

**Memorandum**

Date May 14, 1981

From Jay S. Friedman, M.A., Program Evaluation Branch  
Nancy J. Binkin, M.D., M.P.H., Abortion Surveillance Branch;  
Michael E. Dalmat, Dr.P.H., Office of the Division Director; and  
Family Planning Evaluation Division, CHPE

Subject Foreign Trip Report (AID/RSSA): Mali, February 26 - March 25, 1981;  
Senegal, March 26-31, 1981

To William H. Foege, M.D.  
Director, Centers for Disease Control (CDC)  
Through: Horace G. Ogden  
Director, Center for Health Promotion and Education (CHPE) *Hur*

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**SUMMARY**

Following a visit to Mali in November 1980 by Friedman (See Foreign Trip Report of February 24, 1981) the Family Planning Evaluation Division (FPED) was requested by USAID/Bamako and the Ministry of Health and Social Affairs of Mali to implement two activities:

- 1) A general evaluation of family planning services in Mali.
- 2) a study to measure the complications resulting from incomplete abortions,

In collaboration with Ms. Nadine Burton of the International Fertility Research Program, Research Triangle Park, North Carolina, these two activities were implemented during the period February 26 - March 25, 1981.

In collaboration with the Ministry of Public Health and Social Affairs the CDC and the IFRP provided assistance in conducting an evaluation of family planning services in Mali. The evaluation examined the services provided by the Division of Family Health (DSF) as part of overall family health activities within its Maternal and Child Health Centers (PMI), as well as the family planning services provided by the three clinics of the Malian Association for Family Protection and Promotion (AMPPF). Data collection instruments were developed, field tested, and revised accordingly. Using these instruments, the study team composed of CDC, IFRP and Ministry personnel evaluated the family planning services of eleven centers. After an initial review of the data, the study team prepared a set of preliminary recommendations which were presented and discussed with officials from the Ministry and USAID/Mali. Within the next six weeks, the data will be analyzed in Atlanta and an "Evaluation Report" will be prepared and forwarded to the Malian members of the study team for their comments. Thereafter, the "Evaluation Report" will be finalized and submitted to the Ministry, USAID/Mali, and AID/Washington.

For the benefit of all PMI activities, not just family planning, we recommend a restructuring and bolstering of the DSF (refer to Figure 2). One of the central advantages of the proposed reorganization is that both the director and assistant director will be able to delegate much of the day-to-day responsibility for both administrative problem-solving and the technical development of the staff and the program in general to (1) the technical supervisors who will have more immediate access to and a closer working relationship with PMIs, (2) a training and IEC coordinator, and, (3) a supply officer. This will leave the director and assistant director with more time to evaluate the efficacy and efficiency of the program, provide direction to staff through the technical supervisors in order to bolster weak services and to plan and prepare for the geographic and programmatic expansion of the program.

The second collaborative activity was a specific study to estimate the sociomedical costs of complications following induced and spontaneous abortions. The Malian medical community has been very concerned about the morbidity and mortality associated with abortions. Currently, the country's abortion legislation does not permit termination of pregnancy even in life-threatening situations. Nevertheless, a large number of abortions are performed in Mali, which are frequently done under septic conditions, leading to complications that result in a large number of hospital admissions and deaths.

Ministry of Health personnel felt it was important to define and measure the extent of the health and social costs associated with abortions. Rather than attempting to measure the exact number of induced abortions taking place in Mali, a prospective study has been designed to monitor hospitalized cases of abortion complications for a 12-month period in fifteen urban and rural health care facilities using a standard data collection instrument. Senior Malian collaborators and midwives in these health care facilities acting as data collectors were trained by CDC/IFRP staff and have begun to document cases.

In July 1981, Ms. Burton will re-visit Mali to monitor the progress of the data collection and to assist in resolving any field problems that might arise. In September 1981, Dr. Binkin will re-visit Mali to supervise data collection activities and organize a preliminary analysis of data collected for the first six-month period. An interim report will be prepared in the fourth quarter of CY 1981. A final report will be prepared in April 1982.

In Senegal we met with the USAID/Senegal Health, Nutrition and Population Officer at his request in order to discuss potential collaboration with FPED. A study of maternal mortality was of particular interest to USAID and Senegalese health officials that we met. In addition, a meeting was held with the Chief Editor of the magazine "Famille et Developpement," which has a circulation of 40,000 throughout Francophone Africa to discuss the contribution of articles on family planning subjects from FPED staff.

#### I. Places, Dates and Purpose of Travel

- A. Bamako, Mali February 28 - March 25, 1981 at the request of USAID/Mali, DS/POP/FPSD and the Ministry of Public Health and Social Affairs (The Ministry) to conduct the following two activities in collaboration with Ms. Nadine Burton of the International Fertility Research Program (IFRP):
1. During the period, March 1-28, Nancy Binkin and Jay Friedman provided consultation in the implementation of a study of maternal and abortion-related mortality in Mali.
  2. During the period, March 7-28, Michael Dalmat and Jay Friedman provided consultation to the MOHSA for conducting an evaluation of family planning services in Bamako and other health regions of the country. Principal counterparts were Dr. Liliane Barry of the Division of Family Health (DSF) of the Ministry and Mr. Abdoul Tounkara of the Association Malienne pour la Promotion et Protection de la Famille (AMPPF).
- Both activities were to follow up a planning visit to Mali by Jay Friedman November 8-20, 1980.
- B. Dakar, Senegal March 26-31, 1981, at the request of USAID/Senegal and DS/POP/FPSD to consult with Dr. Michael White, USAID Health Nutrition-Population Officer en route returning to the U.S. The normal itinerary returning to the U.S. from Mali requires a stopover in Dakar, Senegal.

This travel was in accordance with the Resources Support Services Agreement (RSSA) between the Office of Population, AID, and CDC/CHPE/FPED. In addition, USAID/Mali requested that Dr. Binkin provide technical advice concerning a meningitis outbreak which took place during our visit. The details of this epidemiologic investigation are presented in a separate trip report.

II. Principal Contacts

A. Mali

1. USAID/Mali

Mr. Thomas Park  
Health, Nutrition and Population Advisor

2. Ministry of Public Health and Social Affairs (MOPHSA)

Dr. S. Konate  
Deputy Director of Planning

Dr. Liliane Barry  
Chief, Division of Family Health

Mme. Sira Dembele  
Planning Division

Mlle. Jasmine Abel  
Nurse-Midwife, Division of Family Health

Dr. M. Diop  
Chief Medical Officer  
Gabriel Toure Hospital

Dr. Mamadou Lamine Traore  
Surgeon, Point G. Hospital

Dr. Sangare  
Chief Medical Officer  
Director, Point G. Hospital

Dr. D. Diabe  
Chief Medical Officer  
District of Bamako

Mme. Fatimata Keita  
Chief Midwife  
Institute Nationale de Prevoyance Sociale

Mr. Mamadou Konate  
Director of Social Affairs

Mr. Lassana Siby  
Planning Division, MOPHSA

Mr. Mamadou N. Traore  
Director of Planning, MOPHSA

3. School of Medicine

Dr. Aliou Bah  
Director-General

Mr. Attaher Toure  
Student

4. Association Malienne Pour la Promotion et  
la Protection de la Famille (IPPF Affiliate)

Mr. Abdoul Tounkara  
Research and Evaluation Officer

B. Senegal

1. USAID/Senegal

Dr. Michael White  
Health, Nutrition and Population Advisor

2. Other Contacts/Senegal

Dr. Paul Correa  
Professor of Medicine and Chief, Obstetrics  
and Gynecology, Dantec Hospital, Dakar

Mlle. Marie-Therese Boye  
Nurse-Midwife and Social Worker  
Societe Nationale de l'Exploitation des Eaux, Dakar

Mme. J. Y. Kane  
Nurse-Midwife  
Family Planning, Protection Maternelle-Infantile  
Medina, Dakar

Dr. Ismail Sy  
Director, Maternal-Child Health  
Ministry of Health, Dakar

Mme. West-Allegre  
Director Croix Bleue  
Family Planning Clinic

Dr. Elom  
World Health Organization  
Program Coordinator, Senegal

Mr. K. Thiam  
Executive Director  
Association Senegalaise du Bien-Etre Familiale  
(IPPF Affiliate)

Mr. Francois Itoua  
Chief, Editor  
Famille et Developpement  
Magazine, Dakar

Dr. J. Lauroy  
Director, Obstetrics and Gynecology  
Abass Ndao Hospital  
Dakar

### III. Background

Following a visit to Mali in November 1980 by Friedman (See RSSA Foreign Trip Report of February 24, 1981), the Family Planning Evaluation Division (FPED) was requested by USAID/Bamako and the Ministry of Health and Social Affairs of Mali to provide technical assistance in the implementation of two activities:

- 1) a study to measure the complications resulting from incomplete abortions,
- 2) a general evaluation of family planning services in Mali.

These activities were carried out in collaboration with Ms. Nadine Burton, Coordinator for Africa of the International Fertility Research Program (IFRP), Research Triangle Park, North Carolina. Collaboration between CDC/FPED and IFRP proved to be extremely advantageous since IFRP had already developed a questionnaire which, with minor modifications, could be used in the abortion complication study and IFRP could also provide the necessary funds for in-country local costs for the two projects in Mali. FPED/CDC, for its part, provided French-speaking technical personnel who were experienced in conducting both activities and one in particular who was familiar with field work in Mali.

The Ministry of Public Health and Social Affairs (hereafter referred to as "the Ministry") provided the services of senior collaborators for both activities as well as the use of vehicles for field trips. Mme. Sira Dembele, Chief of the Planning Division of the MOPHSA acted as the overall project coordinator for both activities.

The first activity was to evaluate how well Malian family-planning activities in Mali have served the needs of the population since their inception in the early 1970's, as well as to determine what actions must be taken to improve services within the next ten years.

The second collaborative activity was a specific study to estimate socio-medical costs of hospitalized complications following induced and spontaneous abortions. The Malian medical community has been very concerned about the morbidity and mortality associated with illegal abortions. Although the country's abortion legislation does not permit termination of pregnancy even in life-threatening situations, a large number of abortions are nevertheless performed. Frequently, these abortions are done under septic conditions, leading to an unknown number of complications that result in a large number of hospital admissions and deaths.

#### IV. EVALUATION OF FAMILY PLANNING SERVICES (MALI)

##### A. Utilization of Evaluation Findings

The Division of Family Health (DSF) has begun the fourth year of a five-year project to provide upgraded MCH plus family planning services through its national network of 56 PMIs (MCH - Maternity Centers). Based in part on the forthcoming recommendations from this evaluation, the DSF will:

1. determine what needs to be done to improve the family planning services currently provided by PMIs;
2. decide where and at what rate to introduce family planning in the 21 PMIs not currently offering childspacing services;
3. identify those training, technical assistance, and other resource requirements needed to implement plans developed as a result of (1) and (2) above.
4. prepare a new proposal for the extension of UNFPA assistance and explore other sources of complementary assistance.

USAID/Mali intends to utilize this evaluation as one of several inputs into the development of an MCH/family planning support strategy.

Further participation in the evaluation has provided an open forum for the discussion and rethinking of the AMPPF's role in relationship to the DSF and the field of family planning in general.

B. Study Issues and Team

Based on preliminary agreements arrived at with the Ministry during Mr. Friedman's November 1980 trip to Mali, the evaluation was to address the following points:

1. The quality and completeness of quantitative reports and statistical data generated by family planning activities.
2. The number of continuing active users by method, continuation rates and reasons for discontinuation.
3. The age groups and social classes served (and whether there are unmet needs among them).
4. Expansion of the geographic coverage of the program.
5. Expansion of the services provided by the program, including research on the causes of infertility and its treatment, and the unmet needs for sterilization services.
6. The impact of socio-cultural, administrative and logistical constraints on program operations.
7. Clinic and central planning and management needs.
8. The training needs of staff providing FP services.
9. On-going evaluation and research activities by DSF and AMPPF staff.
10. The provision of family planning services for the next five years.

In preparation for the evaluation, we developed a detailed outline of study questions, the practical uses of the information to be collected, and the instruments for collecting the data. The proposed study questions focus on four areas of investigation:

1. services offered and users of services
2. factors affecting efficiency,
3. quality of care
4. availability and utilization of complementary services.

All of the data required to answer the study questions could be collected through the use of five data collection procedures and instruments:

1. Record Review of Family Planning Clients
2. Review of Monthly Reports
3. Logistics Review
4. Staff Interviews
5. Client Interviews

In Mali, the Study Team consisted of:

Dr. Liliane Barry, Division of Family Health (MOHSA)  
Mlle. Jasmine Abel, " " " " "  
Mr. Abdoul Tounkara, AMPPF  
Mme. Sira Dembele, Planning Division (MOHSA)  
Mr. Lassana Siby,  
Mr. Jay Friedman, CDC  
Dr. Michael Dalmat, "  
Ms. Nadine Burton, IFRP

The proposed study plan and the data collection instruments were reviewed by the study team before beginning field work and modified accordingly. The specific study issues investigated through the use of each data collection instrument are presented in Figure 1.

In addition, those MCH-Maternity centers that currently offer family planning services and those that do not were located on a map over which a population distribution overlay was placed. From this graphic display, it is easy to identify centers that do not offer family planning services that are located in densely populated areas. The DSF will use this aide in selecting midwives from these centers for training in the provision of services.

#### C. Data Collection Procedures

##### 1. Record Review of Family Planning Clients

The study period chosen for all centers, PMIA and IPPF affiliate (AMPPF) centers alike, was January 1, 1979 through February 1981. The January start date was chosen in order to leave a six-month history between mid-year 1978 when the PMIs began providing family planning services and the study so that a case load of clients might have been built. As the AMPPF Centers have been providing family planning services since 1974 or 1975, the January 1979 start date is somewhat arbitrary, but does provide for consistency in the study period.

Figure 1  
Study Issues Investigated by  
Data Collection Instruments

Record Review of Family Planning Clients

1. Social and economic characteristics and pregnancy outcome of users by method.
2. Method changes.
3. Current status of method use.
4. Apparent presence of contraindications to methods used.
5. Apparent thoroughness of client screening.

Review of Monthly Reports

1. Consistency of reporting.
2. Seasonal variation in user levels: prenatal, postnatal, and family planning consultations.

Logistics Review

1. Average consumption of supplies by method over a six-month period.
2. Number of months supply on hand by method.
3. Physical inventory.
4. Consistency of physical inventory with last month's report.
5. Lead time required to receive new shipment of supplies from time of requisition.
6. Mechanism that triggers a request for resupply.
7. Occurrence of stock-outs within last six months.
8. Status of storage facility.

Staff Interview

1. Training and experience in family health services and family planning.
2. Competing responsibilities of staff providing family planning.
3. Extent and nature of outreach.
4. Frequency and type of technical supervision.
5. Access to continuing education opportunities.
6. Ability to communicate in local languages.
7. Periods of greatest and least activity in the center.
8. Work schedule in the center.
9. Services or activities that are needed but not offered at present and the availability of time to carry them out.
10. Availability of external resources.
11. Procedures and norms with respect to family planning services:
  - number of cycles of pills provided during first and subsequent visits
  - availability of family planning services throughout the work-week.
12. Availability of nutrition (breastfeeding, weaning, supplementation) and STD prevention education to clients.
13. Availability of iron and folic acid tablets for women of reproductive age.
14. Demand for sterilization.
15. Technical knowledge:
  - contraindications and secondary effects of the pill and IUD.
  - symptoms, treatment, and referral of PID.
16. Availability and status of equipment.

Client Interviews

1. Present or former use of family planning services.
2. Perception of waiting period to receive services.
3. Distance from residence to center and travel time and cost.

Samples, ranging from 10% of client records in the case of large centers to 100% in the case of small centers, were systematically drawn from the files of study centers after taking a random start.

In all Ministry PMIs (MCH-Maternity Centers), family planning client records are organized alphabetically by the last name of the client. In the largest center, serving 51 percent of all PMI active users, the records of inactive clients are periodically weeded out and kept separately from the records of women presumed to be active. In this center, we selected every "kth" record from among the "active" records. In all other PMIs studied, records are not separated according to the status of the client. We drew every "kth" record from among all available records.

All IPPF affiliate (AMPPF) centers file client records chronologically by the month and year of the client's first visit. In the largest center, serving 95 percent of all AMPPF active users, records were drawn using the every "kth" approach from among the January 1979 - February 1981 records. However, in the two other AMPPF centers, the number of records available was so small that every "kth" record was drawn from all records, independent of the date of first visit.

## 2. Review of Monthly Reports

Monthly reports were reviewed for three months in both 1979 and 1980 to explore seasonal variation in new acceptors and revisits by continuing users. A rainy season month, a dry, cool winter season month and the Muslim holy month of Ramadan were selected, as follows:

	<u>1979</u>	<u>1980</u>
Rainy Season	August	July
Ramadan	July	August
Dry, Cool Winter	December	December

Because transportation is most difficult during the rainy season, and women are busy preparing meals and making special arrangements during Ramadan, we anticipated lower user levels during these months than in December, which offers the best conditions for travel and activities away from the home.

## 3. Logistics Review

The logistics data was studied in most centers using the most recent six-month period in which all six monthly reports were available. Therefore, the period under investigation varied from center to center within the last 14 months. Results from

inventories were compared with stock levels reported in the January or February 1981 monthly report. Questioning pertaining to stock-outs was limited to the six-month period prior to the evaluation.

4. Staff Interviews

In each center, a Chief Midwife is responsible for family planning services. She was interviewed using a "Staff Interview" questionnaire. In addition, a second, and in a few cases, a third person was also interviewed using the same form. These persons were nurses and midwives who assist the Chief Midwives in providing services or the physicians responsible for supervising their work.

5. Client Interviews

In the few centers where many clients were present at the same time, women were selected systematically after taking a random start. In several centers, very few (if any) women were present, so Study Team members interviewed anyone that came to the center during the field visit.

D. Selection of Study Centers and Conduct of Field Work

We proposed studying eight centers, four that are known to be functioning well and four that are known to be performing poorly, so that we could identify factors that might explain the difference between the two groups of centers. However, our counterparts preferred not to prejudge the performance of the centers. Instead, study centers were selected by the Malians to include centers offering family planning at four levels of the health system:

<u>Bamako:</u>	PMI Central Centre Pilot
<u>Regional Capitols:</u>	Koulikoro Hopital de Segou
<u>Cercle Headquarters:</u>	Niono Kolokani PMI Famory
<u>Arrondissement Headquarters:</u>	Beguinda Fana Mana Katibougou

Data collection instruments were field tested March 14, 1981 in the PMI Center at Badalabougou. Last minute modifications were made based on the field tests and forms were reproduced March 15-16. Field visits were made between March 17-23, followed by a preliminary review of the data and verbal reporting of findings and recommendations on March 25 to Ministry officials.

E. Preliminary Findings

Data collected in Mali is currently being analyzed and will be incorporated into a forthcoming evaluation report. The findings reported in this section and the recommendations presented in the next section are based on a preliminary review of the data and should therefore be considered to be tentative in nature.

1. Centers Providing Family Planning Services

Of the 56 PMIs (MCH-Maternity Centers) operated by the DSF, 21 or 37.5% have been providing family planning services for at least six months (refer to Table 2). Midwives from 8 additional centers have been recently trained to provide these services and have received contraceptive supplies. Physicians and nurse-midwives working in five other centers, although not trained by the DSF in family planning, receive contraceptives from the Division and provide services. In all, 61% of all PMIs are prepared to and/or are offering family planning services in Mali.

2. Active Users of Family Planning Services

Prior to the record review, the Study Team established criteria for determining whether family planning acceptors are currently active. In the case of pill users, the criterion was that at the time of the last visit, the person be supplied with enough contraceptives to still be "covered by a method" the day of the record review. With respect to the IUD, all women were considered active for a period of two-and-a-half years following the insertion. Using these criteria, we found that 42% of our sample was still actively using a family planning method: 42% in the case of AMPPF's Centre Pilote; 39% for all AMPPF centers as compared to 53.7% for DSF centers; 42% in Bamako as compared to 34.1% in centers outside of Bamako. (Refer to Table 3.) Applying these percentages to the "total number of records" on hand at study centers, we estimated that a total of 2538 acceptors are active users, broken down as follows:

- a. 2046 active users (80.7% of total) are served by the three AMPPF centers compared to 492 active users (19.3%) served by the DSF centers. In fact, 1953 or 77% of all users are served by one AMPPF facility, the Centre Pilote.
- b. 2,201 active users use the services of centers in Bamako (86.8%) as compared with 335 active users served by centers outside Bamako (13.2%).

Separate estimates of active users based on logistics data were within 5.9% of the above estimates based on the records search. (Refer to Table 4.) However, center-specific logistics data estimates differed from as little as 4.2% to as much as 73.0% from the records search estimates. The large variance between center-specific estimates is probably attributable to poor record-keeping of logistics data. In contrast, the logistics-based estimate for the country as a whole is based on data that is meticulously kept by the assistant director of DSF at the central level.

TABLE 1

PMIs (MCH-Maternity Centers) That Provide  
Family Planning Services in Mali

REGION	Providing F.P. Services	Starting to Provide F.P. Services	Providing F.P. Services Based on Center Initiatives	Not Providing F.P. Services	Total # of Center	% of Centers Providing F.P. Services
Segou *	Niono Famory		San	Markala Bla Barorieli Macina Tominian	8	38
Mopti	Mopti			Bandiagara Bankasi Djene Douentza Koro Tenenkou Youruarou	8	12.5
Tombouctou	Dire Tombouctou			Goudam Gourma- Rharous Niafunke	6	33
Kayes		Kayes Mahina Morodu Sahel Kita	Kenieba Djema	Yelinare	7	86
Koulikero	Katibougou Koulikoro Mana Kati Kolokani Nara Baguinda Fana	Dioula Kangaba	Bamamba		11	100
Sikasso	Bougouni Sikasso	Koutiala		Kadialo Kolondieba Yanfolila Yorosso	7	43
Gao	Gao	Menaka	Ansongo	Bourem Kidal	5	60
Bamako	Central Badalabougou Missira Niarela Kati				5	100
TOTAL	21	8	5	22	56	61

NOTE: AMPPF centers providing family planning services not noted here include the Centre Pilot and the Hospital de Segou.

TABLE 2

ESTIMATE OF ACTIVE USERS OF FAMILY PLANNING  
SERVICES IN DSF MCH-MATERNITY CENTERS (PMI)  
AND AMPPF FACILITIES BASED ON RECORD REVIEW:  
MALI, 1981

	<u>% ACTIVE FROM SAMPLE</u>	<u>TOTAL # OR RECORDS REVIEWED</u>	<u>ESTIMATE OF ACTIVE USERS</u>		
			<u>#</u>	<u>% of SUB- TOTAL</u>	<u>% of TOTAL</u>
<u>AMPPF CENTERS</u>					
BAGUINDA	42	78	33	1.6	1.3
HOPITAL DE SEGOU	13	460	60	2.9	2.4
CENTRE PILOT	42	4,652	1,953	95.5	77.0
SUB-TOTAL	39	5,190	2,046	100.0	(80.7)
<u>DSF CENTERS</u>					
PMI CENTRAL	53	468	248	50.6	9.8
FAMORY	55	228	125	25.6	4.9
FANA	9	11	1	0.2	0.0
KATIBOUGOU	100	72	72	14.7	2.8
KOLOKANI	47	53	25	5.1	1.0
KOULIKORO	20	51	10	2.0	0.4
MANA	30	30	9	1.8	0.4
SUB-TOTAL	54	913	490	100.0	(19.3)
<u>TOTAL</u>	42	6,103	2,538	-	100.0

TABLE 3

ESTIMATE OF ACTIVE USERS OF FAMILY PLANNING  
SERVICES FROM CENTERS LOCATED IN BAMAKO  
AND ELSEWHERE BASED ON RECORD REVIEW:  
MALI, 1981

	<u>% ACTIVE FROM SAMPLE</u>	<u>TOTAL # OF RECORDS REVIEWED</u>	<u>ESTIMATE OF ACTIVE USERS</u>		
			<u>#</u>	<u>% of SUB-TOTAL</u>	<u>% of TOTAL</u>
<u>BAMAKO CENTERS</u>					
CENTRE PILOT	42	4,652	1,953	88.7	77.0
PMI CENTRAL	53	468	248	11.3	9.8
SUB-TOTAL	43	5,120	2,201	100.0	(86.8)
<u>OTHER CENTERS</u>					
BAGUINDA	42	78	33	9.8	1.3
FAMORY	55	228	125	37.3	4.9
FANA	9	11	1	0.3	0.0
HOPITAL DE SEGOU	13	460	60	17.9	2.4
KATIBOUGOU	100	72	72	21.5	2.8
KOLOKANI	47	53	25	7.5	1.0
KOULIKORO	20	51	10	3.0	0.4
MANA	30	30	9	2.7	0.4
SUB-TOTAL	54	983	335	100.0	(13.2)
<u>TOTAL</u>	42	6,103	2,538	-	100.0

TABLE 4

COMPARISON OF ESTIMATES OF ACTIVE USERS  
OF FAMILY PLANNING SERVICES:  
MCH-MATERNITY CENTERS, MALI 1981

	Estimate Derived From Record Review (A)	Estimate Derived From Logistics Data (B)	% Difference (1A-B:B1)
PMI Central	248	339	26.8
Kolokani	25	24	4.2
Koulikoro	10	37	73.0
All Centers Evaluated	2,538	2,396	5.9

NOTE: Logistics estimates were derived by adding the monthly totals of contraceptives distributed to users in the case of individual centers or to all centers in the country in the case of the central DSF warehouse to obtain an annual total. These annual totals were then divided by the number of oral contraceptives the typical user would consume in a year, 13 cycles of pills or 0.4 in the case of the IUD.

We estimate contraceptive prevalence in Mali to be 232/100,000 women 15-44 years of age (or 0.2%). Using the 1976 census data as the base and applying an annual rate of natural increase of 2.76%, we estimate the 1980 population of women 15-44 to be 1,567,800. To estimate the total number of active users at the time of the record review, we have added the following numbers to the estimate presented in Table 3 for all study centers.<sup>1</sup>

1. Study center estimate	2,538
2. 10% of PMI Centrale acceptors prior to 1979, whose records we did not review (i.e., 4,852) are still active	485
3. 40 active users served by each of the eleven PMIs currently providing family planning services but not evaluated. (40 is the average for non-Bamako centers)	440
4. 10 active users served by the eight PMIs that are just starting to provide family planning services	80
5. 20 active users served by each of the five PMIs offering family planning services at their own initiative	100

Gross estimate of total active users in Mali through health system	3,643
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### 3. Logistics

The basic approach used by all centers, with the exception of the Centre Pilote and PMI Centrale, is to wait until stocks have been completely depleted before obtaining new supplies through a written request or by personally travelling to Bamako to obtain them. The Centre Pilote and PMI Centrale resupply on an "as

<sup>1</sup>These estimates are subjectively derived based on a review of logistics data and discussions with AMPPF and DSF staff.

needed" basis directly from the AMPPF and DSF national warehouses kept on their premises. Over half of the other centers experienced stock-outs of pills (used by 90-95% of all users) during the last six months.

The AMPPF warehouse employs the first-in-first-out (FIFO) method of stock management, is clean, well ventilated, and uses adequate stacking and storage procedures.

While being well protected from the rain and adequately ventilated, the DSF warehouse does not employ standard stacking and storage procedures, nor the FIFO method. Use of FIFO is somewhat complicated by the fact that the current supplier of pills does not furnish either the manufacturing or expiration date.

4. Supervision

Only 3 of the 11 midwives responsible for the study centers' family planning activities have ever received technical supervision. Other than their initial training in family planning, none of the midwives has benefitted from in-service training or other forms of continuing education.

5. Quality of Services

The present AMPPF and DSF norm is that all acceptors must receive a pelvic exam and should have their blood pressure and medical history taken prior to receiving a method. The record review revealed that in three centers, 80% or more of new clients did not have either a pelvic exam or a blood pressure reading. In 5 centers, roughly 40% of medical histories were incomplete.

Mana is a Protestant Mission center supervised by the DSF. The nurse-midwife was systematically counseling young adults to wait until they have one or more children before beginning childspacing. The de-facto policy and practice was to provide family planning services to multiparous women unless the husband and wife, in the presence of the nurse-midwife, insisted on using contraceptives at an earlier stage. Two of thirty acceptors had had 12 or more pregnancies, were advised by the supervising physician to have no more children. They began using contraceptives, but due to a stock-out, ceased using the pill, became pregnant, and died in childbirth. Sterilization facilities were not accessible and the nurse-midwife had "bad experiences with the IUD," and, therefore, the pill was the only recommended method, although sterilization or the IUD may have been indicated. While the practices of Mana are not representative of DSF's norms, they do confirm that norms need to be clarified and interpreted through supervision to all midwives providing family planning services.

While Mana may not be typical, all but two of the midwives in charge of PMIs interviewed were uneasy about the IUD and consequently prescribe use of the pill almost exclusively. In addition, it is against DSF policy to use depo-provera, which led to abandoning the use of the method approximately 18 months ago in Mana and elsewhere. Barrier methods are rarely used and are not stocked by 9 of the 11 centers evaluated.

Information, education, and communication (IEC) services are primarily offered to women who come to the centers to request family planning services. Staff from three centers go outside of the center to promote family planning through community social affairs meetings. At centers where we asked this sort of question, we did not detect an effort to promote family planning among women seeking prenatal or well baby services, or among those who had just delivered at the maternity.

IEC activities may be limited because staff still are somewhat unsure of themselves technically. Half were unfamiliar with 40% or more of the complications and secondary effects associated with the pill and particularly the IUD. The other half was familiar with 80% of these conditions. (All midwives were aware of 80% or more of the basic symptoms of PID.)

In order to determine the reasons for the lack of home visits and outreach activities, we asked midwives if they had the time to implement a new activity that they had previously identified as being important. Over half of the midwives responded affirmatively. According to most midwives, the availability of time was not as important a factor in explaining the absence of home visits and outreach activities as the unavailability of transport or resources.

F. Preliminary Recommendations

Recommendations pertaining to five of the ten study issues outlined by Mr. Friedman in his November 1980 trip report are presented in this section:

1. The quality and completeness of quantitative reports and statistical data generated by family planning activities.
2. Expansion of the geographic coverage of the program.
3. Expansion of the services provided by the program, including research on the causes of infertility and its treatment, and the unmet needs for sterilization services.
4. Clinic and central planning and management needs.
5. The training needs of staff providing FP services.

Recommendations concerning three additional study issues are discussed, but on a provisional basis:

1. The number of continuing active users by method, continuation rates and reasons for discontinuation.
2. The impact of socio-cultural, administrative and logistical constraints on program operations.
3. On-going evaluation and research activities by DSF and AMPPF staff.

Final recommendations related to these points, plus recommendations pertaining to two other issues will be included in the forthcoming evaluation report, following the completion of the analysis.

1. The age groups and social classes served (and whether there are unmet needs among them).
2. The provision of family planning services for the next five years.

1. Role of AMPPF:

Since it began providing services in the early 1970's, the AMPPF has built up the number of active users that it serves to approximately 2046, or 80.7% of all family planning clients in Mali. An analysis of AMPPF service statistics indicates that 29.4% of all users, most of whom are urban women, are teenagers. From a preliminary review of the data collected in this study, it is our impression that a much smaller proportion of PMI (MCH-Maternity) center clients are teenagers. Given that at present the bulk of active users, including a large number of urban teenagers, receive family planning services provided by the AMPPF, we recommend that the Association continue with its clinical operations. In fact, we recommend that AMPPF explore ways in which it can work collaboratively with the DSF to reinforce the family planning services offered by PMIs, particularly to urban teenagers. The objective of this type of activity would be to enable this population to delay the birth of the first child or increase the birth interval between the first and second child. AMPPF assistance might be provided for the training of community social workers who are in contact with adolescent groups to enable them to inform teenagers about childspacing benefits and where to obtain services.

At this point in the introduction of family planning services to Mali, it is probably appropriate for AMPPF volunteers to shift some of the Association's attention to research. The role of AMPPF would be to: (1) identify reproductive health and demographic research topics that have important policy implications; (2) to assist the Ministry of Health in establishing priorities among these topics; and (3) to secure funding for priority research to be conducted with or by the Ministry from IPPF and/or other international donors.

In response to the paucity of IEC materials and work identified by the Study Team, AMPPF might consider participating in an assessment of promotional and educational needs and in the development of an IEC program in support of DSF and its own services.

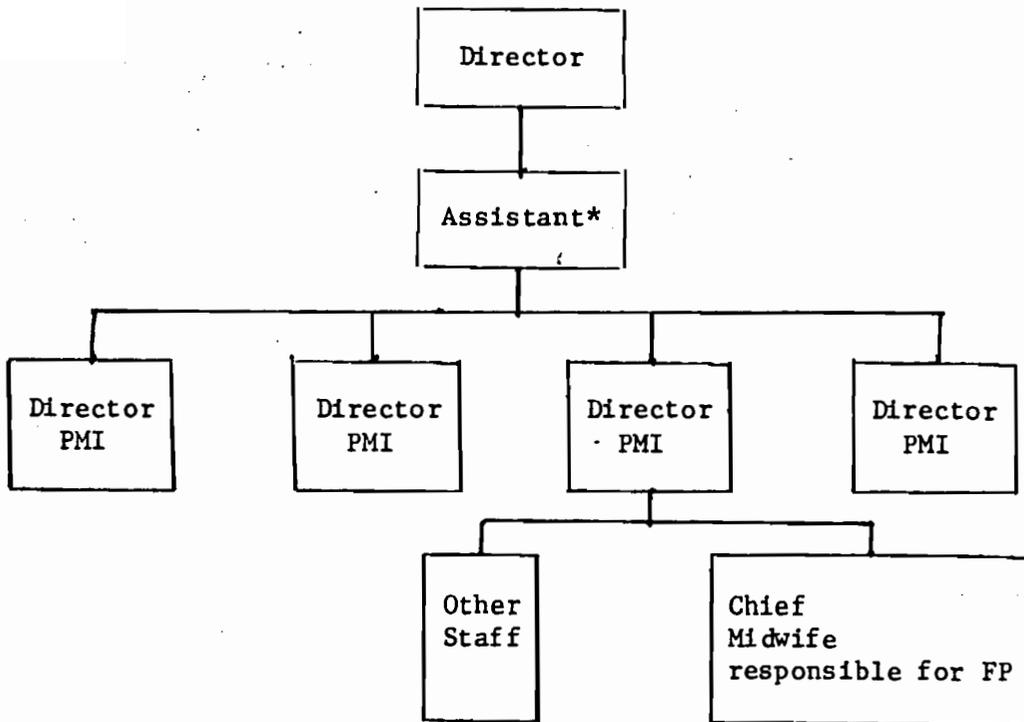
Another area in which AMPPF could play a key role is in introducing an effective family planning training component into the curriculum of physicians, nurses, and other health professionals.

2. Reinforcing the Division de Sante Familiale (DSF):

Figure 2 characterizes the organization of the DSF with respect to PMI services, including family planning. All program direction, administrative, and developmental responsibilities (including training) are currently borne by the director and an assistant. The pressures of daily problem solving, largely administrative, have neither enabled the staff to develop a logistics system nor to monitor program performance through a review of reports sent in by the PMIs, nor to provide technical supervision or continuing education after initial training. As a result approximately only 45% of the PMIs that provide family planning services are sustaining a level of activity of any significance.

For the benefit of all PMI activities, not just family planning, we recommend a restructuring and bolstering of the DSF (refer to Figure 2). One of the central advantages of the proposed reorganization is that both the director and assistant director will be able to delegate much of the day-to-day responsibility for both administrative problem-solving and the technical development of the staff and the program in general to (1) the technical supervisors who will have more immediate access to and a closer working relationship with PMIs, (2) a training and IEC coordinator, and, (3) a supply officer. This will leave the director and assistant director with more time to evaluate the efficacy and efficiency of the program, provide direction to staff through the technical supervisors in order to bolster weak services and to plan and prepare for the geographic and programmatic expansion of the program.

Figure 2 Current Organization of DSF



\* The person serving as an assistant is a French "Cooperante," not a permanent Malian employee.

The proposed reorganization should provide for the upgrading of midwives' competence, particularly in family planning. Presently, the midwives responsible for providing family planning services are supervised by the medical director of the PMI. Of the four medical directors interviewed, all had a more superficial understanding of family planning than the midwives they supervise. They also projected the attitude that "family planning is the concern of the midwife." Given these constraints and the fact that only three of eleven centers were ever supervised technically, there has been no opportunity for reinforcement of previously received training, or technical improvement on the part of the midwives. By introducing the technical supervisor, this deficiency can be corrected.

While the midwives will receive technical supervision from the technical supervisor, they will still receive direction from their immediate boss, the medical director of the PMI who reports directly to the Director of DSF.

The jobs and responsibilities for each new position proposed on Figure 2 are outlined below:

1. Assistant to the Director

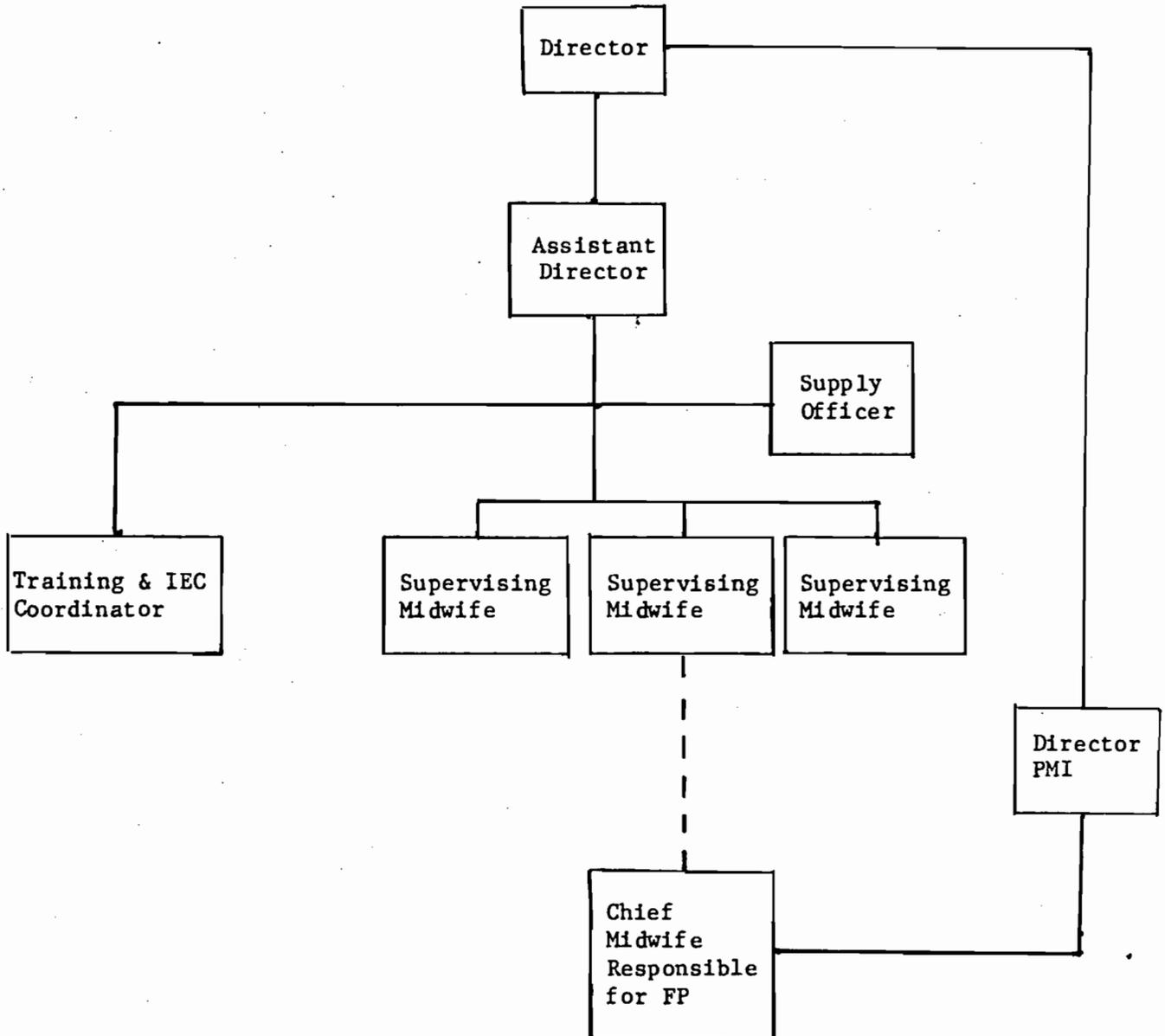
Technical coordinator for:

- Supervision
- Evaluation
- Service Data Analysis
- Presentation of a compilation of monthly reports to be submitted to the Director who will be responsible for joint decision making.
- Assist the Director in planning new projects.

2. Supervising Midwives

Appoint as Supervising Midwives a sufficient number of midwives whose work is well recognized in the Family Health and Family Planning community. There could be three in number, each of whom would cover at least two of the seven Malian regions. Each should have a car with a driver. The Supervising Midwives would be directly responsible to the Director and Assistant Director.

Figure 3 Proposed Organization of DSF



a. Profile of the Mid-Wives to be considered as Technical Supervisors:

- must have 15 years of experience in obstetrics
- must have received FP training
- must be motivated
- must be middle aged and relatively free of all family responsibilities in order to be able to travel regularly

b. Supervisory Responsibilities

1. During her visits she must help the staff to identify existing problems and solve them on the spot with local means if possible.
2. During her visits she must organize 2-3 days of concise, intensive training for the Family Planning staff covering only one technical subject at each visit.
3. During her visits she must analyse all service statistics, including data on the monthly utilization of the stock of contraceptive supplies and then replenish the health center stock from the supplies she will keep in her vehicle.
4. Identify the means of bringing to Family Planning as new acceptors, women who are already using the other services of the clinic.
5. Assist the clinic staff to attract women who are non-users from the area already served by the clinic, as well as those who live in remote areas not yet served by the family health services, including family planning. The means of accomplishing this task must be put into practice with the assistance of the Social Affairs Department (nutrition program, community development etc...)
6. Define with the assistance of the clinic staff, the target population in the catchment area of the clinic who would have need of each of the family health services offered.

c. Implementation of the supervisory system

This system should be implemented as the midwives with the required qualifications become available.

3. Coordinator for Training and IEC

a. Responsibilities:

1. Identify the needs for IEC and training in order to reinforce all the DSF services.
2. Prepare all training courses together with the technical supervisors and the Management.

b. Hiring and Training:

1. Identify a motivated person who has shown her capacity in training personnel and in organizing an animation program.
2. This person must be trained in FP.
3. An outside IEC and training expert should be found to give short consultations in order to help the coordinator to draw up his IEC and training program.

4. Administrator

This person will be responsible for the organization and administration of the logistics system.

3. Reinforcing Delivery of Family Planning Services at Current Service Points:

a. Organization and Priorities

We recommend that priority be given to reinforcing the delivery of family planning services at PMIs that have already begun to offer them. The most urgent step in this direction, in our judgement, is to hire a permanent assistant director, training and IEC coordinator, supply officer, and to promote up to four qualified midwives to the position of technical supervisor. As staffing is completed, the DSF will have the means to reinforce the program. We recognize that the director and assistant director will need to devote time to planning and arranging for the expansion of the program, as there is a long lead time involved in obtaining resources. Nonetheless, both should be acutely concerned with and involved in the reorganization so that program improvements can proceed, and weakness in the program can be corrected before expansion.

b. Training

We recommend four types of training:

- (1) First, as the DSF seems to be getting good results from its initial training course for midwives responsible for providing family planning services, we recommend the continued use of the seminar.

Our Study Team pin-pointed on a map the location of all PMIs, both those that provide family planning services and those that do not. We then placed an overlay that depicts the population densities of Mali over the map. One can easily spot the densely populated areas of Mali that are served by PMIs but that do not have access to family planning services. This visual tool can be used to provide input into deciding which of the PMIs should be the next to send midwives for family planning training. As the map depicts the road network of Mali, it can also be used in deciding where to build the new PMIs funded by the World Bank or other donors.

- (2) A shorter intensive course in family planning is needed to train other midwives, nurses, and physicians who work in the same PMIs as the trained midwives. There are three objectives for this course: (1) to provide accurate information concerning the benefits of family planning and the effectiveness and risks associated with specific methods, as compared with the risks associated with childbirth, so that PMI co-workers understand the value of family planning for different target groups; (2) to retrain midwives already trained and train physicians and other colleagues to determine the best method for a woman; and (3) to (re)train the midwife and her colleagues to properly insert the IUD and counsel clients in the correct utilization of other methods.

It was brought to the attention of the Study Team that many PMI staff members, including some of the midwives who provide family planning services, do not themselves practice family planning. As staff members learn about the benefits and risks of family planning and specific methods, they should be encouraged to use contraceptives themselves. This may in fact make them more effective promoters and providers of family planning services.

This course should be offered by two instructors during one week in a given PMI. We emphasize the need for center-specific training because the experience of participating in the course will contribute to team

development and will enable the PMI team to explore ways to encourage users of prenatal, postpartum, and well baby services to accept family planning within the context of its center.

- (3) Following this intensive short course, a series of in-service training sessions should be offered. One to two instructors, perhaps the training coordinator plus the technical supervisor, should conduct the sessions on-site in each of the PMIs. Up to four sessions per year might be offered. Each session should have a very specific set of learning objectives in support of a given theme. Themes should be presented in a logical, reinforcing sequence. Possible themes might include:
1. Referral of complications.
  2. Profiles of women who are best suited to, and will benefit most from the use of specific methods.
  3. Importance of sterilization to maternal survival.
  4. Diagnosis and treatment of PID and its relationship to family family planning methods.
  5. Family planning, the prevention of STDs, and infertility.
  6. Methods for training health post personnel to promote family planning acceptance.
- (4) Basic professional training programs for midwives, nurses, and physicians should include training in family planning.

c. Information, Education, and Communication (IEC)

We recommend that persons expert in IEC work with DSF and AMPPF to systematically assess what is currently done in this area and what else is needed.

Based on our review of the data and observations, we recommend that IEC initially be targeted to two broad groups: (1) users of other PMI services who are not currently planning their families and (2) active users of family planning methods. The objective of aiming IEC toward the first group is to enroll those women or men who are close at hand as family planning acceptors. The objective for the second group is to motivate users to continue method use thereby reducing drop-out rates. Based on the completed analysis of the evaluation data, we will recommend specific sub-groups for intensive IEC based on age, sex, marital status, socio-economic status, gravidity, pregnancy outcomes, method use and changes.

While none of the Study Team members are expert in IEC, it is our impression that in the next few years the most effective and sustainable IEC method will entail direct communication between PMI, health post, and community social workers and the public. IEC messages should be regionalized and prepared in conjunction with technical supervisors. The technical supervisors should be taught by the training and IEC coordinator to train staff in the use of IEC materials.

d. Contraceptive Methods and Logistics

1. Methods

At the present time, 90-95% of all clients use the pill. The IUD is not being actively promoted except in one of the centers visited. Barrier methods are rarely available in any center. While two surgeons have been trained to perform sterilizations using the laparoscope, shortages of the supplies needed to keep the machines operational have prevented their regular use.

We recommend the following:

- (a) The IUD is particularly useful for women who have had all the children they desire and who do not want to be sterilized. It is also desirable when the pill is contraindicated, particularly when a woman lives far from the nearest center. We recommend that the DSF determine why midwives are reluctant to recommend and insert IUDs. Based on these findings, it is suggested that the DSF establish clear guidelines for use of the IUD and provide refresher training to midwives on all aspects of the IUD.
- (b) Barrier methods are useful for women waiting to begin use of oral contraceptives, for women who are breastfeeding and as an alternative when other methods are unacceptable. We recommend that the DSF clarify its position regarding barrier methods, offer appropriate guidance to midwives responsible for providing planning services and supply the most acceptable and effective barrier methods to all centers in sufficient quantities. If necessary, the DSF should increase the quantities of these barrier methods ordered from donor agencies.

- (c) For sterilization services the DSF should take the lead in arranging for the continuous and adequate supply of CIDEX (sterilizing agent) and all other materials necessary to operate laparoscopes. Where practical, a system should be established to refer PMI clients for sterilization, which is only performed in Bamako at the present time. In anticipation of a growing demand, the DSF should arrange for the training of additional surgeons in areas outside Bamako.

## 2. Logistics

- a. The system for ordering supplies should be based on the following two essential points:
  - (1) A storeroom should be set up in each town where a technical supervisor is to be based. These storerooms will be supplied from the central warehouse in Bamako at 6 monthly intervals. From these storerooms the technical supervisors will supply each center offering family planning services during her regular supervisory visits.
  - (2) The technical supervisor will determine the quantities of each method that she supplies to each center according to the following considerations:
    - The stock on hand at each center
    - Anticipated usage
    - The maximum and minimum number of months supply to be kept on hand in the center
- b. In order to more efficiently manage stocks of contraceptive supplies we recommend that:
  - The DSF puts into use the recently designed stock control form. Field personnel must be trained in its use.
  - At each center, the staff member who is responsible for supply management must keep an up-to-date register which includes the inventory balance of the stock on hand for each method. This same person should also be responsible for filling out the section of the trimester report dealing with data on supplies.
  - A training course on logistics and supply management should be organized for the personnel in all centers responsible for supplies.

- c. A "first in - first out" (FIFO) system must be put into practice in order to insure that items which are received first are those which are issued before those items more recently received. The DSF should insist that overseas suppliers indicate the dates of manufacture on each carton of contraceptive supplies.

d. Records and Service Statistics

- (1) Reports to the DSF are presently prepared on a monthly basis in large centers and every three months in small centers. The reporting period should be standardized so that all centers report on the same basis.

Reports should serve as a basis for action by supervisors. From the reports, supervisors should identify problems and plan supervisory action accordingly. Since it is unlikely at this stage of the program that supervisors will be able to respond in a timely manner to monthly reports, it is recommended that reports of both large and small centers be submitted on a trimester basis. In the future, when the program covers a minimum of 100 clients in approximately 20 centers and a supervisory system is operational, all centers should report on a monthly basis.

- (2) The format and design of the "Fiche d'Admission" (Admission Screening Form) is very good. The following minor improvements are recommended:

- (a) Under "Changement de Methodes" (Method Changes) a third column "Raison" (Reason) should be added to record the reason why this client has changed her method. This would require a change in format in order to provide sufficient space to write out the reason in sufficient detail.

- (c) Under the section where the client is asked "Avez-vous deja essaye de retarder une grossesse avec l'utilisation d'autre methodes?" (Have you ever tried to delay a pregnancy with the use of other methods?), after the responses "oui" (yes) and "non" (no) ", "specifier" \_\_\_\_\_ "(specify)" should be added in order to have details on other methods used.

Making these modifications is secondary in importance to establishing the routine use of the existing "Fiche d'Admission." Any refresher training to be offered to the midwives should provide for a practice session during which the utility and use of the "fiche" is mastered.

- (3) The large register used to record all activities in certain centers is well-designed and should be put into use in all centers. However, this may prove to be beyond the present financial means of the DSF. In this case, a foreign donor agency should be asked to provide funding for a sufficient number of registers for all active centers for an initial two-year period. If this proves impossible, a less expensive, but effective, record-keeping system can be put into use in all centers to keep track of individual patients. The Center for Disease Control has designed and implemented such a system in other countries which makes use of forms made from ordinary stencil paper. This system could be modified for use in Mali and put into use by a CDC consultant at a future date. While these changes and modifications are desirable at this point, they are of lesser importance than the suggested improvements in service delivery.

#### 4. Integration of Family Planning Services

We concur with the policy of the DSF to instruct its personnel to treat the provision of family planning services as an integral part of their normal work load. As part of this policy, the DSF has explicitly stated that no additional remuneration is to be provided to personnel offering family planning services.

#### V. STUDY ON COMPLICATIONS RESULTING FROM INCOMPLETE ABORTIONS

The study to measure the morbidity and mortality resulting from abortion complications is a prospective hospital-based study in 15 centers, most of which are located in urban areas with a population greater than 10,000. These centers were chosen in conjunction with Malian collaborators and were considered to represent a geographic and social cross-section of the health facilities which deal with abortion complications. The study period will be 12 months beginning in March 1981. It is estimated that the number of cases recorded will be approximately 5,000.

The principal data collection instrument being used in the study is an IFRP questionnaire developed for use in hospital-based abortion studies that was modified by CDC staff for use in Mali. The questionnaire focuses on direct costs of abortion, including hospital occupancy, use of drugs and blood products, and use of operating room facilities.

In order to determine whether an individual patient's abortion was spontaneous or induced, we used the standard definitions developed by the World Health Organization 1975 Task Force on the Sequelae and Complications of Induced Abortions and modified the IFRP questionnaire accordingly. The questionnaire was further modified to gain more information on demographic characteristics of women at greatest risk of developing complications. A special open-ended questionnaire is to be filled out on each abortion-related death.

Two ancillary questionnaires were developed in Mali to gather additional information. The first was a questionnaire designed for use at each of the 15 centers to gather retrospective data on the health facility's personnel, equipment and experience with abortion complications. The second was a questionnaire developed to gather monthly information from each center on total admissions and deaths for use as denominator data, as well as the availability of drugs and blood products as possible determinants of the outcome of abortion complication cases.

The senior Malian technical collaborator in this study was Dr. Mamadou Lamine Traore who teaches obstetrics and gynecology at the Malian National Medical School and is also a medico-legal expert. Direct responsibility for data collection and field supervision has been delegated to Mr. Attaher Toure, a fifth-year medical student. He will be primarily responsible for the nine centers outside Bamako, the capital city. A second coordinator for field work is Mme. Fatimata Keita who is chief midwife at the Institute Nationale de Prevoyance Sociale (Social Assistance) and who will concentrate on the six centers in Bamako.

During our stay, Mr. Toure and Mme. Keita were given a thorough grounding in the principles of the study and use of the data collection instrument. Training at eleven centers was then conducted by Mr. Toure and Mme Keita along with CDC and IFRP personnel. Mr. Toure then completed the training at the four remaining more remote centers on his own. Enough doctors, midwives and nurses were trained at each health facility in the use of the data collection instrument to insure a 24 hour coverage of all abortion-related admissions. A coordinator was named at each facility to fill out the secondary questionnaires and to be responsible for the monthly mailing of completed forms.

Responsibility for in-country transmission of completed forms to the Ministry and payment of local study costs is being handled by Mme. Sira Dembele, Project Coordinator at the Direction de la Planification at the Ministry.

In July 1981 Ms. Burton will re-visit Mali to monitor the progress of the data collection and to assist in resolving any coding problems that might arise. In September 1981 Dr. Binkin will re-visit Mali to review data collection activities and to assist our Malian counterparts with a preliminary analysis of data collected for the first six-month period. An interim report will be prepared in the fourth quarter of calendar year 1981. All data will be processed at the IFRP computer facilities at Research Triangle Park, North Carolina. A final report will be prepared in April 1982.

#### VI. ACTIVITIES IN SENEGAL

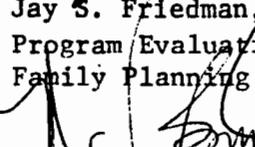
The Health, Nutrition and Population Officer, USAID/Senegal, requested that we meet with him in order to discuss the possibility of technical consultation in Senegal by FPED personnel. Meetings were held with Dr. Ismail Sy, the director of Maternal-Child Health and Family Planning in the Ministry of Health and Dr. Paul Correa, Professor of Medicine and Chief of Obstetrics and Gynecology at the largest hospital in Dakar. Additional meetings were held with several other persons active in family planning activities in Senegal. A general interest was expressed by USAID and Senegalese professionals in conducting a study of maternal mortality.

In addition, a meeting was held with the Chief Editor of the magazine "Famille et Developpement," which has a circulation of 40,000 throughout Francophone Africa, to discuss the contribution of articles on Family Planning subjects from FPED Staff.

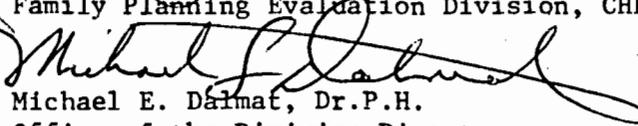
Senegal recently conducted a nationwide fertility survey as part of the World Fertility Survey. Results show only 20% of women are aware of modern methods of contraception and only 1% have ever used modern methods. The mean number of live births to women 45-49 years of age is 4.0 and the mean number of living children for this age group is 2.9. A summary of the survey report in French is on file at FPED/CDC.



Jay S. Friedman, M.A.  
Program Evaluation Branch  
Family Planning Evaluation Division, CHPE



Nancy J. Binkin, M.D., M.P.H.  
Abortion Surveillance Branch  
Family Planning Evaluation Division, CHPE



Michael E. Dalmat, Dr.P.H.  
Office of the Division Director  
Family Planning Evaluation Division, CHPE

ATTACHMENT 1

Health Facilities Visited During the Implementation  
of the Study on Abortion Complications

1. Gabriel Toure Hospital, Bamako
2. Point G. Hospital, Bamako
3. Djikoroni Maternity Center, Bamako
4. Handallaye Maternity Center, Bamako
5. Korofina Maternity Center, Bamako
6. Sogoniko
7. Bougouni
8. Gao Hospital
9. Kayes Hospital
10. Kangaba Hospital
11. Mopti Hospital
12. Nioro du Sahel Maternity Center
13. Segou Hospital
14. Segou Maternity Center
15. Sikasso Hospital
16. Tombouctu Hospital