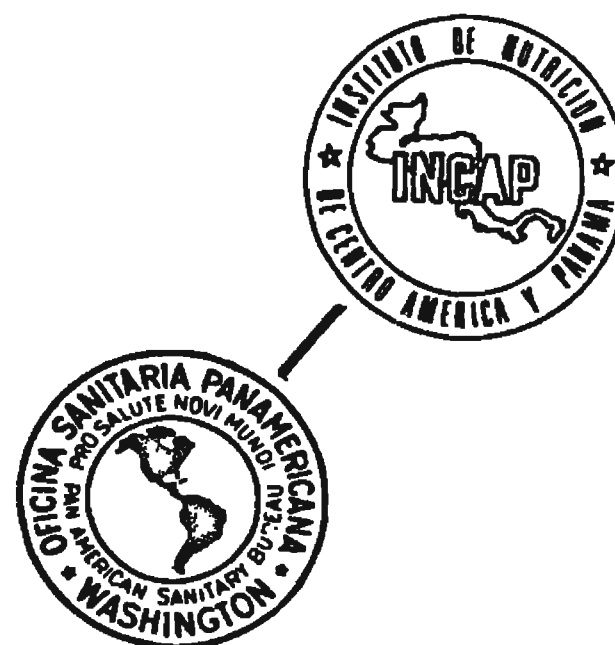


Monograph 12



A SIMPLIFIED HEALTH CARE PROGRAM IN RURAL GUATEMALA: THE PATULUL PROJECT

**AGENCY FOR INTERNATIONAL DEVELOPMENT
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1980

A SIMPLIFIED HEALTH CARE PROGRAM
IN RURAL GUATEMALA: THE PATULUL PROJECT

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SIMPLIFIED HEALTH CARE PROGRAM OF THE HUMAN DEVELOPMENT DIVISION OF
THE INSTITUTE OF NUTRITION OF CENTRAL AMERICA AND PANAMA (INCAP)
IN THE COMMUNITIES OF THE DEPARTMENT OF
SUCHITEPEQUEZ, GUATEMALA, C. A.

PATULUL PROJECT

I. Background

In 1969 the Division of Human Development of the Institute of Nutrition of Central America and Panama (INCAP) began a study of the effects of nutrition on the mental development and physical growth of preschool children (Growth and Development Project). This project was carried out in four rural communities of the Department of El Progreso in the eastern region of Guatemala. A supplementary feeding program was implemented in order to improve the nutritional status of the population. This program consisted of the daily free, centralized distribution of two types of supplements: protein-calorie and calorie.

No medical care services were included in the original experimental design but a real and felt need for these was detected as the project progressed. Thus, a health care program was implemented in each community with attention provided by physicians. After thorough study of this system it was simplified in such a way that the physician's role became that of supervisor for the Auxiliary Nurses who took charge of the primary health care services.

A series of analyses were conducted before this modification was designed and implemented. These provided answers to the questions presented in table 1.1. In general terms and based on the experience accumulated in this area, this is the minimum amount of information necessary to organize an efficient health care program or to modify an existing one.

TABLE 1.1 QUESTIONS TO BE ANALYZED WHEN ORGANIZING A
SIMPLIFIED HEALTH CARE PROGRAM

1) What needs exist?

1.1 What is the present health situation and how is it related to the demographic, socio-economic, cultural and geographical characteristics of the community?

1.2 What are the real and felt needs for curative, preventive and promotional health services?

2) What resources are available?

2.1 What health care and referral system already exist?

2.2 What health care personnel is available?

2.3 What facilities are available?

2.4 What is the cost of the existing program?

- 3) How flexible is the present program?
 - 3.1 How easily could the existing program be modified using the same, or new resources?
 - 3.2 Can the personnel be retrained?
 - 3.3 Is the development of a new more efficient program, which would be less or equally costly, possible?
 - 4) Are quality control, supervision and evaluation systems part of the existing program? How could these be introduced?
-

Once the medical care needs were defined both in terms of quality and quantity, the list of cases attended in the clinics was examined (see Table 1.2). As can be observed, the analysis of 2,287 patient visits to the clinics in the four communities, indicated that the most frequent causes for patient visits were dermatological, gastrointestinal and respiratory problems. The treatment of these cases is relatively simple and thus could be delegated to intermediate health personnel. The analyses coincided with the opinion of the medical personnel working in the project who felt that they were being under-utilized and complained of a lack of intellectual stimulus provided by more difficult or less common cases. Finally, the cost aspect of the medical care program was also analyzed.

Based on the above, a Simplified Health Care Program was begun. Curative medical care was emphasized using a simplified therapeutic guide. This guide provided the clinical symptoms of the most frequent diseases and indicated the appropriate treatment. The criteria for the selection of the medicines recommended were: relative harmlessness, effectiveness, ample therapeutic value, easy administration and low cost.

TABLE 1,2 DIAGNOSTIC FREQUENCY OF CASES SEEN AT CLINICS
IN THE GROWTH AND DEVELOPMENT PROJECT*

Diagnosis	Percentage
Skin diseases	16.1
Diarrhea	14.0
Upper respiratory diseases	12.2
Other respiratory problems including lower respiratory diseases	9.9
Muscle-skeletal diseases	8.5
Ascariasis	8.3
Ear, nose and throat diseases	7.9
Other gastrointestinal problems	7.0
Anemia and malnutrition	4.7

Wounds and accidents	4.0
Gyneco-obstetrical problems	2.5
Urinary infections	1.6
Childhood communicable diseases	1.0
Fever, unknown origin	1.0
Malaria	0.6
Others	1.7
TOTAL	(2,287 cases) 100.0

*Source: Analyses of Outpatient Clinic Visits in four communities of the Department of El Progreso, 1969-1971.

Before the new program was implemented, aspects related to the health personnel required were studied. Of the various alternatives reviewed, the Auxiliary Nurse was chosen to be trained to function as a Medical Auxiliary in charge of primary care of the cases attended in the outpatient clinics. The use of nursing auxiliaries in this way is not in itself particularly innovative. Auxiliaries have traditionally provided some form of health care to rural populations in developing countries. For example, in Guatemala, auxiliary nurses typically receive hospital training and are subsequently employed in rural clinics administering medicines prescribed by the physician but without formal training in diagnostic or therapeutic techniques. This preparation coincides with the so-called Medical Assistant in other areas.

In the simplified Health care system described here, the Auxiliary Nurses were trained to take clinical histories, to conduct simple physical examinations and to diagnose and treat the most common diseases. This training was carried out in the clinic with the first phase being the mastery of the therapeutic guide. Next the auxiliary was allowed to attend patients with continuous supervision by a physician and an auxiliary nurse previously trained in the simplified Health care program. Constant quality control was also practiced.

This program was implemented in four communities of the Department of El Progreso from the period 1969-1976. In 1976-1977 the program was redefined and further simplified. Presently this simplified medical care program is being used in coffee plantations near the town of Patulul (Department of Suchitepequez) and in four communities in the Department of Sololá, Guatemala. This document describes the Simplified Medical Care System as it functions in the Patulul area. The total population being covered in this project is 7,166 and the communities range in size from 289 to 1,398 residents each.

This manual emphasizes the program's practical aspects. Its major purpose is to provide a basic instruction guide which could be used by other groups interested in developing similar projects in the health field. Thus, special attention will be given to the aspects related to project implementation, personnel training, quality control and development of preventive and curative medical

activities as well as those dealing with mother-child health. The original manual was written in Spanish and a summarized version has been prepared in English; both versions are available to interested parties.

II. Description of the "Simplified Health Care Program"

The philosophical basis of the "Simplified Health Care Program" is described in the document entitled "Health, Nutrition, Family Planning and Community Participation: A simplified integrated approach for rural areas in Latin American countries", which is included as an annex to this document (Annex I). Our experiences in terms of program implementation and the activities carried out by the personnel in the different subprograms is described below:

2.1 General Characteristics of the Program

1. The program should be implemented in a relatively short period of time with limited resources.
2. Program costs should be low in the initial phase as well as in the subsequent phases. The health program should allow the establishment of a local system with a tendency towards self-sufficiency utilizing local resources and community participation.
3. Subprofessional or auxiliary personnel will be employed in order to accomplish the majority of health activities. This personnel includes Auxiliary Nurses, Health Promoters and Empirical Midwives with medical supervision.
4. The program should use simple techniques and procedures which provide adequate solutions for the majority of health problems in the rural area, giving special attention to those groups in the population defined as the high risk and most vulnerable groups.
5. The community should pay a moderate price for services provided, given that free services promote paternalism and inhibit active community participation.
6. The incorporation of the community into both health and development activities should be one of the fundamental program characteristics.

2.2 Implementation of the Program

Once the decision has been made to begin a health program in rural communities, the existing health situation should be analyzed as well as the demand for services, available resources and other aspects such as those indicated in the preceding section (See Table 1.1). Also, information on the population should be gathered, i.e., families should be identified, houses numbered, and individual characteristics such as occupation, education,

ethnic group, etc. recorded.

All this data may, according to our experience, be collected in one of two ways (Annex II). A census survey form (Table 2.1) can be easily used by the auxiliary nurse. Through this form information about socio-cultural, economic, health, nutrition and demographic characteristics of the community and family can be obtained, as well as data on morbidity, use of services, health expenses, housing characteristics, holding of durable goods and environmental sanitation. All information collected by this form is specially useful for solving emergency problems, planning activities, and evaluating program impact. Furthermore, this form serves not only to collect statistics but also to establish a relationship between health personnel and the community.

The other, simpler means of collecting a portion of the necessary information is the census form presented in Table 2.2. This form serves to conduct a census of the population residing in the community which will constitute the subject/object of the health program. This form is much simpler than the other and can be used by health promoters under supervision by the auxiliary nurse.

Both of these forms permit immediate determination of the number of persons and families residing in the community. This is translated into the number of rural health promoters needed to attend each community. We have estimated that one promoter can adequately cover a population of 100 families or 500 inhabitants. Approximately 10 health promoters can be supervised by one auxiliary nurse. The census data will also be used to identify the communities, families within each community, and individuals within each family. By means of a seven digit code it is possible to identify the community (first two digits), the family within the community (next three digits which allow identification of families from 000 to 999) and the individual within the family (01 = father, 02 = mother, 03 to 20 for children of both parents, and special numbers for nieces, nephews, grandchildren, children of only one parent who form part of the family, etc.).

Besides collection of census information, the personnel is trained to prepare a simple map to be utilized for sectoring the community. Each promoter covers five sectors composed of 20 families (100 persons) each, who are visited at home every 15 days in concentrated communities, and every 30 days where the population is scattered. In this way the promoter can program two visits per day in each sector. Each sector also has two health guardians who refer urgent cases to the promoter. Thus, the promoter will conduct 10 programmed visits daily, as well as emergency visits when necessary.

In each home visit the promoter will detect disease cases of high risk and will refer them to the clinic. Also he/she ensures that the most vulnerable groups, mothers and children, are included in periodic controls, and updates census information. The promoter will also carry out health and nutrition

Table 2.1

Family name _____		Place _____	
Form No. 1 A 4 (1 2 3)	Card No. _____ (1 5 6)	Town Ident. _____ (7 8)	Form _____ (9-10-11)
Inf. on _____ (12-13)		Date of interview _____ (14) (15-17) (18-19) (20-21)	
Room No. _____ (22-23)		House _____ (24-26)	
Marital status household heads _____ (27)		Ethnic group _____ (28)	
Religion Mr. _____ (29)		Religion Mrs. _____ (30)	
No. pregnancies _____ (31 32)		No. live children _____ (33 34)	
No. dead children _____ (35 36)		No. stillbirths _____ (37)	
No. persons in family _____ (38 39)		In dwelling _____ (40-41)	
Mrs. is pregnant _____ (42)		Family planning _____ (43)	
Relation of family head with head of extended family _____ (44-45)		Income code _____ (46)	
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>Marital Status</p> <p>1. Single, no children</p> <p>2. Single, no formal union</p> <p>3. Single, mother</p> <p>4. Mother without stable union</p> <p>5. Unmarried</p> <p>6. Married</p> <p>7. Separated or divorced</p> <p>8. Widowed</p> </div> <div style="width: 20%;"> <p>Ethnic Group</p> <p>1. Indian</p> <p>2. Ladino</p> <p>3. Sample</p> <p>4. In</p> <p>5. Out</p> <p>6. Family Planning</p> <p>7. Has used & doesn't use</p> <p>8. Has used but doesn't use</p> <p>9. Hasn't used but does use</p> </div> <div style="width: 20%;"> <p>Religion</p> <p>1. Catholic</p> <p>2. Protestant</p> <p>3. Other, specify _____</p> </div> <div style="width: 20%;"> <p>Pregnant or Nursing</p> <p>0. Not preg. nor nursing</p> <p>1. Yes, not confirmed</p> <p>2. Confirmed</p> <p>3. Nursing</p> <p>4. Pregnant and nursing</p> </div> <div style="width: 20%;"> <p>Sex</p> <p>1. Male</p> <p>2. Female</p> </div> </div>			
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>Actual State</p> <p>1. Present</p> <p>2. Dead</p> <p>3. In house hold forming another family</p> <p>4. Outside of household living in community</p> <p>5. Outside of community</p> </div> <div style="width: 20%;"> <p>Verified age</p> <p>1. Not reliable</p> <p>2. Reliable</p> <p>3. Papers</p> </div> <div style="width: 20%;"> <p>Birth place origin</p> <p>1. Place</p> <p>2. Hamlet</p> <p>3. Village</p> <p>4. Municipal seat</p> </div> <div style="width: 20%;"> <p>Heads and wives</p> <p>0. No</p> <p>1. A little or with difficulty</p> <p>2. Yes</p> </div> <div style="width: 20%;"> <p>Special courses</p> <p>0. No</p> <p>1. Yes</p> </div> <div style="width: 20%;"> <p>Principal and present occupation</p> <p>Separate code</p> <p>Identification family and subject</p> <p>Same as census</p> <p>Separate code</p> </div> </div>			
Interviewer _____ (47)			

Card number	Subject	NAME			Present status	Birth date			Verified age	Date of emig. immig. or death			Grades Passed	For persons over 10 years			Children 0 to 59 months			OBSERVATIONS
		1st Last Name	2nd Last Name	Usual Name		Day	Month	Year		Day	Month	Year		Principal Occup.	Secondary Occup.	Field of work occupation description	Weight (kg)	Height (cm)	Arm circumference	
101	12 13 14				15	16-17	18-19	20-21	22	23-24	25-26	27-28	29	30-31	32-33				34 35 36 37 38 39 40 41 42 43	
102																				
103																				
104																				
105																				
106																				
107																				
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116																				
117																				
118																				
119																				
120																				
121																				
122																				
123																				
124																				
125																				

Column	Code	Information
4-5-6	001	Card
22		<u>Dwelling characteristics</u> <u>Ownership of site</u> 0. Doesn't exist 1. No 2. Yes 3. Others
23		<u>Type of Dwelling</u> 1. Improved dwelling 2. Hut 3. Semi-formal dwelling 4. Formal dwelling 5. Others
24		<u>Ownership of dwelling</u> 1. Staying with neighbor 2. Servant 3. Staying with relative 4. Renting 5. Provided for use 6. Amortized 7. Owner 8. Other (specify)
25-26		No. of rooms
27		<u>Floor</u> 1. Dirt 2. Brick or clay 3. Cement 4. Tile 5. Wood 6. Other
28		<u>Roof</u> 1. Straw or similar 2. Roof tile 3. Tin 4. Cement 5. Other
29		<u>Walls</u> 1. Cane or similar 2. Simple mud or cane 3. Covered mud and cane 4. Simple adobe 5. Adobe with stucco 6. Wood 7. Brick or cinder 8. Other

Column	Code	Information	Observations
30		<u>Location of kitchen</u> 1. In sleeping area 2. In separate place 3. Part of house 4. Other	
31		<u>Cooking facilities</u> 1. On floor 2. Low wood stove 3. High wood stove 4. Low adobe stove 5. High adobe stove 6. Formal stove 7. Other	
32		<u>Electric light in dwelling</u> 0. No 1. Yes	
33		<u>Sanitary installation</u> 1. Absent 2. Latrine 3. Septic tank 4. Toilet 5. Other	
34		<u>Drainage system</u> 1. Above ground 2. Cane pool 3. Plumbing 4. Other	
35		<u>Water supply</u> 1. River, lake, or spring 2. Public fountain 3. Well at home 4. Public plumbing system 5. Other	
36		<u>Household Goods</u>	0. No 1. Yes
37		Radio	
38		Record player	
39		Television	
40		Bicycle	
41		Motorcycle	
42		Automobile	
43		Sewing machine	
44		Refrigerator	
45		Hand mill	
46		Well	
47		Pige	
48		Cattle	
49		Sheep/goats	

FORM No. CD 1
(1-3)
TOWN IDENTIFICATION.

(4)

Name of Town _____

COL. (5)
1 - First input
2 - Change
3 - Correction

COL. (6)
1 - Within the sample
2 - Outside the sample

0 - Present
1 - Birth
2 - Immigration
3 - Change of Dwelling
4 - Marital Status
5 - Temporary emigrant
6 - Death

7 - Stillborn
8 - New family
9 - Permanent emigrant

1 - Unreliable Information
2 - Reliable
3 - Verified

1 - Single no children
2 - Single, no formal relationship
3 - Single parent
4 - Single parent, no stable relationship
5 - United
6 - Married
7 - Separated
8 - Widower
9 - Does not apply

0 - Probable
1 - Pregnant
2 - Nursing
3 - Not pregnant nor nursing
4 - Probable abortion
9 - Does not apply

1 - Volunteer
2 - Permanent Laborer
3 - Office Worker

1 - Correction
Blank - No correction

promotion and education activities. Form VD1 (Table 2.3) is utilized for the home visits and is used to collect information for four visits to the same family. A portion of the information is subsequently recorded on form VD2 (Table 2.4) which is filed in the clinic. The forms contain very precise, self-explanatory instructions.

The census, sectorization and home visits are also very useful for promotion of cooperative groups of pro-health committees which are a valuable resource for providing educational messages to the population.

Besides making daily home visits, the promoter works in the clinic providing health care to referral patients and those soliciting services as well as performing the routine examinations of mothers and children. In more dispersed communities almost all activities are carried out at the home level; in the Patulul Project the communities are sufficiently concentrated so that the clinics are utilized.

III. Contents of the Simplified Health Care Program. Subprograms, Activities and Personnel

The Simplified Medical Care Program in this project is made up of the following subprograms:

- 1) Curative health care
- 2) Preventive health care
- 3) Maternal health care
- 4) Care of children, with emphasis on nutritional recuperation.

In each of these subprograms both service and research activities are conducted. This document will only deal with the service activities.

The personnel responsible for the development of these activities are: a field physician, auxiliary nurses and health assistants or rural health promoters. The field physician is responsible for supervision, education and quality control of the attention provided by the health personnel. The majority of preventive and curative activities have been delegated to the auxiliary nurse and to the health promoters. The latter are members of the community who cooperate in the delivery of health service both in the clinics and at home. The promoters are trained by the auxiliary nurses and field physician.

The activities of the field physician and auxiliary nurses are described in the following sections. The functions of the promoters are simplifications of those of the auxiliary nurses. The training program is organized in such a way that the health promoters will gradually take over all the duties of the auxiliary nurses.

Department _____ Municipality _____		Family Composition		
Finca or Community _____ Sector _____		Father _____ Mother _____		
Month _____ Year _____ Identification _____		Children _____		
		Others _____		
F O R T N I G H T S				
FAMILY MEMBER	F _ t _	F _ t _	F _ t _	EXPLANATION
Head of Household. Disease Symptoms				Investigate whether head of household is sick or well. If ill record disease code
Mother: Status (pregnant, nursing, other)				Indicate pregnancy with <u>P</u> , nursing with <u>N</u> , other with <u>O</u> . If pregnant refer for Prenatal Examination, if breastfeeding check to see if child nurses adequately, promote breastfeeding.
Disease Symptoms: Simple diarrhea Diarrhea with mucous and/or blood Vomiting Fever Nasal Secretion Productive Cough Asthma and/or chest congestion Others ()				Ask of the mother has had any of these symptoms in the last 3 days today, yesterday or day before yesterday. Mark any positive symptoms with an "X". Three days or more with underlined symptoms indicates high risk.
Children: Vaccinations - Measles - DPT - Polio				Ask to see health card for all children in family and check vaccination status and growth curve. All children should be vaccinated according to the protocol and should have had at least one weight and height measurement in the past 6 months. If any child needs vaccinations or anthropometric examination record his/her identification and refer to clinic.
Control of Growth: (weight and height)				
Disease symptoms Simple diarrhea Diarrhea with mucous and/or blood Dehydration Vomiting Fever Nasal Secretion Productive Cough Asthma and/or chest congestion Others ()				Ask if any of the children has had any of these symptoms in the past 3 days today, yesterday and day before yesterday. Mark any positive symptoms with an "X" and identify which child. Three days or more with underlined symptoms indicates high risk
Clinic visits in past 2 weeks				Ask whether any member of the family has visited the clinic in the past week or is in treatment. Check present status and if necessary refer to clinic
Referrals to Clinic				Identify cases referred to clinic (high risks or others), and indicate reason for referral
Changes in family composition: Births Deaths				Record mortality and natality by filling in identification and date.

OBSERVATIONS:

BIWEEKLY HOME VISIT BY HEALTH PROMOTERS

Department _____ Municipality _____
Farm or Community _____ Sector _____ Bimester _____ Year _____

[illegible]

Explanation:

1. Record identification of persons with symptoms reported on Form VD1.
 2. Indicate mother's status: P=Pregnant; N= Nursing; 0= Not Pregnant nor nursing
 3. Identify children who have not been vaccinated according to the Protocol or who need anthropometric examination (weight/height)
 4. Identify family member(s) who visited clinic in past 2 weeks
- ** Mark reports of cases of new families with two initial asterisks

3.1 Curative Medical Care

Outpatient clinic services are provided. The auxiliary nurse trained in this program and supervised by the physician, is responsible for providing medical care. In serious cases or where problems or doubts arise, the auxiliary refers the patient to the physician. In the physician's absence the auxiliary nurse and the promoter are prepared to refer the patient to the corresponding health care center or hospital.

The prerequisites for auxiliary nurse candidates are: to have completed grade school, to have received a hospital program and to be highly motivated with a desire to learn. In some cases the candidates have also received a public health course. The auxiliaries selected for this program are trained to provide simplified medical services.

3.1.1 Training of the Auxiliary Nurse

This training is aimed at preparing the auxiliary nurse in the management of the area's most common illnesses. The more difficult or uncommon cases are referred to the supervising physician. The quality control system is designed to correct treatment errors and for use in ongoing personnel training. The paramedical personnel is not trained in the treatment of uncommon diseases. Table 3.1 presents the general contents of the training program in terms of curative medicine; Table 3.2 describes it in greater detail.

The auxiliary nurse is responsible for direct patient care. She takes the clinical history, makes the diagnosis and prescribes treatment based on the simplified therapeutic guide (Annex IV) and the protocol for the use of outpatient clinic forms (Annex V) include the description of the signs and symptoms which the auxiliary nurse must investigate in order to make a diagnosis. For example, if a patient visits the clinic complaining of diarrhea, the auxiliary nurse must determine the duration of the symptoms, the quantity and characteristics of the diarrheal episodes (consistency, color, quantity) and any associated factors such as fever, irritability, anorexia, apathy, etc. Furthermore, the auxiliary will question the patient about the supposed cause of the disease and if he/she has taken any medicine. Based on the history and a simplified physical examination, the auxiliary nurse will make a diagnosis, prescribe treatment and determine what follow-up is required.

When the case cannot be adequately diagnosed, the patient is referred to the physician. These cases are generally those in which a more detailed physical examination is required or in which the history includes aspects which are not covered in the training of the auxiliary personnel.

3.1.2 Recording Information

TABLE 3.1 SIMPLIFIED HEALTH CARE PROGRAM. TRAINING SCHEDULE FOR CURATIVE HEALTH CARE ACTIVITIES

	<u>Training in:</u>	<u>Hours</u>	<u>%</u>	<u>Days</u>
1.	Introduction to the program	4	2	5
2.	Use of the general examination and therapeutic guides	20	10	2.5
3.	Delivery of medical care based on therapeutic guide	160	80	20.5
4.	Quality control	8	4	1.0
5.	Report	4	2	.5
	TOTALS	200	100	25.0

TABLE 3.2 SIMPLIFIED HEALTH CARE PROGRAM. CURATIVE HEALTH CARE

Activity	Task	Educational Objective	Educational Content	Training Strategy	Evaluation	Place	Time	Personnel
1. Introduction to the program	Provide general information about the program	Acquaint student with program and training area	Recognition of training area. General information about program.	Conferences. Survey of training area.	Explain what training consists of	Health Post	4 hrs.	-Student -Training auxiliary nurse -Supervisor -Field physician
2. Use of examination and therapeutic guides	Instruct student in the use of examination and therapeutic guides	-Learn to examine the patient. -Acquire all knowledge necessary in order to provide medical attention according to the therapeutic guide. -Gyneco-obstetrical problems. -Psychiatric and nervous system problems. -Diseases of genital urinary systems. -Other symptoms. Medications:	Description of symptoms, signals and diseases. Description of most common findings of patient examinations indicating abnormalities and possible causes. -Digestive tract diseases. -Respiratory diseases. -Emergencies. -Eye, ear & nose diseases -Childhood communicable diseases -Skin diseases	-Active reading -Examination of patients -Observation of patients signals and symptoms	Questions on the content of the therapeutic guide	Health Post	20 hrs.	-Student -Trained auxiliary nurse -Supervisor -Field physician

Table 3.2 (Continued)

Activity	Task	Educational Objective	Educational Content	Training Strategy	Evaluation	Place	Time	Personnel
		-Description -Indications -Contraindications -Dosage						
3. Provide medical care based on the therapeutic guide	Patient care with direct supervision by trained auxiliary nurse and field physician	Provide excellent quality of medical care based on signals, symptoms, diagnosis and treatment according to therapeutic guide	-Take clinical history recording signals and symptoms, conduct physical examination, make a diagnosis and provide treatment for diseases listed in activity #2.	Patient management	Comparison of students work with that of trained auxiliary and correction of errors in history, diagnosis and treatment.	Health Post	160 hours	-Student -Trained auxiliary nurse -Supervisor -Field physician
4. Evaluate patient management based on therapeutic guide	Determine whether patient has received adequate treatment	-Demonstrate to the student by following the steps indicated in the treatment guide she is capable of providing quality medical care.	Direct Method: observation student/physician. Indirect Method: Revision of forms analyzing conduct: History, diagnosis and therapy.	Direct observation of 10% of all cases	By means of percentage of cases well managed.	Health Post	8 hours	-Student -Field physician
5. Report	Complete report	Record the number of patients treated, referrals, and control of morbidity.	Instruction in use of monthly report form.	Fill out monthly report form.	Review of monthly report.	Health Post	4 hours	-Student -Trained auxiliary nurse -Supervisor

For practical purposes the patient visit is divided into four stages: 1) clinical history; 2) diagnosis; 3) treatment and 4) outcome. All information is recorded in the outpatient clinic forms. The instruction manual for these forms is included in Annex V. The patient visit form must be filled out in duplicate with one copy to be kept in the project's central file and the other in the clinic.

Table 3.3 presents an example of the patient management using the patient visit form.

A young mother, Mrs. María Hernández visited the clinic on February 14, 1978, and was examined by an auxiliary nurse with initials G.A., and identification number 3.

The patient was 22 years old, female and was breast feeding at the date of the visit. Her identification number code provides the following information: town of residence, family and position within the family. A family census was carried out previously in order to establish these identification codes. Mrs. Hernández lived in community 00, formed part of family 021, and was the female head of the family, 02. She came to the clinic with complaint of watery eyes, nasal obstruction, nasal discharge and headaches. Under symptoms of severity, anorexia and fever were recorded. The patient was taking medicine and was nursing on the day of the visit. On the reverse of the form, the nurse's findings, as well as the diagnosis and treatment prescribed, were reported in more detail. As can be observed, the symptoms of watery eyes, nasal obstruction and moderate headache began two days previous to the visit. One day before, she had experienced tiredness, anorexia and fever, and had taken "Mejoral" (local brand of aspirin). The patient reported no other problems.

On examination, the nurse found the patient to be in generally good condition, weighing 45.2 kg., and having an oral temperature of 37.2°C, a pulse rate of 75/minute and a blood pressure reading of 100/60. The nasal exam showed a bit of mucous and obstruction. No other problems were encountered. Based on this information the case was diagnosed as an upper respiratory infection and treated as indicated in the therapeutic guide (See Annex IV), with aspirin and nasal drops as necessary, and the patient was advised to drink plenty of liquids. The nurse also indicated to the patient that if she experienced renewed fever, or cough, she should return to the clinic. No further visits were recorded for the month of February.

This form has been found to provide all the information necessary for adequately recording history, diagnosis and treatment and also serves for quality control of the attention provided.

The outpatient visit form is the same for all patients and allows information to be included for six

16-

RECORD TO VISITS TO
OUTPATIENT CLINIC

Form. CE2 Card 1 Identification 00 021 02 Sex 2 Col. 15 2
(1-3) (5) (7-8) (9-11) (12-13) (14) (15)

Year of Interview 78 Age 22 Years _____ Months _____ day
(20-21)

Examiner's code 3 Name maria Hernández
(6)

0 - Preschooler
1 - Prenatal
2 - Nursing
3 - Other

[illegible]

History	Physical Examination	Diagnosis	Treatment	Observations
02/14/78 Patient refers headache, watery eyes, nasal ob- struction, which began 2 days before the visit. One day before she experienced anorexia & fever. She has taken NEJORA (local brand of aspirin)	General good con- dition, normal temperature. Nasal exam showed a bit of mucous.	Upper respiratory infection Code 0101	1. Drink abundant liquids 2. Aspirin 0.5g PO every six hrs. 3. Cough syrup 1 cap P.O.T. 1. 0 for 3 days.	Asked patient to come back to the clinic if symptoms persist after 3 days of me- dication.

visits. This form facilitates the gathering of all information related to the diagnosis and treatment of a case for several visits as well as for quality control purposes. Furthermore the information is coded so that computer analyses can be performed.

3.1.3 Quality Control On-the-Job Training

The medical care system has been divided into three phases for quality control purposes: 1) Clinical history; 2) Diagnosis; 3) Treatment and follow-up. In Figure 1 all the relationships to be explored are presented in a Venn diagram. In regard to errors, each of the phases can be analyzed independently as well as in their relationships history/diagnosis, history/treatment, diagnosis/treatment and history/diagnosis/treatment.

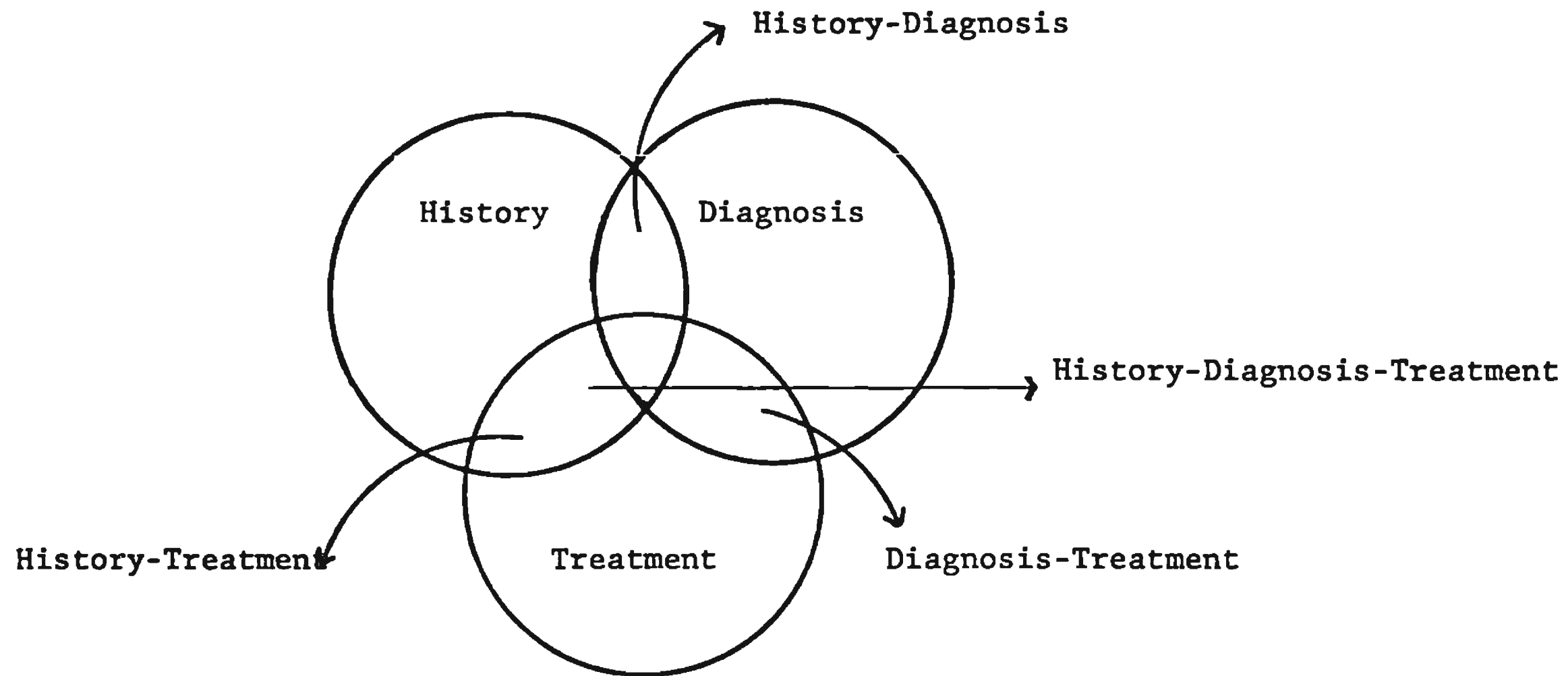
Two methods of quality control can be applied in the Simplified Medical Care Program: direct observation of patient management by auxiliary personnel and revision of the forms filled out at each patient visit. Each method will be described below.

3.1.3.1 Direct Observation

Quality control by direct observation requires the physician to be present during the patient's visit. The auxiliary nurse conducts the interview and examination of the patient, makes a diagnosis and prescribes treatment while the physician observes. The physician fills out a patient visit form simultaneously with the auxiliary and at the conclusion of the visit the two forms are compared. During the patient's visit the physician plays a passive role, intervening only in the case of a serious error on the auxiliary's part. After the visit and comparison of forms, the physician provides on-the-job training related to the history, diagnosis and treatment of the patient seen.

For educational and quality control purposes, the physician analyzes the following components of case management: clinical history, diagnosis and treatment. The initial control considers each of the stages separately, with a subsequent analysis of the three steps as a whole. An example of the quality control procedure follows: A patient presenting pain and cramps in the upper right quadrant of the abdomen, with a previous history of cholecystitis, was examined. If the case were diagnosed as ascariasis and treated with an ascariacide, the diagnosis would be considered as an error while the treatment, in relation to the diagnosis, would be satisfactory. Of course, the overall management of the case is incorrect.

As another example, here is a hypothetical quality control for an auxiliary in the training stage. Table 3.4 presents the quality control report for one month. The number of patients seen each day is noted. The errors, detected by comparison with the forms filled out by the physician, are noted separately for each category (history, diag-



Within the circles of History, Diagnosis, and Treatment are included both isolated and combined errors. The total possibility of errors is equal to=

$$P(H \cup D \cup T) = P(H) + P(D) + P(T) - P(H \cap D) - P(H \cap T) - P(D \cap T) + P(H \cap D \cap T)$$

Table 3.4

MONTHLY QUALITY CONTROL REPORT

COMMUNITY: _____

Auxiliary Nurse or Promoter in charge:	Date:	Total number of cases examined	Examined because of quality control	Quality Control											
	Month:			Promoter/Auxiliary-Physician								Intra Promoter/Auxiliary			
	Year:			H*	D*	T*	HD**	HT	DT	HDT	TOTAL	HD	HT	DT	HDT
	Day:														
	1														
	2														
	3														
	4														
	5														
	6														
	7														
	8														
	9														
	10														
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	24														
	25														
	26														
	27														
	28														
	29														
	30														
	31														

* H: History * D: Diagnosis * T: Treatment ** Combination of the above

nosis and treatment) as well as for the combinations of these. Columns H, D and T are used for cases with incorrect history diagnosis, and treatment respectively. HD column is used for cases with both incorrect history and diagnosis, HT for incorrect history and treatment, DT for incorrect diagnosis and treatment, and HDT when the three are incorrect.

The next section of the quality control report refers to the internal consistency of the forms filled out by the auxiliary nurse. Errors in the relationships history/diagnosis (HD), history/treatment (HT), diagnosis/treatment (DT) and history/diagnosis/treatment (HDT) are noted. It is possible, for instance, that the diagnosis is incorrect, but the treatment given that diagnosis could be correct. This would appear under DT in the section Auxiliary/Physician, but nothing would appear in the section Intra-Auxiliary of the report. It is also possible, however, that diagnosis and treatment are incorrect both, in comparison with the physician's form and internally.

As an example of the latter a patient is diagnosed as having simple diarrhea by the physician while the auxiliary nurse made a diagnosis of parasitism and prescribed treatment for amebas. In this case, the error would be recorded in column DT of both the Auxiliary/Physician and Intra-Auxiliary sections.

Table 3.5 presents the hypothetical case of one month's quality control. Of 20 patients who were examined on the 4th of the month, two were not dealt satisfactorily. One of these, besides having an incorrect diagnosis, was treated incorrectly in relation to the diagnosis. In the other case, the diagnosis was incorrect although the treatment for the diagnosis was correct. Generally speaking both cases were badly managed.

The physician examines 5 to 10% of the patients seen each month, together with the auxiliary nurse. In the training phase, supervision is continuous. Based on past experience, different error levels indicate the need for retraining, continuous supervision or periodic supervision. An error rate above 10% indicates the need for retraining, between 5 and 10% requires continuous supervision and with less than 5%, periodic supervision is continued. On this last case, few errors are generally seen and validation of 5 to 10% of all cases is appropriate.

For validation purposes, the forms presented in Table 2.3 are filled out in triplicate by the nurse, in duplicate by the physician. One copy of each is filed in the health clinic and one is sent to the central files after being reviewed. Careful, periodic analyses of this information will help determine the most frequent error and will serve as a guide for continued on-the-job training.

All information is summarized each month on the form presented in Table 3.6.

Table 3.5

FORM. CC01

MONTHLY QUALITY CONTROL REPORT

COMMUNITY: Finca 00

20.

Auxiliary Nurse or Promoter in charge: <i>Juana López</i>	Date: Month: <i>June</i> Year: <i>1978</i> Day:	Total number of cases examined	Examined because of quality control	Quality Control											
				Promoter/Auxiliary-Physician								Intra Promoter/Auxiliary			
				H*	D*	T*	HD**	HT	DT	HDT	TOTAL	HD	HT	DT	HDT
	1	10													
	2	8													
	3	15													
	4	20	10	1		1					2				
	5	15													
<i>Saturday</i>	6	—													
	7	—													
<i>Sunday</i>	8	9													
	9	11													
	10	8													
	11	16													
	12	13													
<i>Saturday</i>	13	—													
	14	—													
<i>Sunday</i>	15	6													
	16	9													
	17	15													
	18	17													
	19	7													
<i>Saturday</i>	20	—													
	21	—													
<i>Sunday</i>	22	11													
	23	19													
	24	21													
	25	13													
	26	8													
<i>Saturday</i>	27	—													
	28	—													
<i>Sunday</i>	29	10													
	30	9													
	31	18													

* H: History * D: Diagnosis * T: Treatment ** Combination of the above

Table 3.6

MONTHLY SUMMARY OF THE QUALITY CONTROL OF THE SIMPLIFIED MEDICAL CARE SYSTEM

	Name of Auxiliary Nurse or Promoter and Finca	Cases seen in the month	Cases validated in the month	Quality Control											
				Promoter-Auxiliary/Physician								Intra Auxiliary /Promoter			
				H	D	T	HD	HT	DT	HDT	Total	HD	HT	DT	HDT
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															

OBSERVATIONS:

3.1.3.2 Analysis of Forms

The other method of quality control of the health care provided in this program consists of the analyses of the outpatient visit forms. Evaluation of the history is not possible with this method but errors in diagnosis, treatment and diagnosis/treatment can be noted. This quality control method provides further information for on-the-job training of the paramedical personnel as well as facilitates detection of cases which should have been referred to the physician or which present potential problems requiring closer examination and control. The physician marks the errors with a red circle which helps in the standardization of physicians in the review of forms.

3.1.4 Functioning of the Curative Health Care Sub-Program

A clinic or Health Post exists in each community and is attended by paramedical personnel, that is, one rural health promoter for each 500 inhabitants. As indicated previously, the promoter is responsible for making home visits and the rest of his/her time is dedicated to patient care and the routine, periodic examinations of the maternal-child group. The promoter is trained by the auxiliary nurse in approximately three months, following the previously described guidelines. Subsequently, the promoter is capable of providing curative services under periodic supervision by the physician and the auxiliary nurse. It is estimated that four hours per week of supervision by the auxiliary nurse and four hours every two weeks by the physician are sufficient if the rural health promoter was adequately trained.

The equipment necessary for diagnosis and treatment of the most frequent diseases of the rural area is available at the clinic level. More complicated cases are referred to the auxiliary nurse or the physician as indicated in the therapeutic guide so that on their supervisory visits they decide what conduct to follow. Emergency cases are referred by the promoter directly to the indicated health center or hospital without waiting for examination by the supervisory personnel. Contact has been made with the local hospitals and the promoters are trained in the reference criteria they use in order to avoid rejection of patients.

3.2 Preventive Health Care

In the health program carried out in the study communities, preventive medicine is practiced in order to diminish the risk of death and disease within the population.

The principal activities developed by the auxiliary nurse and promoters are the vaccination program and the control of epidemics. In order to assure their effectiveness, the auxiliary and promoters are trained in the latest vaccination techniques and adequate data recording. Table 3.7 presents the total training time necessary for the preventive medicine subprogram. Table 3.8 details the activities, tasks, educational objectives, learning content, teaching strategies, evaluation and operational aspects of the training.

3.2.1 Activities

DPT and polio vaccinations are applied to children beginning at 2 months of age based on the absence of defenses against whooping cough and diphtheria, and booster vaccinations are repeated until 7 years of age. Measles vaccination is begun at 9 months of age with the last revaccination given at 7 years. BCG is given from birth to 14 years of age. An epidemiological surveillance system serves to detect any cases of diseases which could be prevented by vaccination including active tuberculosis cases.

Table 3.9 outlines the activities contained in the preventive medicine subprogram. A detailed description of the specific activities of the auxiliary personnel is presented in the following section.

3.2.1.1 Control of Epidemics

The preventive medicine subprogram is aimed at reducing the possibility of epidemic outbreaks of the areas most common diseases. The epidemics which occur most frequently in the study are: acute respiratory infections, and acute infections of the gastrointestinal tract.

1) Acute Respiratory Infections

The entrance and exit for acute respiratory diseases are the mouth and nose. The means of transmission are various, and include indirect contamination (example: hand to mouth or by dust particles), and direct contact (kissing).

When the results of programs destined to control respiratory diseases are compared to those of gastro-intestinal disease control programs, the former appear to be very poor. Nevertheless, the following measures should be recommended: washing hands, and avoiding contamination from sick

TABLE 3.7 SIMPLIFIED HEALTH CARE PROGRAM: TRAINING TIME FOR
PREVENTIVE HEALTH CARE ACTIVITIES

TRAINING METHODOLOGY	HOURS	%	DAYS
1) Introduction to the Program	2	7.7	.25
2) Use of Preventive Medicine Manual	8	30.8	1.00
3) Vaccination application	8	30.8	1.00
4) Management of vaccination control system	4	15.3	.50
5) Storage of vaccines	2	7.7	.25
6) Report	2	7.7	.25
T O T A L	26	100.0	3.25

TABLE 3.8: SIMPLIFIED HEALTH CARE PROGRAM. PREVENTIVE MEDICAL CARE

Activity	Task	Educational Objective	Learning Content	Teaching Strategy	Evaluation	Place	Time	Personnel
1) Introduction to preventive medical care program	Give general information about the program.	Acquaint student with the preventive medical care program.	General aspects of the program	Conferences	Have student explain program.	Health Post	2 hours	Student, Trained Auxiliary, Supervisor
2) Use of preventive medicine manual	Acquaint student with use of preventive medicine manual.	Acquire all knowledge necessary in order to prevent diseases for which vaccines exist.	Description of the following vaccines: DPT, Oral Polio, measles, tetanus toxoid, and BCG in terms of: -Type of vaccine -Age for vaccination -Dosis -Indications and contraindications -Complications -Specific observations -Observation of vaccination technique	Active reading observation of vaccinations	Questions on the content of the preventive medicine manual and vaccination technique.	Health Post	8 hours	Student, Trained Auxiliary, Supervisor
3) Vaccination	Vaccination of entire susceptible population.	Teach the student how to prevent epidemics of diseases preventable by vaccination.	Application of vaccines according to technique studied	Vaccinate under direct supervision of trained auxiliary	By direct observation of student's performance	Health Post	8 hours	Student, Trained Auxiliary, Supervisor

TABLE 3.8 (continued)

Activity	Task	Educational Objective	Learning Content	Teaching Strategy	Evaluation	Place	Time	Personnel
4) Management of vaccination control system	Vaccination programming	Recognize susceptible population	Management of vaccination programming. Motivation.	Review programming Call children to clinic	Review programs to evaluate % of coverage.	Health Post Homes	4 hours	Student, Trained Auxiliary, Supervisor
5) Preservation of vaccines	Storage of vaccines in ideal conditions	Teach student how to adequately store vaccines	Know storage temperature for each type of vaccine and review expiration date	Vaccine Storage technique	Check storage of medicines to verify adequacy	Health Post	2 hours	Student, Trained Auxiliary, Supervisor
6) Report	Make out report	Record vaccination coverages	Acquaint student with report forms	Fill out report form	Review of Report	Health Post	2 hours	Student, Trained Auxiliary, Supervisor

TABLE 3.9 SIMPLIFIED HEALTH CARE PROGRAM. ACTIVITIES IN THE PREVENTIVE HEALTH CARE PROGRAM

Objectives	Activities	Coverage	Concentration	Indicators for Activity Evaluation and Control	Tasks	Service Level			
						C	P	AE	M
<u>Purpose:</u> Reduce mortality due to disease which are preventable by vaccination									
<u>Objectives:</u> Eradicate measles, tetanus, polio, diphtheria and whooping cough.	Vaccination against DPT, polio and measles.	<u>DPT:</u> 80% of children from 2 months to 6 years.	2 doses and boosters at 18 months, 3 and 6 years.	- Number of children vaccinated against DPT, polio, & measles related to susceptible population.	For all vaccines: Promote vaccination.	X	X	X	
		<u>Polio:</u> 80% of children from 2 months to 6 years.	2 doses and boosters at 18 months, 3 & 6 years.	Reported cases of disease which could be prevented by vaccination.	Detect children needing vaccination.	X	X	X	
		<u>Measles:</u> 80% of children from 9 months to 6 years.	Single dose	Mortality due to the above.	Vaccinate them.		X	X	
Diminish tuberculosis cases in all age groups.	Vaccinate children from 0-14 years with BCG	80% of children from 0-14 years.	Single dose	Number of children vaccinated in relation to susceptibles. New cases and mortality.	Keep a record of vaccinations.				X
					Notify physician of new disease cases				X
					Investigate contacts.	X		X	

C= Midwife

P= Health Promoter

AE= Auxiliary Nurse

M= Physician

TABLE 3.9 (continued)

Objectives	Activities	Coverage	Concentration	Indicators for Activity Evaluation and Control	Tasks	Personnel			
						C	P	AE	M
-Control active tuberculosis cases	Sputum examination in patients w/ respiratory symptoms	80% of patients with symptoms above 14 years of age	Sputum examination. If necessary repeat.	Number of samples compared to expected amount. Number and % of cases being treated and in follow-up.	Detect cases with symptoms: cough and expectoration. Do aputum exam Give treatment Investigate contacts		X		
-Maintain epidemiological surveillance of communicable diseases	Notification for cases of communicable diseases. Notification in case of increase in communicable diseases.	100% of all cases		% of cases notified	Detect communicable diseases Report epidemics Visit the community Detect contacts Community education	X	X		
								X	X
						X	X		
						X	X		
						X	X		

persons by cough, sneezes or kisses.

The prevention, treatment and control of the majority of viral respiratory diseases has had little success. Cleaning of the air, personal hygiene, and quarantines have failed to detain contamination.

Among the most common epidemic diseases which affect the respiratory system are the common cold and pneumonia.

Other diseases of the respiratory tract include: diphtheria, whooping cough, mumps, small pox, chicken pox, measles, German measles and meningitis.

2) Acute Infections of the Gastrointestinal Tract

Three large groups can be separated here:

- a) Gastroenteric infections and food poisoning
- b) Viral hepatitis
- c) Diseases due to Enterovirus

a) Gastroenteric Infections and Food Poisoning

This category consists of a series of diseases which are transmitted by direct, person to person contact (fecal-oral or oral-oral) and by various indirect vehicles such as foods, water, or by parenteral means or by vectors. Table 3.10 describes the transmission characteristics of the most frequent diseases.

TABLE 3.10 CHARACTERISTICS OF TRANSMISSION OF GASTROENTERIC INFECTIONS AND FOOD CONTAMINATION

Infection	Incubation Period	Carrier	Transmission	
			Most frequent	Alternatives
Salmonella*	7-72 hours	animal	food	contact
Typhoid*	7-21 days	human	food	water contact
Shigella*	1- 7 days	human	contact	flies, water
Viral diarrhea*	1- 5 days	human	contact	
Gastroenteric staphylococcus**	1- 6 hours	human	food	
Botulism**	12-36 hours	dirt	food	

* Infections of specific etiology

** Food Poisoning

3) Infections of Unknown Etiology

In all these diseases environmental influences are obvious; these infections occur most frequently in situations of overcrowding. When personal hygiene and environmental sanitation practices are improved, the frequency of these infections declines rapidly. The environmental sanitation activities necessary at the community level are:

- provision of abundant, potable water
- adequate excreta disposal
- elimination of fly, garbage and animal contamination
- control of food preparation

b) Viral Hepatitis

Of the two forms of viral hepatitis, infectious and serum, infectious hepatitis is the most common. Infectious hepatitis can be transmitted from person to person, or by a common source such as water, foods, etc. In any case, the source should be detected as rapidly as possible and the contacts should be investigated.

c) Enterovirus Diseases

The most severe enterovirus disease is polio. Polio rates reflect environmental sanitation and personal hygiene levels.

3.2.1.2 Vaccinations

Specific vaccines exist for a series of acute respiratory and gastro-intestinal diseases. In the preventive medicine subprogram, DPT, polio, measles and BCG vaccines are applied. The first two are applied beginning at 2 months of age, measles from 9 months to 7 years of age and BCG from birth to 14 years of age.

1. GENERAL VACCINATION TABLE

AGE	VACCINES
Birth	BCG
2-4 months	DPT + Polio
5-8 months	DPT + Polio
9-12 months	Measles
18 months	DPT + Polio Boosters
3 years	DPT Booster
6 years	DT + Polio Boosters
12 years	DT Booster

DPT VACCINATIONS FOR LONGITUDINAL FOLLOW-UP

2-4 months	DPT
5-8 months	DPT
18 months	DPT
3 years	DPT
6 years	DT
12 years	DT Booster

VACCINATION TABLE FOR FIELD USE: Polio and Measles Vaccines

<u>Calendar Month</u>	<u>Cross-sectional Vaccination</u>
-----------------------	------------------------------------

February and March	Polio
August and September	Polio
November	Measles

PREGNANT WOMEN	
<u>Gestational Age</u>	<u>Type of Vaccine</u>
5th. Month	T
6th. Month	T

2) NORMS FOR VACCINATION: Description of Vaccines and Techniques for Application

1. DPT (Diphtheria, Whooping Cough and Tetanus) Vaccine

- Age: 2 months, first vaccination.
- Complete dosage: 3 doses of 0.5 cc. at 4 to 16 weeks intervals.
- Application: deep subcutaneous or intramuscular.
- Indications: routine immunization of all healthy children from 2 months to 5 years of age. After 6 years, use only DT.
- Contraindications:
 - a) History of convulsions or other neurological conditions
 - b) Fever
- Revaccination:
 - 1st. booster at 18 months, DPT
 - 2nd. booster at 3 years, DPT
 - 3rd. booster at 6 years, DT
 - 4th. booster at 12 years, DT

Revaccination would also be indicated in the case of whooping cough or diphtheria outbreaks.

- Complications:
 - a) Local reactions, soreness, numbness
 - b) General malaise, fever, localized swelling
 - c) Post-vaccination encephalitis
- Preservation: the vaccine should be kept at 4°C. Avoid freezing.
- Observations:
 - a) For pain or fever, use aspirin
 - b) Immunity lasts 2 to 5 years
 - c) Swelling does not necessarily indicate an infection

2) Polio Vaccine

This vaccine contains live attenuated virus Sabin type and is trivalent.

- Age: beginning at 2 months.
- Complete dosage: 2 doses at 4 week intervals.
- Application: PO, 1 drop for German vaccine and 0.3 cc. for Canadian vaccine.
- Indications:
 - a) Routine immunization
 - b) Vaccination of entire susceptible population
 - c) Persons under 30 years of age
 - d) Persons who have been in contact with polio cases
- Contraindications:
 - a) Pregnancy
 - b) Treatment with steroids
 - c) During the course of diseases accompanied by acute fever.
- Revaccination:
 - 1st. booster at 18 months of age
 - 2nd. booster at 6 years of age
- Complications: are very rare
- Storage:
 - a) The German type should be kept at 4°C.
 - b) The Canadian type must be frozen.
- Observations: each type of vaccine has a specific dropper.
 - a) For the German vaccine the dosis is one drop from it's special dropper
 - b) For the Canadian vaccine the dosis is 0.3 administered with a special dropper.

3) Measles Vaccine

The measles vaccine is made of live attenuated virus.

- Age: begin vaccination from 9-12 months and vaccinate children up to 7 years of age.
- Complete dosage: 1,000 UTCID 50, contained in 0.5 cc. (single dose).

- Indications: susceptible children
- Contraindications:
 - a) Pregnancy
 - b) During acute diseases accompanied by fever
- Revaccination: immunity for life
- Complications:
 - a) Fever may reach 39.5°C or 40°C
 - b) Occasionally produces rash (allergy)
- Observations:
 - a) Reactions may occur in persons sensitive to egg protein
 - b) Wait 3 months before administering to children who have received gammaglobulin
 - c) Tuberculosis in any clinical form in children is not a contraindication for vaccination.

4) DT: Vaccine containing Diphtheria and Tetanus Toxoid

The norms for DPT and the vaccination schedule should be followed here.

5) T: Tetanus Toxoid

To be applied to pregnant women in the 5th and 6th. months of pregnancy.

6) BCG

- Age: 0-14 years of age
- Dosis: 0.1 ml.
- Application: intradermal in left arm over deltoid muscle
- Indication: all children
- Contraindications: viral infections (measles, chicken pox, cold with fever) at the time of vaccination.
- Revaccination: at 12 months of age administer Mantoux test. If negative (less than 5 m.m., read at 48 hours) vaccinate again.
- Storage: Keep at 4°C, avoid freezing. The prepared solution is unstable and should be discarded after 30 minutes.
- Complications:
 - a) Local reactions: pain, suppuration
 - b) Fever, malaise after vaccination
- Observations:
 - a) For fever and pain, use aspirin
 - b) If suppuration is severe refer to physician

3.2.2 Information Record and Quality Control

A daily vaccination record is kept for each community on individual cards and on a collective control form. Different forms are used for preschool children and pregnant

women. The name and identification of each will be recorded as well as the date of immunization, type and dosis of vaccine applied both for first vaccination and boosters. Any reported cases of easily recognized diseases will be noted with the date of occurrence. Using this control system, DPT vaccinations will be programmed for each child at 3 and 6 months of age with a + 1 month margin. The vaccination data will be marked with a red X when vaccines were applied within the time limit and with a blue X when outside of this time frame. A new vaccination schedule should be established in the latter cases.

An example of the vaccination procedures is shown in form MP01. Juan Ramírez with identification number 0302506 was born in May, 1975. His name appears on the list of children born in 1975; each form groups children according to year of birth, beginning with children between 6 and 7 years of age and continuing with those of 5, 4, 3, 2 and 1 years. Those born the present year will be added to the form for 1 year olds.

In Juan Ramírez' case, vaccinations were programmed and carried out as follows: the 1st. and 2nd. doses of DPT and Polio, two DPT boosters (at 18 months and 3 years) and a polio booster at 18 months. He will need the DPT and Polio boosters at 6 years to complete the total vaccination plan.

The record of measles and polio vaccinations will be made during the programmed cross-sectional campaigns. Each case of a communicable disease will be investigated and the date of occurrence will be reported. In Juan Ramírez case no history of communicable disease was reported.

Each mother is given a health card from the Health Post, in which the child's vaccination record and nutritional status are reported.

The vaccination form will be kept up to date by the auxiliary nurse. Based on this form, the field physician will prepare the trimestral vaccination report (Form MP02) in which the susceptible population for that trimester, and the number actually vaccinated, will be reported.

Forms MP03, MP04 and MP05 summarize the vaccination level reached during each year of the program. The vaccination reports should be sent to the professional in charge of the Simplified Health Care Program based on the format of Table MP02. The grouping of the trimestral reports will facilitate preparation of the annual reports (MP03, MP04, MP05).

3.3 Maternal Health Care

It is a well known fact that the population group with the greatest risk of disease and death is the mother-child dyad which makes up approximately 40% of the total population (this includes women of reproductive age and children under

VACCINATION AND COMMUNICABLE DISEASE FORM

Community		Born in 1975			Vaccinations										Communicable Diseases				
No	Name	Identifi- cation	Birth Date	Sex	DPT					Polio				M	BCG	Whooping Cough	Measles	Chicken Pox	Others
					1st	2nd	B1*	B2	B3	1st	2nd	B1	B2						
1	Juan Ramirez	0302506	05/5/75	1	08/75	11/75	11/75	05/75	05/81	08/75	11/75	11/75	05/81	02/75					
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

* B = Booster

Trimester: _____ Year: _____

Project: _____

[illegible]

ANNUAL VACCINATION REPORT

Type of Vaccine	Dosage	Age Group		Susceptible Population	Goal	Activities 197_	Vaccinates	
		From (months)	To (years)				P*	O**
DPT	1st	2	Till 7		80			
	2nd				80			
	Boosters				80			
	Total				80			
POLIO	1st	2	Till 7		80			
	2nd				80			
	Booster				80			
	Total				80			
MEASLES	Single Dose	9	Till 7		80			
BCG	1st	At Birth	Till 15		80			
	Revaccination							

* P= Programmed
 ** O= Obtained

EVALUATION OF VACCINATIONS BY AGES GROUPS IN COMMUNITIES

COMMUNITY	A G E G R O U P S																			
	0-12 Months					1-4 Years					5-7 Years					8-14 Years				
	S *	DPT	POLIO	MEASLES	BCG	S	DPT	POLIO	MEASLES	BCG	S	DPT	POLIO	MEASLES	BCG	S	DPT	POLIO	MEASLES	BCG
TOTAL																				
%																				

* S = Susceptible

VACCINATION LEVELS ATTAINED IN THE COMMUNITIES
ANNUAL EVALUATION

Community: _____

Year: _____

TYPE OF VACCINE	ATTAINED VACCINATION LEVELS
DPT	
Polio	
Measles	
BCG	

5 years of age). In the Patulul Project where the Simplified Health Care Program is being developed, it is possible a longitudinal follow-up on those cases of highest risk. Specific manuals exist for data collection and referral of complicated cases for medical care.

3.3.1 Activities

In the Maternal Health Care subprogram, the auxiliary personnel is responsible for the following activities:

1) For the Mother

Early detection of pregnancy in order to ensure the normal progress of pregnancy, vaccination of mother against tetanus, adequate childbirth attention, appropriate treatment of complications and the birth of healthy, full-term babies through the successive protective activities.

2) For Parents

Promotion of family guidance and sex education in order to encourage responsible parenting, prevent provoked abortions and facilitate adequate spacing of pregnancies.

The auxiliary nurse should be retrained to carry out these activities. The training activities are presented in Tables 3.11 and 3.12.

At the Health Post level, the auxiliary nurse and promoters are prepared to detect and refer cases of hemorrhaging, hypertension, general edema, abortions, gynecological infections during pregnancy, severe hemorrhaging related to delivery and complicated deliveries, and postpartum hemorrhaging and infections.

The activities carried out by the different members of the health staff in the Maternal Health Care subprogram are presented in Table 3.13. Pre-and Post-natal aspects are included.

The specific activities carried out by auxiliary personnel, i.e., auxiliary nurses and health promoters, are detailed below.

Every pregnant woman should have a minimum of three examinations. The first should be conducted as early as possible by the auxiliary nurse and health promoter and will be aimed at evaluating the level of risk and determining future care. The second examination will be conducted by the health promoter in the sixth to seventh month of pregnancy if the pregnancy was classified as a low risk one. The auxiliary nurse or physician will examine patients of greater risk. The last examination, in the eighth month, will be carried out by the auxiliary nurse and health promoter. At this time delivery

TABLE 3.11 SIMPLIFIED HEALTH CARE PROGRAM. TIME FOR TRAINING
FOR PRE- AND POST-NATAL CONTROL ACTIVITIES

TRAINING METHODOLOGY	HOURS	%	DAYS
1) Introduction to the Program	2	3.5	.25
2) Use of the pre-, peri- and post-natal control manual	8	13.8	1.00
3) Provide pre- and post-natal care based on manual	20	34.5	2.50
4) Detection of pregnancy	8	13.8	1.00
5) Training traditional birth attendants	8	13.8	1.00
6) System for control of pregnant women	4	6.8	.50
7) Report	8	13.8	1.00
TOTALS	58	100.0	7.25

TABLE 3.12 SIMPLIFIED HEALTH CARE PROGRAM. PRENATAL AND POSTNATAL CONTROL

Activity	Task	Educational Objective	Learning Content	Training Strategy	Evaluation	Place	Time	Personnel
1. Introduction to pre, post natal	Provide general information about program	Acquaint student with pre, post natal control program	General aspects of program	Conference	Have student explain program	Health Post	2 hours	Student, Trained auxiliary nurse, Supervisor
2. Use of manual for pre, peri and post-natal control	Become acquainted with pre, peri and postnatal control manual	Obtain knowledge necessary to provide pre, peri, postnatal medical care	History of previous pregnancies. Prenatal examination. Gynecological and obstetric problems.	Active reading of protocols	Questions on content of pre, peri, postnatal manual	Health Post	8 hours	Student, Trained auxiliary nurse, Supervisor
3. Provide pre, peri and postnatal care based on the manual	Care of pregnant and postpartum women under direct supervision of auxiliary nurse	Provide pre, postnatal medical care in order to be aware of the mother's health status and prevent any complication. Learn to refer all cases which are beyond her capabilities and training to the physician or hospital	Take history of previous pregnancies. Conduct prenatal examination. Urine exam. Confirm pregnancy. Treatment of gynecological problems covered in the therapeutic guide	Management of prenatal patient	Comparison of student's work and that of trained auxiliary nurse, correcting errors according to norms in the manual	Health Post Patient's Home	20 hours	Student, Trained auxiliary nurse, Supervisor

TABLE 3.12 (Cont'd.)

Activity	Task	Educational Objective	Learning Content	Training Strategy	Evaluation	Place	Time	Personnel
4. Early detection of pregnancy	Detect pregnancies before 12 weeks gestation	Determine if pregnancy exists or not. Avoid complications of 1st. trimester. Treat any complications.	Determine date of last menstrual period. Conduct Gravindex pregnancy test. Conduct clinical examination to confirm pregnancy	Technique for interview of mother. Means of determining uterine height. Demonstration of Gravindex test.	Questions about learning content	Health Post	8 hours	Student, Trained auxiliary nurse, Supervisor
5. Training of traditional birth attendants	Help the traditional birth attendants to obtain new knowledge	Have traditional birth attendants improve child birth care	Antiseptic practices. Hand washing. Management of minimal equipment for attending child birth. Technique for tying umbilical cord. Referral of patient with complications to health post or hospital	Informal tasks. Conferences. Demonstrations.	By means of questioning of midwives in terms of learning content	Health Post Midwives home	8 hours	Student, Supervisor
6. System for control of pregnant women	Fill in tables for control of pregnant women	To have a summary which can be consulted easily and which gives a clear idea of the progress of the PPP program	Make out a table containing the following data: -Name -Date of last menstruation -Probable due date -Previous pregnancies -Number of deliveries -1st and 2nd interview	Fill out table correctly	Review of work	Health Post	4 hours	Student, Trained auxiliary nurse, Supervisor

TABLE 3.12 (Cont'd)

Activity	Task	Educational Objective	Learning Content	Training Strategy	Evaluation	Place	Time	Personnel
			-1st. and 2nd. tetanus vaccination. -3rd. interview -Examination by physician -Date of birth -Post-partum exam -Observations					
7. Reports	Make out report of activities	Teach the student the importance for the program of a report of the work accomplished. Number of pregnant women in the community. Examinations accomplished. Vaccination coverage. Births. Abortions. Patients referred to hospital.	Contents of report form.	Fill out report form.	Review of report	Health Post	8 hours	Student, Trained auxiliary nurse, Supervisor

TABLE 3.13 SIMPLIFIED HEALTH CARE PROGRAM

OBJECTIVES AND PURPOSES	ACTIVITIES	NORMS		INDICATORS FOR ACTIVITY EVALUATION AND CONTROL	TASKS	SERVICE LEVEL C P AE M
		Coverage	Concentration			
<u>Purpose:</u> To reduce maternal morbidity and mortality in the rural population covered by the program <u>Objectives:</u> Widen prenatal coverage within population	Maternal Care <u>Prenatal Care:</u> - Early detection and referral of pregnancy (in 1st trimester) - Control of pregnant patients, detection and referral of high risk cases	100% of pregnant women in Program area	Trimestral Control	- Number of pregnancies referred in relation to total pregnancies	- Census and referral of pregnant women.	X X
		Registration of 100% of all pregnant women		- Number of pregnancies registered in relation to total pregnancies - Detection according to trimester of pregnancy - Reduction of fetal mortality	- Registration of pregnancies in work area - Home visits and referrals - Fill out control forms for all pregnant women - Indicate those who can be attended by midwife	X X X X X X X X X
		100% of registered pregnancies		- Number of pregnant vaccinated in relation total - Recording and control of vaccinations	- Make out prenatal control forms - Evaluate nutritional status - Apply tetanus toxoid according to preventive medicine manual	X X X X X X X

C = Midwife P = Promoter AE = Auxiliary Nurse M = Physician

TABLE 3.13 (Cont'd.)

OBJECTIVES AND PURPOSES	ACTIVITIES	NORMS		INDICATORS FOR ACTIVITY EVALUATION AND CONTROL	TASKS	SERVICE LEVEL C P AE M
		Coverage	Concentration			
Promote improvement of nutritional sta- tus of pregnant women	Diet supplementa- tion pregnant wom- en of high risk and malnourished mothers	100% of high risk and mal- nourished moth- ers	General supply of food items	- Number of pregnant women receiving supple- mentation in relation to total - Decrease in low birth weight and infant mor- tality	- Nutritional educa- tion - Provision of sup- plement	X X X X
	Education about hy- giene and progress of pregnancy	100% pregnant and nursing mothers	Every home visit		- Group talks and individual orienta- tion in each home visit - Orientation for the pregnant woman and her family about child birth and pro- motion of birth at- tended by trained midwife	XX XX
	- Register, train and supervise em- pirical midwives	Localization and registry of all em- pirical midwife training	100% of all empirical mid- wives		Conduct census and detect all empir- ical midwives	X
	Promotion of empir- ical midwife train- ing Control of trained empirical midwives	100% of all empirical mid- wives 100% of mid- wives	Monthly visit	- Number of trained mid- wives in relation to total - Number of visits in re- lation to total number of trained midwives - Number pregnant women with complications re- ferred to Health Post	- Promote training of empirical midwives Monthly visits to trained midwives in order to control and train them. Promote prenatal control, registry of births and weighing of new- borns	X X X X

TABLE 3.13 (Cont'd.)

OBJECTIVES AND PURPOSES	ACTIVITIES	NORMS		INDICATORS FOR ACTIVITY EVALUATION AND CONTROL	TASKS	SERVICE LEVEL C P AE M
		Coverage	Concentration			
Implementation of post-partum care	<u>Post-partum care</u>	100% of women in puerperium	Home visit at 48 hours and 28 days	Number of patients in control in relation to total Decrease in post-partum complications	Home visits to all women in puerperium to detect danger signals. Educate about post-partum hygiene. Refer complicated cases	X X X X
Promote Breastfeeding	Promotion to breastfeeding	100% of pregnant and new mothers		Number of women receiving orientation compared to total	Orientation for mothers in relation to total	X X
Promotion of family orientation towards the exercise of conscientious and responsible parenting and child spacing	Family orientation and attention to demand	100% of women of reproductive age		Number of women between 15 and 45 years receiving orientation, compared to total	Promotion of family orientation through talks, meetings, leaflets, movies, etc.	X X

risk will be evaluated and the place for the birth will be determined. This schedule may be modified if the health personnel consider the patient's risk level to warrant additional examinations or closer control by the physician.

3.3.1.1 Pregnancy Detection

All health personnel should be alert in order to detect pregnancies. Every female patient of reproductive age should be asked about the possibility of pregnancy. The promoters who are well acquainted with their communities will be directly responsible for detection of any new pregnancy. The importance of prenatal care should be emphasized in all talks on health and/or nutrition education.

3.3.1.2 Prenatal Examinations

The first prenatal examination will be conducted as soon as the pregnancy is detected. The auxiliary nurse together with the health promoter will fill out the corresponding form and will classify the pregnancy to indicate future conduct (See form PPP1). Based on this examination, further care will follow one of three different plans. Low risk cases will be followed up by the health promoter until the final examination which will be conducted together with the auxiliary nurse. The second level or intermediate risk cases, will require that all further examinations be carried out by the auxiliary nurse. Level three, or high risk cases, will be examined by the physician and the auxiliary nurse. In all prenatal exams, information will be collected using form PPP2: Prenatal Examination. The heading of this form will be filled out at the patient's first visit.

During the final exam conducted in the eighth month, form PPP3 will be filled out and will aid in determining where delivery should take place. The two alternatives are: home birth or hospital delivery.

The health personnel should establish contact with the midwife who will deliver the baby, as soon as the examination schedule is begun. She should be invited to participate in the clinic examinations of the patient and all pertinent information should be shared with her.

3.3.1.3 Recording of Perinatal Deaths

A special form will be filled out in case of perinatal death, be it intrauterine or within the first month after birth (see form PPP4). It is essential that all perinatal deaths be recorded using this form even if considerable time passes between their occurrence and their detection by health personnel.

Form PPP1

CLASSIFICATION OF PRENATAL RISK

(To be filled out by auxiliary nurse during prenatal examination)

Patient's name: _____ Date: _____

Risk Level: (consider severest level even if only one Level III characteristic is checked)

I. Promoter ☐; II. Promoter/Auxiliary Nurse ☐; III. Auxiliary/Physician ☐

Place: _____ Filled out by: _____

(Mark all positive findings with a red cross)

Characteristics	Level I Promoter	Level II Auxiliary	Level III Auxiliary/ Physician
Age	Between 15 and 30 years	Under 15 or over 30 years	--
Previous abortions or miscarriages	None	Between 1 and 3	More than 3
Previous births	1 to 7	Multiparous or more than 7 previous deliveries	--
Previous fetal or neonatal deaths	None	One but not in last pregnancy	More than one or one in last pregnancy
Premature births or low birth weight (LBW) infants	None	Yes, but not in last pregnancy	Premature or LBW infant in last pregnancy
Fetal presentation	All previous deliveries with cephalic presentation	One previous delivery with non-cephalic presentation	More than one with non-cephalic presentation
Previous cesarian sections	---	---	Any previous cesarian delivery
Previous newborns with jaundice or deformities	---	---	Any newborn with jaundice or deformity
Previous twin pregnancies	---	---	Previous twin pregnancy
History of hypertension, edema, or convulsions	No history	History but not in last pregnancy	History in last pregnancy
Hemorrhaging in previous pregnancies	---	---	Hemorrhaging at some point in previous pregnancies

Characteristics	Level I Promoter	Level II Auxiliary	Level III Auxiliary/ Physician
Active tuberculosis	---	---	Active tuberculosis
Urinary infection	---	---	Urinary tract infection during this pregnancy
Fetal size	---	---	More than one month's disparity in fetal size and gestational age
Height and pelvic abnormalities	---	---	Presence of visible pelvic abnormalities
Stability of couple	---	Not stable	---

INSTRUCTIONS FOR FILLING OUT FORM PPP1. CLASSIFICATION
OF PRENATAL RISK

- 1) This form should be filled out during the first prenatal examination by the auxiliary nurse.
- 2) The patient should be questioned about the possibilities detailed in the form.
- 3) All positive findings should be marked with a red cross.
- 4) The most serious level is indicated even if only one characteristic in that column is marked.
- 5) In the case of present or past clinical conditions, or important findings not included in this form, the patient should be referred to the physician.

FORM PPP2

PRENATAL EXAMINATION

NAME: _____ COMMUNITY: _____

AGE: _____ DATE OF LAST MENSTRUATION: _____ RISK LEVEL: _____

TETANUS VACCINATION: 1st DOSE DATE: _____

2nd DOSE DATE: _____

EXAMINATION NO.	1	2	3	4	5
DATE					
WEEKS OF PREGNANCY					
HEMORRHAGE					
URINARY SYMPTOMS					
TEMPERATURE					
WEIGHT					
BLOOD PRESSURE					
EDEMAS					
UTERINE HEIGHT					
POSITION/PRESENTATION					
EXAMINER					

OBSERVATIONS: _____

(Observations continue on back)

INSTRUCTIONS FOR FILLING OUT FORM PPP2.

PRENATAL EXAMINATION

This form should be begun during the first prenatal examination and continued in the following ones. Each patient visit corresponds to a separate column.

- Risk level is that determined by form PPP1.
- Weeks of pregnancy is the difference between the present date and date of last menstruation.
- Hemorrhage signifies any vaginal blood loss since the last examination. If exists, consult physician.
- Urinary symptoms. The patient should be questioned about burning sensation, polyuria (frequent urination), frequent urination during the night, and nighttime chills. The promoter should refer any patient with these symptoms to the auxiliary nurse.
- Temperature. If oral temperature is above 38°C, refer to nurse.

- Weight. Refer any patient with weight loss or no weight gain to the auxiliary nurse. If no clinical condition explaining weight loss is discovered, patient should be admitted to supplementary feeding program.
- Blood Pressure. If blood pressure is greater than 140/90, refer patient to nurse.
- Edema. Refer patient to physician if swelling includes entire leg or body.
- Uterine height. This should be plotted on a uterine height graph (see Graph 1). When no increase is observed or measurements are below lower limit, refer to auxiliary nurse. The patients' nutritional status should be evaluated and, if necessary, she should be admitted to supplementary feeding program. Uterine growth should be controlled more frequently and, if inadequate growth persists, refer the patient to the physician.
- Position/Presentation. If after the seventh month, the fetus is in transverse or podalic position, refer to the auxiliary nurse. She should try to change the position externally and, if not possible, refer the patient to the physician.

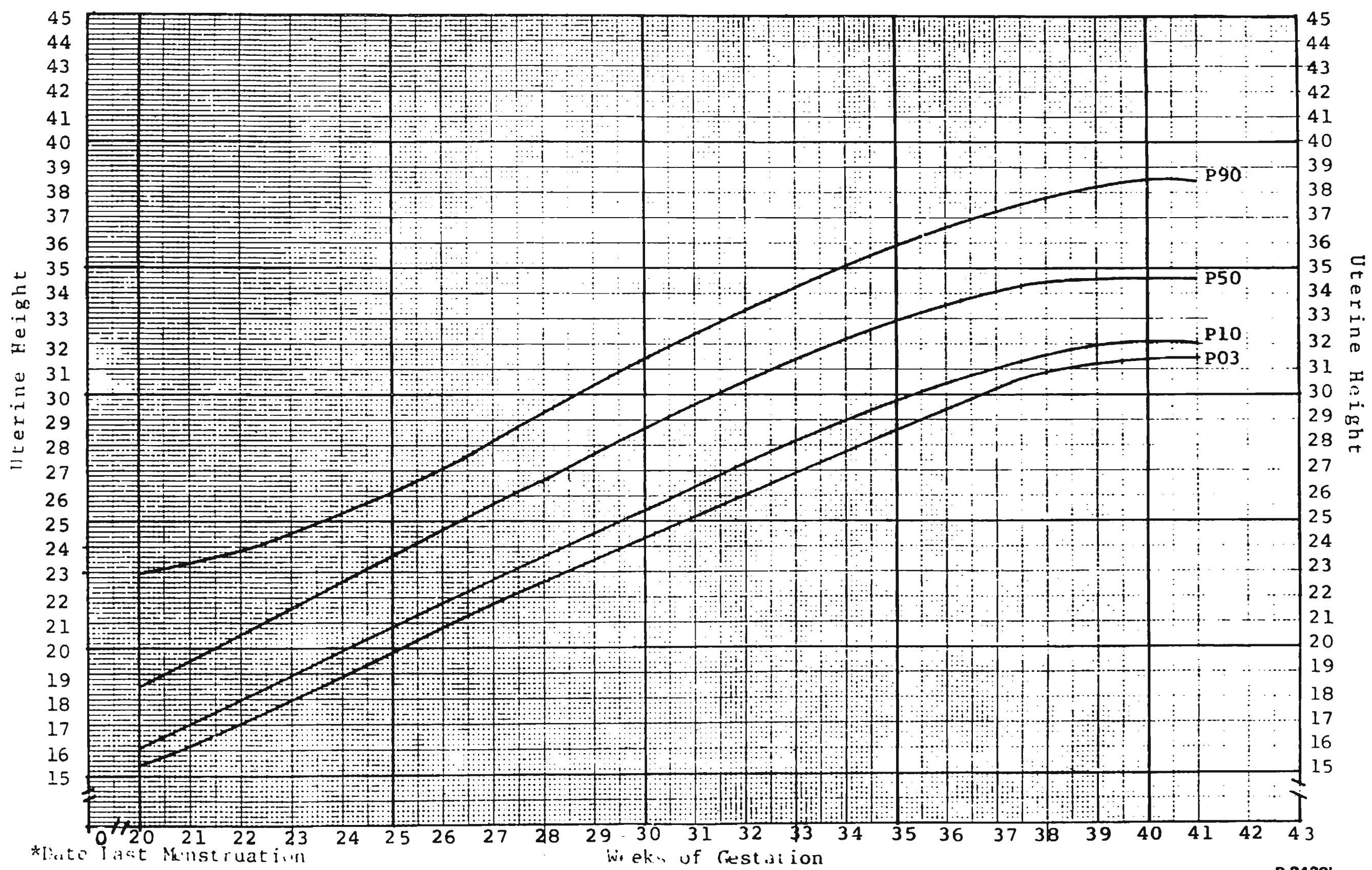
Any further comments or clarifications should be recorded in observations.

Name _____ Protocol No. _____

Age _____ Gestations _____ Parity _____ D.L.M.* ☐ ☐ ☐ Doubts: Yes ☐ No ☐ History of low weight _____

Maternal Pathology _____ Weight at beginning of pregnancy _____

Amenorrhea											
Maternal Weight											

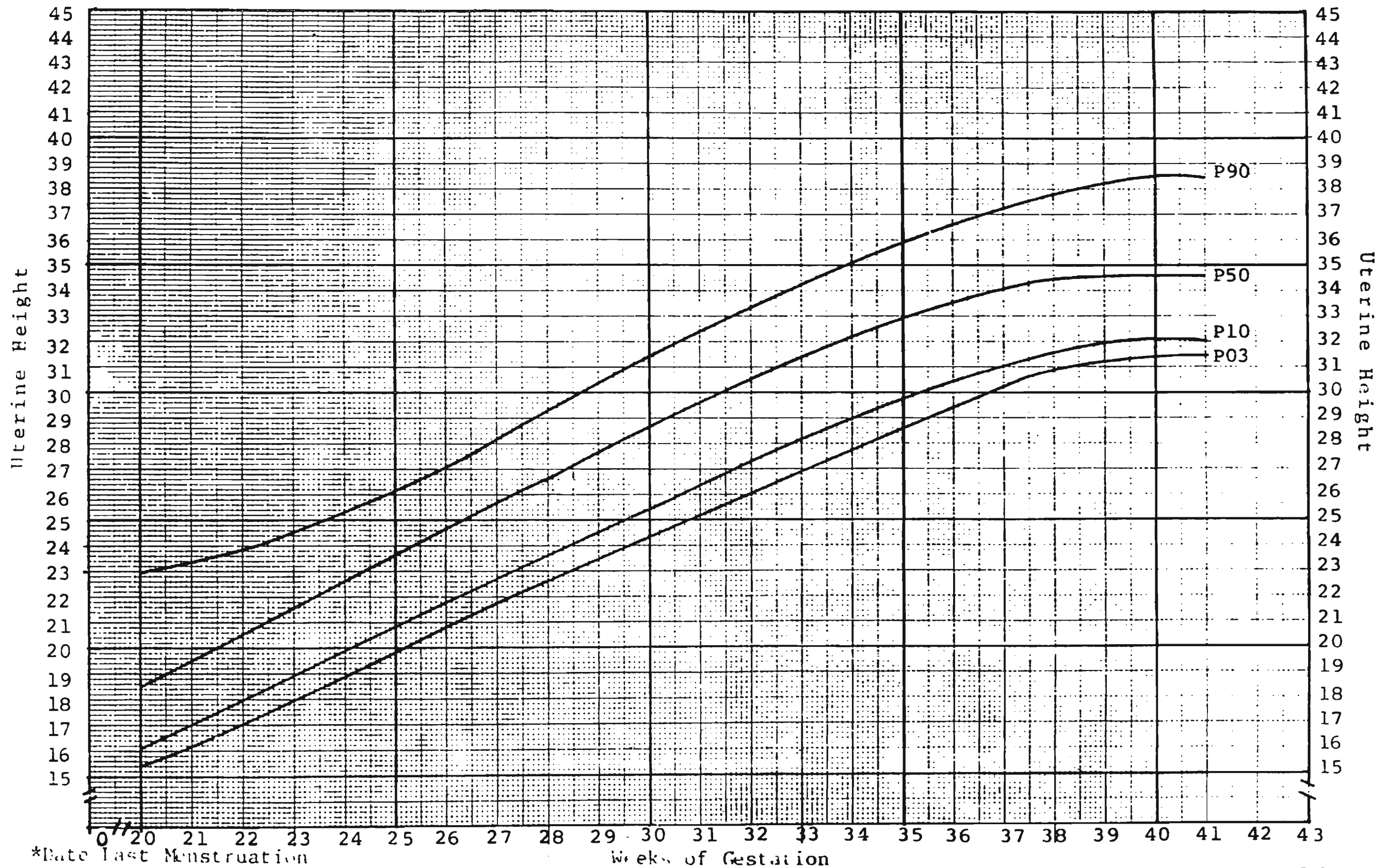


Name _____ Protocol No. _____

Age _____ Gestations _____ Parity _____ D.L.M.* ☐ ☐ ☐ Doubts: Yes ☐ No ☐ History of low weight _____

Maternal Pathology _____ Weight at beginning of pregnancy _____

Amenorrhea											
Maternal Weight											



FORM PPP3

DETERMINATION OF LEVEL OF CARE REQUIRED FOR CHILDBIRTH(To be filled out by Auxiliary Nurse at last prenatal examination
8 months)

PATIENT'S NAME: _____ DATE: _____

Level of Care Required for Childbirth: (most serious level should be considered
even if only one Level II characteristic
is marked)I. Midwife/Promoter ☐ II. Hospital ☐

Place: _____ Filled out by: _____

(Mark positive findings with a red cross)

Characteristic	Level I Home	Level II Hospital
Number of Previous Births	Between 0 and 7	More than 7
Termination of Previous Births	All vaginal deliveries	Previous Cese- rian
Clinical conditions in this pregnancy	None	-TBC -Cardiopathies -Dehydration -RH(-) sensitivity -Diabetes -Generalized edema -Others (risk level will be defined by physician)
Weight gain during pregnancy	Adequate weight gain	Severe malnutrition
Fetal status	Live fetus or dead for less than 4 weeks	Fetal death, more than 4 weeks
Hemorrhage	No hemorrhage in this pregnancy after 1st. trimester	Hemorrhages in 2nd or 3rd trimester regardless of severity
Number of fetuses	Single	Twin pregnancy
Presentation	Cephalic presentation, or podalic in multiparous woman	Podalic presentation in multiparous patient
Situation	---	Transverse situation
Uterine height	Normal	Under 26 cm.
Pelvic abnormalities	---	Obvious pelvic abnormalities

INSTRUCTIONS FOR FILLING OUT FORM PPP3: DETERMINATION
OF LEVEL OF CARE REQUIRED FOR CHILDBIRTH.

- 1) This form should be filled out by the auxiliary nurse during the final prenatal examination.
- 2) Information should be collected from the patient's interview

from the clinical history of present pregnancy, and from the physical examination.

- 3) All positive findings should be marked with a red cross.
- 4) The most serious level (hospital) will be considered even if only one finding in that column is marked positive.

FORM PPP4

RECORD OF PERINATAL DEATH

(Fill out in case of any fetal death or death in first month of life)

NAME: _____ PLACE: _____

DATE AND TIME OF DEATH: _____ DATE AND TIME OF BIRTH: _____

PLACE OF BIRTH: _____ ATTENDED BY: _____

PLACE OF DEATH: _____ ATTENDED BY: _____

MOTHER AGE: _____ NO. OF PREVIOUS DELIVERIES: _____

NO. OF PRENATAL EXAMINATIONS: _____

HUSBAND'S OCCUPATION: _____ NO. OF LIVE CHILDREN: _____

NO. OF DEAD CHILDREN: _____

CLINICAL CONDITIONS DURING PREGNANCY: _____

INFANT

GESTATIONAL AGE AT BIRTH: _____ SEX: _____ BIRTH WEIGHT: _____

LENGTH: _____ WHO WEIGHED INFANT: _____ WHEN: _____

AGE WHEN WEIGHED: _____ PRESENTATION AT BIRTH: _____

DURATION OF DELIVERY: _____ TIME OF RUPTURE OF MEMBRANES: _____

AMNIOTIC INFECTION: YES ☐ NO ☐ CAUSE OF DEATH: _____

FETAL DEATH OCCURRED: BEFORE DELIVERY ☐ FETUS: MACERATED ☐

DURING DELIVERY ☐ NOT MACERATED ☐

NEONATAL DEATH HEARTY CRY AT BIRTH ☐ YES ☐ NO

AGE WHEN FIRST NURSED: _____ HOURS

STRONG SUCTION: ☐ YES ☐ NO

ALWAYS NURSED: ☐ YES ☐ NO. IF NOT, WHY? _____

DISEASES: _____

OBSERVATIONS: _____

FILLED OUT BY: _____ SOURCE: _____

INSTRUCTIONS FOR FILLING OUT FORM PPP4. RECORD
OF PERINATAL DEATHS

This should be filled out whenever a fetal death or death in the first month of life occurs.

The majority of items are self-explanatory.

- Birth attended by: In case of home birth attended by midwife, any aid by clinic personnel would be noted here.
- Number of prenatal examinations. Includes all prenatal controls carried out in the clinic during this pregnancy. If prenatal exams were carried out elsewhere, the place and number of examinations should be recorded. If the patient did not have any prenatal examinations record this with a 0 (zero).
- Clinical conditions during pregnancy. Record all diagnosis made during prenatal period and any others the mother reports.
- Birthweight and height. Clarify who obtained this information and where it was obtained. If possible, investigate time elapsed between birth and weighing.
- Amniotic infection. Positive if woman indicates that membranes ruptured discharging a foul smelling and/or bloody liquid. High fever would also be present before delivery.
- Cause of death. Fill in when diagnosis is made by physician or auxiliary nurse.
- Macerated fetus is one dead for at least 24 hours before birth and presenting physical changes such as: skin peeling, separation of skin, changes in color (red or purple), bone deformities in skull.

3.4 Infant and Child Health Care

Children's growth and development during infancy and the preschool period is being studied in the Patulul Project. The specific manuals which are being used facilitate longitudinal data collection and referral of cases for adequate attention.

Infant and child care is being accomplished by means of specific measures and the adequate utilization of basic health services to alleviate and eliminate problems such as gastroenteritis and respiratory infections. Also, vaccinations against diphtheria, whooping cough, measles, polio, tetanus and tuberculosis are applied. In the preceding sections, the aspects related to Curative and Preventive Care have been explained. The malnutrition aspect is detailed in the following section which describes the activities to be carried out by the auxiliary nurse and health promoters. The auxiliary nurse and promoters are trained as shown in Table 3.14 and 3.15 to function appropriately in the detection and treatment of malnourished children.

The general description of the activities that are carried out in relation to Infant and Child Care, are presented in Table 3.16. The activities to be carried out by the promoters and midwives are also listed.

3.4.1 Detection and Treatment of Patients with Protein-Calorie Malnutrition

Protein-calorie malnutrition is one of the most serious problems existing in maternal child health, especially in rural areas of developing countries. For this reason Simplified Health Care Programs need to pay special attention to early detection and treatment of these cases. This section describes the methodology followed in this Program for the detection, treatment and follow-up of children with protein-calorie malnutrition.

3.4.1.1 Early Detection

The nutritional status of those children covered by the Simplified Health Care Program (Patulul Program) is evaluated periodically by means of anthropometric measurements. The measures used for this purpose are weight and height from which the weight for height ratio is derived. These measurements are taken by duly trained and standardized auxiliary nurses and promoters on a trimestral basis from birth to 36 months of age and every six months thereafter, until 60 months of age.

The information is recorded on the Anthropometry forms (A01) and then the weight and height data is transferred to the Health Card of each child under 5,

TABLE 3.14 SIMPLIFIED HEALTH CARE PROGRAM. TRAINING FOR
DETECTION OF CASES OF MALNUTRITION

TRAINING METHODOLOGY	HOURS	%	DAYS
1) Introduction to the Program	4	7.7	.5
2) Use of the malnutrition manual	16	30.8	2.0
3) Detection of cases with malnutrition	24	46.1	3.0
4) Ambulatory treatment of the malnourished child	4	7.7	.5
5) Reports	4	7.7	.5
TOTALS	52	100.0	6.5

TABLE 3.15 SIMPLIFIED HEALTH CARE PROGRAM - DETECTION OF CASES OF MALNUTRITION AND THOSE IN DANGER OF BECOMING MALNOURISHED

Activity	Task	Educational Objective	Learning Content	Training Strategy	Evaluation	Place	Time	Personnel
1) Introduction to the program	Provide general information about the program	General understanding of program	General aspects of the Program	Conferences	Explanation by the student of the program	Health Post	4 hours	Student, Trained auxiliary nurse, Supervisor
2) Use of malnutrition manual	Use of malnutrition manual	Knowledge of factors for detection of malnutrition cases	Description of signals and symptoms of protein-calorie malnutrition and anemia	Active reading Observation of signals & symptoms in children under treatment	Questions on the content of the manual and signs and symptoms observed	Health Post	16 hours	Student, Trained auxiliary nurse, Supervisor
3) Detection of cases with malnutrition	Detect cases with clinical signs of malnutrition or parents in danger of becoming malnourished	Provide medical care to cases of malnutrition & prevent the same for high risk patients	Identify clinical signs of malnutrition. Identify patients in danger of becoming malnourished	Patient examination	Direct observation of exams conducted by the student	Health Post Homes School	24 hours	Student, Trained auxiliary nurse, Supervisor
4) Ambulatory treatment of malnourished child	Recovery of malnourished child and prevention in children in danger of becoming malnourished	Learn procedure for ambulatory treatment of malnourished children	Treatment of malnourished child Supplementation Iron Instruction of the mother	Observation of cases being treated	Questions about treatment	Health Post	4 hours	Student, Trained auxiliary nurse Supervisor, Field physician
5) Report	Make out monthly report	Emphasize importance of knowing the number of cases of malnutrition and those in danger of becoming malnourished	Understand content of report	Fill out report form	Review of Report	Health Post	4 hours	Student Trained auxiliary nurse

TABLE 3.16 SIMPLIFIED HEALTH CARE PROGRAM - INFANT AND CHILD CARE

Objectives and Purposes	Activities	Norms		Indicators for Activity Control & Evaluation	Tasks	Service Level C P AE M
		Coverage	Concentration			
<p>Reduce morbidity and mortality rates in children under 7 years of age.</p> <p>Promote improvement of nutritional status of infants and preschool children.</p>	<p><u>Child Care:</u> Control of growth and development of children from 0 to 6 years of age with emphasis on nutritional problems</p>	<p>100% of children from 0 to 7 years of age</p>	<p>Monthly in the first trimester trimestrally till 2 years, every 6 months till 5 years, annually above 5 years</p>	<p>-Number of children from 0 to 6 years compared to total</p> <p>-Reduction of mortality rate in children from 0 to 6 years of age</p>	<p>Home visits:</p> <p>-Fill out form for each child under 7 years.</p> <p>-Family orientation about normal growth and development.</p> <p>-Vaccination control according to manual</p> <p>-Evaluation of nutritional status.</p>	<p>X</p> <p>X X</p> <p>X X</p> <p>X X</p> <p>X X</p>

residing in the communities. Specifically, the auxiliary nurse or promoter marks the weight/height coordinate on the graph included in the Health Card. On this card the vaccinations, clinic visits, growth and development findings and information about the child's history of communicable diseases are also reported. The card is kept by the child's mother or guardian and is presented in the clinic every time the child visits due to illness or for vaccinations or anthropometric examinations.

The weight/height curves should be interpreted as follows:

- a) Children with more than a 20% deficit are immediately admitted to the nutritional recuperation program. When the weight for height ratio is less than 70% it means that the child is too thin for his/her height.
- b) Children with a 20 to 29% deficit are considered to be of high risk nutritionally. If their general status is poor and they are suffering from associated pathologies, they should also be immediately admitted to the nutritional recuperation program.
- c) Children with a 10 to 19% deficit have less probability of becoming malnourished. Cases which are doubtful should be referred to the physician.
- d) Children with less than a 10% deficit in weight for height adequation are considered to be out of danger.
- e) Any child with edema should be admitted to nutritional recuperation regardless of his/her weight for height ratio.

3.4.1.2 Examination on Admission to the Program

All cases which are admitted to the nutritional recuperation program will be treated with food supplements. Form DPC 1 should be filled out on admission; this is an authorization for initiation of treatment. This form should be included in the file of each child in the recuperation program.

AUTHORIZATION FOR BEGINNING TREATMENT FOR MALNUTRITION

Name: _____	Age: _____
Identification: ____/____/____/____/____/____/____/____/____/____/	
Diagnosis: _____	
Initial Weight: ____ Kg.	Initial Height: ____ cms.
Date Admitted: ____	Date of Evaluation: ____
_____ Nurse	_____ Medical Official

cc: Project Coordinator

The auxiliary nurse or promoter and the physician will also conduct a clinical evaluation of the child using Form DPC2. The most characteristic signs of malnutrition are listed on this form. As a result of the examination, the associated signs of malnutrition will be identified. This clinical examination should be aimed both at personnel training and education for the families of malnourished children.

Finally, each child entering the nutritional recuperation program should have a blue Health Record filled out. This card is the same as that in the mother's possession (yellow) but is kept in the clinic with all pertinent information.

3.4.1.3 Treatment

Based on the caloric requirements of malnourished children, a dietary supplement has been formulated which should provide approximately 30% of the daily requirements (Table 3.17). This protein-calorie supplement consists of milk + sugar and/or Incaparina + sugar and is provided at the clinic level in each community. The child should be taken to the clinic twice a day by a family member who will be responsible for seeing that the child consumes the supplement. Each visit to the clinic will be utilized for education in nutrition and growth development.

The daily attendance at the clinic and supplement intake will be recorded on a form DPC3 as well as information which will be useful for evaluation of progress. The following information will be included: a) non-attendance

CLINICAL EVALUATION OF MALNOURISHED CHILDREN

Name: _____ Community: _____

Identification: _____ Date of Examination: _____

Date of Birth: _____ Age: _____

Weight: _____ Height: _____

Mark with "1" if the symptom is present and "0" if not present.

Areas	Signals	Auxiliary Nurse	Physician
SKIN	Dry or cold skin		
	Follicular hyperkeratosis		
	Palmar-plantar hyperkeratosis		
	Seborrheic skin		
	Cheilosis		
	Pellagrous skin		
	Light and/or severe peeling		
	Edema feet and ankles, lower limbs, generalized		
	Hair is fine-dry-scarce		
	Diffuse discoloration		
	Hair comes out easily		
MUSCLES	Hypotonicity		
	Hypotrophy		
FACIES	Moon face		
	Old man's face		
PSYCHIC	Apathy		
	Irritability		
	Anorexia		
ADDITIONAL SIGNS	Diarrhea		
	Hepatomegaly (cm. below ribs)		
	Paleness: Light-moderate-severe		
	Fever (temperature in °C)		

Observations:

TABLE 3.17 FORMULAE FOR TREATMENT OF MALNUTRITION CASES

Formula 1: Milk Base

Milk	160 grams	=	678 calories
Sugar	20 grams	=	77 calories
Water e.s.p.	1 liter		
	Total	=	755 calories
	Approximately		23 calories/ ounce

Formula 2: Incaparina

Incaparina	180 grams	=	672 calories
Sugar	40 grams	=	153 calories
Water e.s.p.	1 liter		
	Total	=	825 calories

RECORD OF ATTENDANCE AND INTAKE IN NUTRITIONAL RECUPERATION PROGRAM

NAME	Ident.	Weight	Height	Week	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Supplement	Observations
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	1/2	

by patient, reasons for absence; b) activities carried out by clinic personnel to ensure family cooperation; c) problems in terms of family acceptance of the program; d) appearance of symptoms of treatment intolerance, i.e., nausea, vomiting, diarrhea, allergies, etc.; and e) presence of other diseases and/or treatments during attendance to nutritional recuperation program. Special care should be taken to assure early detection and treatment of any infection in malnourished children.

Some considerations which

should be kept in mind are:

- a) Ideal treatment time is three months. In special cases this may be lengthened or shortened according to physician and nurse's judgment.
- b) The area for distribution of the supplements should be as calm and isolated as possible.
- c) Utensils from the child's home should be used (spoons, glasses, cups) in order to inspire more confidence.
- d) The malnourished child has a high degree of anorexia and irritability and he/she should be treated with considerable patience and kindness. Don't force him/her to consume the supplement.
- e) The psychopathology of malnutrition should be explained to the mother (simply and concisely) in hopes that by understanding the problem she will cooperate more in its solution.
- f) The supplement should not be served too hot nor too cold.
- g) In the case of children under 6 months of age who are nursing, the mother should be given the supplement and education about nursing and nutrition.
- h) Direct participation by the mothers in preparation and distribution of the supplement should be encouraged.
- i) The use of baby bottles is to be avoided.
- j) Dextrolite should be used as an appetite stimulant in cases of severe anorexia.
- k) The water, not the milk should be boiled.

l) When a patient is admitted to the program, socio-economic, dietary and morbidity information should be obtained for the previous six months.

m) A socio-economic study of the family with malnourished children should be conducted in order to identify the most important cause for the malnutrition. In special cases, the delivery of supplements at the family level may be considered.

3.4.1.4 Final Evaluation and Data Flow

The follow up of the case will be carried out by examining the information on attendance and supplement intake, and from biweekly weight and height measures and clinical examination. On his/her biweekly visits to the clinic the physician should review the folders of the malnourished patient.

When the patient has reached an acceptable nutritional status indicated by the weight for height ratio of above 80%, the patient will be discharged from the program and form DPC4 will be filled out.

Once the case is closed, the forms which have been reviewed by the field physician are sent to the Central offices to be punched and subsequently filed by community.

IV. RESULTS: EXPERIENCES TO DATE

In October 1977, the Patulul Project was officially begun in the Department of Suchitepequez, Guatemala. The project covers a population of 7,166 persons residing in 10 coffee plantations whose individual populations vary from 289 to 1398 inhabitants. The project was financed by the Agency for International Development (AID) of the United States and included aspects of curative and preventive medicine, and nutritional interventions aimed at increasing the availability of calories and/or proteins at the family level. The project's experimental design required two years of baseline studies including health care, prior to the beginning of the nutritional interventions. During the first two years, a series of health activities were developed whose results are summarized in this section.

AUTHORIZATION FOR TERMINATION OF TREATMENT OF
MALNOURISHED PATIENT

Name: _____ Age: _____

Identification: _____ Diagnosis: _____

Final Weight: _____ Kg Final Height: _____ cms

Discharge date: _____ Date of Evaluation: _____

Intake and Evolution

	From	To	Month	Weight (kg)	Height (cms)	Attendance (days)	Intake (cc)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Nurse

Medical Official

cc: Program Coordinator

Prior to the initiation of the specific activities of the project, a baseline study was conducted. This consisted of a census, and the collection of economic, social, cultural and demographic data for each family; furthermore, anthropometric information was collected for children under five years of age. The results indicated the existence of high mortality (for example, infant mortality was 160 per 1000), birth (crude birth rate of 50 per thousand), and malnutrition rates (47.5% of children under 5 years of age had less than 75% adequation of weight for age, that is, Gomez II and III).

Based on the information obtained, planning for a simplified health care program utilizing paramedical personnel; i.e., rural health promoters and auxiliary nurses with medical supervision was begun. With cooperation from the plantation owners and managers, members of the community were selected for training as rural health promoters. All the selected personnel was female. Specific manuals had been prepared previously for personnel training and for curative and preventive service delivery. The training of auxiliary nurses was accomplished over a two-month period and they were, in turn, responsible for training the promoters. Training of the latter was carried out on the job so that from the very beginning they learned the nursing skills and techniques necessary for examination, diagnosis and treatment of patients, in each plantation's Health Post.

The guides and manuals such as the Therapeutic Guide, which includes information on the signs, symptoms, and treatment of common diseases in the rural area, which were prepared for this project, were ideal education materials for personnel training. Initially, the personnel was more interested in diagnostic and therapeutic aspects. Once they had "learned to cure", personnel was very receptive to "learn to prevent".

Rigorous quality control was maintained in all aspects of curative medicine. The physician examined a percentage of all patients simultaneously with the auxiliary nurse or promoter, which enabled him to detect errors and retrain personnel. The use of all coded forms was also very useful for quality control procedures.

With regard to preventive medicine, an intense vaccination program was developed which eliminated epidemics such as measles, that had previously affected large segments of the population. The vaccination coverage for measles, DPT and

polio was consistently above 80% in the susceptible groups. Furthermore, routine vaccination of pregnant women with tetanus toxoid was practiced to avoid the risk of neonatal tetanus.

An environmental sanitation program was begun as part of the preventive activities. This included improvement of water supplies and quality, and latrine installation. Bacteriological analyses of water demonstrated that it was highly contaminated in most plantations. Also, studies of the existing systems, revealed that sufficient water was available but the process by which it was conducted, stored and distributed was inappropriate. Given these findings, specific projects utilizing simple models for an adequate, hygienic process were prepared for each plantation. The simplicity and low cost of these projects stimulated the plantation owners to improve water quality. The latrinization program made use of the idea of demonstration projects. Thus, 10% of the population, the most cooperative families, were the first to receive latrines. This 10% learned to utilize the latrines properly and stimulated the other 90% to request unifamily latrines also. The latrines are adequately maintained and used appropriately.

In the maternal care program, early pregnancy detection, prenatal care, determination of delivery risk level and postpartum and perinatal care, were emphasized. The empirical midwives were identified and trained in informal settings. Special emphasis was given to childbirth management and care of the newborn. The midwives were trained to obtain birth weights using a simple scale, and to refer high risk cases. At the clinic level, fetal growth was controlled by means of uterine height and external manipulation was practiced in the third trimester when fetus was in transverse position. Great attention was focused on definition of the risk level of each pregnancy in order to decide the level of care necessary at delivery. Furthermore, breastfeeding was promoted; in cases of failure to breastfeed various methods, including traditional herbal remedies, were used to stimulate milk production and continued nursing.

Infant and preschool child care programs were aimed at early detection of cases of protein-calorie malnutrition. Malnutrition cases with weight for height adequation of less than 80% were treated on an outpatient basis using Incaparina or milk, until adequations above 80% were reached. Anthropometric data was contained in each child's Health Record in which his/her identification, measurements, vaccinations,

diseases and growth and development findings were recorded. It is important to note that in cases where children under 6 months of age were found to be malnourished, the supplement was provided to the nursing mother.

The impact of the Patulul program can be measured in terms of acceptability, impact on morbidity and mortality and side effects.

Acceptability was measured by the number of visits per person per year to the Health Posts in each plantation, which was between 3 and 4. The majority of cases were attended by auxiliary personnel and after the first nine months of the program, of 5,207 patient visits during the July-September, 1978 trimester, 350 (7.6%) were seen by the physician, 1,536 (29.5%) by the auxiliary nurse, and 3,321 (63.8%) were attended by the health promoters. The majority of cases attended by the physician were those referred by paramedical personnel or seen during quality control examinations. It should be noted that not all the promoters had reached the same level of competence given that in some plantations their training began at a later date. It should also be pointed out that some promoters were illiterate and had to be taught to read and write as part of their training.

The program also affected mortality rates. As can be observed in Table 4-1 a notable reduction in infant mortality occurred after the first year of the program's implementation. A lesser reduction is seen for children from 12 to 60 months of age. This reduction is attributable to the program given that no other intervention was instituted in these plantations.

Finally, the program developed in these communities, has had important positive, secondary effects. The success of the simplified health program and the interest on the part of these coffee plantation owners have stimulated private industry to participate in the solution of the health problems of plantation residents. The owners of these plantations have joined together and have attracted new members to form a foundation for the improvement of health and nutrition conditions of these populations. This foundation has excellent possibilities for extending a health program outside of the Patulul area utilizing the simplified model of health care designed for the Patulul plantations. The health program would be funded by plantation owners themselves with community participation. The cost of the program is relatively

Table 6.1-INFANT AND PRESCHOOL MORTALITY IN THE STUDY POPULATION,
BEFORE AND DURING THE PATULUL HEALTH PROJECT

Mortality	Before the Program October 1, 1972 - September 30, 1977	During the Program October 1, 1977 - September 30, 1978
Infant mortality rate per 1,000 (00-11 months)	160	90
Preschool mortality rate per 1,000 (12-60 months)	36	33

low given that it uses paramedical personnel (health promoters) under supervision by auxiliary nurses (one for every 5,000 inhabitants) and a physician (one for every 10,000 inhabitants)

In summary, the field experiences to date, have been valuable in terms of the development of simplified service delivery models which integrate, at the primary level, health recuperation, rehabilitation and promotion. These programs maximize the use of appropriate technologies, community participation and simple criteria for selection of high risk cases.

ANNEX I

HEALTH, NUTRITION, FAMILY PLANNING, AND COMMUNITY PARTICIPATION:
A SIMPLIFIED INTEGRATED APPROACH FOR RURAL AREAS IN LATIN
AMERICAN COUNTRIES*

Health, nutrition, family planning and community participation:
a simplified integrated approach for rural areas in Latin
American countries*

Hernán L. Delgado¹

One of the many problems facing the Ministries of Health of Latin American countries is that of bringing medical and health services to the rural areas. For this purpose, many of these countries are using health and nursing auxiliary personnel, including promoters, traditional birth attendants and health auxiliaries. On the other hand, available information indicates that health problems in rural areas are related to poor socioeconomic conditions of the population. It follows that medical care alone cannot be but a band-aid cure to rural communities. It is therefore considered imperative to complement medical care with health programs which would foster better socioeconomic conditions, thus attacking the real causes of the predominating diseases of developing countries.

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Most Latin American countries have high mortality, morbidity and population growth rates, particularly in the rural areas. In these areas health professionals are scarce, and available para-professional personnel are inadequately trained and under-utilized. Furthermore, funds designated for health purposes are severely limited.

In the past, most governments and private agencies have provided rural health-related services, such as nutrition and family planning, through separate, vertical programs. Recently, governments and international agencies have slowly moved toward integration of nutrition and family planning with other health-related services and community development efforts.

The provision of effective integrated health services for rural areas is not easy and there is considerable debate over the most adequate administration of integrated programs. Although most of the Ministries of Public Health have decided to extend the health, nutrition and family planning services to rural areas in an integrated manner, information concerning the most efficient methods of implementing such programs is presently lacking.

The purposes of the present paper are a) to review the current state of knowledge concerning the interrelationship of health, nutrition, population and community development; b) to examine the present status of nutrition, health and population dynamics in Latin American countries and the recent trends in health statistics and services; and c) to describe a simplified integrated model of health, nutrition and family planning services for rural areas, some of whose components have been extensively tested by our group during the last eight years.

HEALTH, NUTRITION, FERTILITY AND COMMUNITY DEVELOPMENT INTERRELATIONSHIPS

Previous research indicates that the interactions between health, nutrition, fertility and community development are extremely complex. In the following section we will attempt to summarize the major findings to date.

Effects of health and nutrition on fertility

There is considerable observational evidence suggesting that factors such as health and nutritional status affect fertility (4).

It has been reported that the length of postpartum amenorrhea is reduced in mothers with better health and nutritional status (3,7). This would be expected to increase overall fertility. On the other hand, improved nutritional status in a population may lead to longer periods of lactation (6), both because few babies die while being breastfed (33) and because postpartum amenorrhea, the most important component of the birth interval, can be prolonged by lactation and, consequently, reduce the probability of conception (9,20).

Improved prenatal maternal and postnatal child health and nutrition reduces child mortality levels (17,25,31). This can provide motivation for family size limitation (18,49). Some investigators contend that parents in developing countries need or desire a minimum number of surviving children (usually sons) to help them in their work and to provide protection and support in old age. Therefore, it is economically valuable and rational to have a large number of children under high mortality conditions to insure that the desired number will survive. If, however, by means of improved health care and nutrition, a large proportion of children survive to adulthood, parents may no longer need to have larger families. Improved maternal and child health and nutrition increases not only the quantity of surviving children but also their quality, i.e., healthier, more alert and, perhaps, more intelligent children. Prenatal maternal and postnatal child health and nutrition have been shown to contribute to both the physical growth and the intellectual development of a child (7,27). O'Hara (41) postulates that some couples substitute quality of children for quantity.

The effects of fertility on health and nutrition

With an increase in the number of dependent children in a household with a fixed income (especially at the subsistence level), lower per capita intake of food and a higher level of morbidity and mortality is expected. This relationship is not as clear-cut as it might at first appear to be. While Wray (64), Wyon and Gordon (65), and Heady and Heaseman (19) have shown that there is a negative relationship between the nutritional status of a child and the size of his family, prospective studies carried out in South Africa (46) and Nigeria (13) have found no such relationship. If births are not adequately spaced, a mother may stop lactating before a child is completely weaned. This may endanger the nutritional status of the child if adequate foods are not introduced in his diet (24,63). An increased risk of fetal and/or child death following very short birth intervals has also been reported (60,65,66).

Several studies have explored the relationship between fertility and psychological test performance in children. Collectively, the evidence from the literature supports a negative correlation between family size and psychological test performance (42). Chopra (5) explored the relationship between family size and school grades. He found that urban and rural high school students showed a gradual decline in mean intelligence test performance and school grades as family size increased. This is a complex relationship and those studies do not control for social class.

Probably the most elaborate body of data relating to maternal consequences of fertility is that conducted on the grand multipara. Maternal health complications associated with such high parity are: abnormal presentation, toxemia of pregnancy, postpartum hemorrhage, hypertensive cardiovascular disease, hemorrhagic complications, sepsis, nonphysiologic anemia and maternal deaths (22,37,40,44,45).

The relationship of fertility to chronic and acute conditions, apart from obstetric disorders, has received limited research attention. Several morbidity indicators have been found associated with fertility: hypertension (39), diabetes (36), rheumatic arthritis (26) and infectious diseases (12,53). However, these associations disappear when controlling for other factors, and/or there are no adequate physiologic mechanism to explain them.

The effect of socioeconomic development on fertility, health and nutrition

One important component of community development efforts is the upgrading of the population through education. Several authors (2,14,16,48,56) have shown that a woman's fertility is significantly negatively related to the level of education she has attained. In developed countries, however, this association has not always been supported (21,57). Other studies have shown that improvements in maternal education can also lead to better nutrition and lower levels of child mortality (52). It has been reported that the duration of postpartum amenorrhea in low socioeconomic groups is associated with per capita income; mothers from high socioeconomic groups are amenorrheic for shorter periods than mothers from low socioeconomic groups (23,34,55). It has been postulated that better nutritional status and shorter periods of lactation could be responsible for the reduction of the length of postpartum amenorrhea in the high socioeconomic groups.

Increase in per capita income may contribute to a decline in infant mortality and improved nutrition. A decline in infant mortality may, in turn, make it possible for a couple to have fewer children but obtain the same number of surviving children as they would under high mortality conditions. Armstrong (1) Srivastava and Maheshwari (54) have shown that a strong negative relationship exists between infant mortality rate and per capita income.

A relationship between occupation, land owned and/or rented by the family and nutritional status of two and three-year-old children has been reported (58). These authors reported a tendency for the children of skilled workers and merchants to have lower prevalence of malnutrition than those of farmers. Furthermore, they found higher risk of malnutrition for children of families with access to smaller plots of land than for those with access to more land.

Socioeconomic development may also contribute to the improvement of housing and sanitary conditions, which may reduce morbidity and mortality in children. Lower child morbidity contributes to better biological utilization of consumed food by the child, and thus, de facto to improved nutritional status (50).

The effects of improved nutrition and lower fertility on socioeconomic development

Improved nutrition and the reduction in fertility can help to provide some of the basic resources necessary for successful socioeconomic development. The provision of improved nutrition is an investment in the quality of the community's human capital (15), and reductions in fertility offset the drain on other resources that may occur due to rapid population growth.

As recently reviewed by Simmons (51) a reduction in fertility will increase the proportion of the population in the labor force, improve its quality, increase the level of capital formation, and hasten the rate of technical progress.

The interrelationships and their implications for community service programs

Health services alone do not determine human health and nutritional status (35). Some authors have emphasized the improvement of socioeconomic and educational levels of the population as necessary conditions, while others have minimized the effect of medical care on health status (59). Similar

arguments have been presented in regard to the effect of family planning motivation, information and services (47). The essence of the argument is that however extensive and comprehensive the systems of health intervention, they cannot be viewed as ends in themselves. Medical care, for example, treats the symptoms, but not the causes, of illnesses most prevalent in the developing world. Such causes are to be found in substandard economic and social conditions.

Health status, however, is not only an outcome of socioeconomic development but also contributes to it. Improved nutrition and health contribute to improved worker productivity and increased per capita income. Similarly, reduced population growth potentially permits rational and productive investment in human resources and a corresponding growth in per capita income. Consequently, health programs properly form an important component in the larger context of socioeconomic development (61).

Other interrelations may also be postulated. Thus, expenditures on health services may raise fertility and lower mortality, due to the improved health and fecundity of couples. Such inputs, the argument continues, reduce infant and child mortality, thus contributing to a reduction in desired family size, which may be a precondition to any substantial decline in birth rates. These assumptions form the basis for the theory of the epidemiological transition (43). On the other hand, expenditures on family planning may lead to a reduction in the number of births to older women, improved spacing of births, and fewer children, thus improving the nutritional status of mother and children and lowering maternal and infant mortality rates.

In addition, because of its clear and practical utility, health care and its delivery system can be an especially effective vehicle for initiating and organizing programs of broader scope. These programs could have the long-range goals of improving the social and economic conditions which foster physical illness. Medical delivery systems are, therefore, critically important, not only because of their intrinsic value, but also because they form the nucleus for more comprehensive programs of socioeconomic development (8).

In summary, it may be expected that coordinated actions in health, nutrition and family planning will lead to improvements in socioeconomic status. However, it must be pointed out that these integrated programs are no substitute for programs especially directed to socioeconomic development. Health, nutrition and population dynamics do have important consequences for socioeconomic development, but they are only a few among multiple factors.

HEALTH, NUTRITION AND POPULATION DYNAMICS IN LATIN AMERICAN COUNTRIES

Factors characteristic of underdevelopment are manifest in most Latin American countries (Tables 1 and 2). These include low average annual per capita income, large rural populations with disparate land tenancy, semi-subsistence agricultural societies, high levels of illiteracy, almost nonexistent public sanitation, water supply deficient in quantity, quality and availability, poor personal hygiene practices and, in some cases, language and cultural barriers within the population.

As shown in Table 3, the rate of population growth for Latin America was 2.76 per 1,000 during the last five years. The crude death rate was 9.28 per 1,000, and life expectancy at birth was 61.5 years for the period 1970-1975. As shown in this table, there is considerable variability in all indicators among the Latin American countries. This is also the case for other demographic characteristics, such as infant mortality, death rate among children one to four years of age, maternal mortality, age structure of the population, and dependency ratio.

In most Latin American countries, the principal reported causes of death are preventable diseases such as gastrointestinal and respiratory diseases and malnutrition. Vital statistics in most of Latin America are of questionable reliability. In addition to underreporting, particularly in rural areas, most deaths in Latin America occur without sufficient medical attention to accurately determine their specific causes. As shown in Table 4, the causes of most infant and preschool deaths in Latin American countries are preventable by simple techniques, such as vaccines, that have been utilized in developed countries for more than a decade.

Malnutrition and infectious disease tend to occur together and affect each other synergistically. Malnutrition weakens the organism's ability to resist infection, and infection aggravates the effects of malnutrition. We have estimated that approximately 60% of Latin American children under the age of five years suffer some form of malnutrition. The average diet in Latin American countries, particularly in rural areas, is deficient in calories and proteins, especially in animal protein.

In most Latin American countries, medical resources are concentrated in urban areas. Nevertheless, 50% of the population lives in rural areas and has higher levels of mortality

and morbidity than the mean value of the countries. Furthermore, rural areas have considerably less health facilities at their disposal.

In addition to the severe shortage of medical doctors and graduate nurses in rural areas, which is documented in Table 5, paraprofessional personnel (auxiliary nurses, health promoters and midwives) are generally poorly trained and cannot adequately manage some of the most prevalent and basic problems requiring medical attention. The current uneven distribution of professional health personnel and their sporadic visits to rural areas is further complicated by an inadequate communication-transportation infrastructure.

As shown in Table 5 several Latin American countries allocate a very small percentage of the total national budget to health. Moreover, the largest part of the budgets of all health services, both public and private, is consumed by maintenance and administrative costs, or by institutionalized medical attention and custodial health services. These services are only palliative in treating the health problems of Latin America and tend to be concentrated in urban areas. Thus, only a small portion of what is generally a very limited national health budget to begin with is spent on environmental sanitation, infectious disease control, and maternal and child care in rural areas. Nutrition programs are usually restricted to food supplements distributed in maternal and child health care programs and/or through vertical programs. Family planning services are administered by clinics and health posts. In most cases food supplements and contraceptive methods do not reach the population at risk.

TRENDS IN HEALTH STATISTICS

The data previously presented indicate that most Latin American countries suffer from high levels of population growth, mortality, morbidity, and malnutrition. As shown in Table 6, during the last quarter of the century some reduction in mortality, particularly during infancy and childhood, has been experienced by several countries. At the same time, nutrition and health conditions, particularly in rural areas, are changing; improving in some countries while deteriorating in others.

In most Latin American countries the reduction in mortality rates seems to be due principally to the impact of modern medical technology. The utilization of sophisticated technology, international assistance and increased knowledge about disease

cure and prevention has produced in many countries a significant decline in mortality without parallel improvements in the standard of living of the population. This experience is different from that of the developed countries, where the epidemiological transition of health and population (from high mortality and fertility to low mortality and fertility rates) was basically brought about by improvements in living standards, personal hygiene, nutrition, housing, and ecological control of certain diseases. On the contrary, in Latin America, even though modern medical technology has reduced mortality, the underlying causes of disease and death remain. It is clear, for example, that in most rural areas of these countries infections, parasitic diseases and malnutrition continue to be highly prevalent and constitute a decisive factor in the risk of death during the first year of life and beyond. The risk may be even higher during the second year of life, when weaning generally takes place abruptly and results in serious difficulties in child feeding.

Population growth, determined by both birth and death rates, is increasing in most Latin American countries as shown in Table 6. This is due to the decline in mortality and the permanence of high birth rates. The family planning programs have been relatively unsuccessful in bringing down the birth rates in most countries. Increasing population growth, coupled with low levels of social and economic development, will create a higher demand for services in rural areas. Given that national economic resources and priorities of many countries preclude that a larger percentage of the total national budget be allocated to satisfy the present needs of rural areas, and considering that no changes in this situation can be expected in the near future, the Ministries of Public Health will be unable to deal with the expected increased demand from rural areas unless changes in program orientation are made.

Some changes in this direction have been made by Latin American countries. These include the expansion of services to rural areas, the integration of health services, the transition from expensive hospital and medical care services to outpatient and health education and promotion programs and the involvement of the community in initial operational decisions, and subsequent local policy decisions.

TRENDS IN HEALTH SERVICES: EXTENSION AND INTEGRATION OF SERVICES

One of the many problems facing Latin American countries is that of bringing medical and health services to rural, often isolated, areas of a country. As previously indicated, there

exists a high concentration of both physicians and facilities in urban sectors. For the rural ill, this frequently implies a journey to seek medical attention, costly in time, money and effort. At the same time, paraprofessional health personnel, although more numerous than medical doctors and graduate nurses and more evenly distributed throughout rural areas, are ill-prepared to carry out simple and essential medical diagnosis and therapy which could prove essential to health and even to life if applied in a timely fashion.

Recognizing this situation, the majority of Ministries of Health in Latin America have declared one of their major objectives to be the improvement of medical services in rural areas. The Five-Year Health Plan for most of the countries includes among its objectives the extension of health services to rural areas, improved utilization of paramedical personnel and community participation in health planning and action.

Within the five-year plan, priority has been given to the reduction of illness and death due to preventable and reducible diseases, especially communicable diseases, perinatal diseases, and malnutrition. Emphasis has been placed on the most vulnerable age groups of the population: those younger than fifteen years (especially those younger than five years) and pregnant and lactating women. Plans specifically state that medical attention programs must be complemented with health prevention and promotion efforts.

It has been postulated that integrated, horizontal programs of health, nutrition and family planning may have several advantages over vertical delivery systems (62). First, integrated programs have common target groups, common facilities and personnel. The integration of programs would eliminate duplication of efforts, utilize personnel and facilities more efficiently, and reduce the cost per person for each type of service (38).

Second, integrated programs should reach more people than two or more separate vertical programs. Mothers bringing their children into a clinic or being visited by a health worker could also receive nutritional and family planning information. Many of these women would ordinarily be missed in vertical programs. The fact that the health worker is interested in a child's health may make the mother more willing to accept nutritional and family planning information, counseling, and services. Conversely, women coming to a clinic or being visited for family planning services can be screened along with their children for signs of poor nutrition and health. Third, the long-term effect of the integration of services should be the improvement of health

and nutritional status, a decline in fertility and a potential increase in community development. The interaction between health, nutrition, fertility, and socioeconomic development appears to be quite strong.

Proponents of integrated programs argue that when all components are unified into a simple coordinated and multifaceted approach, each component acts synergistically to increase the impact of the other components. The benefits of a combined health, nutrition and family planning program, while obvious for the community as a whole, would be especially important for the health and nutritional status of children under five years of age and for women in the child-bearing years of life.

A SIMPLIFIED INTEGRATED MODEL OF HEALTH, NUTRITION AND FAMILY PLANNING SERVICES FOR RURAL AREAS

Since 1969 the Division of Human Development at the Institute of Nutrition of Central America and Panama has carried out investigations in rural Guatemala, Central America (10,27). In addition to conducting applied research in nutrition, physical growth, and mental development, we have offered simplified health care services to the study populations. Based on these experiences, we have derived a generalized model for intervention programs that utilizes a system of health as a vector for operationalizing an integrated plan of rural development.

In this section, we will describe a simplified integrated model of health, nutrition and family planning services for rural areas that we have developed and portions of which we are currently testing.

General Characteristics of the Model

1. The model has to be implemented in a relatively short period of time, with limited resources.
2. The cost of the program has to be low, both in the initial stages of operation as well as in the subsequent stages of maintenance. It is felt that the simplified integrated model of services will allow for the establishment of a local system which will be self-sufficient to a large extent, depending more on local rather than on national or foreign resources.
3. It has to employ paraprofessional personnel in the majority of its activities. We have encountered no difficulties in utilizing and training such personnel.

4. It has to be a simplified model for simple techniques and procedures allow for the solution of the majority of health problems in rural areas; special attention is being paid to those population groups defined at risk according to established criteria.

5. The community should be charged for these services (though charges should be modest, well within the means of poor rural families and could be used to finance other community development efforts and projects). Our experience has convinced us that free services foster paternalism and hinder the community's active participation in the process of model implementation and action.

6. The incorporation of the community into the health activities, and subsequently into the development activities, has to be one of the most important characteristics on the program. This means that there must be provisions for community direction and control of priorities, procedures and insertion of health services.

Implementation of the Model

As indicated in previous sections, the classical rural health system in most Latin American countries generally consists of a treating physician who periodically visits the health post and an auxiliary nurse permanently stationed at the post. As in the medical system of western nations, which serves as a model for most Latin American countries, the services are primarily concerned with disease, not health. Curative services are provided predominantly by physicians and, although some programs using paraprofessional personnel have developed, their use thus far has been limited.

The model of health, nutrition and family planning that is being proposed is based on the needs and resources of rural areas in Latin American countries. Implementation of this model requires two fundamental stages. The first step includes an intensive diagnosis of specific local needs and available resources, the encouragement of community participation in the definition of needs and selection and training of personnel. The second step is the actual operational implementation of the integrated system.

Diagnosis of local needs, resources and problems is carried out through surveys which will serve as a basis for local planning and a measure of change in the future. The sample survey is designed to provide information on the most important characteristics of the community and the population and its needs and

resources. Data should be collected on: demographic characteristics (total population, age structure of the population, fertility and mortality rates), socioeconomic characteristics (occupation, housing and educational level), health, nutrition and fertility needs (health status of the population to be obtained through a morbidity survey; nutritional status by anthropometric measurement and home dietary surveys; fertility by a simplified and improved knowledge, attitudes and practice survey, KAP), other felt needs of the community and general characteristics of the community and resources (existence of traditional medicine systems, human resources, health posts, water sources, waste disposal systems, access roads, schools, communication systems).

In addition, through informal conversations and other qualitative or ethnographic data gathering techniques, information about the organization of the community, decision making and political processes and communication system within the community will be obtained. Background knowledge of the area will also be obtained by the examination of other available sources of information such as government and ministry publications already available, survey data, published literature, etc.

Before conducting the sample survey, meetings with the local authorities, village leaders and other members of the community are necessary. The leaders of a community usually represent the most important political, religious and social groups but not necessarily the entire community. At these meetings the purpose of the survey and of the project should be explained and the organization of a pro-health committee or groups is advised. These informed groups ideally should participate in all future activities, including the survey, the discussion of the results, and the definition of priorities in accordance with needs, and they should support the operational implementation of the system. As part of their support, the committees have to select the persons who will be trained as health promoters.

In developing the present system it is anticipated that the following personnel will be trained: midwives, health promoters, auxiliary nurses, voluntary personnel and supervisors. Most of the training will be on the job and it will be described later in the paper.

General elements of the integrated model

The general elements of the simplified integrated model of health, nutrition and family planning are:

1. Management of common diseases;
2. Care during pregnancy, delivery and postpartum;
3. Infant and child care;
4. Family planning;
5. Prevention and health promotion.

Implicit in the listing of the elements in the model is the definition of priorities. We consider that in the health sector priorities are to be assigned to the reduction of illness and deaths due to preventable and reducible diseases, specifically communicable diseases, malnutrition, the consequences of unregulated fertility, and to prevention and health promotion. Moreover, emphasis is to be given to the most vulnerable age groups of the population, those younger than five years (especially those younger than three years) and women in reproductive ages (especially pregnant and lactating mothers).

1. Management of common diseases. Common diseases will be treated at the clinic level (health post at the village level) and at home.

The auxiliary nurse will be responsible for providing health care to the majority of the population at the health post. As such, the auxiliary nurse will represent a valuable substitute for physicians in rural areas, but under no circumstances will totally replace the physician. In order to perform his/her functions, the auxiliary nurse will be trained utilizing a simplified therapeutic guide. The therapeutic guide describes the history, symptoms, signs and treatment of illness most common in rural areas. Each auxiliary nurse will receive a weekly supervisory visit from a graduated nurse or physician. On each supervisory visit the auxiliary nurse and the supervisor will independently record the history of a sample of patients, symptoms and signs, issue a diagnosis and indicate the treatment. In order to control for quality of medical care, comparison between forms completed by the auxiliary nurse and those completed by the supervisor will be made. The percentage of error greater than 5% in one sample (of approximately 10% of monthly cases) indicates the need to retrain the auxiliary nurse. Retraining in this system means that the auxiliary nurse has to study carefully the therapeutic guide and that the supervisor will spend more time guiding and assisting this auxiliary nurse. Each of the supervisory visits represents not only new and refresher

education for the auxiliary in the application of the therapeutic guide, but also an appraisal of the quality of the information collected by the auxiliary and of cases properly referred by the auxiliary.

The health promoter will be responsible for providing health care at home. Initially the promoter will treat simple cases (such as mild respiratory infections, simple diarrhea and dehydration which can be treated by oral hydration), following an even more simplified therapeutic guide. The promoters will also be taught to distinguish those illnesses which they can treat from those which should be referred to the health post to be treated by the auxiliary nurse. Based on their individual learning capabilities, promoters will be trained by the auxiliary nurse in the treatment of increasingly complex cases.

In order to perform their functions, the health promoters will conduct daily home visits. These individuals will spend at least 50% of their time in the field. Each of the health promoters will be responsible for a sector of the community (of approximately 100 families each) and will visit a different portion, or subsector, daily. In addition, promoters will conduct daily visits to selected families in other subsectors, who are responsible for informing them about new cases of illness in that subsector. The promoter will also make follow-up visits to persons who have been treated for illness. The supervisor of the health promoter is the auxiliary nurse. She will review the information collected by the health promoter, will treat the cases referred to her and will visit a sample of houses previously visited by the promoter to control for quality of health care. This supervising system will be a constant feature of the model.

This portion of the model has been tested during the last years by our group. We have found that well-trained and supervised auxiliary nurses and health promoters can adequately treat a high percentage of the patients they see. Specifically, we have found that auxiliary nurses, using physician's criteria, can treat adequately over 95% of the cases. Moreover, they can accurately refer those cases they are unable to treat. In addition, we have found high levels of acceptance and enthusiasm on the part of rural villages for this type of treatment. The number of visits to the clinic per patient per year in several study villages is over four, a number beyond that normally encountered in programs based entirely on patient decision.

2. Care during pregnancy, delivery and postpartum. The personnel responsible for providing health care during pregnancy,

delivery and postpartum will be the auxiliary nurse at the clinic level and the health promoters and midwives at home. Where traditional midwives exist, these should be integrated into the model. This model should not be repressive or competitive with the traditional health system but cooperate with it.

The type of care that we are proposing is based on the early detection of pregnancy, the utilization of the high-risk approach and the education of women of reproductive ages. The early detection of pregnancy and the categorization of individuals and groups according to levels of risk will significantly improve the coverage and efficiency of the program. When pregnancy is suspected, either by the health promoter or the midwife, the woman is referred to the health post where the auxiliary nurse will confirm or disconfirm the pregnancy. The auxiliary will then categorize a positive case as a low, middle or high risk pregnant woman. In addition, the information collected will permit the auxiliary nurse to suggest where the delivery should take place (i.e., home or hospital).

In order to categorize the case, she will utilize a set of risk factors that will be taught to all auxiliary nurses. These high risk factors are: a) by history: mothers under 16 and over 35 years of age; elderly primiparae; unmarried women; complicated reproductive history (abortions; stillbirths; pre-matures, abnormals; history of long, obstructed labors); high parity; closely spaced pregnancies; history of high infant and child mortality within the family and some socioeconomic characteristics of the family; b) by physical examination: anthropometric measurement of the mother (low height, small head and/or arm circumference); pelvic deformities; abnormal relation of uterine height and gestational age; undernutrition; hypertension; edema; albuminuria; vomiting; anemia (by examination of the conjunctiva); diabetes, etc.

High-risk cases will be carefully monitored at the health post. Middle and low-risk cases will be followed up by the health promoter and midwife, who will be trained in the detection of complications during pregnancy, i.e., vomiting, persisting headache, edema, convulsions, hemorrhage, etc. These cases will be referred to the health post.

In addition, a second examination of initially low-risk cases will be conducted by the auxiliary nurse during the third trimester of pregnancy to screen for high-risk during delivery.

The midwives will be responsible for assisting the majority of deliveries at home. They will be trained in the detection

of complication during delivery and postpartum (i.e., premature rupture of membranes, prolonged labor, abnormal presentations, retention of the placenta, infections, etc.) that should be referred to the clinic.

3. Infant and child care. Infant and child care will be provided by the auxiliary nurse at the clinic level and by the health promoter at home. As in the case of maternal care, infant and child care will be strongly based on the utilization of the high-risk approach. In addition, a program of immunization and health education is contemplated. In order to identify children at risk, the promoter will be trained in the use of simple indicators which are sufficiently sensitive to establish which children require greater attention, from the point of view of health and illness as well as nutrition. In the course of their weekly visits to houses, and based on anthropometric measurements (arm circumference, height and weight where possible) and on information of morbidity of the child during the last week, the health promoters will treat or refer the cases to the clinic. The promoter will be trained to recognize the higher risk of dying of an infant with diarrhea, with blood and mucus in his stools for more than three days, with vomiting, fever and multiple deposition as compared to that of a simple diarrhea.

Similarly, he will be able to identify and treat or refer to the clinic acute cases of malnutrition. At the clinic level, the high-risk cases will be treated by the auxiliary nurse and the health promoter responsible of the case, with appropriate foods and medicines. In addition, the nature of the disease and its treatment will be explained to the mother in order to have her participate in follow-up maintenance of treatment and learn from the experience the resolution of the case.

4. Family planning. Provision of family planning services will include education, treatment of infertility and motivation for the use of contraceptives to limit family size and to space children (particularly in high-risk cases), provision of contraceptive services and follow-up of users. The contraceptive methods that will be available include promotion of breast-feeding, instruction in the rhythm method, condoms, vaginal foam tablets, diaphragms and spermicidal creams, oral contraceptives, intra-uterine contraceptive devices, male and female sterilization. Advantages and disadvantages of the various methods will be discussed with potential users, and no pressure tactics or incentives will be used. All these family-planning methods will be provided at the clinic level and at home. In order to supplement home contacts, group meetings of both men and women will

be organized to discuss various aspects of family planning and welfare.

5. Prevention. Leavell and Clark's (30) description of the application of preventive measures distinguished three levels: primary, secondary and tertiary prevention. Health promotion and specific protection constitute the phases of primary prevention; secondary prevention comprises the early diagnosis, treatments and disability limitation, while rehabilitation is the focus of tertiary prevention. Primary prevention is the focus of our program and it will be achieved in several ways: personal health services, environmental control measures and promotion.

Personal health services include two main activities: the immunization against communicable diseases and the identification of high-risk cases. It is now widely recognized that children need to be immunized against tuberculosis, diphtheria, pertussis, tetanus, measles and poliomyelitis, and mothers during pregnancy need immunization against tetanus to avoid tetanus neonatorum. The effectiveness of these immunizations can hardly be questioned. However, it is equally clear that in rural areas of Latin America relatively little use has been made of immunizing agents. In our program, high coverage and continuity can be obtained through the weekly home visits of the health promoter.

The second activity under consideration is the selection of high-risk cases. Some of the indicators we have in mind have been previously described. Among the measurements that we have developed and used as risk factors in our studies are anthropometric measurements of the mother and a housing scale as a measure of the socioeconomic condition of the family.

We have found that mothers of low birthweight babies are typically small in stature and head circumference and their houses tend to be of poor quality. We have validated the capacity of these factors to predict low birthweight babies through a food supplementation intervention. It was found that the probability of high-risk mothers having a low birthweight baby is reduced by caloric supplementation during pregnancy to values similar to those observed in the low-risk group of mothers. Furthermore, the probability of low-risk mother having a low birthweight baby was not affected by food supplementation during pregnancy (11,31). Clearly, these indicators can predict risk, and the level of risk can be affected by simple interventions. These indicators do not require expensive resources

in terms of personnel and equipment, can be reliably assessed at the field level and are easily interpreted.

Environmental control measures constitute another way in which primary prevention will be achieved in our program. The World Health Organization (WHO) considers that the provision of a safe and convenient water supply is the simple most important step that can be taken to improve the health of children in rural areas. Safe water for drinking and for better personal and household hygiene can significantly reduce the incidence of gastrointestinal diseases. In addition to the provision of water, there is need of a major educational effort for promoting proper water utilization. Also planned is community education to ensure proper disposal of human and garbage waste. Latrines and garbage pits constitute cheap and practical ways of solving the problem. We consider that the use of safe water, household latrines and community garbage pits constitute important elements among those basic services necessary for the improvement of standards of living.

The success of environmental control programs requires the community to play an active role. Our conception of community involvement demands that the population be kept well informed, participating in the decision-making process, and contributing human and material resources. Community participation in all preventive and protective measures is viewed as a key factor that will guarantee that the population will accept and use the services.

Health promotion, the third important method of primary prevention, has recently received a good deal of attention from health professionals. Health promotion is aimed at informing, influencing and assisting both individual and groups so that they will accept more responsibility and be more active in matters affecting health (28). Based on this definition, Lauzon (29) stated that health promotion means much more than the concept of health education. Most health education in the past has relied on knowledge transfer to achieve change in behavior, and most has been unsuccessful.

Lauzon proposed a health promotion paradigm that attempts to consolidate past and present health-related influence strategies into a taxonomy of health promotion activities. We will follow his presentation as a guideline for describing the activities to be developed in our simplified model. In his epidemiological approach to health promotion, Lauzon distinguishes three types of health promotion activities: host-oriented, agent-oriented and environment-oriented activities.

Our program will focus on the host-oriented health promotion activities which aim to make the host more resistant by modifying factors that influence health and illness. These activities include instruction, education and behavior modification, persuasion, proselytizing, screening and counselling:

a) Instruction will be given to the health personnel, pro-health committee members and voluntary personnel in terms of some health-risk factors, in order to change some harmful habits and to stimulate the development of practices which safeguard health.

b) Education will be given to the entire community and will be aimed at achieving changes in behavior. This will be done by the implementation of educational programs that will follow the principles of social learning theory. The theory implies that modification of behavior will be obtained through stimulation, participant modelling and reinforcement.

Programs based on this model are increasing in the health education field. The focus of our educational programs will be on environmental sanitation and hygiene, infection diseases and nutritional problems. Our experience in the area of health education is somewhat limited, though we have had success in terms of knowledge transfer through the use of educational films followed by a clear discussion of the message by a local health promoter or a member of the pro-health committee in our pilot project. Clearly, education should be given in native languages and material should be appropriate for rural population.

c) Persuasion refers to the utilization of messages intended to encourage target behaviors. In our program, persuasion will be an important component of the promotional effort to organized subgroups of the population, such as religion groups, social groups, local authorities, school students, etc.

d) Proselytizing is expected to occur as a result of the instruction and involvement of the health promoters, pro-health committee members, voluntary groups and health team and their interaction with the community.

e) Among the host-oriented health promotion activities, the identification of groups of population at different levels of risk through screening has had the greatest success. As explained previously, the risk approach takes into consideration the fact that within our apparently homogenous population, there are groups of individuals who may be at higher risk for some factors than others. The high risk population, i.e., mothers with malnourished

children, usually are more attentive and receptive to information and have a higher motivation to change behavior than the healthy groups. In our program, the high-risk population will be identified in order to direct more appropriate messages to them.

f) Finally, counseling, defined as the personal guidance of any individual, will be done at the clinic level and at home, in the context of the periodic visit of patient to the clinic.

Personnel and Attributions

In developing the system we have described, the following personnel will be trained and employed: midwives, promoters, auxiliary nurse and supervisor. Their functions have been described in previous sections, and a summary of the functions is presented in Table 7. However, a few remarks on training and supervision are needed.

The midwives will be organized and trained by project personnel. Practical midwives exist in all rural areas of Latin America. Some have received some training in relation to assistance at childbirth, though the majority have not. Our aim will be to encourage midwives to participate in local on-the-job training programs designed to supplement the skills they already possess (which are frequently considerable and appropriate). Their beneficial traditional roles will be also expanded to include such tasks as communicating and reinforcing basic notions of family planning, nutrition and hygiene. It should be emphasized that we believe that these practical midwives represent a respected and valuable community health resource which it is our aim to incorporate into our program and upgrade, rather than suppress and/or supplant. Training and supervision of midwives will be the responsibility of the auxiliary nurse.

The health promoters form the nucleus around which the system is designed to operate. For this reason, it is essential that the selection of candidates for these posts be made in complete cooperation and accord with the community pro-health committee. The candidates for these positions will be from the target communities, literate and possessing a respectable and responsible community reputation. Since initial emphasis is on the population at highest risk, i.e., mothers and children, the promoters should probably be female. However, the system has to remain flexible in the sense that should there be socio-cultural reasons for employing some male promoters, this can be accomplished.

Because the promoters are members of the target communities selected by the pro-health committees and trained and supervised by the auxiliary nurses, they form the basis for an open system of communication among all groups on an individual basis. Further, as their level of competence increases through experience, we envision that they can serve in other capacities, particularly in rural development programs.

In our experience one health promoter can perform her job working 50% time per day (4 hours). She will receive a monthly scholarship that represents approximately the amount that she is not earning by foregoing her normal activities. We consider that the concept of scholarship -and not salary- is important for the future socioeconomic development programs. Furthermore, we believe that in later phases of the program the health committee should support health promoter services through community health service user payments or with earnings of cooperatives organized within the community.

The role of auxiliary nurses proposed for the model is a common one in all Latin American countries. Auxiliary nurses hired will be retrained and made qualified to render health assistance in areas where no physician is available. Basically, they will study a manual of operation which consists of a series of instructions about all services to be provided and a therapeutic guide. Formal training takes about three months and can be done in the context of the regular clinic activities. Each of the activities of the auxiliary nurse consists of an extension of the work performed by the health promoter at the home level. The auxiliary nurse will be responsible for instructing and supervising the promoters and midwives in their duties. She will also maintain permanent relations with the pro-health committees and the rural communities.

The auxiliary nurse will be in charge of the health post. As part of her duties she will also participate in periodical assessments of the health condition of the community and the planning of community health services which are based on these assessments. She will also be responsible for preparing monthly reports of health post activities, and of charging for health services. In addition, she will participate in the pro-health committee, and solicit necessary equipment and material for the health post. Finally, the auxiliary nurse will be the person responsible for organizing activities of the community related to rural development. The auxiliary nurse will, therefore, be instructed in all other possible services that can be offered to the community in order to promote socioeconomic development.

In our experience, one auxiliary nurse can provide services and education to approximately 1,000 families during the phase of implementation of the model. The total population to be covered by an auxiliary could be increased depending on the response of the community and the capabilities of the health promoters and midwives.

The supervisor in our model will be a physician or a nurse who is previously experienced in public health work in rural areas. The supervisor will be responsible for the compliance of health measures in accordance with norms established for each program, and will be responsible for supervision, instruction and orientation of all the health personnel, and will ensure the continuity of services at all levels. Furthermore, the supervisor will be responsible for the programming of health activities and will participate in health evaluation.

Finally, throughout the development of this project the formation of voluntary groups will be encouraged to perform some specific activities related to health such as preventive programs, environmental health programs and first-aid education. At present there are teachers in elementary schools in rural areas who have the motivation and in some cases have been trained to engage in these activities. The integration of these and other voluntary groups will be encouraged in the context of specific programs.

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Table 1. Statistics in Latin American countries - Socioeconomic indicators (1970)^a

Country	Education		Rurality	Employment and income						
	Adjusted school enrollment ratio ^b		Adult literacy rate(%)	National self-perception of rural population(%)	Total labor force ^c (Thousand)	% of labor force in agriculture	Unemployed %	Dependency ratio ^d	% of national income received	
	Primary	Secondary							by lowest 20%	by high 5%
Argentina ^e	105	44	93	21	8.900	15	5.0	1.1	5	21
Bolivia	96	13	38	71	2.300	66	16.0	1.0	4	36
Brazil	130	27	68	44	29.600	44	2.4	1.6	5	27
Chile	119	29	90	24	3.000	21	7.1	1.6	5	30
Colombia	95	21	74	45	6.200	41	7.0	1.7	4	33
Costa Rica	112	29	89	64	540	43	4.0	1.7	5	23
Cuba	-	-	-	47	-	-	-	-	-	-
Dominican Rep.,	107	19	51	60	1.073	55	14.0	1.9	5	26
Ecuador	95	24	68	62	1.900	54	-	1.8	3	42
El Salvador	90	18	58	61	1.090	47	10.0	1.6	4	20
Guatemala	59	12	47	66	1.600	63	-	1.9	-	-
Haiti	40	4	20	81	2.800	80	-	1.0	-	-
Honduras	91	10	52	74	800	65	8.0	1.5	3	29
Mexico	104	23	84	42	13.000	40	4.0	2.0	4	36
Nicaragua	80	13	57	52	540	51	16.0	2.1	-	-
Panama	110	42	82	52	500	39	7.0	1.5	3	33
Paraguay	93	17	79	64	580	53	-	2.0	4	30
Peru	115	41	72	40	4.300	45	5.0	1.5	2	34
Uruguay	118	56	91	16	1.100	17	8.0	1.0	4	21
Venezuela	82	33	77	25	3.300	22	6.0	1.8	2	40

^a Source: Wilkie, J. W. and Reich, P. (Eds.). Statistical Abstract of Latin America. Volume 18, Los Angeles, UCLA, 1977.

^b Gross enrollment of all ages in primary and secondary school as percentage of population in primary and secondary school age.

^c Includes armed forces and unemployed, excluding housewives, student and other inactive groups.

^d Population under 15 and over 65 years of age, divided by labor force in age groups 15-64 years.

^e Percentage of private income (in cash and kind) received by poorest 20% and the richest 5% of households.

Table 2. Statistics in Latin American countries - Housing and facilities^a

Country	Housing ^a		Sewage disposal systems (1973)		Water supply-piped water (1973)		
	Average number of persons in households	Persons per room	Urban population %	Rural population %	Urban population %	Rural population %	
Argentina	3.8	(1970)	1.4	36	—	78	20
Bolivia	—	—	—	23	3	75	5
Brazil	4.8	(1970)	—	20	3	77	30
Chile	4.2	(1970)	1.4	40	5	94	8
Colombia	5.8	(1964)	—	64	35	89	34
Costa Rica	5.7	(1963)	1.4	40	—	100	66
Cuba	4.5	(1970)	1.2	40	3	85	5
Dominican Rep.	5.0	(1960)	2.0	19	—	80	19
Ecuador	5.1	(1962)	2.5	58	1	65	9
El Salvador	5.4	(1971)	3.1	37	0	85	35
Guatemala	5.2	(1964)	2.6	—	—	87	2
Haiti	—	—	—	—	—	45	2
Honduras	5.7	(1961)	2.4	46	0	97	12
Mexico	4.9	(1970)	2.5	48	0	73	36
Nicaragua	6.1	(1963)	—	22	—	100	11
Panama	4.7	(1960)	—	71	1	100	51
Paraguay	5.4	(1962)	2.6	16	—	36	6
Peru	4.9	(1961)	2.3	55	0	37	10
Uruguay	3.8	(1963)	1.5	51	46	96	31
Venezuela	5.3	(1961)	1.5	47	4	88	42

^a Source: Wilkie, J. W. and Reich, P. (Eds.). Statistical Abstract of Latin America. Volume 18. Los Angeles, UCLA, 1977.

Table 3. Statistics in Latin American countries - Demographic indicators^a

Country	Total popula- tion	Popula- tion growth rate	Density (per km ²)	Birth rate	Death rate	Life ex- pectancy at birth	Population by age group in 1975			Infant mortality	Child mortality 0 - 5 years		Maternal mortality		
	1975 (Thousand)	1970-75	1975	1970-75	1970-75	1970-75	0 - 4	15 - 64	65 & over	Per thousand	Year	Per thousand	Year	Per thousand	Year
Argentina	25,384	1.3	9.1	21.8	8.8	68.2	28.5	63.6	7.9	53.9	(1967)	11.4	(1967)	15.9	(1968)
Bolivia	5,410	2.5	4.9	43.7	18.0	46.8	43.0	54.1	2.9	77.3	(1966)	-		-	
Brazil	109,730	2.8	12.8	37.1	8.8	61.4	42.0	54.8	3.2	-		22.2	(1962)	-	
Chile	10,621	1.8	14.0	25.9	8.1	64.4	36.3	59.0	4.7	86.5	(1970)	18.2	(1969)	15.7	(1971)
Colombia	25,890	3.2	22.8	40.6	8.8	60.9	45.7	51.5	2.8	91.3	(1969)	23.9	(1967)	18.8	(1971)
Costa Rica	1,994	2.8	39.3	33.4	5.9	68.2	42.2	54.5	3.3	61.5	(1970)	12.6	(1971)	9.2	(1972)
Cuba	9,528	2.1	83.2	29.0	5.9	72.3	38.0	55.6	6.4	38.4	(1970)	9.7	(1965)	5.2	(1972)
Dominican Rep.	5,118	3.3	105.0	45.8	11.0	57.8	48.0	49.4	2.6	50.1	(1970)	16.8	(1970)	9.9	(1971)
Ecuador	7,090	3.2	25.1	41.8	9.5	59.6	46.0	51.2	2.8	76.6	(1970)	26.5	(1970)	20.3	(1971)
El Salvador	4,108	3.1	192.0	42.2	11.1	57.8	46.5	50.3	3.2	66.6	(1970)	25.8	(1970)	11.7	(1972)
Guatemala	6,129	2.9	56.3	42.8	13.7	52.9	44.2	53.0	2.8	87.1	(1970)	47.6	(1969)	15.9	(1971)
Haiti	5,888	2.5	211.8	42.0	17.2	47.5	42.9	54.1	3.0	-		-		-	
Honduras	3,037	3.5	27.2	49.3	14.6	53.5	46.9	50.3	2.8	33.2	(1970)	15.6	(1970)	20.1	(1972)
Mexico	59,204	3.2	30.0	42.0	8.6	63.2	45.9	50.6	3.5	68.5	(1970)	23.2	(1971)	13.0	(1972)
Nicaragua	2,318	3.2	17.9	48.3	13.9	52.9	48.4	49.2	2.4	45.3	(1969)	17.5	(1966)	16.4	(1969)
Panama	1,676	2.8	22.2	36.1	7.1	66.5	42.8	53.4	3.8	40.5	(1970)	14.2	(1971)	11.1	(1972)
Paraguay	2,628	3.1	6.4	42.2	8.6	61.6	47.3	50.0	2.7	35.6	(1970)	23.4	(1967)	-	
Peru	15,326	2.9	11.8	41.0	11.9	55.7	44.1	53.0	2.9	-		21.8	(1967)	21.5	(1970)
Uruguay	3,060	1.2	16.4	20.8	9.2	70.1	27.9	63.1	9.0	42.6	(1970)	11.9	(1967)	8.4	(1971)
Venezuela	12,213	2.9	13.4	36.1	7.0	64.7	44.4	52.5	3.1	49.3	(1970)	13.1	(1967)	9.7	(1972)

^a Source: Wilkie, J.W. and Reich, P. (Eds.). Statistical Abstract of Latin America. Volume 18. Los Angeles, UCLA, 1977.

Table 4. Statistics in Latin American countries - Child mortality^a and malnutrition^b

Country	Deaths of children under 5 years old by principal causes								Malnutrition under 5 years old ^c				
	Date	Total Rate per 100,000	Childhood diseases		Gastritis, enteri- tis, etc.		Influenza and pneumonia		Normal		I	II	III
			Rate	%	Rate	%	Rate	%	Date	%	%	%	%
Argentina	1967	1,145	442	38.6	148.1	12.9	131	11.4	-	-	-	-	-
Bolivia	1965	--	-	30.3	-	5.4	-	2.1	1966-69	60.1	29.0	10.2	0.7
Brazil	1962	2,219	607	27.3	388	17.5	263	11.9	1968	31.7	48.4	17.2	2.7
Chile	1969	1,824	155	8.5	-	-	632	34.6	1975	82.2	13.7	3.2	0.9
Colombia	1967	2,398	507	21.1	540	22.6	262	10.9	1966	33.4	45.6	19.3	1.7
Costa Rica	1971	1,257	436	45.1	132	13.6	131	13.5	1966	42.6	43.7	12.2	1.5
Cuba	1965	968	-	-	-	-	-	-	-	-	-	-	-
Dominican Rep.	1970	1,680	301	18.0	329	19.6	58	3.5	1969	25.0	49.0	23.0	4.0
Ecuador	1970	2,649	-	-	349	13.2	290	11.0	1965-69	60.3	28.9	9.6	1.2
El Salvador	1970	2,585	-	-	-	-	-	-	1965	25.5	48.5	22.9	3.1
Guatemala	1969	4,760	216	4.5	1,214	25.5	919	19.3	1965	18.6	49.0	26.5	5.9
Haiti	-	--	-	-	-	-	-	-	1975	17.8	28.9	35.6	17.4
Honduras	1970	1,561	43	2.8	328	21.0	132	8.5	1966	27.5	43.0	27.2	2.3
Mexico	1971	2,318	-	-	584	25.2	570	24.6	-	-	-	-	-
Nicaragua	1966	1,754	445	25.3	411	23.4	103	5.9	1966	43.2	41.8	13.2	1.8
Panama	1971	1,423	98	6.9	171	12.0	180	12.7	1967	39.3	48.8	10.8	1.1
Paraguay	1967	2,340	752	32.1	454	19.4	287	12.3	1973	93.2	4.9	2.2	0.7
Peru	1967	2,176	511	23.5	259	11.9	457	21.0	1965-71	56.0	32.8	10.9	0.8
Uruguay	1967	1,186	623	52.5	109	9.2	89	7.5	-	-	-	-	-
Venezuela	1967	1,308	349	26.7	190	14.5	108	8.2	1974	51.1	35.3	12.2	1.4

^a Source: Wilkie, J.W. and Reich, P. (Eds.). Statistical Abstract of Latin America. Volume 18
Los Angeles, UCLA, 1977.

^b Source: Boletín de la Oficina Sanitaria Panamericana. 80(6): 505, 1976.

^c Gómez. Classification

Table 5. Statistics in Latin American countries - Health resources^a

Country	Central Government tax revenue as a % of GDP	% total Central Government expenditure		Population per physician 1968 - 1971	Physician and rate		
		Education	Housing		Year	Capital and rest of major cities in the country	Per thousand inhabitants
	1971	1971	1971				
Argentina	5.7	16.3	5.8	521	1971	2.5 ^b	1.3
Bolivia	7.5	16.8	5.8	2.174	1970	1.4 ^b	0.3
Brazil	10.2	6.5	0.5	1.918	-	-	-
Chile	20.9	18.6	7.9	1.803	1970	0.7 ^c	0.3
Colombia	9.3	16.5	8.1	2.341	1970	1.2 ^b	0.2
Costa Rica	12.0	25.4	2.9	1.804	1969	1.2 ^a	0.3
Cuba	-	-	-	1.123	-	-	-
Dominican Rep	15.6	15.0	11.0	2.247	-	-	-
Ecuador	10.3	22.5	3.5	2.928	1970	0.7 ^c	0.2
El Salvador	10.4	31.3	12.1	5.101	1972	1.4 ^c	0.1
Guatemala	7.3	18.3	12.3	4.498	1971	1.5	-
Haiti	5.4	11.3	15.9	15.750	1969	0.6 ^d	-
Honduras	10.8	21.3	8.7	4.085	1971	1.2 ^d	0.2
Mexico	7.9	24.3	5.0	1.726	1968	2.3 ^e	0.3
Nicaragua	8.6	18.0	4.0	2.014	1972	1.7	0.5
Panama	12.9	22.7	9.2	1.616	1972	1.9	0.3
Paraguay	9.6	14.4	5.0	1.811	1968	1.0 ^d	0.6
Peru	14.4	20.7	6.6	1.917	1972	1.8 ^d	0.3
Uruguay	12.4	26.0	5.7	1.032	1967	1.6 ^d	0.4
Venezuela	15.8	18.3	9.9	1.115	1972	2.2 ^c	0.7

^a Source: Wilkie, J. W. and Reich, P. (Eds.). Statistical Abstract of Latin America, Volume 18. Los Angeles, UCLA, 1977.

^b Source: Cities of more than 100,000 inhabitants.

^c Department or provinces which contain the capital and large cities.

^d Capital city.

^e Cities of more than 500,000 inhabitants.

Table 6. Statistics in Latin American countries - Health and demographic trends^a

Country	<u>Infant mortality rate</u>		<u>Crude death rate</u>		<u>Population growth rate</u>	
	1950-54	1970-74	1950-54	1970-74	1950-54	1970-74
Argentina	64.9	-	8.8	8.8	2.1	1.3
Bolivia	98.8	-	14.9	18.0	2.0	2.5
Brazil	107.3	-	13.8	8.8	3.0	2.8
Chile	128.1	69.8	12.5	8.1	2.4	1.8
Colombia	113.3	62.8	13.2	8.8	3.1	3.2
Costa Rica	87.1	50.8	11.5	5.9	3.7	2.8
Cuba	-	26.1	9.2	5.9	2.1	2.1
Dominican Rep.	79.7	45.8	9.3	11.0	3.0	3.3
Ecuador	111.4	76.6	16.3	9.5	2.8	3.2
El Salvador	81.8	57.9	15.4	11.1	2.5	3.1
Guatemala	100.1	81.6	21.5	13.7	2.7	2.9
Haiti	-	-	-	17.2	2.0	2.5
Honduras	65.4	38.0	11.6	14.6	2.6	3.5
Mexico	91.5	57.9	15.1	8.6	2.9	3.2
Nicaragua	76.7	45.4	10.1	13.9	2.7	3.2
Panama	56.2	35.7	8.8	7.1	2.9	2.8
Paraguay	-	34.0	13.4	8.6	2.6	3.1
Peru	99.9	65.1	12.5	11.9	2.0	2.9
Uruguay	53.9	43.5	8.5	9.2	1.5	1.2
Venezuela	75.0	50.2	10.3	7.0	4.0	2.9

^a Source: Wilkie, J.W. and Reich, P. (Eds.). Statistical Abstract of Latin America. Volume 18. Los Angeles, UCLA, 1977.

Table 7. Type of personnel per level of care and kind of services.

Level of care	Personnel	Services rendered
Home	<ul style="list-style-type: none"> -Family head -Midwives -Health promoter 	<ul style="list-style-type: none"> -Health education and promotion -Simplified maternal and child care -Family planning -Prevention and treatment of mild morbidity -Early detection of high risk populations -First aid and referrals -Data collection
Health post	<ul style="list-style-type: none"> -Auxiliary nurse -Supervisor 	<ul style="list-style-type: none"> -Medical care -Maternal and child care -Family planning -Health education and promotion -Preventive measures -Rehabilitation and referrals
Health post Health center	<ul style="list-style-type: none"> -Supervisor 	<ul style="list-style-type: none"> -Curative and preventive care -Rehabilitation and referrals

SUMMARY

The factors that determine illness and health are multiple and interrelated. It is clear that the health status of the population depends more on socioeconomic conditions than on health services. The most important health benefits to be sought from socioeconomic development in rural areas are satisfaction of the basic needs of people: adequate nutrition, health, adequate sanitation and education. Better nutrition and environmental sanitation, occurring as a consequence of development, can result in better health even without the benefits of modern medicine.

However, socioeconomic changes are not likely to evolve quickly enough to prevent the exaggerated mortality and morbidity due to poor sanitation and hygiene, limited education and minimal economic resources of the great majority of the population in developing countries.

In the meantime, simplified integrated public health programs with community participation can do much to respond to health needs and to promote socioeconomic development. Health planning must be viewed as integrally related to socioeconomic development and its objectives must be not only to achieve better health but also to stimulate the achievement of optimum development and well-being of the population.

ANNEX II

POPULATION AND HOUSING CENSUS-SURVEY AND
SIMPLIFIED CENSUS

ANNEX II POPULATION AND HOUSING CENSUS-SURVEY AND SIMPLIFIED CENSUS

One of the most important aspects to be taken into consideration in health projects is the size of the population to be covered as well as a general description of its socio-economic and cultural characteristics. Also of interest is the information on the population's dynamics, i.e., migrations, births, deaths, etc.

In the Simplified Health Care Program this information is collected by means of a census-survey of the population or by a simplified census. This information serves as the basis for the definition of the population to be covered, for planning of activities and home visits, and as base line data for future evaluation. Both data collection forms will be presented below.

1. Baseline Census-Survey

Information about the total community population, family resources, and demographic, economic and socio-cultural data at the family level, are collected using the form described below.

1.1 Instructions for use of the Baseline Census-Survey form. Description of questions.

COLUMN	INFORMATION
1-3	<u>Identification of the form</u>
4-6	<u>Card number.</u> Cards # 000, 001 and 101 to 125 are used for this form. General data about identification of the community, family, informant, date of interview, etc., are included in card 000. Cards 101 to 125 are used for identification and specific data for the subjects composing the nuclear family. Card 001 includes information on housing, environmental sanitation and personal belongings.
7-8	<u>Community identification.</u> In these columns the study population is identified.
9-11	<u>Family identification.</u> A sequential numeration system is used for nuclear families in accordance with the numeration of the dwellings. A nuclear family is the direct family group composed of parents, unmarried children and any other single person who is part of the household but not necessarily a family member who depends on the nuclear family or participates in their economic life and lives with them. Single pregnant women or those with children are not included.

COLUMN	INFORMATION
12-13	<p>Extended families are all those nuclear families within these communities who share the same dwelling.</p> <p>This initial identification should be maintained and new families (resulting from immigration, marriage or separations) will be given the corresponding number in sequence.</p> <p><u>Identification of informant.</u> The identification code for each subject is based on family relationship and is determined as follows:</p> <ul style="list-style-type: none"> 01 Male family head 02 Female family head 03-20 Children of both 21-30 Children of 01 but not of 02 (only when they form part of nuclear family) 31-45 Children of 02 but not of 01 (all, whether part of nuclear family or not) 46-50 Nieces and nephews of 01 forming part of nuclear family 51-60 Nieces and nephews of 02 who form part of the nuclear family 61-70 Grandchildren who depend on and live with nuclear family 71-73 Adopted children 74 Daughter-in-law 75 Son-in-law 76 Sister-in-law 77 Brother-in-law 78 Spouse's sibling's spouse ("Concuño") 79-80 Godchild 81 01's father 82 01's mother 83 02's father 84 02's mother 85 01's grandparents 86 02's grandparents 87 01's siblings 88 02's siblings 89-90 Other family members who form part of nuclear family, i.e., uncles, aunts, cousins 91 "Compadre" (godchild's parent) 92-97 Others - not family 98 Servant
14	<p><u>Informant's sex</u></p> <ul style="list-style-type: none"> 1 = Male 2 = Female

COLUMN	INFORMATION
16-21	<u>Date of interview.</u> Day (16-17), Month (18-19), Year (20-21)
22-23	<u>Room number.</u> For use when different families live in separate rooms within one building.
24-26	<u>House number</u>
27	<u>Marital status of heads of household.</u> 1 = Single - without children 2 = Single - no formal union 3 = Single parent 4 = Parent without union 5 = Common-law union 6 = Married 7 = Separated or divorced 8 = Widowed
28	<u>Ethnic group.</u> According to interviewer's judgement. 1 = Indian 2 = Ladino (local non-indian) 3 = Other
29-30	<u>Religion</u> of 02 (29) and of 01 (30). 1 = Catholic 2 = Protestant (any evangelical sect) 3 = Others
31-32	Number of pregnancies
33-34	Number of live children
35-36	Number of dead children
37	Number of stillbirths
38-39	Number of persons in family
40-41	Number of persons in dwelling
42	Pregnant, nursing, not pregnant nor nursing, pregnant and nursing
43	Family planning
44	Relation of family head with extended family
46	Income code
72	Interviewer's code
CARDS '101 TO 125 Data of Nuclear Family Members	
1-11	<u>Identification.</u> Same as card 000. Each card is for one member of nuclear family.

COLUMN	INFORMATION
12-13	<p><u>Identification of subject.</u> Use code based on family relationship. Information for all nuclear family members should be obtained in the following order:</p> <ol style="list-style-type: none"> 1) Male head of household, if there is one be he present or absent. 2) Female head of family. 3) All information on children of both, from oldest to youngest, whether part of nuclear family or not. 4) All 02's children even though of different fathers. Those children who are outside the community studying, on vacation, etc., but are dependent on parents are classified as temporarily emigrated. Those who are economically independent and live outside the community, are permanently emigrated. 5) The information on children of the father only is recorded next. This applies only to those children who are present and form part of the nuclear family. 6) Information on directly dependent grandchildren living with nuclear family. 7) Information on 01's and/or 02's parents or in-laws who are alone and are directly dependent on nuclear family. 8) Information on any other family member. 9) Information on non-family dependents living with nuclear family.
14	<p><u>Sex</u></p> <p>1 = Male 2 = Female</p>
15	<p><u>Present Status</u></p> <p>1 = Present. All members of the family who are living in the house at the time of the interview. Spouses who, although outside the community, maintain harmonious marital relations both by periodic visits and direct family responsibility are also considered to be present.</p> <p>This does not apply to family members who have set up residence outside of the nuclear family household.</p> <p>2 = Dead. Only applies to children of 01 and 02, or only of 02.</p> <p>3 = In house, but separate family. Those children of both parents or just the mother who live in the same house but form part of another nuclear family (that is, are part of the extended family).</p>

COLUMN	INFORMATION
	<p>4 = Outside of the house, in the community. Applies to children of both parents or just the mother, who live in another house as part of another family, i.e., as grandchild or head of another nuclear family.</p> <p>5 = Temporarily out of the community. Applies to children of both or only of mother, who are outside of the community as temporary immigrants for work, school, illness, etc., for a month or more.</p> <p>6 = Stillbirths. All children of both parents or just the mother, who were born dead after 28 weeks of pregnancy. The mother should be questioned to determine the duration of pregnancy and if the child lived for even a few minutes to discard the possibility of abortion or death.</p> <p>7 = Definite emigrant. Applies to children of both parents or only the mother who reside outside of the community and have an independent life.</p>
16-21	<p><u>Date of birth.</u> Day (16-27), Month (18-19), Year (20-21), of birth of each member of nuclear family present and all children of both parent or only the mother including live, dead and stillborn children. To verify dates ask to see identification card or birth certificate.</p> <p>In cases where the informant does not remember dates, the interviewer must use a variety of techniques to aid the informant's memory, i.e., investigate other birthdates, age differences, age when began living with husband, age at birth of first child, ages of all children, etc. Also another visit can be scheduled to give the informant time to look into dates or to interview another family member.</p>
22	<p><u>Verified age.</u> When papers such as identification card, birth or baptismal certificate are seen, the date is considered to be verified. If these are not available the interviewer must evaluate the reliability of the response.</p>
23-28	<p><u>Date of emigration, immigration or death.</u> These columns should be filled in based on the information which appears in column 15, present status. If the person is present and has never left the community as temporary or permanent emigrant, the birthdate should be</p>

COLUMN	INFORMATION
<p>29</p> <p>30-31</p> <p>32-33</p>	<p>repeated. If the person was born in the community and is present, but has lived outside of the community, the date of most recent immigration should be recorded. If not born in the community, date of arrival should be recorded. If born outside the community in a hospital, or if the mother emigrated for the child's birth, the place of birth and date of return to community should be reported regardless of the time spent outside. If any child of both spouses or of the mother only was reported in col. 15 as dead, the date should be recorded. If the child was stillborn, the date of birth should be repeated here.</p> <p><u>Reads and writes.</u> This applies to all family member who are present, and all children of both spouses or the mother only and to those who are absent or dead.</p> <p>Code 0 applies to those over 7 years of age who cannot read or write and for those under 7 years and dead persons.</p> <p>The informant will be asked about all family members.</p> <p><u>Principal occupation and</u></p> <p><u>secondary occupation.</u></p> <p>These apply only to persons 10 years of age or older. In the case of children and women who only work in household and non-remunerated tasks the code 00 should be used. The principal occupation is that which the informant declares as such.</p>
<p style="text-align: center;">CARD 001 Housing Characteristics</p>	
<p>1-21</p> <p>22</p> <p>23</p> <p>24</p> <p>25-26</p> <p>27</p> <p>28</p> <p>29</p>	<p>Same as card 000</p> <p><u>Owns site.</u> Site is understood to be the land occupied by the dwelling other than small interior patios or areas which cannot be used for planting fruits, vegetables, etc.</p> <p>Type of dwelling</p> <p>Ownership of dwelling</p> <p>Number of rooms</p> <p>Dwelling characteristics - floor</p> <p>Dwelling characteristics - roof</p> <p>Dwelling characteristics - walls</p>

COLUMN	INFORMATION
30	Location of kitchen
31	Cooking facility
32	Electricity
33	Sanitation installations
34	Drainage
35	Water supply
36-48	List of durable goods
	0 = No
	1 = Yes

2. Simplified Baseline Census

A family form used for population studies can facilitate collection of information prior to the initiation of health projects. This form is also useful for updating the census of projects in progress. The form is described below.

COLUMN	INFORMATION
1-3	<u>Form identification</u>
4	<u>Interviewer's identification</u>
5	<u>Card code</u>
	1 = Insertion. Persons who enter the baseline census or who immigrate into the community later.
	2 = Real change. Utilized for census updating to indicate a change of status, for example, from live to dead.
	3 = Correction. Change due to error in original census.
7-11	<u>Identification of town and family</u>
12-13	<u>Identification of subject</u>
14	<u>Sex</u>
	1 = Male
	2 = Female
15	<u>Change</u> . This column is used to indicate specific changes for specific family members. The following alternatives can be coded.

COLUMN	INFORMATION
	0 = Present 1 = Birth 2 = Immigration 3 = Movement within community 4 = Change in marital status 5 = Temporary emigrant 6 = Dead 7 = Stillbirth or abortion 8 = New family 9 = Permanent emigrant
16-21	<u>Date of change.</u> Day (16-17), Month (18-19), and Year (20-21).
22-27	<u>Birthdate</u>
28-31	<u>Place of origin or destination,</u> for immigrants or emigrants.
32-34	<u>Family number</u>
35-36	<u>Position in family</u>
37-38	<u>Room number</u>
39-41	<u>House number</u>
42	<u>Verification of birthdate.</u> Refers to reliability of birthdate information. 1 = Unreliable information 2 = Reliable information 3 = Verified information
43	<u>Marital status</u> 1 = Single, no children 2 = Single, no formal union 3 = Single parent 4 = Parent, no formal union 5 = Consensually united 6 = Married 7 = Separated or divorced 8 = Widowed
44	<u>Maternal code</u> 0 = Probable pregnancy 1 = Pregnant 2 = Nursing 3 = Not pregnant nor breastfeeding 4 = Pregnant and breastfeeding 5 = Probable abortion

COLUMNS	INFORMATION
45 46 47-76	Type of worker Correction of birth date Complete last and first names

Table 2.1

Family name _____ Place _____																					
Form No. <u>1A6</u> (1-2-3)	Card No. <u>010</u> (4-5-6)	Town Identi. <u>_____</u> (7-8)	Sex <u>_____</u> (9-10-11)	Inf. age <u>_____</u> (12-13)	Date of interview <u>_____</u> (14)	Known No <u>_____</u> (15-17) (18-19) (20-21)	Hours <u>_____</u> (22-23)	Marital status household head <u>_____</u> (24-25)	Ethnic group <u>_____</u> (26)	Religion <u>_____</u> (27)											
Religion No. <u>_____</u> (28)	No. pregnancies <u>_____</u> (29-31)	No. live children <u>_____</u> (32-34)	No. dead children <u>_____</u> (35-36)	No. stillbirths <u>_____</u> (37)	No. persons in family <u>_____</u> (38-41)	In dwelling <u>_____</u> (42-43)	Mrs. is pregnant <u>_____</u> (44)	Family planning <u>_____</u> (45)	Religion of family head with head of extended family <u>_____</u> (46-48)	Income code <u>_____</u> (49)											
Marital Status 1. Single, no children 2. Single, no formal union 3. Single mother 4. Mother without stable union 5. Unwed 6. Married 7. Separate or divorced 8. Widowed		Ethnic Group 1. Indian 2. Ladino 3. Mestizo 4. Other 5. Other, specify _____ Family Planning 0. Haven't decided yet 1. Has and does use 2. Has used but doesn't use 3. Haven't used but does use		Religion 1. Catholic 2. Protestant 3. Other, specify _____ Pregnant or Nursing 0. Not preg nor nursing 1. Yes, not confirmed 2. Confirmed 3. Nursing 4. Pregnant and nursing		Sex 1. Male 2. Female		Actual State 1. Present 2. Dead 3. In house hold forming another family 4. Outside of household living in community 5. Outside of community		Verified age 1. Not reliable 2. Reliable 3. Paper		Birth place origin destination 1. Place 2. Hamlet 3. Village 4. Municipal seat		Reads and writes 0. No 1. A little or with difficulty 2. Yes		Special awards 0. No 1. Yes		Principal and present occupations Separate code Identification family and subject Same as census Separate code		Interviewer <u>_____</u> (50)	

Card number	Subject	NAME			Present status	Birth date			Verified age	Date of emig. leaving or death			Grades Passed	For persons over 10 years			Children 0 to 59 months						OBSERVATIONS				
		1st Last Name	2nd Last Name	Usual Name		Day	Month	Year		Day	Month	Year		Principal Occup.	Secondary Occup.	Field of work occupation description	Weight (kg)	Height (cm)	Arm circumference								
4-5-6	12-13	14				15	16-17	18-19	20-21	22	23-24	25-26	27-28	29	30-31	32-33		34-35	36	37	38	39	40	41	42	43	
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OBSERVATIONS: _____

- 2 -

Column	Code	Information
4-5-6	001	Card
22		Dwelling characteristics Ownership of site 0. doesn't exist 1. No 2. Yes 3. Others
23		Type of Dwelling 1. Improvised dwelling 2. Hut 3. Semi-formal dwelling 4. Formal dwelling 5. Others
24		Ownership of dwelling 1. Staying with neighbor 2. Servant 3. Staying with relatives 4. Renting 5. Provided for use 6. Amortized 7. Owner 8. Other (specify)
25-26		No. of rooms
27		Floor 1. Dirt 2. Brick or clay 3. Cement 4. Tile 5. Wood 6. Other
28		Roof 1. Straw or similar 2. Roof tile 3. Tin 4. Cement 5. Other
29		Walls 1. Cane or similar 2. Simple mud or cane 3. Covered mud and cane 4. Simple adobe 5. Adobe with stucco 6. Wood 7. Brick or clinder 8. Other

Column	Code	Information	Observations
30		Location of kitchen 1. In sleeping area 2. In separate place 3. Part of house 4. Other	
31		Cooking facilities 1. On floor 2. Above low wood stove 3. Inf. high wood stove 4. Low adobe stove 5. High adobe stove 6. Formal stove 7. Other	
32		Electric light in dwelling 0. No 1. Yes	
33		Sanitary installation 1. Absent 2. Latrine 3. Septic tank 4. Toilet 5. Other	
34		Drainage System 1. Above ground 2. Cess pool 3. Plumbing 4. Other	
35		Water supply 1. River, lake, or spring 2. Public fountain 3. Well at home 4. Public plumbing system 5. Other	
36		Household Goods	0. No 1. Yes
37		Radio	
38		Record player	
39		Television	
40		Bicycle	
41		Motorcycle	
42		Automobile	
43		Sewing Machine	
44		Refrigerator	
45		Hand mill	
46		Well	
47		Pig	
48		Cattle	
49		Sheep/goats	

FORM No. CD 1
(1-3)
TOWN IDENTIFICATION.

FORM No. CD 1
(1-3)
TOWN IDENTIFICATION

INTERVIEWER

DATE OF BIRTH

Name of Town

<u>COL. (5)</u>		<u>COL. (15)</u>		<u>COL. (43)</u>		<u>COL. (44)</u>		<u>COL. (45)</u>			
1 - First input		0 - Present		7 - Stillborn		1 - Single no children		0 - Probable		1 - Volunteer	
2 - Change		1 - Birth		8 - New family		2 - Single, no formal relationship		1 - Pregnant		2 - Permanent Laborer	
3 - Correction		2 - Immigration		9 - Permanent emigrant		3 - Single parent		2 - Nursing		3 - Office Worker	
<u>COL. (6)</u>		3 - Change of Dwelling		<u>COL. (42)</u>		4 - Single parent, no stable relationship		3 - Not pregnant nor nursing		<u>COL. (46)</u>	
1 - Within the sample		4 - Marital Status		1 - Unreliable information		5 - United		4 - Probable abortion		1 - Correction	
2 - Outside the sample		5 - Temporary emigrant		2 - Reliable		6 - Married		9 - Does not apply		Blank - No correction	
		6 - Death		3 - Verified		7 - Separated					
						8 - Widower					
						9 - Does not apply					

ANNEX III

GUIDE FOR PHYSICAL EXAMINATION

ANNEX III: GUIDE FOR PHYSICAL EXAMINATION

AREA	PROCEDURE	NORMAL FINDINGS	ABNORMALITIES	OBSERVATIONS
Body Measurements	<u>Height</u> Children under 75 cm. are measured using infantometer (lying down); larger children and adults are measured standing up.	A growth curve exists with normal heights by age group and sex.	Deviations from normal growth curve.	Height depends on environmental factors such as nutrition and disease. Height is a good indicator of chronic nutritional status.
	<u>Weight</u> Small children (less than 15 kg) are weighed on an infant scale. All others and adults are weighed on an adult scale.	A weight curve exists with normal weight by age group and sex.	Deviations from normal weight curve.	Weight indicates present and past nutrition. It is very useful in order to detect cases of malnutrition when height information is not available. Insufficient weight indicates malnutrition; excess weight indicates obesity.
	<u>Weight/Height Relationship</u> Detected by plotting data on a weight for height graph.	Adequate when between 90%-110% curves.	Treatment is indicated when below 80% curve.	Indicates acute protein-calorie malnutrition; that is, the child is malnourished at the time of the examination.

The Physical Examination Guide continues in this same fashion detailing the examination procedures to be carried out by the paramedical personnel.

ANNEX IV

SIMPLIFIED THERAPEUTIC GUIDE

SIMPLIFIED THERAPEUTIC GUIDE

PATULUL PROJECT

HUMAN DEVELOPMENT DIVISION

(INCAP)

Prepared by:
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tion, Inc., Canada.

Code	Disease
<hr/>	
01	Respiratory System
<hr/>	
0101	Upper respiratory infection
0102	Acute bacterial pharyngeal - tonsillitis
0105	Bronchial asthma
0106	Lower Respiratory infection
<hr/>	
02	Digestive System
<hr/>	
0201	Dental caries
0202	Dental abscess
0203	Herpes simplex
0204	Oral moniliases
0205	Gastritis
0206	Mild diarrhea
0207	Ascariasis
0208	Shigella
0209	Amebiasis
0212	Nausea and vomiting
0214	Intermittent abdominal colico
0215	Trichuriasis
0216	Uncinariasis
0217	Taeniasis
0218	Flatulence
0219	Moderate diarrhea
0220	Severe diarrhea
<hr/>	

(Continued)

Code	Disease
03 Eyes, Ears, Nose	
0301	Hordeolum
0302	Acute purulent conjunctivitis
0303	Otitis externa
0304	Foreign body in nose or ears
0305	Acute otitis media
0306	Sinusitis
0307	Conjunctivitis (irritation or allergic)
04 Genitourinary System	
0401	Urinary infection
0404	Primary amenorrhea
0405	Secondary amenorrhea
0406	Menstrual problems
0407	Prolapse of uterus, bladder or urethra
0409	Syphilis
0411	Mastitis (Infection of mammary gland)
05 Skin Diseases	
0502	Superficial, uninfected wound
0503	Infected wound
0505	Abscess
0506	Impetigo

(Continued)

Code	Disease
05	Skin Diseases
0507	Sarcoptiosis
0509	Diaper rash
0510	Superficial micosis
0511	Verruca (warts)
0512	Allergies
06	Nutritional Diseases
0601	Anemia
0602	Kwashiorkor
0603	Nutritional Marasmus
0604	Kwashiorkor-Marasmus
07	Neurological Problems
0701	Emotional Tension
0703	Convulsions (Epilepsy)
08	Communicable and Tropical Diseases
0801	Measles
0802	Rubella (German measles)
0803	Varicella (Chicken pox)

(Continued)

Code	Disease
08	Communicable and Tropical Diseases
0804	Mumps
0805	Whooping cough
0808	Salmonella
0809	Pulmonary tuberculosis
0811	Onchocercosis
0812	Malaria
0813	Herpes simple
09	Pain
0901	Non-specific pains
10	Hemorrhage
1003	Epitaxis (Nose bleeds)
17	Gyneco-obstetrical problems
1701	Simple vomiting
1702	Severe vomiting in pregnancy
1703	Incomplete abortion
1704	Incomplete abortion with placental retention
1705	Infected abortion

(Continued)

Code	Disease
17	Gyneco-obstetrical problems
1706	Pre-eclampsia
1707	Threatened premature delivery
1708	Placenta previa
1709	Detached placenta
1711	Twins (Multiple pregnancy)
1712	Intrauterine fetal death
1713	Premature rupture of membranes
1714	Transverse presentation
1715	Breech presentation
1716	Placental retention
1717	Postpartum hemorrhage
1718	Postpartum infection
1719	Malnutrition in pregnancy
1720	Retarded fetal growth
1721	Fever in pregnancy
1722	Threatened abortion
18	Newborns
1801	Low birth weight
1802	Respiratory difficulties in the newborn
1803	Infections in newborns
19	Emergencies
1903	Fractures

(Continued)

Code	Disease
19 Emergencies	
1904	Bites
1905	Fevers
1907	Shock
1908	First degree burns
1909	Second degree burns
1910	Third degree burns
1911	Mild dehydration
1912	Moderate dehydration
1901	Severe dehydration

01. RESPIRATORY SYSTEM (Example)

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
Nasal discharge, sneezing, fever, head and body aches, sore throat, general malaise, anorexia. Ocassionally accompanied by cough, vomiting and eye irritation. (In cases of acure bronchitis cough is frequent).	Examine mouth, nose and auscultate lungs. Nasal mucus, redness and congestion are commonly encountered on examination. Generally the lymph glands in the neck area are enlarged and painful. Mild fever: The following vital signs should be recorded: Oral temperature, pulse.	<u>Upper Respiratory Infection</u> Code: 0101 (Includes a series of infections which affect the upper respiratory tract including bronchial passages).	1) Drink abundant liquids, i.e., lemonade, orangeade, etc. 2) <u>Aspirin</u> : 1 tablet po every 4 to 6 hours x 2 days when fever is present. 3) In case of gastritis give <u>Acetominophen</u> 1 tablet po every 4 to 6 hours x 2 days instead of Aspirin. 4) When cough is present give <u>Expectorant</u> 1 teaspoon every 4 to 6 hours for 3 days.	1) Drink abundant liquids. 2) <u>Aspirin</u> : according to weight for 2 days in case of fever 3) <u>Cough syrup</u> : 1/2 to 1 teaspoon every 4 to 6 hours x 3 days in case of cough.	Upper respiratory infections can become complicated. The most frequent complications are: lower respiratory infections, otitis, sinusitis and pharyngeal-tonsillitis.

The remaining segments of this section of the therapeutic guide are similar to this example.

02. GASTROINTESTINAL SYSTEM

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
Pain in one or several teeth which becomes more severe when eating especially when consuming very hot or very cold foods.	Cavities in teeth or molars.	<u>Dental Caries</u> Code: 0201	1) <u>Aspirin or Acetaminophen.</u> One tablet every 4 hours x 2 days. 2) Refer to dental paramedic.	1) <u>Aspirin</u> according to weight every 4 or 6 hours x 2 days. 2) Refer to dental paramedic.	Explain the origin of the problem, the treatment of the same and how to prevent future problems to the patient.

The remaining segments of this section of the therapeutic guide are similar to this example.

03. EYES, EARS AND NOSE

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
History of burning sensation, redness and lacrimation of one or both eyes and purulent secretion.	Eyes with purulent secretion, red, swollen conjunctivas.	<u>Acute Purulent Conjunctivitis</u> Code: 0302	1) Clean affected eye. 2) <u>Paraxin ophthalmic ointment</u> Apply to affected eye every 8 hours for 3 days.	Same as for adults.	Some cases of very severe conjunctivitis which do not improve with the indicated treatment may be treated with Procaine Penicillin or Erithromycin.

The remaining segment of this section of the Therapeutic Guide are similar to this example.

04. GENITOURINARY SYSTEM

History	Physical Exam.	Diagnosis	Treatment	Observations
The patient generally complains of genital hernias. These usually appear several days after childbirth and are due to traumas from the same.	A mass is found in the genital area which increases when the patient strains as if to defecate.	<u>Prolapse of uterus</u> <u>bladder and/or</u> <u>urethra</u> Code: 0407	Surgery is indicated in all cases.	

The remaining segments of this Section of the Therapeutic Guide are similar to this example.

05. SKIN

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
Generally the mother brings child to the clinic due to burn-like lesions in the genital area. Usually seen in children under one year of age due to irritation caused by the child's urine and feces. <u>Make note of duration.</u>	Reddish lesions similar to those of first degree burns in the genital area. Skin fold areas are unaffected. Note physical findings.	<u>Ammoniacal Dermatitis</u> Code: 0509		1) Change diaper every time child urinates. 2) Avoid using plastic pants. 3) <u>Lassars ointment</u> : Apply 4 times a day to affected area. 4) If no improvement is noted, refer to physician.	Explain the cause of the disease to the mother.

The remaining segments of this section of the Therapeutic Guide are similar to this example.

06. NUTRITIONAL

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adults	Children	
History of poor food intake or a disease causing loss of appetite (diarrhea). Swelling of lower limbs occurs, patient is depressed, inactive, loss of appetite, restless, irritable. Most frequent in children from 1-3 years of age.	Edema (swelling in lower limbs or generalized). Skin changes: a) depigmentation b) peeling Burn-like skin lesions.	<u>Kwashiorkor</u> Code: 0602	1) Refer to physician.	1) See protocol for diagnosis and treatment of mal-nourished children	Explain the origin, evolution and prognosis of the disease to the mother.

The remaining segments of this section of the Therapeutic Guide are similar to this example.

07. NEUROLOGICAL PROBLEMS

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
<p>There is generally a history of personal problems which may manifest themselves in many ways:</p> <p>a) Nervousness</p> <p>b) Insomnia</p> <p>c) Loss of appetite.</p>	Headaches, dizziness, and stomach pains may exist.	<p><u>Nervous Tension</u></p> <p>Code: 0701</p>	<p>Investigate causes.</p> <p>1) <u>Meprobamate</u></p> <p>1 tablet po every 8 hours x 2 days.</p> <p>Do not use during pregnancy.</p>		Always investigate cause and try to help solve underlying problems.

The remaining segments of this section of the Therapeutic Guide are similar to this example.

08. COMMUNICABLE AND TROPICAL DISEASES

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
Patient usually complains of mouth lesions which make eating difficult. The lesions often appear during or after illness with fever.	Difficulty in eating, ulcers in the throat or mouth, pain, fever.	<u>Herpes Simple</u> Code: 0813	1) Liquid diet for 2 days. 2) <u>Aspirin</u> 1 tablet po every 4 hours for 2 days. 3) <u>Gentian Violet</u> Apply to lesions TID.	1) Same as #1 Adults. 2) <u>Aspirin</u> according to weight, po every 6 hours x 2 days 3) Same as #3 adults.	Refer to physician if lesions appear in eyes or other parts of the body.

The remaining segments of this section of the Therapeutic Guide are similar to this example.

09. PAINS

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adults	Children	
<p>Patient generally relates a history of non-specific pains which may be in the back, head, legs, etc.</p> <p>May be associated with emotional tensions.</p>	<p>Pain on palpation. Normal blood pressure. No other signs or symptoms.</p>	<p><u>Non-Specific Pain</u></p> <p>Code: 0901</p>	<p>1) Detailed physical examination.</p> <p>2) <u>Aspirin or Acetaminophen</u> 1 tablet po every 6 hours x 2 days.</p> <p>3) If no improvement is noted refer to physician.</p>	<p>1) Same as #1 adults.</p> <p>2) <u>Aspirin</u> according to weight, po every 6 hours x 2 days.</p> <p>3) Same as #3 adults.</p>	<p><u>Acetaminophen</u> only in cases of gastritis.</p>

The remaining portions of this section of the Therapeutic Guide are similar to this example.

10. HEMORRHAGES

History	Physical Exam.	Diagnosis	Treatment		Observations
			Adult	Children	
The patient presents hemorrhage from nose related to cold symptoms or due to trauma-tism or coagulation problems. Investigate duration and frequency.	Bleeding from nose. May also detect fever and red eyes.	<u>Epistaxis</u> (Nose bleeds) Code: 1003	1) Sit patient down and tilt head backwards. 2) If possible place ice pack over nose. 3) External compression and pack nostril(s) with cotton soaked in hydrogen peroxide. 4) If no improvement is observed refer to physician.	Same as for adults.	Explain the causes of the problem and the prognosis to the mother or patient. If he/she has a history of epistaxis refer to physician. If hemorrhage is profuse take pulse and blood pressure reading. Administer fluids if necessary. (See treatment for shock).

The remaining segments of this section of the Therapeutic Guide are similar to this example.

17. GYNECO-OBSTETRICAL PROBLEMS

History	Physical Exam.	Diagnosis	Treatment	Observations
Patient in first trimester of pregnancy. Complains of nausea, loss of appetite, dizziness and vomiting - these symptoms are most frequent in the morning.	Good general conditions. Size corresponds to amenorrhea.	<u>Simple Vomiting</u> (Morning Sickness) Code: 1701	1) Frequent liquid and food consumption in small quantities. 2) <u>Nauseol</u> : 1 tablet po every 6 to 8 hours x 2 days.	

The remaining segments of this section of the Therapeutic Guide are similar to this example.

18. NEWBORNS

History	Physical Exam.	Diagnosis	Treatment	Observations
<p>This problem is common in rural areas and may be attributed to:</p> <p>1) Maternal malnutrition.</p> <p>2) The child is born prematurely.</p>	<p>Newborn with birthweight equal to or below 2.5 kg. (5.5 pounds).</p>	<p><u>Low birthweight</u></p> <p>Code: 1801</p>	<p>1) Refer to physician.</p>	

The remaining segments of this section of the Therapeutic Guide are similar to this example.

19. EMERGENCIES

History	Physical Exam.	Diagnosis	Treatment		Observation
			Adult	Children	
History of falling. Children are most commonly affected. Make note of duration of the problem.	Swelling, deformity, pain, contusions. Make note of location of fracture.	<u>Fractures</u> Code: 1903	1) Immobilize area (splints). 2) Do not massage or pull on affected area. 3) <u>Aspirin</u> 1 tablet po every 4 hours x 2 days. 4) In case of excessive pain, <u>Lisalgil</u> : 5cc i.m. single dose or every 8 hours. 5) Refer to hospital for X-ray and cast.	1) Same as #1 adults. 2) Same as #2 adults. 3) <u>Aspirin</u> : according to weight, po every 6 hours x 2 days. 4) <u>Lisalgil</u> : In case of excessive pain, 1cc. i.m. every 8 hours (Maximum: 2 doses)	Explain prognosis to mother or patient. Do not use <u>Lisalgil</u> in children under one year of age.

The remaining segments of this section of the Therapeutic Guide are similar to this example.

A N N E X V

RECORD OF OUTPATIENT CLINIC VISITS

ANNEX V RECORD OF OUTPATIENT CLINIC VISITS

1. JUSTIFICATION

The Division of Human Development provides simplified medical care services to various populations in the Department of Suchi-tepéquez, Guatemala. This attention is given by auxiliary personnel, nurses and promoters. Previous experience shows that this type of personnel is capable of adequately attending a large proportion of the patients who visit the clinic and that the Simplified Medical Care Program is extremely effective in reducing mortality and morbidity rates.

Curative Health Care at the health post level is one of the activities carried out by this health personnel. In order to improve the Program and to maintain an adequate follow-up of the cases seen in the clinics, correct recording of the information is important.

The instructions for recording Outpatient Clinic visits are outlined below. This form, CE2, is the modification of one used previously (CE1) and facilitates information collection and symptoms with a reported frequency of above 1% and those of greater diagnostic importance were included in the new form.

The CE2 collects information which:

- 1) Faithfully records the motives for patient visits, and patient examination findings.
- 2) Is capable of being standardized
- 3) Can be modified if the analysis of the information collected warrants it.

2. Outpatient Clinic Visit Records Form (CE2)

2.1 General Norms

The form's heading contains spaces for the patient's name and identification, age and code, the examiner's identification, and the date (year) of the examination.

-In the first horizontal line the day and month of the visit are recorded. All information from a given visit will be recorded in the corresponding vertical column.

-In the second horizontal line it is recorded whether the patient's visit is a first visit, a re-examination, or a combination of the two.

A first visit is one in which the patient visits the clinic for the first time for a specific symptom.

.A re-examination is when the patient makes a repeat visit to the clinic for a specific symptom, and: 1) the symptom has not disappeared since the previous visit; 2) has disappeared for less than two days. For example: if a patient visited the clinic reporting symptoms of diarrhea on January 13 and again on January 18 and the diarrhea continued from the 13th till the 18th or disappeared for only one or two days, the visit is considered a re-examination. If, however, the patient complained of diarrhea on the 13th which disappeared on the 14th and began again on the 17th, the visit on the 18th is considered a first visit.

.A combined visit is one in which the patient has a new problem as well as one, that has been continuous since the last visit. A different code is used for each of these. 01 stands for a first visit; 02 for a re-examination and 03 for a combined visit.

-The following codes are used to specify the person responsible for the patient examination:

- 01 = Auxiliary nurse only
- 02 = Auxiliary nurse with physician observing
- 03 = Auxiliary nurse with physician's help
- 04 = Physician only
- 05 = Health promoter only
- 06 = Health promoter and auxiliary nurse
- 07 = Health promoter and physician
- 08 = Health promoter, auxiliary nurse and physician

The remaining columns are organized in terms of systems with the specific signs and symptoms described below. The major divisions are:

- 01 = Respiratory symptoms
- 02 = Digestive symptoms
- 03 = Eye, ear, nose and throat symptoms
- 04 = Genito-urinary symptoms
- 05 = Wounds, skin and hair
- 06 = Nutritional symptoms
- 07 = Neurological (eliminated in CE2)
- 08 = Communicable diseases
- 09 = Pains
- 10 = Hemorrhages (eliminated in CE2)
- 11 = Severity
- 12 = Responses to disease
- 13 = Other factors
- 14 = Factors affecting the mother
- 15 = Vital signs
- 16 = Diagnosis

-A series of specific symptoms are included in each of these divisions.

-The form is used for a trimester and every 3 months the completed form is sent to INCAP for card punching.

If six or more patient visits occur in one three-month period, a new form will be begun and marked with a number 2 in Column 5.

These forms are filled out in duplicate so that a copy can be kept in the Health Post.

-The goal of this form is the detection of symptoms and severity.

-The information for the majority of symptoms is recorded by marking the appropriate space.

For example, if a patient visits the clinic on February 3, for the first time, is examined by the Auxiliary Nurse and the motive for the visit is lacrimation, nasal obstruction and hoarseness, the form should be filled out as follows:

	Day and month (16-19)	03	02
Date of Visit	First visit/Reexam (22-23)	01	
	Examined by: (24-25)	01	
Respiratory	<u>Lacrimation/nasal obstruction/</u>		
01 Symptoms	<u>hoarseness</u>		010

-In the case of combined symptoms, those reported by the patient should be underlined. In the above example, all three are underlined.

-The personnel responsible for the examination of the patient should investigate a series of symptoms from other systems in order to adequately diagnose and treat the patient.

-The symptoms and the physical examination that should be practiced are indicated in the therapeutic guide.

-The severity of the symptoms is indicated in terms of the changes in behavior which are produced in the patient, i.e., anorexia, apathy, irritability, fever and the use of medications.

-The reverse of the form serves to complement the recorded information. There are five columns for History, Physical Examination, Diagnosis, Treatment and Observations.

-Each patient has an individual Outpatient Clinic Visit form. The form itself contains information for children, adolescents and adults of both sexes.

3. Signs and Symptoms

01 Respiratory Symptoms

This space is utilized for patients with mild upper respiratory tract infections. The specific symptoms of each case are underlined by the examiner.

- 010 = Lacrimation/nasal obstruction/hoarseness
- 011 = Nasal secretion or discharge
- 012 = Cough. Any and all coughs are recorded here regardless of their origin. The probable ethiology and color of expectoration should be noted in Observations.
- 013 = Chest congestion or asthma. These are considered to be symptoms of the lower respiratory system (trachea, bronchial passages or lung tissue) or of asthma.
- 014 = Others. Any respiratory problem not included above

02 Digestive Symptoms

- 020 = Mouth and teeth. Any problems of the mouth (herpes, nycosis, moniliasis) and dental problems are included here. The specific symptoms should be underlined.
- 021 = Nausea
- 022 = Heartburn. Generally produced by gastritis or peptic problem. Possible causes should be included in Observations (i.e. specific foods) as well as the frequency of the symptoms.
- 023 = Intestinal parasites. If patient has expelled parasites, indicate their form in Observations.
- 024 = Diarrhea. Refers to defecation of liquid, semiliquid, pasty or semi-pasty stools.
- 025 = Timpanities. Non-specific symptoms of flatulence, full sensation, etc. which may stem from numerous causes.
- 027 = Blood and or mucus in stools. Specific symptom should be underlined.
- 029 = Vomiting. Day of initiation and of termination or clinic visit should be recorded. In History, specific characteristics should be noted.
- 028 = Others. Any digestive problems not included above.

03 Symptoms of Eyes, Nose, Ears and Throat

Any symptoms related to eyes (030), ears (032) or others (034) which were not included in other systems are indicated here. For example, foreign bodies, tonsillitis, conjunctivitis, otitis, sinusitis, etc.

04 Genetio-urinary Symptoms

040 = Burning or pain on urination. Generally indicates urinary infection.

045 = Others. Any symptoms not included in 040, i.e., mastitis, vaginal secretions, etc.

05 Wounds, Skin and Hair

050 = Contusions, mild skin problems. Evidence of blows scratches, sores, cutaneous mycosis, mild skin allergies, and mild superficial burns.

051 = Fractures, severe skin problems. Presence of fractures, severe burns, deep wounds, abscesses, boils and skin infections.

052 = Others. Any problem not included above.

06 Nutritional Problems

060 = Edema. Painless edema of hands, legs, face, or generalized.

061 = Emaciated appearance. Indicates extreme thinness with loss of muscle mass.

062 = Paleness. Indicates notorious paleness of skin and mucous membranes, generally produced by anemia.

063 = Others. Indicates other nutritional problems not included above.

08 Communicable Diseases

When any disease such as measles, German measles, chicken pox, mumps, etc., is suspected it should be referred immediately to the physician to confirm the diagnosis. This diagnosis should be recorded by the auxiliary nurse on the vaccination chart. The following codes are used on the Outpatient Clinic Visit Form:

- 080 Measles
- 081 Rubella (German Measles)
- 082 Chicken Pox
- 083 Mumps
- 084 Whooping Cough
- 085 Tetanus
- 086 Hepatitis
- 087 Typhoid Fever
- 088 Tuberculosis
- 089 Rabies

09 Pains

Pain may appear by itself or be associated with other previously described symptoms, for example, a patient may complain of headache or nasal discharge associated with headache and fever. In both cases the pain symptoms would be recorded in this line.

the same is true for chest, stomach or pelvic pains. Also combined pain symptoms may appear, for example, head and chest pains.

090 = Body pains. Refers to general body aches, muscle or joint pains.

091 = Headaches

095 = Others. Chest, stomach or pelvic pains.

11 Severity

110 = Anorexia and/or apathy and/or irritability. Indicates a marked reduction in appetite, change in attitude and response to environment.

112 = Fever. Defined by the patient. Nocturnal chills generally indicate night-time fever produced by urinary infection.

114 = Others. Anything not included above.

12 Response to Disease

120 = Medications or vitamins. If the patient is taking any medications or vitamins in response to the symptoms presented, the information is recorded here.

121 = Home remedy or medicine prescribed by patient or family.

122 = Recommended by empirical source, i.e., traditional healer.

123 = Recommended by INCAP clinic personnel or other physician, hospital, or pharmacy.

Indicate type of medication and reason for its utilization in case History on the reverse side of the form.

13 Other Factors

Any other problem not included above. Specific information, should be recorded in Observations.

14 Factors affecting mother

This section should be filled out for mother and child patient visits. Information on menstruation and lactation is reported here. A zero (0) indicates the absence and a one (1), the presence of the factor in the month previous to the clinic visit.

140 = Pure lactation. Breast feeding with no supplementary feeding.

141 = Combined lactation. Breast feeding plus other foods. (except sugar water).

142 = Menstruation

15 Vital Signs

150 = Temperature in centigrade

- 151 = Pulse rate per minute
- 152 = Systolic blood pressure, mm. of mercury
- 153 = Diastolic blood pressure, mm. of mercury
- 154 = Weight in kilos with two decimals (XX.XX)

Any case with blood pressure reading higher than 130/180 should be reported to the physician.

16 Diagnosis

In this section diagnosis will be coded based on the therapeutic guide with the system code first, and disease code second. For example: Diarrhea = 0208. If more than one symptom makes up the diagnosis, the codes are entered in the following order.

- 160 = First. Indicates the principal motive of the patient's visit be it first-visit or re-examination.
- 161 = Second. Indicates an associated complaint which is of secondary importance for the patient.
- 162 = Third. Indicates an associated complaint of third priority for the patient.

The results of the history, physical examination, diagnosis, treatment and observations are recorded on the reverse side of the form, as indicated previously.

Table 3.3

RECORD TO VISITS TO
OUTPATIENT CLINIC

Form. CE2 Card 1 Identification 00 021 02 Sex 2 Col. 15 2
(1-3) (5) (7-8) (9-11) (12-13) (14) (15)

Year of Interview 78 Age 22 Years _____ Months _____ Day _____
(20-21)

Examiner's code 3 Name Maria Hernandez
(6)

0 - Preschooler
1 - Prenatal
2 - Nursing
3 - Other

[illegible]

History	Physical Examination	Diagnosis	Treatment	Observations
021478				
Patient refers	General good con-	Upper respiratory	Drink abundant	2012, patient
headache, watery	dition, normal	infection	liquids	To come back to
eyes, nasal obs-	temperature.	Code 0101	2. Aspirin 0.5g PO	the clinic if
truction which	Nasal exam showed		very sore throat	symptoms
began 2 days	a bit of mucous.		3. Cough syrup	present after
before the visit.			1. Rx PCF 1.0	3 days by me
One day before			for 3 days	in 25-50
the visit, patient				
anorexia + fever				
She has taken				
ASPIRIN (local				
band of aspirin)				

Table 3.3

RECORD TO VISITS TO
OUTPATIENT CLINIC[illegible]

History	Physical Examination	Diagnosis	Treatment	Observations
02/14/78 Patient refers headache, watery eyes, nasal ob- struction which began 2 days before the visit. One day before she experienced anorexia & fever. She has taken MEJORA - Local broad spectrum	General good con- dition, normal temperature. Nasal exam showed a lot of mucous.	Upper respiratory infection Code 0101	1. Drink abundant liquids 2. Aspirin 0.5g PO every six hrs. 3. Cough syrup 1 tsp PO TID for 3 days	Isent patient to come back to the clinic if symptoms persist. 3 days to the infection.