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PUBLIC HEALTH PHYSICIAN'S EVALUATION REPORT

OF THE

MALI RURAL HEALTH PROJECT

(688-0208)

November 1981

by

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Introduction

The Project Paper of the Mali Rural Health Project (688-0208) describes the project in these words:

> In this project, the Government of Mali, with financial assistance from USAID and technical assistance from a U.S. contractor, will design, operate and evaluate a demonstration rural health system. In the villages of the demonstration areas, the project will develop a system of simple basic health services, emphasizing those health promotive and disease preventive activities and simple diagnostic and curative activities that can be undertaken by a person of the village, who remains of the village and who receives rudimentary training followed by continuing education and supervision.

Now, in month 40 of the 48-month project, the evaluation report of a public health physician is hereby submitted. The aim of this evaluation is to determine if the project has accomplished the goals as stated above.

Method

This evaluation follows exactly the guidelines stated in reftel Bamako 4431. The evaluator pursued the subject evaluation in three ways:

1. Reading the principal documents of the project.
2. Interviewing government officials, USAID officials and project personnel at all levels.
3. Observing village health workers and supervisors in their work setting.

Trips were made to the two areas of project field activity. In the Fifth Region, there were interviews with personnel at the regional health office, the cercle health office, and the three supervisory teams. This evaluator visited 14 villages out of the 46 where project activity takes place. These 14 villages were chosen by the evaluating sociologist specifically for their representative characteristics. In these 14 villages, 42 village health workers were sought out. Thirty-six were actually located and interviewed. This number represents 30% of the total 119 village health workers of the Koro cercle.

On a trip to the First Region, this evaluator interviewed government officials of the Yelimané cercle and all members of the field supervisory team. Five of the 14 project villages were visited. Of 20 village health workers sought out, 18 were located and interviewed. This number represents 32% of the 56 village health workers of the Yelimané cercle.

During the evaluation, the following persons were contacted:

amenable to attack. They are:

a. Malaria. The project should institute widespread chloroquin prophylaxis to vulnerable age groups. Curative programs should continue since more than half of all H-S consultations are for the relief of malarial attacks.

b. Diarrhea. The project should strengthen its promotion of home preparation and administration of oral electrolyte solution.

c. Infant malnutrition. The project should study infant weaning practices. Based on these studies, the project should formulate and promote a program of early (4 month) breast milk supplementati with appropriate weaning foods.

d. Midwifery. The project should review again and again the essentia of a clean obstetrical delivery.

3. Renewed Village Health Worker Training

Whenever the final training manuals are ready, they should be introduce and distributed at refresher courses for all village health workers. I is imperative that this be done before the termination date of the p oj in Yelimané. Information on family planning services should be include in the training manuals and refresher courses as agreed upon in the Project Paper. More emphasis should be given to oral rehydration and early (4 months) supplementation to breast milk. Village sanitation should be de-emphasized.

4. Improvement of Clinical Referral Services

Representatives from USAID, the GRM, and project leaders should form a task force in order to expedite the improvement of clinical referral services at Koro. These services should be in their improved state before the project termination date.

In order for cercle physicians to handle patients who are referred for contraceptives, USAID should arrange for the delivery of contraceptive supplies and equipment to cercle health centers. Each cercle center should have on hand at least 100 size D Lippes Loops with three IUD insertion kits, one bleeding kit and one abdominal laparotomy kit for surgical sterilizations. They should have a supply (600 cycles) of oral contraceptives--1/50. Each center should also stock one case of condoms. USAID should provide for the training of cercle physicians so that they may acquire the skills of family planning.

5. Changes in Drug Stocks

Eliminate penicillin from the village formulary. Add merthiolate or some other skin antiseptic to the village formulary. Add bandages to each health worker's kit. Add an antacid, such as calcium carbonate, to the village formulary. Stock chloroquin only in tablets of 100 mg base. If American drug manufacturers cannot supply tablets of this strength, then a waiver should be obtained in order to purchase them elsewhere.

E. Recommendations

1. Future of the Proje

As a study of the effectiveness of rural primary health care, this project is a failure. Nevertheless, I do have the suspicion that village people are healthier and happier because the project is there. With this suspicion in mind, I ask, what aspects of the project can be salvaged and under what circumstances? In Yelimané, nothing can be salvaged. There the work of village health workers is unsatisfactory, the means and will for supervision have vanished, and logistic problems are insurmountable without a long-term expatriate presence and project support. In sum, the project leaders should give one last round of training courses to persons already trained there and then terminate project involvement by June 1982. The Yelimané health workers still have a way to restock their medicine chests by paying cash at the Pharmacie Populaire in Yelimané town. Therefore, villagers will not be totally abandoned and they will continue to have the means to obtain their basic medicines which they still need and appreciate.

In Koro, some project activities may warrant continuing if certain conditions are met. The conditions are:

a. That the financial analysis shows the government of Mali can and will support project activities when U.S. funding ends.

b. That project leaders, with proper consultants, establish a basis for health impact evaluation. As a minimum, they should set up a means of determining changes in infant mortality between study villages and control villages.

c. That the principal francophone technical personnel already working for the project remain in order to assure continuity of operations. The university contractor may be dismissed.

If these three conditions can be met, then I would favor a project extension of two years. The extension should not be geographic. Rather, it should intensify and sharpen operations already in effect. In other words, no new villages should be added to the project. Training should concentrate on recycling workers already trained and emphasize the four major health problems listed below.

A project extension will also allow the development of project expertise in maternal and child care in Koro. From Koro, one can launch improved methods for nutrition promotion, family planning, and seek child care. The maternity facilities should be able to accept referral cases for emergency care. These activities in Koro are on the verge of expansion and if their development proceeds satisfactorily, then they will be of immense benefit to rural health.

2. Sharpen Project Emphasis

Training, personnel, management, and financial resources should be concentrated on fc ~ major maternal and child health problems which are

3. Delay in Training Manuals

Now, in month 40 of a 48-month project, the final version of the training manuals has still not been produced. Whatever the reason for this delay, it is inexcuseable.

4. Inadequate Clinical Referral Services

At present, village health workers have no assurance that patients they cannot handle will be properly cared for when they refer them to cercle capitals. Provision was made in the early contractual agreements for the improvement of referral services at Koro. To date, these improved services have not materialized.

5. Need for Revision of Drug Stocks

a. Penicillin is not often needed at the village level. When it is used, it is often used inappropriately.

b. There is a need for bandages and skin antiseptics at the village level.

c. Virtually all village health workers have requests for something to relieve abdominal pain--mostly dyspepsia, a common ailment in subsaharan Africa.

d. American manufacturers produce chloroquin tablets of 150 mg base. European manufacturers produce chloroquin tablets of 100 mg base. In virtually all of Africa and certainly all of Mali, only tablets of 100 mg base can be obtained. Naturally, all health workers in Mali think and prescribe in terms of the 100 mg unit. Unfortunately the Mali Rural Health Project has caused an aberration by supplying American 150 mg tablets. This project authorizes the lowest possibl level of health workers, many of them illiterate, to prescribe and dispense this important and potentially dangerous drug. Village health workers are taught by pictures and colored bottles to identify the "malaria pill." They have no idea that the American pill, while almost identical to the European pill, is 50% more potent. When stocks run low or when village people go to a town pharmacy to purchase malaria pills, they will invariably receive the 100 mg European type pill. There is no indication that an American sized pill will ever be sold in Mali or that American manufacturers even wish to enter the Mali drug market and sell their 150 mg pills. Yet regulations to purchase from U.S. firms have created a situation in Mali which will eventually backfire when the project ends. It will cause great distress to the very poor and unlettered people we are trying to help. The project should humanely supply chloroquin only in tablets of 100 mg, no matter where they are produced.

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5. Collaboration with Traditional Healers

Although the Project Paper directs project collaboration with traditional healers, no one asked the healers if they wanted to collaborate with the project. Dr. Claude Letarte and Mr. Waraba Koné have written reports of their encounters with traditional healers and with officials of the government bureau of traditional medicine. There seems to be two reasons why collaboration may be desirable to the government health service. First, the government wants to learn the secrets of traditional drugs in order, presumably, to test them and make them widely available. Second, traditional healers have the confidence of village people and their advocacy of activities like oral rehydration and nivaquinization would give an immense boost to the project at the village level.

To date, no visible progress has been made to collaborate with traditional healers in either way. In fact, the project has produced no statement as to how to proceed with collaboration and the precise objective that collaboration is supposed to accomplish.

D. Major Problem Areas

1. Inadequate Basis for Impact Evaluation

The Mali Rural Health Project is an important experiment not only for Mali but for all of Africa. If this project, at so low a cost, can produce definite improvements in health, then a great breakthrough in primary health care will be established. Millions will benefit from this finding and similar projects will be started in much of the Third World.

This evaluator feels that the health of the villagers has probably been improved by this project, but there is no way to prove it. The Project Paper specified that adequate baseline data and data from control villages be obtained and followed throughout the project. These specifications were evidently ignored by the contractor and USAID did not enforce them. One recognizes that the collection of precise baseline data and follow-up studies is extremely difficult under Malian field conditions. However, they can be done, and without them no one will ever know if the project did anybody any good.

2. Need to Sharpen Project Emphasis

Over the length of the project, the project teams have collected data on what the major health problems are and which ones are amenable to attack. Now is the time to sharpen project emphasis and to apply most resources to the four major problem areas which will improve maternal and child health. The four problems to attack by both promotive and curative efforts are: malaria, diarrhea, infant malnutrition, and unhygenic obstetrical deliveries.

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These findings show that the top three complaints, which provoke 82% of H-S visits, probably can be treated with chloroquin and aspirin. Of course, the villagers know what remedies and skills the H-S can offer and they seek relief only from those complaints that they know he can handle.

Midwifery: During August, September, October 1981, in six sample villages of the Koro cercle, with a total population of 6,496, 11 A-T assisted at 46 deliveries of which 5 were stillbirths (2 A-T were absent and their deliveries are not included in these totals). With a population of 6,496 and a national annual crude birth rate of 49.1/1,000 (World Bank estimate), one would expect to have 79.7 births in the 6 villages rather than the 46 that were actually recorded. Each A-T assisted at an average of 1.4 deliveries per month. No recorded data is available from Yelimané.

4. Effectiveness of Health Promotion Activities and Integration with Curative Services

Health promotion activities almost always play a secondary role whenever they are integrated with curative services. This phenomenon is not necessarily undesirable, and indeed it may have a desirable outcome in two aspects of this project. The nivaquinization program to suppress malarial attacks in pregnant women and young children is part of the promotive duties of the H-S. He gives out the chloroquin tablets and the more tablets he dispenses as a prophylaxis, the fewer he will dispense as curative therapy. This program started on a trial basis in April 1981. Already, village mothers attest to its benefits. Final indications of its effectiveness will not be available until June 1982.

Oral rehydration promotion activities are totally in the hands of H-S. Although almost all Koro H-S know its preparation and use, the oral rehydration solution is only beginning to be accepted by the villagers. Since H-S have no alternative method of treating diarrhea, they are forced to promote home oral rehydration treatment. It will be difficult to measure the final results of this activity.

Nutritional promotion activities are poor. Most H-S and A-T do not even know the ingredients of a proper weaning food. No improvement in nutrition can be expected. This aspect of the project should be strengthened.

Promotion of child spacing activities is nonexistent. Promotion of village hygiene (latrine construction, trash clean-up, etc.) cannot be expected to improve health within the foreseeable future. Most H-S are wasting their breath to preach the health benefits of these activities. One agrees that a tidy village may be a nice place to look at, but it is not necessarily healthier. Latrine construction is of questionable value. No one has described the present defecation habits of the villagers. Indeed, they might do better to defecate in open sterilizing sunshine than into dark latrine holes.

A-T would accurately record births and deaths in their villages. They have not recorded these vital statistics in a reliable manner and it is unreasonable to assume that they could.

Project leaders from time to time have conducted surveys of a sort. These surveys are good pilot studies and they indicate in gross terms the magnitude of the problems one confronts in the villages. Sissoko and Kelly estimated the crude birth rate at 49/1,000 in eight Koro villages. They also found an infant mortality rate of 109/1,000 in the same villages. Lambl estimated 40-50% fetal/child loss per pregnancy from his interviews with village women. Several investigator found 18-34% of all children malnourished using the arm circumference method. Malaria smear surveys showed 40-60% rates of infection in project areas. Conjunctivitis surveys indicated that 34-38% of children were infected. In spite of these findings, these surveys do not meet the standards of acceptable scientific investigation. For this reason, no reliable measure of project impact can be made.

This evaluator is appalled that Harvard University, reknown for its pre-eminence in epidemiology, did not furnish adequate direction for a sound scientific study. One recognizes the hardships of field studies in the Sahel and the limitations of unschooled research assistants. Yet, the contractors did not even make an attempt to set up control groups, draw baseline measurements from a reliable sample, or establish mechanisms for measuring change. These fundamentals of evaluation were specifically required by the Project Paper. If the Harvard technical assistance team found that such epidemiologic procedures were unrealistic or beyond their capabilities, then they should have requested modifications of the project documents.

3. Number and Kind of Village Health Worker Consultations

In a sample of 12 Koro village radii whose populations totaled 18,632, H-S treated villagers in 282 consultations during the month of October 1981, an average project month. This figure indicates that an average of 23.5 consultations were held in each village and 1.5% of the village people sought curative care from the H-S in that month.

In the 12 sample villages, the following complaints were addressed by H-S during October 1981:

Complaint	Number of Complaints	Percentage of Total Complaints
Fever	105	37.2
Headache	101	35.8
Rheumatism	26	9.2
Cough	15	5.3
Diarrhea	11	3.9
Skin wound or infection	5	1.8
Ear problem	5	1.8
Eye problem	4	1.4
Pain unspecified	4	1.4
Tooth problem	3	1.1
Preventive medication	3	1.1
Total	282	100%

C. Evaluation of Health Impact

1. Population Covered

Arrondissement	Number of Villages Covered	Total Populations of Village Radii Covered
Koro		
Toroli	20	18,574
Central	14	25,818
Madougou	11	21,467
Koporokenie-Na	1	3,457
Yelimané		
Tambacara	14	13,142
Total	60	82,458

Eighty-four H-S serve the 69,316 people who live in the 46 Koro villages which means that there is one H-S for every 825 people. Thirty-five trained A-T serve in the Koro villages which means that there is one trained A-T for every 1,980 people.

Thirty-five poor quality H-S serve the 13,142 people who live in the 14 Tambacara villages which means that there is one H-S for every 375 people Twenty-one trained A-T serve in the Tambacara villages which means that there is one trained A-T for every 625 people.

According to 1980 figures produced by the World Bank (Zachariah, K. L., Population Projections 1980-2000), the population of Mali has the following characteristics: Children aged 0-4 constitute 18.8% of the total population. Women above the age of 15 constitute 27.7% of the total population.

Of 282 H-S consultations held in 12 sample villages of the Koro cercle during the month of October 1981, 13.8% were for children aged 0-4. Twenty-six percent were for women over age 15. Because young children and women of child-bearing age characteristically have more acute illnesses, one would expect more consultations to be for these two groups. Moreover, rural areas of Africa tend to have a larger proportion of women and young children than country-wide figures indicate. Consequently, these Koro data indicate that women and children seek proportionately fewer of the total H-S services than one would expect in an African village.

2. Measurable Improvements of Mortality and Morbidity

The Project Paper clearly states that the project should obtain reliable baseline data and similar data from comparable control groups. No such data was obtained and therefore no change in mortality and morbidity can be measured. Moreover, it was assumed that throughout the project, H-S and

Project plans call for the improvement of referral facilities in Koro. To date, in the 40th month of the project, the promised facilities are still non-operational. Not only the lack of facilities but the inertia or faint-heartedness of medical leaders appear to impede the development of referral services.

Village health workers are instructed to send a referral slip or note with persons that they send in. Earlier in the project, printed referral slips were a part of every health worker's kit. Referral slips, notes or other correspondence from the village worker is neglected nowadays. Such negligence is a sign that the referral system does not work very well. It also weakens the credibility of the referring health worker.

4. Organization of Health Personnel at Highest Levels in Responding to the Support Needs of a Primary Health Care System

The government's health care system in Mali is managed through a traditional pyramid-type organizational framework. The national director of rural health services directly oversees the activities of each regional health officer. The regional health officer is responsible fo the activities of the chief health officer of each cercle. The cercle health officer oversees all health activities in the arrondissements of his cercle. A senior nurse is posted at the central dispensary of each arrondissement. Fortunately, the Mali Rural Health Project is an integral part of the Ministry of Health system and the director of national rural health services serves as a director of the subject project.

This arrangement is ideal, and no organization of higher level personnel could better support a primary health care system. Nevertheless, the system has its flaws. Until now, virtually all project decisions were made in Bamako. Directives bypassed the regional capitals and health officers. The authority passed from Bamako directly to the cercle level. At present, the project leaders are attempting to correct this short-circuited authority. The addition of Malian administrative personnel and an expatriate medical consultant to the medical headquarters of the Fifth Region should help to decentralize decision making. One hopes that this new arrangement will draw more support from the regional office and so strengthen services at the village level.

2. Adequacy and Effectiveness of Supervision

The chief problem of health worker supervision at the village level is that the health worker is so frequently absent at the time of the supervisor's visit. Thirty-six percent of Koro A-T were absent at their supervisor's last visit and 28% H-S were absent. Project leaders have found no solution to this problem. In Yelimané, supervisory visits have not occurred in the past five months. The supervisors say they have problems of transport.

Visits when they occur are scheduled at monthly or bimonthly intervals. Supervisors are not particularly schooled in what to do during their visit but since they all have taught in health worker courses, they follow those same themes during supervision. The main supervisory activity is a check of the treatment notebook and a count of cases treated or babies delivered. Next, money is collected and drugs and supplies are replaced where needed. Where a special village activity such as nivaquinization or health committee formation is underway, the supervisor talks to village leaders and encourages continued involvement. If a supervisor happens to be specially trained in hygiene, he will inspect wells and estimate the need for chemical purification. Some supervisors review drug dosage schedules for various ailments and in general bolster up the village health worker. This evaluator found no health worker who did not value and praise their supervisor's visit.

On balance, the supervisory system seems to work well when it works. In fact, it is probably the sole element of the project which has kept village health workers active and interested in their roles. One suspects that the poor performance of Yelimané health workers is due largely to the break-down of the supervisory system there.

3. Adequacy and Effectiveness of the Referral System

The Mali Rural Health Project has failed to support its village health workers with an adequate referral system. It is patently unfair to train a health worker to perform simple tasks and yet not furnish him support when he is confronted with problems that he cannot handle. Health workers are instructed to refer a large number of problems to cercle medical headquarters at Koro and Yelimané. Yet when these problem cases arrive, little can be done for them. There are no functioning operating room personnel or surgical facilities at Koro or Yelimané, yet women in obstructed labor are instructed to go there for Caesarian section. Some have died. Similarly, men with strangulated hernia are pointed to cercle centers where they receive no help. On a less urgent note, some A-T are told to send women in need of contraception to Koro, yet the physician there has no IUDs and no training on how to insert them.

Many villagers report to nearby Christian mission dispensaries when they need referral services. Such dispensaries have become, de facto, a part of the referral system even though they too offer no acute surgical services.

correctly. In Yelimané, only one health worker knew how to use the band.

A-T all seemed to know the use of every equipment item in their kits. Only 65% actually had cord ties in their kits. One suspects that clean cotton string has other village uses than just to ligate umbilical cords. A-T drugs consisted only of eye drops which are supposed to be instilled daily into each infant's eyes for the first five days of life. The A-T all knew the use of these drops yet only 30% had them presently on hand.

Evaluation of Village Health Worker Support System

1. Adequacy and Effectiveness of Training

These 40 months of the project have seen a gradual evolution of the training courses. Yet, this evaluation could detect no difference in H-S effectiveness between graduates of different Koro courses. Koro health workers who have completed any of these courses are adept at treating malaria, the most important health problem of rural Mali. More recent emphasis has been given to the use of the sugar-salt solution for diarrhea management.

Family planning is still nowhere in the curriculum. There is also some indecision as to what direction to go in attacking malnutrition. Yet, after six H-S courses in Koro and two H-S courses in Yelimané, no definitive teaching manuals have been produced. The manuals now in use and in the hands of functioning H-S are dreadfully poor. They are confusing, jumbled, poorly illustrated and poorly printed. These manuals were produced by persons with little appreciation of the verbal and visual perceptive limitations of illiterate peoples.

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Training courses for A-T have been more consistently good. Much time was spent in the practical application of obstetric principles. Peace Corps trainers were heavily involved at Koro.

At present, all trainers are Malian health personnel of the cercle and arrondissement levels. They are prepared for their teaching duties by informal discussions and exercises with the expatriate staff. Although they seem to function well enough as teachers, they require repeated reinforcement before each course in order to function effectively.

The project would profit immeasurably by repeat courses for existing village health workers. At present, the only possible instruction that a village worker receives after his initial one week of training is during the visit of the supervisor, if that occurs. Relatively little instruction takes place during this brief visit.

On balance, in spite of the poor teaching materials now in use, the graduates of Koro training courses have done amazingly well in their village health roles. Graduates of the Yelimané courses do poorly.

- Weight and/or arm circumference charting of infants and young children. Although each H-S is supplied with an arm measuring band and instructed in its use, virtually nobody uses it.

- Simple diagnostic categories. Each H-S has a record book in which he is supposed to write the name, age, sex, symptoms and treatment he renders. One hundred percent of Koro record books are up to date and legible. Such records are the best indication of a village's response to H-S practice. Koro project supervisors invariably check the book's notations and such surveillance probably constitutes the major supervisory activity of the project. In Yelimané, no such records are kept at all. A-T record only the birth dates of the babies they deliver. They usually record neonatal deaths also. Illiterate A-T usually have someone to write for them.

- Feeding and weaning practices. Village health workers do not record feeding and weaning practices.

Health recordkeeping functions are minimal and so they should be. Virtually all A-T are illiterate. Most H-S have no more than a fourth grade education. Some are totally illiterate yet one has completed the 8th year of school. Writing constitutes an unfamiliar chore for these village people and this project should require of them the absolute minimum number of written reports necessary for ongoing activities.

The Koro H-S do an exceptionally good job on their record books. The illiterate A-T do poorly probably because their record sheets are so confusing. Neither could this evaluator understand in what column or what row of the record grid a newborn baby was supposed to be listed.

5. Use of Training Materials

Every H-S had his training materials close by in his medicine chest. On only two occasions did a H-S reach for his brochure in order to look up a drug dosage in question. Six to eight times when the evaluator asked the H-S to find a certain item in his brochure, the H-S found the correct reference without any difficulty. It appears that the training brochures are available, but seldom referred to. One should note that the training materials which the H-S now have are unattractive, poorly printed, and flimsily bound. They don't look very important and thus are not regarded as important. The A-T have no training materials in their kits.

6. Use of Drugs and Medical Equipment

The H-S have only one item of equipment, a small plastic armband with which to evaluate a child's state of nutrition. With one exception, every H-S had his armband in his medicine chest. Every H-S was asked to demonstrate the use of the band on a nearby child. Forty-four percent of Koro H-S used the band correctly, although nobody appeared to use it very often. Twenty-seven percent of Koro A-T used the band

- Improved food production. Even though all H-S and A-T are farmers, improved food production activities are not appropriate to their health duties at the present time.

- Iron supplements in pregnancy. Although iron supplements would undoubtedly improve the outcome of most pregnancies, the promotion of iron supplements is not now a part of the village health workers' role.

- Tetanus vaccination of pregnant women. The GRM has not furnished the resources with which to promote tetanus vaccination of village women.

- Sterile razor blades and cord ties for village midwives. One hundred percent of Koro A-T know th value of disposable blades and their one-time use. Such health promotion has been effective. Ninety-one percent of A-T had blades in their kits and 64% had clean cord ties. In Yelimané, only one A-T had blades on hand. Two of 10 others said that they used clean blades regularly.

- Niviquinization (malaria suppression). A program of malaria suppression by the ingestion of prophylactic doses of chloroquin is now promoted in 15 villages of the Koro cercle. Promotion activities are begun and sustained by the central supervisory teams. The individual H-S is required only to give out the pills each week. In one village of the Madougou Arrondissement, a H-S has promoted niviquinization on his own initiative. Already 10-12 people have responded to his efforts. In Yelimané, niviquinization is still a subject of public debate. Several different types of payment schedules are being tried on a small scale.

4. Health Recordkeeping Functions

- Continuous census of births, deaths, migrations, and marriages. No A-T or H-S gathers or records this data. The A-T keep a record of babies they deliver and those that die while under their care. Some H-S record births and deaths if they are brought to their attention. Such census keeping activity, while undeniably valuable, is inappropriate to the role of the village health worker. A civil authority should be appointed to this task, not a village volunteer.

- Birth weights. Although scales were purchased for the project, no scales have been furnished to Koro A-T and thus, no birth weights have been recorded. Yelimané A-T have baby scales but only one A-T actually weighs the babies that she delivers.

- Parity and gravidity of pregnant females. The A-T do not record such data although those who are literate could probably do so if given adequate instruction.

- Family planning utilization. Since contraceptives are unheard of in the project areas, no record of their usage is warranted.

	Unsatisfactory	Satisfactory
Koro		
H-S	(5) 20%	(20) 80%
A-T	(2) 18%	(9) 82%
Yelimané		
H-S	(5) 45%	(6) 55%
A-T	(4) 57%	(3) 43%

3. Health Promotion Activities

- Simple infant care and newborn care. All A-T of Koro render satisfactory newborn care and cord care for the first two weeks of life. The effects of this care are reflected by the villagers' remarking on the decreased incidence of neonatal tetanus since the project began.

- Breast feeding and supplementation with weaning foods. No help is required to instruct village women in the virtues of breast feeding. However, supplementation begins too late and its delay results in a large number of malnourished children. There was no evidence that either A-T or H-S encouraged the introduction of weaning food supplements to breast milk at the appropriate age. This is a priority role for all village health workers and it has been neglected apparently.

- Child spacing and family planning advice. This aspect of the project has been neglected totally. Neither A-T nor H-S know anything whatsoever about contraception. Contraceptive knowledge and advice should be an integral part of health worker capabilities but it isn't (see recommendations).

- Hygiene and safety in the home. The H-S sometimes advise on latrine construction. Such advice is rarely followed. Indeed, most H-S do not have latrines themselves. Home safety could be improved by protecting hearths in order to prevent burns by small children. There was no evidence of hearth protection in any village or even mention of such activity.

- Village hygiene. Almost all H-S of Koro are vocally concerned about village hygiene. Such promotion comes hard for a H-S and they undertake it usually only after prodding from a supervisor. Characteristically, they go to the village chief with their complaint and the village chief orders a general clean-up sometimes.

- Logistic link for the vaccination service of the Grandes Endemies. There is little evidence of H-S involvement in this activity. Such involvement should be stimulated by the Grandes Endemies team whenever vaccination campaigns are planned. Vaccination campaigns are usually undertaken only in the face of an epidemic such as meningitis.

correct dosage of chloroquin for adults and children but not for infants. Two of these H-S reached for their training manuals in order to look up the correct dosage. In Koro, no H-S knew the proper dosage of chloroquin for all age groups.

- Follow-up to assure treatment of chronic disease. This function is presently inappropriate to the role of H-S and was not included in their evaluation.

- Distribution of appropriate medicines. Sixty percent H-S demonstrated the appropriate dispensing of eye drops and aspirin. Aspirin is the most frequently dispensed drug and virtually all H-S do it well.

- Midwifery. It is extremely difficult to evaluate clinical midwifery skills without actually observing A-T performance during a delivery. An indirect assessment was made which took into account the supplies on hand, knowledge of what to do in unusual circumstances such as severe postpartem hemorrhage, knowledge of basic hygiene such as handwashing and the recorded outcomes of pregnancies managed. For example, two stillbirths out of five deliveries performed by one A-T was recorded as unsatisfactory performance. Performance was also graded on their response to questions about hypothetical situations. Overall, 55% of A-T clinical performance was estimated as satisfactory or better.

If one compiles evaluation results of the above mentioned functions, the health workers' performance in clinical diagnosis and treatment may be rated as:

	Unsatisfactory	Satisfactory	Superior
Koro			
H-S	(9) 36%	(11) 44%	(5) 20%
A-T	(4) 36%	(7) 63%	(0) 0%
Yelimané			
H-S	(11)100%	(0) 0%	(0) 0%
A-T	(4) 57%	(2) 29%	(1) 14%

2. Referral Training and Judgment

- H-S were asked how they should manage certain problems such as dog bite, meningitis, fractures, etc. The nature of their response indicates the quality of their training and judgment in referring patients to more adequate medical facilities. In the same manner, A-T were asked how they would manage such obstetric complications as prolonged labor, convulsions and arm presentation, all of which demand immediate referral to higher levels of obstetric competence. The result of this evaluation of referral training and judgment is as follows:

5. Reports of Project Progress

Objective: Annual reports for each year of project implementation; summary evaluation report at end of three years.

Accomplishment: Good reports are received semi-annually. At the end of three years, a series of evaluation reports wa obtained and used for mid-project direction.

A. Evaluation of Village Health Workers' Role and Performance

Annex F of the Project Paper lists the "functions of Malian personnel in demonstration areas." Some of these functions are inappropriate in the light of project realities and limitations. Some functions have been ignored by the project leaders. Most of the functions have been incorporated into the defined role which the VHWs are expected to perform and against which they are now evaluated. All functions listed in Annex F are mentioned and referred to below. The candidate was presented with a hypothetical case such as: "What would you do if a six year old boy who had been bitten by a dog came to you for help?" He was then judged on the nature of his response.

1. Clinical Diagnosis and Treatment Functions

- Simple early home treatment of diarrhea. Almost all H-S* of Koro knew how to prepare the oral sugar-salt solution. Sixty-five percent of those interviewed regularly prescribed its use. One outstanding H-S had prescribed and recorded the use of the sugar-salt solution seven times within the past month. The A-T were not evaluated for their treatment of diarrhea because all were not yet trained to prepare the treatment solution. In Yelimané, no village health workers knew how to prepare the sugar-salt solution.

- Home treatment of early malnutrition using local foods. Most H-S gave simplistic answers when asked how to treat malnutrition. In Koro, when pushed for precision, 52% gave a satisfactory response which included advocating the use of peanuts and beans. In Yelimané, only 2 of 11 H-S gave a satisfactory answer.

- Simple treatment of respiratory infections. In Koro, 48% H-S could diagnose and treat respiratory infections satisfactorily. In Yelimané, 3 of 11 could render satisfactory treatment.

- Simple treatment of skin infections. Forty-eight percent H-S in both areas could treat simple skin infections satisfactorily.

- Treatment of malaria. In Koro, 32% H-S knew the correct dosage of chloroquin for all age groups. Fifty-six percent H-S knew the

*Village health workers are either Hygienist-Secourist (H-S) or Accoucheuse-Traditionelle (A-T).

Summary of Objectively Verifiable Indicators as Required by the Project Paper

1. Establishment of Demonstration Projects

Objective: By month 36, there should be one demonstration project in one arrondissement of each of three selected regions. EACH demonstration project should serve 20,000 people in approximately 40 villages. A total of 60,000 people should be served in 120 villages by month 36.

Accomplishment: In month 40, there is one demonstration project in each of two regions. In the Fifth Region, the project serves 69,316 people in 46 villages, located in 4 arrondissements. In the First Region, the project serves 13,142 people in 14 villages located in one arrondissement. In month 40, a total of 82,458 people are now served in 60 villages.

2. Training of Health Workers

By month 36, the following health workers should be trained:

	Objective	Accomplishment
Village level	40	175
Arrondissement level	9	13
Cercle level	3	3
Regional level	3	0
National level (U.S. trained at master's level)	5	1 (due [illegible] Aug. 1982 and work in the Office Malien de Pharmacie)

3. Community Diagnosis

Objective: Reports from project zones and comparison areas.

Accomplishment: No comprehensive and satisfactory community diagnosis was compiled. Several disparate surveys were performed in localized project areas. No data from control areas was obtained.

4. Replicable Initial and Continuing Educational Studies (including teaching manuals, A-V materials, etc.)

Objective: One report for each area.

Accomplishment: A series of studies continues to assess various training methodologies and health promotional materials. In month 40 of the project, definitive teaching manuals have not been produced or replicated. No formal reports on these educational studies have been submitted.

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