

Self-Financing Primary Health Care  
Project - 511-0569

5110569/41  
PD-AAW-033  
15N-30897

PREVENTIVE AND CURATIVE HEALTH CARE SERVICES

AT LEVELS I, II, AND III



Submitted by Robert LeBow, M.D.  
under Contract # 511-0000-8-00-3017  
March, 1983

## PREVENTIVE AND CURATIVE HEALTH CARE SERVICES AT LEVELS I, II AND III

From studies done in the Montero and San Julian areas, it is evident that the principal causes of morbidity and mortality in the project area are infectious diseases and malnutrition. More specifically, enteric diseases, parasitoses, and in the case of anemia, most specifically hookworm. Skin, eye, and respiratory infections are also significant, as are accidents, as causes of morbidity. To delineate the specific preventive and curative health care services which should be offered at Levels I, II, and III, the objectives of the health care system at each level should first be set down. These objectives are based on the major causes of mortality and morbidity.

Some of these objectives should be considered "minimal" objectives i.e., those which definitely should be included in the program. Beyond these minimal objectives are other objectives which could be included depending on the desire of each community and the feasibility of each one of these added objectives. The feasibility could depend on the availability of added resources, the abilities and time constraints of the various health workers, and logistical problems. The "minimal" objectives below are marked "minimal", and optional objectives are marked "optional".

The objectives are delineated below for each of the 3 levels. The services to be offered at each of the levels are then elaborated corresponding directly to each objective. A projected quantification of the services to be provided at each level precedes the listing of services for each level.

The project envisages the following health posts:

Cooperativa Multiactiva La Merced (peri-urban Santa Cruz):	72 level I
	12 level II
	3 level III
Central de Cooperativa Agropecuaria Mineros:	21 level I
	3 level II
Cooperativa Multiactiva San Julián:	56 level I
	8 level II
	2 level III

The above projections are subject to change based on some of the options presented below. Geographic and demographic considerations will influence the final decision on the number and types of facilities chosen.

I. LEVEL I: THE PROMOTOR AT THE COMMUNITY LEVEL

A. OBJECTIVES AT LEVEL I: Preventive and Curative Medicine

1. Preventive

- a) (minimal) Decrease incidence of parasitic and other infectious enteric diseases
- b) (minimal) Decrease incidence of anemia
- c) (minimal) Decrease impact on morbidity and mortality of other preventable infectious diseases
- d) (minimal) Improve maternal and child health for pregnant women and children up to age 5
- e) (optional) Be available as a resource to help the community with other preventive programs: e.g. avoidance of pesticide poisonings, accidents, health programs in the schools in coordination with the rural school teachers, nutrition programs.

2. Curative

- a) (minimal) Be available as a source of first contact primary care to take care of emergencies and minor illnesses.
- b) (minimal) Be able to recognize serious health problems requiring referral to a higher level, especially abnormal deliveries.
- c) (minimal) Have a small supply of basic drugs for the community so as to be able to treat minor illnesses before they become major.
- d) (optional) Be available for administration of treatment ordered at a higher level: e.g., injections, administration of TB drugs or follow-ups.
- e) (optional) Be able to do uncomplicated deliveries, with or without the help of a trained partera (who may also be a promotora).

B. GENERAL CONSIDERATIONS FOR LEVEL I SERVICES

At Level I, it is contemplated that there will be two or more promoters for each community. They may operate out of their own homes, or from a room in a house provided by the community, whichever seems better for the community given individual circumstances. The promoters would be part-time workers (approximately one-quarter time) who earned their living at their usual work, but who would be reimbursed for their services by any means each individual community chose (e.g. profit-sharing on drugs sold). There could be a central supply of drugs in the community, or each promoter could keep a part of the supply at his home.

If it is assumed that each level I community has 40 families and 5.6 people per family, then each community will provide its promoters with about 1225 encounters a year (assuming 5 curative encounters per year\* at level I). If there were 2 promoters, they would then each average seeing about 11 encounters per week, which, at 15 minutes per encounter, not including travel time, would amount to about 3 hours per week spent on curative care. The deliveries (average 6 per year per promotor) and rare emergencies requiring extra time (estimated one every other month) would probably add an average of 1 hour per week (sporadically) to each promoters time.\*\* Contemplating that each promotor would spend 10 hours a week, or 1 1/4 day a week on his work (a 25% time job), this would theoretically be divided as follows:

Actual curative care	3 hr./wk.	30%
Emergencies, Deliveries	1 hr./wk.	10%
Time waiting for patients and travelling to home (if community determined there were to be some "set" hours)	2 hr./wk.	20%***
Preventive Programs	3 hr./wk.	30%
Supervision from Level II, Drug Supply	1 hr./wk.	10%

---

\* From the Montero study, it was determined that there would be 54 illness episodes per week for each group of 40 families. In the Montero example, only 20% sought care\* from the promoters, they would be seeing 22 encounters per week. This figure may or may not include those people only coming to purchase a drug. For purposes of calculation, the assumption is made that 1/2 of the 22 encounters were drugs only.

\* from any health care source; if double that percentage sought care

\*\* Each delivery and "rare" emergency requiring extra time is estimated to consume 4 hours of time.

\*\*\* "waiting" time could be used for preventive programs. These times are averaged out per week, and may actually be bunched into longer times for each item, at less frequent intervals.

It should be stressed that the preventive and curative services to be done by the promotor in any community may (and should) vary according to the needs of the community, the abilities of the promotor, and the financial or logistic feasibility of the services desired. Since this project envisages the individual communities suggesting the services they desire from their promotors, there will be some variation in services from community to community. The below outlines of services to be provided by the promotor is therefore to be used mainly as a general guideline. Some of the services may not be feasible in a given situation, whereas, in other situations the promotor may fill some additional community need, and may have to be trained specifically to meet that additional need.

In addition to preventive and curative services to be offered by the promotors at level I, the promotors will do certain informational and statistical tasks which will be decided upon by the administrative provider group. These tasks would include keeping a log of preventive efforts (talks, meetings, sanitation work) and curative encounters, including types of diseases encountered, drugs administered and referrals made. Keeping track of immunizations and child growth would also be included, as well as reporting communicable diseases. The promotors would be responsible for keeping up their stocks of drugs, and accounting for their use. They could also keep a health file for each member of the community, and the promotor would keep track of charges and collections.

C. SERVICES TO BE OFFERED AT LEVEL I: Preventive and Curative Medicine

1. Preventive:

- a) (minimal) To decrease the incidence of parasitic and other infectious enteric diseases, the promotor should be able to:
- 1) instruct the community on the reasons for using only safe drinking water and how to reach this goal, be it through installing a well, boiling or filtering the water, etc. they should have the skills to follow through to make this instruction effective.
  - 2) instruct the community on the reasons for hygienic and safe waste/feces disposal, be it through the construction and/or use of latrines and/or the modification of common defecating practices that lead to the spread of enteric pathogens. They should be able to follow through to make the instruction effective.
  - 3) following (2), instruct the community in the construction of latrines.
- b) (minimal) To decrease the incidence of anemia, the promotor should:
- 1) know and introduce means in his community to interrupt the spread of hookworm
  - 2) encourage nutritional practices which will decrease the incidence of anemia.
  - 3) be able to recognize anemia and prescribe medicines to eliminate hookworm (Mebendazole) and build up iron stores (iron) and/or folic acid in pregnant women.

c) (minimal) To decrease the impact on morbidity and mortality of other preventive infectious diseases, the promotor should:

- 1) be able to recognize dehydration with diarrhea and provide instructions for oral rehydration or referral if the oral rehydration is not successful.
- 2) be able to suspect possible tuberculosis cases and refer these appropriately.
- 3) be able to help with immunizations, both in organizing the community and in giving the immunizations.
- 4) in areas where malaria is a problem, be able to give instructions on means of preventing the illness and coordinate his work with the malaria program.
- 5) be able to instruct the community in general hygienic means to minimize the spread of enteric, eye, skin, and respiratory diseases.

d) (minimal) To improve maternal health in pregnant women and the health of children up to age 5, the promotor should:

- 1) deliver basic pre-natal care, including
  - i) measuring the growth of the fetus
  - ii) checking for anemia
  - iii) instructing the mother on nutrition and the use of pre-natal vitamins
  - iv) being able to recognize abnormal conditions requiring referral
  - v) when possible, check blood pressure, urine protein, weight gain, and look for other significant disease states, such as syphilis and gonorrhoea.

vi) be able to give instructions in breast feeding and/or supplementation should it become necessary.

vii) be able to give specific instructions to eliminate neonatal tetanus.

2) be able to do basic well-child care, including:

- i) Weighing and measuring of infants and children
- ii) Nutrition instruction
- iii) Administration of immunizations in association with immunization programs
- iv) Pick up abnormalities of vision, hearing, or development and refer these appropriately.
- v) Basic dental instructions

e) (optional) Objective "e" is a general one, and these services provided by the promotor are ones which are adapted to special needs and situations in the community. To be able to meet these special individual needs and situations, the promotor would need specific training.

## 2) Curative

a) (minimal) To be available as a source of first contact primary care for emergencies and to handle minor illnesses the promotor should:

1) of course, be available and accessible. Since it is planned to have at least two promotors in each community, one should be easily reached in case of an emergency at all times.

2) have basic knowledge in handling emergencies involving trauma specifically:

- i) How to stop severe bleeding
  - ii) How to splint and handle fractures
  - iii) How to handle snake bites
  - iv) Some rudimentary knowledge of resuscitation in cases of drowning or electric shock
  - v) Emergency treatment of burns and poisonings
- 3) Know how to recognize, and, if feasible, initiate treatment in medical emergencies, specifically:
- i) initiating oral rehydration in cases of moderate to severe dehydration, along with referral if indicated
  - ii) initiating antibiotic therapy appropriately in cases of severe respiratory problems when referring to higher level.
- 4) Be able to sort out minor self-limited illness from more serious illness and initiate treatment for minor illnesses such as:
- i) URI's
  - ii) otitis extern/otitis media
  - iii) tonsillitis
  - iv) bronchitis
  - v) mild diarrhea/gastroenteritis
  - vi) mild parasitoses, including ascaris and hookworm
  - vii) minor skin infections, abrasions, cuts, burns
  - viii) mild conjunctivitis
  - ix) muscle aches and pains, strains, contusions

- x) anemia
- xi) gastritis/dyspepsia
- xii) minor fungal skin infections
- xiii) mild allergy problems

b) (minimal) The promotor should be able to recognize when there is a serious health problem requiring referral to a higher level, including specifically:

- 1) pneumonia or other severe respiratory problems
- 2) asthma
- 3) severe otitis media
- 4) tuberculosis
- 5) complications of pregnancy and post-partum period
- 6) moderate to severe gastroenteritis, including possible typhoid, shigella, amoebiasis, or giardiasis.
- 7) urinary tract infections/nephritis
- 8) venereal disease
- 9) peptic ulcers
- 10) cholecystitis, appendicitis, volvulus, or other possible "surgical abdomen"
- 11) severe abscesses or skin infections
- 12) malaria
- 13) contagious diseases preventivable by immunization: yellow fever, polio, measles, whooping cough, diphtheria
- 14) liver disease
- 15) heart failure

- 16) seizure disorder or possible meningitis
  - 17) goiter
  - 18) any other apparently minor condition which does not respond to initial treatment in a reasonable period of time.
- c) (minimal) the promoters' services include the availability of a basic drug supply to allow him to treat the basic conditions in (2) (a) (4) above. The specific drugs are listed in the section on formularies.
- d) (optional but encouraged) The promoters' services should include the ability to administer intramuscular injections at the local level, as dictated by a health provider at level II or III, so as to allow better patient compliance, since the patient could stay in his own village. The promotor should be able to follow up on chronic health problems (as per instructions from level II or III) such as:
- a) Tuberculosis
  - b) Failure to thrive in a child
  - c) Rehabilitation
  - d) Chronic skin infections
- e) (optional but encouraged for most communities) A community may want some or all of its promoters to be able to do simple or uncomplicated deliveries in the home. If an auxiliary nurse from a level II facility is immediately available, then perhaps it would not be necessary to have the promoters doing deliveries. There may be partners in

the community who could be trained in sterile technique and in how to recognize complications. If it is necessary for the promotor to be able to do uncomplicated deliveries, then his service should include:

- 1) sterile technique
- 2) care of the newborn including the umbilical cord
- 3) the avoidance of an episiotomy if possible, and the referral to a level II or III facility. The problem to be recognized should specifically include:

- i) malpresentation
- ii) pre-eclampsia or eclampsia
- iii) premature or prolonged rupture of membranes
- iv) fetal death
- v) infection in the mother, pre- or post-partum
- vi) excessive bleeding
- vii) failure to progress in labor
- viii) multiple birth
- ix) prematurity
- x) macronomic baby

II. LEVEL II: THE AUXILIARY NURSES AT THE "PUESTO SANITARIO" LEVEL

A. OBJECTIVE AT LEVEL II: Preventive and Curative Medicine

1. Preventive

- a) (minimal) Decrease incidence of parasitic and other infectious enteric diseases.
- b) (minimal) Decrease incidence of anemia
- c) (minimal) Decrease impact on morbidity and mortality of other preventable infectious diseases.
- d) (minimal) Improve maternal and child health for pregnant women and children up to age 5.
- e) (minimal) Provide direct supervision of Level I, including at meetings involving promoters and their communities.
- f) (optional) Availability as a resource to help communities with other preventive programs, such as health programs in the schools with the collaboration of the rural school teachers.

2. Curative

- a) (minimal) Availability for first contact primary care and to receive patients referred from level I; specifically able to handle emergencies and minor illnesses.
- b) (minimal) Ability to recognize serious health problems requiring referral to a higher level, especially abnormal deliveries.
- c) (minimal) Have slightly expended drug supply (compared to level I) to be able to treat the range of minor illnesses elaborated in the Curative Services section below.
- d) (optional but encouraged) Availability for treatment ordered at a higher level: e.g., infections, administration of tuberculosis drugs, follow-ups.

- e) (optional but encouraged at most sites) Ability to do uncomplicated deliveries, either in the patient's home or at the health post.
- f) (minimal) Provide supervision of the curative services performed at level I.

B. GENERAL CONSIDERATIONS FOR LEVEL II SERVICES

At each Level II facility, it is planned to have one Auxiliary I nurse and one Auxiliary II nurse, both of them full-time and both on salary. Each Level II facility will be responsible for the supervision of the promotors in from 4 to 9 communities, depending on geographic and demographic considerations. The Auxiliary II nurse will do most of this supervision when not filling in for the Auxiliary I at the Level II facility itself. The facility is contemplated to be a basic 2 or 3 room health post provided by the cooperative or rented in the village center. Level II will serve as Level I's resupply point for drugs and other supplies, as well provide a continuous supply of vaccines. It would be a goal to have a supervisory visit to each level I community at least once a month from level II (one half day per month for each visit).

Assuming each level II health post covered an area of 280 families, or about 1575 people\* (5.6 people per family), and assuming an average of 2 encounters per year to the level II facility by each person in the area\*\*,

---

\* this number would probably be higher in the Santa Cruz peri-urban area.

\*\* 2 encounters per year per person in the target population is high based on prior experience with an ineffective health system, and low based on true needs. It is an estimate based on the fact that the same population has already been programmed as having 5 encounters per person per year with the promotor (half of these for drugs only), and, positively, that the promotor would be referring patients for care. Also, the level II facility would in fact be used as a level I facility for patient population in direct proximity to the level II health post.

there would be an average of 12 encounters per day per 260 day year to each level II facility. The number of encounters could be higher if non-member family visits are added on, or encounters for drugs only.

The division of time for various services of the auxiliary nurses at level II would be approximately (combined for the 2):

Curative care (including waiting time for patients)

6 nurse-hr./day 37.5%

Supervisory Time (50% curative  
50% preventive) - 1 day/mo in each  
community 20%

Emergencies and Deliveries 12.5%

Preventive programs - MCH, vaccinations,  
etc. 25 %

Drug Supply, information, etc. 5 %

The auxiliary nurses will have informational and statistical tasks as well as the preventive, curative, and supervisory tasks. These will be similar to the information gathered at level I, and will be specified by the provider administrative group, but will include data on:

- 1) preventive meetings, campaigns, etc.
- 2) curative visits
- 3) referrals
- 4) supervisory activities
- 5) communicable diseases
- 6) drugs distributed and ordered
- 7) charges/collections/costs

C. SERVICES TO BE OFFERED AT LEVEL II: Preventive and Curative Medicine

1. Preventive

a), b), c), d), e) (all minimal) and f) (optional but encouraged) The preventive services to be offered at level II are essentially the same as those by the promotor (see level I preventive services), except that the nurses will act both on a community level in association with the promotor as a team (or on their own if there is no promotor), and on a supervisory level, when they will "quality control" the work of the promotors. The only other specific differences is that the auxiliary nurses (most usually the Auxiliary II) will have more direct organizational roles in health education programs, maternal and child health program, vaccination programs, and TB programs.

Some specific amplifications in the level II preventive services over level I (see level I preventive services) are:

- c) 1) can start IV rehydration if necessary when patient is referred from level I.
- c) 2) coordinate the care of TB patients
- c) 3) has a refrigerator for the storage of vaccines and serves as distribution center for vaccines to the community.
- c) 4) can coordinate distribution of malaria prophylaxis if indicated.
- d) 1) v) Blood pressure and urine protein will be checked, as well as other services at level I.

2) Curative:

a) (minimal) Availability for first contact primary care and for referral care from level I; to be specifically able to handle emergencies and treat minor illnesses, the auxiliary nurses should:

1) be available, as there are 2 nurses assigned to each Level II post and one should be easily reached at all times in case of an emergency.

2) have basic knowledge in handling emergencies involving trauma, specifically:

1) How to stop severe bleeding, including some ability to do basic suturing

ii) immobilization of fractures

iii) How to handle snake bites and how to administer antivenom (some would be available at the Level II post if it were appropriate).

iv) Knowledge of how to do resuscitation

v) Emergency case of burns and poisonings

vi) Stabilization with IV fluids in a shock following trauma, especially chest or abdominal trauma and/or blood loss, while arranging referral.

3) Have basic knowledge in handling medical emergencies, specifically:

1) severe dehydration: may initiate IV therapy before transferring to level III facility

ii) initiating treatment in asthma and pneumonia

4) Be able to treat or at least initiate treatment for minor illnesses, including:

- i) URI's
  - ii) Otitis externa/otitis media
  - iii) tonsillitis
  - iv) bronchitis/mild pneumonia/mild asthma
  - v) diarrhea/gastroenteritis/bacterial dysentery
  - vi) parasitoses
  - vii) skin infections, including the lancing of minor abscesses.
  - viii) abrasion, contusions, and lacerations, including minor suturing
  - ix) conjunctivitis
  - x) muscle aches and pains, strains
  - xi) anemia
  - xii) gonorrhea, syphilis
  - xiii) urinary tract infections
  - xiv) gastritis/dyspepsia
  - xv) allergies
  - xvi) fungal infections
  - xvii) vaginitis
  - xviii) continuing treatment of chronic diseases, such as tuberculosis, thyroid disease.
- b) (minimal) The auxiliary nurses should be able to recognize when there is a serious health problem requiring referral to Level III or above, including specifically:

- 1) severe respiratory problems, including pneumonia, asthma that does not respond readily to treatment, possible pneumothorax
- 2) suspected tuberculosis
- 3) complications of pregnancy, including those cases that have been referred from level I and have been confirmed as truly complicated pregnancies. These would include:
  - i) bleeding in pregnancy, especially 3rd trimester
  - ii) malpresentation or pre-eclampsia
  - iii) fetal death
  - iv) hypertension or pre-eclampsia
  - v) suspected multiple pregnancy
  - vi) premature rupture of membranes or suspected amnionitis
  - vii) macrosomic fetus
  - viii) diabetes in pregnancy
  - ix) tuberculosis in pregnancy
  - x) excessive alcohol consumption in pregnancy
- 4) severe gastroenteritis or enterocolitis, including some cases of dysentery that may require more laboratory diagnosis (e.g. amoebiasis), and those cases where IV rehydration is necessary, although the nurse may begin the IV therapy.
- 5) possible "surgical abdomen," including appendicitis, perforated ulcer, volvulus
- 6) severe skin infections and larger abscesses
- 7) malaria if laboratory diagnosis is required
- 8) contagious diseases preventable by immunization: yellow fever, polio, whooping cough, diphtheria, tetanus, complications of measles

- 9) liver diseases
  - 10) heart diseases, including failure and possible Chagas's Disease  
or rheumatic fever
  - 11) nephritis
  - 12) seizure disorder or meningitis
  - 13) any other apparently minor condition which does not respond to  
initial treatment in a reasonable period of time.
- c) (minimal) The services at Level II include the availability on site of a basic drug supply that will allow the treatment of these conditions in 2) a) 2) 3) 4) above. The specific drugs are listed later in the section on formularies. In addition, some additional drugs may be stored at level II for the specific treatment of a specific patient, e.g., a tuberculosis patient.
- d) (optional but encouraged) The services at Level II should include ability to carry out services ordered at a higher level, including intramuscular and intravenous injections. This could include follow up for
- a) Tuberculosis
  - b) other chronic diseases, infections
  - c) pediatric problems
  - d) rehabilitation
- e) (optional but encouraged at most sites) The auxiliary nurses should be capable of doing uncomplicated normal deliveries, either at the home of the patient or at the health post. This service would include the ability to repair minor lacerations and follow the patient post-partum. The service should include sterile technique,

care of the newborn, and the use of methergine or ergotrate post-partum. They should be able to recognize complications of labor and delivery and appropriately refer them to a level III (or higher) facility. The complications which should be recognized are listed at level I (see Level I, 2) e) 5).)

f) (minimal) The auxiliary nurse (usually the auxiliary II) will supervise the curative services performed by the promoters at level I, and will participate (with the technical nurse from level III) in the evaluation of these services.

III. LEVEL III: THE HEALTH CLINIC

A. OBJECTIVES AT LEVEL III: Preventive and Curative Medicine

1) Preventive

- a), b), c), d) (minimal) These minimal objectives are the same at level III as they are at levels I and II (see levels I and II), although the role at Level III will be more supervisory.
- e) (minimal) To provide direct supervision to level II, and when appropriate, to level I as well, especially as regards sanitation and maternal and child health programs, as well as in the situation when a level II facility is filling the function of a level II facility as well.
- f) (optional but encouraged) the same as for level II.

2) Curative

- a) (minimal) Provide a full range of primary care activities to which promoters and auxiliary nurses at levels I and II can refer patients, with the presence of a physician, including:
  - 1) emergency care
  - 2) primary care of all illnesses with either
    - i) definitive care at the level III facility, or
    - ii) arranging of referral to a level IV or V facility
- b) (minimal) Availability of a basic drug supply adequate for either definitive care in a) 1) & 2) or for initiating care when referred to a level IV or V facility is contemplated.

- c) (minimal at San Julián and Mineros, optional in peri-urban Santa Cruz) Management of normal deliveries and possibly some abnormal labors, as necessary, not including Caesarean section except in dire emergency.
- d) (optional but strongly encouraged) Basic laboratory services available.
- e) (minimal at San Julian and Mineros, optional but encouraged in peri-urban Santa Cruz) Availability of a limited number of hospital beds for treatment of more severe illnesses requiring observation or intravenous treatment, or for deliveries.
- f) (Optional) Basic dental services.

**B. GENERAL CONSIDERATIONS FOR LEVEL III SERVICES**

The Level III Health Clinics will be comprehensive primary care clinics to which referrals will be made from levels I and II, although they will function in curative medicine as a level I or II facility in that the level III facility may be the first health care-source to be approached by the patient, especially for the population in direct proximity to the facility. Depending on what seems most appropriate, some of the peri-urban areas of Santa Cruz may have only level I and level III facilities, in which case auxiliary II nurses from the level III facility would do the supervisory functions for the level I health workers in the same way which the level II nurses would do it in the Mineros and San Julian areas.

### Physicians

It is planned to staff level III facilities with a full-time physician and a part-time physician who would fill in for the full-time physician when that person was not available. If it is decided (and it should be strongly encouraged) that a physician should be on call or available for emergencies or complicated deliveries at any time, then a call schedule for physicians would have to be worked out. It would be a service package "option" whether to have 24-hour availability for a physician (and a nurse), or whether to have the physician available only 40 hours a week (or less). The comprehensive-ness of care and the referral system would suffer greatly if the physician were not available on a 24-hour basis at least in the Mineros and San Julian areas. If utilization warrants it, an option as the project progresses would be to have 2 physicians at each level III health clinic, or to have a physician do curative medicine level II posts on a periodic basis. There could be several other options for physician coverage, including the rotation of several project physicians to the different level III facilities within the project, either on a full time basis or a part-time basis.

### Technical Nurse

Further staff at the Level III facility would include a technical nurse, whose job description would include supervision of level II health posts twice a month each. If the clinic were in fact assuming the function of a Level II facility as well, then the technical nurse (or an auxiliary II nurse) would supervise the promoters at level I. Two additional auxiliary I nurses are contemplated at level III to provide curative and preventive services similar to those of the promoters at level I or the auxiliary I at level II.

### Nurse Midwife

At level III, it is planned (or at least an option) to have trained nurse midwife. The nurse-midwife would share the deliveries with the physician(s), perhaps do home deliveries, supervise the deliveries being done at levels II and I, provide continuing education relative to obstetric care at levels II and I, and, if indicated, organize re-training of existing parteras. The nurse midwife would be responsible for supervising and organizing health education programs related to pregnancy in the health region related to the Level III clinic.

### Laboratory Technician

Level III would have a laboratory technician who would be able to do minimal diagnostic tests in hematology, urinalysis, bacteriology, and the examination of stools. If it became feasible, the type of laboratory tests performed could be expanded. The lab technician would instruct health workers at all 3 levels to collect samples properly and do any lab tests that might be appropriate. The laboratory technician could also do screening exams at levels I and II on a periodic basis.

### Sanitarian

A Sanitarian for the entire area dependent on the level III facility would be assigned to each level III facility, unless it were feasible to have one sanitarium cover a larger area. This might depend on the geographic distribution of the facilities. The sanitarium's work would be entirely preventive. He would supervise programs of water supply and waste disposal as well as do the logistics for such programs. He would be out in the communities most of the time helping the promoters and auxiliary nurses both in education programs related to sanitation and in actual implementation of projects.

### Clerk/Record Keeper

For the compilation of statistics and other data, as well as financial accounting, there would be a clerk/record keeper at each level III facility. This person would be responsible for assembling the data produced by other level III people relative to preventive and curative procedures performed as well as the reporting of communicable diseases. This person, in combination with the technical nurse and/or an auxiliary nurse could be responsible for the logistical system supplying drugs and materials to all the level I and II facilities in the area of the level III clinic.

### Level III facility

The type of facility at level III may vary, depending on what is available, but it is contemplated that it would be a remodeled rented facility, having about 7 rooms and space for up to 10 emergency beds. Hospital services are not contemplated, but emergency rehydration and deliveries could be done there, as well as other short-term care for observation. It would need a special room for the mini-warehousing of drugs, vaccines, and medical materials destined for the level I and II facilities in the area.

### Supervisory Services

The supervisory services from the level III facility would include:

- 1) Radio contact with level II
- 2) Technical nurse to supervise level II (and/or I)
- 3) Sanitarian to work in area sanitation projects
- 4) Nurse-midwife to do pregnancy-related supervision for levels II and I
- 5) Clerk/Record keeper to coordinate information systems and logistics systems of all 3 levels in area under the facility.
- 6) Lab technician to coordinate any lab-related work in area
- 7) Physician who will be referred patients from the lower levels, and, if indicated and/or feasible, may make periodic visits for curative care to some level II facilities.

### Variation in Function of Different Level III Facilities

The functions of the Level III clinic will probably be somewhat different in the San Julián area than in the Mineros and Santa Cruz peri-urban area, as the former area has no readily available emergency care at levels IV and V. The Montero hospital (level IV) is readily available to the Mineros area (less than 20 miles down a paved road) and level V hospitals in Santa Cruz with a full range of tertiary care are readily available to the peri-urban area of Santa Cruz. In contrast, San Julian is much more remote, and at times even cut off from Santa Cruz by torrential rains, so the level III facilities at San Julian should be somewhat better equipped for doing such procedures as emergency Caesarian sections or for treating hypovolemic shock.

It has not yet been decided if the Mineros area will have its own level III clinic, or if an existing Centro de Salud Hospital in the area will fulfill this role, perhaps on a contract basis. One option would be to increase the staff at an existing facility so that the supervisory and logistic systems could be fully operational. Another option would be to carry out the supervisory and logistics functions from Santa Cruz and the provider supervisory group.

### Utilization

The project plans the establishment of three level III clinics in the peri-urban area of Santa Cruz, and two in the San Julian area. Each of the Santa Cruz peri-urban clinics has an estimated target population of 2000 families, or 11,200 people, whereas the San Julian target population for each level III facility would be 425 families who are members of the Cooperative Multiactiva San Julian plus an unknown number of non-members.

If it is assumed that each San Julian Level I post serves as nucleo of 40 families with a population of 225, then the target population for each level III facility would be 6300 people. Hypothetical Mineros level III clinic would have a slightly smaller target population.

The utilization of the level III facilities in the Santa Cruz peri-urban area is somewhat difficult to predict because of the availability of alternative health services and pharmacies. Also, if there are fewer level II facilities than projected, then there will be greater utilization of the level III clinic.

Assuming there are 22 encounters (including 11 for drugs only) at each level I per week, and 60 encounters per week at each level II facility (including home visits in both cases), to avoid overlapping with the services already provided at levels I and II, one could theorize one curative visit to the physician at Level III per year for each person in the target area. This would represent 43 visits per day per 260 day year to the physician in the Santa Cruz peri-urban area. Visits handled by the auxiliary nurses could add to the total number of visits. A proportionately smaller number of patients per day, or 24, would be seen by each physician at each Level III facility in the San Julian area.

Present actual figures for similar level services (including those reported for the Montero project for 1979) do show utilization rates of 1/2 to 1/3 of the above. The higher theoretical utilization rates above are anticipated if the system is truly effective and meets the needs for the population (including the distribution of drugs).

Division of Time

The division of time by each of the staff members at the level III facility is listed in Table I. Rationales for the figures are listed in the footnotes of the table.

Table 1

The Division of Time for Level III Personnel:

	Curative Medicine		Preventive Medicine		Administrative or Supervisory time	
	hr./wk.	% of total	hr./wk.	% of total	hr./wk.	% of total
Physician	32	80%	4	10%	4 <sup>1</sup>	10%
Par-time (1/4) Physician)	10	100%	-	-	-	-
Technical Nurse	8	20%	12	30%	20 <sup>2</sup>	50%
Auxiliary I (2)	20	50%	8	20%	12	30%
Laboratory Tech.	32	80%	8 <sup>3</sup>	20%	-	-
Sanitarian	-	-	24	60%	16 <sup>4</sup>	40%
Nurse-Midwife	12	30%	16 <sup>5</sup>	40%	12	30%
Clerk/Record Keeper	-	-	-	-	40	100%
Laborer/Watchman	not applicable					

1. The physician would be "clinic manager", however, he should delegate various administrative functions.
2. Assuming 8 days/mo. at Level II (and or I) posts (2 x/mo., 4 posts)
3. Could do screening exams at outlying posts, communities as most equipment is mobile.
4. In case of sanitarian, all his work is preventive, but he is supervising.
5. Health education programs, mothers' clubs, etc.

The division of time shown in table 1 for the personnel at Level III would vary depending on demands, needs, and utilization; the schedule should be flexible and reviewed at regular intervals by the provider organization and changed as necessary to be most efficient.

Information

The staff at level III will all partake in informational and statistical reporting, but at this level, the work will be coordinated by the clerk/record keeper.

C. SERVICES TO BE OFFERED AT LEVEL III: Preventive and Curative Medicine

1. Preventive:

a), b), c), d), e) The minimal services at level III to meet the preventive objectives are much the same as they are at levels I and II, except that besides actually doing some of the preventive tasks, personnel from level III will also be in the key supervisory roles for the different preventive programs in the area. The preventive programs are elaborated in more detail above in the discussions of levels I and II, but briefly, the minimal preventive services supported by level III would include:

- 1) water and waste disposal programs (including latrines)
- 2) efforts to control hookworm and decrease the prevalence of anemia
- 3) nutrition programs
- 4) early treatment of diarrheal diseases
- 5) cooperation with vertical programs for specific diseases:  
i.e., tuberculosis yellow fever, malaria, immunization programs.

- 6) support of maternal and child health program, including
  - a) pre-natal care
  - b) recognition of abnormal pregnancies
  - c) well child care

Minimal preventive services at level III would include supervisory functions in:

- a) sanitation
- b) maternal and child health

Objective (f) would be beyond the minimal services listed above; if the communities desired, and if it were feasible, level III could help in such program as the prevention of pesticide poisonings or accidents or give health programs in the schools in cooperation with the school teachers, or help in specific nutrition-oriented programs, family planning, or preventive dental programs.

## 2. Curative

- a) The Level III facility should be able to provide a full range of primary care activities within the capability of a general practice physician. Since patients are being referred from levels I and II, it is specially important that definitive care be given at level III if it is within the range of "primary care", i.e., not requiring hospitalization or specialized diagnostic services not available in the facility.
- 1) Emergency care: Since the facility is especially for referral, a physician should be available 24 hours a day for emergencies but this would not necessarily be a minimum requirement if another arrangement for after-hours emergency care could be made, e.g.

in the Santa Cruz peri-urban area. The emergency care level may vary somewhat depending on whether a level IV or V facility is readily available, as mentioned above. Specific emergencies which should be handled include:

- i) lacerations
- ii) simple fractures, or splinting and stabilization of more serious fractures with arrangement of referral to a level IV or V facility. An X-ray machine is not contemplated at start-up, but is an option to be considered at a later date, if it seems appropriate and there is a documented need as well as the financial capability.
- iii) burns, poisonings
- iv) the capability to do an emergency Caesarian section, under local anesthesia, either at the facility or in the patient's home.
- v) treatment of snake bites
- vi) capability to do resuscitation
- vii) stabilization of patients in hypovolemic shock through administration of IV fluids, including dextran. An option would be the capability to do blood transfusions. This would require an added function for the lab technician.
- viii) IV rehydration
- ix) Initiate treatment of meningities, including the capability to do lumbar punctures.
- x) Treatment of asthma
- xi) Initiate treatment of pulmonary edema

- xii) Treatment of tension pneumothorax
  - xiii) Capability to do emergency tracheostomy under local anesthesia
  - xiv) Capability to initiate parenteral antibiotic treatment in cases of sepsis in the newborn, child or adult.
  - xv) Stabilization of any patient requiring referral.
- 2) Primary Care of general range of illnesses: As mentioned above, the general range of illnesses treated by the general physician should be treated at the level III facility. The exceptions would be:
- i) illnesses beyond the knowledge and capability of the physician, requiring the services of a specialist.
  - ii) elective or semi-elective surgical procedures requiring specialist care or more than local anesthesia.
  - iii) cases requiring diagnostic procedures beyond the capability of Level III.

If a referral is necessary, then there should be arrangements made by the physician so that the patient is transferred as smoothly and as quickly (if necessary) as possible. This could include a phone call (or radio to Santa Cruz or Montero) to the specialist or an accompanying letter/note from the referring physician. It might even include the physician and/or a nurse accompanying the patient to the Level IV or V facility. An option here is the provision of ambulance service. No provision for payment or level IV or V service is contemplated at this time.

- b) (minimal) A drug supply which would enable the physician to treat a full range of primary care problems as well as the emergencies should be available at the Level III facility. To be cost effective, a limited but adequate formulary is planned along with the logistics

system to re-stock drugs. Drugs outside the formulary could be obtained in special cases, at the discretion of the assistant director for medical services in the Provider Organization. The drugs are listed in the section on formularies.

- c) (minimal at San Julián and Mineros, optional but encouraged in peri-urban Santa Cruz) Deliveries: Although deliveries will most likely be done at the level III facilities at San Julián and (if there is one) Mineros, deliveries would be an option in the Santa Cruz peri-urban areas, as the Maternity Hospital in Santa Cruz already does most of the deliveries in the area. If deliveries are done, many of the complicated deliveries could be done with the physician present except those requiring non-emergency Caesarian section. As mentioned above, only emergency Caesarian sections done with local anesthesia would be done at the level III facility. The physician would have to use his judgement on which abnormal labors to refer to a higher level facility.
- d) (Optional but strongly encouraged) Laboratory Services: an option (one that will be strongly encouraged) is basic laboratory services, including the services of a laboratory technician, at each level III facility. Besides doing limited hematology, urinalysis, bacteriological and stool exams at the facility, screening exams could be performed at level I and II sites, allowing more scientific treatment for diseases at those levels. The scope of laboratory services is discussed in more detail below. In the specific section on laboratory services.

- e) (Minimal at San Julian and Mineros, optional but encouraged in peri-urban Santa Cruz) The availability of a limited number of hospital beds at Level III would be a prerequisite for fulfilling the capability of doing deliveries and for the stabilization and/or observation of patients either awaiting referral or being rehydrated. Obviously, a staff member would have to remain at the facility if a patient was there. In the case of a normal delivery, it is not contemplated that the patient would occupy the bed for a long time unless it was specifically indicated.
- f) Basic dental services would be an option available at Level III. This would require the hiring of a full or part-time dentist and/or dental assistant, or an option would be to have a dentist come at intervals and work on a fre-for-service basis, with the level III facility supplying the space and equipment.

### LABORATORY SERVICES AT LEVEL III

To be able to provide more scientific medical services at the level III facilities, it is planned to have a small laboratory at each level III health clinic, with a laboratory technician. The laboratory will allow more appropriate prescribing of medications, thus effecting an overall savings. Also, the physicians will be able to feel they are practicing a better grade of medicine.

The minimal laboratory services that will be provided are listed below:

#### I. PARASITOLOGY

##### A. Exams will be done to identify:

- 1) roundworms: ascaris, hookworm, strongyloides, trichiuris, schistosomiasis, oxyuris, etc.
- 2) tapeworms
- 3) protozoans: amaebae, giardia, trichamonads, malaria, etc.

##### B. Materials needed:

- 1) microscope
- 2) solutions: normal saline, lugol iodine solution
- 3) slides & cover slips
- 4) collection materials for stool
- 5) lancets for getting blood for thick smear for malaria

#### II. HEMATOLOGY

##### A. Exams done will be:

- 1) Hematocrit or Hemoglobin
- 2) White cell count
- 3) Differential
- 4) White cell count in spinal fluid

**B. Materials needed:**

- 1) Microscope
- 2) Centrifuge for spinning hematocrits
- 3) WBC counting chamber
- 4) 10% HCl for WBC counts
- 5) Wright's stain for differential
- 6) Methylene Blue for spinal fluid
- 7) Card for reading hematocrits
- 8) Lancets or means for drawing venous blood
- 9) Microhematocrit tubes, heparinized
- 10) Slides & cover slips
- 11) Materials for mixing up stains

**III. EXAMINATION OF THE URINE**

**A. Exams done will be:**

- 1) specific gravity
- 2) urine protein, sugar, acetone
- 3) microscopic exam of the urine
- 4) (optional) pregnancy test

**B. Materials needed:**

- 1) Microscope
- 2) Centrifuge to spin urine, slides and cover slips
- 3) Test tubes for testing for protein and sugar
- 4) Benedict solution for sugar
- 5) 30% sulfosalicylic acid for protein
- 6) urinometer for measuring specific gravity

- 7) pipettes and droppers
- 8) alcohol burner
- 9) (optional) indicator papers for protein, sugar, acetone, etc.  
(but expensive)
- 10) (optional) Slide method pregnancy test.

#### IV. BACTERIOLOGY

##### A. Exams done will be:

- 1) Gram stains of various body substances: sputum, pus, wound material, urethral discharge, cerebrospinal fluid.
- 2) Collection of samples in transfer media for culture and sensitivity: tuberculosis and other cultures.
- 3) Staining of sputum for tuberculosis

##### B. Materials needed:

- 1) Microscope, with oil for immersion
- 2) Stains for tubercle bacilli: Ziehl-Neelsen Stain or Kinyoun Stain
- 3) Slides
- 4) Stains for Gram Stain: Crystal Violet Grain, iodine, ethanol, safranine.
- 5) Containers for specimens
- 6) Transfer media, as necessary, usually supplied by lab culture will be sent to.

The basic tests above are the minimum contemplated for the Level III laboratory. If the laboratory technician is capable of doing further tests, and there are resources available to get more equipment, as well as the demand for other kinds of laboratory tests, the following useful tests could be done:

(all optional in order of importance)

- 1) Blood typing and crossmarking for transfusions
- 2) VDRL
- 3) Some minimal culturing: wound, sputum, urine
- 4) if equipment were available, some simple blood chemistries.

Outreach to Levels I and II

In order to support the preventive programs of the project and to give levels I and II some laboratory capability, the laboratory technician should travel to selected outlying health posts (and even possibly some level I communities) at regular intervals to do screening programs for such diseases as intestinal parasites and anemia. The average time of 8 hours per week has been programmed for this.

The stool exams could be done right on the site on fresh samples, since the microscope and other materials are easily transported. Hematocrits could either be done at the site or transported back to the Level III facility and done there. Slides for tuberculosis screening could be done at the same time.

The laboratory technician would also train the auxiliary nurses at level II and III to check urines for protein (important in pre-natal care) and to prepare slides for tuberculosis. If it were appropriate other staff in the program could be trained to do lab work as seemed necessary by the lab technician. No outside training program would be necessary.

Equipment necessary for the laboratory is listed in the section on Equipment and Supplies for Levels I, II, and III.

Self-Financing Primary Health Care  
Project - 511-0569

MINIMAL EQUIPMENT AND SUPPLIES FOR FACILITIES

AT LEVELS I, II, AND III

Submitted by Robert LeRow, M.D.  
under Contract // 511-0000-S-00-3017  
March, 1983

## MINIMAL EQUIPMENT AND SUPPLIES FOR FACILITIES

### AT LEVELS I, II, AND III

The equipment needed for level I, II, and III facilities is listed in the respective tables below. Each list represents the minimum equipment that would be necessary at each level to deliver the services outlined in the service delivery plan. There will likely be some variation in equipment among the facilities because of different customs and/or capabilities of the health staff. Furniture and beds have been mentioned in the equipment list but have not been priced out, as it is assumed that furniture and beds will be purchased locally or donated by the communities.

Tables 1, 2, and 3 list only "health" equipment and supplies, and do not include drugs, office equipment, radios, bicycles, or motorcycles. The tables show the 1983 UNICEF numbers and prices.

### LEVEL I

At level I, the promoters have been equipped for doing deliveries as well as basic primary care. To provide the equipment necessary for deliveries, a UNICEF "Midwifery Kit Type 3 Basic" has been included for each level I facility. This kit includes many items which can be used in primary care as well. The complete contents of the kit are described in Appendix 1, along with the UNICEF 1983 prices for each individual item and the "kit" price.

It is conceivable that the project may want to help equip level I parteras who become involved with the program. A similar midwifery kit, perhaps with a few deletions or additions, would serve this purpose, and probably also serve as an incentive for the parteras to become integrated

into the program. For example, parteras completing a 60 hour training course and willing to work in conjunction with the program could be given (or "loaned") a midwifery kit.

### Level II

A refrigerator is planned at level II facilities for the storage of vaccines and some drugs. A two or three room facility will need to be furnished. In order to allow the performance of deliveries either in the facility or in the home, each level II facility has been given a UNICEF "MCH-A-CENTRE-EQUIPT" basic kit, or a Maternal and Child Health Center kit. Many of the items in the kit can be used for primary care as well. The individual items of the kit and most of their respective prices are listed in Appendix 2.

### Level III

Level III facilities will need more extensive furnishing, including several beds, exam tables, office equipment, and more storage capacity for drugs and supplies. Each level III facility has been allotted 2 Maternal and Child Health Center kits (omitting the two scales from the second kit) to allow enough equipment for doing both deliveries and primary care (see Appendix 2).

These facilities have been supplied with enough surgical instruments to permit the physician to do an emergency Caesarian section and minor surgery, as well as an emergency tracheostomy, casting materials have been included.

Laboratory equipment has been included at this level. No equipment for bacteriology (culturing), serology, or chemistries has been included, in accordance with the initial limited functions of the laboratory. These materials could be added later if it seems appropriate. Enough laboratory materials, reagents, etc. have been programmed at this level to allow supplying the level II facilities for any laboratory procedures they may do.

Dressings, Disposables, Drapes

Most dressings have been listed for each facility, but will probably be obtained locally, so they are not priced out. Disposable items such as garbage bags and cleaning materials have not been listed. Also launderable items, such as sheets and drapes have not been included.

Estimated Equipment Costs and Sources for Purchase

(1) Taking into account an estimate for the equipment and supplies not priced out in Tables 1 through 3: (2) assuming that the material will be purchased at UNICEF prices as much as possible; and (3) excluding the cost of furniture other than lamps, the cost for equipping each facility would be approximately as follows:

Level I	US\$	110.00
Level II	"	1,200.00
Level III	"	3,700.00

At level III, the breakdown includes:

For surgical instruments	US\$	425.00
For lab equipment	"	1,300.00

Purchasing the medical equipment from UNICEF would probably be most economical. Bulky solutions and dressings could be bought locally. If it is not possible to purchase the equipment from UNICEF, it would of course be possible to obtain it from a U.S. commercial surgical supply house, but the cost would likely be 50% to 100% greater unless a substantial discount could be obtained. Probably the whole equipment purchase could be put out on bids in the U.S., or elsewhere. The bid process would likely get the best price for the project if it were not possible or feasible to purchase through UNICEF. Another economical possibility would be to order the equipment through the U.S. Public Health Service Supply Depot at Perry Point, Maryland.

TABLE 1

EQUIPMENT FOR LEVEL I FACILITY

<u>Item</u>	<u>Quantity</u>	<u>UNICEF #</u>	<u>UNICEF 1983 Unit Price</u>
<u>Furniture:</u>			
2 chairs and 1 table Cabinet for drugs			
<u>Equipment:</u>			
UNICEF Midwifery Kit Type 3 Basic (Cent. Alum. Case)	1*	9902001	48.57
Scale, bathroom, metric/pounds	1	0139900	9.06
Forceps, dressing, spring type SS, 150 mm	1	0721000	0.72
Bag hot/cold rubber 2 Ltr	1	0315500	2.94
Jar, dressing w/cover 2.13L SS	1	0255000	3.96
Syringe, hypodermic 2ml x 0.1 Nylon luer	2	0785670	0.82
Needle, hypo luer 20G x 1" Box of 12	1	0749300	0.38
" " " 22G x 1 1/2" Box of 12	1	0750500	0.32
Scissors, bandage 182mm	1	0770000	2.61
Flashlight	1	0630000	1.34
Tongue Depressor, metal 165 mm	3	0620000	0.24
Syringe, ear & ulcer, rubber tip 100ml	1	0364000	0.86
<u>Dressings, Solutions:</u>			
Elastic Bandage 75 mm x 5m roll	3	0503025	0.84
Bandage, Gauze, Non-St. 25mm x 9m roll	4	0512100	0.07
" " " 50mm x 9m "	4	0512101	0.15
" " " 75mm x 9m "	4	0512102	0.23
Gauze Pad Sterile 76mm x 76mm	30	0522000	0.04
Umbilical Tape 3mm x 100m	1	0566000	2.92
Isopropyl Alcohol	1L		
Alcohol Dispenser	1		
Tincture of Iodine	1L		
Adhesive Tape 25mm x			
Liquid Soap			
Lubricant Jelly			
Band-Aids			
Cotton-tipped Applicators			
Cotton			
Diluent: Dist. H <sub>2</sub> O for Ing. 2ml amps	50	1543800	.04
" NaCl 0.9% 2 ml amps	50	1543806	.04

\* See Appendix 1 for detailed description. In some communities, there may be one kit for each promotor, or parteras who are part of the program may have their own kits.

TABLE 1

EQUIPMENT FOR LEVEL II FACILITY

<u>Item</u>	<u>Quantity</u>	<u>UNICEF #</u>	<u>UNICEF 1983 Unit Price</u>
<u>Furniture:</u>			
4 chairs, 2 tables			
Cabinet for drugs, large			
2 beds			
Instrument cabinet			
Light, examining, floor 110/220	1	0117000	35.01
<u>Equipment:</u>			
MCH-A-CENTRE-EQUIPT BASIC (Metric-Cent- Luer) Kit (UNICEF)*	1	9902301	283.13
Refrigerator LP Gas/Electric 7.4 cu.ft.	1	1151020	624.88
Vaccine carrier, complete with 4 ice packs	2	1185000	25.25
Bag. Hot/cold rubber 2 LTR	1	0315500	2.94
Flashlight	2	0630000	1.34
Splint set. multipurpose	1	E0555675	28.58
Suture, Obst/Gyn GUT Pkt 12	1	0563000	10.98
Syringe ear & ulcer, rubber tip 100ml	1	0364000	0.86
Otoscope set	1	0660000	17.91
Holder, needle straight 150 mm	2	0742990	2.81
Hammer, reflex	1	0640000	0.93
Suture, silk black set 3 sizes	5	0565500	1.22
Scissors, surgical straight SS 140mm B/B	3	0774500	1.18
Sterilizer, Instr.Boiling 410x250x100 Fuel	1	0160000	15.73
Stethoscope Binaural Complete	1	06860000	1.78
<u>Dressings, Solutions:</u>			
Elastic Bandage, 75mm x 5m roll	12	0503025	0.84
Bandage, Gauze Non-St 25mm x 9m roll	20	0512100	0.07
" " " 50mm x 9m "	20	0512101	0.15
" " " 75mm x 9m "	20	0512102	0.23
Gauze pad, sterile 76mm x 76mm	200	0522000	0.04
Umbilical tape 3mm x 100m	1	0566000	2.92
Cotton-tipped applicators			
Cotton			
Adhesive Tape 25mm x			
Vaseline Gauze			
Band-Aids			
Lubricant Jelly			
Liquid Soap			
Isopropyl Alcohol	3L		
Alcohol Dispenser	1		
Tincture of Iodine			
Merthiolate			
Silver Nitrate Applicators			
Drapes			
Container sputum, screw caps	200	0932530	0.04
Diluent: Dist.H <sub>2</sub> O for Inj. 2ml amp	150	1543800	0.04
" NaCl 0.9% for Inj. 2ml amp	150	1543800	0.04

\*See Appendix 2 for detailed description, with individual prices.

TABLE 1

EQUIPMENT FOR LEVEL III FACILITY

<u>Item</u>	<u>Quantity</u>	<u>UNICEF #</u>	<u>UNICEF 1983 Unit Price</u>
<u>Furniture:</u>			
Tables, chairs, exam tables, beds as necessary			
Large cabinet(s) for drugs			
Instrument cabinet(s)			
Light, examining, floor 110/220	3	0117000	35.01
IV Stand	2		
<u>Equipment</u>			
MCH-A-CENTRE-EQUIPT BASIC KIT (UNICEF) (Metric-Cent-Luer)*	1	9902301	283.13
Same but without adult and infant scales*	1	9902301	141.99
Refrigerator LP Gas/Electric 7.4 cu. ft.	1	1153020	637.28
Vaccine Carrier Complete with 4 ice packs	3	1185000	25.25
Otoscope set	1	0660000	17.91
Otoscope Ophthalmoscope set	1	0661000	35.34
Stethoscope, Obstetric	1	0685800	13.41
Flashlight	2	0630000	1.34
Hammer, reflex	2	0640000	0.93
Sterilizer Hot Air 220V 250x250x300	1	0165500	147.35
Syringe ear and ulcer rubber tip 100ml	2	0364000	0.86
Resuscitation (Ambu) Bag	1		
* See appendix 2.			
<u>Surgical Instruments:</u>			
Suture Obst/Gyn Gut Pkt 12	4	0563000	10.98
Suture Silk black set 3 sizes	50	0565500	1.22
Gloves, Surgeon's Latex Size 7 pair	50	0328500	0.30
Forceps Hemostat Curved Pean Baby 140mm SS	4	0723915	1.79
Forceps Hemostat Straight Crile Baby 140mm	4	0723930	1.72
Forceps Hemostat Mosquit~ Halsted 125mm	4	0730500	1.95
Forceps, Obstet. Simpson Long 350mm	1	0733500	24.10
Curette, Uterine Blunt 280mm Size 1	1	0712900	1.70
" " " " Size 4	1	0713500	2.20
" " Sharp "	1	0714500	1.70
Forceps, dressing, spring-type 150mm SS	2	0721000	0.72
Forceps, placenta 300mm	1	0734000	2.59
Forceps, splinter 100mm	2	0734900	0.61
Forceps, Sponge, straight 225mm	2	0735000	3.18
Forceps, tissue 125mm (teeth) fine	2	0736658	0.73
Forceps, tissue 125mm coarse	2	0736800	0.85
Forceps, Uterine Tenaculum 280mm	1	0740000	2.81
Holder, needle 125mm	3	0742915	1.79
Holder, needle straight 150mm	2	0742990	2.81
Knife Handle # 3	2	0745000	1.62
Knife Blade Pkg of 5 # 10 PKT	5	0746000	0.21
" " " # 11 PKT	5	0746100	0.26
" " " # 15 PKT	5	0746300	0.26

TABLE 1

Continued - Page 2

<u>Surgical Instruments, Continued:</u>	<u>Quantity</u>	<u>UNICEF #</u>	<u>UNICEF 1983 Unit Price</u>
Needle, spinal child 22G x 1 1/2"	2	0747990	0.71
Needle, spinal 22G X 3 1/2"	2	0748500	0.41
Needle, hypo 22G x 1 1/2" box of 12 BOX	5	0750500	0.32
" " 20G x 1" " " luer	5	0749300	0.38
" " 18G x 1 1/2" " "	5	0749100	0.38
" " 24G x 3/4" " "	5	0751000	0.39
Needle, suture Pkt of 6 asst. PKT	2	0758500	1.01
Needle, suture, catgut, Mayo PKT	2	0758920	0.61
Sound, uterine 300mm	1	0775200	4.20
Retractor, abdom. Richardson	1	0767700	2.07
Retractor, Gen. Op.	1	0768797	1.57
Retractor, Gen. Op. set of 2	2	0769110	4.27
Scissors, dissect 132mm	1	0770484	1.10
" " curved Mayo 140mm	1	0770500	1.32
" " straight Mayo 140mm	1	0771000	1.17
" surgical straight 140mm	2	0773500	1.13
Syringe, hypo 5ml luer glass	2	0784000	0.34
" " 10ml " "	2	0784500	0.46
Tracheotomy set Complete	1	0787500	65.34
Cast Spreader	1		
(optional) Cast Cutter	1		
Anoscope	1		
<u>Dressing, Solutions:</u>			
Plaster of Paris Bandage 3" x 3 yd. roll	100	0541050	0.43
" " " 4" x 3 yd. "	100	0541055	0.55
Elastic Bandage, 75mm x 5m roll	30	0503025	0.84
Bandage, Gauze, Non-St 25mm x 9m roll	50	0512100	0.07
" " " 50mm x 9m roll	50	0512101	0.15
" " " 75mm x 9m roll	100	0512102	0.23
Gauze, absorbent, N-St 200mm x 6m	20	0521875	0.33
Umbilical Tape 3mm x 100 m	2	0566000	2.92
Gauze Pad Sterile 76mm x 76mm	1000	0522000	0.04
Finger Cot. Surgeon's Large Box 72	3	0326901	0.85
" " " Medium "	3	0326901	0.95
Adhesive Tape 25mm x 10m	30		
Diluent: Dist. H <sub>2</sub> O for inj. 2 ml amp	500	1543800	0.04
" " " 5 ml amp	200	1543802	0.05
Diluent: NaCl 0.9% for inj. 2 ml amp	500	1543806	0.04
" " " 5 ml amp	200	1543808	0.05
Vaseline Gauze			
Lubricant Jelly			
Liquid Soap			
Isopropyl Alcohol	10L		
Tincture Iodine			
Merthiolate			
Alcohol Dispenser	3		
Cotton			
Cotton-tipped applicators			



Table 1

Continued - Page 4

	<u>Quantity</u>	<u>UNICEF #</u>	<u>UNICEF 1983 Unit Price</u>
<u>Laboratory Equipment, Continued:</u>			
Sulfosalicylic Acid 100G	12	1090000	2.00
Wright Stain Powder 25G	3	1095000	4.33
Gram's Iodine			
Normal Saline solution	2L		
10% HCl solution			
Ethanol			
Stains for tuberculosis stains			
Cytological fixative			
(optional) urine test paper (e.g. Iabstix)			
(optional) slide pregnancy test			
Lugol's Iodine			

APPENDIX 1

	<u>Quantity</u>	<u>#</u>	<u>Price</u>
Midwifery-kit type 3 basic (cent-alum case)	1 kit	9902001	48.57
Sterilizer instrument 222x82x41 mm stainless	1	0167000	2.33
Basin kidney 825ml (28 oz) stainless steel	1	0211000	1.31
Bowl sponge 600ml stainless steel	2	0225000	1.27
Irrigator 1.5 ltr stainless steel	1	0250000	4.66
Apron utility 900 mm x 1m opaque plastic	1	0305000	1.53
Catheter urethral nelaton solid-tip one-eye 12fr	2	0322000	
Connector 3 in 1 for 6 to 8 mm tubing nylon	1	0324500	
Pouch clear polypropylene 250x380mm long	1	0340000	0.11
Sheeting plastic clear vinyl 910mm wide	2	0361000	0.50/m
Tube rectal one eye funnel-end 22fr-500mm rubber	1	0378500	
Tubing latex rubber for irrigator 1.5m length	1	0382000	
Bottle dropping 10ml amber glass	1	0415000	0.13
Bottle n/m-round screw-cap 60ml amber glass	1	0417000	0.11
Bottle w/m-round screw-cap 60ml amber glass	2	0417500	
Thermometer clinical oral dual cels/fahr scale	1	0481050	0.37
Thermometer clinical rectal dual cels/fahr scale	1	0481060	0.40
Brush hand Surgeon's white nylon bristles	1	0514000	0.36
Case for MIDW fe kit with lid empty aluminium	1	0516000	11.35
Cotton wool absorbent non-sterile 100G	1 roll	0519500	0.32
Gauze-pad sterile 12-ply 76x76mm square	20	0522000	0.04
Lamp alcohol with screw cap 60 ml metal	1	0530000	1.22
Pins safety medium size 40mm bag of 12	1	0539000	
Soap box 2 piece hinged plastic	1	0551004	0.17
Soap toilet 118G bar unwrapped	1	0552000	0.11
Scale spring baby 10KG 100G graduations	1	0557000	5.71
Tape measuri. 1.5m/60-vinyl-coated fibreglass	1	0556700	0.22
Towel huck 430x500 mm	2	0575000	0.46
Urinalysis outfit (albumin) test tubes/botl/CLMP	1	0584000	0.60
Stethoscope binaural complete	1	0686000	1.78
Forceps hemostat straight roche-str-pean 160mm SS	2	0727500	2.45
Forceps sterilizer (utility) 200mm vaughn CRM	1	0736500	1.06
Scissors surgical straight 140mm B/B SS	1	0774500	1.18
Clamp tubing regulating Hoffman 13x19mm	1	0930460	

APPENDIX 2

	<u>Quantity</u>	<u>#</u>	<u>Price</u>
MCil-A-Centre-Equipt Basic (metric-cent-luer)	1	9902301	283.13
Scale physician adult metric 140kgs x 100g	1	0140500	108.29
Scale infant metric 16kgsx20g	1	0145500	32.85
Sterilizer Instr.boiling type 320x170x100mm fuel	1	0162000	9.25
Basin kidney 475 ml (16oz)stainless steel	2	0210000	1.35
Basin solution deep approx 6 litre SS	2	0214000	3.89
Bowl sponge 600ml stainless steel	4	0225000	1.27
Cup solution 180ml stainless steel	2	0237000	0.71
Irrigator 1.5 ltr stainless steel	1	0250000	4.66
Jar dressing w/cover 2.13 litre stainless steel	2	0255000	3.96
Measure graduated w/handle 500 ml/1 pint SS	1	0260000	
Tray instrument/dressing w/cover 310x95x63mm SS	1	0276500	4.19
Tray instrument shallow 480x330x19mm SS	1	0278000	4.18
Catheter urethral nelaton solid tip one-eye 14fr	2	0323000	
Connector 3 in 1 for 6 to 8mm tubing nylon	2	0324500	
Gloves surgeon's latex size 7	3	0328500	0.30
Sheeting plastic clear vinyl 910mm wide	2	0361000	0.50/m.
Shiled nipple glass shell rubber nipple	5	0363000	0.43
Syringe ear & ulcer rubber tip 100ml	1	0364000	0.86
Syringe rectal infant rubber bulb hard tip 30ml	1	0365000	0.72
Tube rectal one-eye funnel-end 20fr 500mm rubber	2	0378000	
Tube rectal one-eye funnel-end 24fr 500mm rubber	1	0379000	
Tubing latex rubber for irrigator 1.5m length	2	0382000	
Dropper medicine curved tip ungraduated	6	0425000	0.06
Measuring cup 1 ltr/32 oz/4 cups pyrex	2	0450000	
Thermometer oral clinical dual cels/fahr	3	0481050	0.37
Thermometer clinical rectal dual cels/fahr scale	3	0481060	0.40
Brush hand surgeon's white nylon bristles	2	0514000	0.36
Duster (dust-gun)hand	1	0521000	7.42
Lancet (Hagedornsuture needle) straight 75mm	6	0532000	0.12
Stone sharpening oil Arkansas 50x19x6.3mm	1	0559000	0.89
Suture cotton white non-sterile 00 USP 91m	1	0561000	1.49
Tape measure 1.5m/60" vinyl coated fiberglass	1	0567000	0.22
Tourniquet web heavy olive drap 38x1066mm	1	0570000	1.83
Urinary test set complete	1	0580000	5.00
Tongue depressor 165mm metal	3	0620000	
Pelvimeter collyer external grad. CMS/in.	1	0667000	
Sphygmomanometer aneroid 300mm w/bandage cuff	1	0683000	8.99
Stethoscope binaural complete	1	0686000	1.78
Stethoscope fetal pinard monaural	1	0686500	0.66
Catheter urethral female 12fr metal	1	0710000	
Forceps dressing spring type 150mm SS	2	0721000	0.72
Forceps hemostat straight kelly 140mm SS	2	0724500	
Forceps sponge holding straight 225mm SS	1	0735000	3.18
Forceps sterilizer (utility) 200mm Vaughn CRM	1	0736001	1.06
Holder needle straight narrow-jaw mayo-HGR 150mm	1	0743500	
Knife-handle surgical for minor surgery #3	1	0745000	1.62
Knife blade surgical for minor surgery #10 PKT 5	1	0746000	0.21
Knife blade surgical for minor surgery #11 PKT 5	1	0746100	0.26
Knife blade surgical for minor surgery #12 PKT 5	1	0746200	
Needle hypo 0.70x32mm/22GX1-1/4" luer box of 12	1	0750500	0.32
Needle hypo 0.55x19mm/24GX3/4" luer box of 12	2	0751000	0.39
Needle hypo 0.90x38mm/20GX1 1/2" luer box of 12	1	0752000	
Needle suture 3/8 circ tri pt pkt of 6 unstd.	1	0758500	

APPENDIX 2

Continued - Page 2

	<u>Quantity</u>	<u>#</u>	<u>Price</u>
Scissors bandage angular lister 182mm SS	1	0770000	2.61
Scissors gauze STR 215mm sharp/blunt point SS	1	0772000	
Scissors surgical stright 140mm S/B SS	2	0773500	1.18
Speculum vaginal BI-valve graves small SS	1	0777000	3.79
Speculum vaginal BI-valve graves medium SS	1	0777500	4.65
Syringe hypodermic 2MLXO .1ml nylon luer	3	0785670	0.82
Syringe hypodermic 5MLXO .5ml nylon luer	2	0785672	
Syringe hypodermic 10MLXO .1ml nylon luer	2	0785674	
Clamp tubing regulating hoffman 13 x 19 mm	2	0930460	

TABLE # 2

FORMULARY FOR LEVEL I\*

Oral rehydration salts

Mebendazole

Anti diarrheal and anticholinergic: belladonna with phenobarbital

Laxative: bisacodyl

Antacid pills

Diphenhydramine, oral

Penicillin tablets

Penicillin, procaine, injectable, with diluent

Chlorpheniramine 4 mg.

Ophthalmic antibiotic ointment

Aspirin

Cough medication

Antibiotic dermatological ointment

Iron (for adults and children)

Iron with folic acid

Multivitamins with iron

Ergometrine maleate, tablets

Throat lozenges

Gentian Violet

---

\* See overall formulary for reasons why drug was selected and for what pathology drug is to be used.

TABLE # 2

FORMULARY FOR LEVEL 11\*

All drugs listed in formulary for Level 1, plus:

Alternative anti-diarrheal: iodochlorhydroxyquinolone

Piperazine

Milk of Magnesia

Oral anti-emetic: Promethazine

Parenteral anti-emetic: promethazine

Liquid antacid

IV solution: Ringer's Lactate

Benzathil Penicillin, IM

Tetracycline, 250 mg. tablets

AIC

Aminophylline tablets

Scabicide

Steroid Cream

Potassium Permanganate

Anti-fungal ointment

A + D ointment

Acetaminophen

Ergometrine maleate, IM

Polyvalent Anti-venom

Epinephrine 1:1000

Sulfa-triacethoprim

Sulfa

Nystatin suppositories

Chloroquin

Lidocaine 1%

TABLE # 2, continuation

Anti-Tuberculous drugs

Vaccine

---

\* See overall formulary for reasons why drug was selected and for what pathology drug is to be used.

TABLE # 3

COMPARABLE WHOLESALE COSTS FOR DRUGS

	Per average course of therapy		
	(1)	(2)	(3)
	U.S. WHOLESALE COST	UNICEF OF ACTION MEDEOR COST	**
Oral Rehydration Salts (1)	about \$ 1.00	\$ .06	1566%
Mebendazole (2)	8.98	.10	8880%
Metronidazole (9)	24.48	.42	5729%
Penicillin, procaine, injectable (20)	.93	.39	138%
Penicillin, benzathil, injectable (21)	4.98	.28	1679%
Ampicillin, injectable (22)	12.90	1.79	621%
Sulfa-trimethoprim (59)	3.73	.77	384%
Chloramphenicol (17)	6.90	.57	1110%
Antibiotic ophthalmic ointment (61)	.96	.10	860%
Antibiotic Dermatological ointment (37)	.89	.26	242%
Steroid Cream (39)	1.03	.26	296%
Furasemide (63)	.58	.06	866%
Ergometrine injectable (51)	.69	.06	1050%
Ergometrine tablets (52)	.70	.03	2233%
Chloroquine (68)	1.07	.42	154%
Throat lozenges (33)	about .50	.10	400%

\* Whichever lowest

\*\* (3) % increase in cost were drug to be bought on the U.S. wholesale market.

Self-Financing Priary Health Care  
Project - 511-0569

FORMULARY OF MEDICATIONS FOR USE

AT LEVELS I, II, AND III

Submitted to USAID/Bolivia  
by Robert LeBow, M.D.  
under Contract # 511-0000-S-00-3017  
March, 1983

## FORMULARY OF MEDICATIONS FOR USE AT LEVELS I, II, AND III

### General Comments:

It is a stated goal of this project to provide a limited formulary of drugs for each level that would be both inexpensive and effective. However, this goal must be modified somewhat to conform to the realities of drug utilization.

For example, although a formulary of "about 10 drugs" has been proposed for the promotor, in the San Julian area, 16 promotor are currently using a drug formulary containing 27 items, several of which are either ineffective or redundant. One of these items, Especifico Pessoa, is not only expensive (the most expensive item on the list), but is probably ineffective for its indication: snake bite. Yet people have great faith in it, and might buy it and use it even if it were not supplied by the promotor. People become attached to certain "name" remedies, even if they are no more effective, and perhaps potentially more harmful, than a simpler, less expensive drug.

The dilemma of patient demand for certain medication, even if ineffective, is a serious problem for the promotor or auxiliary nurse trying to build confidence in the population. Also, the expectation of the patient to get some medication, even if none is necessary, puts pressure on the health provider to prescribe. The injection of penicillin when oral medication would suffice is also a common patient expectation and/or demand. In preparing the formulary, these problems have been taken into account. An effort has been made to do at least no harm.

Herbal remedies have not been included in the formularies, but their use is encouraged when appropriate and safe. And the use of herbal remedies is preferable to that of some currently prescribed multi-pharmacy drugs which are potentially harmful.

An attempt has been made to tailor the formulary to the stated objectives and services outlined in the section on services provided at the different levels. In addition to the drug formulary, each level also should be supplied with some antiseptic and/or cleaning solutions. Soap and clean water are probably as effective, but custom dictates the use of colored solutions or alcohol for skin problems or wounds. Bandages, cotton swabs, and diluents for injectables have also not been included in the formulary.

Formulary:

The following formulary (Table # 1) will likely be augmented on an individual basis by a few locally obtained drugs and/or herbs for the reasons outlined above. However, the listing can be considered a "minimal" formulary for each of the levels.

The formulary (Table # 1) lists:

- (1) the medication, or the type of medication. If the type of medication is listed, then the specific names are listed in the boxes showing the alternative drugs available from different sources.
- (2) briefly, why the drug was selected. Often this reason is because it is recognized as the standard drug for the particular condition. Sometimes there is no practical alternative. Other times, low cost is a key reason, and some drugs have been omitted completely because their cost is prohibitive and cheaper

alternatives are available. On occasion, it may become necessary to purchase one of these more expensive drugs not in the formulary (e.g., because of patient allergy to the less expensive drug), but these purchases should be considered on an individual basis by the project physicians.

(3) the level of the system at which each one of the drugs will be used (I, II, III). All level I drugs are included within the levels II and III formularies, and all level II drugs are included in the level III formulary. For convenience, a summary of the formulary for level I is shown in Table # 2, and the formulary for level II in Table # 3.

(4) the comparative costs of the drug (or alternative drugs for the same use) from different sources. A listing for every drug listed from every source researched is not always available, so a "blank" box indicates the item is not available from a particular source. In the case of Bolivian drug manufacturers, only the "Inti" and "Vita" brand drugs are priced out (converted to dollars at 200 pesos per dollar). A few other items are noted to be "available" locally in Bolivia, but are not priced out.

The four drug sources listed in the formulary are:

- i) Action Medeor, a West German medical aid organization.
- ii) a U.S. wholesale drug supplier, in this case Modern Wholesale Drug Co., Inc., 1 Randall Ave., Rockville Centre, N.Y. 11571. The prices are directly from their 1983 catalogue.
- iii) UNICEF. The prices are from the 1983 catalogue.
- iv) Local Bolivian Market. Prices listed are from the current (March 1983) "Inti" and "Vita" wholesale price lists.

Shipping costs may be partially included in these costs, but actual availability from each of these sources is not known.\*

- (5) An estimated quantity of drug needed for an "average" course of therapy is listed, along with an estimated cost per "average" course of therapy, based on either the lowest possible cost from the sources listed, or the U.S. wholesale cost, if the cost is nearly comparable. The "average" course of therapy is based on different dosages for different indications and/or pediatric usages.
- (6) The next 3 boxes then estimate the number of courses of therapy that will be prescribed for each drug within the project system at each level, individually.

These estimates are based on a time when the system will be fully implemented, with a target population of about 55,000. More specifically, the estimates are based on the utilization figures developed for each level in the section on services.

- (i) It was estimated that each level I (community) "facility" would generate 22 encounters per week. Assuming the number of drugs prescribed is 90% of the number of encounters (some encounters would involve no drugs, other more than one), there would be  $.9 \times 22 \times 149$  facilities = about 3000 prescriptions per week, or 155,000 per year.

- ii) Similarly, at level II, the estimate would be:  $80$  encounters per week  $\times .9 \times 23$  facilities  $\times 52$  wk. = 86,000 prescriptions per year.

\*The possibility of obtaining drugs from the USPHS supply at Perry Point, MD should be considered.

iii) At level III, the estimate would be for all 5 facilities:

170 encounters/day x .9 x 260 days/yr.= 41,400 prescriptions per year.

The overall total of prescriptions dispensed per year within the system would be about 282,000, not including vaccines.

The kinds of drugs used at the different levels will be different, and will vary depending not only on the types of drugs available, but on the types of illnesses seen. Level III will have a variety of emergency drugs as well as a wider variety of antibiotics to meet the needs of patients referred there from lower levels.

The estimated courses of therapy at each level are based not only on the number of prescriptions issued (see above), but also on the spectrum of diseases encountered. An estimate of the type of illness encountered in the target population requiring prescriptions would be:

- 20% Parasitoses
- 15% Respiratory infections
- 15% Other G. I. disturbances
- 10% Anemia
- 5% Pregnancy related
- 10% Skin infections
- 15% Pain
- 10% Other

These estimates are based on:

- i) data from the Montero project
- ii) data from San Julian health survey, July 1982
- iii) data from the Unidad Sanitaria in Santa Cruz, 1981
- iv) personal experience

The above estimates have been applied in estimating the courses of therapy for each drug at each level.

In the boxes estimating the number of courses of therapy for each level, there is usually a percentage indicated. This shows the per cent of the total dispensing at the respective level that this particular drug represents.

- (7) Finally, a dollar amount has been calculated to estimate the wholesale cost to the project of one year's supply of each drug as listed. This cost does include some shipping in some cases, but does not take into account the cost of packaging and distribution, re-ordering, or any costs, if any, in customs. The initial order may have to be made primarily from U.S. sources, but it can be readily seen from the prices listed that certain drugs are much less expensive from Action Medeor or UNICEF. Special effort should be made to obtain at least some of these drugs initially from these alternative sources, or the program will be stressed financially unnecessarily.

The specific drugs for which the cost savings would be very substantial include mebendazole, metronidazole, oral rehydration salts, intramuscular penicillin (both procaine and benzathil), injectable ampicillin, sulfa-trimethoprim,

chloramphenicol, antibiotic ophthalmological and dermatological ointments, steroid creams, furosemide, ergometrine injection and tablets, chloroquine, and throat lozenges. (See Table # 4) If it becomes necessary for the project to obtain its own immunization materials and anti-tuberculous drugs, these items should be obtained from UNICEF or Action Medeor, as the cost savings over purchasing them on the U.S. wholesale market is very substantial.

Table # 4 does present the drugs for which the cost savings would be most significant if the drugs were bought outside the U.S. wholesale market. It should be noted, however, that in the case of oral rehydration salts, these could probably be made up locally at much lower cost, although it would involve a considerable amount of packaging.

Overall Costs:

If the drugs were purchased at the prices indicated, from the sources indicated in the column in Table I labeled "lowest cost per average course of therapy", the cost for a one year's supply of drugs, per this formulary, would be \$62,172.39. This cost does not include any extra medications purchased locally, or the cost of packaging and distribution. An it does not include the cost of anti-tuberculous drugs or vaccines, both of which should be supplied through programs of the Ministry of Health.

If it became necessary to purchase anti-tuberculous drugs, they would be much less expensive if obtained through Action Medeor or UNICEF (see items 73 through 75 in the formulary, Table I). Vaccines are also much less expensive if purchased through UNICEF. The vaccines that will

be necessary for the project to have routinely include: DPT, oral polio, measles, adult-type tetanus-diphtheria, and BCG. Rabies vaccine should also be available. As noted above, it is contemplated these vaccines will be made available by the Ministry of Health.\* The project will maintain refrigeration capabilities for vaccines at levels II and III, however.

Summary:

A formulary is presented which includes 19 items at level I, 44 items at level II, and 72 items at level III, not including anti-tuberculous drugs and vaccines. Comparable costs and availability from four sources are listed, and utilization for each of the drugs at each level of services is estimated. Then wholesale cost of each of the drugs is calculated for a one year's supply based on a target population of 55,000 people.

Finally, it should be stated that this formulary is by no means static. It will be modified according to perceived needs, and if the preventive programs are successful, many fewer drugs will be needed in subsequent years, especially drugs such as the anti-helminthals and iron.

---

\* For example, the UNICEF price for 20 doses of OPV is \$0.30 versus U.S. wholesale of \$20.32, and for 10 doses of measles vaccine \$1.22 vs. \$18.33.

THE PROVIDER ORGANIZATION

Submitted by Robert LeBow, M.D.  
under Contract # 511-0000-S-00-3017  
March, 1983

## THE PROVIDER ORGANIZATION

### I. Functions of the Provider Organization

The Provider Organization will be the administrative body for the self Financing Primary Health Care Project. Its tasks will be to:

- 1) Give direction to the project, in coordination with the Board of Directors
- 2) Make policy for the project, in coordination with the Board of Directors
- 3) Administrate the project, including
  - a) Hiring and firing of personnel at levels II and III; suprvision of their performance.
  - b) Establishment and supervision of logistics and drug supply systems
  - d) Establishment and maintenance of a financial and accounting system that will allow detailed financial analysis of the project at any point in time, permitting changes in costs and/or charges.
  - e) Establishment of preventive and curative health care norms and goals and the supervisory system to maintain these, especifically in:
    1. Curative medicine and nursing
    2. Health education
    3. Sanitation
    4. Maternal and child health
    5. Training and continuing education programs

### II. Policy and Direction: The Board of Directors

The director of the project, along with his two assistant directors for health services and administrative services, will prepare detailed plans for the

implementation of the services and management systems for the project. These would follow the general goals and structure of the proposed project, but would be subject to modifications as to reflect real conditions and restraints. They would develop their proposals in coordination with the Board of Directors. Policy and direction of the project is in the hands of both the Board of Directors and the Provider Organization.

The Board of Directors role in the project is mainly advisory, but they would be responsible for hiring the project director, and initially, the two assistant directors. Other types of decisions which should involve the Board include the location of facilities, any major construction or remodeling costs, any major equipment additions (such as an X-ray machine), or any major change in charges. The Board would have some responsibility to review the overall performance of the project (all parameters) at stated intervals of 3 months or less, when the project director will present the performance summary to them. This summary will include detailed patient utilization data, preventive projects planned and already performed, drug utilization data, and a complete financial analysis.

The Board of Directors would be composed of representatives from each of the cooperatives involved in the project and representatives from several professional organizations, including physicians, nurses, and business organizations.

Since the project Board of Directors will not be the legally responsible entity for the project at least at the beginning, it will be important to define the tasks of this Board vis-a-vis the Board of Directors of La Merced, which will be grantee of USAID funds for the project.

Two other Boards relating to this project are also planned to assure a wider based support in the community and to encourage replication of the project elsewhere.

One would be a Board of Voluntary Advisors; the other would be a Honorary Board. The director of the project would respond to these two additional boards.

The Board of Voluntary Advisors would be composed of Bolivian and international health professionals residing in the country who are engaged in primary health delivery program. The meetings of this Board would provide a forum for Board members and project staff to share experiences encountered during the implementation of project components. Membership would include representatives from the Regional Office of the MSW/PH, Project Concern, the Mennonite Central Committee and the Andean Health Project. This Board would meet quarterly.

The Honorary Board would be composed of key national, regional and municipal personalities who will meet no more often than every six months to review the progress of the project. Officials invited to participate on this Board would include: the Major of the City of Santa Cruz, the Prefect of the Department of Santa Cruz, the Archbishop of Santa Cruz, the Minister of Health, the Regional Director of the National Social Security System, the National Director of the Bolivian Red Cross, and the President of the Santa Cruz Chamber of Commerce.

### III. The Establishment of the Provider Organization

The establishment of the provider organization will start with the hiring of the director and the two assistant directors. They will in turn hire the rest of the members of the provider organization.

The hiring of these three key members of the provider organization will be carried out by the project Board of Directors in collaboration with USAID/Bolivia, as grantor.

This group will advertise for the three positions on the Provider Organization, review the applications, and interview selected applicants, making their decision in a reasonable period of time (2-3 weeks after the advertisements have appeared). Preferably the director would be chosen first, so that he could participate in the selection of the two assistant directors. To save time, the initial recruitment would be for all three positions.

Once these three key positions were filled, the director and two assistant directors would in turn recruit and hire the other member of the Provider Organization. All positions in the Provider Organization would be full time.

### IV. The Provider Organization: Prerequisites and Job Descriptions:

#### A. The Director and the Assistant Directors for Health and Administration

##### 1) Director

a) Prerequisites: The Director should be a public health administrator with experience in health administration, and preferably with some experience in the administration of projects involving primary health care and preventive programs. He should be able to work well with technical assistance consultants and be able to relate well to the Board of Directors.

A master's or doctor's degree in public health or public health administration would be required. An M.D. degree is not required, but will not be held against the applicant.

b) Job Description: As director, the duties will be:

1) To relate to the Board of Directors as described above, as well as to the proposed Voluntary Advisory and Honorary Boards;

2) To relate to USAID/Bolivia as the grantor of the project

3) To be responsible for policy decision in the project in association with the Board of Directors;

4) To direct the project with the assistance of his two assistant directors;

5) To receive and coordinate outside technical assistance, including that firm FENACRE/PRICOR, and the technical Advisory Board.

6) The hiring and firing of personnel at levels II and III, although the recruitment of the personnel would be delegated.

7) The hiring of other members of the provider organization in association with the respective assistant directors. After the initial assistant directors are hired, the director will also hire and fire the assistant director.

8) Periodic (at least monthly) review, with other members of the provider organization, of all aspects of operation of the project.

9) Handling of problems that have not been resolved elsewhere in the organization.

2) Assistant Director for Health Services

a) Prerequisite: This position should be filled by a physician with some public health background, preferably in maternal and child health or in family practice. The physician should have a strong clinical background, and should have demonstrated the ability to work well as part of a health team. The physician should be committed to preventive medicine.

An M.D. degree with a completed residency in family practice or a maternal and child health field would be required. Further academic work and/or a degree in the public health field would be desired, but could be substituted for by experience.

b) Job Description.. As assistant director for health services, the duties will be:

1) In association with other member of the health division of the Provider Organization, more precise definition of the curative and preventive medical services to be provided at levels I, II, and III, along with the development of service delivery standards.

2) Recruiting of health personnel for levels II and III, and hiring with the approval of the director; some recruitment could be delegated to level III. Also the recruitment and hiring (with approval of the director) of other members of the Provider Organization in his division.

3) Supervision of curative and preventive health services in the project to maintain a high level of services both quantitatively and qualitatively. Periodic (at least monthly) review of the services. Periodic review of the appropriateness of drug prescribing.

4) Delegation of some of the duties involved in the supervision of health services to the staff working under him in specific programs.

5) Responsibility for monthly reports to the director summarizing the curative and preventive services of the system.

6) Direction, coordination, and supervision of all health-related departments within his branch of the provider organization, i.e.

a) Supervision of preventive and curative medical services

b) Health Education

c) Training Coordination

d) Community Organization

7) Regularly providing curative services at a level III facility so as not to lose touch with the reality of clinical medicine. One or two days a month would be encouraged. This would especially be appropriate if the assistant director for health services were a specialist who could offer something "extra" to the project.

8) Arbitrator for any disputes arising within the project over medical problems (curative or preventive).

9) Regularly scheduled field visits to the three levels of the project for supervision and observation.

10) Specific responsibility for supervision of the physicians at level III.

3) Assistant Director for Administrative Services:

a) Prerequisites: This position should be filled by a person with a background in business administration who has demonstrated, through experience and the ability to do sound financial management of an organization, not necessarily in health.

This person should have experience in the operation of information systems and/or logistics.

A degree in business administration or a closely related field would be required.

b) Job Description: An assistant director for administrative services, the duties will be:

1) Direction, coordination, and supervision of all administrative departments within his branch of the provider organization, i.e.

- a) Financial accounting and personnel
- b) Logistics and drug supply
- c) Management information system

2) In association with the director and other members of the administrative division of the provider organization, to develop project norms for personnel administration (e.g. job descriptions, selection criteria, salary scales, evaluation), financial management, management information systems, and logistics.

3) The coordination of facilities remodeling and/or construction and/or leasing, along with transportation and communications, in association with other members of the provider organization as appropriate.

4) Hiring of level III administrative personnel in cooperation with the level III clinic manager. Also recruitment and hiring (with approval of the director) of other members of the provider organization in his division.

5) Reporting to the director on a monthly basis with a summary of all administrative operations and data collected by the departments under him.

6) Working with the director to effect administrative changes necessary to maximize the efficiency of the project.

7) Regularly scheduled field visits to all levels of the project for supervision and observation.

B. Positions under the Assistant Director for Health Services

1) Supervisor for Preventive and Curative Medical Services:

a) Prerequisites: This position should be filled by a public health nurse who has experience in the supervision of rural health programs, as well as some knowledge of curative medicine and the use of basic drugs. Required will be a nursing degree from a 3- or 4-year program with further academic work and/or a degree in public health, plus public health experience.

b) Job Description: The job description would necessarily overlap with those of the other members in the health services division, since health education, training, and promotor supervision would be involved. Specifically the job would involve:

1) Supervision, setting and enforcing of norms for auxiliary nurses at levels II and III. More specifically, if Mineros does not have a level III facility within the system, this nurse will provide supervision to the auxiliary nurses at level II that normally would have been supervised from a level III facility.

2) Detection of needs for specific training programs or continuing education.

3) Coordination of maternal and child health programs

4) Detection of specific equipment or drug needs.

5) Working with the assistant director for health services to make the program responsive to the perceived needs.

2) Health Educator

a) Prerequisites: This person should have experience in the development of materials and programs for public health projects in rural areas, and

should have shown the ability to work well as a member of a health team. A degree in health education or public health with emphasis in health education would be required.

b) Job Description:

1) To develop modules or integrate modules already developed for health education for the use of all personnel in the project involved in health education, from the promoters to the physicians, and including the sanitarian. These should be appropriate for the specific needs perceived and specific time/location restraints.

2) Serve as a resource person or active participant at all 3 levels as needed.

3) Training Coordinator:

a) Prerequisites: This person should probably be a public health nurse who has had experience in developing training programs, especially for promoters, but possibly also for other level practitioners. A requirement would be either a degree in nursing (3 or 4 year program) plus experience in the development of teaching materials for health program or a similar educational background in either public health or education.

This position could be filled by a member of a private voluntary organization, such as the Mennonite Central Committee, or by someone from an organization like FIDES. Or these organizations could be contracted to give technical assistance to a training coordinator. The position could possibly be phased out, with the functions passing to the nurse-supervisor and health educator, once the training programs have been well established and run through a few cycles. The training programs will utilize the human resources of the health personnel already in the project to provide the actual training, but perhaps with some outside technical assistance, as mentioned above.

b) Job Description: The specific modules and training programs which will need to be developed and/or implemented are:

- 1) Modules for the promoters, based on the goals and projected services.
- 2) Modules to upgrade the Auxiliar I to an Auxiliar II, if necessary.
- 3) Modules to re-train parteras, if appropriate or needed.
- 4) General staff training to acquaint the staff with the functions and objectives of the project as a whole, as well as medical and administrative procedure.
- 5) Continuing education for all levels of staff, both medical and administrative.
- 6) Evaluations of the effectiveness of the training.
- 7) In coordination with the Director of the Provider Organization, planning of training as necessary for members of the provider organization.

4) Community Organizer

a) Prerequisites: Solid experience in community development or organization is necessary. The person must have shown some skill in effective community work in the past, and the ability to work as part of a team. Some experience in health projects would be preferred. Knowledge of Quechua would be an advantage.

b) Job Description: The Community Organizer would:

- 1) Work with already functioning Comites de Salud in communities or help start up these committees, so as to assure their functioning and ability to select promoters as well as to express their wants from the project. This function may be largely supervisory and delegated.

2) Coordinate with the health service coordinators from each cooperative so as to explain the program to the communities and facilitate the recruitment of members.

3) Coordinate and facilitate overall the relationship between the cooperatives, the Comites de Salud, the promoters, and the Provider Organization.

4) Handle community related problems as they arise and generally be responsible for publications at the community level.

C. Positions Under the Assistant Director for Administrative Services:

1) Financial Accounting and Personnel:

a) Prerequisites: These functions would require the services of two people: an accountant in charge of the division and an assistant (with some experience in accounting and personnel) who would help with the financial accounting and do the paper work associated with personnel management. It would be preferable if the accountant had some experience in the health field, but evidence of efficient financial accounting would be more important.

b) Job Description: The accountant would:

1) Develop and maintain two accounting systems: one to keep track of funds provided by the grant, and a second to account for program-generated funds and expenses. Considerable technical assistance will probably be required here.

2) Since hiring and evaluation of personnel as well as their job descriptions are being done at a different level, only the accounting related to the personnel system would be done at this level.

3) Delegation of some accounting and personnel tasks to an assistart.

2) Logistics and Drug Supply

This position is a crucial one and difficult one to fill, since it would involve considerable technical knowledge as well as managerial skill. The main source of income to this "self-financing" system will likely be from the sale of pharmaceuticals, so if the logistics system for drug supply fails at some point, the "self-financing" aspect of the system will be severely jeopardized.

a) Prerequisites: Because of the large amount of work involved, especially with the packaging and distribution of drugs, two people will be needed to fill the functions of this position: a chief of logistics and an assistant. The chief should probably be a pharmacist or at least have a strong background in the handling of pharmaceuticals to avoid costly mistakes at a part of the system which was demonstrated to be so fragile in the Montero project. The chief of logistics should have already demonstrated expertise in the logistics field, preferably with experience in Santa Cruz or Bolivia.

b) Job Description: The logistics department would be responsible for:

1) procurement/inventory/distribution of drugs, medical equipment, supplies for water and waste disposal systems, health education supplies, vehicle parts, and any other supplies or material.

2) maintenance and/or warehousing of all of the above, as well as vehicles and motorcycles.

3) packaging and resupply of drugs, with pricing of same.

4) communications and transportation

5) coordinating the logistics system at levels I, II and III.

Some technical assistance would be necessary to set up the above systems.

### 3) Management Information System

a) Prerequisites: The initiation of this system within the project will require considerable technical assistance. The person chosen to manage this system must be well acquainted with the management of information systems and have had experience in the field. If a computer system is introduced, then this person must know how to operate the computer. This person should have a strong background in statistics, programming, and data entry.

b) Job Description: The management information person will:

1) collect and tabulate all data received from Levels I, II, III  
2) together with the rest of the Provider Organization and the technical assistance consultants, decide which data are to be collected at each level, and how and why.

3) be responsible for quality control on the data being gathered at levels I, II, and III.

4) work closely with the record-keeper/clerks at level III  
5) specifically, if there is no level II facility in Mineros, arrange another system for filtering the data collected.

6) provide comprehensive monthly statistical reports for management review.

### V. Plan of Operations/Logistical Requirement

The Provider Organization will be located in Santa Cruz, in a facility which will be rented with project funds. The facility will have to be of adequate size to provide for office space for 14 people, including two secretaries to be shared between the director and the two assistant directors. In addition, there should be adequate space for technical assistance people

and PRICOR. It should also have adequate attached warehouse space for the required inventory of drugs and equipment with counter space to allow for packaging of the drugs. There will be some necessary remodeling.

Most of the operations are described in the job descriptions above. Figure 1 shows an organizational chart. The final organizational chart may be modified depending upon which organizational arrangement seems most efficient. For example, there may be a separate office for personnel. If during the set-up (and after, in the operation) of the provider organization, a modification seems warranted, it should be considered. For example, once certain systems have been established, it may be possible to combine functions of people and reduce the size of the Provider Organization staff.

Many of the logistical problems have been discussed above. The issue of transportation and communication is a crucial one. Radios at the Provider Organization is Santa Cruz and at the level II and III facilities in the Mineros and San Julian areas, as well as in any peri-urban Santa Cruz areas not serviced by telephone, could provide adequate communication within the system for ordering of drugs and supplies, timing of supervisory visits, general instructions, referral and consultation on patients, etc. Since so many people from the Provider Organization would be in the field so often, in-person communication will also be important.

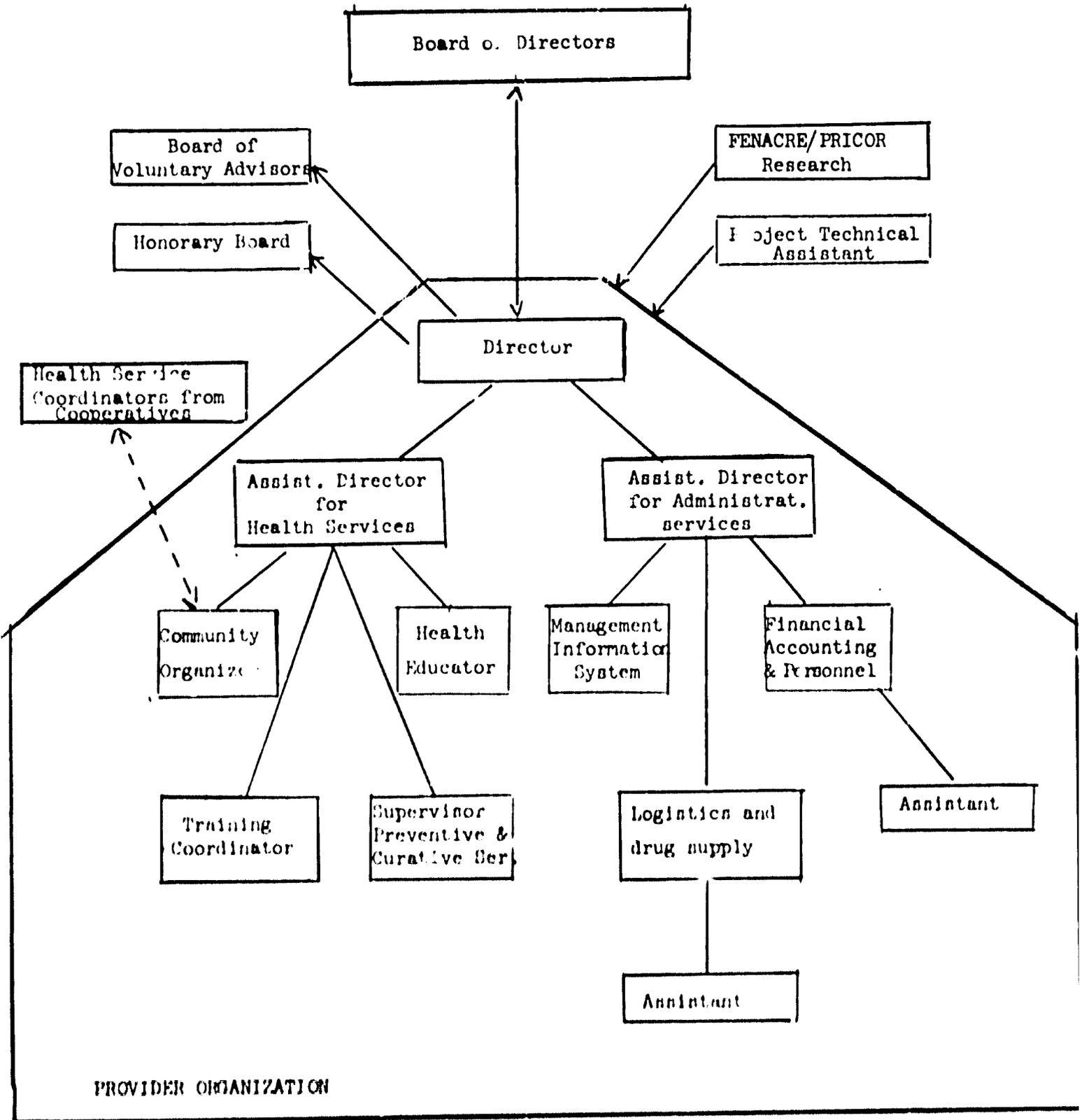
However, the projected number of people from the provider organization who would be travelling from Santa Cruz to the Mineros and San Julián areas would put heavy demands on a transportation system. Visits would have to be coordinated. Public transportation could be used but in fact is rarely

feasible. Whereas it is contemplated that motorcycles and bicycles will be used at levels I, II and III for supervision and home visits, the provider organization will require the use of two vehicles.

If the director and two assistant directors are travelling 30% of the time, the four specialists in the health division each 50% of the time, and the 3 specialists in the administrative division each 20% of the time, then the equivalent of 3.5 people would be travelling at any one time. By either combining trips and/or adding a motorcycle or two, two vehicles could suffice for the provider organization.

These trips should be arranged so that equipment, supplies and drugs can be distributed from the main warehouse at the provider organization at the same time. For overall efficiency stretch jeeps should be obtained. These would allow (1) the transport of 6 people at once; (2) space to transport drugs, and equipment; (3) traction on muddy roads; and (4) use as an ambulance if required. Radios in the vehicles would improve efficiency. Of course, the vehicles would require maintenance, gasoline, and the hiring of two drivers.

FIGURE 1



Self-Financing Primary Health Care  
Project - 511-0569

TRAINING PROGRAMS FOR THE HEALTH STAFF IN  
THE DELIVERY SYSTEM

Submitted by Robert Lallow, M.D.  
under contract # 511-0000-8-00-3017  
March, 1983

## TRAINING PROGRAMS FOR THE HEALTH STAFF IN THE DELIVERY SYSTEM

The health staff in the project at levels I, II, and III will need to be trained to carry out the functions described in the section covering the preventive and curative services at the three levels. The staff of the administrative Provider Organization will also need some training to perform the functions described in the section on that organization..

At level I, the promoters will all need a formal training program to be able to deliver the services projected for them. At levels II and III, the auxiliary nurses and other health personnel will need some training to work as a part of the health team within the project, and the supervisory nurses will need some training in supervising the promoters. However, it is not contemplated within this project to train nurses (or other technical personnel) from scratch. Rather, health personnel who are already trained will be recruited for the project. Minimal additional training will then be done for specific tasks within the project (e.g., logistics, supervision, community organization) and for general aspects of the project.

Basically, there are five levels of training programs that are envisaged in this project:

- I: Training of level I personnel: the promoters, and to some degree parteras and community health committees.
- II: At level II (and when appropriate, level III) training of staff involved in the supervision of level I, along with re-training of staff as necessary to meet specific project goals.
- III: Staff orientation related to project functions and goals, evaluations.
- IV: Continuing education for all staff
- V: Training for staff of the Provider Organization, as appropriate.

The responsibility for organizing the training programs will be primarily in the hands of the Training Coordinator in the Provider Organization. With the help of the other members of the Provider Organization, he will design the training programs. Considerable technical assistance will also probably go into designing and/or implementing the training programs. This technical assistance could be from several sources, such as the Mennonite Central Committee, FIDES, the Bolivian Public Health schools, or outside short-term people. As much as possible, health personnel already hired by the project (nurses, physicians, sanitarian, staff of the Provider Organization) will be involved in carrying out the actual training, but probably most of the training will be contracted out.

I. Training of Level I Personnel:

A. The Promotor

By far the largest component of the training program in terms of number or personnel trained will be the training of the promotors working at level I. Two or more will need to be trained from each level I community, and provision for repeating this training cycle will have to be made to assure replacements for promotors who leave the program.

Programs for training promotors in Bolivia have already been developed, and these already available programs (such as the one designed for the Montero project) will be adapted to this project. It will be a goal to avoid interfering with the promotors' livelihoods as much as possible while training them. For example, planting and harvest times will not be chosen as periods to do promotor training. As much as feasible, the training will be carried out in the promotors' own community or a neighboring community. And a large part of the training will be done in conjunction with the auxiliary II nurse

from level II who would be their supervisor within the project system. The actual site of training will be flexible, depending on the needs of the promoters, the availability of training resources, and geographic realities.

The programs will vary in organization but not so much in content. The promoters' programs will be designed to train them to deliver the services outlined in the service delivery plan, which is described in detail elsewhere. Basically, a 180 hour (6 week total) program is contemplated, scattered over time as is individually appropriate. The 180 hours would include supervised practice time, so that in fact only 25% to 50% of the allotted hours would be in formal teaching time. The formal teaching time for each module would average about 8 hours. This 180 hour program would roughly include the following modules:

- 30 hr. 1) community organization and general preventive overview
- 30 hr. 2) enteric diseases: prevention and treatment
- 15 hr. 3) respiratory diseases, including tuberculosis
- 30 hr. 4) emergencies and recognition of serious illnesses
- 30 hr. 5) deliveries
- 30 hr. 6) maternal and child health: pre-natal and well child
- 15 hr. 7) dispensing drugs, with specific reference to formulary at level I

The training program would also include periodic continuing education for the promoters, at least 18 hours (3 days) a year on a somewhat formal basis. In addition, periodic evaluations, in conjunction with the supervising nurse, would be done. "Certification" and annual "Recertification", perhaps based on a formal exam, are planned for the promoters.

B. Parteras

If it is appropriate, parteras already functioning within the communities will be re-trained in obstetrical and newborn care. In some cases, these parteras may become a promotor and go through the 180-hour program outlined above. Most usually, however, the parteras would be trained with a shorter program more specific to their limited practice. In addition to some training to integrate the parteras into the project program, they would receive 2 basic modules of training:

30 hr. 1) Deliveries and care of newborn

30 hr. 2) Pre-natal care

Only about one third of these hours would be in formal teaching time, the rest in supervised practice. The training of the parteras would be mostly contracted out to organizations which already have shown expertise in this kind of training program.

C. Community health committees

The community health committees will need some training in how to choose and deal with the promoters, as well as how to make decisions on health programs for their communities. This type of training would be brief, consisting of several hours only, but it would have to be repeated periodically as the members of the committees changed.

The training could be contracted out and/or done by project personnel. It will be designed and/or coordinated by the Provider Organization, more specifically by the Community Organizer and the Training Coordinator, in cooperation with the Health Service Coordinators from the cooperatives.

## II. Training of Level II and III Personnel

The supervisors of the promotors will be trained in supervisory techniques, if they do not already have these skills. At the very least, the supervisors (mostly Auxiliary II nurses) will be involved with the training of the promotors they are to supervise to develop the "team concept" in the project.

Also, although it is planned that level II and III personnel will be hired already trained in their respective jobs, there will be project-specific tasks for which they will require additional training. These tasks for which specific training would be indicated include:

- 1) specific supervisory roles
- 2) techniques of evaluation
- 3) use of the specific drugs in each formulary
- 4) project information systems
- 5) project financial systems
- 6) logistics / drug distribution systems
- 7) specific health programs, as necessary
- 8) community relations

The Provider Organization will design and implement these later training programs. The actual training will mostly be done by the Provider Organization personnel, although outside technical assistance will be used also. The Training Coordinator will arrange the programs.

## III. Staff Orientation Related to Project Functions, Goals and Evaluations

The Provider Organization's Training Coordinator will be in charge of organizing staff orientation programs. These will be essential to unify the staff as a "system" so as to maximize efficiency and effectiveness as a whole. All the members of the Provider Organization, both those in the health services branch as well as those in the administrative branch, will have the key roles in carrying out this orientation and making the staff aware of the functions and goals of the project as a whole and its individual parts.

The specific information to be communicated to the staff at regularly arranged meetings includes the tasks listed in section II above. Each one

of these functions could form a training module of approximately 2 to 6 hours. Number seven ("specific health programs, as necessary") could comprise many different modules.

Staff orientation will include instructions on methods for evaluation, including the concept of certification and re-certification.

The orientation will also deal with relationships with the cooperatives as well as the community, and will provide a means for the project personnel to have input into the project. Relationships to other programs (e.g. immunizations, tuberculosis, malaria) will also be put into perspective in the staff orientation.

The staff orientation would be allotted at least 6 to 12 hours a year, although more time would be required at the initiation of the project.

#### IV. Continuing Education for All Staff

Continuing education (including re-education) in both preventive and curative medical topics for all the health personnel at levels I, II, and III is crucial to maintain the quality of care and to maintain the interest and enthusiasm of the personnel. An organized continuing education program is especially essential for the personnel in the more remote rural areas where there is no access to an organized medical education program. The program would be required of personnel, but would allow their input to express their needs in continuing education.

The Training Coordinator and the Assistant Director for Health Services would organize and design these programs, which could be internally run or be associated with outside programs. The continuing education for the promoters would be mostly internally run, although perhaps contracted out. On the other hand, the physicians and nurses would probably do a mixture of internal programs and outside conferences.

Health personnel would be allotted 18 to 30 hours per year for formal continuing education. This training would involve basically:

- 1) review and update of curative and preventive knowledge and procedures
- 2) review and update of the use of drugs
- 3) specific programs aimed at specific levels:
  - a) promoters
  - b) nurses
  - c) physicians
  - d) others

V. Training for Staff of the Provider Organization, as Appropriate

Training for the various members of the Provider Organization will depend on their individual needs to fulfill their projected functions. Some of the people hired to be in the Provider Organization will already have all or many of the needed skills, but this will probably not be the case for most. Strengthening of specific skills to function effectively within the program will probably be necessary for most of the staff of the Provider Organization. Training for the Provider Organization staff would be done through:

- 1) Technical Assistance: short term or long term. Outside consultants will be paid to provide 1:1 training for their respective counterparts in the Provider Organization. The training experience in this situation would be more practical, rather than a didactic one. Specific types of technical assistance will be determined by specific needs, but it is contemplated that considerable technical assistance will be needed for training programs, community organization, management information systems, financial accounting, and logistics. This technical assistance is to be paid for by USAID and PRICOR.

2) Studies or Courses Elsewhere: this training would again be related to the need for specific skills for each individual, and could be short-term (1-4 weeks) or up to 3 months' duration. This could be done at a training center in Bolivia, such as one of the schools of Public Health. Or it could be done within a formal or practical training program outside of Bolivia, preferably in a neighboring country. The specifics of this training would depend on the needs of the individuals hired.

TABLE # 1: FORMULARY FOR LEVELS I, II, AND III, WITH COSTS AND PROJECTED UTILIZATION

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* Action Medeor <sup>1/</sup>	Cost US wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost <sup>3/</sup> UNICEF
1. Oral Rehydration Salts	Inexpensive, effective rehydration	Diarrhea and Dehydration	I, II, III	"Salt tabs"? mg. (code 2104) 1500 tabs=17.64		1 Liter/packet per packet=.06
2. Mebendazole 100 <sup>mg</sup>	Only effective drug for hookworm, also treats other roundworms	Hookworm Ascaris Trichuris	I, II, III	2500 tabs=41.16 (code 0503)	12 tabs=17.95	100 tabs=2.34
3. Anti-Diarrheal	Inexpensive, safe in limited use	Diarrhea	I, II, III		Belladone with $\phi$ B 5000 tabs=18.75	
4. Alternative Anti-diarrheal	In common use, inexpensive, safe in limited use	Diarrhea	II, III	iodochlorhydroxy quinolone 250 mg. (code 2102) 3300 tabs=24.36		
5. Piperazine	Inexpensive if treating ascaris only	Ascaris	II, III	300 mg. (code 0505) 2600 tabs=7.56	500 mg. 5000 tabs=86.50	500 mg scored 1000 tabs=3.61
6. Laxative: Milk of Magnesia	Safe, effective	Constipation	II, III		m.o.m. 1 Gallon=7.95	
7. Laxative: Bisacodyl	Alternative: much less expensive	Constipation	I, II, III	5 mg (code 2001) 11,000 tabs=21.84	5 mg 1000 tabs=5.75	
8. Anticholinergic	Safe, inexpensive	bowel spasms ulcers	I, II, III		Belladonna with $\phi$ B 5000 tabs=18.75	
9. Medrenidazole 250 <sup>mg</sup>	most effective safe drug for giardiasis and amoebiasis	Giardiasis Amoebiasis Trichamoniasis	III	(code 0802) 200 tabs=16.80	250 tabs=101.95	1000 tabs=7.03
10. Anti-emetic, oral	safe and effective	Nausea, vomiting	II, III		Prochlorperazine 10 mg 100 tabs=6.95	Promethazine 25 mg 100 tabs=0.50

\* In U.S. dollars, with German mark calculated at US\$ 0.42/All costs are in U.S. dollars, unless noted otherwise.

TABLE # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* Action Medeor <sup>1/</sup>	Cost US wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost <sup>3/</sup> UNICEF
11. Anti-emetic, IM	Safe and effective	Nausea, vomiting	II, III		Promethazine 50 mg/cc 10x10cc=10.95	
12. Antacid pills	Safe, effective inexpensive	dyspepsia pepticulcer	I, II, III	Aluminum OH 500 mg (code 1801) 1000 tabs=5.88	"Antacid # 1" 5000 tabs=17.50	
13. Antacid liquid	safe, more effective	dyspepsia pepticulcer	II, III		Generic Mylanta 1 gallon=9.50	
14. Atropine IM	standard drug anticholinergic	bowel spasms, bradycardia	III	0.25 mg/ml (code 1901) 75 amps=8.82	2 cc = 2.10	
15. IV solution: D5W	standard	rehydration, giving IV medications	III			
16. IV Solution: Ringer's Lactate	standard	rehydration, hypovolemic shock	II, III			500 ml. with IV set each = 0.68
17. Chloramphenicol 250 mg	inexpensive, usually effective for typhoid	typhoid fever infections resistant to other antibiotics	III	(code 0604) 1900 tabs=28.98	1000 tabs=172.40	100 tabs=14.75
18. Diphenhydramine, oral	standard treatment for allergic reaction	allergic reaction	I, II, III	50 mg tabs (code 0301) 3000=7.98	50 mg tabs 1000=9.95	
19. Penicillin, oral	inexpensive effective	respiratory and skin infections sensitive to penicillin	I, II, III	400,000 IU tabs (code 0619) 1500=23.52	400,000 U tabs 1000 tabs=21.95	Phenoxymethyl PCN 250 100 tabs=1.60
20. Procaine, Penicillin, IM	inexpensive parenteral antibiotic	same as # 19, when not feasible to give oral antibiotic	I, II, III	4000 IU vials (code 0613) 18 vials 20 ml=10.92	300,000 u/cc 10cc vial 100 vials=92.85	1,000,000 u 3 diluent per vial 0.13

TABLE # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* <sup>1/</sup> Action Medeor	Cost US wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost <sup>3/</sup> UNICEF
21. Benzathil Penicillin, IM	long-acting penicillin	impetigo strep infections, syphilis	II, III		Bicillin-LA 1.2 million units 10=49.80	2.4 megaunits 3 diluent vial 0.28
22. Ampicillin, injectable	wider spectrum than penicillin	emergency treatment severe respiratory, G.I., or meningeal infect.	III	vials 500 mg (code 0602) 72 vials.6ml⇒ 21.42	vials 500 mg 10 vials=21.50	
23. Ampicillin, oral	same as # 22	Otitis media hemophilus infections typhoid	III	500 mg tabs (code 0601) 100 tabs=65.10	250 mg caps 1000=43.60	250 mg caps 1000=30.92
24. Ampicillin, suspension	same for children too small to take capsules	same as # 23	III	125 mg/5cc (code 0603) 8 vials 60cc= 7.56	250 mg/5cc 10x100cc = 20.95	60 ml.bottle= 0.50
25. Tetracycline, oral 250 mg	inexpensive, wide spectrum: esp. for gonorrhea, NSU	Bronchitis Gonorrhea, NSU penicillin allergy	II, III	oxytetracycline (code 0609) 1600 tabs = 27.30	tetracycline 250 mg. 5000 tabs=73.50	250 mg. 1000 tabs=14.75
26. Erythromycin 250 mg	covers infections occ. not covered by other antibiotics	mycoplasma, legionella, staph. penicillin allergy	III		250 mg. 1000 tabs=57.50	
27. Ear drops	for relief of pain, available locally	ear pain or otitis externa	II, III		Pain only 1pt 5.40 Auralgan ear-sol antibiotic 12x10cc=25.95	
28. Chlorpheniramine 4 mg	inexpensive, effective antihistamine	congestion allergy	I, II, III		4 mg. 5000=12.30	
29. "Cold tablet"	inexpensive effective	U.R.I.	II, III		APC 5000=28.95	
30. Cough Medication	not harmful	symptomatic relief of cough	I, II, III		Guaitussin 1 Gal.9.95	

TABLE # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* Action Medeor	1/ Cost US wholesale (modern wholesale N.Y.)	2/ Cost UNICEF
31. Aminophylline, tablets	inexpensive effective	asthma COPD	II, III	100 mg tabs (code 2602) 1900=10.08	200 mg. tabs 5000 = 43.50	
32. Aminophylline, IV	standard drug	severe asthma	III	1 ml. amps. 100 mg/ ml. 75 amps=7.56	10 ml. 250 mg 25 amps=7.95	
33. Throat lozenges	inexpensive harmless	relief of sore throat	I, II, III	(code 2606) 1100 tabs=10.92		
34. Iron (adult)	inexpensive	iron deficiency anemia	I, II, III	FeSO <sub>4</sub> 200 mg (Code 1201) 3500 tabs=7.56	FeSO <sub>4</sub> 325 mg 5000 tabs = 20.85	
35. Iron (children)	in liquid form	same as # 34	I, II, III		Fer-Iron gts FeSO <sub>4</sub> 125 mg lx50 ml.=1.30	
36. Multivitamins with Fe	inexpensive	for iron and vitamin deficiency	I, II, III	multivitamins without Fe (code 2704) 11.500 tabs=17.22	multivitamins 500=27.50	multivitamins & Fe 1000=3.83
37. Antibiotic Derm. Ointment	inexpensive	skin infections burns	II, III		Bacitracin 30 Gm 10 tubes=8.95	20 Gm.=0.26
38. Scabicide	for scabies	scabies	II, III	antiscabies ointment (code 1401) 1000 ml=6.72	Kwell lotion 2oz=3.15	
39. Steroid Cream	inexpensive not harmful	allergic skin reactions	II, III	dexamethasone neomycin (code 1404) 60 5 GM tubes= 15.54	1% HC cream 10 x 20 GM 10.30	

TABLE # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* 1/ Action Medeor	Cost US Wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost <sup>3/</sup> UNICEF
40. Permanganate	inexpensive	superficial fungal infections	II,III	(code 1410) 100 ml=6.72	K Permanganate 5 gr. tabs 100=3.05	
41. Anti-fungal ointment	fairly inexpensive	superficial fungus infections	II,III	fungus inf. oint.(c.1601) 22 tubes 20 Gm= 8.82	Vioform 3% HCl% cream 20 Gm.10=1.60	
42. A & D ointment	fairly inexpensive not harmful	diaper rash, minor skin irritation	II,III		A & D 1 lb.jar=1.95	
43. Gentian violet	in common use, inexpensive	fungal inf., vaginitis	I, II,III	powder (code 1602) 1000 ml=23.10	2% solution 12 x 30cc 8.40	25 Gm powder 0.99
44. Aspirin (ASA)	inexpensive and effective	malaise, pain, fever, arthritis	I,II,III	ASA 500 mg (code 0201) 1400 tabs=6.30	325 mg 5000 ⇒15.80 80 mg.50C9=13.95	300 mg 1000= 2.11
45. Acetaminophen	alternative to ASA	malaise, pain, fever	II,III	500 mg (code 0205) 1100 tabs=8.82	500 mg. APAP 1000 tabs=8.25	500 mg Para-cetamol 1000 tabs=4.94
46. Anti-inflammatory	effective, least expensive	arthritis, gout, inflammation	III		Phenylbutazone 100 mg. 1000=31.50	
47. Morphine IV	standard	pulmonary edema, M.I., severe pain	III			
48. Narcotic pain med. (IM)	effective analgesia	severe pain	III		Demerol 50 mg/cc 30 cc=7.10	
49. Narcotic pain med. (oral)	effective analgesia	severe pain	III		APAP & codeine 1/2 gr. 1000 tabs=49.90	

TABLE # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* Action Medecr <sup>1/</sup>	Cost US Wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost 3/ UNICEF
50. Iron & folic acid	inexpensive	for use in pregnancy	I,II,III	Folic Acid 5 mg (code 1202) 10.000 tabs=18.90	Folic Acid 1 mg 5000 = 13.75	F.SOL&Folic acid 1000=1.12
51. Ergometrine Maleate standard 0.2 mg IM		to prevent uterine bleeding post-partum	II,III	ergometrine amps.1cc 150 amps=16.80	ergotrate amps 100 amps=68.65	ergometrine 0.2 mg 6 amps(1cc)= 0.35
52. Ergometrine tabs 0.2 mg	standard	same as # 51	I,II,III	ergometrine tabs 0.5 mg 6500 tabs=36.96	ergotrate tabs 0.2 mg 1000 tabs=116.40	ergotrate 0.2mg 1000= 3.96
53. Pitocin IM	alternative to ergometrine standard	uterine bleeding, augmentation of labor	III	3 IU amps 1 ml. 150 amps=12.60	10 US - 1cc 10 amps=8.95	
54. Polyvalent anti-venom	standard treatment for snake bite	snake bite	II,III			
55. Epinephrine 1:1000	standard treatment in emergency anaphyl. shock & asthma	anaphylactic shock, severe asthma	II,III		1:1000 30cc 10=8.50	1 ml.amps 10 amps=0.48
56. Diphenhydramine, IM	standard treatment severe allergic reaction	severe allergic reaction	III		50 mg/cc 10 x 10cc=11.95	
57. Dextran 70	colloid replacement in severe blood loss	hypovolemic shock	III			<3.04>+
58. 50% Glucose solution	standard	hypoglycemia	III			
59. Sulfa-Trimethoprim	wide spectrum antibiotic, esp.for UTI's shigella	shigellosis, otitis, UTI's bronchitis	II,III	400 mg+80mg (code 0614) 1200 tabs=33.18	400+80 500 tabs=66.50	1000 tabs= 26.35

TABLE # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* <sup>1/</sup> Action Medeor	Cost US Wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost <sup>3/</sup> UNICEF
60. Sulfa	alternative # 59 for UTI	UTI	II,III		Sulfisoxazole 0.5 gm 1000 pills=20.50	Sulfadimidine mixture Ped. 500 mg/5ml 250ml 0.80
61. Ophthalmic Anti-biotic Oint.	inexpensive to treat conjunctivitis	conjunctivitis	I,II,III	oxytetracycline (code 2303) 3% 5 cm. 60 tubes=12.18	Bactracin 4 gm. 12 for =11.50	5 gm = 0.10
62. Furosemide, IV	standard drug diuretic	congestive heart failure	III		20 mg/2cc amps 25 x 2 cc =20.50	
63. Furosemide, oral	standard diuretic	same as # 62	III	40 mg 3200 = 15.12	40 mg 5000=207.50	
64. Hydrochlorthiazide	inexpensive, alternative to #63	hypertension congestive failure	III	25 mg tabs 7600 = 13.02	50 mg tabs 5000 = 19.95	
65. Nystatin suppositories	standard treatment for yeast vaginitis	yeast vaginitis thrush	II,III		Vaginal tabs 100 mu 1 x 15 = 2.10	
66. Valium, IV	standard	status epilepticus	III	10 mg amps 2ml. 75 amps=14.28	10cc amps 5 mg/cc 10 amps= 83.50	
67. Prednisone	inexpensive standard	severe allergic reactions, severe asthma	III		5 mg. 5000= 42.50	Prednisolone 5mg 1000 = 6.91
68. Chloroquine	standard for malaria prophylaxis and treatment	malaria	II,III	250 mg (code 0902) 2100 = 29.40	250 mg 1000= 35.75	150 mg base 1000 tabs=9.73

Table # 1, continued

Medication	Why drug selected	For what pathology	Level at which drug will be used	Cost* Action Medecr <sup>1/</sup>	Cost Wholesale <sup>2/</sup> (Modern Wholesale N.Y.)	Cost <sup>3/</sup> UNICEF
69. Dilatin 100 mg	standard	seizure disorders	III	100 mg (code 0401) 1800 = 7.56	100 mg 1000 = 50.45	
70. Phenobarbital tabs	inexpensive	seizure disorders anxiety	III		30 mg 1000 = 3.95	30 mg 100 = 0.43
71. Diguxin 0.25 mg	standard	congestive heart failure	III		0.25 mg 5000 = 28.70	
72. Lidocaine 2%	most generally used local anesthetic	local anesthesia	II, III	Procaine 2% (code 0101) 10 ml. vials 32 = 6.72	Lidocaine 2% 50 ml. vials 10x50 = 8.50	Lidocaine 2% 50 ml. vial = 0.40
ANTI-TUBERCULOUS DRUGS:						
73. INH	standard	tuberculosis	II, III	See # 75	100 mg 5000 = 20.10	300mg 1000 = 4.86
74. Streptomycin	standard	tuberculosis	II, III	5 gm/20 ml. (code 1104) 18 vials = 10.92	5 gm/12.5 ml 10 = 20.45	1 gm & diluent 1 gm = 0.13
75. Thioacetazone	standard inexpensive	tuberculosis	II, III	INH 300 mg (code 1102) Thioacetazon 150 mg 1600 = 13.86		INH 300 mg + thioacetazone 150 mg 1000 = 8.92

VACCINES: See accompanying text: to be supplied by the Ministry of Health

COURSE THERAPY

Medica- tion #	Cost** Bot. Wholesale (Mar. 1963)		Lowest Cost per average course of therapy ***	In 1 year, Estim. courses of therapy Level I	In 1 year, Estim. courses of therapy Level II	In 1 year, Estim. courses of therapy Level III	Wholesale cost to project of 1 yr. supply
1			$\frac{3}{.25}$ 4 packets	7,750 5%	4,300 5%	1,240 3%	3,189.60
2			$\frac{1}{.10}$ 6 tabs	31,000 20%	12,900 15%	3,720 9%	4,762.00
3	K-Pect Susp. VITA 120 ml. = 1.31	USPHS Ferry Point, Md. Kaolin-Pecting & Belladonna - oz. (0.42)	$\frac{2}{.6}$ 15 tabs	7,750 5%	4,300 5%	1,660 4%	822.60
4	Intestoquin INTI (iodo- hydroxyquino- lone +) 100 tabs = 2.82	ENTERCLIT S. Q.INTI 10 envelopes = 2.17	$\frac{1}{.10}$ 15 tabs	-	430 1/2%	200 1/2%	63.00
5	Neo Ascocerin INTI 60 = 1.20% = 0.68 300 mg 50 tabs = 0.95		$\frac{1}{.05}$ 15 tabs	-	4,300 5%	1,450 3 1/2%	287.50
6			$\frac{4}{(.30)}$ 60 cc	-	215 1/4%	200 1/2%	134.50
7			$\frac{1}{.01}$ 5 tabs	1,550 1%	645 3/4%	300 3/4%	24.95
8	ESPASMO VERMI- DON INTI tabs. 100 = 3.50		$\frac{2}{.03}$ 8 tabs	4,650 3%	1,720 2%	800 2%	200.76
9		Amoeb 90 Giard. 30	$\frac{3}{.42}$ 60 tabs	-	-	800 2%	336.00
10	FLACIL drops		$\frac{2}{.05}$ 10 tabs	-	215 1/4%	100 1/4%	15.75

Course of Therapy, continuation

Medication #	Cost** Bol. Wholesale (Mar. 1983)	Lowest Cost per average course of therapy ***	In 1 year, Estim. courses of ther. Level I	In 1 year, Estim. course of therapy Level II	In 1 year, Estim. course of therapy Level III	Wholesale cost to project of 1 yr. supply
11	FENERGAN	.20 <sup>2/</sup> 2cc	-	430 1/2%	200 1/2%	126.00
12	Alumag Gel Inti 100 tabs = 2.75	.10 <sup>2/</sup> 30 tabs	3,100 2%	1,505 1 3/4%	600 1 1/2%	520.50
13	Alumag Gel Inti 250 ml = 1.65	1.65 <sup>1/</sup> 250 ml.	-	215 1/4%	200 1/2%	624.75
14	1 ea. amp (1cc) Vita 100 amp. = 3.29	.04 <sup>1/</sup> 1 amp.	-	-	200 1/2%	8.00
15	Inti, Vita 500 ml.=1.16 +0.65 for in- fusion set	8.00 <sup>1/</sup> 2000 cc	-	-	200	1,600.00
16	Inti, Vita 500 ml.= 1. + 0.65 for in- fusion set	10.00 <sup>1/</sup> 2000 cc	-	200	400	6,000.00
17	Inti 250 mg. 100 tabs=4.70	.57 <sup>3/</sup> 40 tabs	-	-	100 1/4%	57.00
18	Vitadril 50 mg 100 caps=3.46	.03 <sup>1/</sup> 12 tabs	775 1/2%	430 1/2%	200 1/2%	42.15
19	available	.32 <sup>1/</sup> 20 tabs	6,200 4%	2,580 3%	1,240 3%	3,206.40
20		.26 <sup>3/</sup> 2 megaunits	3,100 2%	1,720 2%	1,240 3%	1,575.60
21		.28 <sup>3/</sup> 1 vial	-	860 1%	400 1%	352.80

Course of Therapy, continuation

Medication #	Cost** -/ Bot. Wholesale (Mar. 1983)	Lowest Cost per average course of therapy***	In 1 year, Estim. course of therapy Level I	In 1 year, Estim. course of therapy Level II	In 1 year, Estim. course of therapy Level III	Wholesale cost to project of 1 yr. supply	
22		1.79 <sup>2/</sup> 6 vials 500 mg.	-	-	400 1%	716.00	
23	500 mg Inti 100 tabs = 268.90	250 mg Vita 1000 tabs = 184.12	.62 <sup>3/</sup> 20 pills	-	-	500 2%	496.00
24	Vita 250 mg/ 5cc 60 ml = 3.49		1.00 <sup>3/</sup> 2 bottles (120cc)	-	-	400 1%	400.00
25	Vitasci <sup>na</sup> 250 mg 1000 caps = 68.68		30 40 tabs bronchitis 28 tabs .36 <sup>3/</sup>	-	1,720 2%	800 2%	907.20
26	Eritrovita 100 caps = 21.20		1.61 <sup>2/</sup> 28 tabs	-	-	200 1/2%	322.00
27	Stalex <sup>Ro-</sup> mers <sup>Inti</sup> 10cc = 0.57		.57 <sup>2/</sup> 10cc	-	215 1/4%	100 1/4%	179.55
28			.03 <sup>2/</sup> 12 tabs	9,300 6%	1,720 2%	400 1%	342.60
29	Aspirin <sup>1000</sup> pueblo Inti 10cc = 0.57	Rin <sup>Vita</sup> 100 tabs = 0.99	.07 <sup>2/</sup> 12 tabs.	-	3,440 4%	1,450 3 1/2%	352.08
30	Jarabe Miel Abejas & Eucaliptus Vita 150g = 0.44		.44 <sup>2/</sup> 150 g	3,100 2%	860 1%	400 1%	1,916.40
31			.25 <sup>2/</sup> 28 tabs	-	430 1/2%	200 1/2%	157.50
32			.95 <sup>2/</sup> 3 amps	-	-	200	190.00

Course of Therapy, continuation

Medication #	Cost ** Bot./Wholesale (Mar. 1983)	Lowest Cost per average course of therapy***	In 1 year, Estim. course of therapy Level I	In 1 year, Estim. course of therapy Level II	In 1 year, Estim. course of therapy Level III	Wholesale cost to project of 1 yr. supply
33		.10 <sup>1/</sup>	4,650 3%	1,290 1 1/2%	400 1%	634.00
34	Fe Gluconate 200 mg Gluco- fer Inti 50 tabs=1.04	.38 <sup>1/</sup>	12,400 8%	6,020 7%	2,480 6%	7,942.00
35	Glucofer 10mg in 100 ml. 100 ml.=0.87	.87 <sup>1/</sup>	775 1/2%	430 1/2%	200 1/2%	1,222.35
36		.15 <sup>1/</sup>	3,100 2%	860 1%	400 1%	654.00
37		.26 <sup>3/</sup>	12,400 8%	6,020 7%	1,650 4%	5,218.20
38	Scabiesin 9/82=60 pesos	.80 <sup>1/</sup>	-	430 1/2%	200 1/2%	504.00
39		.26 <sup>1/</sup>	-	860 1%	200 1/2%	275.60
40	Available 9/82=10 pesos	.40 <sup>1/</sup>	-	215 1/4%	100 1/4%	126.00
41	AntiFunguin Vita 20 ml = 1.34	.40 <sup>1/</sup>	-	430 1/2%	200 1/2%	252.00
42		.13 <sup>2/</sup>	-	215 1/4%	100 1/4%	40.95
43	Available	(.15) <sup>1/</sup>	6,200 4%	1,290 1/2%	400 1%	1,183.50
44	ASA 500 mg Vita 100 tabs=1.14	.03 <sup>3/</sup>	23,250 17%	8,600 10%	3,300 8%	981.20

Course of Therapy, continuation

Medica- tion #	Cost ** Bot. Wholesale (Mar. 1983)	Lowest Cost per average course of therapy ***	In 1 year, Estim course of therapy Level I	In 1 year, Estim course of therapy Level II	In 1 year, Estim course of therapy Level III	Wholesale cost to project of 1 yr. supply
45		.06 <sup>2/</sup> 12 tabs	-	3,440 4%	1,650 4%	305.40
46	Total Inti Buta- solidin-ASA- 100 tabs=.74	.47 <sup>2/</sup> 15 tabs	-	-	500	235.00
47		(.75) <sup>2/</sup> 15 tabs	-	-	100	75.00
48		(.50) <sup>2/</sup> 75 tabs	-	-	200	100.00
49		(1.00) <sup>2/</sup> 8 tabs	-	-	1000	1,000.00
50		.22 <sup>1/</sup> 120 tabs	7,750 5%	3,440 4%	1,240 3%	2,734.60
51		.06 <sup>3/</sup> 1 amp.	-	500	300	48.00
52		.03 <sup>3/</sup> 6 tabs	1,500 1%	500	300	69.00
53		.81 <sup>1/</sup> 10 amps.	-	-	300	252.00
54		(15.00) 5 vials	-	150	50	3,000.00
55	Inti 1cc amp=.24	.04 <sup>2/</sup> 1cc	-	200	50	10.00
56		.12 <sup>2/</sup> 1cc	-	-	50	6.00

Course of Therapy, Continuation

Medica- tion #	Cost** Sol. Wholesale (Mar. 1983)	Lowest Cost per average course of therapy ***	In 1 year, Estim. course of therap, Level I	In 1 year, Estim. course of therapy Level II	In 1 year, Estim. course of therapy Level III	Wholesale cost to project of 1 yr. supply
57		5.00 <sup>3/</sup>	2 units	-	50	400.00
58	Inci 33 1.3% Glucose 20 ml=0.35	1.00 <sup>2/</sup>	3 amps	-	25	25.00
59	Sulfa 3 Vita 100 pills > 1.87	.77 <sup>1/</sup>	28 pills	1,720	800	1,940.40
60	Sulfa 3 Vita Ped. Susp. Sulfa 3 100 pills > 1.87 Vita 60ml=0.48	.75 <sup>4/</sup>	40 pills	430	200	472.50
61	Chlorampheni- col ophth. olint "Dr. Mann" 5gm=0.53 Inci 3cc=0.65	.10 <sup>3/</sup>	4,650	1,720	800	717.00
62	Available?	2.57 <sup>2/</sup>	3 amps.	-	50	128.50
63		.06 <sup>1/</sup>	14 tabs.	-	200	12.00
64		.12 <sup>2/</sup>	30 tabs	-	400	48.00
65	Probably available from USPHS Perry Point, Md.	2.10 <sup>2/</sup>	15 tabs.	200	100	630.00
66		.19 <sup>1/</sup>	1 amp.	-	100	19.00
67		.18 <sup>2/</sup>	21 tabs	-	300	54.00
68		.42 <sup>1/</sup>	30 tabs	860	400	529.20

Course of Therapy, continuation

Medica- tion #	Cost** Bot./Wholesale (Mar, 1983)	Lowest Cost per average course of therapy***	In 1 year, Estim. course of therapy Level I	In 1 year, Estim. course of therapy Level II	In 1 year, Estim. course of therapy Level III	Wholesale cost to project of 1 yr. supply
69		.42 <sup>1/</sup> 100 tabs	-	-	300	126.00
70		.12 <sup>2/</sup> 30 tabs	-	-	500	60.00
71		.57 <sup>2/</sup> 100 tabs	-	-	100	57.00
72		.08 <sup>3/</sup> 10 ml	-	860 1%	400 1%	100.80
73.						To be
74						supplied by the
75						Ministry of Health