AT" nor for the fiches de supervision.

b) On-the-Spot-Training

Guidimaka

The ASC and AT data recording forms have been distributed and their use explained during a central supervision meeting in November, 1987. This was done in all 30 villages. The technical assistant was present at this supervision. Another regional supervisor tested the fiches de supervision and provided further training for the rapport d'activités des ASC et AT. In January, a central supervision (20 of 30 villages) further tested the HIS and provided additional training.

Trarza

A central supervision with TA was held in March, 1988 in the villages of the central department (Rosso). During this supervision, the "RASC" were distributed and explained. Additional forms including the fiches de supervision were given to the regional supervisor for distribution in the whole region through the departmental supervisors. In June-July, 1988 another central supervision (without TA) took place in two other departments and included training in the use of RASC and RAT.

c) Results of Training

In **Trarza**, neither the departmental nor the regional supervisors are using the actual HIS data collecting forms, so their training in that field cannot be evaluated. It will probably have to be done again.

The regional supervisor proposed another "fiche de supervision" to be filled in by the departmental supervisor. It is easier to fill in (more space) and provides the same information, but does not ask the departmental supervisors to compute percentages or to compare the data from one supervision to another or from one village to another. This is easier for the supervisors, but doesn't stimulate them towards data aggregation, utilization of their own data or microplanning. Data aggregation will take more time than with the originally proposed method. Though the proposed form can be improved, this shows that while the regional supervisor has an understanding of the HIS problems, HIS has not been explained clearly enough to him.

In **Guidimaka**, where there is more supervision and where on-the-spot training has produced better results, the regional supervisor and two departmental supervisors are fully cooperating. Percentages are correctly computed and the "fiches de supervision" are understood and filled in the same way in both departments. Errors and lack of precision are the same in both departments, so are likely to be due to the contents of what has been taught and not to the quality of training. The actual data analysis and interpretation, though, still has to be tested, since the departmental data sheets from the villages were sent to Nouakchott for analysis. The regional and departmental supervisors have not been trained yet for this analysis.

3. At the Village Level

Training is primarily done on-the-spot during supervisory visits and is described above.

In Trarza, the quality of data collecting is generally poor. Some ASCs don't use forms and none fill in all the items. Definitions are understood in very different ways. Obviously, the quality of training at this level, if any, is very poor.

In Guidimaka, data collecting is generally accurate in the six villages we visited. One had problems with birth registration (the AT was illiterate and had to ask for help from a student who didn't understand the instructions well). None knew exactly how to register the nutritional status, and it was obvious that instructions had not been clear enough. Vaccination in most of the villages we saw had not been registered.

F. Computer Training of MOHSA Personnel

A computer training program for MOHSA personnel has been in place since the HIS Advisor began providing technical assistance. The following steps have been taken:

- o Identification of candidates for initial training.
- o Initial training by the HIS Advisor and another hired specialist to more than 20 persons.
- o Selection of candidates for further training.
- o Selection of candidates for training abroad. The statisticians of EPI, MCH and PRSSR received additional training in DBase III+ in Kinshasa. The Chief of the Service of Statistics went to a seminar in Dakar on the use of software in demography.

Results of the training have included the following:

- o Four statisticians are able to utilize Lotus 123, and DBase III+ in their current work. Two produced an annual report. One of them has been using DB. Computer programming has been used to assist in at least two surveys, the results of which are still unpublished. At least three statisticians received some training in word processing, but are not using it very often.
- o One secretary has been trained to do word processing, but is not using it very often.
- o One statistician is actually being trained to use the data base for the Documentation Center. He will be in charge of that division.
- o Introductory training provided to several heads of services, while not substantial enough to teach them skills to use the computer, has been useful as a demonstration and to provide an understanding of the methods used by their staffs.

G. Quality of Support to the Project Provided by the HIS Advisor

1. PRSSR

a) Training and Support at the Central Level

Through her continuous assistance and the organization of a two-week training course in Kinshasa, the HIS Advisor provided good computer training to the project's statistician. The statistician is working well and this training has been successfully completed. Through the organization of several meetings with other statisticians, indicators needed for supervising and evaluating PHC have been chosen and an understanding of HIS problems and procedures to resolve them has been developed.

A visit to a working PHC-HIS in Niger (Tulane Project) was undertaken to improve the knowledge of the Chief of Statistical Services of the DPFC and the PRSSR Central Supervisor. (The latter has since taken a teaching position at the École Nationale de Santé Publique, so the benefit of this trip is not lost to PHC in Mauritania).

The HIS Advisor participated in the national seminar on PHC, a first step toward a nationwide integration of PHC activities, and helped define the supervision problems and possible ways for solving them.

b) Implementation of the PHC - HIS

Important progress has been made in this field, but further work has to be done by the national staff. (Please see the recommendation section.) If the HIS Advisor had been allowed to continue her work until May, 1989 (as she proposed in her Action Plan) it is very likely that HIS would have been fully implemented in at least one region, providing a good start for the full implementation in both other regions by the national staff. However, after two extensions of her contract, the GIRM did not request another extension by A.I.D.

Accomplishments

- o Selection of indicators needed for supervising and evaluating PHC, following a schedule that provides an overview of information sought and the purpose in asking for it. Most indicators chosen will give correct information on the level of meeting objectives set by a program, allowing for microplanning. For some indicators, however, it is unclear how they will be measured, and no guidelines are available for that.
- o Creation of forms for collecting and aggregating data.
- o Assistance in establishing supervision procedures.
- o Start of work on writing a manual for utilization of the information by the supervisors. This project has not been completed.

- o Distribution of the forms with an on-the-spot explanation on how to use them. This has been successful in Guidimaka, where intensive central supervision has been possible, but less so in Trarza, where the larger part of this task was left to the regional supervisor, who did not have a vehicle.
- o Supervision (two rounds) and evaluation of data recording forms and procedures. Introduction of the data aggregation forms in a third round is needed to complete this activity.
- o Provision of recommendations for improving the data collecting and aggregating forms. If followed, the recommendations will improve the system. But they should be reviewed and completed after the third round of supervision in Guidimaka.

Shortcomings

- o No written guidelines on how to fill in each of the forms used.
- o No written guidelines on how to use the information for supervision, monitoring and microplanning.
- o No complete and precise training guide for each of the activities concerned.

2. National Health Information System

a) General Approach, Methods and Action Plan

In December, 1987, following a request by the Director of the DPFC, an Action Plan proposed a comprehensive approach towards the creation of a national HIS through the improvement and integration of the different information systems then in use. This Action Plan has been followed throughout 1988. It was approved by the JSI/COP and the USAID Health Office.

The Action Plan identified seven objectives:

- o Simplification and standardization of the HIS of dispensaries and MCH clinics
- o Preparation of an HIS for the PHC
- o Improvement of the utilization of information by the regions
- o An increase in the centralizing role of the DPFC in assessing needs
- o Improvement of utilization of information by the central level
- o Improvement of the hospital HIS

- o Evaluation of the effectiveness of certain services (with an operational objective to create a sentinel post for EPI diseases and other endemic diseases).

Major constraints (See Section G, which follows) did not allow for accomplishment of all of these objectives. Constraints included the withdrawal of technical assistance from ADB/CREDES; the slow reorganization of DPFC, including the absence of a Chief of Statistical Services until the second semester of 1988, and the lack of enthusiasm of his temporary replacement; the peripheral position of the HIS Advisor; and the difficulties of integration with other projects that have their own timing.

The only objectives partly realized were the PHC-HIS and the sentinels network in Nouakchott. Nevertheless, serious work has been done towards realization of a national HIS and towards the meeting of quoted objectives. We can only hope that this work will be utilized as a basis for further accomplishments.

b) Realization in Specific Fields

DPFC - Accomplishments

- o Organization of a training course in the use of computers for 21 MOHSA personnel, of whom four are using this capacity in their work.
- o Organization of meetings with the statisticians of different directions and services, trying to assist them in using a common approach to identify the information needed for their services. The aim was to choose indicators by thoroughly describing the information asked for and analyzing its utilization, feasibility, etc. The selection of indicators has not been fully accomplished by all services. PRSSR produced the list they had already, as did the national MCH Service. The other services introduced their indicators and a list was published, but the discussion on it never took place. However, regardless of the status of the production of indicators for the different services, the meetings gave the statisticians the opportunity to join efforts and exchange information on their activities. They agreed on the proposal of Mme. Dia, Chief of Services of Statistics and Documentation (of DPFC) to join all statisticians under her direction.
- o Organization of a trip to Niger to visit a working HIS (Tulane Project). Mme. Dia was present on this trip.
- o Participation at a seminar on PHC (December, 1988), a first step towards a nationwide integration of PHC activities.
- o Production of the Action Plan and statistical summary for 1988.
- o Assistance to different statisticians in surveys.
- o Preparation of a proposal for computerization of the MOHSA.

The publication of the annual report for 1985 cannot be considered as an accomplishment by the DFFC. The report is as weak as the 1984 issue, even though recommendations for improvement had been made. The JSI advisor did not supervise this activity.

MCH - Accomplishments

- o Training of the statistician in use of computers in Nouakchott and Kinshasa (UNICEF funding). He is now the best of the three most frequent users, and is able to assist his colleagues. His work in collaboration with the HIS Advisors has also helped improve the MCH -HIS.
- o Assistance in preparing the 1987 annual report (as yet unpublished)
- o Analysis of the use of various registers in the MCH units of Nouakchott.
- o Preparation of an Action Plan (including pricing) for a proposal to implement an MCH-HIS based on a family file. This is done with UNICEF and UNFPA funding and eight person/months of TA. The test is about to start, using existing fiches and a new FP fiche.
- o Preparation by the MOHSA of a "fiche de supervision pour tous les services dependants de la DHPS" to integrate supervision of all activities that take place in the MCH centers (nutrition, health education, EPI, prenatal, post natal, deliveries and diarrheal diseases control). However, neither the group of statisticians nor the HIS Advisor, although they have been working on choosing indicators for half a year, have been consulted. This seems to indicate that the target of the HIS Advisor's activities hasn't been central enough.

The MCH statistician has been motivated to work on an improved MCH monthly report, but up to now the MCH-HIS is functioning in the same way as before. Further improvements are left to be done by the UNFPA-funded project.

EPI

Please see Section VIII of this report.

Eye Diseases

The HIS Advisor participated at a seminar on eye diseases. Her contribution has led to improvements by this division in their collecting and reporting procedures.

H. Constraints/Problems

1. PHC-HIS Not Fully Implemented in Both Regions

One major reason for non-accomplishment of the full implementation of the PRSSR HIS is that the JSI HIS Advisor's contract was not extended until May, 31, as she and others had expected and upon which her last (October, 1988) Action Plan was based. Why the HIS Advisor believed so firmly that her contract would be extended is unclear. After two extensions of her contract, the GIRM did not request another extension by A.I.D.

In Trarza, there has been some misunderstanding with the regional supervisor, who did not conduct supervision within the expected time limits. Supervision sessions which were conducted were not done according to the verbal instructions he received. This may well be due to the fact that there were no written guidelines. But it also is because the HIS forms have been proposed from the central level without prior consultations at the regional (or departmental) levels. The regional supervisor was (and is) not fully in agreement with the use of the actual form proposed.

In Trarza the central supervision team and technical assistants did not visit all the villages on a supervisory tour to introduce the "fiche de supervision" data collecting system, as they did in Guidimaka. Obviously, the distribution of forms to the regional supervisor, and a half-day session of training of trainers on HIS, was not enough to effectively institute new collecting, supervising and reporting forms and procedures in place of another system which had been in place for several years.

2. Vehicles

Vehicle breakdowns and the long delays to get spare parts and repairs are also responsible for the failure to complete the supervisory visits, which are critical to PHC-HIS.

3. Initial Action Plan

The initial Action Plan was far too optimistic in its timing.

4. Tasks Under DPFC (central) Responsibility

- a) The HIS Advisor was working at the PRSSR level (according to the terms of reference) and therefore was not in a position to promote actions coming from the central DPFC level.
- b) At this level, an ADB technical assistant (five person/months over two years) was foreseen in the initial Action Plan but was withdrawn without replacement. No one has been in charge of the HIS for hospitals and clinics. It was not until the end of 1988 that a statistician was nominated at the Direction Médecine Hospitalière (DMH).

- c) **Reorganization of the Ministry:**
 - o The MOHSA was reorganized and the DPFC created in August, 1987.
 - o The head of the Service des Statistiques et de la Documentation did not come into position before mid-1988. Before that, the head of the Service de Planification was in charge of HIS, but was not able to involve himself very much in it.
 - o The Director of DPFC was absent during the last five months of 1988.
 - o The two persons who have been actually working on statistics were moved, one to a regional capital (by his request) and the other to the Division of Documentation.

5. Tasks Under MCH Responsibility

Delays have occurred because the head of the service was not available when her approval was needed to proceed. The MCH HIS is relying upon a UNICEF/UNFPA/WHO Project, which has its own scheduling and delays.

6. Tasks Under EPI Responsibility

Please see Section VIII of this report.

The HIS Advisor in EPI was in no position to have the kind of authority needed to significantly influence decisions. Her various memos and warnings mentioning the lack of progress towards a sentinel-post HIS on EPI diseases did not quickly result into orders given by the persons authorized to do so.

7. Computer Training of MOHSA Personnel

Only four of the 21 MOHSA personnel trained in the use of computers are actually using it for their work. This is mainly due to the long delay between ordering and delivering a second computer (more than a year, and it still hasn't arrived) and to the lack of computers elsewhere in the MOHSA.

I. Recommendations

1. HIS of PRSSR

- a) Continue the work started in Guidimaka until the third supervision is completed.
- b) Conduct a third supervision and evaluation (evaluate also the workload) of all villages in Guidimaka, testing the data aggregation and utilization capacities of regional and departmental supervisors.

- c) Organize a seminar on HIS (maybe jointly with other subjects), with the three regional supervisors (and perhaps chiefs of medicine).
- d) Adapt actual forms, procedures and training curricula, taking into account remarks and proposals made in this present evaluation report; changes proposed by Tonia Marek; consultations with supervisors of the three regions; and additional experience from Trarza.
- e) Prepare precise and extensive guidelines in writing for regional and departmental supervisors and for ATs and ASCs.
- f) Improve and complete training of trainers courses in health information procedures, mainly oriented towards practice providing examples and exercises for all possible situations.
- g) Adapt procedures for departmental supervisors to use their "fiche de supervision" when they have an opportunity to visit some of the villages, even if it is not a formally planned supervisory trip and has no regional supervision (e.g. call from a village for an outreach vaccination).
- h) Leave one copy of the "fiche de supervision" in the village.
- i) Adapt procedures so that CHWs and ATs of all villages of a department may have a quarterly meeting with the departmental supervision and collect drug supplies.
- j) Define the role of health post nurses.

2. HIS of EPI

Please see Section VIII of this report.

3. HIS of MCH

- a) Recommendations should follow the testing of the HIS using the "fiche familiale." Six months of TA is foreseen for that action.
- b) MOHSA should immediately prepare supervision procedures and forms and precise guidelines.
- c) Information requested should be analyzed regarding utility and feasibility (plus workload), as had been planned in January, 1988 by the TA.
- d) The completed but unpublished annual report for 1987 should be reviewed by the head of DPFC's central Service des Statistiques et de la Documentation, using some of the same guidelines she is using for preparing the 1988 annual report. These guidelines were prepared in February, 1988.

4. HIS of Central Level (DPFC)

- a) Several MOHSA personnel are currently in PHC training and may come into positions where they can strengthen the national HIS. To assure a continuity of action and prepare the work for the national personnel that will take these positions the evaluation team recommends that technical assistance be provided at the DPFC level in the form of a counselor to the head of the statistical services for one year. This is in agreement with the proposals from the Chief of the Service of Statistics and Documentation.

The counselor's functions will be to assist the head of the statistical service in the following:

- o Coordinating and integrating different HIS activities
 - o Creating and adapting the HIS using data from health facilities, including health posts and hospitals
 - o Implementing and evaluating information systems of MOHSA statisticians (PRSSR, MCH, EPI, Communicable Diseases, "médecine hospitalière," etc.)
 - o Utilizing microcomputers, and organizing training
 - o Analyzing, synthesizing and interpreting all health data available, and preparing the data for timely utilization. The counselor will help the statistical service interface between information production and utilization at the central level.
- b) The evaluation team recommends that the MOHSA proceed with an Action Plan for 1989.

VIII. Expanded Program of Immunization

A. General Observations

Annex H/Section I is a presentation of the findings of previous coverage surveys and administrative data from 1987 related to EPI activities. Given the geography of the country, which makes access difficult to many large areas, it is fair to say that EPI activities have been successful in a short amount of time. One should not underplay the importance of the successes to date. The stated national EPI goal has been increased from 60 to 80 percent of the target population by 1990. The achievements to date are admirable, given the many constraints. It should also be noted that at present, the GIRM does not have the resources to support the present EPI activities, especially the mobile teams (MTs). In the absence of external financial support, the achievements to date would not be sustained. The evaluation team feels strongly that USAID should consider continued financial support of EPI activities, perhaps through grants to other executing agencies presently contributing to EPI activities.

B. Coordination

1. Accomplishments

Coordination of activities of the EPI MTs and the PHC supervisors has been implemented in the Trarza region.

2. Observations/Problems

In Trarza, the general feeling among both the PHC and EPI staff was that once project assistance ends, the coordinated PHC supervision and EPI MT vaccination rounds would be discontinued, as they are not satisfactory for the parties involved. According to the staff, the supervisory component took much longer than the vaccination of the women and children in the villages. (It should be noted that when EPI activities return to using reusable syringes, the vaccination sessions will take longer. There will be the need for 20 minutes sterilization time and potential reesterilization time if the volume to vaccinate increases and necessitates reesterilizing during the sessions.)

Failure to use the growth monitoring charts contained on the vaccination cards also shows a lack of coordination. None of the vaccination cards observed during vaccination sessions had any growth monitoring marks on the card. Further investigation on the feasibility of including growth monitoring as part of EPI sessions revealed that growth monitoring is conducted at separate sessions on different days of the week than EPI services.¹

¹ When questioned on the feasibility of coordinating growth monitoring in one of the health facilities, the staff said their scale had been broken for some time and no growth monitoring had been done.

3. Recommendations

Consideration should be given to expanding the services provided at the time of vaccinations to include growth monitoring and nutrition counseling. This is important given the cyclical droughts and famines in the region. While it is not directly in the project's scope of work, growth monitoring--from the standpoint of PHC--is an important component to be stressed at all health sector levels.

C. **Cold Chain**

1. Accomplishments

Two full-time cold chain technicians are presently based at the central level and participate in each of the supervisory rounds. Of the two cold chain technicians, one is a MOHSA employee and the other is a United Nations Volunteer (UNV) from UNICEF. At present there are two Mauritians receiving training as cold chain technicians in Dakar. They are expected back in country in June, 1989.

Health facility (HF) staff are aware of the cold chain requirements of the vaccines. All HFs visited monitored the temperatures twice daily as recommended. Only one of the eight HFs visited had recorded temperatures above the recommended maximum during the month preceding the field visit. Only one of the refrigerators had materials other than those related to vaccinations in them and in that case it was antibiotics. Vaccine and diluent were found in the refrigerators. All refrigerators were kept locked. The MCH unit director was responsible for the key and assured us that the refrigerator was not opened unnecessarily.

During the vaccination sessions (two were observed, and in other cases the staff were interviewed), vaccine for use during the vaccination session was removed from the refrigerator at the beginning of the session and kept in a vaccine carrier. The open and active vials were kept on top of an ice pack. In one of the sessions observed, the staff did return to the refrigerator to get more vials of vaccine late in the afternoon.

Cold chain monitors (3-M) cards have been tested for use by the central and regional levels. There are plans to implement their use at the operational level beginning in May, 1989. At that time, it is planned that the 3-M cards will accompany all vaccine distributions. They will remain in the refrigerators with the vaccines and will be checked as part of the central level EPI supervision activities. It should be noted that a shipment of measles vaccine had recently arrived in-country with the A band blue. This shipment was being distributed for immediate use as per recommended instructions. Thus it appears as though the central level is well trained on the use of the 3-M cards.

2. Observations/Problems

There is still a problem with procurement of some of the required spare parts for the refrigerators, especially the gas burners. The type used in the EPI refrigerators is not available locally and the delay to replace them at times is prolonged. The evaluation team encountered one regional level freezer out of commission for six months due to the lack of the spare part.

Field visits revealed that the average time a refrigerator was out of order was approximately 10-21 days.

Another serious problem is the butane gas distribution and allocation system. Most places visited by the evaluation team commented that there were insufficient supplies of butane gas. In theory, the gas is distributed twice a year, but the quantity delivered is often insufficient and deliveries don't always arrive. Thus, in practice, refrigerators are often out of order due to a lack of gas for the refrigerator. When this occurs, staff members report they generally use a refrigerator in the community for conservation of the vaccines, although it is questionable if there is strict adherence to the temperature range when a private refrigerator is used. In the case of the EPI campaigns at the Regional Headquarters, the refrigerators are used for keeping the vaccines.

3. Recommendations

There is a need to review the present supply allocation and distribution system for the butane gas used for the cold chain refrigerators as part of EPI activities. This is an area where assistance in management (as discussed later) would be of use.

D. Logistics

1. Accomplishments

At the central level there have not been any ruptures in the stocks. The central storehouse keeps an up-to-date inventory of vaccines available. (Time did not permit a verification of the inventory.) At the regional level, inventories were less consistent. It should be noted that none of the regions visited appeared to have an overstock of vaccine. None of the vaccine vials encountered in the field were past their expiration dates.

2. Observations/Problems

Only one of the three regions visited reported ruptures in vaccine stocks during the year preceding the evaluation.

At the local level, inventories of vaccines in the HFs were theoretically kept and reported on the monthly EPI reporting form. A review of the reports revealed frequent errors in the calculations of the vaccine flows and utilization. This, combined with the system for ordering vaccines on demand rather than through a systematic monthly projection, favors the occurrence of ruptures in vaccine supply. Such ruptures may generally last only one or two days, but could have a potentially serious impact in terms of "missed opportunities."² Vaccine

² Missed opportunities refer to times when the health sector has contact with the target population but does not vaccinate eligibles. Thus, a vaccination session which lacks one or more types of vaccine is a missed opportunity. Another example occurs if a child comes for curative services and is found to be incompletely vaccinated, but is not vaccinated on that same day.

ordering is based upon the previous month's utilization and not upon the estimated population to be covered. Most of the HFs visited where fixed vaccination centers existed did not know their target population. This situation has been noted in previous evaluation reports and to date has not been corrected. While in theory there are monthly vaccine distributions to the fixed facilities that are based on prior planning, in practice the HFs have the tendency to wait until they are running low in vaccines to order. In one HF the team visited on the day of a vaccination session, there was no BCG available for vaccination and the last vial of polio vaccine was opened during the session (The team noted that the BCG was absent at the time of setting up for the vaccination session. The polio vaccine was noted to be absent when the team inspected the refrigerator).

3. Recommendations

Results of the new census should be distributed to all HFs so that they know their target population. In addition, ordering of vaccines should be based upon estimated target population. Ordering should be done with sufficient advance notice to avoid any rupture in stock during vaccination sessions. It is strongly recommended that the supervisory visits concentrate on assuring that the vaccine inventory system be maintained at the regional and operational levels. In addition, consideration should be given to adding vaccine ordering as a priority topic for inclusion in upcoming retraining sessions for EPI.

E. **Personnel**

1. Accomplishments

Personnel are well trained. All vaccinators interviewed at facilities and MTs were up to date with new vaccination schedules (such as inclusion of the polio vaccine dose at birth and the change in tetanus/typhoid (TT) vaccine target population to include all women of the childbearing age group). All the ASCs interviewed were aware of the change in vaccination schedules, supporting the observation that training is extensive and of good quality.

Most HF staff interviewed stated that they would open a new vial of vaccine for only one child rather than lose the child to follow-up. In addition, most personnel stated they would vaccinate children who were ill unless there was a high fever associated with the illness. These two points were used to test if HF staff followed recommendations that have been often observed (in many countries) to go against earlier training of paramedical staff with respect to fear of vaccine wastage and the vaccination of children with mild illnesses.

2. Observations/Problems

EPI information has not been incorporated into the basic curricula for nurses and midwives at the National School of Public Health in Nouakchott. The training in EPI techniques, schedules, recommendations, cold chain etc occurs at the time of job placement. Thus, midwives who are placed in the Maternity Hospitals do not receive updated training on EPI other than those recommendations related to the post-natal time period.

3. Recommendations

Information on EPI program norms should be included as part of the basic curricula for nurses and midwives at the National School of Public Health in Nouakchott. It was learned by the evaluation team that there are plans to incorporate the EPI norms as part of the standard National Public Health School training beginning in October, 1989. The evaluation team supports this effort and is hopeful that it will begin as scheduled. In addition, changes in norms and recommendations should be included in all retraining seminars so that all health care personnel in the public sector are up to date on EPI recommendations.

F. **Supervision**

1. Accomplishments

Overall, the evaluation team was very impressed with the strides made within the field of supervision of the EPI activities.

The EPI unit at the central level is composed of three divisions: Cold Chain and Logistics, Statistics and Documentation, and Training and Supervision. Supervisory visits are conducted by members of the central level divisions with two staff members from supervision and one cold chain technician. The country is divided into six axes for supervisory purposes, with each route programmed for coverage a minimum of three times per year. A supervisory plan/schedule is prepared by the central level on an annual basis. As of the time of this evaluation, the schedule for 1989 had been adhered to.

All HF personnel interviewed mentioned that they had received at least two supervisory visits from EPI central level during the year preceding the evaluation. Most had received three or four visits during the preceding year. In addition, most had already received one visit in 1989. When questioned about this, the central level mentioned that they use the butane gas distribution sessions as an opportunity to do additional supervision during the course of the year, taking advantage of the additional time at each service provider. The overwhelming majority of HF personnel voluntarily stated that they had no problems with EPI central level, reporting that the central level was very supportive of program activities.

The EPI supervisory visits were felt to be useful by all staff interviewed and most visits were followed up with written reports of supervisory findings. The evaluation team had the opportunity to observe a member of the central EPI team providing in-service training and supervision. We were impressed with the quality of the supervision provided.

Reports of all supervisory visits are kept in the central, regional and local levels. Reviews of the supervision reports found them to be of high quality, with descriptions of accomplishments, problems encountered, actions taken, recommendations and topics of discussion for continuing education.

In addition to on-site supervision conducted by the central level, there is also indirect supervision conducted by the central level through a review of monthly reports received from

the HFs and MTs related to EPI activities. All monthly reports from fixed facilities and the MTs are reviewed by the central level EPI, and feedback notes are sent to the reporting units.

G. Programming of Activities

1. Accomplishments

As mentioned above, supervisory visits are programmed one year in advance and are predominantly adhered to as scheduled. In addition, at the end of each year, the supervisory plan is assessed to evaluate why visits may not have occurred.

Training and retraining sessions planned by the central level EPI have been adhered to.

2. Observations/Problems

Vaccine needs are programmed one year in advance by the central level without realistic input from the local levels as to their needs. As a result, vaccine orders had to be significantly reprogrammed this year due to overestimates of needs during the first quarter. In contrast, field visits revealed that one region had a three-week rupture in vaccine supply and one of the fixed facilities had a one-day supply rupture. In both cases, the HFs waited until stocks ran out before reordering.

3. Recommendations

Consideration should be given to modifying the present vaccination ordering and supply distribution system so that vaccine stock ruptures of even one day are prevented. One suggestion is to estimate vaccine needs based on the target population to be covered, making adjustments following an analysis of the previous three months' activities and using a calculation of realistic waste factors.

In addition, EPI should concentrate on vaccine inventory procedures during upcoming retraining sessions and include these activities in the supervisory visits. HF personnel should perform inventories of vaccine stocks at the end of each vaccination session to ensure that there are sufficient supplies for the next session. The HF staff should not wait until supplies are used up to re-order from central or regional levels.

H. Information System

1. Disease Surveillance

Information on the incidence of EPI-related diseases is available through the annual report of the MOHSA Division of Statistics. The most recent report available is for 1985, which is presented in Annex H/Section II. It has been noted in previous evaluations and consultant reports that this is an area of weakness with respect to the overall health sector, and notable within EPI activities. At the level of the reporting units (the HFs), diagnostic acumen is variable, as is the availability of laboratory support for confirmation of some diagnoses. In addition, it has been noted that the utilization of the HFs in some areas is markedly reduced

during the periods when no medications are available. Thus, the validity of the existing "routine disease surveillance" information has been continually questioned.

During the year preceding the evaluation, a sentinel surveillance system was implemented in a pilot phase in nine EPI units in Nouakchott. While it was to be implemented in early 1988, supervision of activities actually began in January, 1989. On one of the sentinel EPI units visited, the staff had been reporting through the system since May, 1988. The reporting form is simple and inquires about three of the EPI target diseases (infant tetanus, polio and measles) and the age group of the case. The HF staff are trained to write the diagnosis in the register in red and count cases monthly. Given the presence of the sentinel reporting units in Nouakchott, where there is the central referral hospital and the rehabilitation center, one questions whether the inclusion of polio and infant tetanus was appropriate for the type of HF reporting. Most cases of neonatal tetanus do not come to the attention of the formal health sector, as they tend to occur in rural areas without easy access to the health sector. Consideration should be given to expanding use of the reporting form to some regional hospitals and perhaps to selected sentinel rural posts; changing the reporting of ages to require the date of birth of the child rather than the age group; and including information on the date of onset of the illness.

It was of interest to the evaluation team that only the sentinel reporting unit, where there were curative registers, had a column for vaccination status of the child. When HF staff were questioned as to the use of the information, they responded that children found to be incompletely vaccinated were given an appointment to return for the vaccination session. But the HF in question conducted vaccination sessions five of the six operational days, so it would seem more practical for the children to be brought immediately into the vaccination session from the consultation room.

2. Vaccinations Given/Coverage

Routine administrative data on vaccinations is received by the central level through monthly reports. Data from the field are sent by the MTs, EPI units and other fixed vaccination facilities to the Chief Medical Officer of the region and to the central level. None of the regions visited collated or analyzed their regional data to permit an assessment of coverage achieved. All data arriving at the central level was disaggregated by HFs and MTs.

The annual report of EPI activities for 1987 is still in draft format awaiting finalization and reproduction. A review of the report reveals the use of incorrect denominators for calculations of the coverage rates. The rates are calculated correcting for those children in the recommended age (thus, for Polio1/DTC1, the denominator used is those children over 45 days of age). As one year's EPI activities are being monitored, there are one year's children less than one year old who were eligible to receive the first dose of Polio/DTC. An additional note is that the presentation of coverage of children greater than one year of age is misleading as it does not account for those children vaccinated before their first birthday. The most appropriate use of the age at vaccination data is to monitor the proportion of the vaccinations given to the population less than one year of age as an indicator of the success of the program (success being defined as vaccinating the less than one year old population rather than older

groups). It is the evaluation team's opinion that the statistical unit of EPI would benefit highly from technical assistance in the analyses of the monthly data.

The EPI unit does not presently have a computer. As part of the project, there were two computers provided. One was kept in the project office, and the EPI computer was kept in the EPI technical assistant's residence. After departure of the EPI TA, the computer was in EPI for a while, but when the project computer broke down, the HIS Specialist TA recommended that the EPI computer be moved to the project office. This computer is being used by many different MOHSA staff. Thus, the EPI staff have a limited time to work on the computer.

As the EPI statistician has been trained in computers (he attended a course in Zaire and is conversant in dBase III+, Lotus 123, SPSSPC+) it would seem prudent to ensure that there is a computer available to the central level EPI. Given the fragile nature of the computers which were previously supplied, consideration should be given to the provision of a laptop computer which comes equipped with long-life batteries (in the event of power failures) and does not have to rely upon step-down transformers which take the brunt of power surges.

3. Special Surveys

Baseline surveys on disease incidence as mentioned in the Project Paper and Project Identification Paper were never conducted in Assaba.³ In the absence of such surveys, it will be difficult to draw any conclusions on the impact of the project on the health status of the population.

During the course of the field visits, the team learned that a recent knowledge, attitude and practice (KAP) survey was conducted in Assaba as part of the World Vision International (WVI) project assistance. Results of this survey will potentially be useful as baseline data for impact of PHC program in the region.

Vaccination coverage surveys have been performed periodically since the early 1980s, as shown in Annex H/Section III. The most recent nationwide surveys in April, 1989 are disaggregated by region, with USAID/UNICEF financing and outside TA provided by OCCGE.⁴ Preliminary results of these surveys were available to this evaluation team the day before departure and are presented in Annex H/Section IV.

³ The reason they were not conducted was not clear to the evaluation team.

⁴ The coincidence of this team's evaluation with the vaccination coverage evaluation was unfortunate. The central level EPI unit was heavily involved in the surveys as was the UNICEF EPI Officer. Because of the conflicting demands on personnel, the methodology for this evaluation had to be modified.

4. Accomplishments

Strides have been made within the EPI program regarding preparation and dissemination of information. Regular information on monthly vaccination activities is received from the HFs and MTs. The evaluation team was impressed by the fact that all personnel interviewed in the EPI/HIS chain (central, regional, departmental and local operational HFs) had records of previous months' reports up to the present month.

5. Observations/Problems

The main problem observed is the delay in analysis of central level data and the absence of data analysis at the regional level. While field personnel praised the EPI Unit in terms of feedback provided following supervisory visits, the absence of feedback with interpretations of target-related performance of the service providers is a gap.

Vaccinating units (HFs and MTs) are not aware of the coverage in their area of influence. This information is an important part of feedback to health care personnel on performance and also for planning of activities.

6. Recommendations

The central level Statistical and Documentation Unit would greatly benefit from availability of a computer for data analysis within EPI and from technical assistance to develop a data analysis plan to help prepare reports on activities in a timely fashion. In addition, consideration should be given to training regional level personnel in analysis and interpretation of regional EPI data.

I. **Health Education**

1. Accomplishments

It should be noted that all HFs visited had posters related to EPI and diarrheal diseases clearly visible. However, the EPI posters were outdated in terms of recommended ages for receipt of the vaccines and most were noted to have been amended by hand by the HF personnel.

2. Observations/Problems

During the two vaccination sessions observed by the evaluation team, there was minimal health education provided to mothers by the vaccination teams. The evaluation team arrived for both sessions after vaccination activities had begun and therefore may have missed an earlier group lecture. Exit interviews of mothers revealed deficiencies in their knowledge about the vaccines and in some cases on the need to return for additional doses. The relatively high drop-out rates may in part relate to this deficiency.

In contrast, at the village level all ASCs and ATs interviewed were up-to-date in their knowledge of the vaccination recommendations. They said they participated in EPI activities in

their village through promotion of vaccinations prior to the arrival of the MTs. In some cases, they accompanied the mothers to vaccination sites immediately following delivery to insure BCG and polio vaccination at birth (this was seen in areas where the access to EPI was feasible).

3. Recommendations

Consideration should be given to the inclusion of health education as part of the retraining exercises of the HF and MT staffs. The central level EPI Unit should consider production of new educational material directed at the illiterate and semi-literate population for use in health education sessions to precede vaccination sessions.

J. Future Evaluation

1. Accomplishments

All prior recommended evaluations of EPI activities have been conducted during the course of the USAID assistance. The evaluation team had available for review documents of evaluations conducted in 1983, 1985 and 1986.

2. Observations/Problems

As mentioned above, at the time of the evaluation team's visit, there was an ongoing nationwide evaluation of vaccination coverage (disaggregated by region) with the financial assistance of USAID and UNICEF (50 percent each) and TA from OCCGE.

3. Recommendations

Periodic (either annual or every other year) evaluations of the EPI activities should be continued. Given the recognized limitations in the routine data collection and analyses, the team recommends that periodic coverage surveys be conducted to monitor successes. In future evaluations, care should be taken to coordinate activities with all interested parties, including both national and international assistance.

K. Vaccination Strategies

1. Fixed

Since the beginning of the present RHS Project activities in late 1984, tremendous strides have been made to strengthen EPI services through the use of fixed facilities. Project objectives to have vaccination services available in all EPI units (32) have been surpassed. At the time of this evaluation, there are 64 HFs in the country providing fixed vaccination activities with an additional five scheduled to begin services during 1989. These 69 HFs include all EPI units in departmental capitals, some PMRs (rural based EPI units) and some dispensaries. Discussions with both UNICEF and national level personnel revealed that a smooth rate of introduction of EPI activities into fixed facilities would be approximately four or five facilities each year. (This takes into account the ordering of cold chain equipment, distribution, training of personnel and development of a supply logistic system.)

Preliminary results from the 1989 national coverage surveys showed that 32 percent of children 12-23 months of age residing in areas covered by fixed facilities were completely covered with the recommended series.⁵ While there is an emphasis on the transition to a fixed facility-based EPI, a plan of action for phasing in vaccination activities at all fixed facilities had not yet been prepared at the time of the evaluation.

The preliminary EPI 1987 Annual Report shows that approximately 55 percent of vaccinations were performed by the fixed facilities during 1987. The majority of vaccinations given by the fixed facilities are administered to children less than one year of age, suggesting that there has been a good incorporation of vaccination activities in the communities surrounding HFs. Preliminary results from the surveys conducted at the time of this evaluation also support the observation of the improved efficiency of the fixed facilities.

2. Fixed/Outreach

There are plans for fixed facilities providing vaccination services to also conduct outreach activities in nearby communities. The present recommendation is to cover those villages within a 10-15 km radius of the HF. At the time of this evaluation, approximately 12 HFs in the country had a means of transport for conducting the outreach activities (through UNICEF assistance) and were actively conducting outreach activities on a weekly basis. As the system was described to the evaluation team, one day per week is dedicated to outreach activities, with each village designated to receive a minimum of four visits per year.

Discussions with EPI staff during the course of the field visits revealed problems with conducting the outreach activities. In theory, all the EPI units visited were supposed to be conducting the activities but in practice transportation was a major constraint. In some areas, the Chief Medical Officer loaned his vehicle to the EPI to conduct the activities. In other areas lack of transportation or gasoline were cited as a constraint. In two instances the team was told that the villages identified for the outreach activities provided transport for the vaccination team on the scheduled day. Other HF personnel stated that the villages did not have the means to provide transportation.

3. Mobile

In the early 1980s it was decided that the Médecins sans frontières (MSF) approach of mobile health services to the peripheral areas would be an appropriate strategy for the provision of vaccination services. The MSF teams in Nema had demonstrated that it was feasible to provide EPI to dispersed rural areas. At the beginning of the RHS Project, the existing MTs were not efficient in their delivery of vaccination services primarily through the use of radial vaccination routes.⁶

⁵ This reflects vaccination activities in 1988.

⁶ Radial routes have the MT returning to the departmental capital each night to sleep and exchange ice packs necessary for conservation of the cold chain.

In response to an earlier evaluation, it was recommended that the MT routes (tournées) be changed to a "loop pattern"⁷, allowing for more uninterrupted field time, reduced gasoline needs and increased efficiency to each circuit. In addition to the change in routing, operational research on the use of mobile refrigerators in the MT vehicles was recommended.

As a result of this, the MT circuits were restructured, abiding by the recommended "loop patterns" so that 10-14 days were spent in the field going from one village to another. In addition, three of the MTs were equipped with refrigerators in the vehicles. This latter trial was considered to be a failure due to frequent breakdowns of the refrigerator. This led to the recommendation to use the 10-14 day cold box as more appropriate technology, given the terrain in the field in Mauritania.

While the MTs are scheduled to complete a minimum of three passages through each circuit, in practice this does not occur. The primary reason this strategy has been compromised is due to frequent breakdowns of the MT land rover vehicles. The project provided 13 land rovers for use in the MT activities. Most of these were purchased in 1984-85. Three additional land rovers were purchased in 1987, making a total of 16 4-WD vehicles. Attempts at the development of a routine maintenance system for the vehicles were not successful. In addition, the chain of command to effect maintenance on the vehicles requires notifying the DHPS first, which in turn notifies the PRSSR, which in turn authorizes the MT in the region to obtain the three estimates required by USAID before one is selected and approved. The above description is a simplification of a very complex procedure that has effectively paralyzed many of the MTs. Some vehicles remain in disrepair for 6-12 months.

In addition to the problems mentioned above, for the past three months USAID/U.S. Embassy and the GIRM have been in dispute regarding the discontinuation of tax exoneration for project purchased gasoline. The result has been paralysis in disbursement of funds for purchase of gasoline for the project vehicles. According to USAID, this problem is not unique to the project--all donor agencies are experiencing the same problem. The net impact is that MT activities in the field have been virtually paralyzed since July, 1988. Some limited activities were conducted in January and February, 1989 in areas that had not used their gasoline coupons during the preceding year due to non-functional vehicles.

Preliminary results of the nationwide coverage surveys revealed 11 percent of children 12-23 months of age living in areas covered by MTs were fully vaccinated. This is in contrast to the 32 percent coverage seen in areas covered by fixed facilities. This supports the observation that the fixed facilities are more efficient in their coverage of the target population. The recommended strategy therefore is fixed sites.

⁷ In the "loop pattern," the MT leaves the department for a predetermined 10-14 day circuit, sleeping in the field throughout the circuit and carrying sufficient vaccine and cold chain supplies for the planned trip.

4. Municipal Vaccination Days

In response to a recognized deficiency of the population's knowledge of vaccination activities, a series of three municipal based National Vaccination Day (NVD) campaigns were conducted in 1985-86. Coverage surveys following the NVDs presented in Annex H/Section V show that the NVDs contributed significantly to overall coverage. Complete coverage in the nine affected municipal areas increased from below 20 percent⁸ to 55.6 percent.⁹ ¹⁰

Because of the documented success, it was decided to continue the support for three annual NVDs in municipal areas (seeking political support at the local level). At the time of the evaluation, data were not available to assess the impact of the continued NVDs, as had been done in 1986.

5. Accomplishments

The conclusion of the evaluation team and its Mauritanian counterparts is that there have been many successes with respect to EPI activities. Fixed vaccination posts have been implemented and reinforced smoothly. Personnel are well trained and well supervised. In a short period of time, the fixed facilities have become the major providers of vaccination services.

The midterm evaluation noted a deficiency in EPI attention to broader TT vaccination of women. In response to this, greater emphasis was placed on these vaccinations. Recommendations were changed to include vaccination of all women of childbearing age (in contrast with the earlier recommendation to vaccinate pregnant women). Preliminary results of the coverage survey revealed 17 percent of women of childbearing age have received two doses

⁸ Complete coverage here refers to a child who has received the full recommended vaccination schedule of one dose of BCG, three doses each of DTP and Polio vaccines, and one dose of measles vaccine. Recent (1988) changes to the vaccination schedule have added an additional dose of polio vaccine at birth and have changed the age at first dose of the DPT/polio series from three months to 45 days of age.

⁹ A preliminary revision of earlier documents discussing the success of the NVDs presents the findings of the complete coverage of 55.6 percent as national data. Discussions with the EPI central level director revealed that in fact the surveys were only conducted in the municipal areas where the NVDs were held and therefore the results apply to those areas only and not nationwide, as could be implied from earlier documents.

¹⁰ Prior to the 1989 vaccination coverage surveys, all surveys conducted accepted a mother's verbal history of vaccination. In contrast, the 1989 surveys used documented histories of vaccination (the information taken from the mother and child's vaccination cards and, in the case of BCG, from presence of the BCG scar).

of TT, and 21 percent of mothers of children 12-23 months of age have received two doses of TT. This represents a marked increase from an estimated three percent coverage of pregnant women in 1986.

Another major accomplishment during the RHS Project was the change in MT strategy to a "loop pattern" from the more costly previous "radial pattern."

6. Observations/Problems

To date, there has been no preparation of a global plan for the transition from the mobile strategy to a mixed fixed facility with outreach strategy. The evaluation team deliberated at great length over this issue and had lengthy discussions with the national counterparts on the evaluation team, the EPI Unit, and other international assistance teams. The consensus is that while the mobile strategy is costly (although a cost efficiency study has not been performed), one cannot categorically recommend that the MTs be disbanded, given the significant logistic constraints in the country with respect to the supporting of the rural health posts.

7. Recommendations

There is the need for operational research on the logistic systems necessary to implement vaccination services at all levels of the formal MOHSA structure. This refers specifically to the introduction of vaccination services at the rural health post level. Given the serious logistic constraints of vaccine and butane gas delivery in the field, consideration should be given to the use of the ten-day cold boxes in remote areas, with delivery of cold boxes and vaccines to these HFs three or four times per year. If the present MTs were used to deliver these cold boxes and supplies (and provide supervision), they would have fewer places to visit during a tournée (rather than the 30 or more village stops they now often have). Combined with this change could be the use of an outreach strategy from the HFs during the ten days vaccine is available. Necessary equipment includes the cold boxes, vaccine carriers, sufficient supplies of ice packs, needles, syringes, cotton, alcohol etc. In theory, this type of system for some of the rural areas would be less costly than the present mobile strategy in use.

After extensive discussions with national counterparts, the team agrees that if operations research studies on the logistics of such a system were to be conducted, it would be more appropriate to select a region that has already been identified as problematic with respect to access (such as Guidimaka) rather than the traditional selection of Trarza, where access is not a significant obstacle.

L. Vaccination Recommendations/Norms and Techniques

1. Accomplishments

The evaluation team was impressed by the inclusion of up-to-date vaccination recommendations in the routine activities at all levels. All internationally-accepted recommendations for vaccination schedules have been implemented. The team was also impressed that the new norms were known by the community-level staff (ASCs and ATs).

Health care personnel were questioned on their willingness to open a new vial of vaccine for one remaining child and their willingness to vaccinate an ill child. All but one of the staff members that were interviewed responded to these questions correctly, a sign that changes in policies have been accepted at the operational level. At both of the two vaccination sessions observed, new vials were opened at the end of the sessions and sick children were vaccinated.¹¹

All personnel directly working in EPI service delivery were aware of the recommendation that one sterile needle and one sterile syringe be used for each dose of injectable vaccine administered.¹²

Vaccination sessions were observed and techniques of vaccination were noted to be satisfactory. In one of the sessions observed, a health worker specializing in the BCG vaccination correctly injected the vaccine intradermally. Other evidence of appropriate technique is the observation that a higher percentage of children have a detectable BCG scar than have a documented history of vaccination (preliminary results of 1989 coverage surveys).

2. Observations/Problems

While recommendations during earlier evaluations highlighted the need for an up-to-date EPI operational manual, at the time of the evaluation there was none available for review by the evaluation team. We learned that the preparation of an EPI operational manual was in the 1989 plan of action for EPI.

3. Recommendations

The evaluation team supports the planned preparation of the EPI operational manual and encourages the central level EPI unit to complete it during this year.

M. **Budget**

The EPI consultant did not review the budgetary aspects of support to EPI activities (See Section IX on Health Economy).

¹¹ The vaccination of sick children was directly observed. There were children at both sessions with ARIs and conjunctivitis.

¹² In previous years it was considered acceptable to use a multidose syringe for more than one dose of vaccine between sterilization, due to shortages of syringes and sterilizers. With the appearance of HIV transmission worldwide, strict adherence is required to the recommendation of one-needle/ one-syringe per dose of injectable vaccine.

N. Technical Assistance

1. Prior Recommendations

Following the midterm evaluation of the RHS Project, it was felt that three technical assistance team members would be appropriate for the second half of the project. The three personnel selected were for EPI (continuation); operations research (added to address sustainability of project activities following the EOP); and HIS (to help develop an information system for the PHC component so that information on the activities performed by the ASCs and disease occurrence in the project villages would be collected and analyzed at the departmental, regional and central levels).

2. Accomplishments

The EPI TA specialists provided by JSI during the course of the RHS Project were well received by their counterparts and contributed significantly to the improvement of EPI activities in the country. The evaluation team was impressed with the significant progress made in EPI activities during the course of the project. In addition, the EPI TA was thorough in its documentation of activities as they occurred, allowing for efficient subsequent progress assessment through a review of TA reports to the MOHSA and USAID.

3. Observations/Problems

It is unfortunate that this TA was discontinued in 1987. There was still a need for external TA. Conflicting stories were heard by the evaluation team with respect to the discontinuation of the TA. On one hand, the team was told that USAID offered to continue the assistance but the MOHSA felt there was sufficient TA in country to cover needs and that given the tremendous successes demonstrated in the EPI component of the project, short-term TA would be better. In contrast, counterparts and other external agencies said departure of the external TA in EPI was premature and precipitous.

Regardless of the actual sequence of events leading up to the departure of the EPI TA, the evaluation teams feels that it was an error to have discontinued the TA. Some of the momentum gained during the course of the TA has slowed down since departure. Specific areas of attention that would have benefited greatly through continued external TA include operations research studies on strategies, central level data processing with respect to the EPI statistics, the logistics system for vaccine planning at the local and regional levels, and problems related to maintenance and repair of MT vehicles.

In addition, the work of the evaluation team was somewhat more difficult due to the discontinuation of TA to both the EPI and PRSSR project components. Following the departure of the EPI TA in January, 1987, no activities reports related to the EPI component or the MOHSA level were prepared, with the exception of the supervisory report. There have not been further documents summarizing ongoing EPI activities, problems, constraints, recommendations etc.

Prior to the midterm evaluation, the project TA team and its national counterparts conducted an internal evaluation that was presented to the midterm evaluation team upon its arrival along with a very detailed "paper trail" of project activities. Unfortunately the final evaluation team did not benefit from this. In addition, the presence of in-country, project-related TA might have avoided the coincidence of having the EPI coverage evaluation going on at the same time as this evaluation. The results of the coverage evaluation are critical to evaluating the impact of project assistance to the EPI in the country. But the evaluation team was not able to benefit from this information.

It is also unfortunate that the existing TA in management has not been available to assist the EPI (and the PHC) components of the project assistance in the field. There are several logistic/management problems within the functioning of the programs that would benefit from his assistance.

4. Recommendations

Consideration should be given to the provision of TA to the project during its remaining months. There are several identified areas for assistance that would benefit greatly from in-country TA.

In addition, the evaluation team feels strongly that the remaining three months of the management TA should be devoted to addressing management issues related to the project assistance. In this way, they could help recuperate some of the time that has been lost through the redirection of the project activities due to the change in the TA scopes of work.

IX. Health Economy

A. Analysis of the Project's Total Cost

The total cost of the RHS Project breaks down as follows (in US \$ thousands):

Investment

Technical assistance	\$2,095
Training	250
Studies	60
Equipment	<u>1,025</u>
Total Investment	\$3,430

Operations

Vehicle maintenance and fuel	260
Total PRSSR local budget	<u>1,310</u>
Total Operations	1,570

Combined Total:

Investment & Operations	\$5,000
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The cost of technical assistance amounts to slightly less than half of the total amount (41.9 percent). Excluding technical assistance, the estimated cost in foreign currency is close to 20 percent (about \$1 million) of the total project cost. This covers primarily purchase of vehicles and spare parts (20 percent of the vehicle price), EPI equipment, drugs and kits for CHWs.

EPI equipment	144,307 UM
Vehicles	476,180 UM
Drugs and CHW kits	41,538 UM

The local PRSSR budget over the entire life of the project amounts to about a third of the whole budget. The local budget consists of outlays for the three PHC regions, EPI and the project's headquarters:

Project headquarters	34,580,232 UM
Trarza	6,917,445 UM
Guidimaka	4,531,029 UM
Assaba	798,810 UM
Central EPI & other regions	18,068,233 UM

The amount for the project headquarters is rather high since it includes both personnel and maintenance outlays.

For each region, expenses can be divided between training, supervision and EPI:

Trarza

Training	4,683,038 UM
Supervision	566,874 UM
EPI	1,411,294 UM

Guidimaka

Training	2,818,517 UM
Supervision	966,040 UM
EPI	728,472 UM

Assaba

Training	360,980 UM
Supervision	40,400 UM
EPI	156,897 UM

Training is the biggest cost item in the regions (between 60 and 70 percent). Supervision costs are lower because some supervisory activities could not take place due to the lack of vehicles in working condition (in Trarza for example). The major items in the local budgets include:

Maintenance (vehicle and cold chain equipment)	19,608,381 UM
Supplies and equipment	12,532,026 UM
Improvements	4,391,185 UM
Transportation and transit expenses	674,580 UM
Personnel	15,259,208 UM
Training	8,596,326 UM
Missions and trips	2,799,922 UM
Financial expenses and contingencies	<u>759,882 UM</u>
Total	64,621,510 UM

(All data for the local budget are for the budget period beginning 12/12/1988.)

The largest item (vehicle and cold chain equipment maintenance) deals essentially with EPI-related expenses; then comes personnel expenses, followed by supplies. For these broad categories, the increases during the life of the project have been as follows:

- o Maintenance costs have multiplied by seven, which reflects the difficulties encountered in this country with regard to accessibility--some regions are still very difficult to reach and the trip is rough on the vehicles.

- o Supplies and personnel have each multiplied by three, which can be explained by the fact that, as the project progressed, new areas received PHC coverage. However, the personnel cost increase might appear high if one considers that some personnel involved in project-related activities are paid by GIRM and are not included in the figures above.

1. Financing Sources for Major Project Items (1984-1988)

<u>Expenses</u>	<u>Mauritanian Participation</u>	<u>USAID</u>
Headquarters rental and supplies	11,152,000 UM	16,923,211 UM
Personnel	58,619,000 UM	15,259,208 UM
Maintenance	-	19,608,381 UM
Transportation/transit outlays	-	674,580 UM
Training	-	8,596,326 UM
Missions and trips	-	2,799,922 UM
Financial expenses and contingencies	- _____	<u>759,882 UM</u>
TOTAL	54,097,000 UM	64,621,510 UM

B. Cost-Effectiveness of Trained Workers

Data on the number of patients treated by workers or referred to health facilities are not available. As far as training is concerned, the estimated cost of training a worker is 27,640 UM (\$360). The evaluation team established that workers were well trained, even when the village was remote or the worker was newly-trained at the last training session.

C. Areas Where Costs Could be Reduced

1. Supervision

Although it would be difficult to recommend a supervision system that could be as efficient yet cost less, it is clear that the present system is vulnerable, particularly in activities which suffer because of fuel shortages or the slow repair of vehicles. Such logistical problems are often costly. Several modifications to the present system are possible, but it is necessary to assure that such modifications are feasible. The following factors must be considered:

a) Integration of Various Activities

To date, the attempt to integrate the supervisory activities with the EPI mobile teams has not been successful for two reasons:

- o Its implementation was tried while there was already a system in place with its own objectives (the mobile teams) and therefore the programming of its activities was well established.
- o Some technical aspects made this integration difficult. For example, the use of single-use disposable syringes greatly reduces the time spent in villages immunizing the children, compared to the amount of time required to supervise CHW and CHC activities.

However, this integration is essential to reduce costs and should be reexamined in light of new development factors such as the decentralization plan being studied by the MOHSA. Under this plan, health regions would have a regional director who would lead a team, the members of which would have well-defined tasks planned within the framework of the coordination of PHC activities.

Furthermore, the DHPS is becoming a reference framework where all of the various services which comprise PHC can see themselves as integral parts of a PHC policy rather than separate, autonomous units. Also, the likely development of a "mixed" strategy for immunization (fixed post and advanced immunization activities)--which is intended to reduce activities currently performed by the MTs--offers an opportunity to redefine the tasks of these teams and add on supervision and other PHC activities.

b) Decrease Central Level Supervision

One way to reduce supervision costs through decentralization would be the development of a system of limited central supervision. CHWs would be supervised regionally or departmentally at the same times when they came in for medicine supplies. The feasibility of this suggestion is presently being studied as part of the Bamako Initiative.

2. Drugs

It is clear that in the area of drugs, cost savings can be achieved without affecting the general efficiency of the project. Drugs are purchased from pharmacies or private warehouse at too high a cost and in forms or packaging which are not adapted to needs. The suggestions contained in the Bamako Initiative are aimed at reducing costs by recommending that drugs be purchased at UNIPAC prices and provided through regional warehouses (NKC transportation to the regions by way of Pharmapro).

Some savings could already be made by changing the drugs contained in CHW kits (especially by avoiding drugs in the form of syrups which are always more expensive). The National PHC Commission has just established a list of essential drugs for the CHWs. The list received final approval in mid-March, 1989.

D. Recommendations for Future Financing of PHC Activities

The RHS Project has trained 311 workers, including 298 who are now operational. The project covers 170 villages. This represents a major achievement which must not disappear. The areas to be particularly supported are training (mostly retraining from now on) and supervision, which is indispensable to ensure the sustainability of the project at its current level.

1. Persons to Involve

The general population is already involved in the financing of activities to the extent that people pay for medicine. Rarely do they remunerate ASCs or ATs. The ATs' situation is better, since they often receive donations and sometimes charge a fee for child delivery (200 UM for example). Generally, almost all of the resources mobilized by the people are to pay for medicine. A lower cost for drugs could allow a reallocation of resources, in particular to the benefit of the workers who would receive a more rewarding income.

As far as local communities are concerned, especially communes which are regional or departmental capital cities, it is still too early to assess their ability to generate resources to support PHC activities. For the moment, the project includes only one case of such participation--the commune of Rosso took the responsibility for paying CHWs in six villages. It is not possible to say if this assistance will continue.

As far as the rural communes, they are much too new to allow for an assessment of their financing capacities, but it is likely that their budget is too small to allocate resources to PHCs.

As for the regions, they no longer have funds of their own. Presently, they have only operating funds allocated by the Ministry of the Interior. With decentralization, they will probably have at their disposal resources that they will manage themselves. Regional officials in the three project regions have expressed their commitment to the project and their interest in the PHC policy. It is still too early to assess the extent to which they could participate in financing PHC activities in their regions.

NGOs are involved in the Assaba region. Word Vision International (WVI), which already participates in some PHC components (nutrition and immunization), could possibly expand its role in PHC activities in the departments that it covers.

2. Recommendations

The RHS Project constitutes an important experience in the area of PHC. Tools have been forged, logistics implemented and many CHWs trained and CHCs formed. Many villages are covered by the project, and their involvement in PHC makes a difference in the regions. What has been achieved so far by the project has to be consolidated to guarantee that these activities continue.

Priority areas to be supported include training, supervision, regional PHC commissions (See Section E), and essential drugs (See Sections C and F).

E. Decentralization of Resource Management in Rosso

In Rosso, the PHC program within PRSSR took over the Trarza project which had begun in 1980. Based on its long experience, the region was selected to field test the decentralized management of resources. For this reason, it was decided as early as the last quarter of 1987 that a share of the project's financial resources would be directly allocated to the region and managed from Rosso.

1. Activity Planning

At the central level, an activity schedule was established. It was presented to the region which itself plans these activities in the framework of the Regional Commission of PHC.

a) Role of the Regional PHC Commission

It is within this commission that the final version of the regional activity schedule is developed. The commission is responsible for:

- o Assessing results for the previous year
- o Evaluating the achievement of scheduled objectives
- o Proposing solutions to the various problems encountered
- o Planning activities for the following year.

The commission meets twice a year. It consists of the chief medical officer, the regional supervisor, the chief of the mobile team, the delegate for diarrheal diseases and the official in charge of MCH, one or two representatives of the project at the central level, and representatives of the Ministry's central services (DHPS and DPFC). During the last two years, the USAID Mission HDO attended the Regional PHC Commission meetings in the field. Each service makes a presentation about what is scheduled and what has been achieved. Activities are scheduled for a six month period.

There is also a Regional Technical Commission which is composed solely of regional officials (chief medical officer, regional supervisor, departmental supervisors, officials in charge of MCH, EPI and diarrheal diseases) who are responsible for solving problems encountered during supervisions and also to suggest activities to be implemented. It works from documents and supervision reports and meets twice a year.

b) Budgeting

Once the scheduling of activities has been decided, the chief medical officer and the regional supervisor develop a quarterly budget for PHC activities in the region. This provisional budget is sent through the chain of command to the DHPS, which forwards it to the Project Director for approval. When the budget is approved, a quarterly

advance is made. The various receipts to justify how the money was spent are to be sent to project headquarters.

2. Management of the Advance

This advance allows the region to implement its own activities or to contribute its share into scheduled activities at the central level.

a) **Expenses Covered by Central Resources**

This process of decentralized resource management at Rosso only became effective in mid-May, 1988. The advance for the first quarter of 1988 was not released until May, 1988. For 1988, expenses for the Trarza region covered by the central level for training, supervision, EPI and the Regional Commission were as follows:

Training	769,400 UM
Supervision	53,750 UM
EPI	876,103 UM
<u>Regional Commission</u>	<u>36,000 UM</u>
Total	1,735,253 UM

The advance received by the region was 633,000 UM, making it possible to retrain 18 trainers; hold a regional supervision (11 villages supervised in Keur Macene, 40 for the R'Kiz Department); retrain 90 CHWs; and hold a meeting of the Regional PHC Commission.

If the amount allocated to EPI is excluded, an estimated 42.4 percent went for regional expenses which were covered by the advance anaged at the regional level for 1988.

3. Perception of the System for Resource Decentralization

The regional supervisor believes the advances used for scheduled activities allow for more management flexibility at the regional level. It allows resources to be adapted to the planned activities at the appropriate time.

Personnel at the central office made the following points:

- o It is more rational to use on-the-spot materials and available human resources. This system must favor the integration of the activities.
- o When activities are conducted away from the center, generally several persons travel to the region. In a decentralized system, in most cases, a single trainer or supervisor is sent to join the regional team which results in savings in per diem and transportation.
- o Previously, the need to plan all missions to the region from headquarters was a time-consuming burden for headquarters personnel, whereas the regional team is in a better position to organize these tours.

3. Problems/Constraints

The decentralization of resources initiated in the last quarter of 1987 became effective only in 1988, and even then with much delay. It was only in May, 1988 that the first advance was received and there has been no other since then. Activities initially scheduled for a particular quarter occurred in fact over a semester. Two factors can account for this situation:

- o Since the first advance had been released very late (almost in the middle of the year), many activities scheduled for the first quarter could not take place.
- o Shortage of fuel during this period led to postponement of several activities.

Since the next quarterly advance can only be obtained upon presentation of receipts to justify the spending of the previous one, there are further delays. These problems should not be attributed to the decentralized management. They result from delays inherent in USAID's financial system.

4. Recommendations

The decentralized management of resources tested at Rosso should be expanded. It is in line with the principle of integration recommended during the midterm evaluation of the project, as well as with the decentralization which is presently a priority at the MOHSA. The region is endowed with a Regional PHC Commission which forms a framework well adapted to activity planning and which allows for a joint effort at the central and regional levels. Presently, an important review is under way within the National PHC Commission. In this context, it is recommended that there be a representative of the National PHC Commission within the Regional PHC Commission.

The management tools upon which activities planning can be based exist in part. It is necessary to go forward with implementation of information supports (supervision checklists of the various levels) until management tools defined in the Bamako Initiative become operational.

F. Drugs and Cost Survey

The evaluation team visited 12 villages in the Trarza and Guidimaka regions and was able to observe the cost recovery system in operation. This observation cannot be interpreted to reflect the situation as a whole.

The evaluation team noted a wide diversity in the methods used to replenish the CHW drug kits and the great difficulty in regularly replenishing the kits because of high prices charged by the private pharmacies where the drugs are purchased. The various systems observed included:

- o Payment for drugs

This practice is quite frequent. As an indication, the price paid by the patient ranges from 2 to 5 UM for a tablet; 10 UM for a spoonful of syrup. However

these prices are not high enough to cover the cost of replenishing the kits (very often the cost of a tablet is 6 to 8 UM).

- o Payment for treatment performed

This system was rarely encountered in the villages visited. The rates observed were 20 to 30 UM for three days of treatment.

- o Payment of a premium

This system was often used jointly with payment for drugs. Sometimes, it is a person in the village who finances the purchase of drugs.

- o Combination of two systems

Examples can be the combination of charging for a treatment and payment of a premium. Often the premium comes from a production cooperative or a village fund. It is sometimes paid in kind; in such a case it is used to remunerate the CHW.

1. Management Ability of CHCs

Generally the entry-exit books for the medicine kit are well-kept. In some cases a recovery system initially adopted was later reconsidered and replaced by another one. This indicates some research on the part of some committees in order to improve their system for replenishment of the kits.

On the other hand, there is sometimes no organized system to resupply the kit on time. In such cases, a fee is then requested from clients. Therefore, the wide diversity in the cost recovery systems for the drugs reflects the diversity of the country's social structures. From the start of the project, the choice had also been made to let the people decide on the kit replenishing systems, and not to impose a preestablished scheme.

2. Recommendations

The cost recovery system for drugs varies greatly as has been noted. However, the principle of participation by the people to replenish the drug kit seems well accepted. The PRSSR staff is able to observe the different means of replenishing drug kits during their supervisory visits and are therefore a valuable source of information when planning a cost recovery system.

On the one hand, it would be worthwhile to study the various techniques used for the cost recovery of drugs in order to identify systems which allow for better management, while taking into account village practices and traditions. On the other hand, supplying the CHWs' kits with essential drugs on the basis of the Bamako Initiative would be a way to truly test the villagers' ability to recover drug costs and to generate profits.

G. Recommendations for the Future Financing of PHC Activities in the Three Regions

To ensure the sustainability of PHC activities in the three regions covered by the project, financial assistance should be granted to support, among other things, the transition to the implementation of the Bamako Initiative. Indeed, the schedule developed for this implementation indicates that the three regions will not be able to take over until after 1991. Support will therefore be necessary for 1990 and most probably for 1991.

During this period (1990-1991), the three components to be supported in priority are training, supervision, the Regional PHC Commissions.

1. Training

Training will be mostly in the form of retraining CHWs in 1990-91 and trainers in 1990.

2. Supervision

Before a less expensive system can be put into place, one can envision for the coming period an annual supervision frequency of one at the central level and two or three at the regional level, depending on the region. Intensive supervision is necessary in 1990 in Assaba since the establishment of CHWs will still be new, and in Guidimaka for 18 new villages.

3. The Regional PHC Commission

This commission exists in Tarza and Guidimaka. It is an important tool for planning and evaluation of activities at a decentralized level. This body must be supported while waiting for the regional decentralization to become operational. In Assaba, where activities pertaining to the Bamako Initiative are scheduled to begin (21 villages of the Kankossa Department in 1990), it is possible that another new body will be put in place.

In addition to the three priority areas, a provision of essential drugs as recommended by the Bamako Initiative would help to enhance PHC activities in the three regions.

4. Support to PHC

Supporting the activities listed above would require an estimated \$250,455 in financial assistance. This amount takes into account the financial resources of the ministry, the organizational relationship between the ministry and the regions, the implementation of a national PHC policy, and the schedule for Bamako Initiative activities in these three regions. The amount consists of the following major components for the period 1990-1991:

Annex A

Annex A

Principal Contacts

I. USAID

A. Nouakchott

William Twadelle - Ambassador
John Vincent - DCM
Glenn Slocum - Mission Director
Walter Boehm - Deputy Director
Pamela Mandel - Health Development Officer
Delia Pitts - Deputy Health Officer
Ahmed Salemould Vall - Administrative Officer

B. JSI/Project Staff

Michel Vernier, M.D. - Chief of Party
Aly Sy - Management Consultant

II. Other Donors

A. UNICEF

Ms. Deborah Dishman - Director Health
Guido Borghese, M.D. - EPI Programme Officer

B. WHO

Amara, Toure, M.D. - WHO Representative

C. ADB/WB

M. Abdul Lahi - Project Director

III. MOHSA/Central Level

A. DHPS

Kane Ibrahima, M.D. - Director Public Health Department
M. Sy Mamadou Samba
M. Boubakar - Supervision
M. Thiam

B. Mauritanian Team

M. Sy Mamadou Samba - DHPS
M. Ba Saidou - PNLMD
M. Ahmed Salemould Vall - USAID/Health
M. Ba Bocar - Professeur à l'Ecole National de Santé Publique.
M. Corraera Chouaibou - PEV
M. Senne Mamadou - DMH
M. Moctarould Mamah - Professeur à l'Ecole National de Santé Publique.

C. PEV

- M. Kone Bassirou - Programme Director
- M. Dia Abou Hassan - Director Division Cold Chain Stores
- M. Kane Mamadou - Director Cold Chain Logistics
- M. Abdou Karim Diagne - Cold Chain Technician

D. PRSSR

- M. Anne Saada - Project Director
- M. Fatimatou N'Diaye - Statistician
- M. Diakhita - Central Supervisor

E. Others

- Tolba, M.D. - Director, Planning and Supervision Dept.
- M. Sene Mommadou - Division of Hospitals
- M. Moctar Ould Memah - National School of Public Health
- M. Dia al Housseynou - Service of Health Education

IV. Regions

A. Trarza

1. Regional level - Rosso Sub-Region
 - Coulibaly Issa, M.D. - Médecin Chef
 - Amadou Thiam - Regional Coordinator Equip Mobile
 - Abda Rahman Hamoud - Chef EM - Boutilimit Sub-Region
2. Departmental level
 - Boutilimit - Chief of CS - El Hadi Seibi M.D.
 - Mayor - M. Alder Rabnoss Mohammad
 - Supervisor - Mohammad Fall Avelahi
 - PMI - Rosso
 - PMI - R'Kiz
 - First Adjoint to Mayor - R'Kiz
 - Departmental Supervisor - R'Kiz
 - Departmental Supervisor - Mederdra - Bouton Diallo
3. Local level
 - a) Rosso - Jaber
 - Toungene - Woloff - Lekra Lahmar - Charatt

 - AT
 - ASC
 - Health Committee

 - Kaffara - Pular
 - AT
 - ASC

Garak - PMR
Sage Femmes
ASC

M/Balae - Hassaneye
AT/ASC (same person)

Meilnounge - ASE
Abdellahould Haiballah

Lekra Lahmar
AT
ASC

Charatt
AT
ASC

Jaber
AT
ASC

b) R'Kiz
Goilid - Poulare
AT/ASC (same person)

Kermodi - Hassaneye
AT
ASC

B. Guidimaka (Selibaby = Regional Capital)

1. Regional level
Faye Mamadou - Regional Supervisor - PHC
Tamboura Amadou - Chef Equip Mobile
2. Departmental level
PMI - Selibaby
3. Village Level
M. Ouldyenga Kanbossa - Supervisor - Department Ouldyenga
M. Adenou Bilal - Departmental Supervisor - PHC
Hassi Chegan
Tetdoumal
Kini Koumou
Tehtabe Maure

C. Assaba

1. Regional level

Sidi Ould Mohamed Tayeb, M.D. - Medecin Chef
Mohamed Mahmoud Ould Md. Saleem M.D. - Adjoint to MC
Mohamed Dou D/Bounedou - Chef Equip Mobile
M. Sy Birana - Adjoint Equip Mobile

2. Departmental level

PMI - Kiffa

Annex B

Annex B

Documents Reviewed

1. IG/I Case No. D880020, Country Mauritania, Title: Rural Health Service Project, Number 682-0230, USAID/Mauritania, Office of Investigations, Inspector General, U.S. Agency for International Development. Report of theft of vehicle spare parts from the offices of the Rural Health Services Project.
2. Ba Idrissa Abdoul, Ouattara Nibahan: Etude des dossiers des poliomyelites du CNORF, Programme des Nations Unies pour le Developpement Projet 87 015, (de Octobre 1980 au 31 Decembre 1987).
3. Claquin, Pierre; End of Tour Report, Mauritania Rural Health Services Project, AID Contract No. 682-0230.
4. Project Evaluation Summary, Expanded Programme on Immunizations, July, 1981-July 1983; Project No. 625-0937.
5. Memo to Dr. Ba from Dr. J.F. Etard; Thoughts of the PEV, 11 April, 1987.
6. Project Implementation report; Rural Health Services Project (682-0230); 1 October 1987 - 31 March, 1988.
7. Activities Report #6; Tonia Marek, SIS 1-31 March, 1988.
8. Memo to M. Kone Bassirou from JF Etard; Activities Report, first semester, 1987; 26 September, 1987.
9. Project Implementation Report; Rural Health Services Project (682-0230); 1 October, 1986 - 31 March, 1987.
10. Project Implementation report; Rural Health Services Project (682-0230); 1 April 1987 - 30 September, 1987.
11. Project Implementation Report; Rural Health Services Project (682-0230); 1 April 1988 - 30 September, 1988.
12. Le Programme Élargi de Vaccination en République Islamique de Mauritanie, 1985 (from USAID/PEV report files).
13. Note sur une evaluation de la couverture vaccinale en mauritanie, 1989 (from USAID/PEV report files).
14. Estimation de besoins en vaccin pour l'année 1988 (from USAID/PEV report files).
15. Project Identification Document; Mauritania: Rural Health Services Project (682-0230), 1983.

16. Programme élargi de vaccination, projet de renforcement des services de sante rurale: Resultats de l'évaluation sur la couverture vaccinale des enfants nes en 1982 et en 1983 dans 9 regions de la republiques islamiques de Mauritanie effectuee en Decembre 1984; Aout 1985.
17. Ministère de la Santé et des Affaires Sociales, Direction de la Planification, Formation et de la Cooperation, Division Etudes Statistiques, Rapport Annuel, 1985.
18. Nazirou K, Bassirou K et Semette MM, Plan d'action pour l'elimination du tetanos neo-natal, Atelier OMS Tetanos Neo-natal, Dakar, 12-19 Decembre 1988.
19. Ministere de la Santé et des Affaires Sociales, DHPS - PEV, Preliminary results: Enquête Nationale de couverture vaccinale, Mars 1989.
20. USAID-JSI Contract and Amendments.
21. JSI-Proposed Reorientation of the PHC component of the RHS Project in the RIM- January, 1986.
22. Training Manual for ASC-1988.
23. Training Manual for ATs.
24. Training Manual for Village Committees.
25. Annual Report-Health Statistics-1985 (lost).
26. Project Evaluation Summary-Rural Health Services Project 682-0230-1986.
27. Project Paper-Rural Health Services Project 682-0230.
28. Project Identification Paper-Rural Health Services Project 682-0230.
29. Bamako Initiative-UNICEF-1988.
30. Availability of Essential Drugs and Cost Recovery-Dr. H. Perier/UNICEF-1988.
31. Controller's Documents - PRSSR.
32. Booklet of the Village Health Committee - Guide for Supervision.
33. HIS Consultant Reports - 1-15.
34. Plans for the HIS of MOSHA.

12

Annex C

STATEMENT OF WORK

I. Program Evaluator-Team Leader

A. Review and evaluate all aspects of the project pertaining to primary health care including, for example, project management of the USAID, the contractor, and MOH.

Analyze and evaluate the progress and status of the various components of the PHC system such as:

1. commitment by the Government to PHC, including the development of the national PHC commission.
2. PHC coverage of the population in areas concerned by the project.
3. Degree of integration of the PHC programs of the project with the central level activities in (SMP) preventive medicine, (SMI) mother and child care and the (SEP) studies and planning.
4. Integration and effectiveness of PH activities at the regional level..
5. Integration and effectiveness of integrated mobile teams activities.
6. Quantity and quality of curative and preventive activities conducted by CHW's and TBA's in villages involved by the project.
7. Quality of training curricula for CHW, TBA, village health committees and their supervisors at departmental and regional levels. Critique the materials according to competency-based criteria.

B. Evaluate the quality of support to the project and MOH provided by the Primary Health Care Advisor to the Ministry of Health, who is funded by this project.

C. In carrying out the evaluation, special attention should be given to the role and relevance of central project organization and structure (FRSSR).

D. Develop specific recommendations with priority attention given to sustainability of project outputs after PACD.

II HEALTH INFORMATION SYSTEM CONSULTANT

- A. The health information consultant will review and evaluate all aspects of the project pertaining to the development and execution of a health information system in the project areas such as:
1. quality and quantity of supervision at central, regional and departmental levels;
 2. development of and use of health information records, brochures, and other documents;
 3. training of health personnel at central, regional and village level in the collection and evaluation of health information; and
 4. training of central MOH personnel in use of computers to exploit health data.
- B. Consultant will review HIS-related documents including all supervision reports, statistical analyses, training materials, data collection records, and MOH information system planning documents.
- C. Consultant will evaluate the quality of support to the project provided by the HIS advisor of the technical assistance team.
- D. Consultant should evaluate reasons for progress or lack thereof in this area and should develop specific recommendations pertaining to the sustainability and expansion of the project's HIS achievements after the PACD.

III.

EPI TECHNICAL OFFICER

- A. Review recommendations of 1983 EPI evaluation and 1986 mid-term evaluation in categories of cold chain, logistics, programming, and disease surveillance;
 - B. Prepare technical agenda for, and participate in, field trips to at least two regional operation sites, including mobile and fixed team operations to observe and evaluation functional status of EPI operations at all levels;
-
- C. Make assessment of reliability, consistency, and general quality of ongoing health information being collected by MOH which are related to the EPI program;
 - D. Review objectives related to the EPI component of the project, confirm their continuing validity, as appropriate, and recommend changes and additions.
 - E. Draft recommendations for specific actions which MOH and donor agencies (W.H.O., USAID, UNICEF) should take to sustain program operations after PACD.

IV HEALTH ECONOMIST

- A. Analyze the total cost of operating the Rural health Services Project in Trarza, Guidimaka and Assaba regions. Total costs should be divided into:
- operating and investment costs
 - key functional categories (training, supervision project office operations, etc.)
 - foreign exchange requiring costs

 - source of financing (Ministry of Health and Social Affairs, USAID, UNICEF, local population, NGOs, etc.) for major cost elements;
- B. Compare costs to measures of effectiveness, such as numbers of ASCs trained or number of patients treated, if data available;
- C. Identify areas where costs could be reduced without jeopardizing overall effectiveness (i.e., frequency of supervision rounds, training protocols, types of medicines supplied, etc.);
- D. Develop recommendations for future financing of primary health care activities in these three regions, either by the population, the government, or other donors. Identify key areas strategy of financing for the future in terms of
- the overall management and record-keeping capability
 - the types of expenses covered by central project resources
 - the proportion of total expenses for which this central allotment accounts
 - perceptions of regional medical officer/supervisor of the system
 - perceptions of the central project office staff of the system;
-
- E. Analyze the cost recovery methods used by the community health workers in the project villages to replenish their supplies of drugs.
- F. Discuss with RHS staff, USAID, the Ministry of Health and Social Affairs, and other major donor agencies a plan for future financing of primary health care activities in these three regions.

Annex D

Minister of Health
(Dr. N'Diaye Kane)

Secretary-General
(Mme. N'deye Tabora Fall)

(Six Directions)

Dir. of Hygiene and Public Health
Dr. C. Moctar

Dir. of Curative Med.
Dr. Ba Lemine

Dir. of Pharmacy Drugs

Dir. of Planning, Training and Coop.
Dr. Menna Tolba

Dir. of Social Affairs

Dir. of Admin. and Finance

(Eight Services)

Communi-
cable
Diseases
Dr. Kane
Ibrahima

Three
Divisions

Vaccination
Program
Dr. Kone
Bassirou

Three
Divisions

TB and
Leprosy

Nutrition
Sall Aliou
Mamadou

Two
Divisions

M C H
Ba Khady
Sy

Two
Divisions

Health
Education
Dia Al
Housseynou

Three
Divisions

Hygiene and
Sanitation
Cisse
Gueladio

Two
Divisions

School Health
Dr. Dia Yaya
Yero

R

Annex E

A.I.D. EXTERNAL TRAINING

As of 3/89

PIO/P NO.	DATE	NAME	SUBJECT	COUNTRY	DURATION	AMOUNT	CUMULATIVE TOTAL
1682-0230-1-40015	July 84	Abdallahi O/ Md Lehbib	Health Administration Promotion Development of Primary Health Care	Senegal	24 Months	\$ 6,248.00	
1682-0230-1-40013	July 84	Diallo Boujou Diakhite Lassana	Health Administration Proposition Development of Primary Health Care	Benin	24 Months	\$17,061.00	
1682-0230-1-40014	Aug. 84	Faye Mamadou Sy Amadou	Health Administration Proposition Development Primary Health Care	Benin	18 Months	\$11,000.00	
1682-0230-1-50013	Jan. 86	Moctar Ould Menah	Health Education	Senegal	24 Months	\$14,000.00	
1682-0230-1-30039	Jan. 86	Demba Amadou M'Bow	Medical Planning	Senegal	24 Months	\$14,000.00	
1682-0230-1-30038	Jan. 86	Ba Abdoulaye Samba	Health Public Administration	Senegal	24 Months	\$14,000.00	
1682-0230-1-30044	Jan. 86	Kelly Nazirou	Epidemiology	U.S.A.	24 Months	\$63,750.00	
1682-0230-1-30049	May 86	Ba Bocar	Community Health	Togo	3 Months	\$ 2,200.00	
1682-0230-1-30062	Nov. 88	Diabira Bakary	Health Administration (Pending)	U.S.A.	10 Months	\$45,000	
1682-0230-1-30063	Nov. 88	Dia Al Housseynou	Health Education (Pending)	Franco- phone Africa	18 Months	\$45,000 ?	
1682-0230-1-30064	July 88	Fatimetou N'Diaye Correra Choueibou	Health Statistics	Zaire	3 weeks	\$10,300	
1682-0230-1-30067	Nov. 88	Anne Saada Aissata Guisset	Population conference	Senegal	1 week	\$ 2,634	
1682-0230-1-30071	Jan. 89	Ba Bocar Aissata Guisset	Health Information Systems	Niger	1 week	\$ 5,800	\$250,993

Annex F

Annex F

REPUBLIQUE - ISLAMIQUE - DE MAURITANIE
HONNEUR - FRATERNITE - JUSTICE

MINISTERE DE LA SANTE ET DES AFFAIRES SOCIALES 88

PROJET DE RENFORCEMENT DES SERVICES DE SANTE RURALE 838

FICHE DE SUPERVISION POUR POSOLOGIE A REMPLIR PAR
LE SUPERVISEUR DEPARTEMENTAL DANS CHAQUE VILLAGE

REGION : NON DE L'ASC :
DEPARTMENT : DATE DE LA SUPERVISION :
VILLAGE : NON SUPERVISEUR :

Médicaments autorisés	Réponse de l'ASC :		Observations
	Posologie correcte	Posologie non correcte	
1. Nivaquinine: Traitement chez l'adulte	:	:	:
2. Nivaquinine: Traitement chez l'enfant	:	:	:
3. Nivaquinine: Prophylaxie chez l' enfant	:	:	:
4. Aspirine chez l'adulte	:	:	:
" l'enfant	:	:	:
5. Piperazine sirop: adulte	:	:	:
" enfant	:	:	:
6. Sulfate de fer en comprimés	:	:	:
7. Alvityl comprimés	:	:	:
8. Alvityl sirop.	:	:	:
9. Terpone sirop: adulte	:	:	:
" enfant	:	:	:
10. Totracyeline	:	:	:
11. Argyrol gouttes	:	:	:
12. Auréomycine 1%	:	:	:
13. Sachet de RVO	:	:	:
14. Solution SRO	:	:	:
15. Conduite à tonir pour malnutrition	:	:	:
Brassard vert	:	:	:
Brassard jaune	:	:	:
Brassard rouge	:	:	:

TOTAL 20 20
Cocher la réponse dans la colonne correspondante.
Calculer l'score de l'ASC.

Annex G

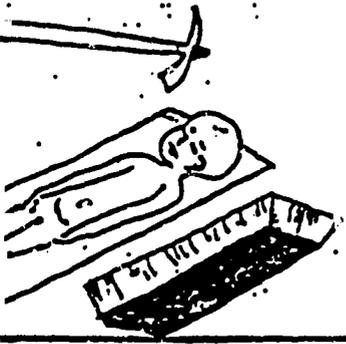
RAPPORT D'ACTIVITES A REALISER
A LA FIN DE CHAQUE FOIS/ASC

REGION : _____
DEPARTEMENT : _____
VILLAGE : _____

Superviseur : _____
Date de la supervision actuelle : _____
Date de la dernière supervision : _____



Nombre d'enfant de 0 à 5 ans communiqué par ASC

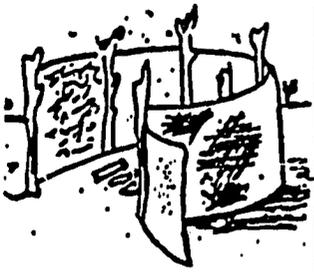


Nombre de décès chez les enfants de 0 à 5 ans



Nbre de trous à ordures construits

Nombre de latrines construites



Nombre de familles utilisant les latrines



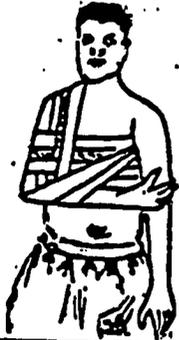
Nombre de familles traitant l'eau par filtration.



Nombre de familles traitant l'eau par javélation.



Nombre de cas de fractures.





Nombre de séances d'E.P.S*



Nombre de visites à domicile.



Nombre d'enfants dans la zone jaune.



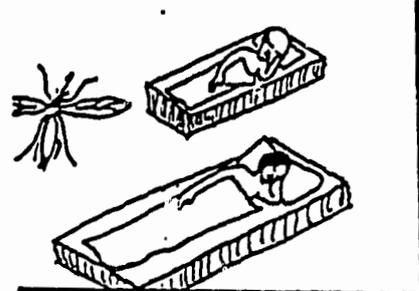
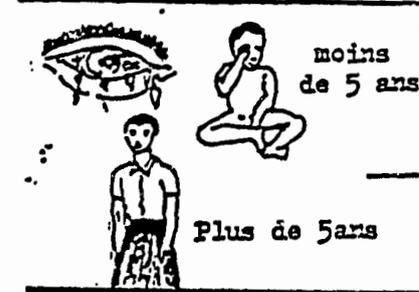
Nombre d'enfants dans la zone rouge.



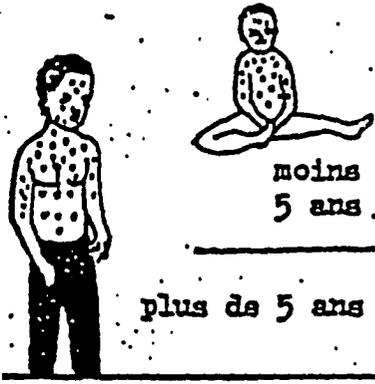
Nombre d'enfants dans la zone verte.



* Les données concernant l'effort des participants et les thèmes abordés lors des séances seront recueillies par le superviseur

 <p>moins de 5 ans</p> <p>Plus de 5 ans</p>	<p>Diarrhée.</p>
 <p>moins de 5 ans</p> <p>plus de 5 ans</p>	<p>Toux avec fièvre</p>
	<p>Fièvre traité avec nivaquine. (Paludisme)</p>
 <p>moins de 5 ans</p> <p>Plus de 5ans</p>	<p>Conjonctivite</p>
	<p>Anémie</p>
 <p>moins de 5 ans</p> <p>Plus de 5ans</p>	<p>Blessures</p>
 <p>enfant de 0 à 5 ans</p>	<p>Vers en allant au cabinet.</p>





moins de
5 ans.

plus de 5 ans

Rougeole



moins de
5 ans

Plus de 5ans

Coqueluche.



Poliomyélite

moins de 5ans



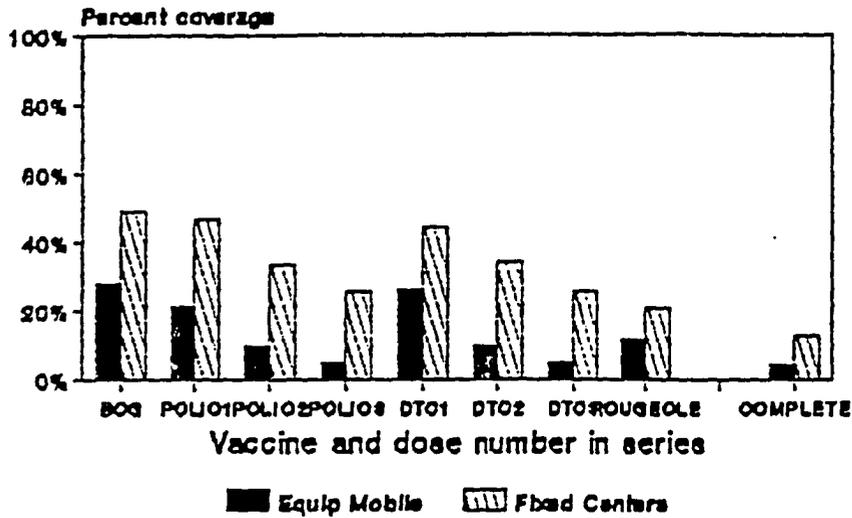
Tétanos.

89

Annex H

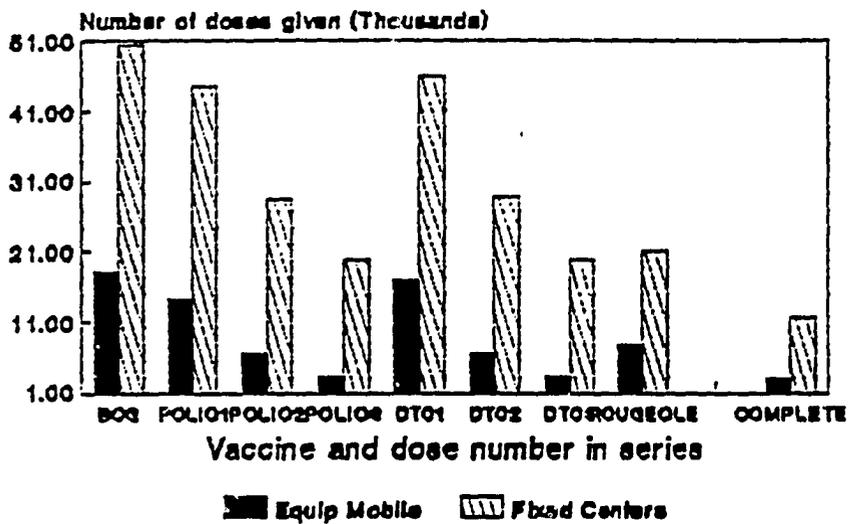
Section I

Vaccination Coverages, children 0-11 mo Mauritania, 1987



Source: PEV/Preliminary Report, 1987

Vaccinations Given to 0-11 mos children By type of strategy, Mauritania, 1987



Source: PEV/Preliminary Report, 1987

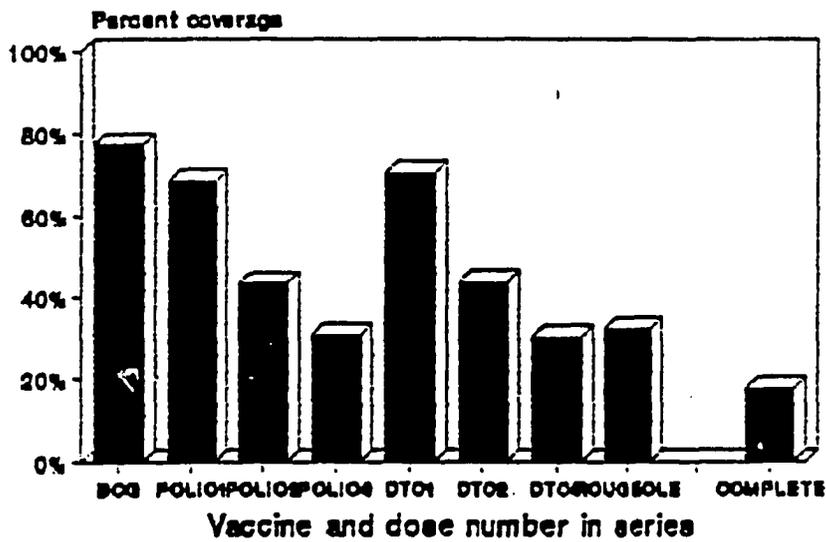
92

VACCINATION COVERAGES, CHILDREN 0-11 MOS MAURITANIA, 1987

PRELIMINARY FIGURES ROUTINE REPORTING SYSTEM

SOURCE: MSPSA/PEV PRELIMINARY REPORT, 1987

Vaccination Coverages, children 0-11 mo Mauritania, 1987



Source: PEV/Preliminary report, 1987

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Section II

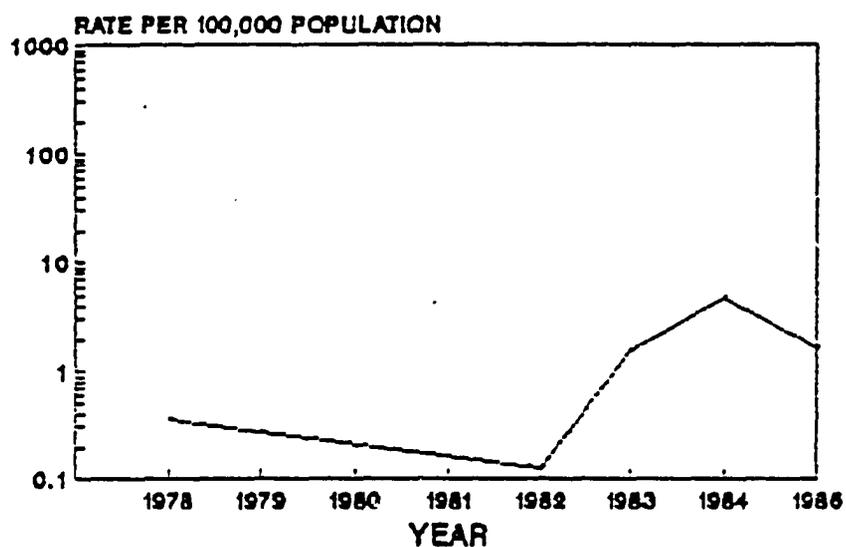
EPI TARGET DISEASES

REPORTED RATES PER 100,000 POPULATION

MAURITANIA, 1981 - 1985

Source: Rapport Annuel, 1985 /MSPAS

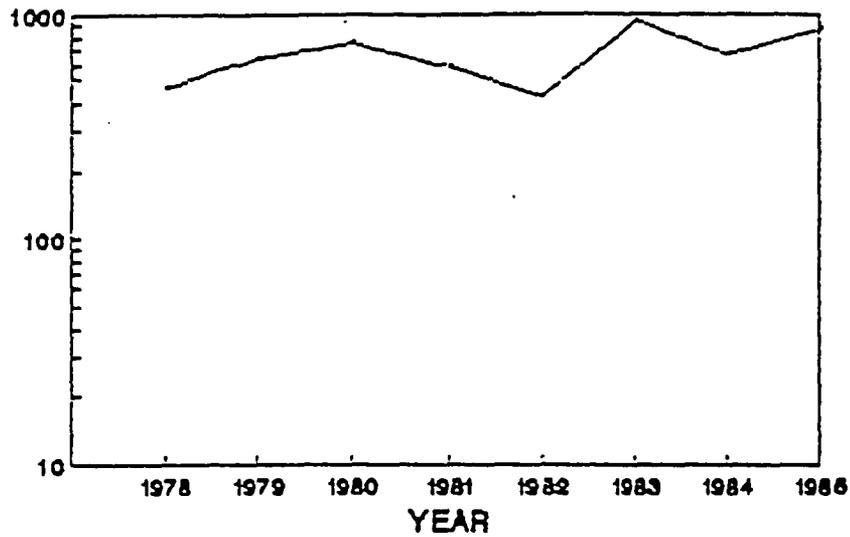
REPORTED RATES PER 100,000 POPULATION DIPHTHERIA, MAURITANIA, 1978-1985



Source: MSPAS Rapport Annuel 1985

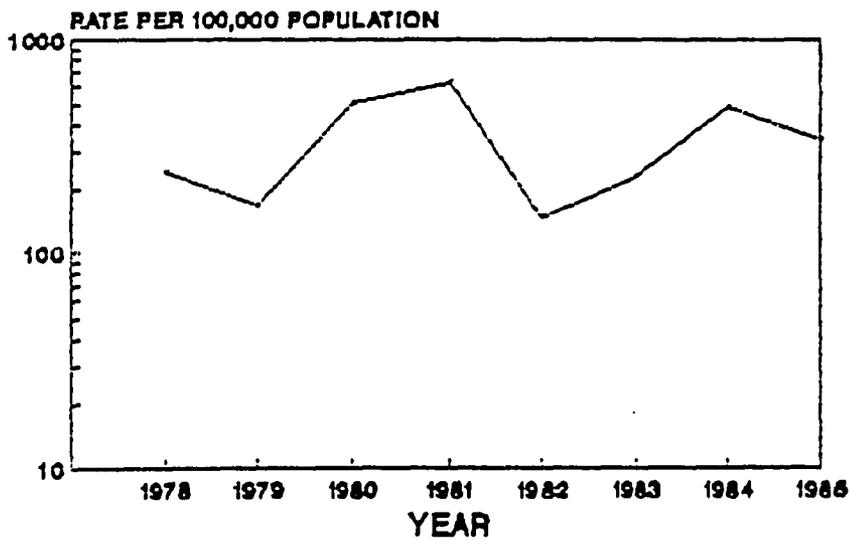
95

**REPORTED RATES PER 100,000 POPULATION
MEASLES, MAURITANIA, 1978-1985**



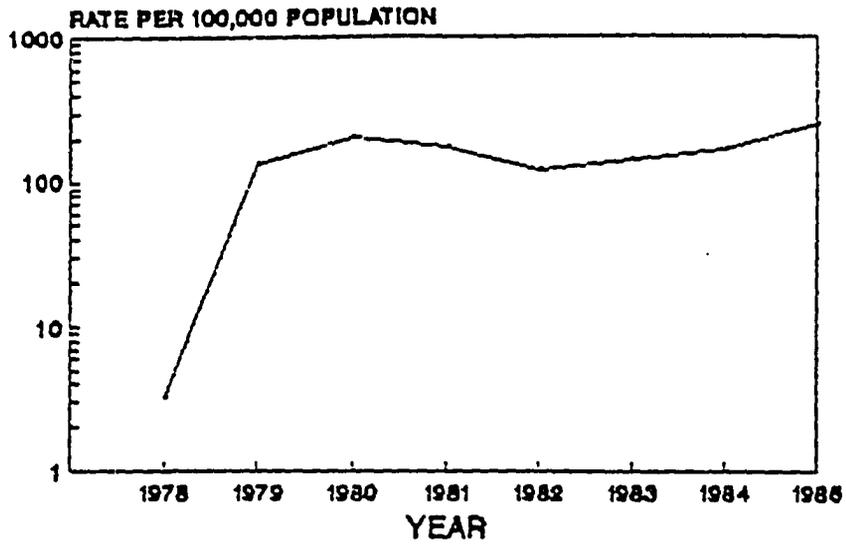
Source: MRPAS Report Annual 1986

**REPORTED RATES PER 100,000 POPULATION
PERTUSSIS, MAURITANIA, 1978-1985**



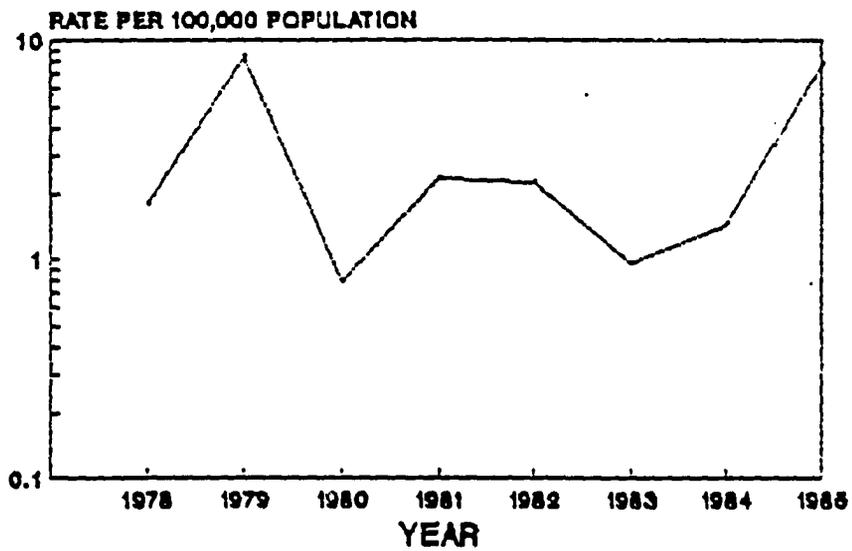
Source: MRPAS Report Annual 1986

**REPORTED RATES PER 100,000 POPULATION
PULMONARY TUBERCULOSIS, MAURITANIA**



Source: MRPAS Report Annual 1986

**REPORTED RATES PER 100,000 POPULATION
TETANUS, MAURITANIA, 1978-1985**



Source: MRPAS Report Annual, 1986

Section III

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SUMMARY OF VACCINATION SURVEYS CONDUCTED IN 9 REGIONS,
CHILDREN BORN IN 1992 AND 1993
MAURITANIA, DECEMBER 1984

(N= 210 for each Region)

(N= 1590 for Total Surveyed)

Location	Assaba		Erakna		Tagant		Trarza		HodhChargui		Adrar	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ECG	140	66.7%	127	60.5%	187	89.0%	203	96.7%	101	48.1%	115	54.8%
POLIO1	126	60.0%	124	59.0%	185	88.1%	153	91.5%	95	45.2%	113	53.8%
POLIO2	77	36.7%	56	26.7%	121	57.6%	136	64.8%	36	17.1%	57	27.1%
POLIO3	53	27.6%	22	10.5%	62	29.5%	77	36.7%	17	8.1%	30	14.3%
DTG1	126	60.0%	125	59.5%	183	87.1%	192	91.4%	93	44.3%	113	53.8%
DTG2	77	36.7%	55	26.2%	121	57.6%	136	64.8%	36	17.1%	57	27.1%
DTG3	53	27.6%	22	10.5%	62	29.5%	77	36.7%	19	8.6%	30	14.3%
MESLES	116	55.2%	99	47.1%	167	79.5%	170	81.0%	70	33.3%	71	33.8%
COMPLETE	53	27.6%	17	8.1%	61	29.0%	75	35.7%	14	6.7%	25	11.9%

Location	Adrar		Gorgol		Guidiaaka		HodhGarbi		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
ECG	115	54.8%	180	88.7%	139	65.2%	209	99.5%	1401	74.1%
POLIO1	113	53.8%	132	62.9%	124	59.0%	207	99.6%	1299	69.7%
POLIO2	57	27.1%	60	29.5%	58	27.6%	133	63.3%	734	39.5%
POLIO3	30	14.3%	33	15.7%	26	12.4%	73	37.1%	403	21.3%
DTG1	113	53.8%	132	62.9%	124	59.0%	207	99.5%	1395	69.5%
DTG2	57	27.1%	53	29.1%	55	26.2%	133	63.3%	723	39.5%
DTG3	30	14.3%	33	15.7%	26	12.4%	73	37.1%	404	21.4%
MESLES	71	33.8%	111	52.9%	99	47.1%	203	99.7%	1106	59.5%
COMPLETE	25	11.9%	26	12.4%	23	11.0%	74	35.2%	373	19.7%

SUMMARY OF PREVIOUS VACCINATION SURVEYS,
NAURITANIA, 1961-1963

Date	6/61	6/61	6/61	1/63		7/63	
Location	Nouakchott	Assaka	Gorgol	Nouakchott		Gorgol	
Age Group	12-47mos	12-47mos	12-47mos	12-24mos		12-47mos	
				TEYARETT	SEENHA	CARD+HX	CARD ONLY
BCG	70%	64%	65%	52%	75%	75%	40%
MEASLES	42%	53%	76%	21%	39%	50%	33%
DTC1	65%	61%	87%	27%	54%	70%	42%
DTC2	21%	40%	61%	16%	46%	44%	26%
DTC3	19%	17%	35%	15%	42%	25%	17%
FOLI01	56%	67%	86%	27%	54%	68%	44%
FOLI02	43%	40%	59%	18%	46%	43%	25%
FOLI03	45%	16%	34%	15%	42%	24%	17%
COMPLETE	27%	14%	29%	13%	32%	20%	13%
CARDS	69%	33%	70%	--	--	46%	46%

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SUMMARY OF VACCINATION SURVEYS CONDUCTED IN 2 REGIONS

(N= for each Region)
(N= for Total Surveyed)

	Hodh el Char		Hodh el Gar		Erakna	
	MSF-85	FEV-84	MSF-85	FEV-84	MSF-86	FEV-84
	%	%	%	%	%	%
BCG	94.8%	48.1%	96.7%	99.5%	87.7%	60.5%
DTC1	93.8%	44.3%	93.4%	98.6%	84.0%	53.5%
DTC2	79.5%	17.1%	79.8%	63.6%	60.3%	26.2%
DTC3	53.6%	8.6%	52.6%	37.1%	39.0%	10.5%
MEASLES	64.3%	33.3%	66.4%	98.7%	73.9%	47.1%
COMPLETE	57.1%	8.7%	52.6%	35.2%	37.8%	8.1%
DTC DROP-OUT	37.5%	69.6%	43.7%	62.4%	53.8%	80.4%

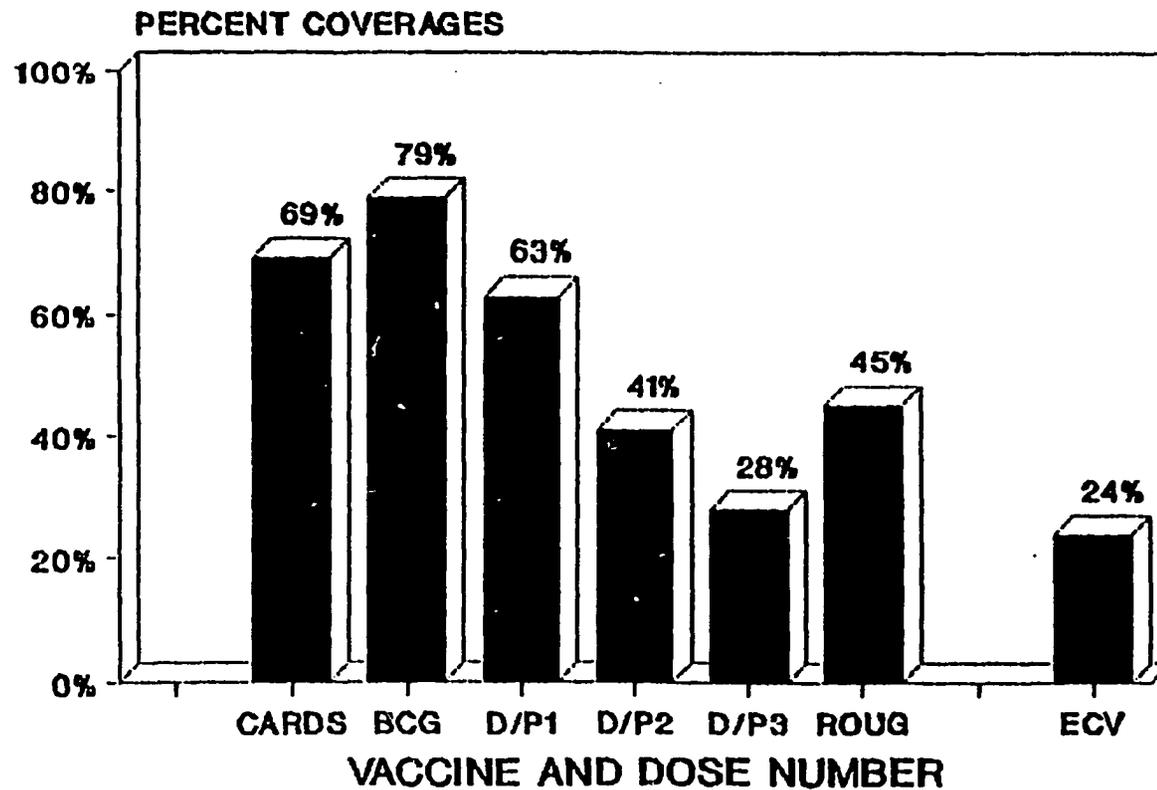
Section IV

**PRELIMINARY RESULTS
VACCINATION COVERAGE SURVEYS
CHILDREN 12-23 MONTHS OF AGE**

MAURITANIA, APRIL 1989

SOURCE: MSPAS/PEV

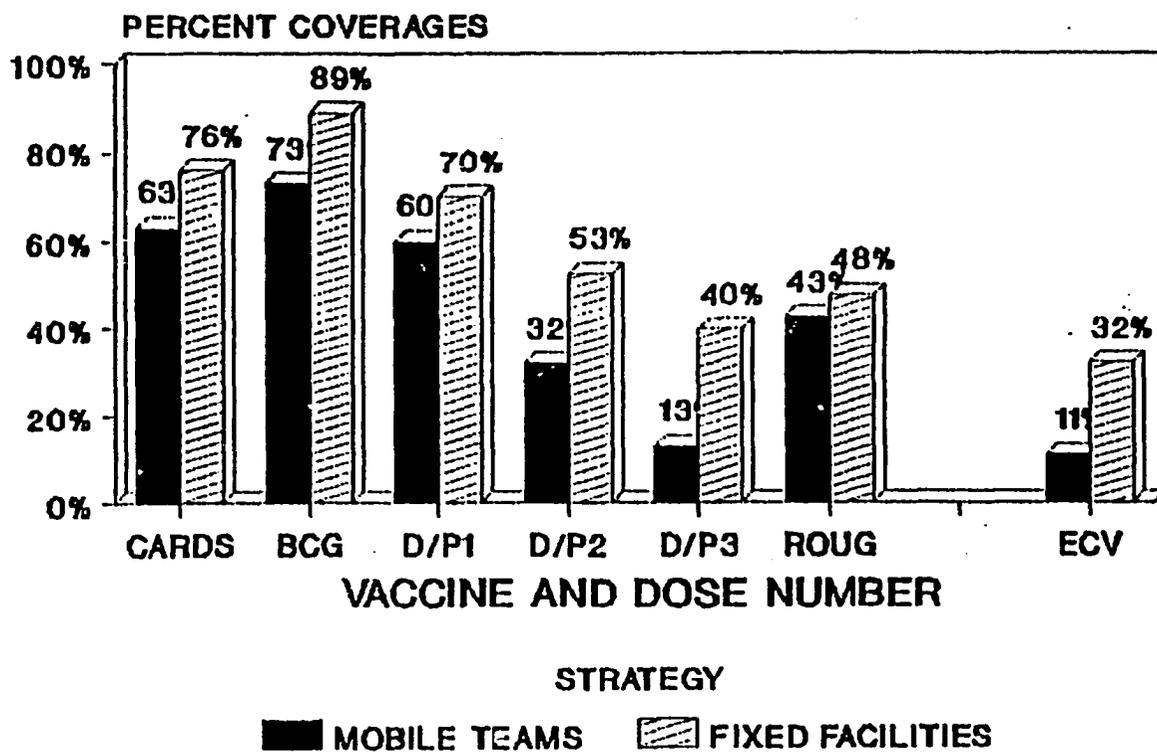
**VACCINATION COVERAGES (1989 SURVEY)
CHILDREN 12-23 MOS OF AGE, MAURITANIA**



Source: MSPAS/PEV PRELIMINARY RESULTS

104.

VACCINATION COVERAGES (1989 SURVEY)
CHILDREN 12-23 MOS., MAURITANIA



Source: MSPAS/PEV PRELIMINARY RESULTS

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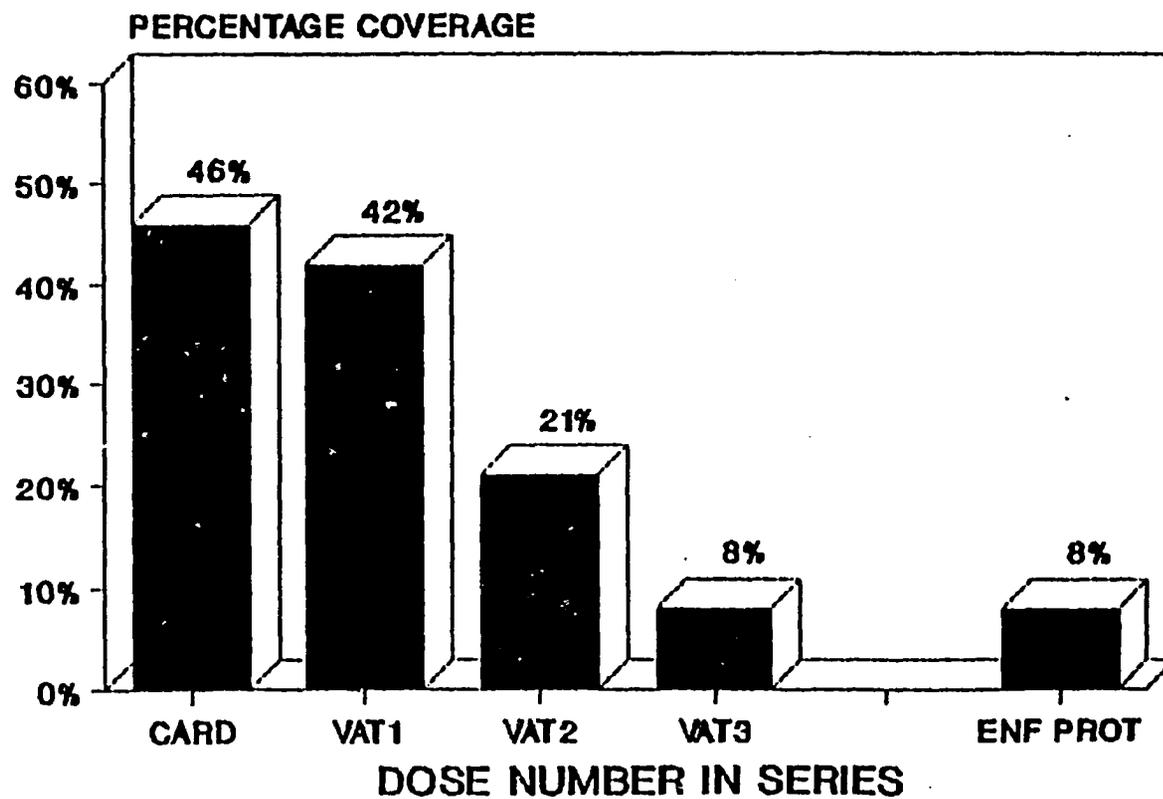
**PRELIMINARY RESULTS
VACCINATION COVERAGE SURVEYS
TETANUS TOXOID, WOMEN IN CHILDBEARING AGE**

MAURITANIA

SOURCE: MSPAS/PEV

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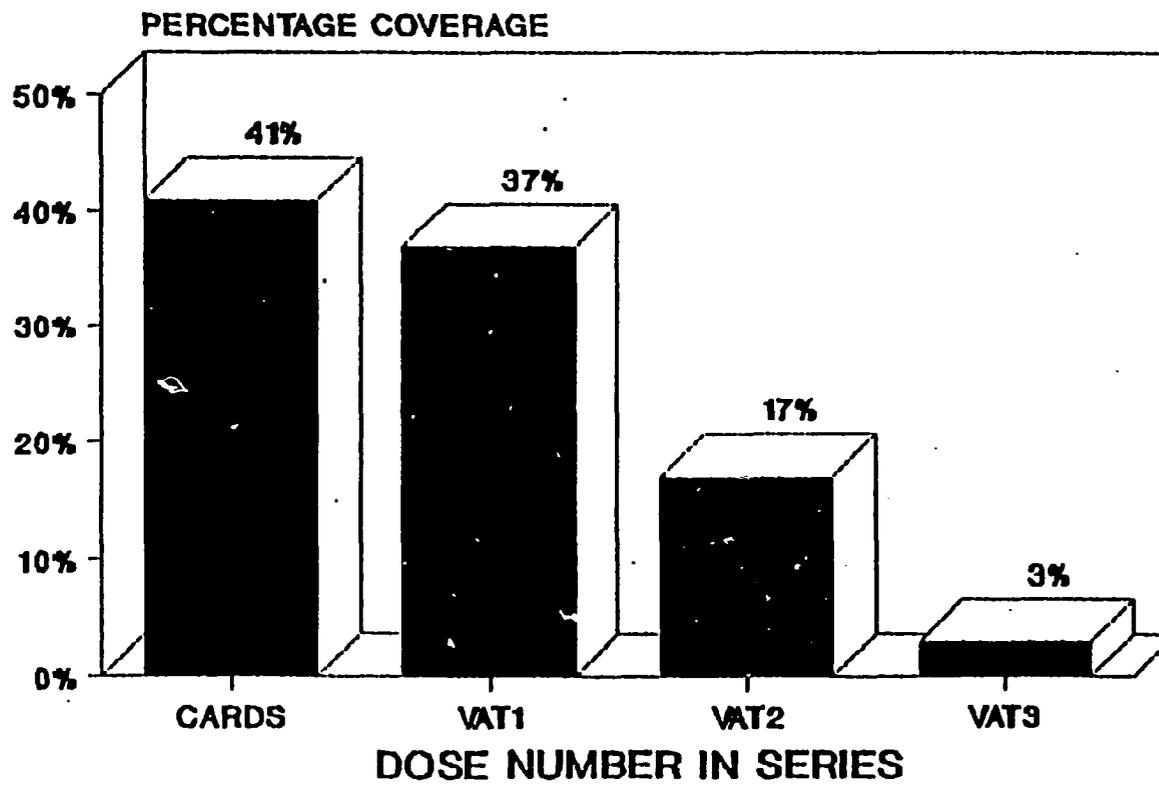
**TT VACCINATION COVERAGE (1989 SURVEY)
MOTHER'S OF CHILDREN 12-23 MOS OLD**



Source: MSPAS PRELIMINARY RESULTS

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**TT VACCINATION COVERAGES (1989 SURVEY)
WOMEN IN CHILDBEARING AGE**



Source: MSPAS PRELIMINARY RESULTS

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Section V

SUMMARY OF VACCINATION COVERAGES FOLLOWING NATIONAL VACCINATION DAYS
MAURITANIA, 1986

Location Age Group	Kiffa	Akjoujt	Abr	Tidjikja	Aloun	Nasa	Nouhadibou	Zouerate	Boghe	Kaedi	TOTAL
	12-35acs	12-35acs	12-35acs	12-35acs	12-35acs						
BCG	63.3%	95.8%	95.8%	94.9%	99.5%	97.8%	86.5%	71.5%	99.5%	99.3%	90.8%
DTC1	62.5%	87.7%	93.0%	89.3%	95.3%	94.6%	63.5%	43.4%	98.7%	97.3%	83.1%
DTC2	47.3%	76.3%	89.7%	79.5%	92.5%	87.4%	27.3%	32.1%	92.9%	63.6%	71.3%
DTC3	39.7%	67.6%	76.6%	64.2%	82.2%	73.5%	20.7%	22.2%	84.8%	73.3%	61.5%
POLIO1	59.4%	87.7%	92.5%	83.8%	95.3%	88.4%	69.5%	43.4%	98.7%	95.8%	82.7%
POLIO2	46.9%	76.3%	89.3%	80.0%	92.5%	87.4%	27.9%	31.7%	92.9%	63.6%	71.2%
POLIO3	36.2%	67.6%	76.6%	64.2%	82.2%	73.5%	20.7%	22.2%	84.8%	73.6%	64.4%
MEASLES	65.6%	63.5%	69.6%	71.2%	79.8%	74.9%	43.7%	52.9%	80.8%	61.3%	68.8%
COMPLETE	32.1%	53.3%	65.4%	55.3%	70.9%	64.6%	15.8%	16.3%	74.1%	74.9%	52.7%
DTC DROP	36.5%	22.5%	17.6%	23.1%	13.7%	17.0%	63.6%	48.8%	14.1%	17.3%	25.0%
POL DROP	39.1%	22.9%	17.2%	23.5%	13.7%	16.6%	63.9%	48.8%	14.1%	17.3%	22.1%

(10)

Annex I

The Bamako Initiative

African Health Ministers attending the 37th regional meeting of the World Health Organization (WHO) in Bamako, Mali in September 1987, addressed the health care crisis by embracing a new strategy designed to revive primary health care, particularly for children and women in their region.

The Bamako meeting, which was also attended by UNICEF Executive Director, James P. Grant, and the then Director-General of WHO, Dr. Halfdan Mahler, reached an agreement whereby countries would:

- put their resources squarely behind the proven elements of PHC;
- make more rational use of their slender health budgets; and
- examine creative approaches to community financing methods which had already enabled communities in a number of African nations to take charge of local health needs.

One feature of this package, now known as 'The Bamako Initiative', is the importation of basic essential drugs for distribution and sale through maternal and child health (MCH) centres and other health units at the district and peripheral levels. The concept of charging for drugs through government health channels, holds the promise that even on modest budgets, nations have a chance to build sustainable health networks in the remotest of regions.

Surveys in Africa have shown that people in many communities are prepared to pay for their medicines, and need not be totally dependent on administrations in distant capitals. Indications are that what many communities need most are reliable sources of essential drugs and vaccines, either free or at prices they can afford. Too many people are currently paying private distributors exorbitant prices for medicines which are frequently inappropriate for their needs, and sometimes dangerous.

It was proposed in Bamako that basic essential drugs be supplied by ministries of health through community health centres and posts, at cost plus a margin to cover their replenishment and local operating costs, including the salaries of health workers. This concept of self-sustained health care found a receptive audience at the meeting and was endorsed unanimously.

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