

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL

TO : William H. Foege, M.D.
Director, Center for Disease Control
Through: Philip S. Brachman, M.D.
Director, Bureau of Epidemiology (BE) 

DATE: June 24, 1980

FROM : Mark Speckhard, M.D.; Mark W. Oberle, M.D., M.P.H.
Program Evaluation Branch (PEB), Family Planning Evaluation Division (FPED)

SUBJECT: Foreign Trip Report (AID/RSSA): Ministry of Health, Colombia, April 21-
May 3, 1980

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SUMMARY

At the request of the Colombian Ministry of Health (MOH), USAID/Colombia and AID/Washington, Drs. Mark Oberle and Mark Speckhard of CDC/BE/FPED/PEB, visited Colombia April 21-May 3, 1980, to evaluate surveillance of the MOH sterilization program. In May 1979 the Colombian Ministry of Health (MOH) initiated a training program for minilap and endoscopic sterilizations with the assistance of the Johns Hopkins Program for International Education and Gynecology and Obstetrics (JHPIEGO) and the United States Agency for International Development (USAID). With the onset of the program, the Division Materno-Infantil (DMI) of the MOH requested that regional hospitals report female sterilization procedures on reporting forms prepared for this program. During the first 7 months of the program, 351 reports of sterilization were received. The MOH perceived that either relatively few procedures were being performed or there was substantial unreporting. To evaluate the surveillance system, Drs. Oberle and Speckhard visited the DMI in Bogota, the DMI Regional Coordinators in 5 Regions, and 10 Regional Hospitals in northern and southern Colombia.

Seven of the Regional Hospitals estimated that they had performed a total of 486 sterilization procedures during the first quarter of 1980. However,

these 7 hospitals had officially reported only 99 (20%) of these procedures. This suggests that there is substantial under-reporting of sterilization procedures, although it would take a more extensive study to define precisely the level of under-reporting. The MOH had noted that on the basis of procedures reported to them, 52% of sterilizations were being done by endoscopy. On the basis of estimates obtained at these 7 regional hospitals, 9% of sterilizations in these hospitals were accomplished by endoscopy. One cannot generalize this percentage to the entire program, but it appears that endoscopy makes up a much smaller proportion of total sterilizations than that suggested by the reports to the MOH.

Evaluation of the surveillance system revealed a number of factors which influence reporting of sterilizations. We believe the success and effectiveness of the surveillance system depends on active supervision at the regional level, most appropriately by the DMI Regional Coordinator. Currently, the MOH requires hospitals to submit sterilization reports directly to the central DMI office to reduce lag time. We recommend that this procedure be amended so that hospitals send sterilization reports through the DMI Regional Coordinator to allow him to monitor and actively manage the sterilization program in his region. We developed a checklist to assist the DMI Regional Coordinator in reviewing hospital sterilization programs (included as Attachment 1 to this report). We found that the need to report all sterilizations is not widely known. The reporting requirement was generally thought to refer to endoscopic procedures only. The MOH should clarify reporting requirements to each hospital so that each knows all sterilization procedures are to be reported. A sterilization monitor who is in the best position to tabulate all the surgical sterilizing procedures should be appointed in each hospital.

The current reporting form for female sterilization contains detailed questions about the person receiving sterilization and about the procedure. The information gathered permits the MOH to evaluate the characteristics of the population receiving sterilization as well as the procedures utilized. To increase the effectiveness of this form, we recommend that it be precoded and that the form be changed to clarify the choices for type of sterilizing procedure and include source of payment. While the information on the sterilization reporting form is of marked interest to the MOH, the length of the form will likely be a deterrent to completion and contribute to under-reporting. We recommend an additional precoded form be used providing a simple line-listing of patient name, age, parity, and type of procedure. We have provided an example of such a form. At present, sterilization reporting is requested from each regional hospital where a laparoscopist has been trained and laparoscopic equipment has been installed. In order to more fully assess the current status of sterilization in MOH hospitals and to provide a baseline for measuring the effect of sterilization programs, surveillance should be extended to all MOH hospitals with a physician and operating room to include regional, university, and the local hospitals.

In evaluating the surveillance system for the MOH sterilization program, we encountered a great deal of information about the sterilization program itself. This information concerning factors which influence performance of sterilizations, may be useful to the policy-makers in AID and the Colombian MOH and is included in our report along with related recommendations.

I. PLACES, DATES, AND PURPOSE OF TRAVEL

At the request of the Colombian Ministry of Health (MOH), USAID/Colombia, AID/POP/LA, and AID/POP/FPSD, Drs. Mark Oberle and Mark Speckhard of CDC/FPED/PEB visited Colombia April 21-May 3, 1980, to evaluate surveillance of the MOH sterilization program. In May 1979 the MOH initiated a training program in endoscopic and minilap sterilizations for MOH physicians in regional hospitals. At the same time, the MOH requested regional hospitals to report sterilizations. After several months into the program, the MOH was concerned because few reports of sterilizations had been received. In response to this concern, Dr. Mark Oberle visited Colombia October 28-November 1, 1979, to review sterilization surveillance and assess the need for more extensive evaluation. The MOH reported, as of November 1, teams had been trained for 47 regional hospitals, but only 114 reports of sterilizations had been received from 8 regional hospitals. Under-reporting was clearly a problem, and Dr. Oberle identified the need for improving sterilization surveillance (See CDC/RSSA report for Colombia dated December 12, 1979).

In February 1980, Dr. Jorge Michelsen, Vice-Minister of Health, Dr. Oscar Henao, Chief of Population Dynamics in the Division Maternal-Infantil (DMI), and Dr. Luis Ponton, Chief, Office of International Health, Colombia, visited CDC to review ways in which CDC could provide technical assistance to the Colombian MOH. Subsequently, the MOH requested AID to send Drs. Oberle and Speckhard from the FPED at CDC to Colombia to evaluate the sterilization program surveillance system for the MOH. The MOH requested that at this stage in the sterilization program, the focus of the evaluation should be on the effectiveness of the reporting system rather than on morbidity and mortality associated with sterilization.

To evaluate the surveillance system, Drs. Oberle and Speckhard visited the DMI in the MOH in Bogota, the DMI Regional Coordinators in 5 geopolitical regions (departments), and 10 regional hospitals in northern and southern Colombia. This travel was in accordance with the Resource Support Services Agreement (RSSA) with the Office of Population, AID, and CDC/BE/FPED. Dr. Oberle remained in Colombia from May 3 through May 23 to join 3 staff members of AID in an evaluation of health sector loans 069 and 075 and Nutrition Loan 514-0220. This evaluation will be reported separately.

II. PRINCIPAL CONTACTS

- A. Colombia Ministry of Health (MOH)
 - 1. Dr. Jorge Michelsen, Vice-Minister of Health
 - 2. Dr. Luis Daza, Chief, Division Materno-Infantil (DMI)
 - 3. Dr. Oscar Henao, Chief, Population Dynamics Section, DMI
 - 4. Dr. Jairo Barragan, Population Dynamics Section, DMI
 - 5. Dr. Luis Ponton, Office of International Health

- B. Agency for International Development (USAID/Colombia)
 - 1. Mr. Jerry Martin, Director, USAID/Colombia
 - 2. Mr. Marvin Cernik, Population Officer
 - 3. Mr. Arturo Posada, Assistant Population Officer

- C. Asociacion Pro-Bienestar de la Familia Colombiana (PROFAMILIA)
 - 1. Dr. Miguel Trias, Director, PROFAMILIA, Colombia
 - 2. Dr. Eduardo Rodriguez, Director, Pilot Clinic, Bogota

- D. Department of Huila, Office of Public Health
 - 1. Dr. Rufius Macias Alvira, Chief of Service
 - 2. Dr. Guillermo Gomez, Chief of Medical Services
 - 3. Dr. Jaime Rodriguez, DMI Regional Coordinator, DMI
 - 4. Marta Cecilia Narvaez, DMI Regional Nurse

- E. Regional Hospital, Neiva
 - 1. Dr. Armando Arevalo, Medical Coordinator
 - 2. Dr. Alberto Moreno, Chief of Obstetrics and Gynecology
 - 3. Dr. Ricardo Lievano, Laparoscopist
 - 4. Geneveva Parra, Laparoscopy Nurse
 - 5. Ana Garces, Nursing Supervisor, Outpatient Department

- F. Regional Hospital, La Plata
 - 1. Dr. Victor Manuel Benilla, Laparoscopist

- G. Regional Hospital, Garzon
 - 1. Dr. Heladio Vargas Motta, Laparoscopist
 - 2. Rocio Cortez, Laparoscopy Nurse

- H. Regional Hospital, Pitalito
 - 1. Maria Ruth Hoyos, Laparoscopy Nurse

- I. Department of Cordoba, Office of Public Health
 - 1. Dr. Ricardo Becharra, DMI Regional Coordinator
 - 2. Fabiola Vuelvas, DMI Regional Nurse

- J. Regional Hospital, Monteria
 - 1. Dr. Eduardo Flores, Medical Coordinator
 - 2. Dr. Julio Zapateiro, Laparoscopist

- K. Regional Hospital, Cerete
 - 1. Dr. Alfredo Spa, Medical Director
 - 2. Dr. Daniel Fajardo, Director, DMI Services
 - 3. Dr. Cristobal Petro, Laparoscopist

- L. Department of Sucre, Office of Public Health
 - 1. Dr. Juan Escobar, DMI Regional Coordinator

- M. Regional Hospital, Sincelejo
 - 1. Dr. Francisco Vergara, Laparoscopist
 - 2. Maria Lucy Hernandez, Laparoscopy Nurse
 - 3. Gladys Alvarez, Chief Nurse

- N. Department of Bolivar, Office of Public Health
 - 1. Dr. Rafael Polo, DMI Regional Coordinator
 - 2. Dr. Maximo Arenas Caballero, Epidemiologist
 - 3. Sara de Marin, DMI Regional Chief Nurse

- C. Clinica Rafael Colvo, Cartagena
 - 1. Dr. Vespeciano Zapata, Laparoscopist
 - 2. Nellie Valiente, Laparoscopy Nurse
 - 3. Ana Duenas, Chief Surgical Nurse

- P. Regional Hospital, Carmen de Bolivar
 - 1. Ana de Yepes, Laparoscopy Nurse

- Q. Department of Atlantico, Office of Public Health
 - 1. Dr. Rafael Perez, DMI Regional Coordinator

- R. Regional Hospital, Barranquilla
 - 1. Dr. Jose A. Rosillo, Laparoscopist

III. OBSERVATIONS AND RECOMMENDATIONS

A. Background

In May 1979 the Colombian Ministry of Health (MOH) initiated a training program for minilap and endoscopic sterilizations. Throughout this report the term sterilization will refer to female sterilization. The training program was developed and implemented by the Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO). JHPIEGO arranged for staff of the PROFAMILIA to provide the training to MOH physicians and nurses under the direction of JHPIEGO. The training program is funded by the USAID through the Office of Population (DS/POP). In addition, AID has funded endoscopic equipment for each trainee.

In the initial phase of the program, which is scheduled for completion by July 31, 1980, a physician from each of the 108 Regional Hospitals in Colombia is being trained in laparoscopy, and a nurse from each of the hospitals is being trained in the function and maintenance of laparoscopic equipment. The physician and nurse are usually trained simultaneously as a team.

As of May 1, 1980, 85 physicians and 79 nurses from MOH Regional Hospitals had been trained in laparoscopy, and 73 hospitals had received laparoscopic equipment. With the onset of the program, the MOH DMI requested that Regional Hospitals report female sterilization procedures to the DMI on standard forms. A maternal risk assessment form was also requested for each patient to document the need for sterilization. During the first 7 months of the program, from May through November 1979, 351 reports of sterilization were received by the DMI. Late reporting substantially increased the numbers reported for these months (Table 1). The numbers currently available for the first quarter of 1980 will also be revised upward on the basis of late reporting. We were unable to obtain estimates of populations in the catchment areas served by each hospital either from the hospital or the MOH.

For our evaluation, we asked the MOH to assist us in setting up an itinerary which would allow us to visit as many Regional Hospitals as possible in weeks. We emphasized our interest in hospitals that had submitted few or no reports

but indicated that we also wanted to visit hospitals that had been reporting regularly in order to evaluate surveillance in both types of facilities. We interviewed Chiefs of DMI services, laparoscopists, and laparoscopy nurses in 4 regional hospitals in southern Colombia and 6 regional hospitals in northern Colombia. The MOH advised each of the 10 regional hospitals and 5 DMI Regional Coordinators of our impending visit. We visited with the DMI Regional Coordinators in each of the regions (departments), and a staff member of the Central DMI Office or the region accompanied us on our visits to each regional hospital.

B. Sterilization Reporting

To assess the numbers of sterilization procedures performed, we asked personnel at each regional hospital the numbers of sterilizations performed by type of procedure from January-March 1980. None of the hospitals had a tabulation of sterilizations performed, and deriving the numbers from source documents would have required more time than we could allocate while maintaining our schedule of 10 regional hospitals. However, in 7 of the 10 regional hospitals, personnel were able to estimate the number of endoscopic and total sterilizations performed from January-March 1980 (Table 2). These hospitals are not a random sample nor do we know that they are representative of the 73 regional hospitals with operational programs. The seven hospitals had reported a total of 99 sterilizations for the months of January-March 1980 to the MOH, for an average of 14.1 reports per hospital. The MOH received a total of 816 sterilization reports for January-March 1980 for an average of 11.2 reports for each of the 73 operational programs. This suggests that the surveillance in the 7 hospitals did not differ substantially from the national average.

In the first quarter of 1980 these 7 hospitals officially reported to the DMI only 20% (99) of the 486 procedures estimated to have been performed. There is substantial under-reporting of sterilization procedures, although it would take a more extensive study to define precisely the level of under-reporting. Our data does suggest that sterilizations are performed more extensively in MOH hospitals than had been appreciated.

The MOH had noted that on the basis of procedures reported to them, 52% of sterilizations were being done by endoscopy. On the basis of estimates obtained at these 7 regional hospitals, 9% of sterilizations in these hospitals were accomplished by endoscopy. One cannot apply this percentage with confidence to the entire program, but it appears that endoscopy makes up a much smaller proportion of the total sterilizations than that suggested by the reports to the MOH.

C. Factors Which Influence Reporting of Sterilizations

We believe that the success and improved effectiveness of the surveillance system depends on active surveillance and supervision at the regional level, most appropriately from the DMI Regional Coordinator. Currently, the MOH procedure requires hospitals to submit sterilization reports directly to the MOH (DMI) to reduce lag time. Recommendation: Hospitals should send sterilization reports through the DMI Regional Coordinator to allow him to monitor and actively manage the sterilization programs in his region.

We have developed a checklist (Attachment 1) to assist the DMI Regional Coordinator in reviewing a hospital sterilization program. The questions provide a guide to major areas which should be covered and serve as a personal reminder to the supervisor of problem areas and projected solutions for use when he next reviews the hospital program. The checklist is designed as a management tool and not as a basis for a report.

1. One can expect a degree of under-reporting in any surveillance system. Although a monetary incentive could increase reporting, we would not recommend this, since it would be costly and would likely constitute an unacceptable precedent.
2. The need to report all sterilizations is not widely known. The reporting requirement was generally thought to refer only to endoscopic procedures. The MOH prefers the program title, "Programa Endoscopia Pelvica" because it carries no negative connotations. Recommendation: Clarify MOH reporting requirements to each hospital so that each knows all sterilization procedures are to be reported.
3. No one in the current surveillance system at the hospital level has ready access to information about all sterilization procedures. Hospital personnel estimated that most sterilization procedures currently performed in MOH hospitals are postpartum sterilizations through a periumbilical incision or sterilizations at cesarean section. Neither the Family Planning Clinic nor the laparoscopy nurse may be aware of these procedures. Recommendation: A sterilization monitor who is in the best position to tabulate all the surgical sterilizing procedures should be appointed in each hospital. The DMI Regional Coordinator, in consultation with the hospital staff, may be able to identify the person best able to accomplish this reporting procedure. Such a person should be recommended to the hospital administration for appointment as sterilization monitor with responsibility for completing the sterilization surveillance forms. In many facilities the operating room supervisor may be the one most aware of all surgical sterilizing procedures performed in the hospital.
4. We asked personnel at the 10 hospitals we visited if they noted any problems in completing the reporting forms. The only problem encountered was a single instance in which a hospital staff member felt there had not been sufficient training in completing the form. Recommendation: The DMI Regional Coordinator should review the sterilization reporting form in detail with the person responsible for reporting. Review of the reporting procedure is included on the checklist and should be addressed through visits by the DMI Regional Coordinator to assure that any problems are resolved.

5. The current reporting form contains detailed questions about the person receiving sterilization and about the procedure (Figure 1). The information gathered on this form is of great interest to the MOH, permitting evaluation of the characteristics of the population receiving sterilization as well as the procedures utilized. However, a few changes may allow more complete assessment of pertinent data and more efficient processing. Recommendation:
Change the current reporting form for sterilizations as follows:

- a) Clarify choices for type of sterilizing procedure.
- b) Include source of payment.
- c) Precode all items.

Item 25 on the sterilization form (Figure 1) lists 4 approaches to sterilization. The first, minilaparotomy, is a term commonly applied to sterilization through a small suprapubic incision, a procedure which has received recent widespread popularity. However, in Colombia we found many physicians applied the term minilaparotomy to the commonly used postpartum sterilization through a periumbilical incision. In order to distinguish these 2 approaches on the reporting form, we recommend that alternatives be labelled "interval minilaparotomy" and "postpartum periumbilical" (Figure 2).

The second term in Item 25, laparotomy, is generally used to refer to a surgical procedure through a large or standard abdominal incision. However, physicians in Colombia have used this term to refer to sterilizations performed at cesarean section, since cesarean section is not listed separately on the form. Consequently, to distinguish the 2 procedures, we recommend that both "laparotomy" and "cesarean section" be listed on the form (Figure 2).

The source of payment is an additional characteristic of the population receiving sterilization which can be helpful in determining the type of population served. We recommend that an additional item be included on the reporting form entitled, "source of payment," listing alternatives such as "MOH," "Social Security," "PROFAMILIA," "Private," etc., (Figure 2). It should be noted that PROFAMILIA is already tabulating its procedures performed in MOH facilities. Although reports of these procedures are not being duplicated at the moment in the MOH surveillance system, the option of reporting PROFAMILIA procedures would allow the MOH to estimate the total number of sterilizations performed in its facilities. The surveillance form should clearly specify whether PROFAMILIA procedures are to be reported or not.

Precoding the form can greatly expedite the tabulation. The MOH already has experience with precoded forms which could be applied to the sterilization reporting form.

6. While the information on the sterilization reporting form is of marked interest to the MOH, the length of the form will likely be a deterrent to completion and contribute to under-reporting.

A maternal risk form to substantiate the need for sterilization is also requested for each patient undergoing sterilization. While these forms provide much useful information, a precoded form providing a simple line-listing will likely give a more complete count of sterilizations performed. Recommendation: Establish a monthly line-listing report of sterilizations from each hospital indicating name of patient (or number), age, parity, type of procedure. The MOH uses a precoded line-listing form to record new users of contraceptives (Figure 3). A similar form could be used to tabulate all female sterilizations (Figure 4).

7. At present, sterilization reporting is requested from each regional hospital where a laparoscopist has been trained and laparoscopic equipment has been installed. However, the MOH training program for sterilization may extend beyond the regional hospitals. In fact, a second phase of the training program is proposed in which 100 additional teams will be trained during the period July 1980 through March 1981. In this phase of the program, 82 MOH physicians will receive training in minilap sterilizations. Of these physicians, 42 will also receive training in endoscopic sterilizations. In addition, 18 teams from the Instituto de Seguros Sociales, Caja Nacional de Prevision, and Caja Distrital will receive training in both minilap and endoscopic sterilizations. USAID/Colombia reports that the Instituto de Seguros Sociales, with 390 hospitals and clinics, provides service to over 600,000 families. The Caja Nacional de Prevision serves government employees throughout the country, and the Caja Distrital serves government employees in Bogota through a system of health clinics. USAID/Colombia estimates that the 3 organizations offer health care to over 1 million families. In order to more fully assess the current status of sterilization in MOH hospitals in Colombia and to provide a baseline for measuring the effect of sterilization programs, surveillance should be extended to all hospitals, regional, university, and local, in the MOH system. Recommendation: All MOH hospitals with a physician and an operating room should be included in the sterilization surveillance system.

D. Factors Which Influence Performance of Sterilizations

In evaluating the surveillance system for the MOH sterilization program, we encountered a great deal of information about the sterilization program itself, which may be useful to policy-makers in AID and the Colombian MOH. We have included this information on factors which influence performance of sterilizations in the present section. Although this information is not central to our focus on surveillance, we have included recommendations regarding performance. Our recommendations, derived from evaluations on site, are not intended to establish policy but rather to assist policy-makers who must make the ultimate decisions about the program.

In each hospital, we attempted to define a prime limiting factor which most directly affected productivity of the program (Table 3). In 3 of the hospitals we considered motivation to be the prime limiting factor, in 2 personnel, in 2 competition, in 1 patient demand, and in 1 gas supply was a temporary limiting factor. Attachment 2 provides a brief sketch of each regional hospital we visited. This is not for comparative purposes but to provide background if one wishes to know the setting for observation in the text.

1. Motivation

In 3 of the hospitals (Table 2, Nos. 1, 9, 10), motivation appeared to be the prime limiting factor. In 2 of the hospitals the first endoscopic procedures were performed just prior to our visit. The hospitals had approximately 1 week's notice of our impending visit, which may have triggered the performance of these endoscopic procedures. A visit by the DMI Regional Coordinator with a checklist in hand might have had the same salutary effect. In Neiva, a number of reasons were given why the program had not been initiated, but motivation appeared to be the prime limiting factor. During our visit to Neiva, we examined the equipment and explained the function of the insufflator volume indicator, which personnel erroneously thought was malfunctioning. Following the explanation, hospital personnel acknowledged that they were ready to begin the sterilization program. A visit by the DMI Regional Coordinator might have accomplished the same, and the prospect of a return visit might strengthen the staff's intention to begin using the endoscopic equipment. As we recommended in the section on surveillance, we strongly encourage the active participation of the DMI Regional Coordinator in the management as well as the surveillance of the sterilization program.

2. Personnel/Training

In one of the hospitals (Table 2, No. 5), the laparoscopist had been trained despite his expressed disinterest in laparoscopy because there was no alternative candidate to send to the training program. It is not surprising that only a few endoscopic procedures have been performed by this laparoscopist. Recommendation: Train only those personnel who are interested. In another hospital (No. 6), the laparoscopy nurse quit shortly after her training, but this loss was not reported to the DMI Regional Coordinator or to the MOH prior to our visit. Periodic visits by the DMI Regional Coordinator should identify such problems promptly.

Several laparoscopists reflected that they wished they had been trained on the type of equipment that had been provided to their hospitals. Many of the hospitals are being supplied with laparoscopes which are a simplified and somewhat smaller version of the laparoscope. Visualization through the laparoscope is reported

to be less than through the laparoscope. We were advised that because of the better visualization through the laparoscope, it was preferred as a teaching instrument by PROFAMILIA staff. However, the trainee, who will be faced with using a laparocator in his own hospital, should be trained on that same equipment. Recommendation: Train personnel on the equipment that will be used on site.

3. Demand

In one of the hospitals (No. 3), there was a lack of patient demand for sterilization which was attributed to religious influence. Education and time may resolve this factor. During the first quarter of 1980 PROFAMILIA performed 12,118 female sterilizations in Colombia of which 57% were accomplished by endoscopy according to their first quarter report. Table 4 compares PROFAMILIA activity with that of 7 MOH regional hospitals. Note that from site to site there is wide variation in numbers of sterilizations performed as well as percent accomplished by endoscopy in PROFAMILIA centers as well as in MOH regional hospitals. The numbers of PROFAMILIA sterilizations affirm that there is demand for sterilization. Since patients may travel for some distance to a sterilization center the population served by each site is not defined.

4. Equipment/Gas Supply

In one of the hospitals (No. 4), a depleted supply of carbon dioxide resulted in the interruption of a relatively active endoscopic program. Although this was the only case in which we considered gas supply to be a prime limiting factor, several hospitals registered concern over the supply of carbon dioxide. The gas supply for the laparocator is contained in 2 small cylinders which are supplied with the endoscopic equipment. In a telephone conversation with the manufacturer of the equipment, KLI, Inc., reported that each cylinder enclosed a volume of 2.73 liters. These cylinders can be filled to 850 psi, although they are often filled to a much lesser pressure (400-600 psi), especially when local soda drink manufacturers are used as a source of carbon dioxide. When filled to the maximum pressure (850 psi or 58 atmospheres), each cylinder can provide approximately 158 liters of carbon dioxide for insufflation. Six to 8 liters of carbon dioxide is a reasonable estimate of use per endoscopic procedure which accounts for loss during the procedure, and 10 liters per procedure would not be unusual for the recently trained. A small cylinder could thus be expected to provide gas sufficient for approximately 15-25 procedures; fewer if filled to a lower pressure.

KLI staff reported, in a telephone conversation, that a very small amount of carbon dioxide may enter the cylinder in liquid

form during filling. The KLI staff recommended that the cylinder not be filled with liquid carbon dioxide, since it might inadvertently flow into the insufflator and clog the filters. Several hospitals reported that carbon dioxide was not available locally and that turn-around time for refilling the small cylinders was up to a month. Recommendation: Make a large CO₂ gas cylinder available at any site at which CO₂ is not available locally so that the endoscopic program will not be interrupted while the gas supply is being replenished.

Several laparoscopists expressed concern over the relatively sharp tip of the uterine manipulator provided with the laparocator. In one instance a serious complication resulted from perforation. Recommendation: Consider providing a uterine manipulator with a bulbous tip less likely to perforate the uterus.

Although several sites were using a solution of glutaraldehyde to sterilize the plastic portions of the endoscopic equipment, some sites were still using solutions of benzylkonium, which is much less effective. Recommendation: Encourage each site to sterilize endoscopic equipment in a solution of glutaraldehyde and assist each hospital in obtaining the most economical supply.

5. Competition

In 2 of the regional hospitals (No. 7, 8), personnel mentioned that PROFAMILIA meets the patient demand for sterilization and in addition pays the physician. Because of the potential for duplication of services, PROFAMILIA has agreed to terminate its sterilization activities in certain cities when the MOH is capable of providing sterilization services. The effect that this policy-decision will have on the number of sterilizations performed in a region should be closely monitored. Recommendation: A detailed comparison of the number of MOH and PROFAMILIA sterilizations should be made for a representative time period before and after PROFAMILIA withdraws from an area. In selected regions, this evaluation should involve a review of all available surveillance data.

IV. SUMMARY OF RECOMMENDATIONS

A. Surveillance/Supervision

1. Hospitals should send sterilization reports through the DMI Regional Coordinator to allow him to monitor and actively manage the sterilization programs in his region.
2. Clarify MOH reporting requirements to each hospital so that each knows all sterilization procedures are to be reported.
3. A sterilization monitor who is in the best position to tabulate all the surgical sterilizing procedures should be appointed in each hospital.

4. The DMI Regional Coordinator should review the sterilization reporting form in detail with the person responsible for reporting.
5. Change the current reporting form for sterilizations as follows:
 - a. Clarify choices for type of sterilizing procedure.
 - b. Include source of payment.
 - c. Precode all items.
6. For ease in reporting, establish a monthly line-listing report of sterilizations from each hospital indicating name of patient (or number), age, parity, type of procedure. This format may be associated with more complete reporting.
7. All MOH hospitals with a physician and an operating room should be included in the sterilization surveillance system.

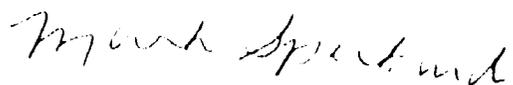
B. Personnel/Training/Equipment/Program

1. Train only those personnel who are interested.
2. Train personnel on the equipment that will be used on site.
3. Make a large CO₂ gas cylinder available at any site at which CO₂ is not available locally so that the endoscopic program will not be interrupted while the gas supply is being replenished.
4. Consider providing a uterine manipulator with a bulbous tip less likely to perforate the uterus.
5. Encourage each site to sterilize endoscopic equipment in a solution of glutaraldehyde and assist each hospital in obtaining the most economical supply.
6. In a sample of regions in which PROFAMILIA terminates its sterilization services, evaluate the total number of public sector sterilizations accomplished before and after PROFAMILIA's termination.

V. ADDENDUM

On May 2, the evaluation and recommendations were presented to Mr. Marvin Cernik and Mr. Arturo Posada, AID/Colombia; Dr. Luis Daza and Dr. Jairo Barragan, Colombian MOH; and Dr. Miguel Trias and Dr. Eduardo Rodriguez, PROFAMILIA/Colombia, by Drs. Oberle and Speckhard.

On May 15, Mark Speckhard discussed the evaluation and recommendations with Mr. Bill Bair, Mr. Dave Deanan, Dr. Andy Wiley, and Mr. Anthony Boni, DS/POP; and Drs. Hugh Davis and Kevin Armstrong, JHPIEGO, in Washington.


Mark Speckhard, M.D. *Red*


Mark W. Oberle, M.D., M.P.H.

TABLE 1

Sterilization Report Forms Received
by Ministry of Health, Colombia*

<u>1979</u>	
July	59
August	147
September	111
October	226
November	249
December	437
<u>1980</u>	
January	268
February	372
March	176

*Data provided by MOH on May 23,
1980.

TABLE 2

Sterilizations in Selected Ministry of Health Hospitals in Colombia
January through March 1980

Regional Hospitals	On Site Estimates of Sterilization				Total Steriliztns. Reported to MOH	% Steriliztns. Reported to MOH
	Endoscopic	Other	Total Steriliztns.	% Endoscopic Steriliztns.		
La Plata	20	12	32	63	15	47
Garzon	5	24	29	17	24	83
Pitalito	16	9	25	64	14	56
Cereté	0	90	90	0	0	0
Sincelejo	1	54	55	2	3	5
Carmen de B.	0	180	180	0	0	0
Barranquilla	<u>0</u>	<u>75</u>	<u>75</u>	<u>0</u>	<u>43</u>	<u>57</u>
	42	444	486	9	99	20

TABLE 3

Endoscopic Sterilizations in Selected Ministry of Health Hospitals in Colombia

January through March 1980

<u>Regional Hospital</u>	<u>Equipment</u>	<u>Endoscopic Sterilization by Month from Onset of Hospital Program Through March 1980</u>	<u>Prime Limiting Factor</u>	<u>Recommendation</u>
1.	Fallope-ring Laparoscope - System B	0-0-0-0-0-0-0-0-0-0-0	Motivation. Demand met by Profamiliar through February 1980. Dr. Daza visited in January and encouraged use of laparoscope. Now have waiting list of patients. Thought insufflation volume indicator malfunctioning but working well and fuction explained during our visit. They plan to begin endoscopic sterilizations soon.	Visits at regular intervals by Department MCH staff with check list and occasional visit by Central Office
2	Laprocator	1-0-2-0-11-9	None now. A faulty gas line connector and fluctuation in electrical power limited program in past but were resolved. An episode of pyosalpinx following an endoscopic sterilization evoked negative response in community but this has abated.	None. The staff is interested, has overcome obstacles, and program is flourishing
3	Laprocator	2-1-2-2	Demand. The local priest is in opposition and "people just are not motivated".	None. Demand may increase in time.
4	Laprocator	0-3-3-4-12-0	Equipment (temporary). CO ₂ supply depleted in March. Only have small cylinder.	Have large cylinder available.
5	Laprocator and Fallope-ring laparoscope - System B	0-0-2-3-0-3-0	Personnel. Trained despite disinterest because no alternative candidate.	Train only those who are interested. Train newly arrived obstetrician who is interested.

TABLE 3

STERILIZATIONS IN MINISTRY OF HEALTH HOSPITALS IN COLOMBIA (Continued)

January through March 1980

<u>Regional Hospital</u>	<u>Equipment</u>	<u>Endoscopic Sterilization by Month from Onset of Hospital Program Through March 1980</u>	<u>Prime Limiting Factor</u>	<u>Recommendation</u>
6	Laprocator	0-0-0-0	Personnel. Nurse quit shortly after training. Did not report loss until our visit.	Regular visits by Department MC staff with check list should identify problem promptly, perhaps in some cases in advance
7	Laprocator	2-1-2-0-0-0-1	Competition. Profamilia meets patient demand and pays physician.	
8	Laprocator	0-0-0-0	Competition. Profamilia meets patient demand and pays physician	
9	Laprocator	0-0-0-0-0-0-0-0	Motivation. Three procedures done just prior to our visit.	Regular visits by Department MCH staff with check list.
10	Laprocator	0-0-0-0-0-0-0-0-0	Motivation. Three procedures done day of our visit.	Regular visits by Department MCH staff with check list.

TABLE 4

Female Sterilizations in Ministry of Health Hospitals and by
PROFAMILIA in Selected Cities in Colombia
January through March 1980

Cities	Estimated Sterilizations in MOH Regional Hospitals			Sterilizations by PROFAMILIA†			Estimated MOH & PROFAMILIA Sterilizations	
	Total	Endoscopic	Percent Endoscopic	Total	Endoscopic	Percent Endoscopic	Total	Percent MOH
La Plata	32	20	63	0	0	--	32	100
Garzon	29	5	17	0	0	--	29	100
Pitalito	25	16	64	11	9	82	36	69
Cereté	90	0	0	0	0	--	90	100
Sincelejo	55	1	2	284	0	0	339	16
Carmen de Bolívar	180	0	0	85*	0	0	180	NA
Farranquilla	<u>75</u>	<u>0</u>	<u>0</u>	<u>749</u>	<u>749</u>	<u>100</u>	<u>824</u>	<u>9</u>
	486	42	9	1129	758	67	1530	23**

†PROFAMILIA, Informe de Actividades de Servicio, Primer Trimestre 1980, Boletín de Evaluación y Estadística No. 17, Bogotá, Abril 1980

*Performed in Regional Hospital and included in total for Regional Hospital.

**Carmen de Bolívar is excluded because PROFAMILIA sterilizations performed in MOH hospital.

FIGURE 1

Current Reporting Form for Female Sterilization

MINISTERIO DE SALUD		NO. HISTORIA CLINICA											
DIRECCION DE ATENCION MEDICA DIVISION MATERNO INFANTIL		<table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 10%;"></td> </tr> </table>											
ESTERILIZACION FEMENINA													
1- SERVICIO SECCIONAL DE SALUD DE		2- MUNICIPIO											
4- APELLIDOS		3- HOSPITAL											
NUMEROS		5- EDAD											
		6- DIRECCION											
7- Año de nacimiento		8- Zona de Residencia U <input type="checkbox"/> R <input type="checkbox"/>											
9- Educación		Años de estudio											
10- Número de Embarazos		16- Tiempo entre la Terminación del último embarazo y este procedimiento	Menos de 1 hora <input type="checkbox"/> Después de 1 hora hasta la salida del Hospital <input type="checkbox"/> De la salida del Hospital hasta 6 semanas <input type="checkbox"/> 6 semanas o mas <input type="checkbox"/>										
11- Hijos nacidos vivos		17- Razón principal para este procedimiento	Médicas <input type="checkbox"/>										
12- Hijos vivos actualmente			Desno de no mas hijos <input type="checkbox"/>										
13- Hijos nacidos muertos			Socio-Económicas <input type="checkbox"/>										
14- Abortos			Otras <input type="checkbox"/>										
15- Resultado del último N.V			Cual <input type="checkbox"/>										
Embarazo N.M <input type="checkbox"/>													
Aborto <input type="checkbox"/>													
18- Ha estado planeando antes de esta intervención		19- Último Método anticonceptivo usado antes de esta intervención											
SI <input type="checkbox"/> NO <input type="checkbox"/>		Diu <input type="checkbox"/> Anovulatorio <input type="checkbox"/> Otro <input type="checkbox"/> Cual _____											
Min-Salud <input type="checkbox"/> Profamilia <input type="checkbox"/> Otros <input type="checkbox"/>		20- Tiempo de uso del mismo											
		menos de 3 meses <input type="checkbox"/> de 3 a 12 meses <input type="checkbox"/> de 1 a 2 años <input type="checkbox"/> mas de 2 años <input type="checkbox"/>											
21- Exámen Pélvico		22- Infección Pélvica											
Normal <input type="checkbox"/> Adherencias <input type="checkbox"/> Prolapso <input type="checkbox"/> Fibrosis <input type="checkbox"/> Quiste <input type="checkbox"/> Combinación _____ Otro _____		Ninguna <input type="checkbox"/> Si, Aguda <input type="checkbox"/> Si, Crónica <input type="checkbox"/>											
		23- Anestesia											
		Local <input type="checkbox"/> Regional <input type="checkbox"/> General <input type="checkbox"/> Analgesia <input type="checkbox"/> Otra <input type="checkbox"/> Cual _____											
24- Procedimiento Efectuada por		25- Procedimiento Realizado											
Interno <input type="checkbox"/> Médico general <input type="checkbox"/> Residente <input type="checkbox"/> Gineco-Obstetra <input type="checkbox"/> Cirujano general <input type="checkbox"/>		Minilaparotomia <input type="checkbox"/> Laparotomia <input type="checkbox"/> Laparoscopia <input type="checkbox"/> Calpotomia <input type="checkbox"/>											
		26- Técnica de Oclusión											
		Solo Ligadura <input type="checkbox"/> Ligadura y Corte <input type="checkbox"/> Fimbriectomia <input type="checkbox"/> Salpingectomia <input type="checkbox"/> Anillo Tubario <input type="checkbox"/> Clip <input type="checkbox"/> Cauterización <input type="checkbox"/> Otra <input type="checkbox"/> Cual <input type="checkbox"/>											
27- Fecha de la Cirugía		28- Nombre del Cirujano											
29- Post Operación Inmediata													
HORA	PULSO	OBSERVACIONES											
30- Fecha programada primer control													
ORIGINAL MINISTERIO DE SALUD - DIVISION MATERNO - INFANTIL													

FIGURE 2

SUGGESTED CHANGES TO CURRENT STERILIZATION REPORTING FORM
FOR FEMALE STERILIZATION

25. Approach to Sterilization

- Caesarean Section
- Postpartum Periumbilical
- Interval minilaparotomy
- Laparoscopy
- Colpotomy
- Laparotomy

x. Source of Payment

- Ministry of Health
- Social Security
- PROFAMILIA
- Private
-

Current Precoded Line-Listing Form for Reporting
New Users of Contraceptives

SISTEMA NACIONAL DE SALUD
SUBSISTEMA DE INFORMACION

SIS - 135

PAGINA No.

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REGISTRO DIARIO DE USUARIAS NUEVAS DE PLANIFICACION FAMILIAR

Seccional _____ Municipio _____

Organismo

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 MES

--	--

ANO

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No. DE ORDEN	No. HISTORIA CLINICA O NOMBRE ABREVIADO	ZONA DE RESIDENCIA		EDAD EN AÑOS CUMPLIDOS		No. DE HIJOS VIVOS		LEE Y ESCRIBE		DONDE OBTUVO METODO ANTICON. ANTES DE ESTA ATEN.				METODO ADOPTADO EN ESTA ATENCION				ATENIDO POR	
		U	R	19	20	21	22	SI	NO	Prof. familia	Min. Salud	Otro	Ninguno	Ano-Vulva	D.I.U.	Estéril.	Otro	M.D.	Per. Ent.
		1	2	1	2	1	2	1	2	1	2	3	4	1	2	3	4	1	2
16-17		18		19-20		21-22		23		24				25				26	
01		1	2					1	2	1	2	3	4	1	2	3	4	1	2
02		1	2					1	2	1	2	3	4	1	2	3	4	1	2
03		1	2					1	2	1	2	3	4	1	2	3	4	1	2
04		1	2					1	2	1	2	3	4	1	2	3	4	1	2
05		1	2					1	2	1	2	3	4	1	2	3	4	1	2
06		1	2					1	2	1	2	3	4	1	2	3	4	1	2
07		1	2					1	2	1	2	3	4	1	2	3	4	1	2
08		1	2					1	2	1	2	3	4	1	2	3	4	1	2
09		1	2					1	2	1	2	3	4	1	2	3	4	1	2
10		1	2					1	2	1	2	3	4	1	2	3	4	1	2
11		1	2					1	2	1	2	3	4	1	2	3	4	1	2
12		1	2					1	2	1	2	3	4	1	2	3	4	1	2
13		1	2					1	2	1	2	3	4	1	2	3	4	1	2
14		1	2					1	2	1	2	3	4	1	2	3	4	1	2

No. DE ORDEN	No. HISTORIA CLINICA O NOMBRE ABREVIADO	ZONA DE RESIDENCIA		EDAD EN AÑOS CUMPLIDOS		No. DE HIJOS VIVOS		LEE Y ESCRIBE		DONDE OBTUVO METODO ANTICCN. ANTES DE ESTA ATEN.				METODO ADOPTADO EN ESTA ATENCION				ATENDIDO POR	
		U	R	19	20	21	22	SI	NO	Profamilia	Min-Salud	Otro	Ninguno	Aro-Vula	D.I.U.	Estériliz.	Otro	M.O.	Perf. Ent.
16		1	2					1	2	1	2	3	4	1	2	3	4	1	2
17		1	2					1	2	1	2	3	4	1	2	3	4	1	2
18		1	2					1	2	1	2	3	4	1	2	3	4	1	2
19		1	2					1	2	1	2	3	4	1	2	3	4	1	2
20		1	2					1	2	1	2	3	4	1	2	3	4	1	2
21		1	2					1	2	1	2	3	4	1	2	3	4	1	2
22		1	2					1	2	1	2	3	4	1	2	3	4	1	2
23		1	2					1	2	1	2	3	4	1	2	3	4	1	2
24		1	2					1	2	1	2	3	4	1	2	3	4	1	2
25		1	2					1	2	1	2	3	4	1	2	3	4	1	2
26		1	2					1	2	1	2	3	4	1	2	3	4	1	2
27		1	2					1	2	1	2	3	4	1	2	3	4	1	2
28		1	2					1	2	1	2	3	4	1	2	3	4	1	2

FIGURE 4

Suggested Pre-coded Line-Listing Form for
Reporting Female Sterilizations

pagina No.

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 paginas

REGISTRO MENSUAL DE ESTERILIZACION FEMINA

Seccional _____ Municipio _____

Hospital _____ Mes

--	--

 Ano

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Fecha	No. de orden	No. Historia clinica o nombre abreviado	Edad en anos cumplidos		No. de hijos vivos	Acceso de esterilizacion					
			22	23		Cesareo	Post parto	Mini lap	Laparo scopio	Colpo tomia	Laparo tomia
18 19	20 21				24 25	26					
	0 1					1	2	3	4	5	6
	0 2					1	2	3	4	5	6
	0 3					1	2	3	4	5	6
	0 4					1	2	3	4	5	6

ATTACHMENT 1

Checklist for Division Materno-Infantil Regional Coordinators
When Reviewing Hospital Sterilization Programs

REVIEW OF STERILIZATION PROGRAM

Hospital _____ Date _____ Visited _____

Review report in the hospital of procedures performed and compare with report submitted to Department. The following questions will provide a guide for reviewing the program and a personal reminder of problem areas and projected solutions for use when you next review the hospital program.

Reports

- Is there an adequate supply of report forms?
- Who prepares the forms? Any problems?
- How many sterilizations are being performed?
- Does this number agree with number reported to Department?
- Are all sterilizations being reported?
- Are all diagnostic endoscopies being reported?

Personnel

- How many physicians perform sterilizations (by specialty)?
- Who has been trained in endoscopy (include date)?
- Have those trained received tutorials?
- Is secondary training of other physicians taking place?
- Is there any problem in lack of trained personnel?

Equipment

- What type of endoscopy equipment is installed (include date)?
- Where is the equipment stored?
- Is there need for more equipment?
- What type of gas is used?
- Where is supply of gas obtained?
- Is there any problem in obtaining supply of gas?
- Is there a large cylinder at the hospital?
- How is equipment sterilized? Any problem?
- Any maintenance problems?
- Any electric power problems?

Program

- What is the current demand for sterilization?
- How do women obtain access into the sterilization program (review each step)?
- Are there any obstacles to access?
- What hours are sterilization services provided?
- What is the cost of sterilization to the patient?
- Is transportation a problem for patients?
- How long do patients stay in the hospital for sterilization?
- Have there been any notable complications?

Limiting Factors

- What factors currently limit the hospital in providing sterilizations?

RESOLUTION

- What can be done to resolve factors that currently limit providing sterilizations?
- What is the first step which should be taken?
- When can one reasonably expect this first step to be accomplished?

ATTACHMENT 2

Background Sketch of 10 Regional Hospitals Visited

I. REGIONAL HOSPITAL, NEIVA - 150 BEDS

This hospital has 2 obstetrician-gynecologists who perform sterilizations. Dr. Ricardo Lievano completed his training in laparoscopy in May 1979, and a laparocator was installed at the hospital in that same month. There is current unmet demand for sterilization. However, no endoscopic sterilizations have been done during the 11 months that the program has been in place. Only an occasional sterilization of any type has been done during the first 3 months of 1980, and only 2 have been reported.

Limiting Factor

1. Through February 1980 the demand for sterilization has been met by PROFAMILIA. At least one of the MOH obstetricians does sterilizations for PROFAMILIA at night. In January 1980, Dr. Luis Daza, Chief of the Division of Maternal and Child Health and Population Dynamics for the MOH visited the hospital and strongly encouraged utilization of the laparoscopic equipment. Dr. Lievano reported that since February they have identified unmet demand for sterilization, and there is a current waiting list of 10 patients.
2. Laparoscopic procedures had not been initiated because the volume gauge on the insufflator was thought to be malfunctioning. During our visit the equipment was examined and noted to be working well; the function of the volume indicator was explained to the laparoscopy nurse and anesthesiologist.
3. Air conditioning for the surgical suite had not been functioning in recent months, and hospital personnel reported that elective procedures are referred to Bogota. After discussion, Dr. Lievano noted that they did intend to begin endoscopic sterilizations soon without air conditioning since the procedures are short.

II. REGIONAL HOSPITAL, LA PLATA

Dr. Victor Bonilla completed his endoscopic training in September 1979, and a laparocator was installed in October 1979. This hospital is the sole source of sterilizations in the area, and there is current unmet demand for sterilization. Hospital personnel estimated 32 sterilizations were performed in the past 3 months, of which 15 were reported to the MOH. Twenty endoscopic sterilizations have been performed in the 6 months that the endoscopic program has been in effect. The number of endoscopic procedures show a marked increase in the last 2 months. Personnel at La Plata showed marked interest in the program, have demonstrated an ability to overcome obstacles, and are developing an effective program.

Limiting Factors

1. A faulty connector in the gas line was repaired.
2. Fluctuation in electrical power was resolved with a voltage regulator.
3. Pyosalpingitis developed in one woman following an endoscopic sterilization procedure and evoked a negative reaction in the community, but this was temporary and has now abated.

COMMENT: Personnel suggested that there be training during the PIEGO course in completing the MOH report form.

III. REGIONAL HOSPITAL, GARZON - 80 BEDS

Dr. Heladio Motta completed his training in December 1979; the laparocator had been installed in October 1979. There is limited demand both on religious grounds and because "people just are not motivated to be sterilized." The hospital is currently meeting the demand for sterilization. Personnel estimated there were 29 sterilization procedures accomplished in the last 3 months. There were 7 endoscopic sterilizations in the 4 months since the program has been in effect.

Limiting Factors

None.

COMMENTS: The laparoscopist has found the laparocator is too short for use in obese women. He noted that he had been trained using an insufflator with a volume indicator and regretted the lack of a volume indicator on his laparocator equipment. However, he felt that with experience, he could compensate for the lack of the volume indicator.

IV. REGIONAL HOSPITAL, PITALITO - 84 BEDS

Dr. Reinaldo Rojas completed his training in September 1979, and a laparocator was installed in October 1979. Demand for sterilization is moderate, and the hospital has no problem in meeting the demand. Personnel estimated 25 sterilizations were accomplished in the last 3 months, of which 14 were reported to the MOH. Sixteen endoscopic sterilizations have been accomplished in the 9 months that the program has been in effect.

Limiting Factors

1. Supply of gas depleted in March and took one month to refill small cylinders. Do not have large cylinder.

V. REGIONAL HOSPITAL, MONTERIA - 302 BEDS

Dr. Julio Zapateiro completed his training in June 1979, and a laparocator was installed in September 1979. The hospital does not meet the demand for

sterilization; there are currently 13 patients on the waiting list. Personnel were not able to estimate total sterilizations performed in the past 3 months. Eight endoscopic sterilizations have been performed in the 7 months since the program began.

Limiting Factors

1. The laparoscopist was sent for training because there was no other candidate, even though he expressed disinterest in the program. Both a laparocator and a system B laparoscope are available. A new obstetrician interested in endoscopy, has arrived in the community and would be a good candidate for training.

VI. REGIONAL HOSPITAL, CERETE - 150 BEDS

Dr. Cristobal Petro completed his training in November 1979, and a laparocator was installed in December 1979. There is much demand for sterilization in the community, but demand cannot be met because of lack of hospital beds and surgical time. Even with the use of the endoscope, there may not be enough operating room time to meet the demand, but it would be markedly improved. Personnel estimated 90 sterilizations were accomplished in the last 3 months. No endoscopic sterilizations have been performed in the 4 months that the program has been in place.

Limiting Factor

1. The laparoscopy nurse quit shortly after completing her training, and the loss was not reported until our visit.

VII. REGIONAL HOSPITAL, SINCELEJO - 162 BEDS

Dr. Francisco Vergara completed his training in May 1979, and a laparocator was installed in September 1979. PROFAMILIA is able to meet the large demand for sterilization and pays physicians for the procedure. Personnel estimated 55 sterilizations were accomplished in the past 3 months. Six endoscopic sterilizations have been performed in the 7 months that the program has been in effect.

Limiting Factor

1. PROFAMILIA is able to meet the demand for sterilization and pays the physician.

COMMENTS: Personnel felt that if PROFAMILIA discontinued sterilizations the regional hospital could not meet the demand unless it increased its gynecologic coverage over the present 2 hours a day. In addition, operating room time is limited. Demand might decline somewhat since PROFAMILIA is free to the patient whereas the regional hospital charges the patient 600 pesos (\$U.S. 13.00).

VIII. REGIONAL HOSPITAL, CARMEN DE BOLIVAR - 80 BEDS

Dr. Nelson Gonzalez completed his training in October 1979, and a laparocator was installed in December 1979. There is moderate demand for sterilization, which is easily met by the regional hospital. The surgeon at the regional hospital does all the PROFAMILIA sterilizations in the hospital by minilap. Personnel estimated that 180 sterilizations were performed in the past 3 months. No endoscopic sterilizations have been accomplished in the 4 months that the program has been in place.

Limiting Factors

1. PROFAMILIA meets the demand for sterilization and pays the physician for the procedure.

IX. MATERNITY HOSPITAL, CARTAGENA - 64 BEDS

Dr. Vespeciano Zapata completed his training in May 1979, and a laparocator was installed in August 1979. There is current moderate demand for sterilization which is being met. Personnel were not able to estimate the total number of sterilizations performed in the last 3 months. Three endoscopic sterilizations were accomplished in the 8 months in which the program has been in effect.

Limiting Factors

1. Motivation appears to be the limiting factor, since no other limiting factors were identified, and the only endoscopic procedures (3) performed were accomplished just prior to our visit.

X. REGIONAL HOSPITAL, BARRANQUILLA - 200 BEDS

Dr. Jose Rosillo completed his training in May 1979, and a laparocator was installed in July 1979. There is current great demand for sterilization which is being met by PROFAMILIA and the regional hospital. Personnel estimated that 75 sterilizations were performed in the past 3 months. Three endoscopic sterilizations were accomplished in the 9 months in which the program has been in place.

Limiting Factors

1. Personnel noted that electric power fluctuations were a problem which has only been recently resolved with a voltage regulator. However, motivation appears to be the prime limiting factor in that the only (3) endoscopic procedures performed were accomplished on the day of our visit.