

Patient Flow Analysis (PFA)

DATA COLLECTION MANUAL



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
Atlanta, Georgia 30333



Contents

Introduction	1
What Is Patient Flow Analysis?	2
Output	2
The PFA Graph	2
The Statistical Report	5
The PFA Process: Planning and Implementation	12
Study Coordinator	12
Management's Role	13
The PFA Team	13
Preparing for a PFA Study	14
Study Variables	14
Planning	14
Briefing the Staff	18
Registers	18
Code List (Register 6)	21
Reason for Visit	23
Subclassification	23
Clinic Task Assigned	23
Personnel Worksheet (Register 5)	24
Personal Identification	26
Official Designation	26
Task(s) Assigned	26
Personnel Register (Register 2)	27
Time You Are Ready to Serve Patients	29
Time You Are No Longer Available to Serve Patients	29
Break Times	29
If in Travel Status in Order to Work in this Clinic	30
Source of Funds for Your Salary	30
Gross Salary, Etc. (Days of Paid Sick & Annual Earned plus Holidays, Fringe Benefits, and Hours in a Normal Work Week)	30
Staff Persons Who Change Tasks	30

Patient Sign-In Sheet (Register 4)	33
Patient Register (Register 3)	35
Patients Who Are Seen by More Than One Staff Person at a Time	37
Staff Persons Who See More than One Patient at a Time	37
Clinic Register (Register 1)	38
Clinic Characteristics	40
Scheduled Time of Clinic; Earliest Time in the Data; Latest Time in the Data	40
Comments	41
Visually Editing the Data	41
Clinic Register (Register 1)	42
Personnel Register (Register 2)	42
Patient Register (Register 3)	42
Most Common Errors	42
Using the Data	43
Figure 1. The PFA Graph	4
Figure 2. The Statistical Report	7
Figure 3. Patient Register	20
Figure 4. Sample Code List	22
Figure 5. Sample Personnel Worksheet	25
Figure 6. Sample Personnel Register	28
Figure 7. Sample Patient Sign-In Sheet	34
Figure 8. Sample Patient Register	36
Figure 9. Sample Clinic Register	39
Figure 10. Clinic Characteristics in the Statistical Report	41
Appendix A. PFA Study: The Preliminary Report	44
Appendix B. Variables and Codes	48
Appendix C. Study Coordinator’s Checklist	53
Appendix D. Study Registers—English	56
Appendix E. Study Registers—Spanish	63

Introduction

This manual is one of two by the Centers for Disease Control and Prevention (CDC) that provide instruction on Patient Flow Analysis (PFA). The *PFA Data Collection Manual*, best described as a PFA primer, covers the more fundamental issues faced by users new to PFA. It also treats some advanced aspects of PFA to serve users who have a moderate amount of PFA experience and would consider using more sophisticated PFA study designs. These presentations are labeled “More Advanced PFA Study Design.” The *PFA Data Collection Manual* outlines all PFA study steps and describes general data collection methods, PFA’s coding requirements, and quality assurance procedures. The data analysis and problem-solving aspects of PFA, although not yet fully documented, are included in preliminary draft form (Appendix A).

The *PFA Data Collection Manual*’s companion document, *Patient Flow Analysis in Outpatient Clinics: Data Processing*, describes computer data entry and how to obtain graphic and statistical output. New users should become familiar with both manuals before attempting PFA.

For more advanced levels of understanding of PFA, training is available from CDC as well as several consultants around the country. Please contact CDC for information:

Services Management, Research & Translation Team
Program Services and Development Branch
Division of Reproductive Health
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention
4770 Buford Highway, N.E. MS-K22
Atlanta, Georgia 30341-3717
Phone: (770) 488-6260
Fax: (770) 488-6291
E-mail: WBoyd@cdc.gov

What Is Patient Flow Analysis?

Patient Flow Analysis (PFA) is a software-supported system that tracks patient flow and the use of personnel in health service clinics. Managers can use PFA to collect data for statistical documentation and graphical representation of a clinic session. The data can be used to identify problems in patient flow, determine personnel and space needs, and track personnel costs per patient visit. PFA, thus, helps managers assess the effect of clinic systems on patient flow.

Health service organizations can use PFA to measure the performance of individual clinic sessions, design new clinics, improve the clinic pattern, and review personnel needs to increase clinic effectiveness. The results: reduced patient waiting time (and frustration) in the clinic, more equitable distribution of workload for each staff person, and greater staff satisfaction with the overall delivery of services to the patient. More patients may also be served for the same, or even reduced, costs.

Software limitations currently restrict various aspects of PFA study design. New users must be aware of the two most significant restrictions: First, studies are limited to 199 patients and 50 staff; second, studies may not run longer than 11 hours and 59 minutes.

Output

The PFA Graph

The PFA software generates a graph providing a 2-dimensional representation of the clinic session (Figure 1; see page 4 for a representation of the graph). This graph is fairly easy for staff persons to understand and allows clinic management problems to be visualized. The upper portion depicts patients' visits; the lower portion presents the services staff persons delivered during the clinic session.

The patient visit lines describe individual patient's visit with each visit consisting of one or more service contacts. These service contacts are shown as one or more upper-case alphabetic characters with each character representing one minute of service time. The period of time between service contacts is represented by dashes, with each dash representing one minute of nonservice time. For example, in the graph for study XX001471 (from a small family planning clinic), below the horizontal time line running from 5:30 PM to 9 PM, Patient 1's visit is presented. Arriving at approximately 5:55 PM, Patient 1 receives one minute of service R; R, according to the legend, represents the reception service. From 5:56 through 6:30, Patient 1 receives no services. From 6:31 through 6:34, Patient 1 receives 3 minutes of L, which the legend translates as Laboratory. The remainder of patient 1's visit, in chronologic order, consists of more

nonservice time, then one minute of O (Other nonspecified service), additional nonservice time, then 5 minutes of concurrent services A (Assist Clinician), and P (Physician). Patient 1's visit is completed by 3 more minutes of nonservice time, one more minute of the nonspecified service, one minute of nonservice time, followed by 2 minutes of E (Education).

There are additional 1-character symbols. At the end of patient 1's visit line, the first, an A, represents patient 1's Reason for Visit; the second, also A, codes patient 1's Subclassification. The legend again translates these aspects of patient 1's visit: the Reason for Visit is *annual* (examination); the Subclassification is *pill* (that is, the patient's preferred method of family planning). Reason for Visit is self-explanatory; Subclassification, not as clear, allows patients to be grouped into as many as seven subpopulations; here, patients are grouped by preferred family planning method; other commonly used groupings include patient gender and patient age. The graph also uses these symbols: <, marking the patient's appointment time; ' (apostrophe), found under the service codes, marking when the service contact started; N, after the patient number, indicating the patient did not have an appointment

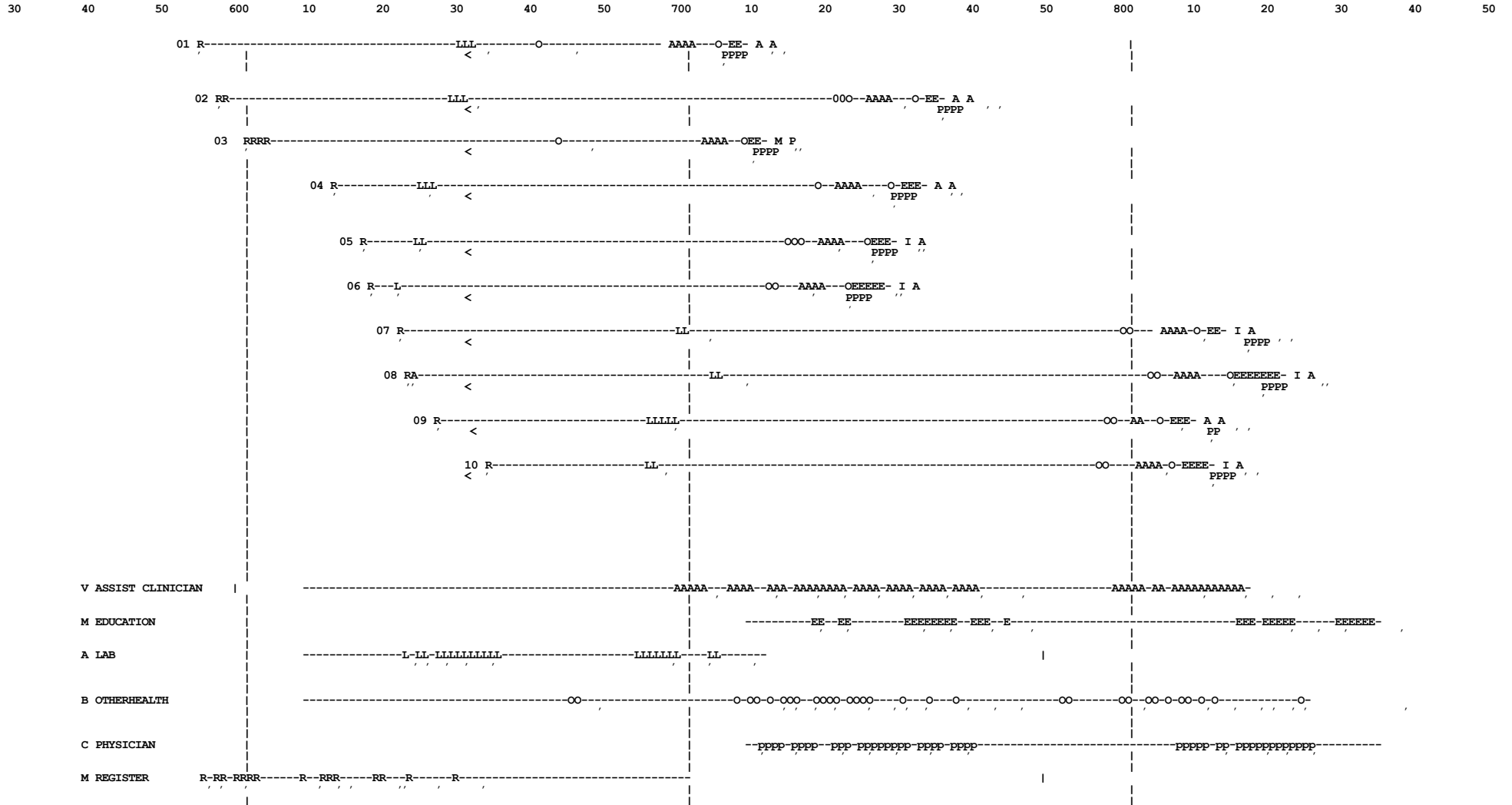
The service lines, below the patient lines, depict the type, number, and length of service contacts that staff persons have with patients. Unlike each patient line, which represents the full range of services a patient receives, each service line represents only one service as delivered by only one staff person. Other staff persons' delivering the same service would be represented in additional service lines. Staff persons who deliver two or more services would have additional lines, each corresponding to a specific service the staff person delivered.

Besides identifying when staff persons are delivering services, the service lines also identify staff time not identifiable with a specific patient. For example, in the graph for study XX001471, the first service line describes delivery of assist clinician services. Nonservice periods are represented by dashes, periods of service by upper case alphabetic codes. The staff person who delivered this service is identified as V, the first character in the left margin. V may be the clinic's aide, Vivian. Vivian may also deliver another service in this clinic, for example, education. If so, then when she delivers education, Vivian is identified as M.

Figure 1. The PFA Graph

PAGE 1

PATIENT FLOW ANALYSIS - XX001471
 JAN 01 1991 06:30 - 07:30PM



LEGEND FOR XX001471			
TASKCODES		VISIT CODES	
AAA	AIDE	A	ANNUAL
EE	EDUCATION	I	INITIAL
LLL	LAB	M	MEDICAL
OOO	OTHER		
PPP	PHYSICIAN		
RRR	RECEPTION		
		A	PILL
		D	DIAPHRAGM

The Statistical Report

Besides the graph, the PFA system produces a summary and six statistical tables. Each table contains information about key aspects of the clinic session.

Table 1	Documents patients' time of arrival in the clinic relative to their appointment time. This information can be helpful in determining how well the appointment system is being managed, and how patients are responding to that system. Arrival within 15 minutes of the appointment is defined as "on-time."
Table 2	Examines patients' visit time in clinic by visit type. This table is divided into three categories: (a) average time in minutes in the clinic, (b) patient time in minutes receiving services, and (c) proportion of patient time in contact with staff. This information is useful when modifying or developing an appointment schedule.
Table 3	Documents the number of patients and personnel-related costs by visit type and Subclassification. This is the only table that uses the Subclassification variable.
Table 4	Compares the time the clinic made available for delivery of each service with the actual patient service time. It also identifies the number of patients accessing each service and how long they waited before receiving each service. Managers can use this information to redistribute service responsibilities among staff persons to remove bottlenecks at key stations.
Table 5	Further describes patients' service time and calculates personnel-related cost per patient by task and visit type. This table is useful in calculating personnel-related cost for each service and in modifying or developing an appointment schedule.
Table 6	Lists each staff person and the cost to the clinic for each minute of service provided; the number of patients staff persons see; the length of their clinic day; the amount of time they spend with patients; and the proportion of their clinic day spent with patients. This table is helpful in determining the cost of specific clinic services.

PFA studies can be done without including cost data. Nonetheless, including these data allows cost comparisons when doing follow-up studies. When deciding whether to include costs in PFA studies, you should review tables 3, 5, and 6, where these data appear. If you choose not to include these data, you need not collect the information below the double line on the Personnel Register (Register 2). During data entry, not entering any data will signal PFA to use programmed default values instead. See Figure 2 (page 7) for a sample statistical report.

Figure 2. The Statistical Report

PAGE 1 - SUMMARY

PATIENT FLOW ANALYSIS
STATE CODE XX - COUNTY CODE 001
BUILDING CODE 47 - STUDY NO. 1
JAN 01, 1991 - 06:30 P.M. - 07|30 P.M.

DATA SET CODE: XX-001-47-1

CLINIC CHARACTERISTICS:

- (1) URBAN
- (2) CONVENIENCE HOURS
- (3) F
- (4) FAMILY PLANNING
- (5) G
- (6) M

Comments:

DBL-V TEST DATA SET

INTRODUCTION

23 APPOINTMENTS WERE MADE (SEE TABLE 1)
65 PERCENT OF APPOINTMENTS WERE KEPT
15 PATIENTS WERE SERVED (SEE TABLE 3)
0 PATIENTS REGISTERED BUT RECEIVED NO SERVICES
6 PERSONNEL WORKED IN THIS CLINIC (SEE TABLE 4, ITEM 2)
2:52 WAS THE DURATION OF THIS CLINIC - FIRST TO LAST PATIENT (HOURS:MINUTES)

PATIENT ORIENTED DATA

16 PERCENT OF THE AVERAGE PATIENT'S TIME IN THE CLINIC WAS SPENT IN CONTACT WITH CLINIC PERSONNEL (SEE TABLE 2)
16 MINUTES WERE SPENT BY THE AVERAGE PATIENT IN CONTACT WITH CLINIC PERSONNEL (SEE TABLE 2)
98 MINUTES WERE SPENT BY THE AVERAGE PATIENT IN THE CLINIC (SEE TABLE 2)

PERSONNEL ORIENTED DATA

51 PERCENT OF PERSONNEL TIME AVAILABLE WAS SPENT SERVING PATIENTS (SEE TABLE 4, ITEM 6)
21 MINUTES OF PERSONNEL TIME WERE SPENT WITH THE AVERAGE PATIENT (SEE TABLE 4, ITEMS 4 AND 7)
41 MINUTES OF PERSONNEL TIME WERE AVAILABLE PER PATIENT SERVED (SEE TABLE 4, ITEMS 2 AND 7)

COST DATA

4.43 WAS THE AVERAGE PERSONNEL COST FOR VISIT TYPE ANNUAL (SEE TABLE 3)
5.80 WAS THE AVERAGE PERSONNEL COST FOR VISIT TYPE INITIAL (SEE TABLE 3)
3.63 WAS THE AVERAGE PERSONNEL COST FOR VISIT TYPE MEDICAL (SEE TABLE 3)
.00 WAS THE PERSONNEL COST TO BUDGET CODE A
.00 WAS THE PERSONNEL COST TO BUDGET CODE B
.00 WAS THE PERSONNEL COST TO BUDGET CODE C
.00 WAS THE PERSONNEL COST TO BUDGET CODE D
.00 WAS THE PERSONNEL COST TO BUDGET CODE E
75.87 WAS THE TOTAL PERSONNEL COST FOR THIS CLINIC
.00 WAS THE TOTAL TRAVEL COST FOR THIS CLINIC

TABLE 1 ----- PATIENT TIME OF ARRIVAL IN THE CLINIC RELATIVE TO APPOINTMENT TIME (MINUTES)

	EARLY		ON TIME	LATE		PATIENTS WITH APPOINTMENTS
	> 45	16-45	+/- 15	16-45	> 45	
NO. OF PATIENTS	0	6	9	0	0	15
PERCENT OF TOTAL	0%	40%	60%	0%	0%	100%

TABLE 2 -----

VISIT TYPE	AVERAGE PATIENT TIME IN THE CLINIC (MINUTES)			PATIENT TIME RECEIVING SERVICES (MINUTES)			PROPORTION OF PATIENT TIME IN CONTACT WITH STAFF RECEIVING SERVICES
	MEAN	RANGE		MEAN	RANGE		
		MAX	MIN		MAX	MIN	
A - ANNUAL	99	124	82	14	15	13	15%
I - INITIAL	107	146	81	18	25	11	17%
M - MEDICAL	64	81	46	11	12	10	17%

TABLE 3 ----- NUMBER OF PATIENTS / COST PER PATIENT SERVED BY VISIT TYPE AND SUBCLASS

VISIT TYPE	SUBCLASS								PTS. BY VISIT TYPE	WITH APPT BY VISIT TYPE
	A	B	C	D	E	F	G	ALL		
	PILL	FOAM	IUD	DIAPHRAG	OTHER	OTHER	NONE	ALL		
	NO/COST	NO/COST	NO/COST	NO/COST	NO/COST	NO/COST	NO/COST	NO/COST		
ANNUAL	5/4.43	0/.00	0/.00	0/.00	0/.00	0/.00	0/.00	5/4.43	33 %	5
INITIAL	7/5.28	0/.00	0/.00	1/9.44	0/.00	0/.00	0/.00	8/5.80	53 %	8
MEDICAL	2/3.63	0/.00	0/.00	0/.00	0/.00	0/.00	0/.00	2/3.63	13 %	2
TOTAL PATIENTS	14	0	0	1	0	0	0	15	---	15

TABLE 4 ----- PERSONNEL STATISTICS BY TASK

	TASK															TOTAL
	A AIDE	B STUD	C CLIN	D CLER	E EDUC	H HIST	I I	L LAB	M MANA	N N	O OTHE	P PHYS	R RECE	S SOC	T DIAG	
1. NO. OF PERSONNEL WHO WORKED	1	0	0	0	1	0	0	1	0	0	1	1	1	0	0	6
2. PERSONNEL MINUTES AVAILABLE	138	0	0	0	97	0	0	60	0	0	143	104	74	0	0	616
3. PERCENT OF TOTAL PERSONNEL MINUTES AVAILABLE	22 %	0 %	0 %	0 %	16 %	0 %	0 %	10 %	0 %	0 %	23 %	17 %	12 %	0 %	0 %	100%
4. PERSONNEL MINUTES IN PATIENT CONTACT	80	0	0	0	54	0	0	36	0	0	50	77	20	0	0	317
5. PERCENT OF TOTAL TIME IN PATIENT CONTACT	25 %	0 %	0 %	0 %	17 %	0 %	0 %	11 %	0 %	0 %	16 %	24 %	6 %	0 %	0 %	100%
6. PERCENT OF AVAILABLE TIME IN PAT. CONTACT (#4/#2)	58 %	0 %	0 %	0 %	56 %	0 %	0 %	60 %	0 %	0 %	35 %	74 %	27 %	0 %	0 %	51%
7. NO. OF PATIENTS SERVED	15	0	0	0	15	0	0	13	0	0	15	15	15	0	0	15
8. AVERAGE WAITING TIME PRECEDING THIS STATION	6	0	0	0	1	0	0	24	0	0	55	0	0	0	0	82

TABLE 5 --- TIME (MINUTES) AND COST PER PATIENT SERVED BY TASK AND VISIT TYPE

TASK	VISIT TYPE	PAT. SERVICE MINUTES		NO. OF PAT. SERVED AT STATION	COST	
		TOTAL	MEAN		TOTAL	MEAN PER PATIENT
A - ASST	A-ANNUAL	21	4	5	3.53	.71
	I-INITIAL	52	7	8	8.73	1.09
	M-MEDICAL	7	4	2	1.18	.59
	TOTAL	80	5	15	13.43	.90
	DIST COST				.00	.00
E - EDUCATION	A-ANNUAL	11	2	5	2.01	.40
	I-INITIAL	39	5	8	7.14	.89
	M-MEDICAL	4	2	2	.73	.37
	TOTAL	54	4	15	9.89	.66
	DIST COST				.00	.00
L - LAB	A-ANNUAL	18	4	5	5.00	1.00
	I-INITIAL	18	2	8	5.00	.63
	TOTAL	36	3	13	10.00	.77
	DIST COST				.00	.00
O - OTHER	A-ANNUAL	16	3	5	3.20	.64
	I-INITIAL	28	4	8	5.60	.70
	M-MEDICAL	6	3	2	1.20	.60
	TOTAL	50	3	15	10.00	.67
	DIST COST				.00	.00
P - PHYSICIAN	A-ANNUAL	19	4	5	6.17	1.23
	I-INITIAL	51	6	8	16.56	2.07
	M-MEDICAL	7	4	2	2.27	1.14
	TOTAL	77	5	15	25.00	1.67
	DIST COST				.00	.00
R - REGISTER	A-ANNUAL	6	18	5	2.26	.45
	I-INITIAL	9	25	8	3.40	.42
	M-MEDICAL	5	15	2	1.89	.94
	TOTAL	20	21	15	7.55	.50
	DIST COST				.00	.00
ALL	A-ANNUAL	91	18	5	22.17	4.43
	I-INITIAL	197	25	8	46.43	5.80
	M-MEDICAL	29	15	2	7.27	3.63
	TOTAL	317	21	15	75.87	5.06
	DIST COST				.00	.00

3

PAGE 6 - PERSONNEL SUMMARY (CONTINUED)
XX-001-47-1

DATA SET CODE:

TABLE 6 ----- INDIVIDUAL PERSONNEL DATA

PERSONNEL CODE	OFFICIAL DESIGNATION CODE	TASK ASSIGNED	COST RATE \$/MIN	NO. OF PATIENTS SEEN	TIME WITH PATIENTS (MINUTES)				TOTAL TIME IN CLINIC (MINUTES)	PERCENT OF TIME WITH PATIENTS
					MEAN	MAX	MIN	TOTAL		
A	T	L	.167	13	3	5	1	36	60	60%
B	A	O	.070	15	3	5	2	50	143	35%
C	D	P	.240	15	5	14	2	77	104	74%
M	M	R	.102	15	1	4	1	20	74	27%
M	M	E	.102	15	4	8	1	54	97	56%
V	L	A	.097	15	5	14	2	80	138	58%
AVERAGE			.123							

The PFA Process: Planning and Implementation

Although the graphs and statistics are the most tangible products of the PFA system, it is the process that occurs before and after the PFA study that is more far-reaching and beneficial. The PFA process does not assume that simply doing a study will solve all the problems. Instead, PFA catalyzes change in the way a clinic does business responding to the staff's concerns. Ideally, the PFA process will result in a renewed customer orientation and desire on the part of staff to see clients happier and themselves less burdened.

The process involves bringing together different departments within the clinic to solve shared problems. In this sense, PFA can be an excellent team-building tool resulting in (1) greater communication among departments, (2) better understanding of other departments' goals and needs, (3) focused clinic-wide goals and objectives, and (4) continuity in patient care. For the process to be successful, cooperation and participation of all levels of the clinic organization are needed.

This section of the manual focuses on the PFA process and the unique roles played by staff. It begins with a discussion of the role of the study coordinator, the leader of the PFA team. Top management's role in the PFA process is discussed next, then the role of the PFA team in analyzing the output to identify barriers to service and implementing changes.

Study Coordinator

The study coordinator serves as the impetus for change and is responsible for generating interest in the PFA process and keeping momentum and cooperation alive. This person is also responsible for carrying out the study. The study coordinator should be selected with great care. The staff must perceive this person as unbiased and receptive to their needs and ideas.

The clinic manager is often given the role of the coordinator by default. This person may not be the best choice, depending on the clinic manager's relationship with the staff. Because of the pivotal role of the position, choose someone highly motivated with effective communication and people skills. When selecting the coordinator, consider the following questions: (1) Does this person have the skills needed? (2) Does this person realistically have the time to devote to the activities generated by the study? (3) Will this person be able to view the findings of the PFA objectively? (4) What is the staff's perception of this person?

Management's Role

Realistically, change will not take place without executive approval and active involvement. Therefore, recruiting top management's help is essential. The reverse is also true. That is, top management may feel strongly about doing something while necessary support staff (implementers) are not yet on board with the idea. These pieces must be brought together before success can be achieved over the long run.

First, assess the clinic's needs and determine if PFA can help. PFA will be extremely useful if the goal is to improve service to the customer (patient). If the clinic suffers from long patient waiting times, overburdened and often unhappy staff persons, and patient flow and paper flow problems, change can begin with PFA.

PFA may not be the clinic management tool needed at this time or it may not be the only tool needed. For example, if management is interested in evaluating individual personnel performance, *PFA is not the appropriate tool*. In fact, using PFA in this manner may defeat its role as a team-building tool.

If management decides to use PFA, management and the study coordinator should make an agreement outlining management's role and responsibilities. It is not enough for management to agree to the study. They must commit to facilitate the process of change. This commitment includes, but is not limited to, time and resources. The commitment can be as informal as a verbal agreement or as formal as a memorandum. The form is not important. What is important is that the staff is aware of management's commitment to the process of change and long-range clinic improvement for the benefit of both patients and staff.

The PFA Team

When used properly PFA's findings will help facilitate communication and promote staff involvement in the decision-making process. An effective way to begin this process is to form an interdisciplinary team composed of a representative from each clinic department. The PFA team would be responsible for all aspects of the PFA process, from study design to data analysis, as well as identifying obstacles to patient services. Additionally, they develop feasible options and work with the staff to implement the needed changes.

Which staff persons are involved in the process of team-building is as important as the actual process. Because of the importance of a team approach, it is essential that key individuals in each department are identified and recruited for the PFA team. The key individuals should have organizational skills, knowledge of the clinic, and the respect of their peers. It is not necessary to be in a supervisory position; in fact, it is important to have all levels of the organization represented.

Initially, members of the PFA team may perceive their departments as having unique wants or needs. For example, administration may want a well-run, cost-effective clinic, and clinicians may voice a need to provide patients with quality care without enormous amounts of paperwork. Ultimately, what everyone wants is a clinic where patients receive quality care in a time-efficient manner and where staff feel fulfilled and appreciated.

Preparing for a PFA Study

This section describes the steps to be taken by the study coordinator and the PFA team when running a PFA. The material is presented in the order in which the steps are executed: (1) defining and coding the study variables, (2) planning the logistics of the study, and (3) briefing staff.

Study Variables

Among the variables are the tasks conducted by the staff, the Reasons for Visit, and the Subclassifications. Each variable must be defined thoughtfully and assigned a 1-character alphabetic code (for example, *history-taking = H*). This is a crucial step because the variables appear on the graph and in the statistical report. Allow considerable time for this step. Here are some hints.

The PFA user's list of variables should be applicable to all clinic sessions. If the same variables are used for all studies at the same clinic or within the same agency, data from these studies will be comparable, and it will be feasible to do analyses across multiple studies. The key is making comparisons within the same clinic or within the same agency. Comparing different types of clinics or clinics from different agencies may not be fruitful.

The time spent developing the study variables affords the study coordinator an excellent opportunity to engage in team-building. The coordinator, along with the PFA team that represents each department of the clinic, should decide on the variables and select their corresponding codes. This process should improve communication among these departments.

Appendix B contains a list of variables with suggested codes; these variables have proven the most widely applicable over time. They are presented here as suggestions and need not be used if others are better suited to the situation. Variables are discussed in more detail in the next section.

Planning

Once the variable list has been completed, other decisions must be made by the study coordinator and the PFA team. This step provides another opportunity for team-building.

The following decisions are required:

- % When and how will the patients be entered on the sign-in sheet?
- % Who will distribute the Patient Registers as the patient arrives?
- % How will the Patient Registers be routed through the clinic?
- % Which staff persons will determine the Reason for Visit and Subclassification?
- % When will staff persons receive their Personnel Registers?
- % How will the Patient and Personnel Registers be collected?
- % How and where will clocks and watches be synchronized?

When and how will the patients be entered on the sign-in sheet?

It is extremely important to determine when and how patients will enter the study so that a study number can be assigned and their arrival time documented. Without the correct arrival time, if patients take a number when first entering the clinic and then wait to be called by the reception or registration staff, the patient's noncontact time before registration or reception will not be recorded and a possible bottleneck not identified.

More Advanced PFA Design. If clinic staff are not able to document this information, it may be necessary to have a person, not assigned to work this session, posted at the clinic's entrance to record patients' arrival times.

Who will distribute the Patient Registers?

The question of who will distribute the Patient Registers (Register 3) at the start of the study is also important. Having reception or registration staff initiate Patient Registers may cause delays. To avoid delays, the study coordinator may perform this task. Problems can also arise if patients come into the clinic through more than one entrance. For example, a patient returning to the clinic for a lab-only visit who was instructed to go directly to the lab may miss the study registration area set up at the main entrance. Unless alternate PFA study registration sites are established, this patient may never be enrolled in the study. Therefore, set up PFA registration at each entrance, assigning to each registration area the number of Patient Registers equal to the projected number of patients to be received.

How will the Patient Registers be routed through the clinic?

Once it is determined who will distribute Patient Registers, the management team needs to decide how the registers will be routed through the clinic. The simplest procedure is to attach the register to the patient's clinic record. As the patient moves, the register also moves from station to station.

More Advanced PFA Design. If the record and the patient proceed through the clinic separately or if the record does

not reach some stations, there are two possible options for documenting patient service time. If the PFA team decides that patients would reliably carry the register to all stations, this plan may be incorporated into the study design. If the team sees this as too uncertain, then place a log with staff at each station to assure collection of a patient identifier and service start and end times; these data are later edited into the patient's register.

Which staff persons will determine the Reasons for Visit and Subclassification?

Two approaches are possible for determining a patient's Reason for Visit. The more traditional approach bases the Reason for Visit on the treatment or services actually received. Patients often receive services other than those called for by the type of appointment; the Reason for Visit determined at registration may therefore be incorrect. From this point of view, it makes more sense for the clinician who sees the patient to document the Reason for Visit. Or, better still, the study coordinator, assisted by clinic staff, might review the patient's medical record after all services are rendered, then document the Reason for Visit on the patient register.

The other approach dictates that Reason for Visit should reflect the *intended* services and not services received. Advocates of this approach believe that PFA should document accurately those instances when patients are appointed for services other than those they receive. Obviously, with this approach, the Reason for Visit (and possibly Subclassification) can be determined as the patient's visit begins, for example, at registration.

Subclassification, optional for the PFA user, may be defined in such varied ways that potentially any staff person may document it. For example, in the family planning clinic, Subclassification may further specify the patient's Reason for Visit (*annual*) by identifying patients' preferred family planning method with A = pill and B = diaphragm. Because the method may be clear only when seeing the clinician, the study design may have the nurse, physician's assistant, or nurse practitioner documenting the Subclassification.

Or, in family planning clinics needing to know the number of male patients receiving service, Subclassification may be used to identify the patient by sex with A = male and B = female. Obviously, all staff providing direct service are able to document this variable, so the study design may have clerical staff being responsible for documenting the Subclassification.

Or, in WIC clinics needing to know the number of persons visiting the clinic daily, Subclassification may identify how many family members accompany the WIC participant or patient with A = no family members, B = one family member, C = two family members, etc. For those WIC participants receiving nutritional counseling, the study design may have nutritionists documenting Subclassification; for those receiving food vouchers and no other services, staff persons distributing the vouchers may need to document Subclassification.

When will staff persons receive their Personnel Registers?

The Personnel Registers (Register 2) should be distributed the morning of the study to avoid their being misplaced. However, distribution could be a problem in a clinic with a large staff, or if employees are on flex-time. For such situations, the study coordinator can distribute the registers through departmental supervisors or during the briefing (described later).

How will Patient and Personnel Registers be collected?

Normally, the Patient Register stays with the patient's clinic record until removed by the study team at the end of each patient's visit. Similarly, staff persons keep their own Personnel Registers until turning them in at the end of the clinic or at the end of their shift. Nonetheless, registers may get misplaced. To avoid this problem, the study coordinator should collect the Patient Registers during the course of the clinic session. This procedure serves 2 needs. First, it will provide a final opportunity for visually editing the data and for correcting illegible, incorrect, or missing data while contacts can still be easily remembered by clinic staff. Second, it gives the study coordinator an opportunity to compare the Patient Registers to the patients' medical record to verify services documented with services received.

How and where will watches and clocks be synchronized?

Watches, clocks, and other timepieces must be synchronized to reduce time-related inaccuracies in the study data that staff document. Before the day of the study, identify as "master clock" the clock most clearly visible to the staff persons and the one they usually refer to during their workday. Then, on the day of the study as staff persons receive their Personnel Registers, have them re-set their watches according to this master clock.

Two alternative or complementary strategies to staff persons' using their personal timepieces: First, for staff who deliver services within view of their LAN-connected computer, designate the LAN clock as the master clock. Second, for staff persons whose telephones have a digital time readout, designate this as the master clock.

Consider two other aspects of synchronization. First, be sure to instruct staff persons to glance at their synchronized timepieces (whether watch, computer monitor, or telephone face), then note the master time before they document this time on the register (either the Patient Register or their own Personnel Register). Second, because digital timepieces allow staff persons to identify times most efficiently and accurately, you may wish not to use other timepieces.

Briefing the Staff

Briefing the staff is actually a 2-step process. The first briefing introduces PFA and the staff learns the who, what, where, when, and why of the study. The second briefing, ideally held within 24 hours before the study, instructs the staff about how the study will run. At this briefing, the study coordinator should use sample registers to help staff persons understand the instructions.

As mentioned earlier, the staff persons' perception of PFA will have a profound effect on its usefulness as a catalyst for change. The briefing is often their first introduction to PFA. **We cannot overemphasize the importance of this meeting.** The study coordinator should be prepared to answer detailed questions on PFA. The briefing should emphasize that PFA will be used to improve clinic efficiency and not to evaluate individual staff. Not only does the study coordinator need to demonstrate knowledge and competency in the use of PFA, but he or she must gain the staff's trust. **Always remember that one of the benefits of PFA is that it can give staff a sense of empowerment and ownership.**

The study coordinator should be respectful of concerns voiced by the staff but should not be pulled into departmental disputes. Doing so might jeopardize the coordinator's neutral stance and the success of the study. The coordinator should acknowledge concerns but should not attempt to resolve them during the briefing. The analysis session, instead, is the appropriate forum for identifying problems and developing solutions.

Registers

The PFA study uses six registers to collect information about a clinic session. Five of the registers require some preparation before the PFA study begins. If members of the PFA team prepare these registers, they will gain further insight into PFA study design. The heavily outlined boxes in bold type require an alphabetic entry; the thinly outlined boxes require numeric entries. If possible, all entries should be made in pencil. Make entries carefully and clearly.

The registers are discussed here in the order in which they are used in the PFA study: Code List (Register 6), Personnel Worksheet (Register 5), Personnel Register (Register 2), Patient Sign-In Sheet (Register 4), Patient Register (Register 3) and Clinic Register (Register 1). Please see Appendices C and D for complete sets of English-language and Spanish-language registers. They can be reproduced as needed at any time.

Many of the registers require coded study variables. The PFA team should define these with an eye to the study site's unique character and the desired graph and statistical output. Please refer to the Patient Register (Figure 3, page 20) while reviewing the following information, which describes codes and items on the registers that may not be self-explanatory.

The team will consider the Personal Identification code, Tasks Assigned, Clinic Characteristics, Reasons for Visit, and Subclassification. Alternatively, the team may use the many default coded variables, which have been tested over a long period of time and shown usable for many studies. (The software also contains some coded variables used to compute cost data, for example, salary per year= Y . These are defaults and cannot be changed.) See Appendix B for the set codes and the variables they correspond to that are defaults in the software.



Figure 3. Patient Register

Patient Register - 3

PATIENT NUMBER.....

0	0	1
---	---	---

REASON FOR VISIT Code.....

D
A

SUBCLASSIFICATION Code.....

Time of arrival in clinic.....

HR	:	MIN
0	7	:
3	0	

Time of appointment (clinic record).....

9	9	:	9	9
---	---	---	---	---

PATIENT SERVICE TIME:

Contact #	Personal ID Code	Start Time	:	End Time	:	End Time
1.	B	0 7	:	3 5	:	0 7
2.	V	0 7	:	5 9	:	0 8
3.	J	0 8	:	1 5	:	0 8
4.			:		:	
5.			:		:	
6.			:		:	
7.			:		:	
8.			:		:	
9.			:		:	
10.			:		:	
11.			:		:	
12.			:		:	

Code List (Register 6)

The Code List is used to record Reasons for Visit, Subclassification, and Tasks Assigned, with their respective codes. Place a Code List with staff persons who will document these variables to assure uniform completion of the Patient Registers. A sample register follows with sample codes for a general clinic.



Figure 4. Sample Code List

REASON FOR VISIT (Patient)

<i>Code</i>	<i>Definition</i>
A	
B	
C	Check-up
D	DIS referral
E	
F	Family Planning
G	
H	HIV service
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	Referral
S	STD Symptoms
T	
U	
V	
W	
X	
Y	
Z	

SUBCLASSIFICATION (Patient)

<i>Code</i>	<i>Definition</i>
A	Male
B	Female
C	
D	
E	
F	
G	

CLINIC TASK ASSIGNED (Personnel)

<i>Code</i>	<i>Definition</i>
A	Assistant Clinician
B	Student
C	Clinician
D	DIS
E	Educator
H	HIV Counselor
I	
L	Laboratory
M	Manager
N	Nurse
O	Family Planning Counselor
P	Physician
R	Reception
S	
T	

Reason for Visit

The patient's Reason for Visit can be defined in two ways. First, it can be defined retrospectively, based on the services the patient actually received; this reason may not be the same as the reason for the patient's appointment. Second, it can be defined prospectively, based on appointment information or what the patient describes; this reason may not correlate with services the patient actually received. For either approach, the variables must be specific to the clinic studied and clearly understandable. Although 26 codes are available for the Reason for Visit, use of such a large number in a single study may lead to a statistical output that is less useful.

Tables 2, 3, and 5 of the statistical report (see Figure 2, page 7) present the data by Reason for Visit. Review these tables when deciding what Reasons for Visit are best for the study.

Subclassification

Use of Subclassification is optional but gives the user the opportunity to further specify or refine the visit type, the patient, or, possibly, a specific aspect of the visit. Examples of Subclassifications are age, sex, and pregnancy trimester. Table 3 is the only statistical table that uses Subclassifications. Only codes A–G are available.

Clinic Task Assigned

Clinic Task Assigned is the range of tasks the staff performs during the clinic session being studied. Fifteen alphabetic characters are available to code this variable. The most commonly used Clinic Tasks are listed in Appendix B.

If a staff person performs multiple tasks during a single patient contact (for example, taking a medical history, providing education, and giving treatment), the team will have to determine which task to assign to the staff person for this contact. Only one task assigned is used for each patient contact, although more detailed studies might require additional tasks assigned at specific stations.

The team should be aware of the unique role of the codes *B* and *M* in cost calculations. *B* is usually reserved for any person who contacts patients, but does not provide a service. For example, the person might be collecting data for a special study or may be a new staff person or student who is sitting with a staff person to learn how to deliver the service. *M* is usually reserved for the manager. For all staff assigned the *B* code, PFA calculates no costs. For all staff except those assigned the *M* code, PFA assigns

both contact and noncontact costs on a prorated basis to only those patients served by each staff person. For those with M, PFA distributes noncontact costs (i.e., managerial costs) to all patients seen in the clinic.

Personnel Worksheet (Register 5)

This register is used to organize the data needed to complete individual Personnel Registers (Register 2). A copy of this register follows with information for three staff persons entered.



Figure 5. Sample Personnel Worksheet

Personnel Worksheet —5

LOCATION WPB DATE 1/1/98 TIME 7:30 DATA SET NAME FL000001

PERSONAL ID		OFFICIAL DESIGNATION		TASK(S) ASSIGNED		SOURCE OF FUNDS	GROSS SALARY	PER	LEAVE AND HOLIDAYS*	%FRINGE BENEFITS	HOURS IN WORKWEEK
NAME	CODE		CODE		CODE						
B. GROW	B	CLERK	C	RECEPTION	R	A	10,995	Y	30	32	40
J. TRUSSEL	J	HIV	H	HIV COUNS	H	S	9,995	Y	45	38	38
VIDA BLUE	V	LABORATORY T.	L	LAB	L	S	9,995	Y	45	38	40

Personal Identification

Any alphabetic character, upper case or lowercase, and other keyboard characters such as *, @, !, ?, are acceptable Personal Identification codes. We recommend that a staff person's first or last initial be used in the upper-case before using lower-case or other characters. Be sure to have a different code for each staff person; for staff persons changing tasks, assign additional unique Personal Identification codes. Do not use numbers. The system will handle up to 50 Personal Identification codes.

The study coordinator should list all personnel who are assigned to work in the clinic on the day of the PFA study. Enter the name, official designation (professional status), and the assigned clinic task(s) for each staff person in the spaces provided.

The following information is required to calculate personnel cost: the budget or source of funds from which the employee is paid, the employee's gross salary, the number of days of paid holiday, vacation, and sick leave that the employee earns in a year, the percentage used to calculate fringe benefits (usually available from an administrator), and the number of hours in the employee's normal workweek. Volunteers should be assigned a salary equal to that of a paid employee in the same position.

Official Designation

This variable describes the professional status of each person working in the clinic. Professional status reflects how staff persons have been trained, not which task they perform. For example, a clinic manager who registers patients in the morning would have an Official Designation of *manager* and *registration* for the Task Assigned. Unlike Task Assigned, Official Designation appears only in Table 6 of the statistical report. Here it may differentiate types of staff who perform the same task; for example, both nurses and physicians may be task-coded as clinicians.

Alphabetic characters only are permissible codes for this variable. Commonly used Official Designations with corresponding codes are listed in Appendix B.

Task(s) Assigned

Include here a brief phrase defining the task assigned to each staff person and the corresponding task code. Be sure to document on a separate line on the Personnel Worksheet each task that staff persons provide during the clinic session; the second entry for each such line will show a different Personal Identification code.

The remaining data, identified by the column headers *Source of Funds* through *Hours in Workweek*, are required so that PFA can calculate personnel costs. For Source of Funds, after establishing your own coding list (this list cannot be entered into the PFA software), enter the code corresponding to the budget funding the staff person's position. Also enter the staff person's gross salary per time unit (e.g., year, month); the number of days of paid sick, holiday, and vacation leave; fringe benefits—not including sick, holiday, or vacation leave—as a percentage of gross salary; and the number of hours in the employee's workweek. Be sure to assign a salary for volunteers equal to that of a paid staff person in the same position.

Personnel Register (Register 2)

Staff persons expected to have face-to-face contact with patients during the clinic session are given a Personnel Register. Each staff person receives one register, except for those who move from one Task Assigned to another during the clinic session. In this case, one Personnel Register is needed for each task. This circumstance is discussed in more detail in the section called Staff Persons Who Change Tasks. The following example shows the Personnel Register with information for the clinic receptionist.



Figure 6. Sample Personnel Register

Personal Identification Code.....
Official Designation Code.....
Clinic Task Assigned Code.....

Grid containing codes B, C, and R

Time you are ready to serve patients.....
Break Times (FIFTEEN Minutes or More)

Time Out and Time In grid with numerical values: 1 1, 1 5, 1 2, 1 5

Time you are no longer available to serve patients.....

If in travel status in order to work in this clinic
Miles Traveled (round trip).....
Mileage Rate (cents/mile).....
Time in Travel Status (minutes).....

SOURCE OF FUNDS FOR YOUR SALARY (code).....

GROSS SALARY..... 1 0 9 9 5 0 0 Y

DAYS OF PAID SICK & ANNUAL EARNED PLUS HOLIDAYS..... 3 0

FRINGE BENEFITS (%)..... 3 2

HOURS IN A NORMAL WORK WEEK..... 4 0

The Study Coordinator enters each staff person's Personal Identification code and distributes the registers during orientation or as the staff arrive for work on the day of the study. Distribution should take place as close to the study time as possible to reduce the chances of the registers being misplaced. Staff persons do not need the Official Designation and Task Assigned codes to fulfill their study responsibilities; therefore, the study coordinator may choose to document this information of these registers after the study. This procedure may help to reduce staff confusion about which code to use to document their patient contacts.

Do not include salary or any other cost data on the Personnel Register until after the study. If data are processed locally, these data can be taken from Worksheet 5 and edited into the Personnel Registers.

Time You Are Ready to Serve Patients

Staff persons enter the time they are available or are scheduled to see patients. Their availability may depend on a range of factors, including whether they have other clinic duties. These duties may include gathering supplies or information, preparing their work area, documenting a prior patient's visit, and performing administrative duties. Staff availability may also depend on being scheduled to see a patient; here, *time ready to serve* equals the patient's appointment time. (Note: This time is only indirectly related to the clinic's scheduled hours and often varies from one staff person to another.)

Time You Are No Longer Available to Serve Patients

Despite being available, staff persons enter the time when patients no longer require their services. Staff persons may be unavailable for a variety of reasons: There are no more patients; other staff persons are already delivering all the required patient services; staff persons must fulfill other responsibilities not related to direct patient care. (Note: This time does not necessarily reflect the end of the workday, nor the scheduled end of the clinic.)

Break Times

Staff persons enter breaks in their workday of 15 minutes or longer. During these times, staff persons are not available to serve patients. Such times include lunch, scheduled morning and afternoon rest periods, and time periods working in other clinics. (Note: The PFA software will not accept breaks shorter than 15 minutes.)

If in Travel Status in Order to Work in this Clinic

If staff persons travel to work from another workplace, receiving reimbursement for their travel expenses, PFA will calculate the associated travel costs. Staff persons themselves or the clinic's administrator may provide the necessary data for such staff persons' Personnel Registers.

Source of Funds for Your Salary

In highly integrated clinics, the source of funds for staff positions may be a number of different programs. PFA acknowledges this situation, allowing personnel costs to be distributed according to their funding source. A maximum of six such programs or funding sources can be identified by assigning the codes A, B, C, D, E, and X. You will need to establish this coding list; the PFA software does not accept this information. If there is one funding source only, leave this field blank for PFA's default setting to be used. Clinic staff rarely know this information; instead, rely on the clinic administrator, who usually has more ready access to such data.

Gross Salary, Etc. (Days of Paid Sick & Annual Earned plus Holidays, Fringe Benefits, and Hours in a Normal Work Week)

PFA offers a limited range of cost calculations, based solely on most costs related to personnel. On the basis of the above data, PFA calculates a range of related costs, including the cost for each visit type. Please keep the following points in mind when entering Data: *Gross Salary* is a dollar amount per unit of time (see Appendix B for the 10 permissible time units with corresponding codes); *Days of Paid Sick & Annual Earned plus Holidays* is the total of these two items; *Fringe Benefits*, a percentage of *Gross Salary*, cannot include *Days of Paid Sick & Annual Earned plus Holidays* if these data are already entered in the previous field (if these data cannot be excluded from fringe, then enter 0 in the *Days of Paid Sick & Annual Earned plus Holidays* field); using *Hours in a Normal Workweek*, PFA calculates personnel costs per minute of service time available when *Gross Salary* is defined for time periods equal to or greater than one week (e.g., per week, per month); this figure may vary for each staff person. Again, the clinic administrator usually provides the most ready access to such data.

Staff Persons Who Change Tasks

With the PFA study design reflecting how services are delivered in the clinic session, staff may document their changing from one task (or service) to another. Depending on the session, the

design may be quite rigorous or relatively easy to carry out. But, regardless of the design's demands, documenting each service change will require an additional personnel register corresponding to the new service.

The design most easy to carry out requires the staff person switching services to be slightly more attentive in their documentation than other staff. The design applies only to clinic sessions where this staff person's workday consists of an initial span of time, delivering one service only, followed by another span of time, delivering a different service, and, possibly, yet another span of time, delivering a third service. During each continuous span of time, this staff person delivers no more than one service; additionally, the time spans do not overlap. Under these circumstances, this staff person's personnel registers may use the same Personal Identification code.

This design has this staff person documenting as follows: First, before beginning the initial time span of their workday, say from 8 AM - 10 AM, when he or she will deliver, for example, a service described as "register patients," the staff person signs in by entering "8 AM" in the *Time you are ready to serve patients* field on their first register, the one corresponding to "registering patients," then proceeds to deliver this service, documenting each service contact on the patient registers. When about to start the next time span, when he or she' will take a "medical history," the staff person signs out by entering "10 AM" in the *Time you are no longer available to serve patients* field on the first register. Then, immediately, taking their personnel register corresponding to "medical history," the staff person signs in entering "10:01 AM" (allowing the minimum 1-minute time lapse between the first time span and the second) in the *Time you are ready to serve patients* field; then he or she proceeds to deliver that service, documenting as usual all service contacts on the patient registers. The staff person repeats this signing-in, signing-out procedure, ensuring the mandatory minimum 1-minute lapse, for each additional service he or she delivers during the remainder of the clinic session. For this design to work, two things must occur: First, the staff person must precisely document following these procedures. Second, the PFA study team must rigorously review these data before data entry. (Note: If reimbursable costs related to on-the-job travel are being collected, enter the amount on one Personnel Register only.)

More Advanced Study Design. For clinic sessions where the staff person may deliver any of a range of services during any service contact throughout the workday, a more complex study design is needed. This design still requires attentive documentation on the part of the staff person, and, in addition, editing of data before data entry. As with the design described above, here the number of services the staff person delivers defines the number of personnel registers he

or she is assigned. Unlike the earlier design, however, each register reflects a different Personal Identification Code.

Users should be aware that this design presents two potential problems. First, the staff person may fail to document consistently and accurately each service delivered, using the appropriate Personal Identification code. If their ability to carry this out is uncertain, either the design will need simplifying—possibly resulting in a less precise depiction of the session—or the design will need to incorporate alternative task-documentation procedures.

A range of alternative procedures is feasible. The one imposing least burden on the staff person has them documenting a single Personal Identification code, thus likely avoiding the problem of unreliable documentation. After noting their Personal Identification code, the staff person goes to the right margin of the patient register, at the end of that contact line, and jots down a brief 1- or 2-word code or descriptor corresponding to the task he or she delivers. For example, jotting *H/W* when taking a patient's height and weight and *BP* when taking a patient's blood pressure. To carry out this design, these descriptors must be completely defined before the study and communicated to all staff.

Before data entry, the PFA study team edits these data. First, assign the staff person's original register to one of the services the staff person documented using the marginal annotation (*H/W*, for example), then create a second personnel register for this staff person. The second personal register documents a new Personal Identification code as well as the code for the staff's official designation and a code for the second service ("*BP*"). Next, review the patient registers for all contacts made by this staff person and verify whether the Personal Identification code corresponds to the marginal annotation; where the marginal annotation reflects a different Personal Identification code, correct the Personal Identification code at the beginning of the contact line. Apply this 2-step editing for each service delivered.

The second problem with this more advanced study design—regardless of data collection methodology—is how the results as produced in the PFA outputs contradict the outputs produced by the less advanced design. This dilemma results from PFA not being able to associate any more than one personnel register with a single staff person. The advantage of the more advanced design shows most clearly in the graph, where the patient lines reflect more accurately the range of services the patients access. But, by contrast, its disadvantage shows most strikingly in graph's personnel lines, where the total amount of available staff service time is greatly inflated for those staff persons assigned 2 or more personnel registers. A comparison of

the statistical tables produced by each design show similar advantages and disadvantages.

The ideal solution to this problem would be to blend the best of both designs. The graph would couple the advanced design's patient lines with the less advanced design's staff lines.

Determination of the ideal statistical report, however, would not be quite as clear. Because of this report's relative complexity, compared with the graph, PFA users should first seek to gain greater familiarity with its data before attempting to piece together the ideal statistical report. For this reason, users should be cautious in using these data to draw conclusions about the session.

For example, interpretation of data in Table 4, Line 8, *Average Waiting Time Preceding This Station*, must take into consideration where and when these services are delivered. If the services delivered by individual staff persons, as documented by the more advanced design, are always delivered at different stations, then the waiting times here are reliably station-specific. If, on the other hand, individual staff persons always deliver these services at the same station, then it will be necessary to determine if the staff person ever delivers these services chronologically one after the other to the same patient. For such instances, PFA will attribute 0 minutes of waiting time for the second service at this single station, simply because it is the second service—a PFA convention. If for the next patient, were the sequencing of these services reversed, then whatever had been the second service would be attributed the station's entire waiting time. Consequently, the more advanced design does not necessarily provide the more accurate picture of some aspects of the session.

Patient Sign-In Sheet (Register 4)

This register identifies patients, optionally, by name along with the patient's time of arrival and appointment time, and assigns to each a PFA study number. Figure 7 (page 34) shows a sample Patient Sign-In Sheet with five patients entered.



Figure 7. Sample Patient Sign-In Sheet

All Patients:

Please print your name on the first blank line and enter the time that you arrived and the time of your appointment.

Page No. 1

Clinic Location: Gwinnett Date: 2/20/98 Time: 8:30

Patient Number	Name	Time of	
		Arrival	Appointment
1	<i>Louise Rowan</i>	8:35	8:30
2	<i>Amy Morris</i>	8:41	8:30
3	<i>Ralph Suiter</i>	8:45	8:45
4	<i>Margie Gillespie</i>	8:53	8:45
5	<i>Mark Pritchard</i>	8:55	9:00
6			
7			
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			

Locate the register in an area of the clinic as close as possible to where the patient flow begins. Unless patients routinely sign into the clinic, they may not clearly understand that the study design has them signing in. Someone not in the study can help by directing the patients as he or she explains briefly the purpose of the study. Because this initial point in the patient contact is often the reception area—one of the busiest locations in the clinic—it may be useful for the study coordinator to remain in the reception area during this early stage to manage this aspect of the study. As patients enter the clinic reception area, they sign in and document their arrival and appointment times; note that their appointment time may be different from that shown on the records. For patients without appointments, the PFA team will enter zeroes before data entry occurs.

Alternatively, many clinics now have computer-generated appointment lists, containing the session's patients and appointment time. This may be used instead of the PFA sign-in sheet. The only modification needed would be the addition of Patient Register numbers and arrival times.

Patient Register (Register 3)

Patient registers identify each patient's service contacts, including who served them and the length of service. Figure 8 (page 36) is an example of a completed patient register with several contacts.



Figure 8. Sample Patient Register

PATIENT NUMBER.....

0	0	1
---	---	---

REASON FOR VISIT

S
A

SUBCLASSIFICATION Code.....

Time of arrival in clinic HR : MIN

0	7	:	5	9
---	---	---	---	---

Time of appointment (clinic record) HR : MIN

		:		
--	--	---	--	--

PATIENT SERVICE TIME:

Contact #	Personal ID Code	Start Time				End Time					
1.	B	0	8	:	0	5	0	8	:	1	1
2.	J	0	8	:	1	8	0	8	:	4	5
3.	V	0	9	:	0	0	0	9	:	0	5
4.	J	0	9	:	1	0	0	9	:	2	2
5.	B	0	9	:	2	6	0	9	:	3	0
6.				:					:		
7.				:					:		
8.				:					:		
9.				:					:		
10.				:					:		
11.				:					:		
12.				:					:		

The register follows the patient's flow through the clinic visit. It must reach each service station no later than the patient to ensure each contact's accurate documentation. The Patient Register is often attached to the patient's chart or, alternatively, carried by the patient from station to station.

In the classic PFA design, the receptionist initiates the register at reception, ensuring that the number on the Patient Register corresponds to the patient number on the Patient Sign-In Sheet. The receptionist then enters the patient's arrival time and, from the clinic records, the appointment time. Additionally, the classic design has the receptionist also entering the Reason for Visit and Subclassification codes.

Each staff person who serves the patient enters his or her Personal Identification code in the appropriate box, calls the patient, and enters the start time of the contact. When the contact is completed, each staff person enters the end time. If the patient does not respond, the staff enters the word *CALL*, one character in each box of the end time; the staff person repeats this process each time the patient is called and does not respond. If the clinic staff or the PFA team learns the patient has left the clinic, the register goes to the study coordinator. (Note: Before data entry, change *CALL* to 99 99.)

If staff persons are using analog clocks or watches (i.e., the kind with hands for the hour, minute, and second), they must record all times to the nearest minute. Using digital timepieces allows staff persons to capture times more precisely, with less effort. For contacts shorter than one minute, staff persons may record end times that are the same as the start time. All times must correspond to those of a regular 12-hour clock: PFA will not accept 24-hour military or international time.

Patients Who Are Seen by More Than One Staff Person at a Time

PFA studies can document patients receiving concurrent services delivered by two or more staff persons at the same service station. Such staff simply record their own Personal Identification code, start time, and end time on separate contact lines of the Patient Register.

Staff Persons Who See More than One Patient at a Time

PFA studies may also document staff service contacts delivered to more than one patient at a time. At many clinics, educational sessions routinely see staff serving many patients concurrently. As with 1-patient contacts, staff persons simply record their Personal Identification code and start and end times on each patient's register.

Clinic Register (Register 1)

The Clinic Register allows studies to characterize the clinic itself. The study coordinator and PFA team complete it during or after the study, although the Data Set Name should be established when coding is discussed before the study begins.

Figure 9 (page 39) is an example of the completed Clinic Register (Register 1).



Figure 9. Sample Clinic Register

Clinic Register— 1

Data Set Name:

F L

State

0 0 0

County

0

Other ID

0

Other ID

1

Study No.

Clinic Characteristics Codes:

Geographic.....

U

Clinic Hours.....

D

Organizational.....

H

Services Provided.....

I

Other.....

Other.....

Date (Month/Day/Year):.....

0 1

0 1

9 7

Scheduled Time of Clinic:

HR : MIN A/P

Start.....

0 8

: 0 0

A

End.....

0 4

: 3 0

P

Earliest Time in the Data.....

0 7

: 3 0

A

Latest Time in the Data.....

0 5

: 1 5

P

Number of Appointments Scheduled.....

0 0 9

COMMENTS..... D B L - V

Each PFA study has a unique data set name, composed of two alphabetic and six numeric characters. The main consideration in naming the data set is establishing a system that is meaningful and assures no duplication of data set names. Traditionally, the alphabetic characters are the state postal abbreviation. Often, the six numeric characters incorporate existing schemes for coding hierarchical levels of the organizational structure. Frequently, the sixth and seventh characters identify the clinic site and the last character identifies the ordinal number (1st, 2nd) of the PFA study. For example, the first of two studies at the same Georgia site could be named GA000001; the second, GA000002.

If a site has different types of services, for example, family planning on Monday, Maternal Child and Health (MCH) on Tuesday, and Women, Infants, and Children (WIC) services on Wednesday, assign each session a data set number that will distinguish it from the others. For example, code the study at the family planning clinic GA000101, the MCH clinic GA000201 and the WIC clinic GA000301.

Clinic Characteristics

Clinic Characteristics define the clinic and are printed on the Summary Page of the statistical report (Figure 10, page 41). Codes and their suggested definitions are listed in Appendix B. The user may, however, assign any alphabetic character for coding the characteristics chosen to describe the clinic.

Scheduled Time of Clinic; Earliest Time in the Data; Latest Time in the Data

One hour before the clinic's scheduled opening time is where the graph begins; enter the published or advertised hours of the clinic in the *Scheduled Start Time* field. After editing the clinic, personnel, and patient registers, identify the earliest time and enter it in the *Earliest Time in the Data* field. Because no patient's visit may go beyond the clinic's advertised closing time and certainly not beyond the time the last staff person is no longer available to serve, identify the latest time from these two registers and enter it in the *Latest Time in the Data* field.



Figure 10. Clinic Characteristics in the Statistical Report

```
PAGE 1 - SUMMARY          PATIENT FLOW ANALYSIS          DATA SET CODE: XX-001-47-1
-----
                           STATE CODE XX - COUNTY CODE 001
                           BUILDING CODE 47 - STUDY NO. 1
                           JAN 01, 1991 - 06:30 P.M. - 07:30 P.M.

                           CLINIC CHARACTERISTICS:
                           (1)  URBAN
                           (2)  CONVENIENCE HOURS
                           (3)  F
                           (4)  FAMILY PLANNING
                           (5)  G
                           (6)  M

                           Comments:
                           DBL-V TEST DATA SET
```

Comments

Data (up to 36 characters) entered in the *Comments* field appear only on the Summary Page of the statistical report. Comments may document abnormal occurrences that may affect the study or can be used to further describe the data or the setting. For example, it may be noted under *Comments* that the clinic is short one clinician the day of the study, resulting in abnormally long waits before the clinician station. Such data can be useful later during data analysis. For examples, please see the statistical report (Figure 2, page 7) and the Clinic Register (Figure 9, 39).

Visually Editing the Data

As the completed registers are returned to the study coordinator, check them for legibility, accuracy, and completeness. Make corrections while events are still fresh in the staff persons' mind.

Here are a few general hints for visual editing:

- Check to see that all required fields have an entry.
- Legibility will allow ease of data entry. All fields should be clear and not run into the edge of the box.
- Data in heavily outlined fields are alphabetic; numeric data are in lightly outlined boxes. There are two exceptions: in the *Comments* field all keyboard characters are permissible and the *End Time* field may be completed with the word *CALL*. However, before data input the word *CALL* must be replaced by

9999.

Clinic Register (Register 1)

Check that the Data Set Name is two alphabetic characters followed by six numeric characters. Be sure the *Scheduled Clinic Hours*, and *Earliest* and *Latest Time in the Data Set* fields are complete. Consulting clinic records, complete the *Number of Appointments Scheduled* field. Complete the *Comments* field.

Personnel Register (Register 2)

Be sure the *Personal Identification*, *Official Designation*, and *Clinic Task* fields are complete as well as the *Time You Are Ready to Serve Patients* and *Time You Are No Longer Available to Serve Patients* fields. Be sure the break time entries are 15 minutes or greater and that both *Time In* and *Time Out* fields are complete.

Patient Register (Register 3)

Be sure all fields above *Patient Service Time* are complete. Under *Patient Service Time*, no data are required if the patient received no services. However, for all contacts, the personal ID code, start time, and end time fields must be complete. Check to be sure that the time of arrival is not later than the start time of the first contact. Also, be sure that successive contacts' start times are in chronological order and that each contact's end time is no earlier than the contact's start time.

Most Common Errors

The PFA software provides on-line editing, resulting in nearly error-free data entry. Nonetheless, identifying and correcting the following frequently made errors will allow quicker data entry:

- Incorrect *Earliest* or *Latest Time in the Data* (Register 1)
- Missing or incorrect *Break Times* (Register 2)
- Missing *Time of Arrival* and *Time of Appointment* (Register 3)
- *Time of Arrival* later than first contact's *Start Time*
- Missing *Personal Identification code*

Using the Data

Now that you have completed the PFA study, the really hard work of converting the information to something useful begins. First comes data entry, for which *Patient Flow Analysis in Outpatient Clinics: Data Processing* will be extremely helpful. From this point on, the process will require a great deal of information-sharing between the PFA team and the staff. These two groups together will assess the information provided by the graph, statistics, appointment table, and other outputs.

We hope that you find this manual helpful. Although it is intended to supplement knowledge gained from a PFA training session, some users will conduct PFA studies without formal training. Please contact the CDC for additional assistance or to offer critical comments on this manual.

Clinic Management Unit
Centers for Disease Control and Prevention
4770 Buford Hwy., N.E. Mailstop K22
Atlanta, GA 30341-3717
(770) 488-5227

Appendix A. PFA Study: The Preliminary Report

The Preliminary Analysis Report: The Patient Visit

1. How many patients did the study follow?

Answer: See “Number of patients served” in the Summary Report, Introduction.

2. Does the PFA statistical report classify these patients according to Reason for Visit?

Answer: Yes, and also by Subclassification (for study designs making use of Subclassification). See “Number of patients by visit type and Subclassification” See Table 3, the “All” column and subclass headings for total by visit type and subclasses within each visit type.

3. What was the average (that is, arithmetic mean) length of clinic visit for all the patients?

Answer: See “Minutes were spent by the average patient in the clinic” in the Summary Report, Patient-Oriented Data.

4. What was the average amount of time they spent receiving services?

Answer: See “Minutes were spent by the average patient in contact with clinic personnel” in the Summary Report, Patient-Oriented Data.

5. Does PFA break these numbers down according to the patients’ Reason for Visit?

Answer: Yes. See “Average time in clinic, average service time and proportion of clinic visit spent receiving services,” according to the patients’ Reason for Visit in Table 2; review the means, maximums, and minimums.

6. What was the average amount of time all patients spent receiving each service? (Note: task=service or group of services)

Answer: See the total line under each task (that is, each service) in Table 5, “Time (minutes) and cost per patient by task and visit type”; for each task, review the average (mean) number of service minutes and the number of patients served.

7. Does PFA break these numbers down according to the patients' Reason for Visit?

Answer: Yes. See each visit type line under each task in Table 5, "Time (minutes) and cost per patient by task and visit type"; for each task, review the mean number of minutes of service delivered and the number of patients served according to their Reason for Visit.

NOTE: Regarding items 6 and 7: Depending on how your clinic uses its staff and the study design, your PFA may describe that patients receive two or more tasks concurrently. That is, some stations may be staffed by two or more clinic personnel. For example, if a clinic aide always chaperones the physician, each minute of the physician task coincides with a minute of clinic aide task time. A typical contact for patients at this "Physician" station may include 15 minutes of physician service time and 15 minutes of aide service time—a total of 30 minutes of service time. But these 30 minutes of services occurred during a 15-minute period. (Hint: use the graph to identify such 2-staff stations.) Therefore, patients typically view (correctly) that they have received only 15 minutes of service. Thus, the "total" figures in Table 5 may not accurately reflect "patient time receiving services" (see Table 2). Nonetheless, if used cautiously, data from Table 5 may provide a much more detailed picture of service delivery time than found in Table 2.

8. What can PFA tell us about the average amount of time patients wait to receive services?

Answer: See Table 4, line 8. Each task here is seen as a "station"; shown is the amount of time the average patient spends waiting before beginning to receive the task (or service). The tables do not break these data down by patient's Reason for Visit or any other way. As the data from line 8 are reviewed, review also the data from lines 6, "percent of available time in patient contact," and 7, "number of patients served (at this station)." Together, these lines help to identify the clinic's probable flow bottlenecks: Data from line 6, if a high percentage, suggest that high staff utilization contributes to long waits; Data from line 7 indicates the patient load at this service station.

9. What can PFA tell us about appointed patients' honoring their appointment times?

Answer: See Table 1. There are three PFA conventions to understand. First, patients who

are “on time” arrive no more than 15 minutes before or after their appointment time. Second, those arriving more than 15 minutes before their appointment are “early.” Third, those arriving more than 15 minutes after their appointment are “late.” The tables do not provide any other data on appointments.

10. Are there other data that may help improve existing appointment systems?

Answer: If no more than one staff person delivers each task and if each staff person sees each patient, then the average length of the patient contact of longest duration may help space the clinic’s appointment slots. See Table 6, “time with patients, maximum.”

Compare this with the time interval between appointment times as depicted on the graph. Appointments should reflect the service of longest duration for each Reason for Visit.

Appendix B. Variables and Codes

Variables and Codes

The entire list of codes used within the PFA system is found in the LABELS.DAT file of the software. The following alphabetic codes with corresponding definitions have proven over the years to be the most useful. You may select other definitions and other codes.

LIST OF PFA CODES

Clinic Characteristics (codes may be any upper-case alphabetic character)

Geographic

<i>Code</i>	<i>Definition</i>
R	Rural, small town, non-SMSA
S	Suburban
U	Urban, Standard Metropolitan Statistical Area (SMSA)

Clinic Hours

- B Business hours, weekdays—no portion of the scheduled time for this clinic sessions falls outside of regular business hours.
- C Convenience hours, weekdays—all or part of the scheduled time for this clinic session falls outside the regular business hours of this community.
- W Weekends—the clinic is conducted on Saturday or Sunday.

Organization

- D Health Department
- H Hospital-based
- N Neighborhood Health Center
- O Other

Services Provided (any upper-case alphabetic character)

A	Adult Health
C	Child Health
D	Dental
F	Family Planning
G	General
H	Hypertension
I	Integrated
L	Laboratory
M	Maternal/Child Health
N	Nutrition
S	Sexually Transmitted Disease
T	Teen clinic
W	WIC

Other

The two remaining codes may be left blank if there is no need to characterize the clinic further.

Official Designation (any upper-case alphabetic character)

<i>Code</i>	<i>Definition</i>
A	Nurse's Aide, Neighborhood Health Visitor, Public Health Community Worker
C	Clerk
D	Doctor (physician)
E	Health Educator
F	Nutritionist
H	Health Professional or Nutritionist
L	Licensed Practical Nurse (LPN)
M	Manager, Administrator
N	Registered Nurse or Public Health Nurse
P	Nurse Practitioner, Nurse Midwife, Physician's Assistant
S	Social Worker
T	Lab, X-ray, or other Technician

Clinic Task Assigned (codes may be these characters only)

<i>Code</i>	<i>Suggested Definitions</i>
A	Aide
B	Student/observer; any person whose purpose for being in the clinic is to learn to perform clinic tasks, to collect data, observe, or teach. The person does not provide any service to patients.
C	Nonphysician Clinician ; nurse practitioners, nurse midwives, physician's assistants, or other person who provides physical examination, medical treatment, medical consultation, or referral.
D	Clerical (not reception).
E	Education; education/counseling on such topics as health, nutrition, or contraception, not including medical history.
H	Medical H istory.
I	Intake, I nterviews.
L	Lab work; collects and processes laboratory specimens.
M	M anager/administrator, clinic coordinator.
N	Nutrition.
O	O ther health-related work.
P	Physician, clinician: provides physical examination, medical treatment, medical consultation, or referral.
R	R eception.
S	S ocial services: advises patients on social problems.
T	T echnicians.

Source of Funds

Only characters A, B, C, D, E, and X are acceptable. They may be defined as you wish according to the budget source.

Gross Salary

These codes will be used if cost data is collected. Otherwise the default setting is sufficient. These are the only codes accepted by PFA.

<i>Code</i>	<i>Definition</i>	<i>Code</i>	<i>Definition</i>
Y	Year	D	Day
M	Month	H	Hour
B	Semi-monthly (1st and 15th)	S	Session
F	Fortnightly (every 2 weeks)	P	Patient
W	Week	R	Rate per minute

Appendix C. Study Coordinator's Checklist

Study Coordinator's Checklist

Planning and Organizing the Study

- Decide on the date of the PFA.
- Define the variables and their corresponding codes.
- Decide how Patient Registers will move through the clinic.
- Decide when and how patients will enter the study (placement of the sign-in sheet).
- Determine which staff persons will participate in the study.

Preparing the Registers

Personnel Worksheet (Register 5)

- List the clinic staff.
- Assign Personal Identification, Official Designation, and Task Assigned codes.
- Complete the cost data.

Personnel Register (Register 2)

- Enter the staff person's name and Personal ID code, the optional Official Designation, and the Task Assigned codes.

Patient Register (Register 3)

- Number the registers.

Briefing the Staff

- Give general instructions, being sure to emphasize the need to **print** legibly using box lettering (for example, enter only alphabetic characters in the heavily outlined boxes and numeric characters in all other boxes).
- Explain how to record patient contacts on the Patient Register.
- Give CALL instructions.
- Explain how to record special situations: patients who have contact with more than one staff person at a time; staff persons who have contact with more than one patient at a time; staff persons who change tasks.
- Give time-out and time-in instructions.

Running the PFA

Before the Clinic Session

- Synchronize the clocks and watches.
- Distribute the Personnel Registers.
- Place sign-in sheets and Patient Registers at predetermined sites and instruct the staff.

During the Clinic Session

- **Be available for questions.**
- Record events that are not recorded on the PFA registers but influence patient flow.
- Visually edit Patient Registers as they are collected.

Wrapping Up the Study

- Collect and visually edit the remaining Patient Registers.
- Check Patient Registers against the sign-in sheet to be sure all are collected.
- Collect the Personnel Registers, enter the Official Designation and Task Assigned codes and salary information, and visually edit again.
- Check the Personnel Registers against the Personnel Worksheet to be sure all are collected.

Appendix D. Study Registers—English



Patient Flow Analysis

Clinic Register - 1

Data Set Name:

State

County

Other ID

Other ID

Study No.

Clinic Characteristics Codes

Geographic.....

Clinic Hours.....

Organizational.....

Services Provided.....

Other.....

Other.....

Date (Month/Day/Year).....

Scheduled Time of Clinic

HR

:

MIN

A/P

Start.....

:

End.....

:

Earliest Time in the Data.....

:

Latest Time in the Data.....

:

Number of Appointments Scheduled.....

COMMENTS.....



Patient Flow Analysis

Personnel Register - 2

Personal Identification Code.....

Official Designation Code.....

Clinic Task Assigned Code.....

Time you are ready to serve patients..... **HR** : **MIN**

Break Times (FIFTEEN Minutes or More)

Time Out:
from

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>

Time In:
to

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>

Time you are no longer available to serve patients..... **HR** : **MIN**

If in travel status in order to work in this clinic

Miles Traveled (round trip).....

Mileage Rate (cents/mile).....

Time in Travel Status (minutes).....

SOURCE OF FUNDS FOR YOUR SALARY (code).....

GROSS SALARY.....

DAYS OF PAID SICK & ANNUAL EARNED PLUS HOLIDAYS.....

FRINGE BENEFITS (%).....

HOURS IN A NORMAL WORK WEEK.....



Patient Flow Analysis

Patient Register - 3

PATIENT NUMBER.....

--	--	--

REASON FOR VISIT.....

--

SUBCLASSIFICATION Code.....

--

Time of arrival in clinic.....

--	--

 HR :

--	--

 MIN

Time of appointment (clinic record).....

--	--

 HR :

--	--

 MIN

PATIENT SERVICE TIME:

Contact #	Personal ID Code	Start Time	End Time					
1.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
2.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
3.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
4.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
5.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
6.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
7.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
8.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
9.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
10.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
11.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
12.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
13.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
14.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		
15.	<table border="1"><tr><td style="width: 20px; height: 20px;"></td></tr></table>		<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :			<table border="1"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> :		



Patient Flow Analysis

Patient Sign-in Sheet - 4

All Patients: Please print your name on the first blank line and enter the time that you arrived and the time of your appointment.

Page No. _____

Clinic Location: _____ Date: _____ Time: _____

Patient Number	Name	Time of	
		Arrival	Appointment
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			



Patient Flow Analysis

Code List - 6

REASON FOR VISIT (Patient)

SUBCLASSIFICATION (Patient)

Code	Definition
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	

Code	Definition
A	
B	
C	
D	
E	
F	
G	

CLINIC TASK ASSIGNED (Personnel)

Code	Definition
A	
B	
C	
D	
E	
H	
I	
L	
M	
N	
O	
P	
R	
S	
T	

Appendix E. Study Registers—Spanish



Analisis De Flujo De Pacientes

Registro de la clínica - 1

Código de los Datos de este Estudio:

Departamento

Municipio

Otro

Otro

Estudio Número

Códigos, Características de la Clínica:

Ubicación geográfica.....

Horas de servicio

Institución a que está vinculada.....

Servicios ofrecidos

Otro.....

Otro.....

Fecha (Mes/Dia/Año):.....

Horario programado para esta Clínica:

HR : MIN A/P

Comienza.....

Termina.....

Hora Más Temprana en los Datos.....

Hora Más Tarde en los Datos.....

Número de Citas Programadas.....

COMENTARIOS



ANALISIS DE FLUJO DE PACIENTES

Registro de personal - 2

Código, identificación personal.....
Código, designación Oficial.....
Código, tarea asignada en la Clínica.....

Hora en que está listo para atender
pacientes.....

HORA		:	MIN	
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>

Intervalos (QUINCE minutos o Más)

Salida:

de

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>

Entrada:

a

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>

Hora en que Ud. ya no está disponible para atender pacientes.....

HORA		:	MIN	
<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>

Si tiene QUE VIAJAR A ESTA CLINICA PARA TRABAJAR

Kilómetros viajados (Ida y vuelta).....

Tasa de Kilometraje (costo/kilómetro).....

Tiempo recorrido (minutos).....

CODIGO, FUENTE DE FONDOS DE SU SALARIO.....

SALARIO TOTAL

DIAS PAGOS POR ENFERMEDAD, AUSENCIA, VACACIONES Y FERIADOS.....

PORCENTAJE QUE RECIBE DE BENEFICIOS.....

HORAS DE TRABAJO EN UNA SEMANA NORMAL.....



ANALISIS DE FLUJO DE PACIENTES

Registro de pacientes - 3

PACIENTE NUMERO.....

--	--	--

CODIGO, RAZON DE VISITA.....

--

CODIGO, SUBCLASIFICACION.....

HORA : MIN

Hora de llegada a l clínica.....

Hora de cita programada (ver libro de citas).....

Tiempo de servicio con el paciente:

Contacto #	Código, ID Personal	Tiempo Comienza	:	Tiempos Termina	:	Tiempos Termina								
1.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
2.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
3.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
4.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
5.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
6.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
7.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
8.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
9.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
10.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
11.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
12.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
13.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
14.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		
15.	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>			:	<table border="1" style="width: 100%; height: 15px;"><tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr></table>		



ANALISIS DE FLUJO DE PACIENTES

Lista de pacientes- 4

Todos los pacientes: Por favor escriba su nombre en letra imprenta en el espacio en blanco y entre el tiempo de llegada a la clínica y la hora de su cita.

Página ____

Lugar de la clínica: _____ Fecha: _____ Horas: _____

PACIENTE NUMERO	NOMBRE	HORA DE	
		Llegada	Cita
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			



ANALISIS DE FLUJO DE PACIENTES

Lista de Códigos - 6

RAZON DE VISITA (Paciente)

Código	Definición
A	_____
B	_____
C	_____
D	_____
E	_____
F	_____
G	_____
H	_____
I	_____
J	_____
K	_____
L	_____
M	_____
N	_____
O	_____
P	_____
Q	_____
R	_____
S	_____
T	_____
U	_____
V	_____
W	_____
X	_____
Y	_____
Z	_____

SUBCLASIFICACION (Paciente)

Código	Definición
A	_____
B	_____
C	_____
D	_____
E	_____
F	_____
G	_____

TAREA ASIGNADA (Personal)

Código	Definición
A	_____
B	_____
C	_____
D	_____
E	_____
H	_____
I	_____
L	_____
M	_____
N	_____
O	_____
P	_____
R	_____
S	_____
T	_____

