

PNAAP 647

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LOGISTICS SYSTEM INFORMATION

MINISTRY OF HEALTH

BOLIVIA

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## Introduction

The consultant was asked by the USAID Mission in Bolivia to participate with a group of consultants in the gathering of information and material as background for an expanded rural health services project, for which the Mission was preparing a formal Health Sector Project paper.

The experience of the Montero Project was to serve as the basis for projecting the needs and requirements of the new project. Two main problems hindered the consultants. First; a final selection of the project sites and consequently the estimates of population to be served had not been made; and, Second very little baseline or service status information was available from the Montero Project.

Therefore, this report represents a framework from which the Mission Staff was to insert the information then outstanding. The reader is referred to the final Project Paper for the approach selected by the Mission.

## I Warehousing

### Current Status:

The current warehousing system is limited to one Central Ministry of Health warehouse in La Paz. It has no purchasing power and primarily stocks donated UNICEF or other donor drugs and commodities. The cold chain room in the warehouse now serves the Banco de Vacunas as a central vaccine storage point. A small section of the warehouse contains administrative supplies for the Ministry.

The warehouse and consequently the logistics system suffers from most of the problems identified ten years ago. These deficiencies are:

- 1) No internal development plans were ever created;
- 2) A shortage and lack of qualified technical are employed;
- 3) No plans for expanding services to regional or rural centers;
- 4) No procurement system;
- 5) Only a few central hospitals in La Paz are served;
- 6) Some accounts received were unpaid;
- 7) Limited funds are advanced on a personal basis to employees;
- 8) Inconsistent salary levels among employees were noted;
- 9) Shortages in stocks revealed a need for bonding of warehouse employees;
- 10) The accounting records were incomplete or not up-to-date;
- 11) Medical stocks were improperly stored.

Local warehousing for the Montero project has been limited to a storage space at one hospital. One warehouseman has been employed to handle drugs and a small amount of miscellaneous supplies. Figure 1 describes The Central Warehouse System.

#### A. Projected Warehouse Locations (New Project)

1. National Level: - La Paz  
A new Central Warehouse is to be constructed. (See Architect's Plan)
2. Departmental Level: -  
To serve as distribution and administrative center for the region.
  - La Paz
  - Santa Cruz
  - Cochabamba

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3. Sub-Departmental Level:

To be located within a Centro de Salud Hospital

- La Paz

- . Pucarani
- . Coroico
- . Corocoro
- . Luribay

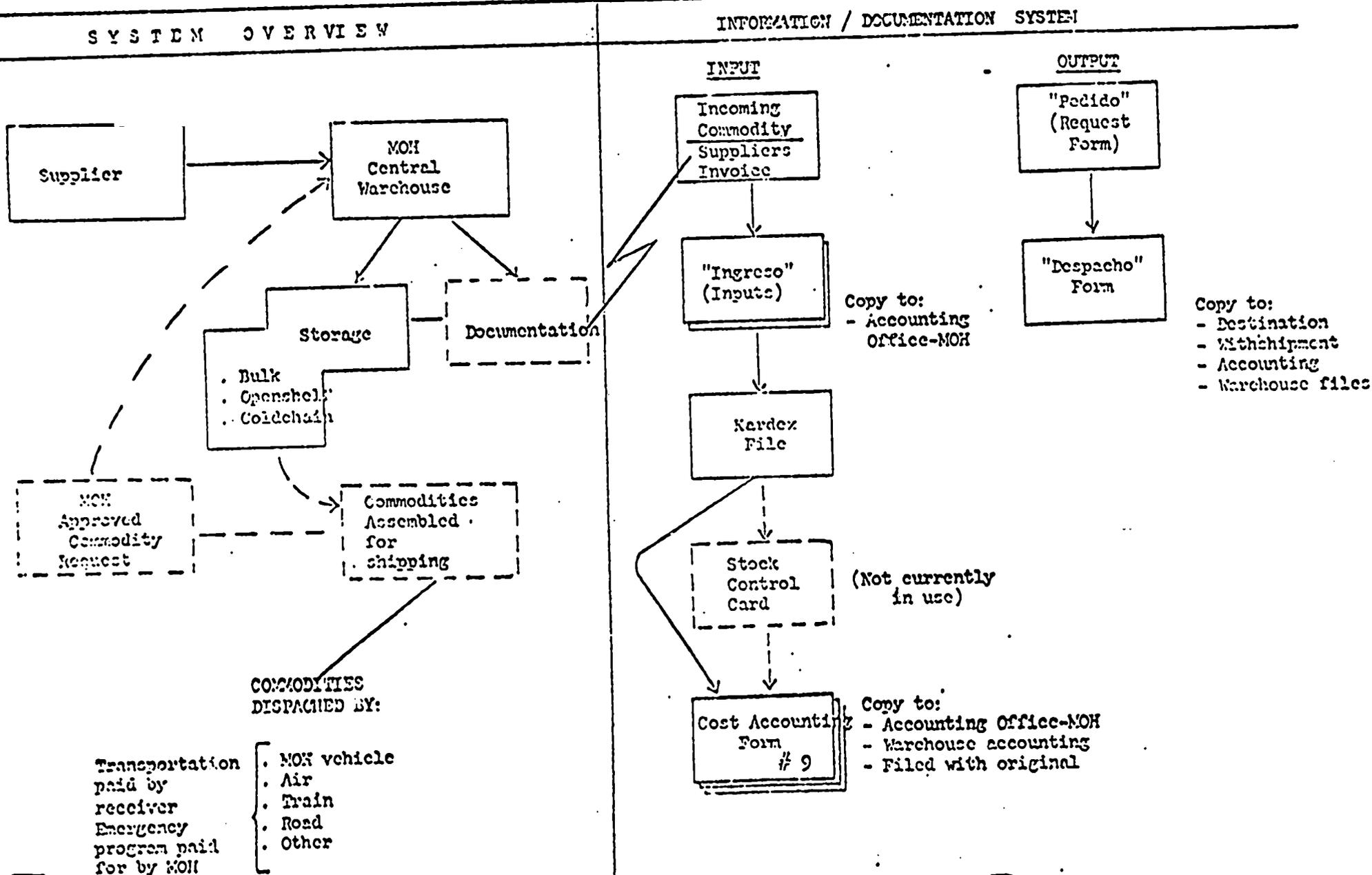
- Santa Cruz

- . Montero
- . Samaipata
- . Charagua
- . Roboré
- . San Ignacio de Velasco

- Cochabamba

- . Punata
- . Quillacollo
- . Villa Tunari
- . Aiquile

Figure 1  
 MINISTRY OF HEALTH  
 CENTRAL WAREHOUSING SYSTEM - LA PAZ



Best Available Document

B. Projected Warehouse Requirements

1. NATIONAL LEVEL

This Warehouse to be used for storage of supplies and drugs for entire country. Based on an estimated 6,004,714 sq. meter of storage space for inhabitant. Total estimated national population in 1986 = 7,000,000.

LOCATION	SIZE	STAFF	MONTHLY SALARIES	EQUIPMENT	COST	
					EQUIPMENT	CONSTRUCTION
LA PAZ	3,300 sq. m.				\$ 70,000	\$ 672,500

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2. DEPARTMENT LEVEL

These Warehouses are to be used for storage of supplies and drugs for entire department.

LOCATION	Popul. Served (1986)	SIZE	STAFF	MONTHLY SALARIES	EQUIPMENT	COST	
						EQUIPMENT	CONSTRUCTION <sup>B</sup>
LA PAZ	1,980,409	355 sq.m. or combine w/Nat. warehouse					53,250
SANTA CRUZ	1,179,756	223 sq.m.	Wareh. Manag. Secrt. Chauf. Night Watchm. Wareh. Helper	175 130 155 90 90	Desks (2) Typewriter Shelving Refrigerator (14 cu.ft.) File Cabinets (5 drawer metal) Chairs Work Bonch		33,450
COCHA-BAMBA	902,154	170 sq. met.					24,500

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3. SUB-DEPARTMENT LEVEL (La Paz)

LOCATION	CSH Pop. Served	SIZE	STAFF	SALARIES	EQUIPMENT	EQUIPMENT	COST CONSTRUCTION
Pucaraní 8 CSH 9 PM	40,316						
Coroico 4 CSH 3 PM	16,118						
Crocoro 2 CSH 2 PM	9,918						
Luribay 6 CSH 1 PM	24,664						

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SUB-DEPARTMENT LEVEL (Cochabamba)

Location	N° Central Hospitals	N° Medical Posts	Population Served	Total Size Wareh.	Staff	Monthly Salaries	Equipment	COST	
								Equipment	Construction
Punata	4	4	38,284		Warehm. Secret. Cahuf.				
Quillacollo	2	4							
Villa Tunari	2	6							
Aiquile	3	2	22,422						

SUB-DEPARTMENT LEVEL (Santa Cruz)

LOCATION	POP. SERVED	SIZE	STAFF	MONTHLY SALARY	EQUIPMENT	COST	
						EQUIPMENT	CONSTRUCTION
Montero 8-CSH 6-PM	68,724		Warehouseman Secretary Chauffer	175 130 155	Typewriter Desk (2) File Cab. 5 draw met. Refrig.(9 cu.ft) Chairs (3) Work Bench Shelving Calculator		
Samaipata 3-CSH 3-PM	19,911		Warehouseman Chauffer	175 130 155			
Charagua 2-CSH 2-PM	33,687						
Roboré 3-CSH 2-PM	23,829		Warehouseman Secretary Chauffer	175 130 155			
San Ignacio de Velasco 1-CSH 1-PM			Warehouseman	175			

## II Transportation System

The current system for the Montero Project is shown in Figure 2. The system has not been operative on a regular basis and a very limited number of commodities actually passed through the system.

### A. Projected Transportation System Requirements:

Based on Mission staff planning ideas Figure 3 represents the number and type of vehicles necessary.

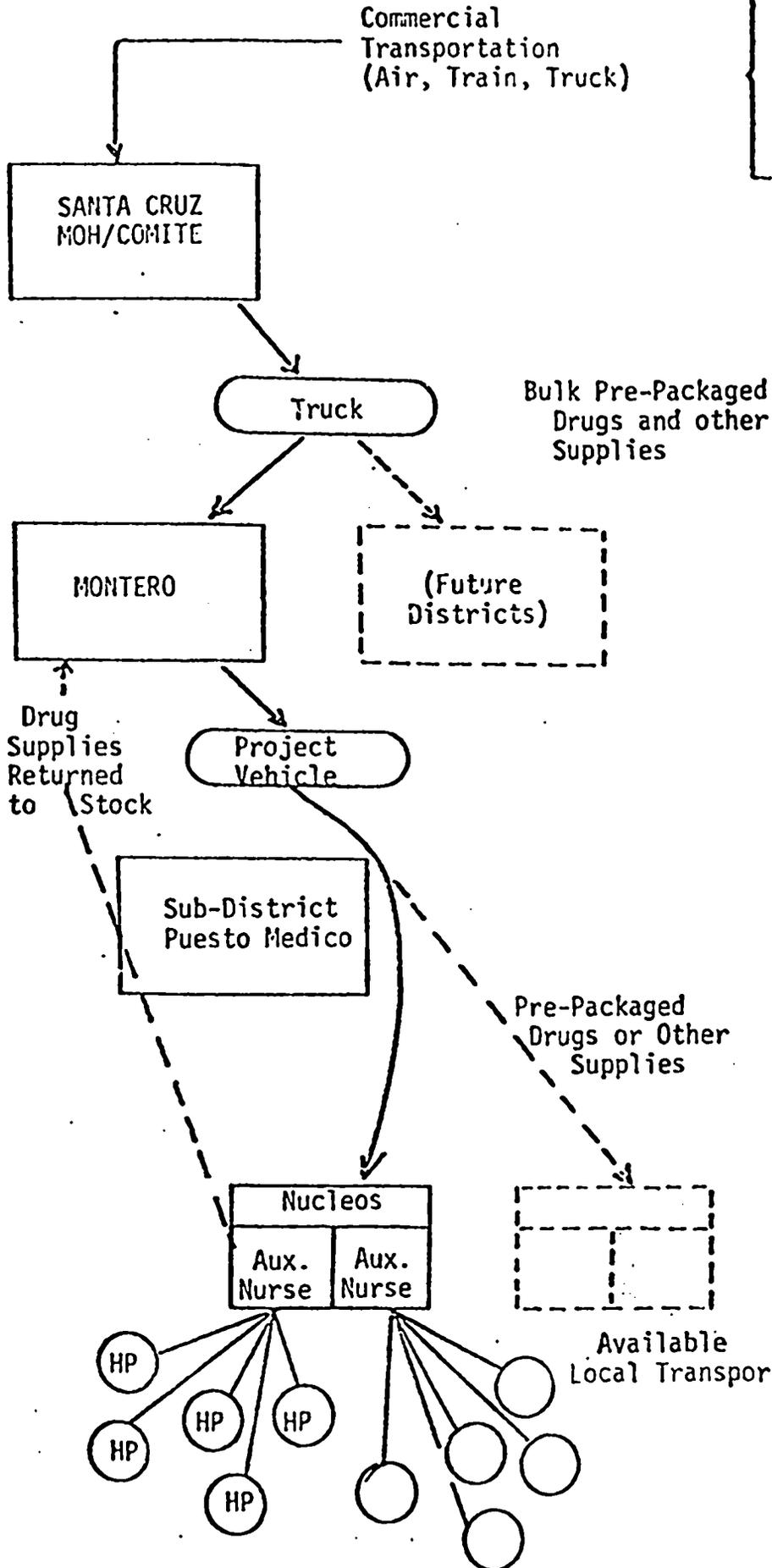
Projections for maintenance of vehicles including bicycles and motorcycles is shown in Figure 4.

Figure 2  
Transportation System

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- Sources:
1. Bolivian Producers;
  2. Manufacturers' Representatives in Boliva; or
  3. International Suppliers
  4. USAID

Vehicle:  
-1/2 ton truck,  
-Maintenance  
-Petrol

Vehicle  
-Jeep 4 wheel drive  
-Maintenance  
-Petrol

Available  
Local Transportation

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## Projected Transportation Systems Requirements

ADEQUATE NUMBER AND TYPE OF VEHICLES IS NECESSARY FOR THE PHYSICAL DISTRIBUTION OF DRUGS AND SUPPLIES

LEVEL	TYPE OF VEHICLES	RESPONSIBILITY	# REQUIRED	C O S T	
				PER VEHICLE	TOTAL
National					
DEPARTMENT	Carry all	Chauffer	3	10,000	30,000
	Pick-up truck	Chauffer	3	14,000	42,000
SUB-DEPARTMENT	Carry all	Chauffer	13 (4-LP) (5-SC) (4-CB)	10,000	130,000
CENTRAL HOSPITAL	Motorcycle (Honda #125)	Auxiliar II	57 (24-LP) (21-SC) (12-CB)	800	43,600
MEDICAL POST OR HEALTH POST	Bicycle (3-speed with carrier on back)	Auxiliar I	259 ( 96-LP) (111-SC) ( 52-CB)	150	38,850

Figure 4

COST OF MAINTAINENCE FOR TRANSPORTATION VEHICLES

<u>ITEM</u>	<u>BICYCLE</u>	<u>MOTORCYCLE</u>	<u>VEHICLE</u> (Carry-all or Pick-up)
Parts and Accesories	17.50	.65.	750
Maintenance and Repairs	10.75	45.	1,000
Gasoline and Oil	--	95.	1,000
<b>T O T A L</b>	<b>28.25</b>	<b>205.</b>	<b>2,750</b>

TOTAL COST

Health Post or Medical Post	(259 Bicycles) --	7,316.75
Central Hospital	( 57 Motorcycles) --	11,685.00
Sub-Department	( 13 Carry-Alls ) --	35,750.00
Department	( 3 Carry-Alls ) -- ( 3 Pick-ups ) --	16,500.00
National		

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### III DISTRIBUTION

The following is a suggested system for the distribution of drugs and medical supplies from the National to the Local Level.

Each step covers the following:

Location

Process

Whose Responsibility

Forms Needed

Transportation

Figure 5 shows the flow of commodities and reorder forms. Figure 6 indicates, for each level of the system, the major processes which occur at that level, the focus of responsibility, the type of transportation involved, and the forms needs.

Figure 5

DISTRIBUTION OF COMMODITIES

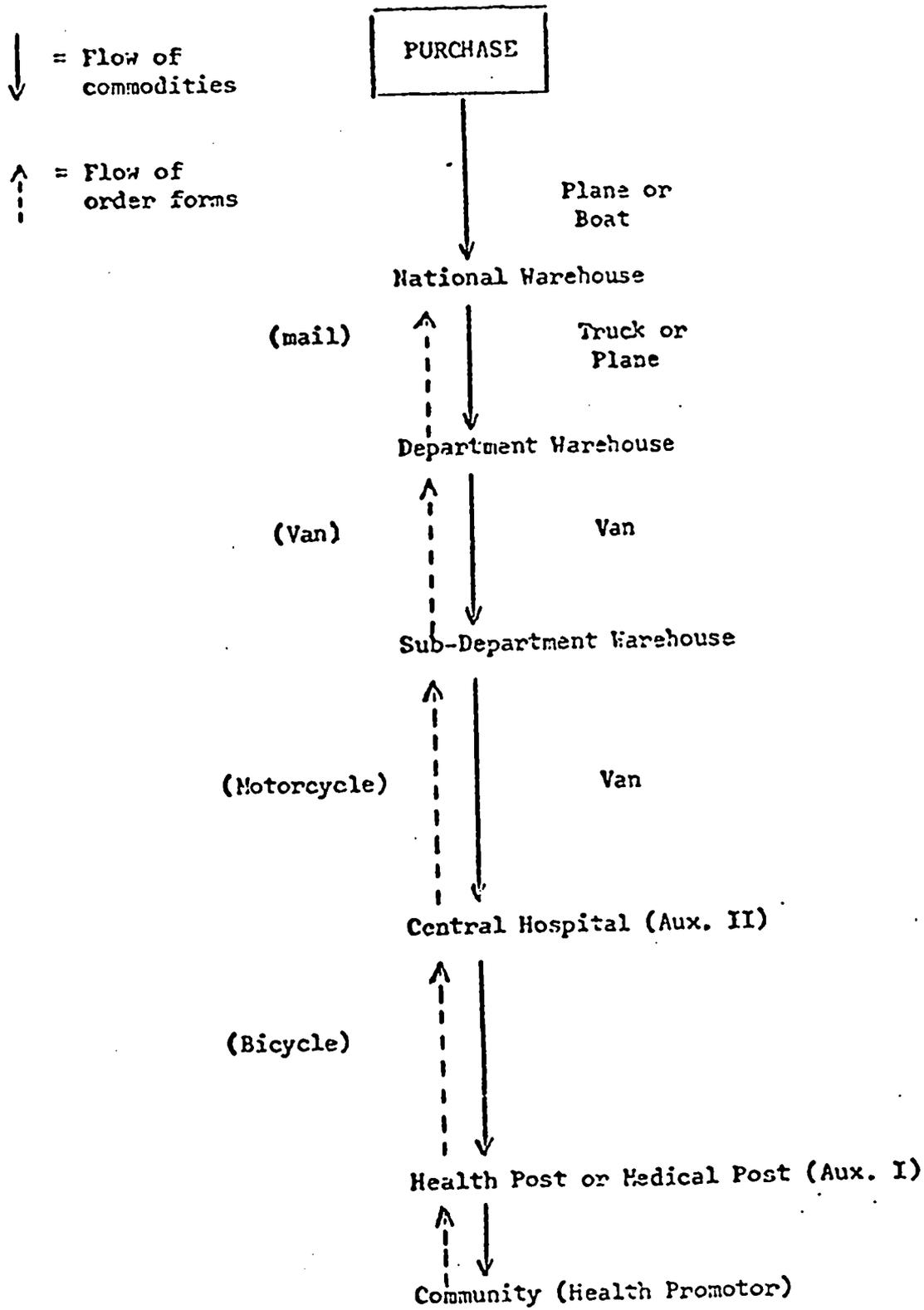


Figure 6 (Part 1)

LEVEL	PROCESS	RESPONSIBILITY	TRANSPORTATION	FORMS NEEDED
National	1. Commodities delivered by vendor	Vendor	Plane or Ship	Packing List Purchase Order
	2. Commodities received by MOH personnel in central warehouse	Warehouse Manager	Truck	Invoice Ocean Bill of Lading Commercial Invoice Packing List Transfer form Release from Customs
	3. Monthly Department orders filled from Central Warehouse stock	Warehouse Manager		Department Order Form
	4. Commodities delivered to department warehouse	Chauffer	Truck or Plane	Copy of Dept. Order Form 'Airway Bill
Department	1. Commodities received in department warehouse	Warehouse Manager	Truck or Plane	
	2. Monthly Sub-Department orders filled from Department Warehouse stock	Warehouse Manager		Sub-Dept. Order Form
	3. Sub-Dept. orders delivered to each site	Chauffer	Van	
	4. Order placed with National Warehouse for re-supply of commodities	Warehouse Manager	Mail	Dept. Order Form

Figure 6 (Part 2)

LEVEL	PROCESS	RESPONSIBILITY	TRANSPORTATION	FORMS NEEDED.
SUB-DEPARTMENT	1. Commodities received in Sub-Department Warehouse	Warehouse Manager	Van	
	2. Monthly orders from Aux. II P (Central Hospital) received	Warehouse Manager	Motorcycle	Monthly order form
	3. Monthly orders from Aux. II (Central Hosp.) filled	Warehouse Manager		
	4. Drug Supplies from Aux. II (CSH) delivered to CSH before next monthly meeting with Aux. I	Chauffer	Van	
	5. Order placed with Dept. for re-supply of commodities	Warehouse Manager	Van	Sub-Dept. Order Form
CENTRAL HOSPITAL	1. Drugs and supplies for Aux. II received in CSH.	Aux. II	Van	
	2. Drugs and supplies from previous order delivered to Aux. I at time of monthly meeting	Aux. II	Motorcycle	
	3. Individual orders from Aux I are condensed into one order and taken to Sub-Dept. Warehouse after monthly meeting	Aux. II		Monthly Order Form

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Figure 6 (Part 3)

LEVEL	PROCESS	RESPONSIBILITY	TRANSPORTATION	FORMS NEEDED
Health Post or Medical Post	1. Drugs and supplies orders for Aux. I received in HP or MP	Aux. I	Bicycle	
	2. Drugs and supplies are delivered to Health Promoters at time of monthly meeting	Aux. I		
	3. Individual orders from Health Promoters are condensed into 1 order and taken to Aux. II after monthly meeting	Aux. I	Bicycle	Order Form for Drugs and Supplies
Health Promotor	1. Drugs and supplies from previous order for HP received at time of monthly meeting with Aux. I	Health Promotor		
	2. Monthly order left with Aux. I at time of monthly meeting	Health Promotor		Order Form for Drugs and Supplies

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#### IV COORDINATION WITH HEALTH NEEDS AND SERVICES

##### 1. Objective:

Limit the number of drugs and medical supplies to those needed to treat a high percentage of conditions encountered in each community.

Determination of a basic drug and medical supply list at each level depends on the following:

- a. Responsibilities of each health worker.
- b. Types of illnesses encountered in each community.
- c. Number of persons in each community.
- d. Availability of drugs.
- e. Priority of each drug or medical supply:  
i.e.: Would there be a greater benefit from the inclusion of aspirin tablets that are used frequently for numerous conditions or the inclusion of a drug that is used for an illness seen only a few times a year.

## V INFORMATION SYSTEM (Logistics portion only)

At the sub-department and local levels in Montero a logistics information system for drugs and medical supplies was implemented with the AID Montero Project.

The following components have been implemented:

1. Distribution System, from Montero warehouse to health promoters and Auxiliar I
  - a. Delivery of initial supply
  - b. Re-supply system
  - c. Distribution of vaccines from Banco de Vacunas in Santa Cruz.
2. Establishment of warehouse in Montero
3. " " kardex system for inventory control
4. The sale of drugs by the Health Promotor in individual communities has produced a fund for future purchase of drugs at the Sub-Departmental Level.

### A. DRUG UTILIZATION REPORT

#### 1. Purpose

- Determination of actual cost of supplies and drugs for each unit.
- Determination of actual usage to provide forecasting for future purchases of individual commodities.
- Adjustment of basic list of drugs and medical supplies at each level to reflect medical conditions encountered.

#### 2. Source of Information

- Monthly orders filled at each level.

#### 3. Responsibility

- (See Figure No. 6)

#### 4. Drug Utilization Chart

- (See Figure No. 7)

#### 5. Recommendation

- Periodic medical and management review of Drug Utilization Chart.

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Figure 7

DRUG UTILIZATION CHART

DEPARTMENT            SANTA CRUZ

DATE                    JUNE 1979

ITEM	UNIT COST	Santa Cruz	Montero	Samaipata	Charagua	Roboré	San Ignacio de Velasco	TOTAL UNITS	TOTAL COST
Tetracycline 250 mg. 28s	.50	4/2.00	20/10.00	-	-	-	3/1.50	27	13.50
Piperazine 500 mg.	.02	100/2.00	-	-	-	-	100/2.00	200	4.00
		4.00	10.00				3.50		17.50

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B. FORMS IN USE

- a) Order Form for Supplies
- b) Manual for Health Promoters
- c) Inventory Form for Initial Stock
- d) Dosage Table for Drugs Used by Health Promoters
- e) Contract Between Comité de Salud and Health Promotor
- f) Instruction Manual for Order Forms for Supplies (SS-F4)
- g) Kardex de Existencias
- h) Price List for Drugs and Services
- i) Labels with Use of Drug and Dose
- j) Request Form to Warehouse
- k) Request Form From Warehouse
- l) Price List of Cost of Supplies

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C. DRUG FORM SPECIFICATION EXAMPLE

1. PRE-PACKAGE RECORD FOR EACH MEDICATION

- Pre-Package No. (Figure 8)
- Date
- Number of units
- Manufacturer
- Lot No.
- Expiration Date
- Person's Signature

2. LABEL ON ENVELOPE

- Name
- Quantity
- Strength
- Pre-Pak Control No. (Indicating manufacturer & Lot No.)
- Expiration Date
- Directions for use

Name:	Penicilin 250 mg. 20 Tablets
1 TABLET 4 TIMES A DAY	
before meals PP 201	Exp. 9-5-80

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FIGURE 8  
PRE-PACKAGE SYSTEM

Purpose

Preparation of "unit of use" package for one course of therapy for tablets or capsules for distribution.

Example : Tetracycline 250 mg. capsules (bottle of 1,000)  
prepare 50 units of 20 capsules each

Advantages

- Provide Controlled Course of Therapy
- Provide identification of each unit by complete labeling
- Prevent contamination of medication
- Permit a more accurate inventory control at all levels
- Eliminate re-packaging at sub-levels

Background Information Needed

- Estimate of needs in each community
- Decision by medical personnel as to course of treatment for each disease
- Review of drug usage records

Requirements

Tablet counting machine  
Plastic bags  
Heat sealer for plastic bags  
Labels

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D. FUTURE

1. Information on actual Drug Usage and Coordination with Health Needs and Services will be obtained from the data that is currently being collected.
2. Plans for a larger Montero Warehouse are being done at Unidad Sanitaria in Santa Cruz

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Appendix I

	<u>POPULATION**</u>		<u>RURAL</u>		<u>*CHS</u>	<u>*PM</u>	<u>*PS</u>
	<u>*1976 (Actual)</u>	<u>1986 (Estimated)</u>	<u>*1976</u>	<u>1986**</u>			
BOLIVIA	4,644,000	7,000,000	2,786,400	4,200,000			
<hr/>							
<u>DEPARTMENT</u>							
La Paz	1,484,151	1,880,409	829,438	955,980	24	18	78
Santa Cruz	715,092	1,179,756	453,146	661,404	21	20	91
Cochabamba	730,353	902,154	525,356	600,155	12	19	33
<hr/>							
TOTALS	2,929,601	3,962,319	1,812,940	2,217,539	57	57	202
<hr/>							

\* From Plan Nacional de Salud 1977-80 MPS/SP

\*\* Projections of urban-rural population based on Mission estimation adjusted to 1976 census figures.

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Appendix 2

COST OF INITIAL SUPPLY OF DRUGS, MEDICAL SUPPLIES AND INSTRUMENTS

The following costs were obtained from basic lists of supplies that are in use in the Montero Project.

Final selection of items and quantity to be included must be based on actual drug usage and actual medical conditions seen at each level. This information can be obtained from the work of the Montero Project.

Level	Equipment* and Instruments	Drugs	Medical Supplies	Drugs for Use by Doctor Only	TOTAL COST	
					Fixed	Variable
Health Promotor	\$ 90.	70.	12.50	X	90	206
Health Post	950.	30.	12.50	150	950	242.50
Medical Post	2,000.	175.	17.50	X	2,000	192.50

\* Fixed Cost: All other costs are for 100 persons for 2 months supply.

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Appendix 3

COST OF INITIAL STOCK FOR PROMOTORS (2 Months)

U. S.

Basic List of

- 26 drugs
- 11 medical supplies
- (does not include vaccines)

6 months supply for initial supply  
and restocking

Almacén Central -	33 1/3%
" Department.-	16 2/3%
" Sub-Dep.=	16 2/3%
Promotors -	33 1/3%

\$ 100/100 inhabitants / 2 months  
Average No. of persons in each community = 250

<u>Department</u>	<u># Promotors</u>	<u>Cost of Initial Stock</u>	<u>1 month stock Sub-Department</u>	<u>1 month stock Department</u>	<u>2 months stock National</u>
La Paz	480	120,000	60,000	60,000	323,750
Santa Cruz	555	138,750	69,375	69,375	
Cochabamba	260	65,000	32,500	32,500	
<b>TOTAL</b>	<b>1,295</b>	<b>323,750</b>	<b>161,875</b>	<b>161,875</b>	<b>323,750</b>

TOTAL FOR 6 MONTHS = \$ 971,250

INITIAL ORDERING CYCLEI. INITIAL

- a. Need quantity for 9 months to give adequate coverage at all levels. This allows at national level total of 5 months to give national purchasing committee time to begin operation and to receive some information on actual use from lower levels.

2. FOLLOWING ORDERS

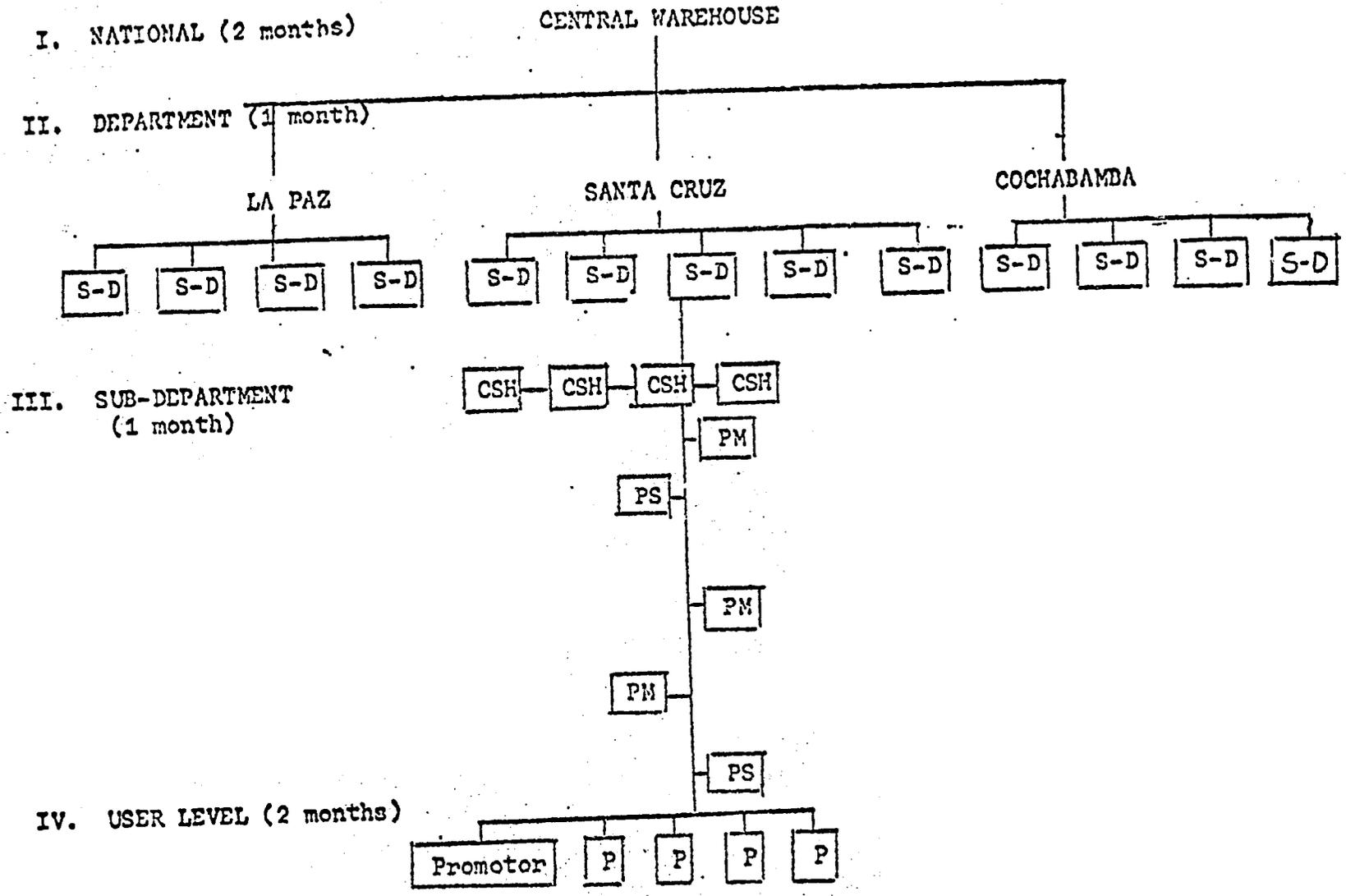
- a. 3 month supply which will keep a 6 month supply in the entire system at any one time - Based on the knowledge that one order from a foreign country requires 3-6 months to arrive in Bolivia

LEVEL	Jan.	Feb.	Mar.**	April	May	June**	July	Aug.	Sept.**	Oct.	Nov.	Dec.
National	5*	4	3	2	1	3	2	1	3	2	1	3
Department	1	1	1	1	1	1	1	1	1	1	1	1
Sub-Department	1	1	1	1	1	1	1	1	1	1	1	1
USCR (Health Promoter Central Hospital Health Post - Medical Post	2	2	2	2	2	2	2	2	2	2	2	2

\* // of months of stock at each level.

\*\* Place new order for three months.

SCHEMATIC DIAGRAM OF WAREHOUSING SYSTEM



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Appendix 6

BASIC DRUG LIST

Eight Months Supply for 100 Persons

<u>Drug</u>	<u>Promotor</u>	<u>Unit Cost</u>	<u>Total Amount</u>	<u>Total Cost</u>
1. Aspirin 1-1/4 gr.	ea		40	20
2. Aspirin 325 mg.	ea		40	10
3. Buscapina Tablets	ea		10	20
4. Cold Tablets (children)	ea		20	20
5. Cold Tablets (adults)	ea		20	16
6. Expectorent	120 u		2	36
7. Kao Pectate	120 u		5	60
8. Oral Elec. Soln.	ea		10	15
9. Sulfaguanidine Tablets	ea		25	10
10. Piperazine Syrup	120 u		3	90
11. Mintezol Suspension	120 u		1	62
12. Mintezol Tablets	ea		10	36
13. Ferrous Sulfate Syrup	120 u		2	40
14. Ferrous Sulfate Tablets 325 mg	ea		100	30
15. Prenatal Vitamins	ea		25	37
16. Penicillin Susp.	ea		2	60
17. Penicillin Tablets 400,000 units	ea		25	50
18. Ampicillin 250 mg. Caps.	ea		20	40
19. Tetracycline Opth. Ointment	1/8 oz.		1	5
20. Gentian Violet Solution	Bottle		1	2
21. Potassium Permanganate Solution	Bottle		1	1
22. Magnesium Sulfate Powder	oz.		1	2

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<u>DRUG</u>	<u>PROMOTOR</u>	<u>UNIT COST</u>	<u>TOTAL AMOUNT</u>	<u>TOTAL COST</u>
23. Diaparene Ointment	Tube		3	45
24. Otozermbon Otic Drops	Bottle		1	40
25. Sulfacol Powder	Bottle		2	40
26. Scabiacon Ointment	Tube		1	15

Appendix 7

BASIC DRUG LIST

HEALTH POST

Eight Months Supply for 100 Persons

<u>Drug</u>	<u>Health Post Unit</u>	<u>Total Amount</u>	<u>Total Cost</u>
1. Aspirin 1-1/4 gr.	ea	40	20
2. Aspirin 325 mg	ea	40	10
3. Cibalgina	amp.	10	20
4. Buscapina Tablets	ea	10	20
5. Buscapina Tablets	amp.	3	6
6. Cold Tablets (children)	ea	20	20
7. Cold Tablets (adult)	ea	20	16
8. Expectorent	120 cc	2	36
9. Kaopectate	120 cc	5	60
10. Oral Elec. Solution	ea	10	15
11. Sulfaguanidine Tablets	ea	25	10
12. Piperazine Syrup	120 cc	3	90
13. Mintezol Susp.	120 cc	1	62
14. Mintezol Tablets	ea	10	36
15. Ferrous Sulfate Syrup	120 cc	2	40
16. Ferrous Sulfate Tablets 325 mg.	ea	100	30
17. Prenatal Vitamins	ea	25	37
18. Penicillin Susp.	ea	2	60
19. Penicillin 400,000 units	ea	25	50
20. Ampicillin 250 mg. caps.	ea	20	40
21. Benadryl 25 mg. caps.	ea	10	10

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<u>Drug</u>	<u>Health Post Unit</u>	<u>Total Amount</u>	<u>Total Cost</u>
22. Benadryl 50 mg./cc	amp.	2	10
23. Methergine 0.2 mg.	Tab.	10	20
24. Tetracycline Ophthalmic Ointment	1/8 oz.	1	5
25. Gantrisin Ophthalmic Solution	Bottle	1	20
26. Otozombon Otic Drops	Bottle	1	40
27. Sulfacol Powder	Bottle	2	40
28. Gentian Violet Solution	Bottle	1	2
29. Potassium Permanganate Solution	Bottle	1	1
30. Magnesium Sulfate Powder	oz.	1	2
31. Bioparene Ointment	Tube	3	45
32. Aluminum Hydroxide Gel	Bottle	2	30

CARRIED BY DOCTOR DURING HIS VISIT

1. Sulfasoxazole Tablets	ea	80	80
2. Triple-Sulfa Susp.	Bottle (120 u)	2	24
3. Tetracycline 250 mg. caps	ea	30	30
4. Erythromycin 250 mg. Tablets	ea	30	30
5. Proc. Penicillin 1,500,000 units	ea	5	60
6. Benz. Penicillin 1,200,000 units	ea	2	80
7. Streptomycin 1 gr.	ea	10	70
8. Isoniazid 100 mg.	ea	50	2
9. Methergine 0.2 mg. amp.	ea	2	12
10. Nystatin Vag. Tablets	15s	1	20
11. Flagyl 250 mg. Tablets	ea	20	80
12. Prednisolone 5 mg.	ea	15	18
13. Celestone	amp.	1	40

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Appendix 8

SANTA CRUZ

SANTA CRUZ - Departmental (State) Health Office

I. Directly Administered from Santa Cruz

A. Hospital Health Centers

1. Cotoca (1)
2. Concepción (2)
3. Izozog (3)
4. Santa Isabel (4)
5. San Matías (5)

B. Medical Posts

1. La Guardia (1)
2. Puerto Quijarro (2)
3. Ascensión de Guarayos (3)
4. Paurito (4)
5. Coches (5)
6. El Campamento (6)

C. Health Posts

1. Ayacucho (1)
2. Palmar Oratorio (2)
3. Montero Hoyos (3)
4. Kilómetro 12 (4)
5. Pampa Isla (5)
6. Puerto Pailas (6)
7. Terebintos (7)
8. Pailon (8)
9. Pozo del Tigre (9)
10. Campanero (10)
11. El Piray (11)

II. Montero - H.H.C. (6) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Mineros (7)
2. Saavedra (8)
3. Portachuelo (9)
4. Buena Vista (10)
5. Warnes (11)
6. Sagrado Corazón (12)
7. San Javier (13)

B. Medical Posts

1. Puesto Fernández (7)
2. Antofagasta (8)
3. San Juan de Yapacaní (9)
4. Santa Fe de Yapacaní (10)
5. San Carlos (11)
6. Santa Rosa del Sara (12)

C. Health Posts

1. Jochi (12)
2. La Porfía (13)
3. Aroma (14)
4. Caimanes (15)
5. San Ignacio (16)
6. Buena Vista (17)
7. Chané Independencia (18)
8. Chané Magallanes (19)
9. Villa Busch (20)
10. Buen Retiro (21)
11. Buen Retiro Colonia (22)
12. Jorochito (23)
13. Limoncito (24)
14. Caranda (25)
15. Azusaqui (26)
16. Colpa Arriba (27)
17. La Esperanza (28)
18. Las Barreras (29)
19. Loma Alta (30)
20. San Ramón (31)
21. El Puente (32)
22. Naranja! Don Bosco (33)
23. Nor Este (34)
24. Dos de Mayo (35)
25. Santo Domingo (36)

III. Samaipata - H.H.C. (14) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Valle Grande (15)
2. Comarapa (16)

B. Medical Posts

1. Lagunillas (13)
2. Pucarã (14)
3. Postrer Valle (15)

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C. Health Posts

1. San Isidro (37)
2. Moro Moro (38)
3. Pampa Grande (39)
4. Cuevas (40)
5. Mairana (41)
6. Mataral (42)
7. Quirusillas (43)
8. El Trigal (44)
9. Saipina (45)
10. El Torno (46)
11. Pulquina (47)

IV. Charagua - H.H.C. (17) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Camiri (18)

B. Medical Centers

1. Gutierrez (16)
2. Cuevo (17)

C. Health Posts

1. Cabezas (48)
2. Ipita (49)
3. Choreti (50)
4. Boyuibe (51)
5. Tajibos (52)
6. Florida (53)
7. Salinas (54)
8. Hayti (55)
9. Itanambicua (56)
10. Yapiroá (57)

V. Robore - H.H.C. (19) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Puerto Suárez (20)
2. San José de Chiquitos (21)

B. Medical Posts

1. El Carmen (18)

C. Health Posts

1. Santa Ana (58)
2. Santo Corazón (59)
3. San Miguel (60)
4. San Ignacio de Chiquitos (61)
5. Las Taperas (62)

VI. San Ignacio de Velasco - H.H.C. (22) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

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B. Medical Posts

1. San Miguel (19)

C. Health Posts

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C O C H A B A M B A

COCHABAMBA - Departmental (State) Health Office

I. Directly administered from Cochabamba

A. Hospital Health Centers

1. Sacaba (1)

B. Medical Posts

1. Tiquipaya (1)
2. Villa Independencia (2)
3. Morochata (3)

C. Health Posts

1. Altamachi (1)
2. La Victoria (2)
3. Cuti (3)
4. Locotal (4)

II. Punata - H.H.C. (2) (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Cliza (3)
2. Tarata (4)
3. Arani (5)

B. Medical Posts

1. Tiraque (4)
2. Vacas (5)
3. Pocoma (6)
4. Colomi (7)

C. Health Posts

1. Villa Rivero (5)
2. Chillijchi (6)
3. San Benito (7)
4. Tolata (8)
5. La Villa (9)
6. Corani (10)
7. Anzaldo (11)
8. Arbieto (12)
9. Ucureña (13)
10. Tiataco (14)

III. Quillacollo - H.H.C. (6) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Capinota (7)

B. Medical Posts

1. Sipe Sipe (8)

2. Tapacari (9)

3. Arque (10)

C. Health Posts

1. Anocaraire (15)

2. Vinto (16)

3. Santivanez (17)

4. Bolívar (18)

5. Tacopaya (19)

6. Charomoco (20)

7. Ramada (21)

IV. Villa Tunari - H.H.C. (8) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Chipiriri (9)

B. Medical Posts

1. Todos Santos (11)

2. Chimoré (12)

3. Ivivigarzama (13)

4. Paracti (14)

5. Villa 14 de Septiembre (15)

6. Puerto Villarroel (16)

C. Health Posts

1. San Miguel (22)

2. Coari (23)

V. Aiquile - H.H.C. (10) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Mizque (11)

2. Totorá (12)

B. Medical Posts

1. Pojo (17)
2. Pasorapa (18)

C. Health Posts

1. Tin Tin (24)
2. Omereque (25)

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L A P A Z

LA PAZ - Departmental (State) Health Office

I. Directly administered from La Paz

A. Hospital Health Centers

1. San Borja (1)
2. Santa Rosa (2)
3. Apolo (3)
4. Rurrenabaque (4)
5. Reyes (5)

B. Medical Posts

1. Palca (1)

C. Health Posts

1. Calamarca (1)
2. San Buena Ventura (2)
3. Ixiamas (3)
4. Mecapaca (4)
5. Irpachico (5)
6. Kalla Baja (6)
7. Tahuapalca (7)
8. Ambana (8)
9. Acorcero (9)

II. Pucarani - H.H.C. (6) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Achacachi (7)
2. Copacabana (8)
3. Puerto Acosta (9)
4. Sorata (10)
5. Viacha (11)
6. Guaqui (12)
7. Moco Moco (13)

B. Medical Posts

1. Huarina (2)
2. Desaguadero (3)
3. Chuma (4)
4. Ayata (5)
5. Pillapi (6)
6. Carabuco (7)

7. Santiago de Huata (8)
8. Cangalli (9)
9. Charazani (10)

C. Health Posts

1. Laja (10)
2. Tambillo (11)
3. Tiahuanacu (12)
4. Taraco (13)
5. Quiabaya (14)
6. Batallas (15)
7. Huatajata (16)
8. Escoma (17)
9. Aygachi (18)
10. Pelechuco (19)
11. Puerto Pérez (20)
12. Amarete (21)
13. Huarisata (22)
14. Janco Amaya (23)
15. Tito Yupanqui (24)
16. Cohana (25)
17. Chachacomani (26)
18. Ticulasi (27)
19. Tajani (28)

III. Coroico - H.H.C. (14) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Chulumani (15)
2. Irupana (16)
3. Caranavi (17)

B. Medical Posts

1. Coripata (11)
2. Tipuani (12)
3. Guanay (13)

C. Health Posts

1. Unduavi (29)
2. Mapiiri (30)
3. La Asunta (31)
4. Suapi (32)
5. Taipiplaya (33)
6. Alcoche (34)
7. Santa Fe (35)
8. Villa Aspiazu (36)
9. Ocobaya (37)

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10. La Plazuela (38)
11. Cajuata (39)
12. Arapata (40)
13. Tajlhui (41)
14. Rosapata Tuli (42)
15. Villa Elevación (43)
16. Combaya (44)

IV. Corocoro - H.H.C. to be constructed (18) - (Sub-Departmental Administrative Center)

A. Hospital Health Centers

1. Caquiaviri (19)

B. Medical Posts

1. Charaña (14)
2. Patacamaya (15)

C. Health Posts

1. Jesús de Machaca (45)
2. San Andrés de Machaca (46)
3. San Pedro de Machaca (47)
4. Chacoma (48)
5. Machacamarca (49)
6. Comanche (50)
7. Calacoto (51)
8. Achiri (52)
9. Berenguela (53)
10. S.P. de Curachuara (54)
11. Santiago de Machaca (55)
12. Santiago de Llallagua (56)
13. Papel Pampa (57)
14. Collana (58)
15. Rosapata (59)
16. Janco Marca (60)
17. Llanquera (61)
18. LaquinMaya (62)

V. Luribay - H.H.C. (20) - (Sub-Departmental Administrative Center)

A. Hospital Health Center

1. Sica Sica (21)
2. Inquisivi (22)
3. Ayo Ayo (23)
4. Quime (24)
5. Colquiri (25)

B. Medical Posts

1. Caracato (16)

C. Health Posts

1. Licoma (63)
2. Coriri (64)
3. Tablachaca (65)
4. Sapahaqui (66)
5. Villa Belén (67)
6. Lanza (68)
7. Macamaca (69)
8. Arcopongo (70)
9. Mahoza Lanza (71)

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Appendix 9

HOST COUNTRY, USAID AND EMBASSY OFFICIAL

CONTACTED

USAID LA PAZ

Ruther, Nancy L., Director of Project  
Kadunc, Edward, Loan Officer  
Coury, John, Administrative Assistant  
Arabe, Gerardo,  
Gumiel, Alberto, Administrative Assistant

USAID - CONSULTANTS

Doster, James  
Hougen, Lee - Ph.D.  
Bradbury, Robert - Ph.D.  
Contreras, Nelson - Dr.  
Frerichs, Ralph - Ph.D.  
O'Connor, Terrence  
Kraljevic, Ivo

MINISTRY OF HEALTH - LA PAZ

Nuñez, Juan - Assistant in Dept. of Administrative Analysis  
Tobbia, Nancy - " " " " "  
Camberos, Dr. Humberto - Director of Pharmacology  
Cortero, Dr. Máxima - Director of National Control of Drug

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MONTERO PROJECT

Tobon, Dr. Carlos	-	Regional AID Advisor
Becht, James	-	AID Advisor
Rojas, Dr. Oscar	-	Regional Coordinator
Maida, Dr. Evaristo	-	Coordinator of Project
Daza, Roberto	-	Warehouse Manager (Montero)

PHARMACISTS

Sosa, Dr. David	-	La Paz
Dominguez, Dra. Rosa	-	Santa Cruz