



## Memorandum

Date September 16, 1981

From Anthony A. Hudgins, Public Health Analyst, Program Evaluation Branch,  
Family Planning Evaluation Division (FPED), Center for Health Promotion and  
Education (CHPE)

Subject Foreign Trip Report (AID/RSSA): Patient Flow Analysis--Rio de Janeiro and Sao  
Paulo, Brazil, July 12-25, 1981

To William H. Foege, M.D.  
Director, Centers for Disease Control  
Through: Horace G. Ogden  
Director, CHPE *HGW*

## SUMMARY

- I. PLACES, DATES, AND PURPOSE OF TRAVEL
- II. PRINCIPAL CONTACTS
- III. BACKGROUND
  - A. Patient Flow Analysis (PFA)
  - B. Centro de Pesquisas e Assistencia Integrada a Mulher e a Crianca (CPAIMEC)
  - C. Previous Consultation in Implementation of PFA in Brazil
- IV. INTERPRETATION OF PFA RESULTS AND RECOMMENDATIONS
  - A. Central Clinic
  - B. Clinica Bispo
  - C. Clinica Villa Kennedy
  - D. A General Comment
- V. INSTALLATION OF PFA PROGRAMS IN BRAZIL
- VI. CONSULTATION TO PROJECT IN SAO PAULO

## SUMMARY

On July 12-25, 1981, Anthony A. Hudgins travelled to Rio de Janeiro and Sao Paulo, Brazil, on a followup visit to an earlier consultation in March 1981, to implement the computerized Patient Flow Analysis (PFA) methodology in Brazil. During this visit (a) Centro de Pesquisas e Assistencia Integrada a Mulher e a Crianca (CPAIMEC) personnel were trained in analysis of PFA output through analysis of the results of five studies executed during the previous consultation; (b) specific recommendations were made to improve clinic operations through changes in scheduling of patients and staff; (c) the three PFA computer programs were installed and tested in Brazil, and (d) CPAIMEC personnel were assisted in using the PFA system for consultation to another agency in Brazil.

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

At the request of USAID/Brazil and FPSD/AID/W, Anthony A. Hudgins travelled to Rio de Janeiro and Sao Paulo, Brazil, July 12-25, 1981, to train personnel in a major family planning service agency, CPAIMEC, in the interpretation of Patient Flow Analysis (PFA) results, and to install the PFA computer programs at the service bureau used by CPAIMEC for future use in country to process data from CPAIMEC clinics and other family planning clinics in Brazil. This travel was a follow-up to an earlier trip in

March 1981 (see Trip Report--Hudgins, June 26, 1981), and was in accordance with the Resource Support Services Agreement (RSSA) between the Office of Population/AID, and FPED/CHPE/CDC.

## II. PRINCIPAL CONTACTS

### A. Centro de Pesquisas e Assistencia Integrada a Mulher e a Crianca (CPAIME)

1. Dr. Helio Aguinaga, Executive Director
2. Dr. Les Scofield, Director of Evaluation
3. Ms. Karen Lassner, Coordinator, Information and Evaluation
4. Sr. Renato Muniz, Statistical Assistant
5. Dr. Sumner, Medical Director
6. Dr. Lavander, Deputy Medical Director

### B. Control Data Corporation of Brazil

1. Sr. Mario Matesco Neto, System Programmer

### C. Pathfinder Fund

1. Dr. Jose de Codes, Brazil Representative

## III. BACKGROUND

### A. PFA

PFA is a system developed by FPED/CDC which documents personnel utilization and patient flow in individual family planning clinics. Its use enables management to obtain data for statistical documentation and graphical representation of a clinic session, which can be used to identify problems in patient flow, determine personnel and space needs, and document personnel costs per patient visit. Family planning programs using PFA can measure the performance of individual clinics, initiate clinics, initiate improvements in the clinic pattern and/or personnel needs that will increase overall clinic efficiency, and measure the results at minimal cost. Specific anticipated benefits to be derived from the use of PFA may include reduction of patients' waiting time (and frustration) in the clinic, a more equitable distribution of workload for each staff member during the work day, and reduction of personnel costs in the clinic. Additional patients may also be served for the same or even reduced costs.

### B. CPAIME

CPAIME is a major provider of family planning services in the metropolitan Rio de Janeiro area, initiating approximately 1,000 new users per month. The central clinic is a large facility housed in an old teaching hospital. This clinic provides a full range of family planning services to 130-230 women per day and accomplishes approximately 360 surgical sterilization procedures per month. The

organization also provides services in 13 health posts throughout the Rio de Janeiro metropolitan area. Four of these are small primary health care centers within Rio de Janeiro where MCH and immunization services as well as family planning services are provided. Nine are family-planning-only clinics housed in larger community health centers with a broad range of services. These clinics are largely in the suburbs of Rio de Janeiro.

C. Previous Consultation in Implementation of PFA in Brazil

On March 17-29, 1981, Anthony A. Hudgins trained personnel of CPAIMC in the use of PFA in evaluation and management of family planning clinics (see Brazil Trip Report by Hudgins dated June 26, 1981). As part of the training in data collection, data sets were collected in five clinic sessions at three locations. These data sets were processed by FPED.

During this previous consultation, preliminary discussions were held with CPAIMC and the Pathfinder Fund concerning the possibility of CPAIMC having PFA processing capabilities within Brazil and providing consultation to other family planning programs in Brazil with Pathfinder support.

IV. INTERPRETATION OF PFA RESULTS

During the previous consultation in March 1981, five data sets were collected within CPAIMC clinics--three data sets at the large central clinic and two data sets at two smaller clinics. Results of these studies were carried to Brazil and analyzed in conjunction with CPAIMC personnel. A summary of findings and recommendations follows:

A. Central Clinic:

Three data sets were collected on (a) a very light Friday (Friday normally has the lightest patient load, and on this day bad weather contributed to the patient load being abnormally light--130 patients), (b) a normal Friday (180 patients), and (c) a busy Monday (normally the busiest day--230 patients). Since three data sets were available for analysis, we were able not only to define problems within the clinic, but also study how these problems were affected by changes in the patient load.

Table 1 includes selected summary statistics from the study results. As the patient load increased, average patient waiting time and time in clinic increased. However, the percent of time the staff spent in contact with patients also increased, resulting in lower personnel costs per patient and probably indicating that some staff are under-utilized unless there is a heavy load. Some specific observations are:

- The busy Monday clinic was generally overloaded, causing relatively long waits for patients while in Friday clinics, staff were less well utilized.
- Patients tended to arrive early in the day, with half having arrived by 9:00 a.m.. Even in the Monday clinic with 230 patients, by 3:00 p.m. there were insufficient patients to properly utilize staff.
- Patients must come to the clinic at least twice before having surgical sterilization--once to schedule the surgery, again to turn in lab specimens. For each of these two types of visits, all patients are scheduled at once, but only one staff member is available to serve them. This results in long waits for one relatively short contact. In one of the study sessions, late arrival of the staff member aggravated the situation so that patients waited as long as 6 hours.
- As can be seen in Table 1, in the Monday session long waits tended to develop before the nurse-practitioner doing physical exams and the nurse doing medical histories. Viewing the graph confirmed that these two positions tended to be understaffed for the high volume of patients.
- Occasionally some staff were under-utilized because they were waiting for patients to finish education sessions.

#### Recommendations

- (1) Efforts must be made to try to reduce the variation in patient loads by countering the tendency for patients to arrive on Monday and early in the morning. While most of the patients, including all of the initial patients, are walk-ins, many of the patients in for revisits or follow-up have appointments. Thus, all appointments should be made for the afternoons of Tuesday through Friday, leaving Monday and other mornings for walk-ins. While this may not totally solve the bunching problem, it will help alleviate it.
- (2) The visits for scheduling surgery and for doing lab work prior to surgery should be combined into one visit. A staff member should be assigned to handle these tasks throughout the day, and patients should either be given staggered appointments or told to come in at their convenience, which would tend to scatter their arrival throughout the day.
- (3) In order to assist with the especially heavy demand on Monday, one nurse-clinician to do physical examinations and one nurse to do medical histories should be brought in from the relatively under-utilized satellite clinics.

- (4) The ad hoc methods currently used for determining when an education session will be started need to be examined and possibly modified so that patients' and staff time can be used more effectively.

B. Clinica Bispo

This clinic is in a "favela" (a lower socioeconomic urban area) in Rio de Janeiro. It provides a broad range of primary care, specializing in maternal and child health and family planning. As it was generally under-utilized, patient waits tended to be short.

Recommendations:

- (1) Recruit more patients utilizing staff for outreach activities, if necessary.
- (2) Schedule more patients in mid-morning for the nurse practitioner.
- (3) Until the patient load increases, less physician time is needed, perhaps 2 hours instead of 4, or for fewer days per week.

C. Clinica Villa Kennedy

This clinic is a family planning clinic within a more general community clinic in a suburban "new-town" of Rio de Janeiro. Again, since the clinic was generally under-utilized patient waits tended to be short. However, the physician in this clinic was also seriously under-utilized. It should be noted that the staff stated that the day of the study was a market day and, therefore, fewer than the expected number of patients arrived.

The major problem from the patients' point of view was the requirement for two visits for initial patients--one for registration and education, a second for the physical exam.

Recommendation

- (1) Recruit more patients, utilizing staff for outreach activities, if necessary.
- (2) Design the clinic flow to give full initial services in one visit. While initial patients are in the education session, the physician and his assistant can serve follow-up and medical problem patients. After the education session and medical history interview, the physician could serve the initial patients. The current staffing pattern could handle this.

D. A General Comment

Related to the under-utilization of some of the clinics, the consultant noticed a general lack of information material and posters

promoting family planning and was told that there was very little such material in Portuguese. This is a problem that should be addressed on a national or international basis. However, other FPED staff have reported adequate information and educational materials in Portuguese at BEMFAM, the IPPF affiliate. Perhaps, there is a need for better interagency cooperation within Brazil.

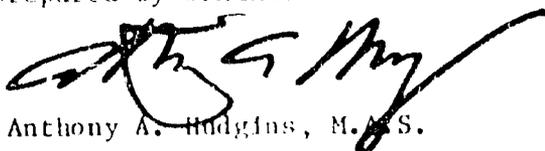
#### V. INSTALLATION OF PFA PROGRAMS IN BRAZIL

I carried a tape of all three PFA programs (edit, statistics, and plot), printouts of these programs and printouts of the Job Control Language for each program. CPAIMC personnel installed the PFA programs in their computer facility contractor (Control Data of Brazil), Rio de Janeiro, both for use with their own clinics and in clinics of other family planning agencies within the country. With Pathfinder support, it was felt that this activity would be an extension of CPAIMC's current role as a leader among Brazilian family planning agencies in the field of evaluation.

Although the programs were written in common universal languages, some programming was needed to adapt the logic of the I.B.M. based programs to enable them to run on a Control Data Corporation computer. The country representative of the Pathfinder Fund agreed to pay for this conversion. During the visit, I worked with Control Data personnel, and all three basic PFA programs were tested on data collected in a Sao Paulo clinic. By the end of the visit, all programs were functioning with only very minor labelling errors in the plot program. Now that these programs are installed, future use in Brazil will be relatively inexpensive.

#### VI. CONSULTATION TO PROJECT IN SAO PAULO

A major reason for installing the PFA programs in Brazil is so that CPAIMC can have PFA data processing capability and can act as agent for PFA by providing consultation to other family planning projects in Brazil. I accompanied Renato Muniz of CPAIMC on a trip to Sao Paulo and assisted him in doing two PFA studies at the Indianapolis Clinic of the Sao Paulo Family Planning Center. These data sets were processed in Rio de Janeiro (with duplicate processing being done at CDC for comparison purposes), and a preliminary analysis was done. This analysis showed (a) a general under-utilization of the clinic, (b) the lack of an appointment system makes it impossible to plan the workload of the physicians. For example, a pediatrician was in the clinic for 4 hours and saw no patients. Final analysis and a report to the clinic and the funding agency (Pathfinder Fund) will be prepared by CPAIMC.



Anthony A. Hodgins, M.A.S.

TABLE 1

Selected Statistics From PFA Studies  
CPAIME Central Clinic  
March 1981

	<u>Light Load</u> <u>Friday</u>	<u>Normal Load</u> <u>Friday</u>	<u>Heavy Load</u> <u>Monday</u>	
Number of Patients	130	180	230	
Percent of Patients Arriving Late	24	19	18	
Percent of Patient Time in Contact	29	26	19	
Percent of Staff Time in Contact	29	32	36	
Cost for Initial Visit (\$U.S.)	4.82	3.31	2.88	
Cost for Follow-up Visit With Nurse	2.24	1.52	1.42	
Cost for Follow-up Visit With Physician	3.11	1.75	1.26	
Average Time in Clinic (Minutes):	88	106	134	
Initial Visit	109	105	194	
Follow-up with Nurse	59	75	127	
Follow-up with Physician	81	73	163	
Resupply	75	76	125	
Other	127	134	89	
Maximum Time in Clinic (Minutes):	274	424	309	
Percent of Time in Contact with Patients:				
Nurse Practitioner	56	59	66	
Physician	55	54	57	
Average Total Waiting Time (Minutes)	63	80	108	
Before Medical History	9	20	57	
Before Education	17	22	19	
Before Exam With Physician	35	42	53	
Before Exam With Nurse	41	55	69	