

**Access to Essential Medicines:
El Salvador, 2001**

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Strategies for Enhancing Access to Medicines Program
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About SEAM

The Strategies for Enhancing Access to Medicines (SEAM) Program is funded by the Bill & Melinda Gates Foundation under contract D3601, and works to improve access to essential medicines and vaccines in the developing world by fostering partnerships between the public and private sectors.

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Acronyms and Abbreviations

ADS*	Asociación Demográfica Salvadoreña (Salvadoran Demographic Association)
ANSAL*	Análisis del Sector Salud de El Salvador (El Salvador Health Sector Analysis)
ASAPROSAR*	Asociación Salvadoreña para la Promoción de la Salud Rural (Salvadoran Association for Rural Health Promotion)
ASPS	Salvadoran Association for Health Promotion
BCG	bacillus Calmette-Guerin (tuberculosis vaccine)
BODESA	Bodegas Salvadoreñas SA
CALMA*	Centro de Apoyo de la Lactancia Materna (Breastfeeding Support Center)
CPM	Center for Pharmaceutical Management
CSSP*	Consejo Superior de Salud Pública (Superior Council on Public Health)
CTFT*	Comité Técnico Fármaco-Terapéutico (Pharmaco-Therapeutic Technical Commission)
DEF/PLM	Diccionario de Especialidades Farmacéuticas [Equivalent to <i>The Physician's Desk Reference</i> in Spanish-speaking countries]
DPT	diphtheria, pertussis, and tetanus (vaccine)
EDL	essential drugs list
FESAL*	Encuesta Nacional de Salud Familiar (National Family Health Survey)
FUNDESO*	Fundación de Desarrollo Social (Social Development Foundation)
FUSAL*	Fundación Salvadoreña para la Salud y el Desarrollo Humano (Salvadoran Foundation for Health and Human Development)
GDP	Gross Domestic Product
INQUIFAR*	Industrias Químicas-Farmacéuticas (Pharmaceutical-Chemical Industries)
ISO	International Standards Organization
ISSS*	Instituto Salvadoreño de Seguro Social (Salvadoran Social Security Institute)
MDS*	Physicians for Health Rights
MSH	Management Sciences for Health
MSPAS*	Ministerio de Salud Pública y Asistencia Social (Ministry of Public Health and Social Welfare)
NGO	nongovernmental organization
OPV	oral polio vaccine
PD	prime distributor
PDR	

PHC	primary health care
SALSA*	Salvadoreños Saludables (Healthy Salvadorans project)
SEAM	Strategies for Enhancing Access to Medicines
SIBASI*	Sistemas Básicos de Salud Integral (Basic Comprehensive Health Care Systems)
UACI*	Unidad de Adquisiciones y Compras Institucionales (Institutional Purchasing and Acquisition Unit)
UFI*	Unidad Financiera y de Inversión (Finance and Investment Unit)
USAID	U.S. Agency for International Development
USD	U.S. dollars
UTMIM*	Unidad Técnica de Medicamentos e Insumos Médicos (Medication and Medical Supply Technical Unit)

* Spanish acronyms

The Ministry of Public Health and Social Welfare (MSPAS) of El Salvador has a network of 30 hospitals (including ambulatory care) and primary care facilities grouped into 18 Departments or regions, and beginning in September 2001, into 27 *Sistemas Básicos de Salud Integral* (Basic Comprehensive Health Care Systems) (SIBASI). The public-sector network provides care to a little less than 50 percent of the population of 6 million inhabitants. The country's current administration has established consolidating health reform as one of its priorities to allow for better use of the available resources and has shown openness to strategies involving public-private cooperation.

Diagnosis of the Current Situation

Despite the increased availability of financial resources, some essential medications are still lacking in both public health care units and those of nongovernmental organizations (NGOs). At the MSPAS, purchasing has been decentralized, decreasing the ability to negotiate prices for pharmaceutical drugs in large volume and providing little management capacity for inventory management. Because of pressure from professionals, the essential drugs list (EDL) is being increased, requiring spending for more-sophisticated medications without consideration to technical criteria necessary to ensure the availability of drugs required to meet the most common health needs of the country. The large number of purchases through bidding and purchases by direct purchasing by the hospitals and the central level determine the weak response of the private sector and encourage the noncompliance of suppliers to the tender conditions. The purchase of very expensive medications and increased administrative expenses caused by multiple bids by individual institutions are evidence of the economic inefficiency of the system, and they contribute to the shortage of medications and supplies in the health system.

Currently, the nonprofit private sector dedicated to health care is small, consisting of NGOs and churches, and is estimated to cover approximately 7.5 percent of the population. Yet, these organizations provide services in rural areas that do not have access to the services of the MSPAS. Because they are supplied in low volumes, these organizations cannot negotiate favorable prices for their drugs, thus limiting the availability of essential medicines in their care.

One of the most significant findings of this analysis is the low quality of medications sampled. Of a total 87 products sampled, 35 percent did not meet the requirements to be considered adequate in terms of content within approximately 10 percent of what is stated on the label. In the MSPAS group, this problem is even more pronounced because 50 percent of the medication samples collected from those facilities do not meet the quality criteria.

Proposal

Based on these findings, the following options were analyzed:

- Joint Price Negotiation

We suggest establishing a supply system in which the prices are negotiated for all pharmaceutical needs of the MSPAS and other institutions that are interested in obtaining lower prices, such as the Salvadoran Social Security Institute (ISSS), armed forces health care system, and NGOs. The volume of drugs that need to be purchased would be established for a fixed period (minimum one year) and drugs selected would be based on the EDL from the participating institutions according to the various levels of care. When the prices are established, each health care unit or institution would make the purchase and corresponding payment upon receipt.

- Prime Distributor System

We also suggest contracting logistical management services (handling inventory and distribution of drugs) from a private commercial entity through competitive mechanisms (public bidding), which will make it possible to provide better service at a lower cost. Some private companies have shown interest in participating in a system such as the one proposed. These include not only traditional companies from the pharmaceutical sector (manufacturers, importers, and distributors), but also warehouses and logistics services companies that are interested in expanding to distribution in the health sector.

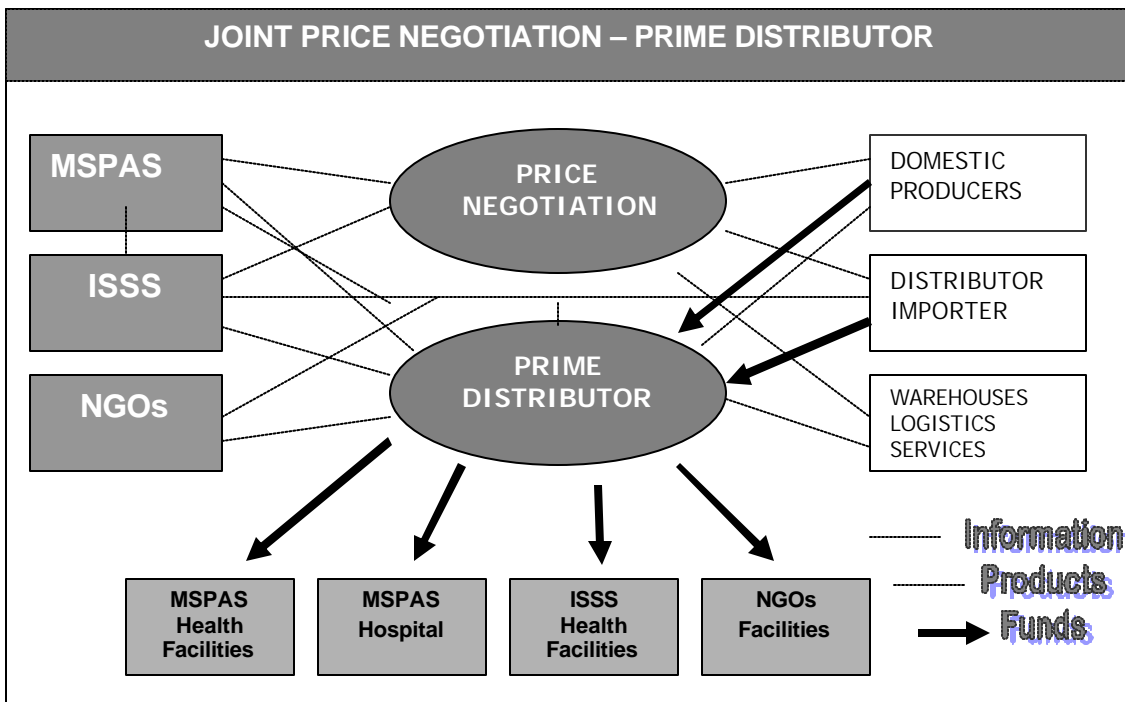
This system would make it possible to obtain lower purchase prices for essential drugs because the distribution cost would not be included in the price. It would also accelerate the purchasing processes by eliminating the need for independent bidding at each of the hospitals, decrease the management costs of the multiple bidding processes currently carried out, and decrease the current costs of administering 10 institutional warehouses of the MSPAS to serve the health care facilities in the Departments.

This procedure would also benefit the manufacturers and importers since this negotiation would establish the production needs in advance, permitting them to plan production throughout the year. This production planning would make it possible to schedule product deliveries on a monthly or bimonthly basis, or according to the needs of the health units and their temporary storage capacity, thus avoiding the last-minute ordering of raw material, and the need to hire staff for temporary production peaks, which in addition to increasing costs for staffing and overtime, place the quality of the products at risk. This process would benefit the performance of the contracts within the specified period.

The two systems proposed would result in reduced administration and management costs, and at a determined level of drug requirements, on reduction of the total system costs.

Both systems must attempt to include the NGOs interested in improving their drug supply at lower prices. Although they provide health services, they are not well organized or consolidated into a network that could offer them more efficient use of their resources. The proposed system can provide a favorable environment for better coordination between the NGOs and the public health sector in addition to facilitating the appropriate use of scarce resources. The ISSS, which currently serves 15 percent of the population and has large medications expenses, may benefit from the joint prices negotiated and the primary distribution (PD) system to make a better use of its resources. The new system should also ensure that the savings are invested in the purchase of essential drugs for the country.

The following diagram shows the flow of products, funds, and information in the intervention proposed for El Salvador.



This system is considered the most appropriate because it is consistent with the vision of the reform process that considers externalizing services and subcontracting a politically acceptable alternative. The MSPAS would carry out and consolidate its role as financing and regulatory entity while an external entity would be responsible for ensuring that the health facilities service units receive their drugs.

The system can begin operation immediately using the existing regional warehouse system that the MSPAS currently manages, in addition to making deliveries to the 30 system hospitals that have hospital storage facilities. After the reform is in operation, the distribution would be made to the temporary warehouses of the SIBASI medical units.

In addition to the preceding proposals, we recommend the following actions be taken:

1. Adapt the basic framework of the institutions to the morbidity-mortality of the country without giving greater weight to diseases whose cost can prevent devoting the necessary budget to improving the health of the majority
2. Establish mechanisms to improve the quality of the products flowing through the MSPAS health system, such as—
 - a. Design and implement a prequalification system for product vendors or suppliers
 - b. Strengthen the Official Quality Control Laboratory of the MSPAS to ensure that the products selected and used in the system are appropriately monitored
 - c. Implement a flexible and effective quality control system that makes it possible to know the quality of products that have been acquired before they are used in the services
3. Strengthen the logistical management information system, to make possible a more efficient management of resources
4. Redistribute the staff and resources in both the hospitals and the health service units and SIBASIs to reinforce the limited staff with technical training in administration and the appropriate handling of drugs and medical supplies

Implementation Plan

The proposal has been discussed with the Minister of Public Health and Social Welfare, Dr. José Francisco López Beltrán, and the Deputy Minister of Health, Dr. Herbert Betancourt, as well as with their advisory team. When the senior officials of the Ministry of Health have decided to carry out the new Prime Distributor Alternative Model project, and with their approval, the following activities are recommended for implementation.

Legal Aspects

A work team must be formed with the legal consultant of the MSPAS to prepare the legal proposals that support the change and to defend the proposals before the relevant authorities.

Political Aspects

Political support in the legislative and executive branches is important in order to modernize the supply system.

Technical Aspects

One of the most important technical aspects is the preparation of the legal, technical and economic specifications of the bids, including quality, policies, and timing aspects. One of the bids will include price negotiation for drugs, and the other will specify the terms of reference for companies offering prime distributor services.

Financial Aspects

Preparing the financial and budget elements will be necessary in order to establish what resources are available to pay for these purchase bids for products and services.

Information Aspects

Release all information on the project to all parties potentially concerned both within and outside the MSPAS. After the specifications for the bids have been established, they must be published in accordance with the legal standards in force.

Purchase Procedure

It is first necessary to gather information on the drug needs of the participating institutions. For this purpose, a technical analysis of the service levels of each and the morbidity that this represents is necessary. Then, when the bid to negotiate the prices of the potential quantities of medications is specified, a careful, transparent analysis of the bids received will have to be performed so that recommendations can be made to the appropriate authorities regarding award of the bids.

Implementation of the New Model

After the contracts have been executed with the suppliers and the prime distributor, the plan for modernization of the system, in which the active and determined participation of all participants is needed, must be implemented. In particular, it is important to be clear about the resources each institution will bring to the system that they will use to manage their supply levels to coordinate with the logistical system of the prime distributor network.

Background

Despite advances in modern medicine, there are still large gaps in ability to access essential drugs, both among countries and among population groups within a single country. In an effort to explore the viability of public-private cooperation to improve the population's access to medical supplies and essential medicines, a technical team from the Center for Pharmaceutical Management (CPM) of Management Sciences for Health (MSH) visited El Salvador in May 2001 to perform a comprehensive analysis of the essential medication supply systems in the various organizations and institutions that provide health services in both the public and private spheres. This analysis was conducted within the framework of the Strategies for Enhancing Access to Medicines (SEAM) project of CPM/MSH financed by the Bill and Melinda Gates Foundation.

In accordance with the Health Sector Reform process, the government of El Salvador, and the Ministry of Public Health and Social Welfare (MSPAS) is specifically interested in developing alternative models for financing, managing, and providing health services. This reform can lead to more efficient use of resources and redistribution of health costs, and at the same time make it possible to provide higher-quality services to the country's population. One of the priority areas of the reform is improvement and modernization of the pharmaceutical supply system.

General Objective

This report analyzes the state of pharmaceutical drugs in El Salvador and attempts to identify the most significant causes that may account for a limited availability of medicines in both public and private health services. The goal is to propose alternative strategies, appropriate for the country and consistent with the government's current modernization policies, to increase the poorer population's access to good quality essential medicines.

Specific Objectives

- Evaluate the functioning and capacity of the public and private health subsectors in providing medicines
- Determine the gaps in access to essential drugs and supplies in the different subsectors that provide health services and medicines
- Study the feasibility of appropriate public-private cooperation alternatives to improve access to medicines

The analysis performed deals with the following aspects of the pharmaceutical supply system:

- Pharmaceutical services policy
- Pharmaceutical legislation relative to the drug supply system and, contracting to third parties
- Available budget and financing of drugs and medical supplies
- Drug purchasing and distribution process
- Quality assurance management of pharmaceutical products
- Prescribing and dispensing pharmaceutical drugs
- Availability of a minimum number of essential drugs in the health services
- Interest and ability of the private sector to participate in alternative health commodity supply models

Country Overview

El Salvador is a Central American country of 20,720 square kilometers of land and 6,122,515 inhabitants, which translates into a density of 295 inhabitants per square kilometer, the highest population density in Central America. Politically, the country is divided into 14 departments and 262 municipalities.

El Salvador has a high poverty rate with income distributed very unequally; the poorest 40 percent receive 11 percent of the country's income and the richest 10 percent receive 31 percent (Ministerio de Economía 1999). Before the earthquakes in early 2001, it was officially estimated that 48 percent of the population lived in poverty. In mid-2001, this number was believed to have increased to 58 percent, equal to approximately 3.7 million Salvadorans living in poverty, 19 percent of whom are considered destitute and 39 percent relatively poor (Mesa-Lago 2001). One-fifth of the population (19.5 percent) is illiterate and the education level is low.

According to the 1998 Encuesta Nacional de Salud Familiar (National Family Health Survey), previously known as Fecundidad y Salud (Fertility and Health) (FESAL-98), the overall fertility rate of women age 15 to 45 was 3.6 live births, between 1993 and 1998, with little variation from the overall fertility rate of 3.9 between 1988 and 1993 (ADS 2000). The disparity of access to or acceptance of family planning methods varies according to location, with the overall fertility rate ranging from 2.8 live births in the San Salvador metropolitan area to 5.2 in rural areas of Cabañas.

However, some improvements in services cannot be denied. One example is the decrease in maternal mortality rate from 158/100,000 live births between 1983 and 1993 to 120/100,000 live births between 1988 and 1998. The number of prenatal checkups has increased over the last 10 years, and 9 of every 10 pregnant women with live births are estimated to have received a tetanus toxoid injection. Institutional deliveries are still at a low level (58%), with the MSPAS being the major service provider (43.3%), the ISSS (11.7%), and private providers handling only 3 percent of deliveries.

Another significant achievement is the decrease in infant mortality between 1993 and 1998 (35/1,000 live births), explained largely by a decrease in neonatal mortality. This rate is lower than in the neighboring countries of Guatemala, Honduras, and Nicaragua. It is also estimated that the full immunization schedules of four vaccines (bacillus Calmette-Guerin [BCG]; diphtheria, pertussis, and tetanus [DPT]; oral polio vaccine [OPV], and measles) are given to 78.5 percent of the infant population, although BCG alone reaches 93.8 percent.

Table 1 presents some basic information on the development level of the country.

Table 1. Basic Information on El Salvador

Basic Information	Total	Urban	Rural
Population (millions) ^a	6	3.5	2.5
Life expectancy at birth (years) ^b	69.4	72.3	66
Households with drinking water (%) ^a	54.4	72.0	25.5
Households with indoor toilets (%) ^b	40.1	67.3	6.8
Households that cook with firewood (%) ^b	39.2	13.8	70.3
Households with electricity (%) ^a	81.5	95.6	58.4

Sources:

^aMinisterio de Economía May 1999.

^bEncuesta Nacional ADS 2000.

Health and Pharmaceutical Systems

The Health System in El Salvador

The public health system in El Salvador comprises the Ministry of Public Health and Social Welfare, the Salvadoran Social Security Institute (ISSS), The Army Health Care System (Sanidad Militar), and Bienestar Magisterial (Teacher's Welfare). A private system also exists, which consists of for-profit private clinics and hospitals, and nonprofit parochial clinics and nongovernmental organizations (NGOs) that provide health services. Each of these institutions has its own structure, management, staff, facilities, financing, and services. The small degree of coordination and lack of common operating, technical, and legal processes in these entities lead to inefficient use of resources, duplication of options for certain sectors of the population, and therefore, gaps in health services for a large sector of the population.

Although El Salvador has increased its health budget in recent years, public funds account for 46.6 percent of the total health expenditures in the country, or 4.1 percent of the gross domestic product (GDP), while the remaining 53.4 percent is covered by out-of-pocket expenditures for treatment. In the private component, 95 percent of health expenses is paid out-of-pocket by private individuals and only about 5 percent is paid by private health insurers (MSPAS 2002). However, this 5 percent is actually 0.5 percent of the Salvadoran population (Ministerio de Economía 1999). The expenditures of NGOs that provide health services were reported in the Cuentas Nacionales en Salud (National Health Accounts) to be 2 percent of the total health expenditures in 1997 and 1.5 percent in 1998 (MSPAS 2000c and 2001), but the same study in 1999 reported no data.

The MSPAS is the entity responsible for regulation, promotion, prevention, and provision of health care for the vast majority of the Salvadoran population. Theoretically, its services must cover 80 percent of the population, but it is estimated that in practice it covers approximately 50 percent. The MSPAS operating budget comes largely from the National Treasury (84.3 percent), and the remainder is divided between contributions from foreign cooperating agencies and revolving funds generated by the health facilities (fees for services) (MSPAS 2002).

Social Security was created in 1954 to provide health care services to workers. Currently, the targeted population of the ISSS is the economically active employed population and its beneficiaries: active workers, retirees, spouses, life-long companions, and children up to the age of six. The coverage level is 15 percent of the general population and 21.7 percent of the economically active population. ISSS financing is bipartite, with the workers contributing 3 percent and employers contributing 7.5 percent. The number of persons eligible in 1999 was 925,529 (Colegio Médico de El Salvador 1999; ISSS 1999).

The proportion of the Salvadoran population covered by NGOs with health programs is relatively small (approximately 7.5 percent), primarily in rural and remote areas where other providers do not offer services (Deman and Monroy 2000). Eight of the 13 NGOs interviewed provide services in rural areas only, two of the 13 provide services in urban areas, and only two provide services in both areas. Seven of the 13 NGOs provide services only through health promoters, while three offer services only in clinics and three provide both services (more information on NGOs is available in Appendix D).

Between 22,000 and 70,587 inhabitants are served by individual NGO projects. The NGOs that have health promotion programs, in particular the Seraphim Foundation, Fundación Salvadoreña para la Salud y el Desarrollo Humano (FUSAL), and World Vision International, have more reliable figures because they conduct their own censuses. The Order of Malta and the Pastoral de Salud of the Archbishopric, which coordinates the parochial clinics, do not know the number of people they serve because both offer services only in clinics (without health promoters) open to the general public.

There has been no close coordination between the MSPAS and the NGOs over the last 10 years. Unlike the central level, in regional and local areas, good coordination of activities exists and the NGOs participate in immunization campaigns, mobile clinics, and other activities scheduled by the MSPAS. The agreement between the MSPAS and the U.S. Agency for International Development (USAID) for the Salvadoreños Saludables (Healthy Salvadorans) (SALSA) project includes financing for five basic health service projects through NGOs over two years, and it was extended in 2001 to give the MSPAS time to hire NGOs to expand its services. During the months following the earthquakes in early 2001, the NGOs played an important role: receiving and distributing donations; assisting in rescue and reconstruction work; and, at times, diverting their financial support to affected areas with the most urgent needs.

In recent years, various proposals to reform and modernize the health sector have been debated in El Salvador (Cruz et al. 1999; Colegio Médico de El Salvador 1999; Comisión Nacional de Salud 1999). The proposals each include aspects such as the need for policy leadership by MSPAS; administrative decentralization; coordination or integration among institutions; reassignment of resources for prevention, promotion, and first-level care; extension of health coverage to the population not covered; the need for tax subsidies for the reform, improved efficiency, and quality of services; human resources training; and social participation. However, there are differences of opinion in two vital areas: the model for providing services and the method of financing the reform.

In order to achieve legitimate reform through consensus, the Reform Monitoring Commission was created, which is intended to be a support authority. Its objective will be to provide political, technical, and administrative monitoring of the reform; to guarantee the process; and to open forums for debate and consultation in order to promote the social and political viability of the reform process.

While the commission is succeeding in gaining the necessary consensus, the MSPAS has decided to push the reform process of the health sector, giving priority to the aspects where consensus already exists. To do so, MSPAS is adapting its structure for scheduling, supervision, and control operations and for decentralized performance of projects on local levels. For this purpose, four offices have been created on the central level—Planning, Regulation, Quality Assurance, and Financial Administration—in order to guarantee the regulatory and oversight aspects.

As part of the new management model, the four offices are linked to the Sistemas Básicos de Salud Integral (Basic Comprehensive Health Care Systems) (SIBASI), which have been developed as the basic structure that unites in the local context the elements to make a national health system operational. The geographic area and population of the SIBASI are systematically defined. Twenty-eight SIBASI have been defined in accordance with the above-referenced criteria (MSPAS October 2000B).

The SIBASI structure plan calls for the formation of an Advisory Board composed of various health care providers in the specified geographic area, such as the health care facilities of the MSPAS, ISSS, NGOs, and for-profit private organizations. Each SIBASI will have a manager and a municipal oversight board. A second-level hospital networked with the health units, clinics, rural nutrition centers, institutional community representatives, and local leaders will head the operations of each SIBASI.

At this time, the 28 SIBASI have been legally formalized by publishing the necessary manuals and regulations. In addition, six SIBASI, which cover 499,075 inhabitants, have already begun to operate.

The Pharmaceutical Market in El Salvador

The value of the pharmaceutical market in El Salvador in 1999 was estimated to be USD 190,541,847 according to a Pan American Health Organization (PAHO) report. ISSS and MSPAS expenditures for medication are estimated at only 10 and 13 percent of this amount, respectively, which suggests that 77 percent is out-of-pocket spending by the population.

Table 2. Financial Data on the Pharmaceutical Market in El Salvador

Source and Year of the Data	Amount	Per Capita Expenditure
Total pharmaceutical market in El Salvador year 1999 ^a	\$ 190,541.847	\$ 31.80
Private pharmaceutical market year 1999 ^a	\$ 147,916.865	\$ 24.40
MSPAS pharmaceutical market year 2000 ^b	\$ 22,074,480	\$ 4.55
ISSS pharmaceutical market year 1999 ^c	\$ 17,724.446	\$ 19.10

Sources:

^aPAHO

^bData from the UTMIM, MSPAS.

^cLee D., et al. May 2000.

If the country's resources were divided equally among the population, medicine expenditures would be USD 31.80 per inhabitant. However, given the actual number of eligible persons in the ISSS, and the number of inhabitants that the MSPAS covers (80%), the ISSS medication expenditure per eligible person was approximately USD 19.15 in 1999, whereas at the MSPAS, the year 2000 per capita expenditure for medication for 80 percent of the Salvadoran population was USD 4.55.

Drug Registration Policy

In El Salvador, a legal framework regulates the marketing and use of pharmaceutical products through which all drugs and medical supplies that are used in the country must be registered in the Consejo Superior de Salud Pública (Superior Council on Public Health) (CSSP). This council is an autonomous entity and a suboffice of the Presidency of the Republic and not the MSPAS. The council's responsibilities include registering and licensing health professionals; granting operating licenses to health establishments (hospitals, clinics, pharmacies); and registering the drugs that can be marketed in the country, the laboratories that manufacture them, and their distributors or pharmaceutical wholesalers. For this reason, the CSSP has departments that suit those purposes, such as Professional Councils (Medical, Pharmaceutical, Veterinary, Dentistry); the Department of Medical and Pharmaceutical Establishments; and the Products Department, where certificates of free sale are issued. These departments and the Professional Councils have inspectors who are responsible for monitoring the compliance of activities under their jurisdiction.

The Technical Council is the technical support entity of the CSSP and is coordinated by the President's Office of the CSSP. The council is composed of 16 professional representatives designated by the professional guilds, with four members from each of the professions represented. The Technical Council decides on the registration of products for medical and pharmaceutical use based on the results of the quality analysis and conditioned on submission of the necessary legal and technical documents.

The pharmaceutical product registration process takes six to eight months. However, for pharmaceutical products produced by domestic laboratories, a pre-registration is issued, which is temporary authorization for six months to commercialize drugs in the country while the

registration is in progress. This pre-registration is conditioned on submission of the legal and technical documentation and payment of the established fees, through which it becomes immediately effective. For the registration of drugs of foreign origin, a free-sale certificate issued by authorities of the country of origin, proof of registration in other countries, certificates of analysis, qualitative-quantitative formula, and clinical studies must be submitted. Drug registrations are valid for a period of five years, at the end of which each laboratory or importer must apply to renew the registration.

At this time, the drug registration information system is being computerized. More than 11,000 registered drugs are already entered in the new computer system, but it is estimated that in total some 25,000 drugs are registered with the CSSP. The CSSP has registered more than 1,000 pharmacies, 60 domestic drug-manufacturing laboratories, and 35 pharmaceutical wholesalers and distributors. The latter have an intermediary role; they are not producers, but they do represent foreign manufacturers and import and market their products in the country.

The CSSP has its own quality-control laboratory to examine products to be registered. However, because the MSPAS is responsible for health oversight pursuant to the health code, its Central Quality Control Laboratory is the only laboratory officially recognized. The CSSP contracts the services of this laboratory and others authorized by the CSSP when it requires analyses that its laboratory cannot perform.

In the case of the NGOs, the Pharmaceutical and Chemical Oversight Board of the CSSP is the entity responsible for authorizing dispensaries and pharmacies of private for-profit and not-for-profit clinics to dispense and sell medicines to their clients without requiring a pharmaceutical manager. The term *pharmacy* is formally reserved for commercial pharmacies, which must comply with stricter requirements, including having a pharmaceutical manager.

In general, the NGOs have an exemption through the Department of the Presidency to import donated items. The primary condition for the donations is that the expiration date be at least six months later than the date of arrival in the country.

Figure 1 shows pharmaceutical supply and demand in El Salvador.

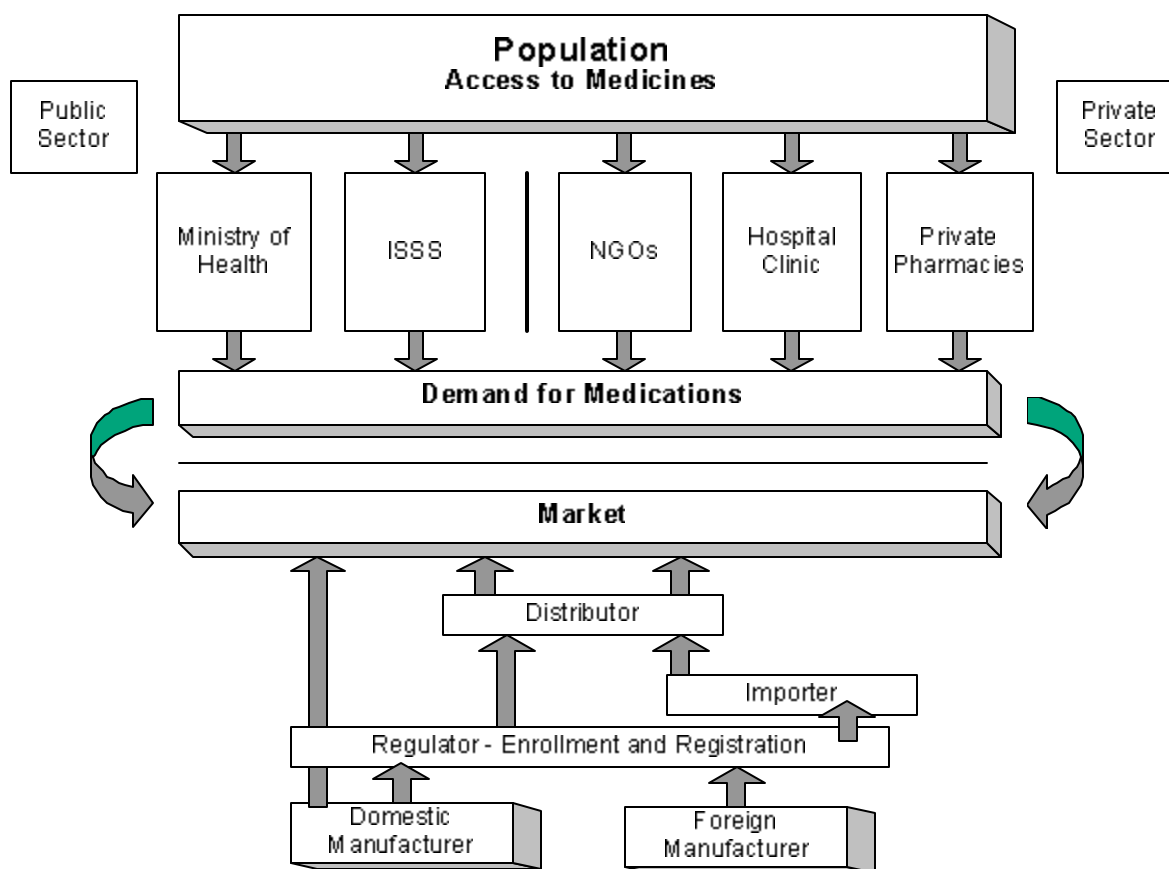


Figure 1. Pharmaceutical Supply System

Selection of Drugs for Use in Health Institutions

El Salvador does not have an essential drugs list (EDL) that is common to the many public and private institutions. In the public sector, medications are selected by each institution that provides clinical services. The products are selected by Technical Committees and are consolidated in the so-called essential drugs list (*Cuadro Básico*) for each institution.

At the MSPAS and the ISSS, this selection of medication for the EDL has been carried out for several years. The EDL in effect for the MSPAS dates from November 1997, but a new EDL is soon to be approved and published. The Official List of the ISSS in effect dates from 1995, but a new list is also in the process of being approved and published.

At the MSPAS, the *Unidad Técnica de Medicamentos e Insumos Médicos* (Drugs and Medical Supply Technical Unit) (UTMIM) is the technical entity responsible for selecting the drugs to be used in all health services of the MSPAS; UTMIM is supported by a *Comité Técnico Farmaco-Terapéutico* (Therapeutic Pharmacological Technical Committee) (CTFT) and many medical experts. It also coordinates with the *Unidad de Adquisiciones y Compras Institucionales*

(Institutional Purchasing and Acquisition Unit) (UACI) to consolidate the medication and medical supply acquisition needs of the health care facilities of the country's departments (administrative units) which cover primary-care services. The personnel of the UTMIM are responsible for reviewing sources of scientific information in order to prepare support material for the CTFT, which is responsible for making the corresponding modifications to the EDL of the MSPAS. The CTFT, coordinated by the director of the UTMIM, is composed of medical professionals from the four basic specialties and representatives of public and private universities (Universidad Nacional and Universidad Matías Delgado).

The MSPAS EDL, whose use is mandatory in MSPAS facilities, was reviewed by the MSH team of consultants during this visit. The latest version was revised in 2000 and 2001 but has yet to be approved by MSPAS authorities. It contains 385 active ingredients in 555 pharmaceutical forms and establishes the use of the medications according to the levels of complexity of the services provided in the establishments.

The proposed list includes 20 medications that have the same therapeutic indications. For example, the therapeutic group of antimicrobials includes ampicillin + sulbactam in the same category as amoxicillin + clavulanic acid so that they compete. But with the therapeutic arsenal already available in the EDL, which offers treatment for infections by gram-positive bacteria, gram-negative bacteria, anaerobium and polyresistant bacteria, no clear epidemiological scientific reasons are demonstrated that justify including these combinations at set dosages.

Piperacillin (sodium) + tazobactam is also included in the EDL. One of its primary indications is for pseudomonas, but ceftazidime, which has been shown to have a good profile for pseudomonas, is already included for this indication, which is why the inclusion of piperacillin is not justified. The EDL also already includes imipenen-cilastatin. This same category also includes meropenem, which has the same efficacy profile as imipenen. Therefore, it is not necessary to indicate its use for all facilities. If its inclusion is a result of its necessity in pediatrics (fewer convulsions have been described with its use), the Bloom Pediatric Hospital and others that treat this type of pathology can make the purchase independently without the need to include this drug in the EDL for all facilities.

The case of sodium cefoxitine 1 g powder, which has the same indications for the treatment of infections produced by anaerobia and gram-negative bacteria that other antibiotics already on the EDL efficiently cover—such as clindamycin phosphate 150 mg/ml, metronidazole 5 mg/ml solution for injection, sodium penicillin 5 million IU, sodium ceftriazone 1 g powder, or ciprofloxacin 200 mg in solution for injection—also illustrates unnecessary duplication. The EDL also includes 12 products with different pharmaceutical forms with no real justification and five drugs of dubious intrinsic value.

At this time, the professional staff of the UTMIM does not have updated sources of information or even tertiary sources to facilitate the decision-making of the Comité Técnico Farmaco-Terapéutico, and the functions of the UTMIM are limited by its lack of resources. Past projects had established the Information Center at the UTMIM, but the center does not currently fulfill those functions. No studies have been performed on medication usage, or pharmaceutical oversight, nor has there been follow-up of prescription patterns or the use of medications in

institutions. Nor have bulletins with pharmaco-therapeutic recommendations been sent to the teams of professionals at MSPAS institutions.

The drug selection systems of the NGOs are empirical in the majority of cases, based primarily on applications made to the administration by the treating doctors, and to a lesser extent, on historical usage and most-common illnesses. The only NGOs that report having an EDL are those that have rural health programs, and in that case, their EDL is very limited. The lack of funds and restrictions imposed on prescriptions by rural health promoters prevent these programs from purchasing products that are not on the list.

Acquisition and Distribution of Drugs

All health systems, whether public or private, have their own processes for acquiring, storing, and distributing drugs. Both the MSPAS and the ISSS, because they are within the public system, must be governed by the law on Public Contracts and Acquisition in making their purchases and entering into agreements.

Ministry of Public Health and Social Welfare

On the central level, the MSPAS has an Institutional Purchasing and Acquisitions Unit, Finance and Investment Unit (UFI), and the Drug and Medical Supply Technical Unit, which support the management of the acquisitions of the Departmental Offices. The central level supports drug purchases for hospitals only on special occasions. This support has taken place in the past two years when an additional budget adjustment was made for the second half of the year to increase the storage system primarily because of disasters or national crises.

The decentralization process established in recent years gives hospitals financial and administrative independence from the MSPAS. Each hospital manages its own budget. Therefore, each has a UFI and a UACI for its acquisitions. Because of this decentralization, drugs are provided to the 30 hospitals of the MSPAS system separately from the purchase of drugs for the departmental health care facilities, which is carried out on the central level. Each hospital consolidates its drug needs internally for one year based on historical consumption and in this way estimates the budget to be requested from the Treasury Department. Each of the hospitals carries out its own bidding process, which, added to the bidding that takes place on the central level for departmental health care facilities, requires that the manufacturers and distributors respond to these bids a minimum of 31 times per year.

Each hospital requests its budget directly from the Treasury Department between March and April of each year, but a lower amount is generally allocated by the Treasury. The adjustment of the budget requires the central UFI, the establishments dependent on the Departmental health care facilities, and the hospitals to prioritize their acquisitions, always resulting in deficits of some products or the need to make purchases with their own funds.

Figure 2 is a graph of the current status of the storage system showing the complexity and duplicated functions that increase the inefficiency of the system.

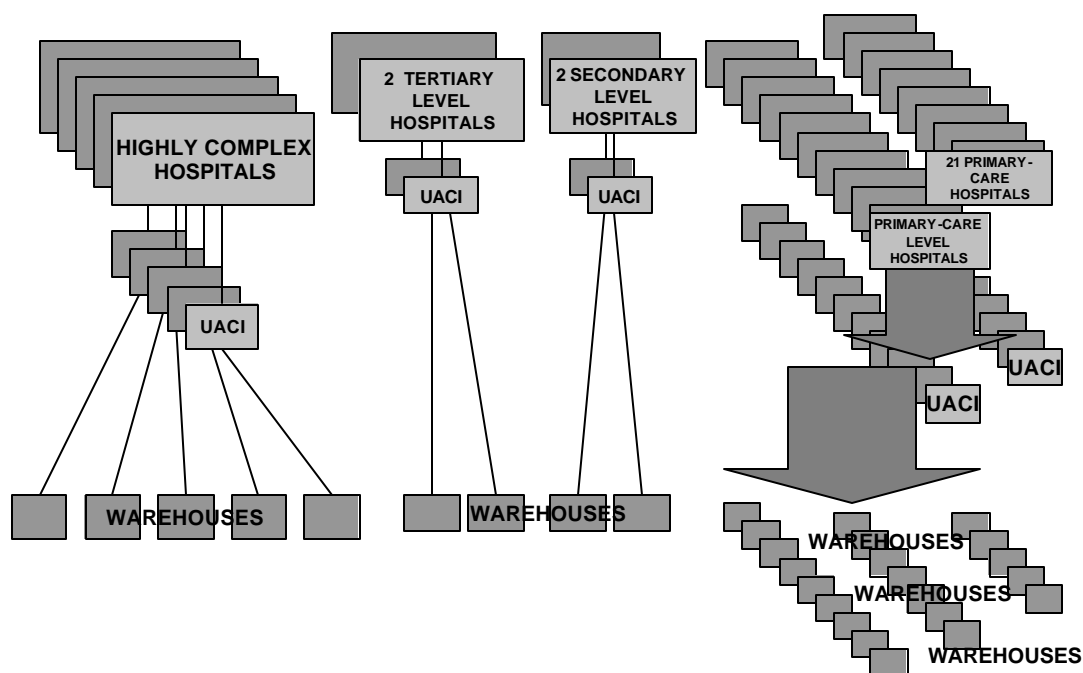


Figure 2. Current MSPAS Acquisition Hospital Level

Considering both the Departmental health care facilities and the hospitals, the budget for medication has increased in recent years. In 1995, USD 18,272,882 (14.41% of the health budget) was paid in, while in 2000, USD 22,074,480 (12% of the budget for health) was paid. Although the percentage of the health care budget intended for drugs has decreased, the absolute amount has increased 20 percent over the last five years. This increase is because the government increased the amount budgeted for health by 42 percent during the period. The funds estimated for drugs continue to increase: for the year 2001, USD 25,969,888 (16 % of the health budget) was budgeted, and for 2002, a need of USD 30,800,000 (18% of health expenditures) has been estimated, a percentage much higher than in developed countries with greater economic capacity. Even with this increase, the drug budget of the MSPAS is less than the ISSS drug budget; the latter allocates 33 percent of its health budget to the acquisition of drugs. These amounts do not take into account the cost of distributing the drugs after they are acquired by the central level to the Departmental health care facilities or the departmental warehouses at the service units. In the case of hospitals that handle their own bidding, the suppliers are responsible for the distribution; therefore, the distribution cost to hospitals is possibly already included in the price.

Of the expenditures for drugs of the MSPAS, 65 percent is for hospitals (USD 20 million) and 35 percent is for the Departmental health care facilities (USD 10.8 million). However, because less is always received from the Treasury than is budgeted, in October 2001, it was estimated that the budget deficit for drugs (compared to the amount requested) for 2002 was USD 5.9 million, or 20 percent of the overall budget.

In general, the Treasury Department approved approximately 20 percent of the requirements of the public health facilities. According to the data obtained from 20 hospitals that provided information during the survey, the 2000 budget deficit varied from 1 percent to 44 percent, with an average of 18 percent. For the 2001 budget, the deficit range was 3.6–38 percent, with an average of 16 percent. This deficit required health facilities to adjust their needs. However, wages and raises must be paid, which account for approximately 80 percent of the amount approved. All other types of drugs, medical supplies, food, maintenance, general services, fuel, and so forth must be paid with the remainder. In the case of drugs, deficit percentages were reported at 8–68 percent for 2000 with an average of 41 percent, and for 2001, at 8–67 percent with an average of 33 percent.

According to reports of the MSPAS hospitals, the average budget for drugs in 2000 ranged from USD 77,390 at the Cojutepeque hospital to USD 1,885,395 at the Rosales hospital, with an average of USD 348,888 and a median of USD 260,323. Given the specialization of the first four hospitals in Table 3, and the possibility of a reporting error (in the case of the Sensuntepeque hospital), it is preferable to focus on the median percentage of the hospital budget used on drugs, which was 8.75 percent in 2000 and 9.93 percent in 2001. The Sensuntepeque hospital reported having used approximately 35 percent of its budget for drugs in 2000 and 65 percent in 2001, which completely removes it from the rest of the hospitals, including those that are specialized and those that have a large volume of patients. This variance could be a result of an error in reporting, but it is worth noting because it means that the budget for wages and other categories had to be greatly decreased. Other reporting hospitals that increased the budget percentage used on drugs in 2001 compared to 2000 are San Juan de Dios de San Miguel, which nearly doubled the percentage of its medication expenditures; Nueva Guadalupe; Cojutepeque; and to a lesser extent Psiquiátrico in its general care, Rosales, and Neumológico.

Table 3. Average Medication Budget in MSPAS Hospitals

Hospital	2000 Hospital Budget (USD)	2000 Drug Budget (USD)	Drug % 2000	2001 Hospital Budget (USD)	2001 Drug Budget (USD)	Drug % 2001
Rosales	17,104,522.06	1,885,394.64	11.02	18,605,661.00	2,628,572.00	14.13
SJD Sta. Ana	8,929,056.00	646,775.66	7.24	10,189,758.00	884,987.43	8.69
SJD San Miguel	8,858,918.00	756,570.00	8.54	10,075,325.00	1,524,867.00	15.13
Maternidad	8,263,930.00	457,143.00	5.53	8,844,407.00	468,267.00	5.29
Psiquiátrico G.	5,549,281.00	497,309.00	8.96	6,187,722.00	871,022.00	14.08
Zacamil	5,467,657.00	403,337.00	7.38	6,381,937.00	571,429.00	8.95
San Rafael	5,242,760.00	307,261.00	5.86	5,874,896.00	495,025.00	8.43
Neumológico	3,661,755.00	328,822.00	8.98	3,825,761.00	430,677.00	11.26
Santa Teresa	3,567,751.43	279,744.00	7.84	3,660,254.00	273,285.00	7.47
San Pedro-Usulután	3,513,992.00	320,256.21	9.11	3,881,257.00	342,285.71	8.82
Ahuachapán	3,505,518.86	207,728.22	5.93	3,825,808.00	227,192.66	5.94
Chalatenango	2,504,614.86	240,901.67	9.62	2,619,730.00	301,549.00	11.51
Chalchuapa	2,005,124.11	314,420.57	5.68	2,033,685.00	217,434.10	10.69
San Bartolo	1,988,376.00	228,571.00	11.50	2,199,219.43	286,277.00	13.02
Cojutepeque	1,816,799.00	77,390.00	4.26	2,031,168.00	200,044.00	9.85
La Unión	1,692,467.40	355,700.00	21.02	1,778,477.10	417,907.00	23.50
San Fco Gotera	1,653,170.00	196,565.00	11.89	1,809,301.00	181,247.00	10.02
Mons. Romero SM	1,540,288.00	114,374.00	7.43	1,658,992.00	138,942.00	8.38
Usulután-Jiquilisco	1,517,714.00	121,855.00	8.03	1,628,451.00	140,686.00	8.64
Nva. Guadalupe	1,475,244.57	148,571.00	10.07	1,694,734.00	336,999.00	19.89
Nva. Concepción	1,403,278.00	113,996.00	8.12	1,513,639.00	101,067.00	6.68
Stgo. de Maria	1,308,397.71	162,392.00	12.41	1,413,154.86	174,963.43	12.38
Suchitoto	1,045,737.00	88,114.00	8.43	1,105,640.00	99,657.00	9.01
Sensuntepeque	346,324.57	120,120.00	34.68	335,082.00	217,316.00	64.85
Average	3,915,111.52	348,887.96	10.40	4,298,919.14	480,487.43	13.19
Minimum	346,324.57	77,390.00	4.26	335,082.00	99,657.00	5.29
Maximum	17,104,522.06	1,885,394.64	34.68	18,605,661.00	2,628,572.00	64.85
Median	2,254,869.49	260,322.84	8.75	2,409,474.72	293,913.00	9.93

After the Treasury approves the budget, the purchases may commence in accordance with the regulations in force. However, the bidding processes may take six to eight months, which contributes to the shortage of supplies at the health care facilities. In 2001, the contracts for the purchases made at the central level for the departmental health care facilities were being executed in October, and the products had to be delivered in 30–60 days. Although the process had been initiated in the early months of the year, it had to be postponed to make emergency purchases because of the earthquakes. To a large extent, donations sustained the supply of services, the same as the emergency purchase made late in 2000, the delivery of which to the

departmental health care facilities was completed in May 2001, coinciding with the collection of data for this study.

Most hospital units give priority to the category of drug purchasing, which under the system covers some 8 to 10 months of supplies, resulting in some cases in almost four months of supply shortages. However, the majority of hospitals does not have the budget to maintain the infrastructure and equipment; to carry out teaching and research, to conduct staff training; or even to pay for basic services such as electricity, telephones, water, and hospital solid waste removal.

The hospitals have used different strategies in order to be able to meet their expenses. One example is what happened in 2001, when raises were not paid to any personnel (percentage of wage increase that is calculated in a performance rating system, maximum of 8 percent). This strategy made it possible to use funds equal to approximately 6 percent of the percentage of the amount budgeted for wages. In some cases, hospitals have used the alternative of transferring funds from the drugs category to other categories because they hoped to receive an additional budget increase for drugs, since that is virtually the only category where strengthening is considered necessary.

Apart from their budgetary allocation, both hospitals and health care facilities can use the monies generated from patient care (fees for services). It is estimated that through this income, 10–20 percent can be collected to compensate for the drug deficiencies and, in special cases, other supplies such as oxygen.

The MSPAS has administrative procedures to make purchases that correlate to the amounts to be spent. For example, hospitals can purchase without bidding by requesting three product descriptions from suppliers for up to a maximum amount of 100,749.99 colones (USD 11,514.28). Beyond this amount, they must bid. In health care facilities, purchases up to a maximum amount of 5,000 colones (approximately USD 571) can be made without consulting the Departmental Office.

However, there are no guidelines for selecting or prioritizing the type of drugs that both hospitals and health care facilities can purchase with discretionary funds. The inventory lists of the hospital warehouses included drugs not included in the EDL of the MSPAS. To make these purchases, only the approval of the pharmacy advising physician, supporting the request and the approval of the director, is required. The support, however, may consist merely of medical personnel complaints about the alleged “poor” quality of any equivalent medicine on the EDL. No established procedures ensure that decisions are based on scientific criteria.

Donations are another source for acquiring drugs. After the earthquakes in early 2001, Japan donated USD 4.7 million worth of drugs and other cooperative efforts or countries donated drugs valued at approximately USD 2 million. The problem in determining the value of the donations is that there are no unit prices for the merchandise received. These donations appear to have somewhat balanced the drug deficit in 2001.

Another point that must be noted is that in addition to the actual demand of the population, other unscheduled demands can aggravate or contribute to the supply shortage of the system, such as certain multivitamin policy programs that increase consumption and accelerate expense, or special days that are not budgeted for and require that drugs be provided. Under these circumstances, some hospitals seek to resolve the situation by borrowing or by exchanging emergency medications and transferring products when possible.

MSPAS Expenditures for Pharmaceutical Products

An indicator of how funds are used to purchase medication is the investment in different therapeutic categories. According to reports from five departmental warehouses supplied by purchases made on the central level of the MSPAS, the following five therapeutic categories require the largest medication purchasing expenses, in descending order: antibiotics, vitamins, antiparasitics, hormonal contraceptives, and antihistamines. (See Table 4.) In the case of the Sonsonate warehouse, the largest investment is in the therapeutic categories of hormonal contraceptives and vaccines, whereas in the other warehouses, antibiotics are the largest. On average, the five therapeutic categories specified accounted for 61 percent of the drug purchasing amount in 2000 for these warehouses, with a variation of 43–80 percent of the value of the inventory. It is important to note that none of these products were provided through donations. Rather, they were purchased on the central level.

Table 4. Value of Therapeutic Categories according to Data from Departmental Warehouses

Therapeutic Category	Sta. Ana	Ahuachapán	Sonsonate	San Miguel	La Paz
Antibiotics	\$116,971.00	\$ 73,036.82	\$ 37,459.94	\$498,088.00	\$177,805.37
Vitamins	\$ 73,090.00	\$ 81,611.93	\$ 21,558.12	\$ 72,223.00	\$ 61,754.28
Biologicals	\$165,907	\$102,016.16	\$ 94,684.58		\$ 57,139.49
Hormonal contraceptives		\$ 34,238.51	\$ 69,302.47		
Antacids	\$ 40,212.00				\$ 46,045.71
Antihistamines	\$ 35,554.00			\$ 61,908.00	
Analgesics				\$ 68,778.00	
Antituberculars			\$20,472.59		
Hematinics				\$ 81,471.00	
Antiparasitics		\$ 41,185.95			\$100,336.45
Total 5 Categories	\$431,734	\$332,089.37	\$243,477.70	\$782,468.00	\$443,081.30
2001 Total Drug Investment	\$604,972.27	\$621,021.56	\$410,492.57	\$976,925.00	\$646,442.74
2001 Percentage of Expenditures in These 5 Categories	71.36%	53.47%	59.31%	80.09%	68.54%

With regard to the expenditures of hospitals according to therapeutic categories, with the exception of the Hospital de Maternidad in San Salvador, hospitals spend the greater percentage of their drug budgets on antibiotics and intravenous solutions. In the third place, they vary between antiparasitics and hormonal products, and then a variety of therapeutic categories including anti-inflammatories, anesthetics, and others.

In general, expenditures in the first five categories of drugs account for an average of 65 percent of the allotted (approved) budget reported in 2000 and a median of 68 percent. Some hospitals, such as San Juan de Dios de Santa Ana and Zacamil, appear to invest 89–95 percent of their budgets in their first five therapeutic categories, whereas the others spend 30–50 percent. In the case of the Nueva Guadalupe hospital, it was reported that the amount spent on antibiotics was over 100 percent of the budget allotted to the hospital, and was even much higher than the other four drug categories as shown in Table 5.

If one considers the total drug expenditures, and assuming funds are added to the hospitals' own income, the average percentage of the expenditures in the first five therapeutic categories is 58.6 percent and the median is 56.7 percent. The range varies from 41 to 88 percent, with the Hospital Nueva Guadalupe de San Miguel accounting for the maximum of 88 percent. This figure means that only 12 percent of the budget is used in the other 40 therapeutic categories. The Hospital Nacional de la Unión is an interesting case because it reported that its total drug expenses were less than the budget allotted by the Treasury.

Upon reviewing the hospital's drug expenditures in greater detail, the analysts noted that the hospitals are directing their expenditures toward acquiring drugs with very specific indications to cure pathologies that affect small population groups, such as third-generation cephalosporins, anesthetics like sevoflurane and isoflurane, and biologicals like albumin and immunoglobulin.

Table 5. Therapeutic Groups with Higher Expenses in Hospitals (in USD)

Therapeutic Groups	Matern.	SJD Sta. Ana	Zacamil	Cojutepeque	Mons. Romero	Chalchuapa	La Unión	Suchit	Nva Concep.	N. Guadlp SM	San Bartolo	Stgo de Maria	Sensun tepeque	SnFco Gotera	Ahua chapan	Usulután Jiquilisco
IV solutions	118,737	50,937	99,946	14,302	11,694	14,589	21,419	5,473		4,886	11,600		25,022	17,224	19,363	21,580
Cytotoxics	69,461															
Antibiotics	63,363	284,245	140,366	19,686	48,229	37,185	46,842	15,531	39,581	199,762	73,858	19,823	41,748	36,979	48,220	32,189
Antiasthmatics	49,449															
Vaccines	41,154															
Anticonvulsants		125,395		6,958												5,476
Anesthetics		63,162	60,228			13,428									12,488	
Anti-angina preparations		56,030								7,238						
Antihypertensives			39,905	8,486		6,801				7,501						
Antiparasitics					5,869			6,847	5,222		23,719	43,416	9,585	6,987		11,109
Anti-inflammatories					5,953		5,841				9,300					
Hormonals				12,535							12,058		13,439	12,980		
Analgesics													8,878			12,647
Antac./antag. H2					6,539											
Vitamins						7,107	5,157	3,367						6,691		
Ophthalmic products			44,358													
Antihistamines							4,623									
Special								6,157								
AntiTB									3,101							
Hypoglycemics															10,252	
Antiseptics									1,686							
Antimycotic agents									1,561							
Dermatological										14,943						
Relaxants															13,266	
Total 5 Groups	342,164	579,769	384,804	61,967	78,283	79,109	83,882	37,375	51,150	234,331	130,535	63,239	98,672	80,861	103,590	83,001
Median Budget 2000 \$	457,143	646,776	403,337	77,390	114,374	314,421	355,700	88,114	113,996	148,571	228,571	162,392	120,120	196,565	207,728	121,855
Reported Expenditures \$	653,021	1,051,000	853,512		134,427		135,148	78,415		265,545		154,378	121,276	133,132	207,897	134,812
% of Budget 2000	74.85	89.64	95.41	80.07	68.44	25.16	23.58	42.42	44.87	157.72	57.11	38.94	82.14	41.14	49.87	68.11
% of Actual Expenditures 2000	52.40	55.16	45.08		58.23		62.07	47.66		88.25		40.96	81.36	60.74	49.83	61.57

Estimated Drug Handling Expenses

The data in Table 6 show the expenses that could be estimated based on the data obtained from seven departmental warehouses in order to estimate the operating costs of handling drugs in warehouses as a proportion of the monetary equivalent of their inventory. For this purpose, 83 percent of the warehouse staff's time was considered to be dedicated to handling drugs; therefore, the salary category corresponds to this percentage. The storage cost, fixed cost or cost from the warehouse, maintenance cost, financing cost, and tax depreciation of the warehouses have been calculated using the storage area reported to be dedicated to drugs and multiplying by specific costs per square meter annually. The costs per square meter have been estimated using data reported in the analysis performed by the MSPAS in *Cuentas Nacionales en Salud 1998—Estimación del Gasto Nacional en Salud en El Salvador* (National Health Accounts 1998—Estimate of National Health Expenditures in El Salvador) and are explained in detail in Annex E of this report.

For the transportation expenses, various assumptions had to be made: first, only Usulután-San Miguel provided salary information for the drivers (2) for its two vans and fuel and repair expenses. Because wages do not vary greatly and do not depend on the value of the inventory that is handled, this information was used for the other warehouses, assuming that each warehouse has at least one driver to distribute drugs. If the other warehouses have more drivers, these data are underestimated.

It was also assumed that the value of a new van is approximately USD 35,000 and USD 30,000 for a freight lift. These amounts were used to estimate the depreciation cost of both (dividing the value of the van by seven years, the estimated useful life after which it would need to be replaced, and five years for the freight lift). The financing cost of the vans was estimated as 1 percent of their value.

For the fuel, maintenance, and repair of the vans, the percentage that this expense represents of the inventory value of the warehouse that reported this expense was calculated, and the same percentage was applied to the inventory value of the other warehouses (assuming that the higher the inventory value, the higher the distribution expense).

The expiration costs of drugs in storage were only reported by the Usulután-San Miguel warehouse. To estimate the amount in the other warehouses, the percentage that these data represented in the reporting warehouse was used to estimate the data of the other warehouses.

With these assumptions, the cost of operating the warehouses ranged between 23 percent and 61 percent of the amount of inventory that these warehouses handle. This analysis did not include costs at the central level before the drug entered the departmental warehouses. Therefore, the estimate may be lower than the actual expenses.

Table 6. Estimated Operating Expenses of Departmental Warehouses

Expenses	Sta. Ana	Ahuachapan	Sonsonate	Usulután	San Miguel	Zona Centro	La Paz	Average by Area
Personnel	\$36,801.10	\$14,670.88	\$15,140.54	\$53,352.67	\$49,248.61	\$30,180.39	\$12,150.83	\$30,220.72
Storage cost	\$28,710.00	\$20,194.02	\$7,788.00	\$35,692.80	\$32,947.20	\$7,224.10	\$8,580.00	\$20,162.30
Fixed cost	\$28,275.00	\$19,888.05	\$7,670.00	\$32,448.00	\$32,448.00	\$7,114.64	\$8,450.00	\$19,470.53
Maintenance cost	\$47,850.00	\$33,656.70	\$12,980.00	\$59,488.00	\$54,912.00	\$12,040.16	\$14,300.00	\$33,603.84
Financing cost of inventory (0.12)	\$51,037.09	\$26,265.88	\$24,503.44	\$28,009.78	\$84,145.13	\$32,603.46	\$33,164.03	\$39,961.26
Tax depreciation (0.1)	\$8,700.00	\$6,119.40	\$2,360.00	\$10,816.00	\$9,984.00	\$2,189.12	\$2,600.00	\$6,109.79
Transportation (gas/maintenance)	\$4,343.62	\$2,248.37	\$1,983.47	\$3,848.86	\$3,848.86	\$2,766.22	\$2,911.75	\$3,135.88
Transportation (personnel)	\$5,271.96	\$5,271.96	\$5,271.96	\$5,271.96	\$5,271.96	\$5,271.96	\$5,271.96	\$5,271.96
Depreciation of vans	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00
Financing cost of vans	\$350.00	\$350.00	\$350.00	\$350.00	\$350.00	\$350.00	\$350.00	\$350.00
Expiration costs	\$6,712.87	\$3,474.76	\$3,065.36	\$6,172.23	\$5,515.00	\$4,275.07	\$4,499.98	\$4,816.47
Tax depreciation of freight lift	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00
Total operating costs	\$229,051.6	\$143,140.02	\$92,112.76	\$246,450.3	\$289,670.75	\$115,015.1	\$103,278.5	\$174,102.7
Average medication inventory	\$658,124.6	\$340,662.48	\$300,525.3	\$402,537.8	\$1,078,982.6	\$419,124.6	\$441,174.7	\$520,161.7
Operating costs as a percentage of the average inventory	34.80%	42.02%	30.65%	61.22%	26.85%	27.44%	23.41%	33.47%

To estimate the cost of drug management in hospitals (Table 7), 70 percent of the warehouse personnel wages was used for managing drugs (assuming that 30 percent was dedicated to supplies and other equipment). The time of the pharmacy staff was added in its entirety. In addition, to estimate the fixed storage, depreciation, and financing costs, 70 percent of the reported warehouse area was used as well as the entire pharmacy area. Only some hospitals reported drug transportation expenses, but at very low levels. These were considered, but those hospitals without data were not considered in the transportation category since they handle their own bidding and the orders are delivered to their facility by the suppliers. In the case of warehouse equipment depreciation, the cost of a freight lift divided by five years was used, which is the useful life of the equipment after which it would have to be replaced.

Table 7. Operating Cost of the Supply System in Hospitals in USD

Expenses	Staff Salaries	Storage Cost	Fixed Costs	Maintenance Financing	Financing Costs (0.12)	Depreciation of Real Estate	Transportation	Depreciation of Storage Equipment (0.10)	Expiration Costs	Total Cost	Average Inventory	% Inventory Cost
Maternidad	144044	18367	18089	30612	27146	5566		6000	750	250574	226217	111%
Rosales	269208	31746	31265	52910	65450	9620		6000		466199	545418	85%
Psiq. General	98617	11836	11657	19726	41985	8840		6000	126	198787	349878	57%
Neumologico	64764	23510	23154	39183	48886	7124	none	6000	15066	227687	407380	56%
SJD SM	120280	65657	64662	109428	72705	19896	4137	6000		462766	605877	76%
SJD S. Ana	99556	56364	55510	93940	82023	17080		6000	932	411406	683528	60%
Zacamil	116037	10281	10125	17135	64151	3115	7081	6000		233926	534594	44%
Cojutepeque	39121	11022	10855	18370	8389	3340		6000	57	97154	69908	139%
Mons. Romero	32060	7286	7176	12144	12637	2208	none	6000	1055	80567	105309	77%
Chal-chuapa	39479	12119	11936	20199	12226	3673		6000		105632	101886	104%
La Unión	33389	12570	12379	20949	20802	3809		6000		109897	173346	63%
S. Pedro-Usulután	57554	1229	1211	2049	16503	373	1816	6000		86734	137528	63%
San Rafael	105288	17191	16930	28651	38310	5209		6000	9477	227057	319251	71%
Suchitoto	37668	5546	5462	9243	11543	1680		6000	490	77631	96191	81%
Nva Concepcion	27242	7593	7478	12654	10792	2301		6000	1300	75359	89931	84%
San Bartolo	68636	4650	4579	7750	23066	1409		6000		116090	192217	60%
Santa Teresa	31823	74567	73437	124278	33411	22596		6000		366111	278424	131%
Sensuntepeque	1220	12543	12353	20906	16840	3801		6000	4020	77683	140333	55%
SnFco Gotera	42300	8184	8060	13640	16576	2480		6000	71	97311	138134	70%
Ahua-chapan	7894	11860	11681	19767	21597	3594		6000		82392	179972	46%
Usulután-Jiquilisco	23705	6073	5981	10121	33874	1840		6000	12485	100079	282285	35%
Category Average	65781.31	18918.23	18631.59	31530.39	36572.98	5712.82	5665.93	6000	3555.15	183018.28	268355.49	75%

Unlike the operating cost of departmental warehouses, where the estimate does not reach 50 percent except in the case of the Usulután warehouse, drug management in hospitals accounts for a high percentage (average 75%) of the average value of the inventory they handle. The average inventory was estimated based on the December 1999 and December 2000 inventory data divided by two; if data existed as of another time of the year, they were also considered. The median cost of maintaining the system of the hospitals is 70 percent with a 35–139 percent range of variability.

Nongovernmental Organizations

The purchasing systems in the NGOs generally consist of small and frequent purchases by individual clinics from regular distributors. The NGO clinics are visited regularly by representatives of pharmaceutical companies and pharmaceutical wholesalers, which can take orders and deliver merchandise. Only a few NGOs have established formal bidding systems for greater efficiency and economy of scale (AMES for example, which provides drugs to many parochial clinics). The Order of Malta is in the process of standardizing the purchasing system of its 10 clinics for better quality and efficiency.

Of the 13 NGOs interviewed, 10 use donations, either monetary or in kind, to supply a portion of the drugs they dispense, but none are supplied exclusively by drug donations. Eight of the 13 NGOs have cost-recovery mechanisms, but with varying degrees of effectiveness. Contribution for service, may be voluntary only, with the funds dedicated to local activities, or a fee system for services may exist with sale of drugs at cost. No NGO is 100 percent self-sufficient.

Only Asociación Demográfica Salvadoreña (ADS), the largest NGO, has its own distribution system from a central warehouse to the different clinics using vehicles it owns. The other NGOs usually distribute medication when they visit health promoters for supervisory and support activities.

Private Pharmacies

Only 13 (45 percent) of the 29 private pharmacies that participated in the study had a pharmacist present at the time of the visit. In general, information was provided by the owner (8 cases), by an administrator or manager (9), or by a pharmacy employee (11). The majority of pharmacies surveyed were independent (79 percent) and only five (17 percent) were members of a pharmacy network. Twelve of the pharmacies (41 percent) had a copy of the EDL of the MSPAS on the premises.

The number of products present varied greatly, from 20 to 100,000 products reported, but the average was 5,755 products and the median and trend were 2,000 products. All pharmacies visited handled medical supplies, 59 percent had vaccines, 83 percent had condoms, 76 had dental products, 79 percent had eye products, and 14 percent carried diagnostic reagents. However, only 8 of the pharmacies reported having a functioning refrigerator. It is important to note that 19 pharmacies reported that they had been inspected during the last 12 months.

Seventy-nine percent of the pharmacies reported maintaining a record of drugs sold and 58 percent had a sales book. Only 4 of the 29 pharmacies had a computerized record of their products, and 8 maintained a record of prescriptions. Although it could not be confirmed, it was reported that on average the pharmacies dispensed 12 percent of prescriptions from the public sector. The number of daily customers at the pharmacies, the number of items sold per day, and the average number of customers with medical prescriptions appear in Table 8.

Table 8. Pharmacy Characteristics

Characteristics	Data
Pharmacist present during visit	45%
Average number of pharmacy staff	2.86
Has a copy of the EDL	41%
Products present	
Average	5,755.25
Median and trend	2,000
Has some type of sales record	79%
Has a prescription record	28%
Number customers daily	
Average (range 10–600)	99
Median	50
Number of items sold per day	
Average (range 20–5,000)	343
Median	122
Average % of sales with prescription	22%
Has contract with insurers or companies	28%
Number of suppliers	
Average (range 7–100)	31
Median	20

The primary source of information reported for the pharmacies was the suppliers of the manufacturers or drug distributors. Seventy-six percent of the pharmacies had the *Diccionario de Especialidades Farmacéuticas* (DEF) (Dictionary of Pharmaceutical Specialties) or PLM. In half of the cases (11), the edition was from 2000. The others had the 1999 or 1995 editions. Nine of the 29 pharmacies reported having some type of pharmacology book. Three reported having a pharmacopeia, and one had treatment guidelines.

The insurers or institutions with which some pharmacies (8) had agreements to dispense drugs to their beneficiaries included Bienestar Magisterial, Cooperativa Melara, Compañía Hidroeléctrica, Administración Nacional de Acueductos y Alcantarillados, and Complejo Pesquero.

The pharmacies generally receive payment from the providers at 30–60 days (83%) and up to 90 days (10%). Seventy-two percent of the pharmacies reported receiving some type of discount for timely payment. In general, the requests for supplies were made by telephone and during visits from the supplier. The frequency of requests varied from daily to bimonthly or weekly, but the products arrived within two or three days.

The data presented in this analysis were collected from a sampling of 26 MSPAS facilities, 23 NGO facilities, and 29 private pharmacies. For some access indicators, there were also data from 24 MSPAS hospitals.

Indicators of Geographic Accessibility to Pharmaceutical Products

- *Percentage of households that are more than 20 kilometers from a health facility or pharmacy that is expected to have tracer products in stock at all times*

Because a home survey was not conducted in this study, we do not have original data to estimate this indicator. A review of the 1998 FESAL survey report indicates that, although the information was not collected at that time either, the percentage of women in the sample who reported receiving at least one prenatal checkup was 89.9 percent, which would indicate access to the services of health facilities. It is also clear that while there are differences between women who live in urban and rural areas with respect to access to health facilities, this difference is not great (92 percent in urban areas and 88.3 percent in rural areas). With regard to pharmaceutical services, given that all health facilities have a pharmacy, we can assume that approximately 90 percent of women have access to this service. Private pharmacies, moreover, exist in larger numbers than the health facilities. Therefore the ratio of facilities with pharmaceutical products per inhabitant is high.

Another relevant factor is the immunization rate reported in the same survey, and the location where those immunizations were received. In 1998, 94.7 percent of children under five years of age received BCG, and 85 percent received DPT, oral polio, and measles vaccines in a health care facility. Only 78 percent received all four vaccines. There was no difference between rural and urban areas, suggesting that access to this service is similar.

- *Average hours of operation of a facility*

This indicator focuses on the hours a pharmacy facility is available to provide services to the public. The results (Table 9) indicate that at least two of the facilities in the MSPAS sample are open to the public 24 hours a day, seven days a week. The NGOs provide limited services and do not have 24-hour service. During the weekend, the NGOs have a limited schedule.

Table 9. Hours of Operation of Facilities in Sample

Criteria Used	Pharmacies	MSPAS	NGOs
Average number of hours of operation per day (total 7 days)	11	9	4.9
Median	11.6	7.35	5.71
Number of facilities that provide 24-hour services	4	2	0
Average hours open per week	11.64	10.3	6.30
Average hours open on weekends	10.5	11.43	2.75

Availability of Drugs and Pharmacy Facilities

The availability of drugs at the facilities visited, measured in terms of whether medicines are available for dispensation, is typically evaluated by two related indicators. The first indicator measures the availability of a set of products (not expired), called tracer products, at the time the study was conducted. Availability is determined by examining the inventory records or by making a physical inspection. The second indicator measures the periods during which these products were not available during the year before the study was made. In order to be able to calculate a valid indicator of availability, it is essential to have reliable and up-to-date records. Therefore, only those facilities where data from the previous months could be reviewed have been included. Together, both indicators provide information not only on current availability but also on the probability that products are available at any time.

Average Availability of the Group of Key Medications at the Facilities

Table 10 compares the information obtained from the 1994 Análisis del Sector Salud (ANSAL) (Health Sector Analysis) study of the MSPAS (Lee and Bates 1994) with the information obtained from the current study (May 2001). Although the tracer products differed on the two occasions, the methodology used to identify the indicator drugs was similar in that the products selected are those that should be available for dispensation at the time of the survey, in particular at the MSPAS facilities. The results suggest that whereas the availability of key products has improved in the MSPAS, a certain decrease in essential products has occurred in the NGOs. This difference may be the result of the NGOs' limiting the types of problems that they treat (particularly if they only have health promoters) and therefore not carrying the selected tracer drugs on their lists, even though these drugs were selected for the most common pathologies.

The most notable case is that of contraceptives, which are not expected to be found in the private diocesan or parochial hospitals. Therefore, comparisons are made with and without contraceptives as part of the tracer drugs that all institutions must have. Only three products from the list of tracer products (condoms, medroxyprogesterone, and ethynyl estradiol-levonorgestrel) were in this category. Even with this adjustment, where the availability of the tracer group references only to the other products, the MSPAS sample (which includes hospitals and health care facilities) demonstrates greater availability than the sample of hospitals only (where there

was a larger number of drugs for anesthesiology and other more complex pathologies), NGOs, and even pharmacies.

Table 10. Average Percentage of Availability of a Group of Key Products

Type of Facility	1993 ^a	2001 ^b
MSPAS hospitals	Not available	69.21%
MSPAS sample facilities	77.5%	83.6% (with contraceptives) ^c 87.5% (without contraceptives) ^d
NGO facilities	79% (without contraceptives)	57.07% (with contraceptives) ^c 61.9% (without contraceptives) ^d
Pharmacies	No information obtained	74.7% (with contraceptives) ^c 78% (without contraceptives) ^d

^a *Analysis of the Health Sector – Pharmaceutical Products Administration*, (Lee and Bates, 1994).

^b MSH survey of facilities, May 2001

^c If the analysis is based on a group of products including contraceptives

^d Availability of group of products without contraceptives

Table 10 shows that on average the availability of the tracer products is 84 percent in the facilities of the MSPAS sample. Using an expanded list for the hospitals, which included tracer drugs for more complex conditions that the hospital must treat, the availability indicator at the hospital level was 69 percent.

In the NGOs, the average availability of the list of tracer products is 57 percent and only increases to 62 percent when the contraceptives that some do not handle are not included in the analysis. In the case of the NGOs, products for degenerative diseases in adults are found in less than 30 percent of the facilities, with private parochial hospitals having only three products from the list in their inventory. However, products to treat childhood illnesses and analgesics are present in nearly 60 percent of the facilities or more.

In the case of pharmacies, this information was collected from 24 of the 29 pharmacies surveyed and the availability of the complete list was 75 percent. If contraceptives are excluded from the analysis, this indicator only increases to 78 percent.

Following are the detailed results for the tracer products used in the sample of the survey of public and private facilities (Table 11).

Table 11. Availability of Tracer Products in Health Facilities

Availability of Tracer Products (N = 24)	MSPAS (N = 26)	NGOs (N = 23)	Pharmacy (N = 26)
Acetaminophen 500mg tab.	100.00%	95.65%	100.00%
Amoxicillin 500mg cap.	84.00%	91.30%	100.00%
Chloropheniramine tab. 4mg	80.00%	60.87%	83.33%
Clotrimazole 1% topical cream, 20–40mg tube	91.67%	73.91%	91.67%
Condoms	76.00%	30.43%	75.00%
Digoxin 0.25mg tab.	84.00%	13.04%	50.00%
Diphenylhydantoin 100mg tab.	64.00%	17.39%	33.33%
Ethinyl estradiol-levonorgestrel, coated tablet cycle	84.00%	26.09%	29.17%
Ferrous sulfate 300mg tab.	92.00%	78.26%	66.67%
Ferrous sulfate sol. 125mg/ml	88.00%	52.17%	45.83%
Folic acid 5mg tab.	68.00%	78.26%	75.00%
Glibenclamide 5mg tab.	72.00%	43.48%	87.50%
Hydrochlorothiazide 25mg tab.	44.00%	17.39%	25.00%
Ibuprofen 400mg tab.	88.00%	86.96%	100.00%
Magnesium and aluminum hydroxide susp., oral	68.00%	43.48%	70.83%
Mebendazole 100mg tab.	96.00%	78.26%	95.83%
Medroxyprogesterone acetate susp. 150mg/ml for injection	64.00%	13.04%	37.50%
Metronidazole 500mg tab.	92.00%	73.91%	91.67%
Oral rehydration salts, powder, 27.9g packet	100.00%	86.96%	70.83%
Penicillin G benzathine, powder, 1.2 million IU bottle	88.00%	56.52%	91.67%
Propranolol hydrochloride 40mg tab.	56.00%	34.78%	83.33%
Salbutamol sulfate 2 or 4mg tab.	100.00%	65.22%	91.67%
Trimethoprim sulfamethoxazole 40mg+200mg/5ml susp.	100.00%	69.57%	87.50%
Trimethoprim sulfamethoxazole tab. 160-800mg	100.00%	82.61%	95.83%
Average number of tracer products available	17.52	13.7	18.5
Average availability of tracer products (includes contraceptives)	83.60%	57.07%	74%

Of the 25 MSPAS facilities that participated, 16 had 20 or more tracer products available. The others had less than 20 products. These facilities include the Ahuachapán Health Unit, which reported having only 14 tracer products available, and the Berlín and San Carlos Morazán Health Units. The greatest deficiencies were evidenced by the low number of facilities with propranolol, hydrochlorothiazide, and diphenylhydantoin, all products for degenerative pathologies that are usually treated in outpatient visits. Folic acid, which should be in all facilities, was only available in 68 percent of the MSPAS facilities.

In the case of the hospitals, the list of tracer products comprised 43 medications in 46 pharmaceutical forms considered necessary to treat common pathologies that require hospital care at various levels of complexity. Table 12 presents the results of the availability of 26 of these tracer products.

The average availability in hospitals is 69 percent, which primarily reflects the low availability of halothane (42 percent), cephalexin (30 percent), haloperidol (8 percent), meperidine (41 percent), and insulin (50 percent). These products were expected to be present in all hospitals to handle more complex admissions and pathologies than the facilities that provide only ambulatory care. Their absence could be explained by the use of different products in the same category, as is the case for albendazole, for which many hospitals report using mebendazole. However, there is no explanation for why half of the hospitals do not have insulin and 92 percent do not have haloperidol. An example of a very expensive substitution is sevoflurane, which was being used in 37 percent of the 24 hospitals that provided data.

Table 12. Availability of Tracer Products in MSPAS Hospitals

Tracer Product (N = 26)	MSPAS Hospitals (N = 24)
Acetaminophen	95.65%
Albendazole	47.83%
Amikacin	82.61%
Bromazepam	20.83%
Carbamazepine	79.17%
Ceftriaxone	91.30%
Cephalexin	30.43%
Cloramphenicol ointment	95.83%
Co-trimoxazole	91.30%
Diazepam	66.67%
Diclofenac	86.96%
Epinephrine	78.26%
Furosemide	91.30%
Haloperidol	8.33%
Halothane	41.67%
Heparin	69.57%
Hydrocortizone	83.33%
Ibuprofen	86.96%
Insulin	50.00%
Meperidine	47.83%
Oral contraceptives	87.50%
Propranolol	86.96%
Ranitidine	75.00%
Salbutamol sol.	91.67%
Salbutamol tab.	75.00%
Sevoflurane	37.50%
Average availability	69.21%

Average Percentage of Time in a Year That the Group of Key Products Is Not Available at the Facilities

This indicator was measured in the sample of facilities based on the list of tracer products for the primary-care levels and the number of days of each month of the prior year that the product was not available. This indicator can provide a better view of the probability of finding the products at the facilities at any given time. One limitation of this indicator is that it depends on how well the inventory records have been maintained and updated. To the extent possible, reliable data were obtained from the public sector and NGOs in El Salvador. It was not possible to obtain this information for pharmacies because the majority do not keep monthly records of supplies.

The numbers in Table 13 show significant similarity between the stock-out level of the NGOs and the MSPAS facilities over a one-year period. Only the products that the facilities normally carry were considered in the calculation in order to prevent inflating the stock-out percentage at the NGOs that do not carry some drugs. The results show that even with fewer products, the NGOs have stock-outs the same amount of time as the MSPAS facilities, for which all tracer products in their category are considered.

Table 13. Percentage of Tracer Product Stock-Outs for One Year in Health Facilities

Tracer Products (N = 24)	MSPAS (N = 25)	NGOs (N = 23)
Acetaminophen 500mg tab.	1.05%	4.20%
Amoxicillin 500mg cap.	6.90%	7.97%
Chloropheniramine 4mg tab.	7.31%	7.45%
Clotrimazole 1% topical cream, 20–40mg tube	4.95%	9.45%
Condoms	7.57%	6.42%
Digoxin 0.25mg tab.	6.79%	18.98%
Diphenylhydantoin 100mg tab.	17.05%	23.72%
Ethinyl estradiol-levonorgestrel, coated tablet cycle	12.34%	10.00%
Ferrous sulfate 300mg tab.	10.58%	0.12%
Ferrous sulfate sol. 125mg/ml	5.64%	5.95%
Folic acid 5mg tab.	12.00%	9.81%
Glibenclamide 5mg tab.	13.12%	0.00%
Hydrochlorothiazide 25mg tab.	21.36%	16.53%
Ibuprofen 400mg tab.	3.15%	6.44%
Magnesium and aluminum hydroxide susp., oral	24.03%	6.96%
Mebendazole 100mg tab.	6.28%	11.61%
Medroxyprogesterone acetate susp. 150mg/ml for injection	27.18%	13.85%
Metronidazole 500mg tab.	0.91%	12.13%
Oral rehydration salts, powder 27.9g packet	0.59%	10.21%
Penicillin G benzathine, powder, 1.2 million IU bottle	7.50%	4.60%
Propranolol hydrochloride 40mg tab.	19.60%	15.62%
Salbutamol sulfate 2 or 4mg tab.	3.12%	4.95%
Trimethoprim sulfamethoxazole 160–800mg tab.	2.55%	8.66%
Trimethoprim sulfamethoxazole 40mg+200mg/5ml susp.	2.17%	6.09%
Average number of tracer products handled	23.88	17.30
Total days of stock-outs of the group of tracer products	21,157	527
Average percentage of time (in 365 days) when there is a stock-out of each product in all facilities	9.32%	9.24%

Again, the majority of the stock-out period proves to be for drugs such as propranolol and hydrochlorothiazide that are used in degenerative and chronic pathologies, which are important conditions for outpatient visits in both types of care. What attracts attention is that in the MSPAS facilities, there are ferrous sulfate, folic acid, and tablet cycle contraceptive shortages 10 percent of the time during the year and medroxyprogesterone is short 24 percent of the year. In the case of NGOs, oral rehydration salts appear to be in short supply 10 percent of the year, as are antiparasitics (mebendazole and metronidazole) almost 12 percent annually.

- *Percentage of prescribed products presented to be dispensed that were actually dispensed*

This indicator was measured through interviews of patients who received a prescription and went to a pharmaceutical facility to obtain it. Evaluation of the proportion of prescribed products that were actually dispensed at the facility triangulates the information with that found in the inventory of available products. Thus, the subject of availability is brought to the level of dispensation to the patient. If the inventory data suggest little availability, it is expected that the dispensation is also affected. It must be noted that in efficient systems, it is possible to quickly resupply even when the inventory data show chronic supply shortages, and they may be able to dispense the products.

The results of this indicator also consider other aspects of the supply system that can influence dispensation, such as the cost of the product to the patient. However, in MSPAS facilities, patients do not have to pay for medicines, therefore, the cost factor should not affect this indicator unless the medicine has been acquired with patients' earnings.

Drugs provided through the NGOs may be given to patients or sold at a subsidized price, at cost, or at cost with an added percentage margin to cover administrative expenses. Some type of mechanism always permits patients without money to be exempt from payment.

Thirty interviews were conducted in each facility, the results of which are presented in Table 14. These data were not obtained in pharmacies. The results show that in the MSPAS facilities, the clients or patients obtained 84 percent of the drugs prescribed, while in the NGOs, the clients obtained 87 percent of the drugs prescribed. It must be noted that the persons prescribing may have been limiting themselves to prescribing what they knew existed in the pharmacies. However, these data are consistent with the availability data presented previously.

Table 14. Products Prescribed and Dispensed

Results	MSPAS	NGOs
Total patients interviewed	712	567
Total products prescribed	1,539	1,234
Total products dispensed	1,298	1,074
Percentage dispensed	84.3%	87.0%

Percentage of Facilities with “Valid” Sources of Information on Drug Use

An indicator of prescription quality is whether the facilities have on hand an adequate information source that makes it possible for them to know the products they handle. It is expected that when persons prescribing have access to accurate and reliable information sources, they will be more likely to write appropriate prescriptions. Traditional pharmacopeias, for example, offer information on the formulation of products but contain little information relative to their therapeutic use. Some tertiary sources like *Martindale* also contain therapeutic information in addition to pharmacological information. Pharmacology texts (for example, *Goodman and Gillman’s Pharmacological Basis of Therapeutics* and *Remington’s Pharmaceutical Services*) or medical textbooks contain minimal information on the formulation of products but provide information directly related to adequate and appropriate prescription. Drug handbooks such as the *Physician’s Desk Reference* (PDR) or its equivalents (in Spanish-speaking countries, the *Diccionario de Especialidades Farmacéuticas* or PLM) are financed by the pharmaceutical industry and usually contain information that is published in package inserts; therefore, they are rarely subject to moral or legal authority.

To avoid confusing the interviewees with the meaning of “reliable information source,” the question was left open to make it possible to list all types of information sources to which the parties interviewed at the facilities believed they had access. Table 15 shows the frequency of responses in pharmacies, MSPAS facilities, and NGOs.

Table 15. Information Sources Reported by Type of Facility

Information Source	Pharmacies (N = 29)	Hospitals (N = 24)	MSPAS (N = 25)	NGOs (N = 23)
At least one source	89.76%	100.00%	85.7%	65.0%
EDL	41.4%	100.00%	39.3%	8.7%
DEF/PLM	75.8%	n/a	35.7%	47.8%
Standard treatment guidelines	3.4%	n/a	39.3%	17.4%
Pharmacopeia	6.9%	n/a	0	0
Pharmacology texts	27.6%	n/a	7.1%	30.0%
Other sources (magazines, pamphlets)	13.8%	n/a	57.1%	56.5%

Note: “n/a” indicates that this information was not collected in the questionnaire sent to hospitals.

Essential Drugs List or a Formulary That Has Been Updated over the Last Five Years

The MSPAS and the ISSS each have an EDL. The current versions date from 1997, but a new version is soon to be approved in both institutions.

Percentage of Facilities That Have the Most Recently Published Version of the Essential Drugs List

Of the 24 MSPAS hospitals that responded to the survey, all stated that they use the EDL in force. In the sample of MSPAS facilities, the percentage was only 39 percent. However, 41 percent of the pharmacies surveyed reported using a list of essential medications or having a copy of the MSPAS EDL. The NGOs only reported using an EDL in 9 percent of the 21 interviews, and none of the private facilities declared having the EDL.

Percentage of Population with Access to a Reliable (“Valid”) Source of Information on Drugs

None of the facilities studied reported having a patient information service in their centers. Because of time and budget constraints, the study could not conduct a population survey to ask this and other questions regarding access to a representative population sample in the country. In the review of previous studies, no information was found on this subject. However, this study was able to ask the patients interviewed who received prescriptions and dispensation whether they knew what the medicine was for and how to use it. In the case of pharmacies, this information was collected through simulated patients or “confederate.” The results of these questions will be reported under the indicators for the quality of the service and drugs prescribed.

Affordability

In many unindustrialized countries, one of the biggest reasons for not having access to drugs is its cost. However, in El Salvador, as previously mentioned, nearly 53 percent of the healthcare expenses are paid by individuals for private-sector services. The *Encuesta de Hogares de Propósitos Múltiples* (Multipurpose Household Survey) conducted in 1997 (Ministerio de Economía 1998) found that 32 percent of the population self-medicates, and that of this group, 65 percent live below poverty level. A recent study of the Colegio Médico (Colegio Médico de El Salvador 1999) reported that 42 percent of the population self-medicates. In a comparison of the drug expenses of the MSPAS, the ISSS, and households in 1997 (MSPAS 2000), it was estimated that households spend three times more on drugs than either institution.

Drugs are purchased in both pharmacies and walk-up stalls in towns, markets, buses, or shops since there is no control of the quantity and type of drugs dispensed. During the CPM/MSH visit to the country, indiscriminate sale of drugs was a practice commonly observed at markets.

Average Unit Price Differential between Cheaper and More Expensive Products

This indicator first shows the range of price options available to customers in private pharmacies, which were obtained for the cases in which at least two different prices were found for the same

active ingredient in the same pharmacy. If an establishment provided only one price, it was not included in the calculations. It was assumed that when there was only one price, no other options were available to the customer. Table 16 shows the percentage difference between the prices for the same product sold at a single pharmacy and the number of pharmacies considered for each tracer product.

The fact that there was little data must be considered when interpreting these results, because it may result in the estimate's not being representative of the entire sampling of pharmacies. To prevent considering incorrect product data when the information was collected, prices that appeared to be outside the normal range were confirmed with prices for the same product from the same laboratory at other pharmacies. The results showed that, in the majority of the cases, there were significant price differences consistent with those expected for generic and brand-name products and also consistent with the variety of products available in the pharmacies.

Table 16. Difference between Lowest and Highest Sale Prices of Tracer Products in Private Pharmacies

Products	Lowest Prices (Median)	N	Highest Prices (Median)	N	Max/Min Ratio	Average Differential Percentage	N
Acetaminophen tab.	0.004	21	3.333	8	833.333	104.17	8
Amoxicillin cap.	2	21	52.55	10	26.275	41.87	10
Chloropheniramine tab.	0.6	18	2.2	3	3.667	200.00	3
Clotrimazole 1% topical cream	25	20	50.6	6	2.024	8.83	6
Condoms	1.333333	17	7.75	11	5.813	233.33	11
Digoxin tab.	1.111666	10	2.2	0	1.979		0
Diphenylhydantoin tab.	1	4	3.5	2	3.500	86.12	2
Ethinyl estradiol-levonorgestrel cycle	0.255357	6	3.358571	2	13.152	457.75	2
Ferrous sulfate sol.	20	8	153.15	2	7.658	181.42	2
Ferrous sulfate tab.	0.395	13	5.266667	1	13.333	205.56	1
Folic acid tab.	0.733333	13	4.333333	3	5.909	112.66	3
Glibenclamide tab.	1.333333	17	6	4	4.500	33.23	4
Hydrochlorothiazide tab.	2.1875	4	11.49767	0	5.256		0
Ibuprofen tab.	0.020	20	3.750	10	187.500	35.00	10
Magnesium and aluminum hydroxide	19	11	65.25	6	3.434	56.86	6
Mebendazole tab.	1.283	20	17.300	2	13.481	65.56	2
Medroxyprogesterone acetate for injection	44.45	9	96.45	1	2.170	10.57	1
Metronidazole tab.	1.7	18	5.666667	2	3.333	127.24	2
Oral rehydration salts powder	0.800	13	3.650	1	4.563	102.78	1
Penicillin G benzathine 1.2 M IU	11	18	56.71	5	5.155	49.00	5
Propranolol hydrochloride tab.	1	16	2.3	3	2.300	30.58	3
Salbutamol sulfate tab.	0.8	17	15.05	4	18.813	44.08	4
Trimethoprim sulfamethoxazole susp.	21	18	153.85	6	7.326	291.99	6
Trimethoprim sulfamethoxazole tab.	2	20	20.545	7	10.273	364.29	7
Average percentage price difference						129.22	

Percentage Difference between the Purchase Prices of the MSPAS and the Median International Prices for Tracer Products

The comparison of MSPAS purchase prices with other international prices makes it possible to measure efficiency in acquiring drugs. Efficiency can generate savings that may be invested in increasing the amount purchased for greater availability of the products and better prices.

To estimate this indicator, purchase prices were compared by reviewing the bids conducted on the MSPAS central level in 2000 to supply the Departmental health care facilities along with the median prices available in other international bids compiled in the *International Drug Price Indicator Guide* published by MSH (McFadyen 2000). The median purchase prices at the central level of the MSPAS were also compared to the median purchase prices of the MSPAS hospitals that conduct their bids separately. The drugs from the list were the same 46 that appear in Table 17.

The results show that although 33 of the 46 products were purchased at prices lower than the median international bid prices, the high price paid for the remaining 13 results in the relative difference in total price for the group of tracer products purchased through central bidding at the MSPAS being 82 percent higher than the prices for the same group of drugs when purchased at the median international prices. The percentage is negative because the UTMIM prices are higher than those in the MSH price guide ($\text{MSH Price} - \text{Central UTMIM Price} / \text{MSH Price} \times 100$). The conclusion is that the MSPAS, through its central bidding, still has the opportunity to obtain better prices, which would release more of the budget to supply drugs that have current deficits.

Comparing the prices obtained by the hospitals through their purchases with the prices obtained in bidding on the central level to supply the Departmental health care facilities ($\text{Hospital} - \text{Central UTMIM} / \text{Hospitals} \times 100$) shows that the hospitals obtained 40 of the 46 products (86.9%) at higher prices than the bids at central level, resulting in a 23 percent relative difference from the median hospital purchase price (central bidding obtained the group of products for less than the median of the hospitals). When this difference is considered relative to the centralized purchase prices for the group of tracer products, the hospital prices are 48 percent higher than those obtained in the central bidding, represented in Table 17 as $\text{UTMIM} - \text{Hosp} / \text{UTMIM} \times 100$.

Detailed review of the prices obtained by the different hospitals shows a wide range of purchase prices with variations among hospitals from 13 percent in the case of sevoflurane to 3,100 percent for albendazole tablets. Between these extremes are hydrochlorothiazide, for which the difference in the minimum and maximum prices (both in hospitals) is 1,766 percent, insulin at 249.17 percent, and propranolol at 585 percent. In general, all drugs studied show significant variations that do not appear to be due to the geographic location of the hospital, economy of scale, or the type of supplier, since in the case of innovative imipenen-cilastatin-type medications, there is only one supplier in El Salvador. The fact that hospitals make purchases individually causes them to lose their ability to negotiate because the products are purchased in smaller quantities than if they purchased together. Individual purchase is also disadvantageous for manufacturing or importing companies because they must handle the bids from each hospital separately.

In the case of the NGOs, very few reported any purchase prices, and what can be seen is that the majority receive the so-called “hospital price” because they lack sufficient volume to negotiate prices.

Table 17. Relative Purchase Price Differences of Central UTMIM, Hospitals, and International Price Guide

Tracer Product	Central UTMIM	MSH Guide	Hospital Median	No. of Hospitals	MSH – UTMIM ÷ MSH	Hosp – UTMIM ÷ Hosp.	UTMIM – Hosp ÷ UTMIM
Acetaminophen	0.0064	0.0066	0.0076	21	3.03%	15.79%	-18.75%
Albendazole	0.0114	0.1814	0.0340	12	93.72%	66.47%	-198.25%
Amikacin	0.5486	0.7750	0.7350	18	29.21%	25.36%	-33.98%
Amoxicillin	0.0343	0.0422	0.0460	18	18.72%	25.43%	-34.11%
Benzylpenicillin	0.2274	0.1920	0.3350	16	-18.44%	32.12%	-47.32%
Bromazepam	0.0240		0.0320	8		25.00%	-33.33%
Carbamazepine	0.0171	0.0483	0.0256	18	64.60%	33.13%	-49.54%
Cefotaxime 1g	1.9943	3.1935	2.5100	14	37.55%	20.55%	-25.86%
Cefoxitine	6.7463		6.7500	1		0.05%	-0.05%
Ceftazidime	2.8914	6.4046	4.3429	9	54.85%	33.42%	-50.20%
Ceftriaxone	1.6343	6.8318	1.8000	21	76.08%	9.21%	-10.14%
Cephalexin	0.1086	0.1000	0.1045	8	-8.60%	-3.92%	3.78%
Chloramphenicol oint.	0.3029	0.1373	0.6200	20	-120.61%	51.15%	-104.69%
Chloropheniramine	0.0035	0.0037	0.0081	17	5.41%	56.79%	-131.43%
Clotrimazole 1%	0.2160		0.4350	16		50.34%	-101.39%
Condoms	0.0571	0.1190		0	52.02%		
Diazepam	0.0093	0.0097	0.0112	16	4.12%	16.59%	-19.89%
Digoxin	0.0149	0.0420	0.0210	16	64.52%	29.05%	-40.94%
Diphenylhydantoin	0.0083		0.0135	18		38.52%	-62.65%
Epinephrine vial	0.1543	0.1505	0.3050	20	-2.52%	49.41%	-97.67%
Ferrous sulfate sol.	0.3840		0.4600	14		16.52%	-19.79%
Ferrous sulfate tab.	0.0080	0.0042	0.0080	15	-90.48%	0.00%	0.00%
Folic acid	0.0041	0.0042	0.0057	15	2.38%	28.07%	-39.02%
Furosemide	0.0061	0.0115	0.0110	21	46.96%	44.55%	-80.33%
Glibenclamide	0.0042	0.0061	0.0070	16	31.15%	40.00%	-66.67%
Haloperidol	0.1326	0.0749	0.1363	8	-77.04%	2.71%	-2.79%
Halothane	38.398		38.400	13		0.00%	0.00%
Heparin	1.3497	0.2271	1.6600	21	-494.32%	18.69%	-22.99%
Hydrochlorothiazide	0.0171	0.0040	0.0430	9	-327.50%	60.23%	-151.46%
Hydrocortisone cream	0.8263	0.0406	0.8200	21	-1935.22%	-0.77%	0.76%
Ibuprofen	0.0103	0.0147	0.0110	21	29.93%	6.36%	-6.80%
Imipenen-cilastatin	17.2263		17.2300	5		0.02%	-0.02%
Insulin NPH	8.0834		9.1400	17		11.56%	-13.07%
Mag. alum. hydroxide	0.6823		0.8150	16		16.28%	-19.45%
Mebendazole	0.0090	0.0141	0.0160	16	36.17%	43.75%	-77.78%

Tracer Product	Central UTMIM	MSH Guide	Hospital Median	No. of Hospitals	MSH – UTMIM ÷ MSH	Hosp – UTMIM ÷ Hosp.	UTMIM – Hosp ÷ UTMIM
Medroxyprogesterone	5.6297	2.6381	4.4150	4	-113.40%	-27.51%	21.58%
Meperidine	1.7143		2.0803	14		17.59%	-21.35%
Metronidazole	0.0149	0.0108	0.0150	18	-37.96%	0.67%	-0.67%
Oral contraceptives	0.6480		0.5200	17		-24.62%	19.75%
ORS	0.1166	0.1419	0.1300	17	17.83%	10.31%	-11.49%
Propranolol	0.0046	0.0099	0.0150	19	53.54%	69.33%	-226.09%
Ranitidine	0.3429		0.5800	21		40.88%	-69.15%
Salbutamol sol	0.4171		1.6500	21		74.72%	-295.59%
Salbutamol tab.	0.0046	0.0057	0.0085	20	19.30%	45.88%	-84.78%
Sevoflurane	228.26		214.88	10		-6.22%	5.86%
Sodium diclofenac	0.1170	0.0487	0.1100	21	-140.25%	-6.36%	5.98%
Trimethoprim-sulfadoxine susp.	0.2823		0.3700	17		23.70%	-31.07%
Trimethoprim-sulfadoxine tab.	0.0297		0.0340	21		12.65%	-14.48%
					-82%	23%	-48%

- *Number of days that a worker who earns minimum wage must work to pay the cost of a complete course of treatment according to standard treatment guidelines.*

The minimum living wage in El Salvador is 1,265 colones monthly, which is equivalent to USD 144.57 (exchange rate of 8.75 colones per dollar). Using the drug price information for four tracer conditions, the number of days that a worker who earns the minimum wage must work in order to be able to pay for complete treatment was estimated (dividing the minimum living wage by 22 to estimate the amount per workday in one month). Using the minimum living wage in this indicator helps to create an index of the ability to pay because in developing countries, income, whether individual or family, is difficult to measure. However, given that nearly half the population lives in rural areas, the use of the minimum living wage, which generally represents the employed workforce, may not be very representative of reality for the majority of the population.

Standard treatments were used to estimate the cost of treatments. In the case of parasitosis, the cost of six mebendazole tablets (two for three days) was estimated. In the case of dysentery, the treatment used was trimethoprim-sulfamethoxazole (10 tablets for five days). To treat pneumonia in adults, 500 mg of amoxicillin was used (total of 21), and one injection of medroxyprogesterone was used for family planning (only one injection was calculated although it must be repeated every three months).

Table 18 presents the estimated results of the cost of a complete treatment for these specific conditions using the lowest median price of pharmacies. The other columns (sampling of MSPAS and NGO facilities) have been estimated with the purchase costs of the institution, establishing a hypothetical scenario in which the patient did not have to pay at least this cost in those facilities. What is important in this case is to see how many days of work a person would

have to invest if he or she had to buy drugs at the cost price at public and NGO facilities, or if he or she could not find them there, at private pharmacies.

Table 18. Number of Days That a Worker Who Earns Minimum Wage Must Work to Pay for a Standard Treatment

Tracer Condition	Based on Median of Lowest Pharmacy Price	Based on Median of Hospital Purchase Price	Based on Median of MSPAS Sample Purchase Price	Based on Median of NGO Purchase Price
Parasitosis	0.26	0.015	0.010	0.026
Dysentery	0.63	0.052	0.042	0.125
Adult pneumonia	1.83	0.15	0.125	0.36
Family planning (inj.)	0.87	0.67	0.15	n/a

Note: n/a means no information was obtained on this product from the NGOs.

- *Percentage of the population that is covered by some type of health insurance*

These data could not be obtained during our study because a population survey was not conducted. A review of documents found that the ISSS covers approximately 15 percent of the general population and 25 percent of the economically active population. It has been reported in the *Encuesta de Hogares de Propósitos Múltiples 1998* (Ministerio de Economía 1999) that approximately 0.5 percent of the Salvadoran population has some type of private insurance. The health expenses of these private insurers, however, account for approximately 5 percent of the health expenses (MSPAS 2002).

In our sampling of pharmacies surveyed, 27.59 percent had some type of agreement with a company or entity that paid the pharmaceutical expenses of its eligible members. As discussed later, there are many pharmacies and our sample is too small to draw more generalized conclusions.

Coverage offered by private insurers operating in the country includes medical insurance that covers hospitalization, surgery, medical examinations, laboratory studies, and drugs. The insurance coverage is individual or family, and there are corporate plans. The family plans include spouses and children under the age of 25.

Persons can only be insured if they are under the age of 60 and provide proof of good health at the time of enrollment. The coverage is effective commencing on the day following enrollment. If candidates for coverage have a chronic disease, the companies evaluate the condition, and if they determine that they can insure these patients, the latter must pay higher premiums.

One of these plans offers a maximum of USD 35,000 for hospitalization, with a copayment of 20 percent that must be paid by the insured party. A maximum of USD 2,800 is paid for childbirth expenses. For surgical procedures and organ transplants, the maximum coverage is USD 15,000, while the maximum for AIDS treatment is only USD 3,000. Eighty percent of the cost of drugs is paid.

The cost of a corporate plan for a healthy person who is 48 years of age and married with two dependent children, is USD 66 per month, slightly less than half the minimum living wage salary. This fact makes it difficult for the majority of the population to have access to this type of coverage.

Cultural Acceptability or Satisfaction

- *Percentage of patients who reported satisfaction with the services provided at the last visit*

Although the study did not include a population survey to measure this indicator, we can use reports of previous studies conducted in El Salvador. One qualitative study conducted by COSSACO in December 1998 Comisión Nacional de Salud de las Asambleas Comunitarias (Sistematización de los Resultados 1998) provides the responses of focus groups regarding the quality of health care. Participants stated that “the treatment of the MSPAS and ISSS facilities is inadequate due to the lack of medicines” and that these facilities “have low-quality and insufficient medicines.” The participants also complained about the extended waiting period to receive attention. The only institution that was praised in this regard was the Red Cross. However, because this report was qualitative, it is not possible to estimate the indicator as a percentage of the population that shares this opinion.

- *Number of products from the EDL that are on the list of those most sold in the private sector*

Seventy percent of the items on the list of products that were sold in pharmacies at the time of the study were part of the EDL of the MSPAS. This fact combined with the other indicator related to prescription quality may provide a range in which prescription medical practices in El Salvador have improved. More information on this aspect will be addressed later.

Service and Product Quality

Beginning in 2000, El Salvador decided to participate in the Unión Aduanera Centroamericana (Central American Customs Union) subgroup on drugs, which, to date, includes four countries: El Salvador, Guatemala, Honduras, and Nicaragua. These four countries are interested in establishing uniform quality criteria for products produced in each.

The CSSP has its own quality-control laboratory that makes it possible for it to examine the quality of drugs before their registration in the country. The MSPAS also has a quality-control laboratory that performs tests on drugs that enter its system. Despite the fact that there are four private quality-control laboratories authorized by the CSSP (LEEC, IQB, USAM, and SINTESIS), the MSPAS laboratory is the only one recognized as official in the country pursuant to the health code in force. The health code is currently being revised for submission to the legislature so that the drug registration and control functions are granted to the MSPAS.

The MSPAS laboratory has a spectrophotometer and equipment for high-precision liquid chromatography and atomic absorption. The tests conducted are based on standards established in the United States Pharmacopeia (USP), the British Pharmacopoeia, the European Pharmacopeia, and the Japanese Pharmacopeia, among others. The tests performed are physical-chemical and microbiological. In terms of staff, there are 13 professional pharmacists and a support staff of two laboratory technicians.

The MSPAS laboratory is currently being updated to obtain International Standards Organization (ISO) 17025 certification pursuant to the recommendations of an external audit performed in 1999. This audit recommended improving the physical plant, ensuring sterility, and preparing manuals for procedures that must be followed. There are currently quality and procedures manuals. The methodology manual is in the process of being prepared. In addition, there is a project to adapt and move the quality-control laboratory to the former military hospital.

Financing for the MSPAS quality-control laboratory is mixed. Although the MSPAS is responsible for the cost of the staff, the supplies necessary to carry out the functions are acquired through a cost-recovery program. The operating budget for the year 2000 was USD 613,098, of which USD 168,469 came from the MSPAS for salaries and USD 444,629 originated from transfers that were used to purchase supplies. The information provided shows that the average cost for the analysis of 1,427 lots performed in 2000 was USD 430. However, the fees authorized for the services offered are lower than this average as shown in Table 19. Therefore, the laboratory may be operating at a loss. These fees were approved by the Treasury Department in 1997.

Table 19. Fees Approved for Analysis in the MSPAS Quality-Control Laboratory

Analysis	Fee
For one active principle	\$148.57
For two active principles	\$171.43
For three or more active principles	\$228.57

As of August 15, 2001, a total of 675 analyses had been performed. Approximately 596 were physical-chemical and microbiological analyses, 26 were vaccines, 18 were products with complaints of stability problems, and 35 analysis requests were for other products.

The average time necessary for an analysis is 7 to 14 days (Table 20). The wait appears to be caused by microbiological tests conducted on sterile and nonsterile products, as is the case with tablets; the latter examination is not indicated in the pharmacopeias, but it causes them to perform additional tests for fungi, yeast, and limits [sic.] because microbiological contamination was detected in tablets.

Table 20. Time Necessary for MSPAS Product Analysis

Type of Analysis	Time Required
Sterile	7 days for membrane filtration 14 days for traditional direct method
Nonsterile	7 days (the 3–5 day Petrofilm method is currently being validated) (2-day limits)

The MSPAS laboratory also performs in vitro analyses of all lots of drug products delivered to the MSPAS quality-control laboratory. However, the rejection percentage is low.

Table 21. Lots That Did Not Pass the Quality-Control Analysis

Year	No. Lots Evaluated	No. Lots Rejected (%)
1997	550	22 (4%)
1998	465	71 Domestic (15.30 %) + 4 Foreign (0.88 %)
1999	1,049	25 Domestic (2.38 %) + 4 Foreign (0.38 %)
2000	1,427 (914 Dom., 513 For.)	41 Domestic (4.50 %) + 3 Foreign (0.59 %)
2001 (31 Set)	674	7 Domestic (1.03 %) + 3 Foreign (0.44 %)

In 2000, 1,427 lots were analyzed, 914 from domestic laboratories (64 %) and 513 from foreign laboratories (36 %). Of the lots from domestic laboratories, 44 were rejected (4.81 %). Of the foreign laboratory lots, 3 were rejected (0.56 %). The primary reasons for rejecting products from domestic laboratories were noncompliance with sterility criteria, physical-chemical defects, and problems with dissolving. The problem with the lots from foreign laboratories was physical-chemical defects. The quality-control failure rate of products from both sources (domestic and foreign) was 3.3 percent of the lots analyzed. Although this is a decrease in the percentage rejected from 1998 (16.16 %), it is slightly higher than the 1999 rejection percentage (2.76 %). Compared to 1998, the decrease in the percentage of lots rejected may indicate that the MSPAS is improving its selection of drugs. However, the results of the samples obtained during the study indicate that the quality problem of products in circulation in El Salvador, and particularly in the MSPAS, is still far from being resolved (see Table 23).

With the hospitals, there is a problem in the mechanism of shipping samples to the quality-control laboratory. The products are delivered directly to the hospitals, and because of the urgent need to use the products, they are rarely sent to the laboratory. Or if they are sent, the product has already been used by the time the results are received. This problem weakens quality assurance.

The ISSS does not have its own quality-control laboratory. Rather, it contracts analysis services from one of the laboratories that is authorized by the CSSP to perform dissolving, physical-chemical, sterility, and microbiological analyses. The average duration of the analyses is 3 days for tablets and 15 days for drugs that require sterility tests. The laboratory that currently has the contract with Social Security is beginning the process for ISO- 17025 certification. The ISSS also has agreements with the Laboratorio Especializado en Análisis de Productos Biológicos (LEBI) (Specialized Biological Product Analysis Laboratory) of the University of Costa Rica and with private laboratories in Mexico that are used for cases where there are problems. The final mechanisms have not been established, but the possibility of the MSPAS Quality Control

Laboratory submitting bids to contract these services is being considered. In addition, contracts may be possible with quality-control laboratories in other countries like Mexico or Costa Rica in order to use them as reference laboratories.

The quality-control process in the ISSS consists of—

1. Supplier prequalification, which is in the first stage of implementation. It is currently in the hiring phase for positions already approved and ready to begin the training process.
2. Receipt, sampling, and visual analysis. At this time, training on the hospital level has already been given to the persons responsible for receiving and taking samples.
3. Participation on recommendation committees.
4. Documentation of the problem of therapeutic flaws and pharmaceutical problems in conjunction with the Pharmacotherapy Department. The implementation of the Quality Assurance project is beginning with the proposed ABC classification of suppliers.

If the pharmaceutical products are from a laboratory that has had no problems for a period of six months, visual inspection alone will be performed. Only drugs that enter the Central Warehouse are subject to quality inspection.

The current ISSS rejection percentage is similar to that of the MSPAS. In 2000, 800 analyses were performed and 2 percent were rejected. The primary reasons for rejection were dissolving problems, contamination, and friability. The decrease in problems reported in the samples since 1996, when the rejection percentage was 9 percent, may mean that the ISSS is also improving its supplier selection system.

It is important to note that like that of the MSPAS, the quality assurance of the ISSS has weakened, because although the current purchases are centralized, the drugs are delivered directly to the hospitals and regional warehouses. Therefore, the ISSS is having difficulties taking samples and quickly reporting the results to the medical health care facilities before the medicine is used up.

- *Percentage of a sample of tracer products from the facilities that failed quality tests*

During visits to the facilities, 87 samples of tracer drugs (20 tablets each) were collected. Samples were obtained from 22 NGO facilities, 30 from the public sector (including one sample from an ISSS hospital), and 35 from private facilities (32 pharmacies and three market stalls). Although there was no attempt to make the sampling representative of the products marketed in El Salvador, it did provide an idea of the quality of the products. Table 22 shows the pharmaceutical products and the number of samples of each that was collected during the survey.

Table 22. Number of Samples of Each Product Collected in El Salvador

Product Name	Samples Collected
Amoxicillin (500mg)	13
Trimethoprim-sulfamethoxazole (160/800mg)	10
Folic acid (5mg)	18
Hydrochlorothiazide (25mg)	3
Metronidazole (500mg)	16
Mebendazole (100mg)	4
Digoxin (0.25mg)	10
Paracetamol (500mg)	6
Furosemide (40mg)	4
Captopril (25mg)	3
Total samples	87

The analyses were performed at the University of Maryland laboratory in the United States. The product identity was studied, a test analysis was performed to evaluate whether the amount of active ingredients corresponded to the product label, and dissolving and disintegration tests were conducted. All products underwent identity tests, trials, and a minimum of one of the following two tests (dissolving or disintegration).

Table 23 shows the results for the products that revealed some type of problem in the quality analysis. In particular, it was observed that they had a lower concentration of active ingredients, that is, below the range recommended in the USP, relative to the product label. A total of 35.6 percent of the 87 samples did not meet some of the quality standards.

Table 23. Samples That Did Not Meet the Quality Standards (MSH Study, May 2001)

Medication Name	Lot Number	Type of Facility	Sector	Trial (% of label strength)	Disintegration (minutes)	Dissolution (% of label strength)	Substandard Evaluation
Amoxicillin	179	Clinic	NGO	83.4%	14.90	—	1
Folic Acid	L-5	Clinic	NGO	75.00%	—	—	1
Metronidazole	04	Clinic	NGO	56.3%	20.55	—	1
Metronidazole	05	Clinic	NGO	75.3%	3.65	—	1
Metronidazole	L017	Clinic	NGO	65.2%	0.95	—	1
Paracetamol	07	Warehouse	NGO	66.40%	21.48	—	1
Amoxicillin	144	Pharmacy	Priv.	87.6%	6.43	—	1
Captopril	01	Pharmacy	Priv.	31.70%	—	61.8%	1
Folic Acid	188	Pharmacy	Priv.	89.60%	—	—	1
Folic Acid	188	Pharmacy	Priv.	86.00%	—	—	1
Folic Acid	188	Pharmacy	Priv.	87.80%	—	—	1
Folic Acid	P-1	Pharmacy	Priv.	89.40%	—	—	1
Folic Acid	7300	Pharmacy	Priv.	87.60%	—	—	1
Folic Acid	9K80	Pharmacy	Priv.	84.00%	—	—	1
Folic Acid	4562/94	Pharmacy	Priv.	119.60%	—	—	1
Paracetamol	04	Pharmacy	Priv.	66.10%	19.68	—	1
Folic Acid	n/a	Health C.	MSPAS	75.20%	—	—	1
Furosemide	200	Hospital	MSPAS	87.40%	—	—	1
Metronidazole	30259	Health C.	MSPAS	57.0%	0.88	—	1
Metronidazole	100218	Health C.	MSPAS	62.9%	0.87	—	1
Metronidazole	96070312	Health C.	MSPAS	67.2%	23.83	—	1
Metronidazole	00030256	Health C.	MSPAS	57.5%	0.58	—	1
Metronidazole	00030257	Health C.	MSPAS	59.6%	0.43	—	1
Metronidazole	00070205	Health C.	MSPAS	71.9%	0.52	—	1
Metronidazole	00070205	Health C.	MSPAS	63.5%	0.53	—	1
Metronidazole	01010294	Health C.	MSPAS	52.4%	0.53	—	1
Metronidazole	L033	Health C.	MSPAS	64.6%	1.15	—	1
Metronidazole	L037	Health C.	MSPAS	66.9%	1.98	—	1
Metronidazole	L082	Health C.	MSPAS	74.7%	0.75	—	1
Metronidazole	L137	Health C.	MSPAS	57.8%	1.43	—	1
Metronidazole	L39	Hospital	MSPAS	57.3%	8.78	—	1
% of substandard samples from the total (N = 87)							35.6%
% of substandard samples from NGOs (N = 22)							27.3%
% of substandard samples from public-sector samples (N = 30)							50.0%
% of substandard samples from pharmacy and market samples (N = 35)							28.6%

n/a = not available

— = test not done

When the failure percentage is considered for each of the sectors studied (public, NGO, and private), 50 percent of the samples taken from the MSPAS failed some of the tests performed (primarily, lower concentration of the active ingredient than what is considered acceptable). Twenty-seven percent of the lots collected from the NGOs and 28.6 percent of the samples from the commercial private sector also had quality defects. Lower concentrations of the active

ingredient may result in subtherapeutic responses to the treatment, and in the case of antimicrobials, they may contribute to developing a resistance to antimicrobials.

Note the case of folic acid, where five samples of a same lot were processed (from private pharmacies), only two of which passed the quality test. This result could be explained by an unequal distribution of the active ingredient in the product manufacturing or inappropriate handling in the warehouse or the pharmacies themselves. It may also be a problem specific to folic acid because even being from different lots, half of the 18 folic acid samples collected did not meet the quality standards. A product that appears to be of equally poor quality in both the NGOs and in the public sector is metronidazole.

An important aspect that would contribute to improving the quality of products in El Salvador would be to ensure that the manufacturers comply with the standard manufacturing practices already established by international organizations. Another mechanism to ensure the quality of the products would be to establish a system that controls quality during the manufacturing process, which would decrease the time in which the product may be sold with a guarantee on the market or introduced to the health systems.

It may be appropriate to establish a qualification process for parties offering pharmaceutical products and to perform random quality controls on products when the laboratories have shown a good history of quality in their products. This would make the analyses flexible and could reduce the operating costs of the laboratory.

- *Percentage of patients who know how to use the drug prescribed*

This information was obtained through interviews of patients who were treated in the facilities surveyed (see Table 24). The goal was not to determine whether information on the use of the drug given by the patients was correct, but rather whether the patients had been given any information regarding why the drug was used.

Table 24. Patients Who Were Provided Information on the Use of Drugs

	MSPAS	NGOs	Private ^a	Pharmacy
Number of patients interviewed	712	447	120	34
Total drugs prescribed	1,539	967	267	49
Total drugs received	1,298	848	226	34
No. of drugs prescribed for which patients know why and how they are used	1,505	888	250	30
Expressed in % of drugs prescribed	97.79%	97.79%	91.83%	88% ^b

^a Interviews of patients in Oratorio San Jose, Hospital Guadalupano, and at the ADS clinic in Santa Tecla

^b Relative to drugs actually purchased

- *Prescription quality*

Comparing the results with the data collected by the 1993 ANSAL survey, we see in Table 25 that in both the MSPAS, and the NGOs and three private clinics, the number of medications prescribed per physician-patient meeting did not vary from 1993 to 2001. There was an increase in the prescription of generic products at the facilities of the three sectors, but with a greater increase in the MSPAS, which indicates that the physicians are abiding more by the standard and that they have confidence in generic products. This trend is also reflected in the prescription of drugs that are on the EDL.

Table 25. Prescription Quality Indicators in El Salvador

Indicators	MSPAS	ISSS	NGO	Private ^a
No. of drugs per visit				
1993	2.2	2.4	2.3	2.4
2001	2.2	N.D.	2.2	2.2
% of drugs prescribed by generic name				
1993	72%	57%	52%	20%
2001	84%	n/a	63%	57%
% of drugs prescribed that are on the MSPAS EDL				
2001	93.4%	n/a	72.0%	70.0%
% of visits where antibiotics were prescribed				
1993	32%	33%	34%	37%
2001	33%	n/a	28%	23%
% of visits where vitamins were prescribed				
2001	31%	n/a	31%	24%
% of visits dipirona (metamizole)				
2001	1%	n/a	0%	3%
% of drugs prescribed that were dispensed				
2001	84%	n/a	88%	85%
% of patients who knew why and how to use the drugs				
2001	98%	n/a	92%	94%

^a Patients interviewed in Oratorio San Jose, Hospital Guadalupano, and at the ADS clinic in Santa Tecla

^b n/a = Data not available

With regard to the number of physician-patient meetings that concluded with the prescription of antibiotics, the difference in the MSPAS facilities does not appear to be significant. In the NGOs and private clinics studied, there was a decrease, but given the fact that the NGOs have a limited EDL, it is understandable. It is possible that the type of pathologies seen in these facilities is different from those seen at the MSPAS.

Although there are no data from 1993 to compare the prescription of vitamins and metamizole, it should be noted that nearly a third of the visits at MSPAS and NGO facilities concluded with the prescription of vitamins. Dipirona is still being used in the private sector despite the fact that its use has been shown to be dangerous.

Relative to drug availability, we see that in the three types of facilities studied, approximately 15 percent of the drugs prescribed were not available because the patients did not receive them. Another important aspect is that the patients are given guidance on why the prescribed drugs are used, in particular in the MSPAS, where the percentage of knowledge on the drugs is 98 percent of those prescribed.

Proposal to Modernize the Supply System

Objectives

General

To modernize the supply system in the provision of drugs and medical supplies at the health care facilities so that supplies for patients' medicine are timely, efficient, and of good quality.

Specific

1. To establish the legal bases for joint bidding on drugs and medical supplies of all MSPAS institutions, and upon agreement, of NGOs and the ISSS.
2. To establish the legal bases for contracting individuals or legal entities to be responsible for the logistical process of storing, distributing, and shipping drugs and medical supplies to the health care facilities.
3. To rely on a logistical system for the storage, distribution, and shipment of health supplies, avoiding the purchase of large volumes of drugs and medical supplies and their storage for six months, one year, or longer. This system may generate savings and improved use of the financial resources.
4. To design and implement a management information system that permits the optimal use of data and information from the suppliers and the logistical system of the prime distributor and that provides feedback to the regional levels or SIBASI, as well as the health services, so that it is possible to conduct inspections and monitoring and to evaluate the performance of the various elements of the supply system.
5. To design and implement a comprehensive quality assurance system for drugs and medical supplies within the health system.

Coverage

In its first phase, the proposal involves the Ministry of Public Health and Social Welfare with its 30 hospital units and the 380 medical facilities of the Departmental health facilities or, according to the progress of the reform process, the 27 SIBASI that have been officially named. The ISSS and the NGOs may be invited to participate in this system because there would be more advantages in increasing the volume of purchases, which could decrease the purchase prices.

Description of the Intervention

The intervention would consist of—

1. Price negotiation for all health services as a whole (hospitals and health care facilities) for the participating institutions, thus limiting the number of bids necessary. The current high number of bids decreases the purchase volume and negotiation capacity of the institutions and makes it difficult for manufacturers respond appropriately to bids.
2. Hiring of an individual or legal entity to be responsible for picking up the merchandise from the manufacturers and consolidating and distributing it to the facilities that requested it. This entity, called the “Prime Distributor” in this document, would be in charge of the logistical system for storage, distribution, and shipment based on modern logistical management techniques, for drugs and medical supplies purchased by the MSPAS and participating institutions.
3. Establishment of a quality control system for the MSPAS that makes it possible to quickly identify defective drug products before their circulation in the health care system.

The objective and goal of this intervention are for the MSPAS (and the participating institutions) to have a completely modern and viable supply management model, which makes it possible to reduce drug handling costs so that the resources can be used to increase purchases of essential medicines required in the facilities in order to provide quality care. This alternative would involve the MSPAS (and the various institutions) not being responsible for managing warehouses with large inventories.

This model is intended to modernize the MSPAS supply system to maximize joint purchasing to improve prices with higher volumes of each article. The “negotiation” and contracting of items would be carried out in consultation with the UTMIM and the management of the UACI on the central level on the basis of public bidding using forecasts of annual domestic consumption.

The quantity required must be specified as an estimated range (with minimums and maximums) and not as a fixed quantity. This method would make it possible for the industry to better schedule its production throughout the year-long order period, thus preventing rushes and obviating the need to hire untrained personnel to meet the production peaks that occur in the current system.

The intervention involves hiring an individual or legal entity to be responsible for the administration of the logistical supply system for MSPAS supplies. The system includes the receipt of products ordered by the facilities from suppliers, temporary storage of the m while the complete order is consolidated for the facilities, and transportation and delivery to the facilities. This entity, called the Prime Distributor (PD), must be contracted through public bidding. The PD would then be responsible for managing the inventory and delivering it directly to all hospitals and health facilities of the country in a timely and efficient manner. The health care facilities would have a maximum one-month inventory and one-month rotation, which is much

easier to handle than the volume currently managed, with its consequent inventory losses. Products whose prices have been established through the first bidding would be ordered independently by each health care facility on a periodic basis according to its storage capacity and needs. The services of the PD will be subject to an agreement executed by the institutions and the PD and in accordance with the stipulations of UFI of the institutions.

The conceptualization of the model is presented below according to the various aspects that must be addressed.

Drugs and Medical Supplies

The Prime Distributor System will handle all products on the EDL. Price negotiation for these products will be centralized and carried out by the Institutional Purchasing and Acquisition Unit. Price negotiation will be carried out through requests for proposals or public bids, requests for proposals or public bids by invitation, management discretion, and direct contracting. The quantities to be purchased will be specified and determined based on estimates and projections of domestic Consumption on the national level. If data are not available, the needs must be estimated based on modern and proven methods. A database must be created to be able to maintain the information and make projections taking the stock-out parameters over recent years into account as well as the donations received for national emergencies.

After the suppliers have been determined, each hospital and Departmental Unit or SIBASI will prepare its purchase orders for the necessary products through the PD. The orders may be based on a defined period of consumption, with the manufacturer or supplier being informed of the estimated requirements. The products may be produced and distributed on a monthly or bi-monthly basis according to the speed of consumption of the facility according to the contract between the parties (the supplier and each of the health care units).

Tenders and Contracts

Supplier

Suppliers will be selected for each product pursuant to the results of the tenders, offer prices, and quality of the product, in accordance with the law in force. The technical specifications for the products, administrative aspects, and financial conditions must be worked out in advance by a committee of the MSPAS and clearly stipulated in the tender documents.

After the prices have been negotiated, the facilities, departmental units, and hospitals will request purchases from the suppliers awarded the contracts. These requests must specify the delivery frequency of the products requested, the amounts, and the form of payment. In addition, the responsibilities of the supplier, the PD, and the MSPAS facilities must be well defined in the requests.

Prime Distributor

The entity that will fulfill the role of the PD will be selected through public tender based on the contracting law in force. As in the previous case, the tender documents must specify the commitments and relationships between the PD and the MSPAS as well as the relationship between the suppliers and the PD and the MSPAS.

The responsibilities of the PD include managing the inventory of its temporary warehouses, preparing orders for the various facilities, requesting products required by facilities from suppliers awarded the contracts, determining the frequency of the delivery of the products to the care facilities, and managing an information system so that it is possible for facilities to know their inventory levels.

Contracting the Prime Distributor

For the contracting, it is necessary to take various factors into account, including experience in handling a product logistics system, efficiency and timeliness of shipments, responsibility for and control over the system, reduction of operating costs, management of a modern information system that permits flexible transactions and provides the necessary information on the quantities of products in inventory, lot numbers, expiration dates, and the like.

Under these conditions, contracting alternatives and payment for services could be—

1. **Set Monthly Price**
The prime distributor will estimate a set monthly amount, which includes all costs of the service, including its profit and an additional estimate for the inventory in its warehouse.
2. **Shipment or Sale**
Establish the cost of each shipment, for which it is necessary to estimate the volumes to be sold in each shipment by Care Center and define a single rate per sale.
3. **Shipment or Sale by Geographic Area**
The cost per sale would be estimated according to each geographic area.
4. **Shipment or Sale according to Kilometer Distance from Each Center**
The cost would be established for each delivery according to the kilometer distance to each center that is determined.
5. **Shipment or Sale according to Kilometer Distance of Routes**
A cost would be determined for the kilometer distance for each defined route.
6. **Single Rate per Units Sold and Delivered**
Establish a single rate per unit sold, which is determined through mutual agreement.
7. **Commission**
Establish a set commission based on the total prices of products delivered to the Care Centers.

These are some alternatives that may be considered when the technical specifications for contracting the Prime Distributor are established. In addition, the cost of handling the inventory and preparing the orders must be estimated.

Storage, Distribution, and Sale

Storage

The PD will receive the drugs and medical supplies direct from the domestic manufacturers, importers, or pharmaceutical wholesalers with which the MSPAS entered into purchase agreements, and will have a copy of each agreement with the suppliers; it will also receive from the Central Warehouses products that must be stored until the stocks are exhausted.

It is proposed that when the contract commences, the minimum stocks that the PD handles be for 30 days and the maximum for 60 days (for one month of inventory and one month of rotation). The suppliers will make deliveries every month or every two months for an equal consumption period according to the delivery schedule prepared by the UACI pursuant to the terms of the contract. In special cases, the PD must adjust orders to the suppliers 15 days in advance. The deliveries will be supported by final invoices containing the technical specifications pursuant to the contract and the respective payment statements. It is important in this first phase that it be possible to adjust the quantities and deliveries for the convenience of the system, for which the following must work in cooperation: suppliers, prime distributor, and health care units. The UACI of the central level will have the duty of supervising and adapting this beginning phase, with the technical advice of the UTMIM.

All products received and in the possession of the PD are intended for use by the MSPAS, but the PD is responsible for them, and it is necessary that it perform all verifications and physical counts required in accordance with the provisions of contracts and make the respective claims in a timely manner when necessary, because the MSPAS will not be responsible for any contractual nonconformity.

The MSPAS will only pay for drugs and medical supplies after they are delivered and received at the hospitals and health care facilities. The PD will provide the information necessary to maintain tight control over the minimum and maximum stocks in both its own warehouse and those of the health care facilities so that their stocks do not fall below the authorized minimum (minimum stock) in order to prevent supply shortages. Therefore, it is necessary to have close coordination among suppliers, hospitals, warehouses, and health care facilities of the MSPAS and, of course, the management and operation of an up-to-date online information system.

Distribution

In the first stage, as the beginning of the process, the UTMIM and the central UACI, in coordination with the SIBASI management and hospital and health care facilities administrators,

will prepare the drug and medical supplies distribution chart, which will contain estimates of the projected monthly and yearly amounts to be shipped to each care center and the form of delivery to each care unit determined in the first phase as well as to the regional or area warehouses in order for them to be delivered to the units in the SIBASI.

The PD will receive from the managers of pharmacies, hospital warehouses, and SIBASI the requisitions or orders according to the distribution chart, consumption, minimum stock that is available for 30 calendar days (one month), and maximum for 60 calendar days for the central region—and for the rest of the country 30, 60, and 90 calendar days respectively or based on the space available in each facility. These requisitions or orders must be executed by the manager or person in charge of the pharmacy and authorized by the director of the health care facility and in the case of the departmental or area warehouses, by the warehouse manager.

Pursuant to the allotted budget, the requisitions or orders will be prepared for distribution and delivery to the MSPAS facilities, taking into account the indications for proper management, storage, handling, and transportation specified in the contract.

Shipment and Delivery

The suppliers will on a monthly basis deliver to the PD the products requested by the health care facilities along with the invoices for each facility. The PD will prepare a product receipt certificate for the inventory, and when the orders for the delivery period are finished, it will prepare the invoices for the cost of the services, and upon delivery of the order to the health care facility, the two invoices will be enclosed.

Each health care facility must prepare a supply receipt certificate after the supplies have been reviewed and determined to be received in accordance with the terms of the contract. The manager or person in charge of the pharmacy or warehouse will execute the documents in order to receive the products. With these documents, the PD will provide a copy of the invoices and the receipt certificate to the UFI. At the UFI, these documents will be exchanged for the *Quedan* (order for payment document confirming the delivery of the paperwork in order to begin the payment process, which will be delivered when the respective payment is made).

The director of the UFI will review and execute the documents to authorize payment to the PD and the supplier in accordance with the allotted budget and the quantities requested by each care center and other specifications set forth in the orders and contracts.

All supplies must have a minimum of expiration period of 24 months commencing on the date of delivery to the PD and a minimum of 20 months in the health care facilities.

When any discrepancies or abnormalities are detected in the products and/or payment documents, the parties concerned reserve the right to reject said supplies, and provide explanations of the situation and immediately communicate it to the immediate superiors or make the necessary adjustments as appropriate for the medical care unit.

Quality Control

In order to prevent problems with the use of drugs, it is necessary to have quality control assurance for the drug and medical supplies storage system that is timely, efficient, effective, and flexible.

The MSPAS will, through the units, the Quality Control Laboratory, and with the advice of the UTMIM, perform the visual physical inspections and physical-chemical and microbiological analyses to the samples of the products that are considered appropriate. The authority to have a group of professionals and technicians dedicated to quality assurance to strengthen this weak area is of utmost importance.

It is important to begin with a plan for the national industries to comply with good manufacturing practices, given the fact that currently very few are in compliance. Similarly, it is necessary to request the certificate of origin of raw materials upon their entry into the country as well as that of imported products.

It would be appropriate to negotiate with the suppliers in order to permit testing on products during the production process and on finished products in the installations of the manufacturers and/or importers and pharmaceutical warehouses.

An important element for the new system proposed here is analyzing the products stored in the warehouses of the Prime Distributor, pharmacies, and warehouses of the MSPAS, all of which would be carried out with the goal of speeding delivery of the drugs to health units, avoiding quarantine.

The party responsible for quality control will determine the number of inspections and analyses performed on the products according to the safety of and the confidence that it has in the manufacturers and the supplies themselves pursuant to the files of each supplier and their assigned classification.

Concerning foreign products, the quality-control process will be conducted on finished products, for which the pharmaceutical wholesaler or importer will be required to have a “quality certificate” or analysis certificate issued by the country of origin. Physical inspections and chemical-biological analyses that quality control deems appropriate will be performed in accordance with its established quality assurance programs. Likewise, quality-control inspections will be performed upon the receipt, storage, and distribution of drugs.

All products that enter the hospitals, pharmacies, and departmental warehouses must be authorized for consumption or use by the Quality Control Laboratory. However, this does not exempt them from the analyses and inspections that may be performed in these facilities at a later time in random sampling programs.

The cost of the analyses will continue to be paid by the manufacturers, importers, or pharmaceutical wholesalers, regardless of the amount of products verified.

Quality Control Laboratory personnel will perform reviews and inspections of the PD facilities to ensure that the products are maintained in an appropriate environment in which the drug is properly managed and handled with appropriate equipment and under optimal conditions.

Form of Payment

The MSPAS will pay the Prime Distributor for the service of managing the drugs with a modern logistical system. The suppliers will be paid in accordance with the bid and the provisions of the contracts executed by the suppliers. Both charges will be made separately.

In the public tender, it is important to request from all suppliers the bank account number in which the different centers that have received deliveries of products may make their respective deposits within 30–60 days following the delivery of the documents. After the payment is made, the bank will seal the payment document for the supplier and provide a copy of the *Quedan* to the respective unit.

The PD will present to the budget office in each hospital and the management of the SIBASI the respective payment documents, copy of the invoice, and service and merchandise receipt certificate and will receive the *Quedan* from this office as proof to make the payment. This payment will also be made through bank accounts.

The documents for payment must be reviewed by the party responsible for the receipt certificate pursuant to the contracts executed and in force in an effort to monitor their agreements.

Payment Alternatives for Suppliers

The PD will function only as the intermediary in delivering to the health care facilities the respective invoices of each supplier for their respective products. A certificate of receipt must be prepared for each delivery. These documents will be provided to the UFI of the respective units authorized to make payment and where the *Quedans* are prepared, one for the products and another for the logistical services. Both will be provided to the PD, and with these documents the payment process will begin, which will be carried out through deposits to the respective accounts of each supplier in accordance with the specifications agreed to in the respective contracts.

When suppliers deliver products to the Prime Distributor, they understand that the payment will be made by the various health facilities that requested the merchandise, or by the SIBASI, after the facilities have received the products. It is estimated that the payment process will begin within 15 days and will take 15–45 days, for payment by bank account. This payment proposal was analyzed and discussed with UFI representatives.

Installation Capacity of the Prime Distributor

The PD must own or lease physical installations that guarantee appropriate storage, distribution, and shipment in accordance with the conditions established to comply with the quality required in the public bidding, with a distribution of space according to the types of medications and medical supplies, which would operate based on a code system (in this case, there would be 555 forms or codes). The PD is obligated to maintain an environment that protects the products in accordance with the technical specifications of the drugs, such as air conditioning and refrigeration rooms for the products that require them; floors, roofs, and false ceilings in good condition and sealed to prevent dust, insects, and rodents from entering; natural and artificial light; adequate water, fire, theft, and robbery safety measures; efficient equipment and furnishings, as well as transportation equipment for the distribution logistics that may be owned or leased (trucks, pick-ups, and electric freight elevators), computer equipment system, e-mail, telephone, fax, radio, online connection, and so forth.

The PD must also have sufficient staff with good professional, academic, and technical preparation and appropriate training to perform the duties of their positions. For its operation in the distribution of drugs, it is necessary and mandatory to have a registered Manager and an operating license issued by the corresponding authorities in accordance with the standards in force for the area of drugs.

Registrations and Controls

The Prime Distributor will have a reliable computer system, which can handle the entry and exit of the supply inventory, accounting processes, actual consumption, expiration dates and lots, and which provides all statistical information required by the MSPAS and its units according to the specifications established in the public bidding.

For the entry of inventory, it will register all products entering its warehouse; for the exit, it will register the items delivered (invoiced) to the hospitals, pharmacies of the facilities, and departmental warehouses or SIBASI. The respective controls and registrations will be performed to determine the deliveries and sales pending for each manufacturer, importer, or pharmaceutical wholesaler in accordance with the contractual clauses of each contract. The same actions will be performed for the hospitals, pharmacies, and warehouses by determining the deliveries and sales pending according to the essential drugs and medical supplies distribution chart.

The PD computer system must, at the end of each month or whenever required, provide to the UTMIM and the central UACI the respective information requested showing the deliveries of products by suppliers, and shipments made to the facilities during the respective period.

The PD is obligated to notify the MSPAS units (UACI, UFI, Quality Control Laboratory, as defined in the contract) in a timely manner of all abnormalities detected upon the receipt and delivery of drugs and to make the respective claims to each supplier in a timely manner. If these notifications are not made, the MSPAS will not be liable for any claims. Similarly, the PD will

provide notice of products that have been exhausted and those with less than a one-month supply in order to take urgent measures to remedy the situation.

Since the products that the PD handles are intended for use by the MSPAS, it is necessary to have some control of online information for these products. Therefore, the central UACI will perform a monthly entry registration when the supplies enter the Prime Distributor warehouses and an exit control for the hospitals, pharmacies, and warehouses. This process is carried out in order to determine the supply inventory on a given date, which will prevent the possible release of drugs to other destinations, and in order to have information on the inventories being managed.

The MSPAS also reserves the right to carry out, through its units and under special circumstances, the various inventory inspections, accounting records, staffing, vehicle fleet inspections, and any information and reports prepared by the PD as set forth in the contracts.

Implementation

In order for the operation and function of the project to be viable, its implementation has been structured in the following phases.

First Phase

- The Prime Distributor, after selection through public bidding, will receive medications from the current central warehouses of the MSPAS, which still have a large inventory, and from the suppliers for new purchases. This transfer and delivery must be scheduled according to the specifications of the contracts awarded.
- The PD will make the respective shipments to the health units, departmental warehouses or functional SIBASI, if applicable, according to the schedule of needs of each unit.
- At the same time, the current needs of each institution will be determined so that each is able to sufficiently estimate how much to request and when. In general, it is projected that the health care facilities will handle low inventories for one month and a one-month rotation. This system will require monthly deliveries by the PD unless the scheduled needs differ and the deliveries are for periods that are somewhat longer (two or three months according to the needs and geographic location and availability of appropriate temporary storage areas). Hospitals may wish to maintain one month of inventory and a one-month rotation or may prefer to have two months of inventory and one of rotation, but the hospitals need to make their inventory management costs more efficient.
- During this first phase, the seven regional warehouses will continue to deliver their products until the second phase begins.

Forms of Payment during this Phase

Payments to the manufacturers or importers for the merchandise purchased will be made according to the financial standards established by the UFI, among which the following are being considered: the central level pays the suppliers from the budget allotted to the health care facility and hospitals, or each health unit or hospital pays its suppliers directly through direct deposit to the bank accounts of the suppliers. Suppliers can be requested to provide a bank account number in the medication bidding so that the hospitals can make direct deposits through their UFIs to the account of each supplier. To begin the payment process, current regulations require a copy of the invoice and the certificate of receipt, with which the application for the deposit of the corresponding funds may begin. It is estimated that this type of management may take 15–45 days. It would have to be carried out on the central level while the decentralization of the SIBASIs takes place. When the SIBASI are fully operational, they will carry out the corresponding payment procedures.

Second Phase

- In the second phase, the Prime Distributor will receive drugs from the central warehouses (until the existing stocks are exhausted) and from the medical suppliers as detailed and according to the schedule of needs of the health care facilities throughout the country. At this time, both the central and departmental warehouses can decrease their operations until closing. The staff who are currently adequately trained and work in the warehouses will have to be reassigned to improve the management of the hospital warehouses. The shipments will be made directly from the Prime Distributor to all hospitals and the health care facilities on the national level.
- Payment for the products received will be made according to the mechanism selected based on the experience during the first phase. If the SIBASI are functional, the payment may be made separately by the managers of the SIBASI through deposit to the accounts of the respective suppliers.

Third Phase

- In the third phase, all regional warehouses of the MSPAS would have no need to operate since the suppliers would deliver the contracted products to the Prime Distributor based on the schedule of needs set forth in the contracts. The PD will make the deliveries on the national level directly to each facility specified in the contract. The payments made will be decentralized by hospitals and SIBASI throughout the country according to the established budget.

Desired Results for Specific Access Problems

The following results are desired:

- Minimize the responsibility of the institution by delegating a private entity to manage the logistical supply system: storage, distribution, and shipment of drugs and medical supplies.
- Ensure that MSPAS medical care centers have drugs and medical supplies in a timely manner in order to efficiently satisfy the population served.
- Assure the quality of the drugs that the MSPAS distributes, improving its image and gaining the people's confidence in these drugs.
- Evaluate losses due to expiration, robbery, theft, and mismanagement.
- Purchase drugs and medical supplies efficiently and at better prices.
- Minimize costs in the supply of drugs and medical supplies.
- Use MSPAS funds more effectively by making payments only for products received at the institutional facilities, at prices much lower than the current ones.
- Achieve greater efficiency and efficacy in the distribution and shipment of drugs on the national level.
- Improve the management of inventory in hospitals and their care units with adequate human resources and professionals as well as adequate temporary warehouses.
- Reinforce the urgent needs of the hospital warehouses and temporary warehouses in the SIBASI and their care units with human and other resources of the current warehouses.

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Appendix 1: Essential Medications in the NGOs of El Salvador

Dr. Carlos Aristeguieta

Executive Summary

Primary Findings

- The NGOs active in health programs in El Salvador cover a relatively small portion of the population (approximately 7.5 percent), corresponding to approximately two percent of the overall health expenses.
- Their programs are generally rural primary health care (APS), using health promoters, clinics or a combination of the two. However, others are more specialized [in areas] such as reproductive health and family planning.
- The majority of the systems for selecting medications are empirical. They are based on the requests of treating physicians, and to a certain point, historic consumption and prevalent pathologies. All rural health programs have a basic chart of medications, albeit limited. Only two NGOs do not have any type of basic chart.
- The purchasing systems vary in complexity from small and frequent purchases by individual clinics from usual distributors, to formal bidding systems seeking greater efficiency and economy of scale. One NGO in particular is in the process of unifying the purchasing system of its ten clinics for better quality and efficiency.
- The majority of the NGOs use donations either in cash or kind to supply at least part of the medication (none is supplied with donations exclusively). Almost all NGOs have cost recovery mechanisms, but with variable degrees of effectiveness. There may be only a voluntary contribution for the service with the funds dedicated to local activities, or a fee system for the services and sale of medications at cost. No NGOs are 100 percent self-sufficient.
- Distribution is generally carried out through promoter supervision and support activities and not as a separate activity. This is due to the limited availability of funds in small scale projects, which are carried out with relatively efficient efforts.
- Relative to activities to regulate and improve the use of medication, only the NGOs that have rural primary health care programs have treatment guides for the promoters with the most common pathologies.
- Two examples of public-private cooperation were identified that seek to improve aspects of the access to medication. One is the recent opening by a NGO of three pharmacies in the capital that offer a wide array of products at reduced prices with optimal service. The other is the installation and maintenance of a computerized information system in a clinic in the capital that connects medical facilities to the pharmacy. This makes it possible for patients to

obtain prescribed medications and prevents the prescription of medications to which they are allergic.

Recommendations and Next Steps

- It would be possible to use some NGOs as a basis for operations to increase the access to essential medications. The NGOs have experience in the area, usually serving populations in locations difficult to access and with good success. Although the projects conducted by the NGOs are typically small, this would be an advantage for a well controlled pilot operation.
- One obstacle to beginning large operations with NGOs is that they are fragmented and there are no centralized coordination systems between them and the MSPAS. Another problem is the possibility of sustaining the activities of the NGOs over the long term.
- It is possible to combine the lists of basic medications of the various NGOs, and it would be a first step to a collective purchasing program. It would be appropriate to gather an initial group of NGOs whose programs are similar (for example, basic health care through promoters) to develop a common basic list. However, a common list would lead to a debate on the prescription privileges and dispensation of the suppliers and should be carried out in conjunction with the MSPAS. This would be the case in particular if the ultimate objective is for the NGOs to participate in MSPAS purchasing.

Introduction

In the framework of the Strategies to Increase Access to Medications Project, Center for Pharmaceutical Management of Management Sciences for Health, a technical team visited El Salvador in May 2001 to perform a comprehensive and multi-group analysis of management systems for essential medications. One of the groups analyzed was Nongovernmental Organizations (NGOs) with health programs. The general objective of the project is to promote new initiatives based on public and private cooperation to improve access to essential medications in developing countries involving various methods of access: availability, financial accessibility, geographic accessibility, acceptability and quality. The specific objective of the mission to El Salvador was to perform a detailed evaluation of the current status of the public's access to essential medications including public groups (Health Department and the Salvadoran Social Security Institute) and private groups (nonprofit NGOs and commercial private [companies]). The results of the evaluation will serve as information in determining whether El Salvador will be selected to carry out specific operations during the four remaining years of the project.

Materials and Methods

May 1-19, 2001, there was a visit to El Salvador, at the beginning of which, the largest NGOs with activities in the health sector were selected with the help of a national counterpart. The NGOs were contacted and interviews with the directors and visits to the facilities were organized. The interviews followed a semi-structured pattern with open questions related to

aspects of the services provided, the management of medications and the cost and financing of the programs. Interviews were also sought with officials of multi-national and bilateral organizations that played a role in promoting NGOs active in the health sector. Whenever possible, documentation on the costs and quantities handled was obtained. Local literature on the NGOs in the health sector was also sought.

Findings

Sixteen NGOs were selected from a total of 20, with four rejected because they were very small or did not handle medication. Thirteen were contacted and interviewed while the other three did not respond to repeated calls (see Attachment 2). The portion of the Salvadoran population covered by NGOs with health programs is relatively small (approximately 7.5 percent) corresponding to approximately 2 percent of the overall health expenses.

The majority of the NGOs (eight out of 13) provide services in rural areas only, two out of 13 serve urban areas and only two provide services in both areas. In addition, the majority of NGOs (seven out of 13) only provide services through health promoters, while three provide services in clinics only and three provide mixed services.

Projects of the individual NGOs serve groups of 22,000-70,587 inhabitants. The NGOs that have health promoter programs, in particular the Seraphim Foundation, FUSAL and World Vision have higher figures as they have already conducted their own censuses. Two NGOs (Order of Malta and Clínicas Parroquiales) do not know the number of people they serve and both provide services in clinics only (without health promoters) that are open to the general public. Patients from distant municipalities visit the Order of Malta clinics and the FUNDESO clinic.

The MSPAS does not have much experience working with NGOs. For example, over the last ten years, there has been no committee or similar organization that is a central counterpart to the NGOs and assists in the coordination of their activities. In contrast, on the regional and local levels there is good coordination of activities, with the NGOs participating in vaccination days, mobile clinics and others. The agreement between the MSPAS and USAID for the Healthy Salvadorans Project (SALSA) includes financing for five basic health care projects through NGOs (FUSAL, ASAPROSAR, CALMA, OEF and AMS). This two-year project was recently extended by six months to December 2001 in order to give the MSPAS experience in contracting NGOs to expand its services. However, and in part due to the earthquakes of January and February 2001, the MSPAS has not been able to take charge of the projects as planned.

It must be noted that some NGOs were affected by these earthquakes, either through direct damage to their infrastructure or due to financial support received for their projects being diverted to affected areas of greater need. However, the NGOs played a critical role receiving and distributing donations and assisting in recovery and reconstruction work.

The Medication Management Cycle and NGOs

Selection of Medications

The majority of the systems for selecting medications are empirical. They are based on requests to the management of treating physicians, and to a certain point, on historic consumption and prevalent pathologies. Only two NGOs (FUNDESO and Clínicas Parroquiales) do not have a basic chart of medications. However, all rural health programs have a basic chart of medications, albeit limited. The lack of funds and restrictions imposed on prescriptions by rural promoters prevent these programs from spending on products that are not on the list.

Acquisition of Medications

The acquisition systems vary in complexity and range from small and frequent purchases by individual clinics from usual distributors, to formal bidding systems seeking greater efficiency and economy of scale. The clinics of the NGOs are visited regularly by representatives of pharmaceutical manufacturers and wholesalers, which can take orders and deliver merchandise. The Order of Malta is in the process of unifying the purchasing system of its ten clinics for greater efficiency and quality.

Ten of the 13 NGOs interviewed use donations, whether monetary or in kind, to supply at least a portion of the medications they dispense. None are supplied exclusively with medication donations. Eight of the 13 NGOs have cost recovery mechanisms, but with varying degrees of effectiveness. There may be only a voluntary contribution for the service and the funds are dedicated to local activities or a fee system for services and the sale of medications at cost. No NGO is 100 percent self sufficient.

Medication Distribution

Only ADS, the largest of the NGOs has its own distribution system from a central warehouse to the various clinics with vehicles owned by the organization. In general, the other NGOs distribute medications when they carry out promoter supervision and support activities, and not as a separate activity. This is due to the fact that small scale projects have limited funds, which makes them relatively efficient.

Use of Medications

The use of treatment guides for promoters with the most common pathologies was only observed in the NGOs with rural primary health care services. In the clinics, the treating physicians used their own judgment and the availability of medications.

Administrative Support

It was noted that the NGOs are recognizing more the importance of good management in the optimal operation of their programs. For example, the Order Malta recently hired a professional administrator, in part to reorganize its medication and medical supplies purchasing system.

Regulatory and Legal Framework

The Chemical and Pharmaceutical Oversight Committee of the Superior Council on Public Health is the entity responsible for regulating medication. Clinics and dispensaries, including those of the NGOs, are authorized to have medical supplies in order to dispense and sell medications to their clients without a pharmaceutical manager required. The term pharmacy is formally reserved for commercial pharmacies, which must comply with the most stringent requirements, including having a manager.

In general, the NGOs have an exemption through the Office of the President of the Republic to import donations. The primary condition for the donations is that the expiration date be at least six months after the date of arrival in the country.

Amount of Access and the NGOs:

Availability

Availability does not appear to be as good as in the private commercial sector. On one hand, NGO projects frequently use promoters who can only treat a limited number of problems, albeit the most frequent (ARF [acute renal failure] and EDA, etc.). On the other, the limited budgets of the projects make them dependent on donations and they require a cash flow to make new purchases. This occasionally results in some medications not being available.

Economic Accessibility

Economic accessibility seems to be much better than in the commercial private sector, but not as good as the public sector, which is free. The medications offered through the NGOs may be given to patients, sold at a subsidized price, at cost or at cost plus a margin percentage to cover the administrative expenses. There is always some type of mechanism so that patients without money can be exempt from payment.

Geographic Accessibility

This is one of the advantages of many NGOs, in particular those that have rural primary health care projects. Those projects cover areas not served by the public sector.

Acceptability

The acceptability of the services can be characterized as superior to that of the public sector. Many NGOs insisted that the effort they make to serve their clients with quality and dignity this was one of their strong points.

Quality

This is one of the primary problems described by the NGOs. There is no quality control mechanism for medication. There are frequent reports of medication that is defective or does not

achieve a good therapeutic response. When quality guarantees are requested from manufacturers, they are offended that the quality of their products is questioned. The NGOs usually make a pre-selection from their suppliers, avoiding orders from those with which they have had bad experiences or that have a bad reputation. There is strong perception that brand name medications are better.

Example Case 1: Salvadoran Demographic Association (ADS)

This is the largest and most traditional NGO in the country. Founded 39 years ago, its services were focused on reproductive and sexual health, but has expanded to include ten basic health care clinics, one tertiary hospital, three pharmacies and other services not necessarily related to health such as web page design. ADS and Pro-Familia have good acceptance and excellent name recognition. According to Lic. Jorge Hernandez Isussi, Executive Director of ADS, the institution has increased its self-sufficiency over the last seven years from 20 to 80 percent. The largest program is rural reproductive health care services, which consists of a network of 765 promoters and a support and supervision system. However, the services of these promoters are limited to distributing contraceptives and providing counseling on the same. The program also has the largest deficit of all and relies on donations and internal subsidies to survive.

The Pro-Familia pharmacies, which opened last October, grew out of the merchant program of the institution, which includes the creation of a pharmaceutical wholesaler to represent and distribute their products. They offer a complete range of medications and supplies at commercial prices and hope to be more competitive through a combination of activities. They are attempting to reduce the cost of medication (larger volumes by combining the purchases of the three pharmacies, bonus system,¹ discount for prompt payment and shortly, purchase through the pharmaceutical wholesaler) and provide better service to the clients (parking, security, 24-hour schedule and residential service). They report that [these] have been very well received, doubling their sales volume in seven months.

Example Case 2: Social Development Foundation (FUNDESO)/Antiguo Cuscatlán Care Clinic

This is an organization with a single center in an urban area, which attracts clients from many other towns. It was created thanks to the support of the local industry, which continues to provide support. It has and maintains an integrated computerized information system, which connects the medical facilities to the pharmacy, which makes it possible for patients to obtain prescribed medications and prevents the medications to which they are allergic from being prescribed. The clinic database could be a valuable resource for participation studies.

¹ When a determined number of units of a product is purchased, a specified quantity of the same product is given as a bonus.

Recommendations and Future Perspectives

The health programs conducted by the NGOs offer their clients the advantages of geographic accessibility and acceptance. The economic accessibility that they offer is better than in the commercial private sector. The availability is variable, but not as good as the commercial private sector. Although they cover a small segment of the population, and an even smaller portion of the total health expenses, it is possible to include them in the operations to increase the access to essential medications. There are already examples of public-private cooperation that attempt to improve certain aspects of access to medication. Although the projects that the NGOs operate are usually small, this would be an advantage for a well controlled pilot operation. One obstacle to beginning large operations with NGOs is that they are fragmented and there are no centralized coordination systems between them and the MSPAS. Another problem is the possibility of sustaining over the long term the activities of the NGOs, which are not completely self-sufficient. Several NGOs have expressed their interest in participating in joint purchasing programs, which would improve quality and reduce costs. A first step would be to combine and update the various basic charts of medications.

Appendix 2: Cost Definitions for Warehouses and Hospitals

Budgets Used

1. Area Used = warehouse area used for medications. The warehouses reported it directly, but in the case of hospitals, 70 percent of the warehouse area reported was considered.

In the case of Usulután and San Miguel, which also serve the departments of Unión and Morazán, we divided area in half for each (Usulután and the rest - San Miguel, which provided costs for the other two), although Usulután is said to have 52 percent and the other three 48 percent of the warehouse area.

2. Personnel Cost = Annual salary of warehouse personnel (not including drivers) *0.83 (percentage of the time represented by medications as supplies account for 15-20 percent of the value of the warehouse).

3. Storage Cost = medication warehouse area x 66 USD annually (for merchandise stored in one square meter at 5.50 USD per month). *The cost reported in Cuentas Nacionales en Salud 1998 – Estimación del Gasto Nacional en Salud en El Salvador was used as an example.*

4. Fixed Costs = medication warehouse area x 65 USD per year. This amount was based on the reports of the previously specified publication, including electricity, water, telephone, taxes and security services, which are estimated at \$3.50 per month per square meter. But adding other costs such as equipment, shelving, insurance and fire [protection] adds \$1.90 per month per square meter, totaling \$5.40 per month per square meter resulting in 65 USD per year per square meter.

5. Maintenance Cost = warehouse area x 110 USD.

6. Financial Cost of Inventory = average inventory x 0.12 (annual interest rate)

7. Physical Depreciation = warehouse area x 200 USD (construction value) x 0.10 /annually (at ten years)

8. Transportation Cost = The information was only provided by Usulután and San Miguel. It includes \$3,017.14 for fuel, \$2,240.14 for maintenance, \$1,069 for spare parts and \$1,371.43 for insurance. This information is for vans, which is a total of \$3,848.86 per van. It was not possible to obtain information on the cost of the vans in order to estimate depreciation or the monthly financial cost of having the vans, which would be one percent of the value of each van. Hospitals did not report any transportation expenses for medication, therefore, this category was not considered in the analysis.

9. Driver Salary: Only reported by Usulután-San Miguel as \$10,543.92 for two vans (two drivers). The result is \$5,271.96 annually per driver.² If this data is used to estimate the total fleet managed with money from the departments and central level (18 vans and 18 drivers), the result would be \$164,175.28 per year. However, we have used the amount of one driver for each of the warehouses that reported other information.

10. Van Depreciation: Assuming that there is one per warehouse, the cost to replace the seven vans has been divided over a period of seven years.

11. Financial Cost of Vans: 1% of \$35,000.

12. Physical Depreciation of Equipment such as Freight Elevators: Assuming there is one per warehouse, the cost of one [piece of equipment] was divided by five to estimate the amount that would be necessary to replace the equipment over a five-year period.

12. Expiration Cost = Only two warehouses (San Miguel and Usulután) reported this amount separately. It was estimated how much of the inventory value it represented and this percentage was assigned to the inventory values of the other warehouses that did not report this information.

11. Extra Cost = Represents the work of the central level personnel (UACI, UFI, UTMIM) [and] was not obtained. This means that the estimate may be low. This information was not added to the analysis.

12. Total Operating Cost = The total of all costs specified.

13. Average Inventory that the warehouse handles. This is based on the December 1999 and December 2000 inventory. In some cases, the April 2001 inventory was included in which case, the number was divided by three to obtain an average.

14. Operating Cost as Percentage of the Average Inventory: Total operating cost divided by the average inventory x 100.

² Transportation and driver information provided by Lic. Gladis Reyes, Usulután Department, in cooperation with Lic. Raúl Alfredo Pacheco, budget director.

Appendix 3: Forms Used to Collect Data

Forms for warehouses

Ministry of Public Health and Social Assistance

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
Management Sciences For Health Center for Pharmaceutical Management

Facility Identification: _____	
Department: _____	SIBASI: _____
Warehouse Name: _____	
Level of Complexity: _____	
Instructions: <ol style="list-style-type: none">1. Provide the information requested with data for the year 2000.2. Please indicate when items cannot be completed due to lack of information.3. Fax the information on May 16 to fax numbers: 271-1277, 222-2124, 222-9302.4. If you have difficulty sending by fax, please call telephone numbers: 271-1277, 222-2114, 222-9302 to arrange pickup.	
A. Human Resources and Infrastructure to Acquire Medication:	
For No. 2, please include the annual salary of each labor category.	
1. Area in square meters intended for medication storage: _____	

2. Personnel dedicated to storage and distribution of medication and medical supplies:

- a) Existing Organization Chart
- b) Active employees, human resources itemization (total and itemized by position) :

B. Budget and Purchasing:

1. Indicate the total regular budget of the warehouse in dollars:

Year 2000:

Appendix 3: Forms Used to Collect Data

Year 2001:	_____
2. Indicate the deficit budget of the warehouse in dollars:	
Year 2000:	_____
Year 2001:	_____
3. Indicate the total budget for medication of the warehouse in dollars:	
Year 2000:	_____
Year 2001:	_____
4. Indicate the deficit budget for medication in dollars:	
Year 2000:	_____
Year 2001:	_____
5. Indicate in descending order the distribution of the expense by therapeutic groups in dollars: (Attach list) _____	
6. Indicate in descending order the distribution of therapeutic groups that could not be financed: (Attach list) _____	
7. Indicate the dollar amount of donations received: _____	
8. Indicate the percentage of the medications received as donations that are not on the basic chart of medications: _____	
9. Indicate the total value of the medication purchases in 2000 through:	
Management's Discretion:	_____

Public Bidding:	_____
10. Indicate the total value of medical supplies purchases in 2000 through:	
Management's Discretion :	_____
Public Bidding:	_____
11. Number of public bids carried out in 2000: _____	
12. Number of purchases made at the discretion of the management in 2000: _____	
13. List the medication suppliers: (Attach list)	
14. Include a purchase price list for medication in 2000, specifying the unit price, generic name, pharmaceutical form and supplier.	
15. Indicate the percent of bids awarded for the public bids conducted: _____	
16. Indicate the percentage awarded in the discretionary management processes: _____	
17. Time period between the beginning of the public bidding and the availability of medication (when it can be prescribed): _____	
C. Basic Chart of Medications	
1. Do you use the Basic Chart of Medications:	Yes <input type="checkbox"/> No <input type="checkbox"/>
2. Date of edition:	_____
3. Annual supply shortage percentage of medications included in the basic chart of medications: _____	
4. Percentage of medications purchased that are not included on the basic chart of medications: _____	

Appendix 3: Forms Used to Collect Data

D. Stock

1. How much medication is kept in stock, percentage corresponding to the basic chart of medications:

2. What percentage of medications are in out of stock? Specify why:

3. Specify the criteria used to begin a new purchase of medication (inventory level, consumption increase):

4. Percentage, number of units and cost of the medications that expire in your facilities:

5. Inventory in units and dollars on December 31, 2000:

6. Inventory in units and dollars on April 30, 2001:

E. Stock of the Following Medications					
Generic Name	Current Inventory	Monthly Consumption	Product Exhausted Day/Year	Unit Purchase Price	Therapeutic Alternatives
Albendazole, 200 mg tablet					
Amikacin, 250 mg/ml					
Cephalexin 500 mg					
Trimethoprim Sulfamethoxazole 160/800 tablet					
Ceftriaxone 1 gr					
Epinephrine 1 mg/ml vial					
Propranolol Hydrochloride 40 mg tablet					
Heparin 5000/ml for injection					
Furosemide 40 mg tablet					
Sodium Diclofenac 25 mg/ml solution for injection					
Ibuprofen 400 mg tablets					
Acetaminophen 500 mg tablets					
Meperidine Hydrochloride 2 ml vial					

Appendix 3: Forms Used to Collect Data

Generic Name	Current Inventory	Monthly Consumption	Product Exhausted Day/Year	Unit Purchase Price	Therapeutic Alternatives
Halothane 250 ml bottle					
Sevoflurane 250 ml bottle					
Salbutamol 400 mg tablet					
Salbutamol solution for vaporizer					
Ranitidine 25 mg/ml					
Haloperidol 2 mg tablet					
Diazepam 10 mg tablets					
Bromazepam 3 mg tablets					
Carbamazepine 200 mg					
Insulin NPH					
Cloramphenicol ophthalmologic ointment					
Hydrocortizone cream 1%					
Oral contraceptives					

Hospital Form

DEPARTMENT OF PUBLIC HEALTH AND ASSISTANCE

STUDY OF THE VIABILITY OF PUBLIC-PRIVATE INITIATIVES TO IMPROVE ACCESS TO
 MEDICATION IN EL SALVADOR
 MANAGEMENT SCIENCES FOR HEALTH CENTER FOR PHARMACEUTICAL MANAGEMENT

Name of Establishment: _____	
Department: _____	SIBASI: _____
Hospital Name: _____	
Level of Complexity: _____	
<p>Instructions:</p> <ol style="list-style-type: none"> 5. Provide the information requested with data for the year 2000. 6. Please indicate when items cannot be completed due to a lack of information. 7. On May 16, fax the information to Fax No. 271-1277, 222-2124, 222-9302. 8. If you have difficulty sending by fax, please call telephone numbers 271-1277, 222-2114, 222-9302 to arrange pickup. 	
A. Characteristics of the Hospital:	
1. Number of beds:	_____
2. Average hospital stay:	_____
3. Annual number of outpatient visits:	_____

Appendix 3: Forms Used to Collect Data

4. Specialized consultations provided:	<hr/> <hr/>
5. Five primary reasons for outpatient visits:	<hr/> <hr/> <hr/> <hr/> <hr/>
6. Five primary reasons for hospitalization:	<hr/> <hr/> <hr/> <hr/> <hr/>
7. Five primary causes of death:	<hr/> <hr/> <hr/> <hr/> <hr/>
B. Human Resources and Infrastructure for Medication Purchasing:	
For questions 3, 4 and 5, please include the annual salary of each labor category.	
1. Area in square meters intended for medication storage:	<hr/>
2. Area in square meters intended for the pharmacy:	<hr/>

3. Administrative personnel dedicated to medication purchasing (UACI or Supply):

a) Existing Organization Chart

b) Active employees, human resources itemization (total and breakdown by positions):

4. Personnel dedicated to the storage and distribution of medications and medical supplies:

c) Existing Organization Chart

d) Active employees, human resources itemization (total and breakdown by positions):

9. Pharmacy Personnel:

a) Existing Organization Chart:

b) Active employees, human resources itemization (total and breakdown by positions):

Appendix 3: Forms Used to Collect Data

C. Budget and Purchasing:	
1. Indicate the total regular budget of the hospital in dollars:	
Year 2000:	_____
Year 2001:	_____
2. Indicate the deficit budget of the hospital in dollars:	
Year 2000:	_____
Year 2001:	_____
3. Indicate the total medication budget of the hospital in dollars:	
Year 2000:	_____
Year 2001:	_____
4. Indicate the medication budget deficit in dollars:	
Year 2000:	_____
Year 2001:	_____
5. Indicate in descending order the distribution of the expense by therapeutic groups in dollars: (Attach list)	

6. Indicate in descending order the distribution of therapeutic groups that could not be financed: (Attach list)	

7. Indicate the dollar amount of donations received:	

8. Indicate the percentage of the medications received as donations that are not on the basic chart of medications:	

9. Indicate the total value of the medication purchases in 2000 through:

Management's Discretion:	_____
--------------------------	-------

Public Bidding:	_____
-----------------	-------

10. Indicate the total value of the medical supplies purchases in 2000 by:

Management's Discretion:	_____
--------------------------	-------

Public Bidding:	_____
-----------------	-------

11. Number of public bids conducted in 2000:

12. Number of purchases made at management's discretion in 2000:

13. List the medication suppliers: (Attach list)

14. Include the medication purchase price list for 2000, specifying the unit price, generic name, pharmaceutical form and supplier.

15. For the public bids conducted, indicate the percentage awarded:

16. Indicate the percentage awarded at the discretion of the management:

17. Period between the beginning of the public bid and the availability of the medication (when it may be prescribed):

Appendix 3: Forms Used to Collect Data

D. Basic Chart of Medications	
1. Do you use the Basic Chart of Medications:	Yes <input type="checkbox"/> No <input type="checkbox"/>
2. Date of edition:	_____
3. Annual supply shortage percentage of medications included in the basic chart of medications: _____	
4. Percentage of medications purchased that are not included on the basic chart of medications: _____	
E. Stock	
1. How much medication is kept in stock, percentage corresponding to the basic chart of medications: _____	
2. What percentage of medications are in out of stock? Specify why: _____ _____ _____ _____	
3. Specify the criteria used to begin a new purchase of medication (inventory level, consumption increase): _____ _____ _____ _____	
4. Percentage, number of units and cost of the medications that expire in your facilities: _____	
5. Inventory in units and dollars on December 31, 2000: _____	
6. Inventory in units and dollars on April 30, 2001: _____	

F. Stock of the Following Medications					
Generic Name	Current Inventory	Monthly Consumption	Product Exhausted Day/Year	Unit Purchase Price	Therapeutic Alternatives
Albendazole, 200 mg Tablets					
Amikacin, 250 mg/ml					
Cephalexin 500 mg					
Trimethoprim Sulfamethoxazole 160/800 tablet					
Ceftriaxone 1 gr					
Epinephrine 1 mg/ml vial					
Propranolol Hydrochloride 40 mg tablet					
Heparin 5000/ml for injection					
Furosemide 40 mg tablet					
Sodium Diclofenac 25 mg/ml solution for injection					
Ibuprofen 400 mg tablets					
Acetaminophen 500 mg tablets					
Meperidine Hydrochloride 2 ml vial					

Appendix 3: Forms Used to Collect Data

Generic Name	Current Inventory	Monthly Consumption	Product Exhausted Day/Year	Unit Purchase Price	Therapeutic Alternatives
Halothane 250 ml bottle					
Sevoflurane 250 ml bottle					
Salbutamol 400 mg tablet					
Salbutamol solution for vaporizer					
Ranitidine 25 mg/ml					
Haloperidol 2 mg tablet					
Diazepam 10 mg tablets					
Bromazepam 3 mg tablets					
Carbamazepine 200 mg					
Insulin NPH					
Cloramphenicol ophthalmologic ointment					
Hydrocortizone cream 1%					
Oral contraceptives					

Facility Interview Form

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador

Management Sciences For Health Center for Pharmaceutical Management

Survey of Facilities with Pharmacies

Instructions

This questionnaire will be used in MSPAS, ISSS, NGO and parochial facilities and hospitals and private clinics.

Facility Identification

Department _____ SIBASI: _____

City-Town: _____

Group to which it belongs: MSPASS ____ ISSS____ ONG____ Private ____

Type of facility: Hospital ____ Health Unit ____ Medical Unit ____ Clinic ____

Facility name: _____

Staff providing information

Name _____ Position _____

Name _____ Position _____

Name _____ Position _____

Name _____ Position _____

6. Does the facility use a Basic Chart of Medications? Yes or no

_____ (If yes, attach a copy of the Basic Chart used)

7. Is there an updated list of medications available at the pharmacy?

_____ (Please attach a copy of this list, which includes available medications that are not on the Basic Chart of Medications.)

8. Treatment standards of the facility and the group that established them (MSPAS, ISSS, OPS, other).

-
- | | | |
|----|-------|---------------|
| a. | _____ | Est. by _____ |
| b. | _____ | Est. by _____ |
| c. | _____ | Est. by _____ |
| d. | _____ | Est. by _____ |
| e. | _____ | Est. by _____ |
| f. | _____ | Est. by _____ |
-

9. Value of medication inventory at the end of April 2001 USD _____

10. Amount of losses due to deterioration, theft, or expiration of medications at the end of April 2001 USD _____

11. Do the facility professionals use the medications in the Basic Chart? (Yes or No) _____

12. Medications in addition to the Basic Chart that the facility needs

<u>Medications</u>	<u>Therapeutic Group</u>
a. _____	_____
b. _____	_____
c. _____	_____
d. _____	_____
e. _____	_____
f. _____	_____
g. _____	_____
h. _____	_____

13. Medications not currently available at the facility

<u>Medications</u>	<u>Therapeutic Group</u>
a. _____	_____
b. _____	_____
c. _____	_____
d. _____	_____
e. _____	_____
f. _____	_____
g. _____	_____
h. _____	_____

14. What is the procedure to approve for purchase at the facility necessary medications that are not in the Basic Chart?

15. How frequently are medications added to the Basic Chart that your facility uses?

16. What sources of information on therapy and medications does the facility have?

17. What does the facility do when requests for necessary medications arrive incomplete? Mark all measures taken.

- a. Wait until the warehouse supplies them

- b. Purchase [them] from commercial laboratories

- c. Purchase [them] at local pharmacies

- d. Purchase [them] from a NGO or international organizations

- e. Request donations

- f. Other (specify) _____
- g. There is autonomy to buy whatever is needed

18. If purchases are made, which medications must be purchased regularly?

- a. All handled at the facility
 - b. Only some: (Specify the most important)
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
-

19. Who are the largest suppliers of medication in your center?

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.

20. Describe the medication purchasing approval process and the persons (responsible) involved in it.

21. Describe the purchasing process for approved medications and whether it is carried out with funds at management's discretion or through calls for bids or quotations, and whether there are maximum amounts for any of these processes.

22. How are the quantities of medications to be purchased determined? (Historic consumption or other mechanism)

23. For how many months are they purchased?

Question	MSPAS	ISSS	Private Sector	NGOs and International Organizations
Medication purchasing approval time				
Number of times per year that medications are ordered				
Number of medications requested per order				
Average time between the order and arrival of medications at the facility				
Do you receive information regarding the availability of medications from these suppliers				
Percentage of medications that arrive incomplete according the supplier				
Value of medications received in 2000 from each supplier in dollars				
Surcharge percentage paid for delivery of medication to the facility				
Form of payment for purchases for each supplier (cash, check, credit, other)				
How are orders from each group handled (telephone, fax, in person)				
Do you buy in bulk and repack?				

24. For the questions in the table, write your response under the supplier column corresponding to the question. (Example: If it takes a week to receive medications from the MSPAS and one day from the private sector, put these days under the respective columns).

Appendix 3: Forms Used to Collect Data

25. Types of problems encountered in medication orders and the number of times that this occurred with these suppliers.

Medications with Problems	MSPAS	ISSS	Private Sector	NGOs and International Organizations
Delivery of items not ordered				
Incorrect amount				
Quality questionable due to the physical characteristics of the product				
Products past or close to expiration				
Poor labeling				
Damaged packaging				

26. Specify the total units purchased and the medication purchase amount for the following suppliers over the last three years.

Medication Purchases in Units and Value	Commercial Laboratories or Private Pharmacies			NGOs or International Organizations		
	1998	1999	2000	1998	1999	2000
Units purchased						
Purchase amount						

27. Specify the advantages of purchasing medication from each group:

MSPAS	ISSS	Private Sector	NGO-International Organization

28. Specify the disadvantages of purchasing medication from each group:

MSPAS	ISSS	Private Sector	NGO-International Organization

Cost Recovery

If the establishment does not participate in any cost recovery program, go to the next section.

29. What is the goal of the cost recovery program?

- a. One hundred percent cost recovery
- b. Partial cost recovery at _____%

30. What services have fees to recover costs? (mark all that apply and explain type)

- a. For visits: Type of visit _____
- b. For medication
- c. Other: _____

Appendix 3: Forms Used to Collect Data

31. Who does not pay for facility services (population groups, specific individuals)? What are the criteria for exemption from payment for services or medication?
32. What percentage of patients was exempt from payment in 2000 _____?
33. What percentage of monies earned is retained for the facility?
- a. 100%
 - b. 50%
 - c. None (0%)
 - d. Other: _____
34. What are the annual earnings?
35. With regard to the previous question, what is the annual amount of monies used to purchase medications?
36. Who has the authority to decide how monies earned by the cost recovery program are used? Mark all applicable responses
- a. Facility director or other official
 - b. A committee of health professionals
 - c. Board
 - d. Determined by regulations (central level)
 - e. Other _____

37. Are there any community-based organizations that participate in health activities? Mark all that apply.
- a. Fathers' associations
 - b. Agricultural cooperatives or other labor groups
 - c. Women's organizations
 - d. Religious groups
 - e. Micro enterprise groups
 - f. Other _____
 - g. There are no organizations _____
38. Do some groups specified provide support to this health facility? If so, specify type.

Infrastructure and Equipment

39. What type of storage system is used?
- a. Shelving
 - b. Medicine Chests/Larders
 - c. Cupboards
 - d. Platforms
 - e. Other: _____
40. Specify the number of warehouse for medication in your center and the size of each in square meters.
45. How are the items organized?
- a. No particular order
 - b. By therapeutic group
 - c. In alphabetic order
 - d. By brand or manufacturer
 - e. Other: _____

46. How many items are usually maintained at the warehouse?
47. How many times per year is a physical inventory of the stock performed?
- a. Once per year
 - b. Two times per year
 - c. Every month
 - d. Other: _____
48. What type of record system is used for the stock?
- a. Inventory cards
 - b. Register/Card File
 - c. Computer
 - d. Other: _____
49. How are appropriate temperatures maintained in the warehouse?
50. Is there a temperature monitor in the warehouse and storage area?
51. Is there cold storage for vaccines?
- a. Yes
 - b. No (Explain)
52. Are temperatures recorded in the area for vaccines?
- a. Yes
 - b. No (Explain)
53. What is the electricity source for the facility? (Mark all that apply.)
- a. National system
 - b. Local generator
 - c. Other: _____

54. Does the facility have its own vehicle to transport medication and medical supplies?
- a. Yes
 - b. No (Explain)
55. How much was spent on transportation for medication and medical supplies in 2000? (including fuel, oil, fees, maintenance, tires, etc. in dollars)
56. What are the primary problems with the transportation of medication and medical supplies?

Dispensation

57. Position of the person or persons who usually deliver medication to patients?
- a.
 - b.
 - c.
 - d.
58. Do patients usually receive information on how to take the medications they are prescribed from persons other than those who prescribe them?
- a. No
 - b. Yes (Who provides the information?)

Schedule

60. List the days and times when the facility is open to the public.
- a. Monday, from _____ a.m./p.m. to _____ a.m./p.m.
 - b. Tuesday, from _____ a.m./p.m. to _____ a.m./p.m.
 - c. Wednesday, from _____ a.m./p.m. to _____ a.m./p.m.
 - d. Thursday, from _____ a.m./p.m. to _____ a.m./p.m.
 - e. Friday, from _____ a.m./p.m. to _____ a.m./p.m.
 - f. Saturday, from _____ a.m./p.m. to _____ a.m./p.m.
 - g. Sunday, from _____ a.m./p.m. to _____ a.m./p.m.

Appendix 3: Forms Used to Collect Data

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
 Management Sciences For Health Center for Pharmaceutical Management

Form A Sales Price

Instructions: This questionnaire is for use in MSPAS, ISSS, NGO and parochial facilities as well as hospitals, and private clinics

Facility Identification

Department						SIBASI:					
Group:		MSPASS		ISSS		NGO		Private			
Type		Hospital		Health Unit		Medical Unit		Clinic		Community Facility	
Facility Name:											

GENERIC NAME	Available (4)	Lowest Package Price	Units Per Package	Brand Name	Highest Package Price	Units Per Package	Brand Name
Acetaminophen Syrup 120-160 mg/5ml							
Ibuprofen 400 mg Tablet							
Hydration Salts Oral. Powder, 27.9 g packet							
Mebendazole. 100 mg Tablet							
Trimethoprim-Sulfamethoxazole 40 mg +200 mg/5 ml. Suspension							
Trimethoprim-Sulfamethoxazole 160 Tablets							
Tetracycline Hydrochloride, 500 mg Capsules							
Amoxicillin. 500 mg Capsules							
Ciprofloxacin, 500 mg Tablets							
Penicillin G Benzathine. Powder, 1.2 Million IU Bottle							

Access to Essential Medicines: El Salvador

GENERIC NAME	Available (4)	Lowest Package Price	Units Per Package	Brand Name	Highest Package Price	Units Per Package	Brand Name
PRODUCT (check both name brand and generic products)							
Erythromycin, Ethylsuccinate Suspension 250 mg/5ml							
Ranitidine. 150 mg Tablets or drops							
Condoms							
Medroxyprogesterone Acetate For injection Suspension, 150 mg/ml							
Ethynyl Estradiol-Levonorgestrel. Coated Tables Cycle, 30 mcg-0.15 mg, or 50 mcg-0.25 mg							
Iron Sulfate. 125 mg/ml Solution							
Iron Sulfate. 300 mg Tablet							
Folic Acid. 0.5 mg Tablets							
Salbutamol Sulfate, 300 mg Tablets							
Methyldopa. 500 mg Tablets							
Propranolol Hydrochloride. 40 mg Tablet							
Captopril. 25 mg Tablets							
Furosemide. 40 mg Tablets							
Glibenclamide. 5 mg Tablets							

Appendix 3: Forms Used to Collect Data

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
 Management Sciences For Health Center for Pharmaceutical Management

Form A Sales Price

Instructions: This questionnaire is for use in MSPAS, ISSS, NGO and parochial facilities as well as hospitals, and private clinics

Facility Identification

Department	SIBASI:				
Group:	MSPASS	ISSS	NGO	Private	
Type	Hospital	Health Unit	Medical Unit	Clinic	Community Facility
Facility Name:					

GENERIC NAME	Available (4)	Lowest Package Price	Units Per Package	Brand Name	Highest Package Price	Units Per Package	Brand Name
Acetaminophen Syrup 120-160 mg/5ml							
Ibuprofen 400 mg Tablet							
Hydration Salts Oral. Powder, 27.9 g packet							
Mebendazole. 100 mg Tablet							
Trimethoprim-Sulfamethoxazole 40 mg +200 mg/5 ml. Suspension							
Trimethoprim-Sulfamethoxazole 160 Tablets							
Tetracycline Hydrochloride, 500 mg Capsules							
Amoxicillin. 500 mg Capsules							
Ciprofloxacin, 500 mg Tablets							
Penicillin G Benzathine. Powder, 1.2 Million IU Bottle							

Access to Essential Medicines: El Salvador

GENERIC NAME	Available (4)	Lowest Package Price	Units Per Package	Brand Name	Highest Package Price	Units Per Package	Brand Name
PRODUCT (check both name brand and generic products)							
Erythromycin, Ethylsuccinate Suspension 250 mg/5ml							
Ranitidine. 150 mg Tablets or drops							
Condoms							
Medroxyprogesterone Acetate For injection Suspension, 150 mg/ml							
Ethinyl Estradiol-Levonorgestrel. Coated Tablet Cycle, 30 mcg-0.15 mg, or 50 mcg-0.25 mg							
Iron Sulfate. 125 mg/ml Solution							
Iron Sulfate. 300 mg Tablet							
Folic Acid. 0.5 mg Tablets							
Salbutamol Sulfate, 300 mg Tablets							
Methyldopa. 500 mg Tablets							
Propranolol Hydrochloride. 40 mg Tablet							
Captopril. 25 mg Tablets							
Furosemide. 40 mg Tablets							
Glibenclamide. 5 mg Tablets							

Appendix 3: Forms Used to Collect Data

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
 Management Sciences For Health Center for Pharmaceutical Management
 Changes in Inventory
 Instructions: This questionnaire is for use in MSPAS, ISSS, NGO and parochial facilities as well as hospitals, and private clinics
 Facility Identification

Department															SIBASI:																
Group:					MSPASS					ISSS					ONG					Private											
Type					Hospital					Health Unit					Medical Unit					Clinic					Community Facility						
Facility Name:																															
Total number of tracer medications in stock:																															
															Indicate the number of days out of stock each month.																
PRODUCT (verify both name brand and generic products)		Available? (4)	May 2000	June 2000	July 2y000	Aug. 2000	Sept. 2000	Oct. 2000	Nov. 2000	Dec. 2000	Jan. 2000	Feb. 2001	Mar 2001	Apr. 2001	Total Days W/out Products.																
Acetaminophen Syrup 120-160 mg/5ml																															
Ibuprofen 400 mg Tablet																															
Hydration Salts Oral. Powder, 27.9 g packet																															
Mebendazole. 100 mg Tablet																															
Trimethoprim-Sulfamethoxazole 40 mg +200 mg/5 ml. Suspension																															
Trimethoprim-Sulfamethoxazole 160 Tablets																															
Tetracycline Hydrochloride, 500 mg Capsules																															

Access to Essential Medicines: El Salvador

PRODUCT (verify both name brand and generic products)	Available? (4)	May 2000	June 2000	July 2y000	Aug. 2000	Sept. 2000	Oct. 2000	Nov. 2000	Dec. 2000	Jan. 2000	Feb. 2001	Mar 2001	Apr. 2001	Total Days W/out Products.
Amoxicillin. 500 mg Capsules														
Ciprofloxacin, 500 mg Tablets														
Penicillin G Benzathine. Powder, 1.2 Million IU Bottle														
Erythromycin, Ethylsuccinate Suspension 250 mg/5ml														
Ranitidine. 150 mg Tablets or drops														
Condoms														
Medroxyprogesterone Acetate For injection Suspension, 150 mg/ml														
Ethinyl Estradiol-Levonorgestrel. Coated Tablet Cycle, 30 mcg-0.15 mg, or 50 mcg-0.25 mg														
Iron Sulfate. 125 mg/ml Solution														
Iron Sulfate. 300 mg Tablet														
Folic Acid. 0.5 mg Tablets														
Salbutamol Sulfate, 300 mg Tablets														
Methyldopa. 500 mg Tablets														

Appendix 3: Forms Used to Collect Data

PRODUCT (verify both name brand and generic products)	Available? (4)	May 2000	June 2000	July 2y000	Aug. 2000	Sept. 2000	Oct. 2000	Nov. 2000	Dec. 2000	Jan. 2000	Feb. 2001	Mar 2001	Apr. 2001	Total Days W/out Products.
Propranolol Hydrochloride. 40 mg Tablet														
Captopril. 25 mg Tablets														
Furosemide. 40 mg Tablets														
Glibenclamide. 5 mg Tablet														
Total number of days out of stock:														

Access to Essential Medicines: El Salvador

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
 Management Sciences For Health Center for Pharmaceutical Management
 Patient Interviews

Instructions: This questionnaire is for use in MSPAS, ISSS, NGO and parochial facilities as well as hospitals, and private clinics

Facility Identification

Department _____	SIBASI: _____
Group: MSPASS _____	ISSS _____
NGO _____	Private _____
Type Hospital _____	Health Unit _____
Medical Unit _____	Clinic _____
Com. Fac. _____	
Facility Name: _____	

Approach patients prior to taking care of prescriptions at the pharmacy. Introduce yourself, ask to speak with them for a few minutes and ask:

1. What was the reason for your visit? (symptoms, problems)

2. Patient Age Adult _____ Child _____ Expectant Mother _____

3. What were they prescribed? (Ask to see the prescription and copy the medications prescribed and the instructions if you understand them. Do not write anything under Column R at this time.)

Medications	Instructions	R
_____	_____	---
_____	_____	---
_____	_____	---

Tell the patient that you would like to speak to them again after they have been helped at the pharmacy.

Ask:

4. What medications prescribed were you able to find at the pharmacy? Place a check (✓) before the medications prescribed, if they were handled under Column R [sic.].
5. Ask: Do you know why these medications are used? Write what they tell you for each medication:

Medication	Why Used (what they say)
_____	_____
_____	_____
_____	_____

Appendix 3: Forms Used to Collect Data

6. How are you going to use each medication? (how many times per day, for how long?)

Medication	Form of Use
_____	_____
_____	_____
_____	_____

7. Ask the price and see how many units of the medication they purchased. Note the total price paid for medication. If you know the price of each, list them.

Medication	Units Received	Price Paid (colones)
_____	_____	_____
_____	_____	_____
_____	_____	_____

Thank them for their information. If you notice that the patients may make a mistake when taking the medication, you may suggest that they return to the pharmacy to ask for instructions. No further information is required for the interview.

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
 Management Sciences For Health Center for Pharmaceutical Management

Private Pharmacy Interviews

Instructions: Ask to speak with the pharmacy manager or person in charge. Explain to them the purpose of the study and the amount of time necessary to complete the questionnaire (approximately two hours). Answer any questions or concerns regarding confidentiality and obtain permission to continue.

Establishment Identification

Department	SIBASI:		
Type	Urban - Downtown _____	Urban – City Periphery _____	Rural _____
Establishment Name:			

1. Is a pharmacist present?

Yes _____

No _____

2. Indicate the position or duties of your primary informant.

3. List the pharmacy staff by positions (Manager, Salesclerk, etc.) and the highest level of study completed.

Position	Education Level	Number
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. What year did the pharmacy receive its license to operate? _____

5. What year did the pharmacy open? _____

6. What type of pharmacy is it?

a. Independent (the owner is an individual) _____

b. Owned by a group (chain) _____

c. Franchise (the owner is an individual, but maintains standard merchandise similar to others) _____

Appendix 3: Forms Used to Collect Data

7. Who decides what medications are sold in the pharmacy?

- a. Owner _____
- b. Pharmacy Manager _____
- c. Salesclerks _____
- d. Other (explain) _____

8. Do you have a copy of the National Basic Chart of Medications?

- a. Yes _____
- b. No _____

9. How many products are kept in stock? _____

10. Are some of the following items sold? (mark all indicated Y or N)

- a. Medical Supplies (syringes, gauze, etc.) _____
- b. Vaccines (specify which ones) _____
- c. Diagnostic Reagents (specify) _____
- d. Products to treat eye problems _____
- e. Dental Products _____
- f. Condoms _____

11. Is medication purchased in bulk then repackaged?

- a. Yes _____
- b. No _____

12. Is there a record of the medications sold?

- a. Yes _____
- b. No _____

13. What type of record?

- a. Sales book _____
- b. Book of prescriptions sold _____
- c. Computer record _____
- d. None _____
- e. Other _____

14. Does the pharmacy maintain a record of prescriptions that arrive and prescriptions filled? (If available, it will help in completing the prescription and dispensation form)

- a. Only for prescriptions _____
- b. Only for prescriptions filled _____
- c. Both, prescription and dispensation _____
- d. Other _____

15. Approximately how many customers come to the pharmacy each day? ____

16. Approximately how many items are dispensed each day? ____

17. Approximately what percentage of these items are products that require a prescription in order to be dispensed?

18. How are they informed of the medications sold in the pharmacy?

(List all sources below. If they mention a document like the PLM, list the year of publication)

- a. Supplier product lists _____
- b. PLM (year _____) _____
- c. Information from pamphlets sent by the industry _____
- d. Visitors from pharmaceutical manufacturers who explain orally _____
- e. Others (specify) _____

19. Do you have some of these books?

- a. Treatments standards of any institution (year _____) _____
- b. Pharmacopoeias of products on the market (year _____) _____
- c. Pharmacology or therapeutic books (year _____) _____

20. Do you have a contract with any private hospital, clinic, companies, insurance company or other institutions to dispense medication to the patients from these entities?

- a. Yes _____

- b. No _____

21. If the answer for No. P 20 is yes, what is the monthly administrative cost of processing the paperwork necessary for the payment of the care and medications dispensed? _____

22. How soon are you paid after serving patients from these entities (companies, insurers)? (Note the differences for each entity that it serves.)

23. Do you sell medication or medical supplies to public sector entities such social security, department hospitals and health unit facilities or clients?

- a. Yes (List the type of institutions and the percentage of all sales that these represent)

-
- b. No _____

24. And in these cases, how soon on average is payment received for this service? (Note the differences by institution)

25. Do you sell directly to public sector patients (MSPAS and ISSS)?

- a. Yes _____
- b. No _____

26. If so, are there any special price policies for these patients? (Do they pay the same as other clients or less?)

- a. Yes (Describe) _____
- b. No _____

27. What percentage of your clients have prescriptions that must be handled in the pharmacies of the health facilities (MSPAS or ISSS)? _____

28. Do you sell medications at a discount to any type of patients in particular?

- a. Yes _____
- Poor, indigent discount % _____
- Elderly discount % _____
- Children discount % _____
- Invalids discount % _____
- Other discount % _____

Appendix 3: Forms Used to Collect Data

b. No _____

29. How do you determine the sale price of items?
- a. The price suggested by the distributor-manufacturer is used _____
 - b. A percentage is added to the price paid to suppliers (% _____) _____
 - c. The government determines the price _____
 - d. One percentage for medication, another for other items _____
- (Explain) _____

30. If you answered the previous question with a percentage added to the price paid to suppliers, indicate the differences for the following categories:

- a. Medications that must only be sold with prescriptions (including controlled substances) _____%
- b. Medications sold without prescription _____%
- c. Condoms _____%
- d. Other products _____%

31. What do you do with the products already in stock when your suppliers change their prices?

- a. Items in stock are sold at the new price _____
- Items in stock are sold at the former price and new orders are sold at the new price _____
- c. An average price is determined to sell stock at this price _____
- d. Other _____

32. What are your most popular medications (by sales volume or rapid sales). List by commercial or generic name. Also, note the strength or form of the medication. List the five most popular in descending order from most to least popular.

Name	Strength	Form
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

33. What medications have a greater commercial value in terms of price?

Name	Strength	Form
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

34. How many medication suppliers do you have? _____

34. List your five largest suppliers (which sell the largest amounts).
- a.
 - b.
 - c.
 - d.
 - e.
35. List the most reliable suppliers (punctuality, speed, etc.).
- a.
 - b.
 - c.
 - d.
 - e.
36. List the least reliable suppliers.
- a.
 - b.
 - c.
37. What is the average time for the pharmacy to pay suppliers?
- a. 30 days _____
 - b. 60 days _____
 - c. 90 days _____
 - d. Against product delivery _____
 - e. Other _____
38. Do you receive a discount for timely payment?
- a. Yes (_____%) _____
 - b. No _____
39. Are there consequences for late payment?
- a. Yes (What _____) _____
 - b. No _____
40. How do you order from your suppliers?
- a. By fax _____
 - b. By telephone _____
 - c. By mail _____
 - d. Supplier visit _____
 - e. By e-mail _____
 - f. Other _____
41. How frequently do you order?
- a. Daily _____
 - b. Weekly _____
 - c. Bimonthly _____
 - d. Monthly _____
 - e. Other _____

Appendix 3: Forms Used to Collect Data

42. How long after ordering do products arrive?
- a. They arrive the same day they are ordered. _____
 - b. Two or three days _____
 - c. One week _____
 - d. Seven-fifteen days _____
 - e. Up to 30 days _____
 - f. Over 30 days _____
43. Do you have a purchase record?
- a. Yes _____
 What information does it contain?
 Date order placed _____
 Date ordered received _____
 Quantity ordered _____
 Quantity received _____
 Estimated cost of order _____
 - b. No records maintained _____
44. How do you receive your orders?
- a. By mail _____
 - b. The distributor or supplier transports it to the pharmacy _____
 - b. The pharmacy sends someone to collect the order _____
 - c. Other _____
45. Do you normally receive complete orders?
- a. Yes _____
 - b. No _____
46. What type of reports do you receive from your suppliers?
- a. Order Status _____
 - b. Purchases Made _____
 - c. Account Statements _____
 - d. Other _____
 - d. None _____
47. Have you received products with any of the following problems over the last year? Mark all items applicable and specify the supplier.
- | | |
|--|----------|
| a. Items not ordered delivered _____ | Supplier |
| b. Damaged Products _____ | _____ |
| c. Unexpected Price Change _____ | _____ |
| d. Product Near Expiration _____ | _____ |
| e. Incorrect Medication/Strength _____ | _____ |
| f. Quality Problems _____ | _____ |
| g. Other _____ | _____ |
48. List the three biggest problems in obtaining low prices from suppliers:
- a.
 - b.
 - c.
49. List the three primary problems in being able to select more reliable suppliers:
- a.
 - b.
 - c.

50. List the three primary problems of supplier service quality (product availability, quantity, product quality):

- a.
- b.
- c.

51. List the three primary problems with payment to suppliers:

- a.
- b.
- c.

52. How are your products advertised?

- a. Posters, signs _____
- b. Newspaper announcements _____
- c. Television announcements _____
- d. Other _____
- e. None _____

53. If vaccines are sold, ask to see the refrigerator:

- a. Is there a refrigerator to store vaccines? _____
- b. The refrigerator appears to be operating. _____

54. What days and hours is the pharmacy open?

- a. Monday Hours _____
- b. Tuesday Hours _____
- c. Wednesday Hours _____
- d. Thursday Hours _____
- e. Friday Hours _____
- f. Saturday Hours _____
- g. Sunday Hours _____

55. What services does the pharmacy offer?

- a. Provides information on the medications sold _____
- b. Recommends remedies for problems presented by clients _____
- c. Investigates medication usage problems (allergies, etc.) _____
- d. Maintains information on its clients _____
- e. Gives injections _____
- f. Other _____

56. When was the last time the pharmacy was inspected? (corresponding inspection agency)

- a. During the last two months _____
- b. During the last two years _____
- c. Within two to five years _____
- d. Over five years ago _____
- e. Never _____
- f. Unknown _____

Ask to see the inspection certificate and note the date.

57. Do you use a computerized system for business?

- a. Yes _____
- Inventory Control _____
- Accounts Receivable or Payable _____
- Other _____

OBSERVE THE FOLLOWING (DO NOT ASK) AND MARK:

58. What other products are sold at the pharmacy?

- a. Medical supplies (syringes, hot water bottles, etc.) _____
- b. Natural foods _____
- c. Natural products (medicinal) _____
- d. Office supplies _____
- e. Clothing _____
- f. Perfumes, cosmetics, soaps, gifts _____
- g. Electronic devices _____
- h. Other _____

Do not forget to:

1. Ask the names of medications sold in alphabetical order.
2. Complete the prescription and dispensation sheet if the pharmacy maintains a record.
4. [sic.] Complete the sale price sheet (Form A).
5. Complete the purchase price sheet (Form B), if possible.
6. Make at least one simulated case per pharmacy.

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
Management Sciences For Health Center for Pharmaceutical Management
Case Guide

Instructions: *This questionnaire is for use in pharmacies and private medication shops.*

An person gathering information will select and inform the simulated client. The simulated client must enter the establishment several minutes later. The simulated client must say to the salesclerk working in the pharmacy or shop:

“My little girl has a fever, cough and a runny nose. It’s been two days now. She cannot sleep at night. What do you recommend?”

Do not provide any additional information unless the person helping you asks directly. If the pharmacist or salesclerk asks some of the following questions, answer as follows:

Child’s Age: 6 years

Are there other symptoms like vomiting or diarrhea? No

Have you given her any medicine? No, not yet.

Can she eat and/or drink? Say that she can drink and eat, but it is painful because her throat is sore.

Pay attention to the recommendations and if medication is given, what the instructions for use are. Do not ask anything else and accept what is recommended. When you leave, write what happened on your form.

If the price of the medication(s) offered is over five dollars (50 colones), tell the pharmacist or salesclerk:

:

“ I only have 50 colones”

Wait to see what they suggest to you. Buy what you can with this money (remember what medications they gave you at first and what you actually buy). When you leave the pharmacy, complete the form.

Appendix 3: Forms Used to Collect Data

Establishment Identification

Department	SIBASI:
Type	Pharmacy Store
Establishment Name:	

Record the following:

1.	What recommendations were given when you asked for assistance?	
2.	What medications were recommended first?	Form
	_____	_____
	_____	_____
	_____	_____
3.	What medications were recommended to you and purchased in the end?	Price
	_____	_____
	_____	_____
4.	Were you given recommendations on how to administer medication to the child?	
5.	Was it mentioned that the medication could be harmful to you? What did they tell you?	
6.	Did they tell you how to treat the fever or give you home remedies?	

Access to Essential Medicines: El Salvador

Study of the Viability of Public-Private Initiatives to Improve Access to Medication in El Salvador
 Management Sciences For Health Center for Pharmaceutical Management
 List of Products for Sale
 Instructions: *This questionnaire is for use in pharmacies and private medication shops.*

Establishment Identification

Department	SIBASI:
Type	Pharmacy Shop
Establishment Name :	

Instructions: Identify ten brand name products available with the letters assigned to your team.

No.	Commercial Name of the Product	Manufacturer
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Letter: _____ to letter _____		
Date: _____		