



## Memorandum

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Subject Foreign Trip Report (AID/RSSA): Sudan, May 23-June 18, 1982--Evaluation of  
Contraceptive Logistics Systems

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## SUMMARY

According to the results of the Sudan Fertility Study, which was conducted during the period December 1978-April 1979, about 50 percent of married women have knowledge of family planning, and use of contraception is very low (6.4 percent), particularly in rural areas (2.7 percent). Two AID initiatives are currently underway to increase the availability of family planning services and awareness in Sudan: the Rural Health Support Project (RHSP) and a Model Clinic which, if approved, will be supported by an Operational Program Grant (OPG) to the Sudan Fertility Control Association (SFCA).

We assessed the contraceptive supply system for the following programs: the WHO/MOH-MCH/FP program, the Community-based Family Health Program (CBFHP), the Sudan Family Planning Association (SFFA), and the Ministry of Health (MOH). We found that the WHO/MOH-MCH/FP Program has not developed a logistics system nor an inventory control system. Both the CBFHP and SFFA are able to monitor

inventory and commodities dispensed through informal and formal systems, respectively. Currently a logistics consultant from Medical Services Consultants, Incorporated (MSCI) is assisting the MOH to improve their logistics system.

During this consultation, we estimated the contraceptive supply requirements for both initiatives. Our estimates were sent to AID/S&T/POP/FPSD on June 25, 1982 and differed from those that were sent by USAID/Sudan on June 19. In general, our estimates are higher because we included inventory over and above estimated usage in order to fill the supply pipeline and to have sufficient quantities on hand to meet unexpected demand.

We also served as members of a design team for the Model Clinic. The Clinic will provide a unique base from which to increase the availability of family planning services in Sudan. The executive board of the SFCA, which will operate the Clinic, agreed in principle to a large clinic operation in Khartoum Province, which is predominantly urban, to the extensive use of paramedicals and to the provision of surgical contraception. In addition, community-based distribution of contraceptives was also agreed upon, and it is possible that the Clinic may elect to establish a logistical support activity to the (MOH) and to the University of Khartoum's CBFHP. Logistical support to the MOH could be financed with funds earmarked for the RHSP.

The provision of centrally-funded contraceptives to the MOH should be contingent on the MOH establishing a reporting capability on its family planning activities and on the willingness of the MOH to receive logistical support from the Model Clinic.

If the Model Clinic is approved, it is likely that FPED/CDC consultants will be asked to assist the SFCA in the planning and implementation of the Clinic.

#### I. PLACES, DATES, AND PURPOSE OF TRAVEL

Sudan, May 23-June 18, 1982, at the request of USAID/Sudan and AID/S&T/POP/FPED, to assist USAID/Sudan in evaluating the contraceptive logistics capability and requirements of USAID's Rural Health Support Project (RHSP) and a proposed Model Clinic which, if approved, will be supported by an Operational Program Grant (OPG) to the Sudan Fertility Control Association (SFCA). In addition, we also served as members of a design team on the Model Clinic and assessed the contraceptive supply systems of the Sudan Family Planning Association (SFPA), the University of Khartoum's CBFHP, and the Ministry of Health's Maternal-Child Health and Family Planning Project, which is supported by the World Health Organization (WHO) and the United Nations Fund for Population Activities (UNFPA). This consultation was provided by Richard S. Nosteith, M.P.H., and Alison Spitz, R.N., M.P.H., Program Evaluation Branch, Family Planning Evaluation Division, CHPE. This travel was in accordance with the Resource Support Services Agreement (RSSA) between the Office of Population, AID, and FPED/CHPE/CDC. A preliminary trip report was submitted to USAID/Sudan before our departure.

## II. PRINCIPAL CONTACTS

### A. USAID/Sudan

1. Dr. Mary Ann Micka, Health Officer
2. Ms. Joyce Jett, Population Assistant
3. Mr. Steve Mintz, Design Officer
4. Mr. Peter Kranstover, International Development Intern

### B. Ministry of Health (MOH)

1. Dr. Ali Biely, Deputy Director General, Rural Health Services
2. Dr. Al Rahman El Rasheed, Director General, Central Medical Stores
3. Dr. Hafeey Sadik El Shiek, Director, Pharmacy Office
4. Dr. M.H. Baldo, Director, WHO/MOH-MCH/FP Project
5. Dr. Priscilla Joseph, Primary Health Care Project Director, Juba
6. Dr. El Halim Abdalla Omer, Director, Juba Hospital
7. Sister Mohja, Family Planning Nurse, Khartoum Hospital

### C. Sudan Fertility Control Association (SFCA)

1. Dr. Hamid Rushwan, Board Member
2. Dr. Osman Mustafa, Board Member
3. Dr. Gerais, Board Member
4. Dr. Mohammed Motassin, Board Member
5. Dr. Harith Hamid, Board Member
6. Ms. Sayda Idriss, Program Manager

### D. Sudan Family Planning Association (SFPA)

1. Dr. Abdel Rahman Attabani, President
2. Mr. Salah Khogali, Executive Director

### E. Other

1. Mr. Jim Paton, Project Director, Africa Medical Research Foundation (AMREF), Juba
2. Dr. Faysal A. Mohammed Gaeter, Representative, United Nations Fund for Population Activities
3. Dr. Nyla Mubarak Suliman, University of Khartoum, Community-Based Family Health Project (CBFHP)
4. Ms. Susan Wesley Stacey, CBFHP
5. Professor Awad Abuzayd, Vice-Chancellor, University of Juba

## III. BACKGROUND

### A. Prevalence of Use of Contraceptives

The Sudan Fertility Survey was conducted during the period December 1978-April 1979 as part of the World Fertility Survey. The survey was originally designed as a two-phase survey covering the North and the South of Sudan but, for operational reasons, the survey was conducted only in the North, which represents about 80 percent of the total population.

The results of the survey show that prevalence of contraceptive use in Sudan is very low. As Table 1 shows, only 6.4 percent of exposed women (married, non-pregnant women age 15 to 49 who consider themselves fecund) were

practicing contraception at the time of the survey. Current use is associated with age. The pattern is an inverted U-shaped curve, increasing from 5 percent among women under 25 years of age to 8 percent among women age 25-34, and then decreasing with advancing age.

Of the 6.4 percent who are current users, 5.5 percent are using "efficient" methods. The pill was the most often used method (about 4.3 percent); about 2 percent of the women used other methods, including traditional methods.

As Table 2 shows, contraceptive use varied by residence. Urban women had relatively high levels of current use (16.4 percent) compared to rural women (2.7 percent). Similarly, 19.6 percent of women living in the Khartoum region, which is largely urban, were using a contraceptive method compared to 2.5 and 2.3 percent, respectively, of women living in the rural Kordofan and Darfur regions of Western Sudan. These two regions are included under USAID/Sudan's Rural Health Support Project.

The results of the survey also show that women with some education were more likely to have been using contraceptives than women who had no schooling. Of women who completed primary school or beyond, 41.6 percent were using a method compared to 2.5 percent of women who never attended school. The survey results also show that 81.6 percent of the surveyed women never attended school, so that women with primary education or above are in the minority.

The survey data also indicate that the vast majority of the women who never used contraception do not intend to use family planning. Only 9 percent of exposed women who had never used a method of contraception indicated their intention of using contraception in the future.

Current use and intentions to use contraception may be associated with lack of knowledge of methods to avoid pregnancy. Among all ever married women, only 51 percent had heard of some method of family planning. The pill was the most widely known method (48 percent) followed by injection (25 percent), female sterilization (24 percent), and the IUD (6 percent). Awareness of contraception varied by residence. The proportion of women who had heard of family planning methods was 76 percent in urban areas compared to only 41 percent in rural areas. Similarly, residents of Khartoum Region (predominantly urban) had the highest level of knowledge (82 percent) while women living in Darfur (predominantly rural) had the lowest (23 percent).

In summary, knowledge of family planning is not widespread, and use of contraception is very low in Sudan, particularly in rural areas. Nevertheless, there are indications that some women will elect to use contraceptives if they are made available. This is particularly true of women who are better educated and who live in urban areas. The findings of the Sudan Fertility Study suggest that efforts to increase the awareness and acceptability of family planning in Sudan should first focus on urban areas and among married women who want no more children. Over 80 percent of the women who want to cease childbearing were not using contraception.

A Model Clinic in Khartoum has been proposed to serve women living in predominantly urban Khartoum Province. In addition, family planning services

in the provinces covered by AID's Rural Health Support Project (RHSP) will be established first in urban areas. The Model Clinic and the RHSP are discussed in Section IV.

B. Availability of Family Planning Services

The findings of the Sudan Fertility Study support the general belief that family planning services in Sudan are available only on a limited basis. The MOH, which has the potential to be the largest provider of family planning services in the country through its Primary Health Care Program (PHCP), does not view family planning as a priority service. PHCP priorities include primary immunization, malaria and bilharzia control, and potable water. Thus, although approximately 2,000 MOH personnel have been trained in family planning under the joint WHO/MOH-MCH/FP Project since 1977, a project independent of the PHCP, it is believed that very few provide these services because of the general lack of support for family planning in the MOH, and because of the project's very limited capability of providing material support to its trainees. No one knows or would like to venture a guess, including the project's director, on how many of the trainees are providing family planning services in the country.

Family planning services are provided principally through the private sector, e.g., pharmacies and private physicians. The findings of a study of attitudes of 250 men toward family planning, which was conducted by the SFCA with the technical assistance of the International Fertility Research Project (IFRP), support this view. This study showed that among Khartoum men who had ever used contraception in their marriage, two-thirds obtained their supplies from private physicians and pharmacies. Similar to the findings of the fertility survey, oral contraceptives were the most commonly used method. Problems of foreign exchange, however, have limited and will continue to limit the availability of contraceptives in the private sector. According to Dr. Micka, some pharmacies she visited in March did not have any oral contraceptives. Data on imports of oral contraceptives provided to us by the MOH Pharmacy Office showed that imports for the entire country for the first 6 months of 1982 were equivalent to 23,841 Couple Years of Protection (CYP). To put this figure into perspective, this represents approximately only 10 percent of women of reproductive age living in Khartoum Province.

Other providers of contraceptive services include the Sudan Family Planning Association (SFPA) and the University of Khartoum's Community-Based Family Health Project which receives technical assistance from Columbia University. The number of outlets reported to be operated by the SFPA ranged from 12 to 35. Regardless of the number of outlets, the SFPA dispensed/issued only 11,622 CYP of contraceptives in 1981, principally in Khartoum Province. It is unlikely that the SFPA program will be expanded.

The Community-Based Family Health Project (CBFHP) is also a small program scheduled to be terminated in 1983 or 1984. Although ninety contraceptive outlets were reported to be operational on both sides of the Nile north of Khartoum, the project dispensed only 7,566 cycles of oral contraceptive, or 582 CYP from May 1981 through April 1982.

If the CBFHP is to continue, the MOH will have to agree to a transfer of the project from the University of Khartoum to the MOH. However, it is unknown if the MOH will accept the responsibility for the project. If it does, resupply of the outlets will be problematic. Currently, the outlets receive their supplies directly from the project's two supervisors who make periodic visits to the field. Once the project is under the control of the MOH, however, outlet personnel will have to travel to Khartoum to obtain their supplies.

In summary, the availability of family planning services is limited, are primarily offered by non-governmental sources, and what services are available are located in North Sudan and particularly in Khartoum Province. The prospect for increasing the availability of family planning services in the MOH is limited at this time, and this situation will not change until family planning is identified as a priority service of the MOH and the PHCP. The CBFHP is a viable program, albeit small, but its future is uncertain if the MOH does not accept responsibility for it and provide adequate logistics support.

#### IV. INITIATIVES TO INCREASE THE AVAILABILITY OF FAMILY PLANNING SERVICES

Two AID initiatives are currently under way to increase the availability of family planning services in Sudan. One is the Rural Health Support Project (RHSP) and the other the Model Clinic which, if approved, will be supported by an Operational Program Grant (OPG) to the SFCA.

##### A. Rural Health Support Project (RHSP)

Under the RHSP, USAID will "assist the Government of Sudan (GOS) in the strengthening and improving of its Primary Health Care Program (PHCP) by providing grant funding in the amount of \$18,063,000 of HN (Health, Nutrition) and POP (Population) funds over (the) life of project (FY 1980-1984)." Of this amount, slightly less than \$1.9 million are population funds.

AID's assistance will focus on three areas:

1. Improved delivery of Primary Health Care (PHC) services,
2. inclusion of maternal-child health and family planning services in PHC, and
3. strengthening of planning, management and logistics support of the PHCP.

USAID has contracted with the Africa Medical Research Foundation (AMREF) to implement the objectives of the RHSP in the Southern Region. To date, no contractor has been found for the Western provinces of Sudan.

We believe that the integration of family planning in the PHCP will be slow because of the low priority the MOH places on this service. In addition, the PHC Director for the Southern region believes that because of cultural norms and high infant mortality, family planning will not be acceptable to couples in her region. As a result, AMREF does not plan to emphasize family planning in its training courses for PHC personnel.

Ten provinces are included under the RHSP, six in Southern and four in Western Sudan. However, realizing the MOH's resistance to family planning, USAID's efforts to increase family planning awareness and services under the project will occur initially, beginning in 1983, in only four provinces: East and West Equatoria in the South, and North and South Kordofan in the West. In 1985, family planning activities will also be initiated in North and South Darfur Provinces located in Western Sudan. In our judgment, emphasis should first be placed on developing family planning services in the urban areas of the RSHP provinces before addressing the rural areas. In addition, the Mission should support, to the extent it is possible, organizations and individuals in the provinces that are interested in providing family planning services. For example, Juba University is interested in providing services through its campus clinic, and the director of Juba hospital would like to establish a private, free-standing clinic, also to be located in Juba.

Recently, Juba University received an unexpected shipment of contraceptive supplies from Family Planning International Assistance (FPIA). The shipment included, among other items, 49,200 cycles of oral contraceptives and 6,000 condoms. Juba University was required to pay LS 2,000 (US \$2,251) to clear the shipment through customs. The Vice-Chancellor of the University informed us that the contraceptives and equipment are needed in Juba but has no way of shipping them there. He requested assistance from USAID.

AMREF has a staff member working full-time on logistics in the Southern region. We anticipate that the contractor for the West will also provide the same expertise. Thus, both contractors will work to improve the logistics system of the PHCP in their respective regions, so that when family planning becomes integrated into the PHCP, there will be some assurance that there will be a continuous flow of contraceptive supplies to outlets. In the meantime, USAID should continue its efforts, e.g., observational trips and RAPID presentations, to promote family planning as an integral service of the PHCP.

#### B. Model Clinic

The proposed Model Clinic, which will be operated by the SFCA, will be the first free-standing family planning clinic in Sudan. In some respects the clinic is an experiment to demonstrate the feasibility of a single-service-oriented clinic. The clinic will offer reversible as well as non-reversible methods of contraception. The staffing pattern of the clinic will reflect an emphasis on the use of paramedicals, e.g., nurses with back up support from physicians.

The clinic will be designed to serve up to 25,000 active users in its first year of operation. Although the clinic will primarily serve women who live in Khartoum Province, it is expected that some clients will travel as much as 4 hours or more from other provinces to utilize the services of the clinic.

The above is a brief description of the Model Clinic. Additional details on the design and scope of the clinic will be included in a report by Mr. John Paul James, AID/POP/AFR/DR, who was the principal consultant to the SFCA in

developing the proposal for the OPG. What is important to report here is that the Executive Board of the SFCA agreed in principal to a large clinic operation, to the extensive use of paramedicals, and to the inclusion of surgical contraception as a method offered by the Clinic.

The Model Clinic provides a unique base from which to increase the availability of family planning services in Sudan. In addition to clinic-based services, the SFCA could establish community-based distribution of contraceptives and provide contraceptive logistics support to the MOH and to the University of Khartoum's Community-Based Family Health Project. Based on discussions we had, community-based distribution is a real possibility, particularly for resupply of orals, condoms, and vaginal methods; however, all new users will be required to present themselves at the clinic to obtain their initial supply.

If the SFCA elects to establish a logistical support activity, this will greatly benefit the WHO/MOH-MCH/FP program which currently does not have a logistics capability as discussed in the next section. In addition, if logistical support is provided to the Community-Based Family Health Project, the University of Khartoum would not have to depend on the MOH to pick up the project when it terminates, and it would be possible to quickly expand the project North and South along the banks of the Nile.

Logistical support of the WHO/MOH-MCH/FP Program could be financed with part of the \$1.9 million earmarked for family planning in the RHSP. In our judgment, USAID, the MOH, and the SFCA would benefit from a logistical support activity. For the MOH, it currently represents the only way its facilities can be assured of receiving adequate and timely quantities of contraceptive supplies. It also represents a means of introducing family planning services in MOH facilities that do not currently provide these services.

#### V. ASSESSMENT OF CONTRACEPTIVE SUPPLY SYSTEMS

Our conclusion to promote a logistics support activity as part of the Model Clinic was based, in part, on our assessment of the contraceptive supply system of the WHO/MOH-MCH/FP Program, the CBFHP, the SPPA, and the MOH. These systems are briefly discussed below.

##### A. WHO/MOH-MCH/FP Program

This program is more a training than a service project and thus has not developed a logistics capability nor an inventory control system. In addition, it is a discrete and somewhat autonomous project, and the MOH supply system does not provide logistics support to the project beyond storage. Given these constraints, there are apparently two ways in which the program ships commodities to the field: by program sisters (nurses) who periodically visit active contraceptive outlets of the MOH and by making shipments to the program's 35 participating representatives in the provinces. The former is limited to Khartoum and environs, and the latter lacks the necessary controls to insure that commodities reach their final destinations, e.g., personnel trained by the program.

Presently, the program is planning to ship approximately 300,000 cycles of Norinyl to the provinces. An additional 128,000 cycles will remain in Khartoum. These contraceptives, which are presently stored on the front porch of the program offices, are the remainder of a 1 million cycle shipment that was sent to Sudan by FPIA in 1977. Curiously, the shipment was consigned to the Ministry of Social Welfare and was "lost" for almost 3 years. They were manufactured in 1976 and 1977. Approximately 18 months ago 500,000 cycles of the original shipment were shipped to the provinces. It is unknown how many of these have been distributed to users.

We also found a small quantity of condoms that were manufactured in Korea on hand at the program office. These condoms had an expiration date of 1981. In addition, approximately 10,000 Tahiti condoms were on hand. These were recently received and were manufactured in 1979.

The actual supply status of the program, particularly in the provinces, is unknown. Quantities to be shipped are based on population and prevalence estimates. The director of the program does not know the usage rates of the contraceptives of the field outlets nor their current balances on hand. Given the low prevalence of use of contraceptives in rural Sudan, it is probable that large stock levels currently exist in the field.

The orals at the program office will not be issued until the results of an assay are received. The cartons containing the orals show that they were exposed to direct sunlight and water before the program director located them at Soba hospital. We sent samples to S&T/POP/FPSD to be assayed. If the results of the assay show that the orals are no longer potent, the program will virtually have no oral contraceptives.

As far as we could determine WHO/UNFPA, to date, have not provided contraceptive commodity support to the program. However, the UNFPA representative reported that a shipment valued at US \$40,000 is expected to arrive shortly in Sudan. Surprisingly, he did not know what the shipment will contain. The WHO representative was unavailable for comment.

Recently, the program director made overtures to USAID/Sudan to supply the program with an unspecified number of cycles of Noriday and Norminest. Apparently, he made a similar request to FPIA, but FPIA informed him that the program will not be eligible to receive additional supplies until existing supplies are issued. In our judgment, it should be the Mission's decision to provide centrally-funded contraceptives to the program. In addition, the decision to provide contraceptive supplies should be based on the condition that the program establishes a capability to report number of contraceptives dispensed to users and balances on hand by method--data which are essential to estimating supply requirements of on-going programs. We strongly suspect that stockouts (no supplies on hand) and supply imbalances (over-or under-supply) exist throughout the program. For example, we visited one area where supplies were supposed to have been shipped and were informed that none had been received.

Use of centrally-funded commodities should perhaps also be linked to the willingness of the MOH to enter into an agreement with the SFCA where the SFCA would provide contraceptive logistical support to the WHO/MOH-MCH/FP Program. It should be reemphasized that the program does not have a logistics capability and would benefit greatly from an MOH/SFCA agreement.

A similar arrangement is currently operational in Guatemala. It is called the Direct Distribution Program (DDP) (see FPED/CDC Trip Reports dated 7/13/76, 7/29/76, and 6/3/76). Under this program the Guatemala Family Planning Association provides contraceptive logistical support to the Ministry of Health. When the program began, the Guatemalan MOH was providing family planning services in only 121 locations. After 2 years, 600 MOH facilities were providing these services. This was done with a staff of four people who were responsible for implementing family planning in sites without services and for providing a continuous supply of contraceptives to active outlets. At the time of the DDP's last evaluation, no MOH outlet supported by the DDP had ever run out of supplies.

We strongly urge the Mission to consider a DDP-like activity in Sudan. It could be employed to resupply MOH facilities, like in Guatemala, or could be designed to implement and resupply a totally independent, vertical family planning program, including community-based distribution.

#### B. Community-Based Family Health Project (CBFHP)

The supply system of this project can be characterized as "informal." Outlets receive their supplies directly from the project's two supervisors who make periodic visits to the field. A small room serves as a storage area for the project. There is no formal system of inventory control but, fortunately, quantities of oral contraceptives distributed to users is recorded and reported. Thus, it is possible to determine usage rates and estimate coverage of the program, e.g., percent of target population served by the project. Another advantage of the supply system is that resupply is associated with program supervision. During supervisory visits, balances on hand and supply requirements are determined, thus reducing the probability of supply imbalances, wastage, and fraud. Thus, the system is similar to the DDP in Guatemala but less formal.

If the project is transferred to the MOH when current funding is terminated in 1983 or 1984 individual outlets will be responsible to obtain their supplies from the nearest MOH storage facility, i.e., in Khartoum. The MOH supply system does not provide for a hierarchical system of resupply where hospitals resupply health centers, health centers resupply dispensaries, etc. Thus, a continuous flow of supplies to the outlets will not be guaranteed if the project is transferred to the MOH. Like the WHO/MOH-MCH/FP Program, this project would also benefit from a direct distribution program.

The project currently has 64,800 cycles of Norinyl on hand. Based on the quantity of orals distributed to users from May 1981 through April 1982 (7,566 cycles), this amount represents approximately 8.6 years' supply. The contraceptives were manufactured in 1976/77 and were obtained by the project from the 1 million cycle shipment sent to the Sudan by FPFA in 1977.

C. Sudan Family Planning Association (SFPA)

The SFPA supply system conforms to IPPF standards in terms of inventory control, i.e., a formal system is in place to monitor the flow of supplies. Warehouse space is limited, and there was evidence that the FIRST-IN-FIRST-OUT (FIFO) principle of supply management was not being observed. The system used to determine quantities of supplies to be issued to outlets could be strengthened if maximum and minimum stock levels based on usage were established for each outlet. Resupply of outlets is based more on the availability of transport than on stock levels and usage rates of the outlets. In summary, the SFPA supply system is adequate given the number of outlets it services, i.e., 15 to 35 MOH clinics.

The contraceptive supply status of the SFPA is shown in Table 3. Based on quantities of contraceptives issued/distributed in 1981, 1982 starting balances, and expected receipts during 1982, the SFPA will have on hand for 1982 1.5 and 1.3 years' supply of orals and condoms, respectively. In addition, more than 4 years' supply of IUDs and foaming tablets will be on hand; 6.1 years' supply of Depo-Provera will also be on hand.

The SFPA estimates that it will require 250,000 cycles of oral contraceptives, 150,000 condoms, 100,000 foaming tablets, 5,000 doses of Depo-Provera, and 1,500 IUDs for the period 1983-1985. These requirements may be ambitious given the current level of SFPA programming and its organizational capacity to expand.

D. Ministry of Health (MOH)

Currently, efforts are underway to improve the MOH supply system. USAID/Sudan has provided a full-time logistics consultant from Medical Services Consultants, Incorporated (MSCI) to work with the Central Medical Stores in inventory control and supply management. Thus, we did not evaluate the MOH supply system in detail.

Although efforts are underway to improve the MOH supply system, several problems will have to be overcome before the system can be effective. Many of these problems are exogenous to the logistics system such as the poor communications infrastructure of the country and the chronic lack of transport, petrol, and foreign exchange. Overcoming these problems will be a long-term proposition. Thus, for the short-term, an independent supply system such as a direct distribution program, may be the only way to insure a continuous flow of contraceptive supplies to MOH facilities that provide family planning services.

VI. CONTRACEPTIVE SUPPLY REQUIREMENTS

One of the tasks of our consultation in Sudan was to estimate contraceptive supply requirements for AID's Rural Health Support Project (RHSP) and for the Model Clinic. The estimates presented are submitted in lieu of the 1984 Contraceptive Procurement Tables. The estimates were sent to S&T/POP/FPSD on June 25, 1982.

A. Rural Health Support Project (RHSP)

Ten provinces are included under the RHSP, six in Southern and four in Western Sudan. According to Dr. Micka, however, efforts to increase family planning awareness and services under the project will occur initially, beginning in 1983, in only four provinces: East and West Equatoria in the South, and North and South Kordofan in the West. In 1985, family planning activities will also be initiated in North and South Darfur Provinces located in Western Sudan.

The following assumptions were used in estimating contraceptive requirements (orals and condoms) for the RHSP provinces:

1. Prevalence of contraceptive use in the initial provinces in 1982 and for the Darfur provinces in 1985 is the same as that found by the Sudan Fertility Study for the Kordofan provinces in 1979--2.5 percent.
2. It is unlikely that the MOH's Primary Health Care Project will give greater emphasis to family planning during the 1983-1986 period than it presently does. Thus, prevalence of contraceptive use will increase only slightly during the period.
3. Ninety-eight percent of users will use oral contraceptives, 1 percent condoms, and 1 percent other methods. These proportions will not change over the 4-year period.
4. Thirteen cycles of oral contraceptives and 120 condoms are each equivalent to 1 Couple Year of Protection (CYP).
5. Contraceptives, programmed for use in a given year, should be shipped to Sudan and to the provinces before December 31 of the previous year. Thus, supplies for CY 1983 should arrive in Sudan sometime during the last quarter of 1982 unless project implementation is delayed. In that event, supplies should be received 3 months before implementation of services.
6. Because it is virtually impossible to predict demand in the provinces once contraceptives become available, end-of-year stock levels should be equivalent to 125 percent of the estimated use level for the subsequent year in order to meet unexpected demand and to have sufficient quantities on hand to fill the supply "pipeline."

Contraceptive supplies for West and East Equatoria should be shipped to Sudan via Nairobi, Kenya; there are no reliable and adequate transportation links between Khartoum and Juba. Supplies for the Kordofans and eventually for the Darfurs should be sent directly to Khartoum by air freight. In our opinion, shipping supplies to Khartoum via Port Sudan by sea freight would add additional obstacles, e.g., warehousing and transport, to an already difficult situation.

B. Model Clinic

Negotiations with the Sudan Fertility Control Association (SFCA) on the scope of the Model Clinic were still under way at the time of our departure. Thus, it is unknown at the time of this writing if the Model Clinic will just be a clinic-based operation or if it will include other components such as community-based distribution and a logistics support activity with the MOH.

Before our departure, a tentative agreement was reached on the percent of married women age 15-44 (MWRA) living in Khartoum Province that the Clinic will attempt to serve during each year of the project. The targets are summarized below:

	1983	1984	1985	1986	1987
MWRA (000s)	<u>250</u>	<u>265</u>	<u>281</u>	<u>298</u>	<u>316</u>
Target (%)	10	11	12	13	14
No. of MWRA (000s)	25	29	34	39	44

SFCA board members estimated method mix to be:

<u>Method</u>	<u>Percent Using</u>
Orals	70
IUD	20
Sterilization	5
Other	5
	<u>100.0</u>

The following assumptions were used in estimating contraceptive requirements (orals and condoms) for the Model Clinic:

1. The Clinic will meet its targets in the initial and subsequent years.
2. Seventy percent of the users will use orals, 20 percent IUDs, 5 percent sterilization, 1.5 percent condoms, 1.5 percent injectables, 1 percent foaming tablets, and 1 percent foam/cream and diaphragms. Method mix will not change over the life of the project (5 years).
3. Thirteen cycles of oral contraceptives and 120 condoms are each equivalent to 1 Couple Year of Protection (CYP).
4. Contraceptives programmed for use in a given year (with the exception of the initial year) should be shipped to Sudan before December 31 of the previous year. For the initial year, contraceptive supplies should be available at least 1 month prior to the implementation of services.
5. In order to have sufficient quantities of contraceptives on hand to meet unexpected demand and to begin to fill the supply "pipeline," end-of-year stock levels should be equivalent to 125 percent of the estimated use-level for the subsequent year.

C. DISCUSSION

Estimated cost of the oral contraceptives and condoms, including shipping costs for the RHSP and Model Clinic, are summarized in Table 4.

Estimates of contraceptive requirements for the RHSP and the Model Clinic are just that--estimates. The estimates should be revised based on program performance. Thus, it will be imperative that accurate and complete records be maintained on the two projects. These records should include at a minimum number of contraceptives dispensed to users and balances on hand by method at all administrative levels of the projects. These are among the key elements used in forecasting future supply requirements and in completing the Contraceptive Procurement Tables.

Timely reporting will also be essential. In the event that our estimates are proven to be conservative, adjustments will quickly have to be made to insure a continuous flow of contraceptive supplies to end-users. Timely as well as accurate and complete reporting will also help in correcting supply imbalances in the field.

The decision to provide both Noriday and Norminest oral contraceptives to the RHSP and Model Clinic should be based on programmatic as well as medical considerations. Given the poor communication infrastructure of Sudan, we suggest that the RHSP provide only Noriday to users until the RHSP demonstrates that it can manage contraceptive supplies. On the other hand, greater control can be exercised over the Model Clinic and, thus, both brands should be made available to the Clinic. Dr. Micka and board members of the SFCA, who are gynecologists/obstetricians, should determine what proportion of the total oral contraceptive supply for the Clinic should be Noriday and Norminest.

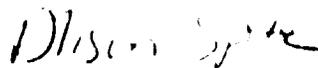
Finally, our estimates of oral and condom requirements differ from those that were sent to S&T/POP/FPSD by USAID/Sudan in Khartoum cable 5574 dated June 19, 1982. In general, our estimates are higher. The differences are probably due to the fact that our estimates include inventory over and above estimated usage in order to fill the supply pipeline, and the Mission's estimates do not. Given the poor communication infrastructure of Sudan, it is important to establish safety stocks from the very beginning. Another factor that may account for the difference in the estimates is that we are assuming that both projects will meet their targets in CY 1983. This may not occur, but given the uncertainty of the situation in Sudan with respect to demand, we would rather err on the high side just to be safe. Besides, our estimates of prevalence of contraceptive use for the RHSP are decidedly conservative. The

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Mission may take issue with our estimates for the RHSP because of the amount of money that is budgeted for contraceptives for the project--approximately US \$600,000. Our estimates can be reduced, however, by changing end-of-year stock from 125 percent of expected use for the subsequent year to 100 percent or less.



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TABLE 1  
Northern Sudan\*: Percent of Exposed Women Currently Using  
Contraception, by Method and Age, 1979

<u>Current Use and Method</u>	<u>Total</u>	<u>Percent of Women by Age Group</u>			
		<u>&lt;25</u>	<u>25-34</u>	<u>35-44</u>	<u>45-49</u>
<u>Currently Using</u>	<u>6.4</u>	<u>5.0</u>	<u>8.1</u>	<u>5.7</u>	<u>2.6</u>
Oral	4.3	2.8	6.4	3.3	0.0
Rhythm	0.6	1.4	0.4	0.2	0.0
Female sterilization	0.4	0.0	0.3	0.9	1.3
Injection	0.2	0.3	0.1	0.2	0.0
IUD	0.2	0.0	0.3	0.1	0.0
Condom	0.2	0.2	0.1	0.2	0.0
Withdrawal	0.2	0.1	0.2	0.0	0.6
Abstinence	0.2	0.1	0.1	0.2	0.0
Male sterilization	0.1	0.0	0.1	0.0	0.6
Other female	0.1	0.0	0.0	0.5	0.0
<u>Not Currently Using</u>	<u>93.6</u>	<u>95.0</u>	<u>91.9</u>	<u>94.3</u>	<u>97.4</u>
Total	100.0	100.0	100.0	100.0	100.0

SOURCE: Based on tabulations from the Sudan First Country Report, forthcoming.

\*Includes the following regions: Khartoum, Northern, Eastern, Central, Kordofan, and Darfur.

TABLE 2

Sudan: Percent of Exposed Women Currently Using  
Contraception, by Residence, Region, and Education

<u>Characteristics</u>	<u>Percent Currently Using Any Method</u>
TOTAL	6.4
<u>Residence</u>	
Urban	16.4
Rural	2.7
<u>Region</u>	
Khartoum	19.6
Northern	3.3
Eastern	3.2
Central	8.2
Kordofan	2.5
Darfur	2.3
<u>Education</u>	
No Schooling	2.5
Incomplete Primary	14.9
Primary and Over	41.6

TABLE 3

## CONTRACEPTIVE SUPPLY STATUS OF THE SFPA

METHOD	Issued/Dispensed in 1981	Balance on Hand 12/31/81	Expected Shipments in 1982	Year's Supply Available in 1982 (4)=(2)+(3)÷(1)
<u>Orals (cycles)</u>	<u>74,710</u>	<u>57,530</u>	<u>55,000</u>	<u>1.5</u>
Noriday	50,200	41,880	42,000	1.7
Microgynon	10,120	8,140	8,000	1.6
Ovulen	9,650	7,450	0	0.8
Neogynon	4,740	60	5,000	1.1
<u>Condoms (pieces)</u>	<u>10,152</u>	<u>7,128</u>	<u>6,048</u>	<u>1.3</u>
<u>IUDs (pieces)</u>	<u>1,130</u>	<u>4,635</u>	<u>0</u>	<u>4.1</u>
Diaps	1,130	3,875	0	3.4
Copper-T	0	760	0	-
<u>Neo-Sanpoon (tablets)</u>	<u>44,800</u>	<u>116,800</u>	<u>100,000</u>	<u>4.8</u>
<u>Depo-Provera (doses)</u>	<u>10,300</u>	<u>33,000</u>	<u>30,000</u>	<u>6.1</u>

TABLE 4

Estimated Cost of Oral Contraceptives and Condoms  
for Rural Health Support Project and Model Clinic

<u>Orals*</u>	<u>RHSP</u>	<u>Model Clinic</u>	<u>Total</u>
1983	\$137,298	\$117,411	\$254,709
1984	132,174	66,633	198,807
1985	138,999	76,419	215,418
1986	157,080	87,171	244,251
Subtotal	<u>\$565,551</u>	<u>\$347,634</u>	<u>\$913,185</u>
 <u>Condoms*</u>			
1983	\$ 3,696	\$ 6,636	\$ 10,332
1984	3,558	3,768	7,326
1985	3,738	4,314	8,052
1986	4,230	4,926	9,156
Subtotal	<u>15,222</u>	<u>19,644</u>	<u>34,866</u>
Grand Total	\$580,773	\$367,278	\$948,051

\*The following cost figures were provided by M. Vernon Peterson, S&T/POP/FPSD. Transportation costs are to Ethiopia.

Orals - US \$0.185/cycle plus US \$22 shipping costs per carton containing 1,200 cycles.

Colored Condoms - US \$4.60/box of 100 condoms plus US \$45 shipping cost per carton containing 6,000 condoms.

NOTE: 1986 figures include cost of contraceptives for CY 1987.