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**SUPPORT TO THE IMPLEMENTATION OF THE
MINISTRY OF HEALTH'S CONTRACEPTIVE LOGISTICS AND
MEDICINE AND MEDICAL SUPPLY SYSTEMS**

Cooperative Agreement N° 527-A-00-96-00470-00

FINAL PROJECT REPORT

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INTRODUCTION

Asociación Benéfica PRISMA is a Peruvian, non-governmental development organization that works to improve the quality of life of the country's vulnerable populations by implementing effective, efficient programs, with active community participation, that respond to the needs of the population. Since its founding, PRISMA has developed activities throughout Peru in the following areas: health, microfinance, logistics, agricultural production and marketing, research and strengthening of local governments.

Since the early 1990s, PRISMA has been working with the Ministry of Health (MOH) to implement programs and projects that contribute to improving the quality of life of the population. An important experience in this area is the logistic support to national food and family planning programs developed in the past decade, as well as the project to support logistics for essential medicines, implemented over the past four years. Between 1996 and 2006, PRISMA carried out two initiatives on the management of medical supplies and medicines: the Contraceptive Logistics Project (1996 – 2002) and the Project to Support the Implementation of the Ministry of Health's Medicine and Medical Supply System (2003-2006). Both projects were implemented with the technical and financial support of the United States Agency for International Development (USAID).

This document is the final report on both projects. It is organized as follows: Chapter I gives an overview of the country's medicine and medical supply system and the project interventions. Chapter II describes the operational strategy of the projects, which were developed through different components or lines of action, and presents the results achieved in each and in general in the logistic operation and management of the medicine and medical supply chain. Finally, Chapter III presents the general conclusions and lessons learned during project implementation, and discusses the challenges for consolidating the integrated system of medicine and medical supplies in the MOH and the sector as a whole. This report provides specific information for each project, using as key references the semester reports of the projects and the external evaluation of the Contraceptive Logistics Project (November 1999), carried out by John Snow, Inc. and that of the Project to Support the Implementation of the Ministry of Health's Medicine and Medical Supply System (June 2006), implemented by the School of Public Health and Administration of the Cayetano Heredia University.

CHAPTER I: PROJECTS TO SUPPORT MINISTRY OF HEALTH SYSTEMS TO SUPPLY CONTRACEPTIVES, MEDICAL SUPPLIES AND MEDICINES

1. OVERVIEW OF THE PROJECTS TO SUPPORT MINISTRY OF HEALTH SYSTEMS TO SUPPLY CONTRACEPTIVES, MEDICAL SUPPLIES AND MEDICINES

Between 1996 and 2006, PRISMA implemented two initiatives on the management of medical supplies and medicines: the Contraceptive Logistics Project (1996 – 2002) and the Project to Support the Implementation of the Ministry of Health's Medicine and Medical Supply System (2003-2006). Both projects were implemented in the framework of the Peru strategy and work plan of the United States Agency for International Development (USAID).

For more than three decades, USAID has been supporting family planning development programs in the public sector, with considerable impact in Latin America and the Caribbean, through technical assistance and donations of contraceptives to the Ministry of Health (MOH) and non-governmental organizations (NGOs). Today, reproductive health services must be made sustainable by reducing their dependence on USAID donations, diversifying their funding sources and developing their capacity to acquire commodities independently. USAID has planned a gradual reduction in all of its contraceptive donation programs in Latin America and the Caribbean, which will close definitively after 2008.

In Peru, the MOH is the executive agency of the health sector and is responsible for developing sector policy. Its goal is to restructure general and specific public health functions and define private-public and inter-institutional coordination of the different agents of the health sector. The main political and social problems influencing Peru's health conditions and health care service delivery are poverty, which is closely associated with the lack of employment opportunities and low wages, ethnic and cultural diversity and centralism.

The country's health services are grouped into two sub-sectors: public and private. Public health services are provided by the MOH, the Health Social Security System (EsSalud) and services for the armed forces and the national police. The MOH is the institution with the largest number of facilities nationwide. These facilities serve mainly the uninsured poor population. EsSalud serves workers of the formal sector and their facilities are located mainly in urban areas. The health care services of the armed forces and the police serve only their employees and direct family members. The private sub-sector concentrates its resources in the larger cities and provides services through clinics, doctors' offices and, to a lesser extent, NGOs. The central level of these health institutions issue policy guidelines, regulations and treatment protocol. Coordination among institutions has been irregular due to the absence of permanent consensus-building channels.

1.1 Context of the Development of the Contraceptive Logistics Project

During the 1990s, reproductive health became a high priority for the Peruvian government. The MOH, EsSalud and several NGOs expanded their reproductive health services. During this period, the MOH developed a strategy to expand public health care services by reactivating hospitals and strengthening health centers and posts with the Basic Health for All Program and the Local Shared Health Administration Committees (CLAS), as well by promoting the Family Planning Program.

When the PRISMA project began (1996), the prevalence of modern contraceptive methods was 41 percent and 23 percent for traditional methods (including 18 percent for the rhythm method), for a total rate of 64 percent for modern and traditional methods.¹

The main organizations involved in contraceptive logistics in Peru at the time were:

The United States Agency for International Development (USAID)/Peru, which donated the largest number of contraceptives to the Peruvian public sector, and subcontracted a local not-for-profit organization (PRISMA) to provide logistics support for the administration of the MOH contraceptive logistics system.

The Family Planning Logistics Management Project (FPLM), funded by USAID to provide contraceptive logistics experience for development in countries around the world.

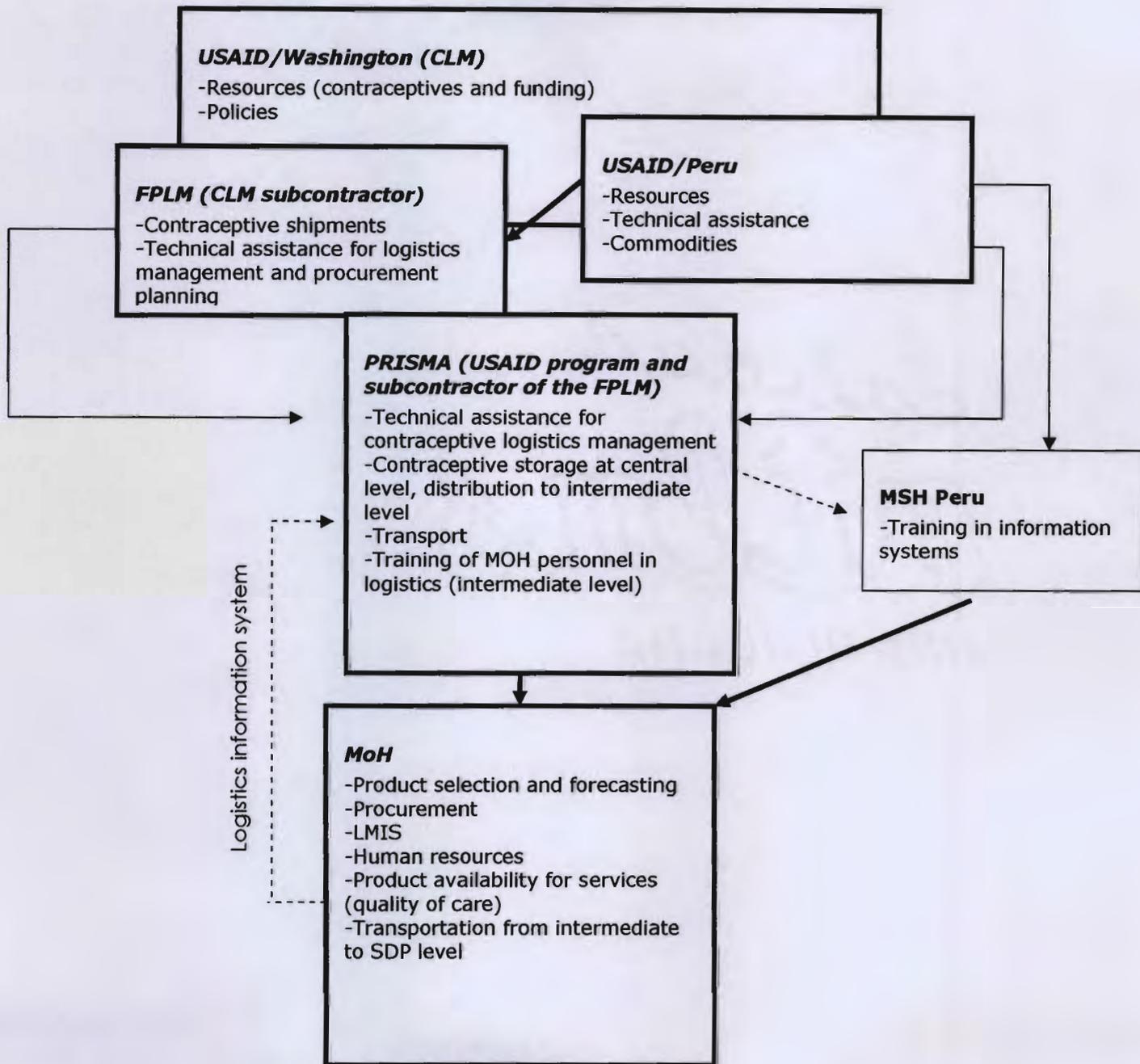
Peruvian Ministry of Health (MOH), which sets policies and provides reproductive health and family planning services.

Asociación Benéfica PRISMA (PRISMA), a local organization contracted by USAID/Peru to manage the main functions of the contraceptive logistics system. PRISMA is also a subcontractor of the FPLM, providing training and technical assistance to MOH personnel nationwide.

UNFPA (United Nations Population Fund) also donated contraceptives to the MOH over the years, although to a much lesser extent than USAID. In 1999, the MOH chose UNFPA as its agent for purchasing contraceptives with public funds.

¹National Statistics Institute (INEI), Peru: Demographic and Family Health Survey, 1996.

Figure 1: Main collaborators in contraceptive logistics in Peru



The FPLM provided technical assistance and training to the MOH in contraceptive logistics beginning in 1987, whereas USAID donated contraceptives to the public sector and NGOs beginning in 1984. In 1990, USAID contracted a local organization, PRISMA, to provide external logistic services to the public sector and to the NGOs receiving USAID-donated contraceptives throughout the country. Most of these services are managed by the MOH. Initially, services included customs clearance of contraceptives, their storage in the central facility and transportation to intermediate storage facilities. Subsequently, these services were expanded to include an annual nationwide inventory and assistance in identifying annual contraceptive requirements. PRISMA's management and administration of the contraceptive logistics system greatly improved supplies at the lower levels of the distribution chain, significantly reducing the percentage of expired supplies and shortages in health care facilities.

Based on this experience, in 1996, a new cooperative agreement was signed for the implementation of the Contraceptive Logistics Project.

1.2 Context of the Development of the Project Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System

Although no reliable data exist on the population's access to essential medicines, in a study carried out in 1999, it was estimated that only approximately 65 percent of clients served in MOH facilities could acquire all the essential medicines they were prescribed. The remaining 35 percent did not have access to those medicines mainly because of their limited purchasing power.

This was the case despite MOH efforts to develop a set of strategies to address the issue. In 1994, the Decentralized Medicine Supply Program (PACFARM) was implemented in the departmental health directorates for first-level MOH facilities. The PACFARM operates through a revolving-fund system. In addition, the MOH provided medicines free of charge to national programs that addressed priority problems, such as acute respiratory illness, acute diarrheal disease, tuberculosis, malaria and immuno preventable diseases.

In 1997, the General Health Law was enacted, which includes a section on pharmaceutical commodities and natural therapies and discusses aspects related to sanitary registration and the manufacture, importation, marketing, quality and use of medicines.

In addition, beginning in 1997, medicines were provided for the schoolchild free health care program, as well as the maternal-child insurance plan. In addition, EsSalud and other health providers finance medicines for their users.

In July 2001, the MOH created the Integrated Medicine and Medical-Surgical Supply System (SISMED) in an effort to guarantee low income populations access to essential medicines through their adequate, timely and permanent supply. To this end, the SISMED directive was passed.² Up until that time, medicines were supplied through multiple, fragmented systems that did not coordinate actions, which led to inefficient resource use, multiple and complex processes, major price variations, little capacity for negotiation, and duplication of efforts, thereby limiting the population's access to medicines, particularly the low-income population. In this context, the SISMED was developed as a public health and poverty eradication strategy of the MOH based on the principles of equity, solidarity, rational use of funds, integrity, decentralization and quality.³

² Ministerial Resolution N° 396-2001-SA/DM of July 9, 2001, published July 14, 2001

³ Institutional website of the MOH

To implement the new SISMED system, the MOH established a central level commission to develop and update regulations in February 2002, which was extended to June of that year.^{4,5} In November 2002, the commission approved a new directive that established responsibilities, powers, processes and procedures for the implementation and functioning of the SISMED, which was defined as: "the set of standardized, coordinated technical and administrative processes to select, plan, procure, store, distribute and use medicines and medical-surgical supplies, as well as to monitor, control, supervise, evaluate and manage information in the agencies and facilities of the MOH."⁶

The provisions of the directive mandate the immediate unification of the existing stock of medicines and medical-surgical supplies acquired with resources from the medicine revolving-fund, the integral insurance plan, the former schoolchild insurance, the former mother-child insurance plan, former national programs as well as funds issued by the National Program for the Administration of Management Agreements (PAAG), in the warehouses, sub warehouses, pharmacy services and other storage locations for medicines and medical-surgical supplies of the regional health directorates (DISAs), specialized institutes, hospitals, health centers and posts and CLAS.⁷ These provisions also call for the establishment of the SISMED.

During this time, the MOH was promoting the implementation of the Integrated Health Care Model, which required the integrated management of the medicine supply. The SISMED was developed as part of this effort.

Thus, since November 2002, the MOH has been operating the SISMED. Achieving the adequate implementation of this system required intervening in the different phases of the supply chain at all MOH management levels (central level) and regional governments (DISAs, health care networks and facilities). Changes were to be promoted through processes such as capacity building of staff working with the system, ongoing supervision and monitoring and the internal and external integration of the entire system using modern information and communications technology.

By late 2002, there were already experiences with integrating the supply chain through programs using a packet of specific supplies, such as in the case of the management of the contraceptive supply. These efforts were carried out as part of the cooperative agreements between USAID and PRISMA. In this framework, and in response to the challenge of taking the SISMED to scale on a multi-dimensional level, this experience served as the basis for future interventions.

From that date to the present, the SISMED has been developing its activities with positive yet insufficient results. The MOH has approved a set of technical and administrative amendments to the directive in an effort to optimize the system.⁸

The decentralization process underway in Peru since July 2002 has been transforming the political system and the government administration. According to the Organic Law of Regional Governments⁹ and its amendments, health functions include supervising and controlling the production, marketing,

⁴ Ministerial Resolution N° 319-2002-SA/DM of February 11, 2002

⁵ Ministerial Resolution N° 1010-2002-SA/DM of June 14, 2002

⁶ Ministerial Resolution N° 1753-2002-SA/DM of November 5, 2002 and published November 10, 2002

⁷ id

⁸ Ministerial Resolution N° 367-2005/MINSA of May 16, 2005 and published May 19, 2005

⁹ Law N° 27868 of November 16, 2002 and published November 18, 2002

distribution and consumption of pharmaceutical and similar commodities. During the period 2005-2009, the law calls for the transfer of several functions to regional governments, including the oversight and control of the system to supply pharmaceutical and similar commodities to facilities of the public sub-sector under the jurisdiction of the regional government.¹⁰ This scenario is compatible with SISMED operation and requires building capacities at the regional and local levels to ensure the adequate management of the medicine supply system.

In this framework, PRISMA, with technical and financial support from USAID, designed and implemented the project Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System.

2. THE INTERVENTION PROPOSAL

2.1 The Contraceptive Logistics Project

The Contraceptives Logistics Project began in September 1996 with Cooperative Agreement N° 527-0375-A-00-6470-00 between USAID and PRISMA.

The project had the proposed goal of "contributing to improving the administrative logistics of contraceptives in Peru and ensuring that contraceptive commodities are available at public and private health care facilities of the National Family Planning Program under optimal conditions, at appropriate levels and in a timely manner to adequately meet the reproductive needs of the population."

To achieve this goal, the following expected results were established:

- Institutionalize the Contraceptive Procurement Tables (CPTs) methodology at the level of the MOH sub-regions, the Peruvian Society Security Institute (IPSS, now EsSalud) and the private sector.
- Clear contraceptive shipments through customs from 1997 to 2001.
- Improve warehouse management in health sub-regions and intermediate levels of the MOH, IPSS departmental management offices and the private sector.
- Improve the contraceptive distribution system to ensure that facilities have contraceptive commodities to serve their family planning clients.

In accordance with the proposed expected results, the project developed the following intervention lines:

Programming:

To institutionalize the CPT methodology based on stocks, consumption and consumption forecasts of the different institutions.

Distribution:

¹⁰ Presidential Resolution N° 026-CND-P-2005 of March 29, 2005. Five-year Sector Transfer Plan 2005 – 2009

In this intervention line, PRISMA was responsible for customs procedures, warehousing and the subsequent distribution of contraceptives to family planning services of the MOH and NGOs.

Training in contraceptive logistics:

This intervention was designed to strengthen the skills of health care workers for the adequate management of contraceptive logistics processes to improve decision-making based on contraceptive information and logistics in the regional health offices, implementing agencies and health care facilities.

Supervision of the logistics system:

This intervention aimed to verify the development of processes and the performance of personnel at the different levels.

2.2 The Project Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System

Based on the results achieved in the Contraceptive Logistics Project, as well as on the lessons learned during that period, in 2002, the MOH, USAID and PRISMA agreed to expand PRISMA's technical assistance to medicines and medical supplies.

Between 2002 and 2006, the objectives and scope of the project shifted in terms of the type of supply, as the table below demonstrates:

Table 1 Project Objectives and Scope, 2002 - 2005

Year	Objective	Commodities
2002	Implementation of a logistics information system Customs procedures, warehousing and distribution	Medicines, medical supplies and contraceptives, laboratory supplies and materials for vector control
2003	Implementation of a logistics information system Customs procedures, warehousing and distribution	Medicines, medical supplies and contraceptives, laboratory supplies and materials for vector control
2004	Strengthening of the Integrated System for Medicines and Medical-Surgical Supplies nationwide	Essential medicines and medical-surgical supplies, including those used in family planning
2005	Strengthening of the Integrated System for Medicines and Medical-Surgical Supplies nationwide	Essential medicines and medical-surgical supplies, including those used in family planning

Source: Cooperative agreements between the MOH, PRISMA and USAID, 2000-2005.

As the table above demonstrates, since 2002 the project has gradually expanded its objectives and scope to the entire SISMED and to all essential medicines and medical-surgical supplies, moving beyond the original proposal of support to selected procedures of the contraceptive supply chain.

In accordance with the objectives and commitments assumed, the project developed the following intervention lines:

Operations:

Through this project intervention, PRISMA carried out customs procedures, stored and distributed medicines and medical-surgical supplies nationwide. Warehousing was carried out in accordance with Good Storage Practices (GSPs) and current regulations. Distribution took place following the instructions of the MOH-PAAG. Medicines of the health strategies were delivered to regional health directorate (DISA) warehouses, whereas contraceptives were delivered to 180 intermediate warehouses.

Technical Assistance:

This intervention is designed to strengthen the skills of personnel involved in the SISMED to manage logistics processes and improve decision-making in DISAs, implementation units and health care facilities in the selected areas.

Supervision and Monitoring:

This intervention seeks to contribute to the proper implementation of processes and the institutionalization of the procedures for the system's operation, as well as to verify personnel performance at each stage of the logistics cycle.

Information Systems:

Through this intervention, PRISMA provides support to the MOH in the implementation of the SISMED system, particularly in the development of software for SISMED and the Integrated Administrative Management System (SIGA).

The operations intervention is designed to develop logistics activities whereas the other interventions support and strengthen logistics processes. Support and strengthening activities were implemented in varying degrees in the DISAs of Huánuco, Pasco, Junín, Ucayali, Cusco, Ayacucho and San Martín.

The PAAG, the General Directorate for Medicines, Drugs and Inputs (DIGEMID), the Office of Statistics and Information (OGEI) and the General Directorate of Public Health (DGSP) of the MOH, as well as DISAs, network offices and regional health care facilities, participated in the design and implementation of the project.

The projects **Contraceptive Logistics** and **Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System** have attempted to contribute to changing the entire institutional system. While the projects have a limited duration, their actions were designed to achieve a sustainable systemic change that would permit improving access of the population to contraceptives and essential medicines over the long term.

CHAPTER II: STRATEGY AND RESULTS OF THE INTERVENTION

1. DEVELOPMENT OF A NATIONAL CONTRACEPTIVE SUPPLY SYSTEM

1.1 Strategy of the Contraceptive Logistics Project

This project was proposed as a strategy to develop the national contraceptive supply system by implementing two major processes: *customs clearance, storage and distribution of contraceptives nationwide subcontracted as a third-party grantee by agreement with PRISMA, funded by USAID; and the design and implementation of the logistics system: assessment, training, logistics information system, supervision and monitoring, with technical assistance from John Snow Inc. and Management Sciences of Health (MSH).* In the context of these two processes, the project strategy will be reviewed in the paragraphs below.

1.1.1 Customs clearance, warehousing and distribution of contraceptives throughout the country through a third-party agreement with PRISMA, with technical and financial support from USAID

To ensure efficiency in the process to clear contraceptives through customs, store and distribute them, the following activities were implemented:

Planning Contraceptive Needs

To estimate contraceptive needs nationwide, the CPT method was implemented. With technical assistance from JSI/FPLM, the project promoted the use of this methodology among the coordinators of the MOH regional family planning programs, health representatives of the police forces and IPSS (now EsSalud).

USAID uses the CPT method to calculate amounts required by the family planning and AIDS programs it supports. The preparation of the CPTs and the results also serve for planning between the program and donors. To facilitate the process, in 1999, the John Snow Inc. Pipeline program for monitoring and procurement planning was introduced, which permits the MOH to track the status of commodities in the contraceptive logistics system.

Project activities are detailed in the table below:

Table 2 CPT Activities
Contraceptive Logistics Project, 1997 – 2001

Year	Activity
1997	Workshop to Assess and Plan Reproductive Health and Family Planning Programs, held in Tacna, with coordinators of the Family Planning Program of 34 MOH regions, health representatives of the armed forces and IPSS, with technical assistance from John Snow Inc., Family Planning Logistics Management (FPLM) and PRISMA staff. The CPT methodology was disseminated, which is based on stocks, consumption and consumption forecasts of different institutions. At the workshop, CPTs were prepared, which were submitted to and subsequently approved by donor agencies.

Year	Activity
1998	Contraceptive procurement needs were estimated for 1999, both for the MOH and NGOs, using the Program for Monitoring and Procurement Planning (PMPP), software developed by USAID through the FPLM project.
1999	The Pipeline software developed by FPLM – John Snow was used to produce CPTs for 2000 and 2001.
2000	<p>The Pipeline software developed by FPLM – John Snow was used to produce CPTs for 2001 and 2002.</p> <p>Taking into account the government's progressive procurement of commodities, the maximum and minimum levels for the country were modified. Thus, beginning in 2001, the maximum level was set at nine months whereas the minimum level was fixed at three months. This change required staff to change maximum and minimum levels throughout the system, except at the SDP level, which maintained previous levels in accordance with an agreement with the Family Planning Program.</p>
2001	<p>As in previous years, the Pipeline software developed by FPLM – John Snow was used to produce CPTs for 2002 and 2003.</p> <p>The maximum and minimum levels for the country were maintained, in other words, nine and three months.</p>

Source: PRISMA, based on semester reports of the Contraceptive Logistics Project

National Contraceptive Inventory

To guarantee adequate contraceptive programming and distribution, PRISMA and the MOH carried out an annual national contraceptive inventory. Ten national contraceptive inventories were implemented, whose objectives were as follows:

- Determine the stock of contraceptives on the inventory date.
- Verify warehousing conditions.
- Analyze stock levels at the facilities inventoried.
- Support the preparation of a contraceptive requisition form for the following period.

Contraceptive Distribution

There are three important steps in contraceptive distribution: request for contraceptives, analysis of available stocks in months and distribution. Below, the project's main activities in each step are summarized.

- Process to request contraceptives*

The National Family Planning Program used the maximum-minimum inventory method, and evaluated and approved the amounts requested by the intermediate level of the logistics chain (UTES, UBASS, ZONADIS, AIS, SBS, etc.) to satisfy needs. PRISMA, through the PECOSAs (requisition and issue voucher) system, began distribution after approval from the central level. The project participated in the chain in all intermediate-level facilities.

The IPSS and NGOs prepared quarterly reports, which were validated in accordance with the Maximum/Minimum Inventory Control System.

☒ *Analysis of Months of Supply (MOS) during the year according to contraceptive orders*

The project considered it important to regularly analyze stock levels at facilities using the months of available stock (MOS) indicator, which identifies stock levels of a facility in terms of months. This analysis was useful for the following:

- Identify overstocks and stock shortages.
- Identify and avoid bottlenecks in stock flow.
- Make stock projections for program requirements.

Determining quantities of contraceptive products in stock is not sufficient for analyzing stock levels. Quantities have to be compared with the average monthly consumption at each site to obtain a significant indicator of stock level. This comparison is made by dividing existing stocks by average monthly consumption, the result of which is the MOS indicator. Once the MOS is calculated for each contraceptive method, the results should be compared with the maximum-minimum levels recommended by the program.

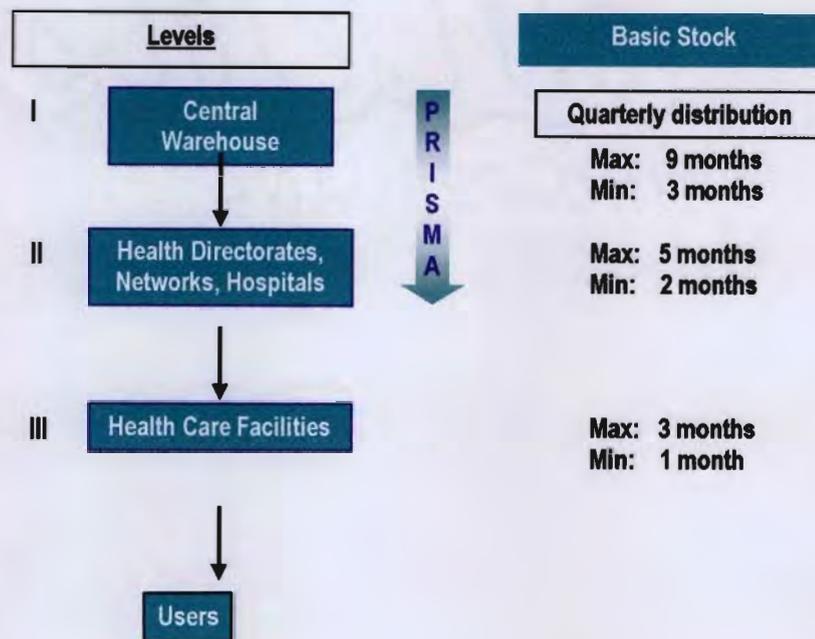
A software program was developed to record the amounts sent to intermediate-level facilities, consumption history and remaining stocks. This information permitted staff to determine *average monthly consumption* for each method, as well as to calculate the MOS indicator, which enabled them to analyze stock levels. The Contraceptive Requisition Form became an important tool for ensuring the adequate and timely distribution of contraceptive commodities.

☑ *Contraceptive Distribution*

For distribution purposes, the regions/sub-regions gradually complied with the requisition timetables prepared, thereby gradually reducing lead time between request and delivery.

The figure below illustrates the distribution flow of contraceptives nationwide, as well as the basic stock established for each level.

**Figure 2: Distribution flow for contraceptives and basic stock by level.
Contraceptive Logistics Project, 1997 – 2001**



1.1.2 Design and implementation of the logistics system: assessment, training, logistics information system, supervision and monitoring, with technical assistance from John Snow Inc. and MSH

This macro-process began with support to the preparation of training needs assessments to identify critical areas in contraceptive logistics and to develop proposals to address the problems identified. Below, the main activities and results in this area are detailed.

Logistics training needs assessment in the health sub-regions

The assessment had the following objectives:

- ☑ Identify contraceptive logistics training needs.
- ☑ Learn about the logistics and supply system of the regions.
- ☑ Determine contraceptive stocks at the different levels.
- ☑ Assess storage conditions of contraceptive commodities.

For assessment visits, instruments were developed, tested and continually updated. PRISMA and the central level of the MOH jointly designed, organized and implemented activities.

This information permitted the project to design a training program for each region, which was developed between 1997 and 1999, as the table below shows.

**Table 3 Timetable for the Training Needs Assessment Visits
Contraceptive Logistics Project, 1997 – 1999**

Semester	Sub-regions with Training Needs Assessments
Semester 1 - 1997	Lima Sur, Arequipa, Cusco, Abancay, Madre de Dios, Chavin and Huancavelica
Semester 2 – 1997	San Martín and La Libertad
Semester 1 – 1998	Lima, Lima Este, Callao, Huánuco, Lambayeque, Jaén and Amazonas
Semester 2 – 1998	Cajamarca, Chota and Cutervo
Semester 1 – 1999	Loreto, Piura, Luciano Castillo, Tumbes, Ucayali, Junín and Pasco

Source: PRISMA, based on semester reports of the Contraceptive Logistics Project.

Training in contraceptive logistics

Workshops to train MOH Family Planning Program personnel and statistics and logistics staff were designed, organized and implemented by the central level of the MOH, PRISMA and MSH.

Workshops entitled “decision-making based on contraceptive information and logistics” were organized in the health regions. Each workshop was five days long, totaling approximately 40 hours of work. The workshop curriculum was tailored to each region based on the findings of the assessment visit.

The objective of the workshop was to give participants logistics methodology, knowledge and basic tools to enable them to effectively manage and administer the MOH contraceptive logistics system. Training emphasized the knowledge and handling of the Commodity Movement Report (IMI) and the Contraceptive Requisition Form, key instruments for logistics administration.

To develop this process, a team of trainers was formed by staff of the MOH (central and regional levels), PRISMA and MSH.

The following modules were developed in the workshops:

- ☑ Introduction to logistics
- ☑ Introduction to the logistics administration information system
- ☑ Contraceptive availability (MOS)
- ☑ System to track maximum-minimum inventories (Contraceptive Requisition Forms)
- ☑ Storage conditions
- ☑ Norms and procedures of the contraceptive logistics system

Training took place between 1997 and 2000 as described below:

**Table 4 Training Activities
Contraceptive Logistics Project, 1997 – 2000**

Semester	Sub-regional teams trained
Semester 1 – 1997	Decision-making based on contraceptive information and logistics Lima Norte, Lima Sur, Huancavelica and Arequipa.
Semester 2 – 1997	Decision-making based on contraceptive information and logistics Cusco, Apurímac, Madre de Dios and San Martín.
Semester 1 – 1998	Decision-making based on contraceptive information and logistics Lima, Callao, La Libertad and Huánuco.
Semester 2 - 1998	Decision-making based on contraceptive information and logistics Jaén, Bagua and Amazonas, Cajamarca, Chota, Cutervo and Lambayeque. Contraceptive logistics administration for the private sector, with the participation of leading NGO participants of the ALCANCE project.
Semester 1 – 1999	Decision-making based on contraceptive information and logistics Piura, Luciano Castillo, Tumbes, Loreto, Pasco and Ucayali.
Semester 2 – 1999	Decision-making based on contraceptive information and logistics Lima Este and Junín.
Semester 1 – 2000	Training workshop on oversight of contraceptive information and logistics for coordinators of the Family Planning Program in 34 health directorates, 10 central-level supervisors and PRISMA personnel.
Semester 2 – 2000	4 work meetings on oversight of contraceptive information and logistics for health directorates of Lima Este, Lima Norte, Lima Sur and Callao.

Source: PRISMA, based on semester reports of the Contraceptive Logistics Project.

To complement training and technical assistance, two manuals were prepared for personnel responsible for logistics processes in the regions.

▣ *Procedural manual for contraceptive logistics administration*

The project developed a user-friendly manual for contraceptive logistics administration to standardize contraceptive logistics procedures for service providers of the MOH Family Planning Program.

The manual was designed for all staff involved in the management of the MOH contraceptive logistics system. It had eight chapters: General aspects of the contraceptive logistics system in Peru; logistics administration responsibilities, storing contraceptives; implementing a physical inventory; record keeping and reporting; revising stock levels; calculating requisition and delivery quantities; and monitoring and supervision of the logistics system.

The manual was validated in work meetings with personnel of the MOH family planning programs of different departments around the country (Lima, Huanuco and San Martín) and was reviewed by the MOH and USAID.

☑ *Training supervision manual*

In order to promote system sustainability, a manual was developed to strengthen the supervisory process and expand the system to service delivery point (SDP) facilities.

To achieve this goal, the manual *Supervising Trainees in Contraceptive Information and Logistics* was developed as a tool to support effective supervision and to standardize concepts, criteria and processes.

The manual had two parts: supervising trainees, which presents aspects of supervision, definitions, objectives, stages, techniques, parties responsible for supervision, necessary materials, frequency, duration, emergency supervision, timing and the requirements necessary for becoming a supervisor. The second part was the supervisors' guide for contraceptive information and logistics, which covered the stages of preparing for supervision (necessary coordination and materials), supervision of contraceptive information and logistics, including the steps to follow during the supervision of each member of the Family Planning Program in intermediate-level and SDP facilities and data to include in reports.

The MOH, John Snow, Inc, PRISMA and MSH prepared the manual. National supervisors and family planning coordinators of MOH facilities participated in validating the manual.

Logistics System Supervision

Supervision and monitoring were essential for assuring that each of the objectives of the logistics system components were achieved and for following up training.

The supervision activities had the following objectives:

- ☑ Monitor logistics training, stock levels, compliance with filling out the SIS 240, IMI and Contraceptive Requisition Forms and analysis of logistics information.
- ☑ Verify the existence of adequate supplies in facilities.
- ☑ Verify the appropriate storage of contraceptive commodities.
- ☑ Provide on-the-job training (supervisor-trainee) to program personnel to improve their capacity to manage the logistics system.

The instruments developed for this purpose included the following:

- ☑ Work sheet to calculate stock levels, which records information on existing contraceptive methods and average monthly consumption, enabling staff to calculate MOS.
- ☑ Stored supplies and storage conditions, where stocks are registered and storage conditions are verified.
- ☑ Structured interviews with Family Planning Program coordinators at intermediate-level facilities and with warehouse managers.

The supervision process was developed jointly with the central office of the MOH, progressively incorporating coordinators in the regions and health care facilities between 1997 and 2000, as detailed in the table below.

**Table 5 Supervisory Activities
Contraceptive Logistics Project, 1997 – 2000**

Semester	Sub-regions supervised
Semester 1 - 1997	Ica, Tacna-Moquegua, Ayacucho Norte, Andahuaylas, Lima Norte and Lima Sur.
Semester 2 – 1997	Ayacucho Sur, Huancavelica, Arequipa and La Libertad
Semester 1 – 1998	Andahuaylas, Ayacucho Norte, Cusco, Abancay, Madre de Dios and San Martín.
Semester 2 - 1998	Lima, Callao, Ica, Ayacucho Sur and La Libertad.
Semester 1 – 1999	Huánuco, Cajamarca, Chota, Cutervo, Jaén and Amazonas, as well as the NGO ASDE in Arequipa.
Semester 2 – 1999	Ayacucho Norte, Huancavelica, Lambayeque, Lima Norte, Piura, Luciano Castillo, Tumbes and Loreto, as well as the NGOs Planifam Cusco, ASDE, Planfami Puno, CADE, Agrovida, Vecinos Perú, TADEPA and ADAR.
Semester 1 – 2000	Tumbes, Ancash, Lima Este, Junín and Ucayali, as well as the NGOs ADAR, PLANIFAM, PLANFAMI, ASDE and AGROVIDA.
Semester 2 – 2000	During this semester, 22 health directorates were visited: Pasco, Jaén, Bagua, Tacna, Moquegua, Piura, Luciano Castillo, Andahuaylas, Apurímac, Cusco, La Libertad, Lima Sur, Puno, Lambayeque, Huancavelica, Huanuco, Arequipa, Ica, Madre de Dios, Cajamarca, Chota and Cutervo. The NGOs Vecinos Perú, TADEPA and ADAR were also supervised.
Semester 1 – 2001	13 health directorates: Lima Sur, Callao, Lima Norte, Lima Este, Lima, Loreto, Ucayali, Ayacucho Norte, Jaén, Bagua, Piura, Tumbes and Junín. The NGOs Mujer y Familia, AGROVIDA, CADE, Manuela Ramos, Vecinos Perú, TADEPA, Max Salud, ADAR, PLANFAMI and ASDE were also supervised.
Semester 2 – 2001	Amazonas, Ayacucho Sur and San Martín, as well as the NGOs PLANIFAM and Flora Tristán.

Source: PRISMA, based on semester reports of the Contraceptive Logistics Project.

By the end of the project, 90 percent of the coordinators of MOH health directorates had carried out supervisory activities, following the complete process of supervising trainees, with support from the supervisory team at the central level.

The strategy to develop this activity focused on trainee supervisory visits to promote integration and institutionalization of the logistics system at the SDP distribution level. This activity sought to ensure that personnel have the necessary knowledge and skills to perform their duties successfully and that staff members are familiar and comply with established norms and guidelines, as well as to support decision making on the corrective measures needed.

Operational Research to Improve Stocking at the SDP Level (Health Care Facilities)

PRISMA carried out this research, with technical and financial support from FPLM- J. Snow, Inc. (Huacho pilot). The goal was to improve the contraceptive supply system of the facilities of the third (SDP) level in the logistics chain to permit an adequate commodity supply. To this end, the following objectives were proposed:

- ☑ Identify the network for contraceptive stocking.
- ☑ Establish and systematize the contraceptive stock flow from intermediate-level warehouses to SDPs.
- ☑ Strengthen the appropriate information system for logistics decision-making in health care facilities.
- ☑ Implement a Contraceptive Stocking Model in the Huaura-Oyón AIS-SBS and in the Lima Norte sub-region.
- ☑ Improve knowledge of storage conditions of personnel involved in the logistics cycle.
- ☑ Evaluate the results of the model's implementation.
- ☑ Disseminate and use the results.

The main activities implemented included training of field personnel responsible for applying the baseline survey, field work, supervision of field work, data processing and analysis, definition of the supply model, implementation of the supply model and evaluation of results.

Research results and conclusions:

- ☑ The supply in SDPs of the Huaura-Oyón AIS-SBS improved as a result of the implementation of the contraceptive stocking model.
- ☑ Information, distribution and warehousing processes were significantly strengthened in SDP facilities.
- ☑ Two variables determine supply status at SDP facilities: geographic accessibility and presence of substitute personnel.
- ☑ Overstocking is the more common supply problem, but it is usually at manageable levels (between four and eight MOS).
- ☑ The lack of human and financial resources limits supervisory activities of intermediate-to-SDP facilities.
- ☑ The supply model implemented can be replicated in other intermediate-level facilities, with modifications to adapt it to each zone.

After the results were presented to personnel at the central level of the MOH Family Planning Program, USAID staff and service providers of the Huaura-Oyón AIS-SBS, a proposal was developed for a plan to apply the model to other health directorates around the country.

Study of Logistics System Integration and Costs

An analysis of integration and costs of logistics systems for MOH reproductive health and program commodities was carried out to support the future sustainability of the MOH contraceptive logistics system. The study identified the strengths and needs for logistics resources within the current system that have an impact on the success of the transition to sustainability and that will ensure the future availability of contraceptives.

1.1.3 Financing and procurement of contraceptives

Until 1998, USAID provided financing for 100 percent of birth control pills, IUDs, injectables, vaginal suppositories and condoms. Beginning in 1999, the MOH began to purchase contraceptives at discounted prices with government funds through a resource allocation agreement with UNFPA. In addition, the MOH began to include funds to purchase contraceptives in its budget.

In 2001, the MOH began to implement the financial management of contraceptives through the National Program for the Administration of Management Agreements (PAAG). Moreover, with the implementation of the Integrated Health Care Model in 2002, contraceptives were included in the recently created SISMED (Integrated System for Medications and Medical-Surgical Supplies), and categorized them as essential medicines beginning in 2004. USAID played an important funding role throughout this period, as the table below demonstrates:

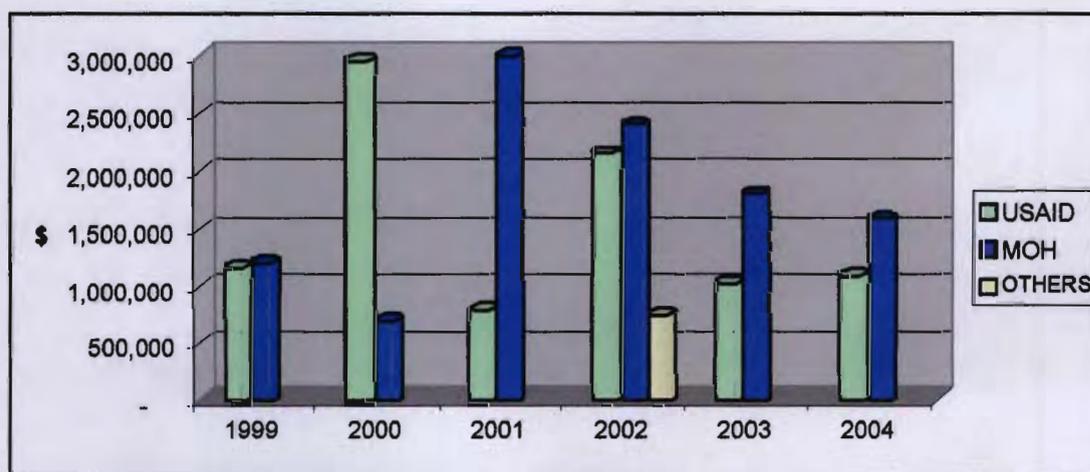
**Table 6 Financing of MOH Contraceptives
1999 – 2004 (US \$)**

YEAR	USAID		MOH		Others		Total	
	\$	%	\$	%	\$	%	\$	%
1999	1,166,309	49	1,214,919	51			2,381,228	100
2000	2,941,730	81	700,031	19			3,641,761	100
2001	790,897	21	2,990,802	79			3,781,699	100
2002	2,148,328	41	2,400,548	45	748,581	14	5,297,457	100
2003	1,030,692	36	1,806,000	64			2,836,692	100
2004	1,094,733	41	1,589,283	59			2,684,016	100

Source: Newbern, USAID/JSI. PRISMA

The figure below compares the source of resources to finance contraceptives.

Figure 3 Financing of MOH Contraceptives 1999 – 2004 (US \$)



Source: Newbern, USAID/JSI. PRISMA

The figure shows USAID participation in contraceptive financing throughout the period and illustrates MOH's increased funding of contraceptives over the past four years.

While the Contraceptive Logistics Project ended in 2002, the procurement of contraceptives continued with USAID financing as part of a project implemented beginning in 2003. The new project was designed to promote the integral development of the medicine and medical supply system, rather than focusing exclusively on contraceptives. Subsequent sections of this document describe the new project in detail.

1.2 Results of the Contraceptive Logistics Project

In November 1999, John Snow Inc carried out the final evaluation of the Contraceptive Logistics Project in the framework of the implementation of the National Evaluation and Strategies of the FPLM. The evaluation was based on performance indicators. The main quantitative and qualitative findings of this evaluation were as follows:

1.2.1 Contraceptive procurement planning

The MOH and PRISMA jointly planned contraceptive procurement. The MOH prepared annual consumption plans using demographic data, which were later validated by PRISMA using consumer information. PRISMA also prepared CPTs, which it sent to USAID/Peru. The USAID mission placed the orders to USAID/Washington. The planning process followed the proposed model.

1.2.2 Procurement

In this first project, all MOH contraceptives were procured by USAID or UNFPA. Depo-Proveras® were purchased by UNFPA with MOH funds, whereas the rest of the products were donated. The goal was for the MOH to gradually assume responsibility for procuring contraceptives, a goal which is being achieved, as the previous sections of this report confirm.

1.2.3 Storage

- The evaluation demonstrated that contraceptive storage conditions and practices were adequate in most of the warehouses visited, although some intermediate warehouses had limited space. All intermediate warehouses assessed averaged 82.9 percent compliance with warehouse conditions, with a range between 66.7 and 94.4 percent. In health care facilities, compliance with conditions averaged 91.7 percent, with a range between 77.8 and 100 percent.
- Aspects requiring immediate action in the intermediate warehouses included improving storage of the HIV/AIDS condoms managed by the Sexually-transmitted Disease and HIV Control Program (PROCETSS), separating damaged or expired supplies from those in good condition (only 8.3 percent of warehouses did this), adding fire extinguishers (58.3 percent did not have them) and labeling and identifying – including expiration dates – boxes containing contraceptives (20.8 percent of the warehouses visited did not have labeled boxes). Labeling facilitates the use of the first-to-expire/first-out (FEFO) system, which helps prevent losses due to storage of products after the expiration date. In the health care facilities, conditions needing improvement included labeling and identification (57.6 percent of the facilities visited did not follow this procedure).
- Most of the warehouse managers were not familiar with the special handling and storage conditions for Depo-Provera®.

- Although it was unusual to find an expired or damaged product, warehouse and health facility personnel were unfamiliar with the MOH norm for disposing of expired/damaged products, or if they were familiar with it, did not follow the procedure.

1.2.4 Distribution and supply

- Ordering and stocking decisions were based on consumption data to make the system response more accurate.
- All health care facilities in the survey followed general program guidelines and maintained maximum and minimum stock levels of three months and one month. Intermediate warehouses maintained maximum/minimum stock levels of six and three months, also following program guidelines.
- Lead time from the intermediate level to the SDPs (health care facilities) was relatively short, with 75 percent of facilities restocked within one week after ordering, and just over 95 percent within two weeks. MOH personnel were responsible for contraceptive distribution from the intermediate level to the SDPs, an arrangement that worked well.
- During the six months before the evaluation, 98.3 percent of intermediate warehouses and 97.3 percent of SDPs had no stockouts of any contraceptive commodity. Neither did the central warehouse suffer stockouts during the period.
- During the evaluation period, no intermediate warehouse had stockouts, whereas one SDP (1.5 percent) had a stockout of condoms. All other contraceptive methods were in stock, however, some were below minimum stock levels.
- During the six months before the evaluation, no expired or damaged product was found at the intermediate warehouses, whereas 97.1 percent of the SDPs had no expired products.
- The system used private transport between the central and intermediate levels. From the intermediate locations to the SDPs, MOH or public transport vehicles were used. This model is capable of responding to system needs.

1.2.5 Information system and logistics administration

- Quality data for decision making are critical to the optimal functioning of a logistics system and depend on availability, timeliness and appropriateness of the data. Consumption data are the most important to collect for stocking products such as contraceptives. The evaluation found that all family planning coordinators at the intermediate level and health care facility personnel were registering, reporting and using information on contraceptive consumption for decision making.
- Use of Reproductive Health Program forms was high in the health care facilities: 89.7 percent for IMIs (Commodity Movement Reports), 83.8 percent for Contraceptive Requisition Worksheets, 80.90 percent for requisition and issue vouchers (PECOSAs) and 95.6 percent for 240 Health Information (SIS-240) Forms.
- All health care service providers interviewed knew the correct amounts of contraceptives to dispense to new and continuing users. Moreover, the evaluation found that requested quantities were accurate in 94.1 percent of SDPs.

- Data quality is high and forms and reports contain few errors. The evaluation verified the accuracy of the calculation of the average monthly consumption and the number of months of supply (MOS), with 92.6 and 97.1 percent accuracy, respectively.
- With respect to the timeliness of information delivery, contraceptive logistics reports were received at the central level an average of 11 days after the closing of the reporting period. Three or four years ago, reports took three months to reach the central office.
- There were an adequate number of official forms and other supporting documents, which are used at all levels of the system. However, qualitative data indicate that some MOH staff believed that the logistics system required too many forms and that some forms duplicated information.
- Staff responsible for recording data and submitting reports have sufficient knowledge and apply it correctly.

1.2.6 Political advocacy

Participating organizations supported the decision to use a model with external logistics activities at the central level. From the perspective of USAID, the decision to finance the contract was made within the reproductive health fund for "priority" countries. Peru was the only priority country in Latin America.

The impact of the use of this external funding model was to ensure that contraceptives were available at all levels. One of the strengths of the current model is its independence from political currents, since the main interest of the responsible organization is technical and is directed to improving system efficiency. The program is considered a success in Peru, where other MOH health programs have experienced logistics problems.

According to the *Negocios* section of *El Comercio* newspaper, the perception of public-sector family planning services improved between 1997 and 1999. In an article published on November 7, 1999, the newspaper reported that 60 percent of users believe that the current contraceptive service delivery is good, up from 15 percent in 1997.

Likewise, in the assessment carried out by John Snow Inc., the following interviewees' comments summarize those obtained in the qualitative interviews:

"... the Peruvian State still has some defects, and management costs are higher than in the private sector, for which reason it is a good idea to continue with outsourcing."

"... the absence of anything like PRISMA running the contraceptive logistics system (being an intrinsic part of it), unless you put something in its place, is like trying to run a car without an engine."

"... this model of contracting PRISMA works and circumstances that would help its continuation are associated with financing, since it is still not self sustainable. This relationship should not end since it also brings us social benefits. The cost of not maintaining this system is higher than the cost paid for the service."

Finally, the Contraceptive Logistics Project enabled Peru to have the most effective contraceptive logistics system in Latin America. From 1997 to 2001, PRISMA, with financing from USAID and the MOH's National Family Planning Program, achieved the following:

- Consolidation of a MOH-PRISMA work team to provide technical assistance in contraceptive information and logistics to the MOH's National Family Planning Program.
- Establishment of distribution levels for each of the MOH's 184 intermediate storage facilities.
- Improvement in information. The National Family Planning Program had quarterly information on the physical stock in each of its 184 intermediate warehouses, with consumption information at 15 and 30 days after the reporting period.
- Reduction of emergency requests.
- Formation of a national team of trainers and supervisors in contraceptive information and logistics to improve program activities.
- Supervisory visits with training at health care facilities to improve the dissemination of the system at the levels where services are provided directly to users.
- Institutionalization and systematization of the procedures and processes included in the Procedural Manual for the Administration of Contraceptive Logistics and the Trainee Supervision Manual, as work tools to develop logistic activities of personnel at each level.
- Budget allocation specifically for the procurement of contraceptives in the MOH, as part of the group of essential medicines.
- Establishment of a methodology to estimate future needs.

In summary, the project achieved the following:

- ✓ Established a logistics information system.
- ✓ Prepared and disseminated reference materials.
- ✓ Trained MOH personnel.
- ✓ Established maximum-minimum stock levels.
- ✓ Improved storage conditions.
- ✓ Created an efficient contraceptive distribution system.
- ✓ Carried out annual inventories of contraceptives.
- ✓ Provided practical training and supervision in logistics operations in the regions.

As a result, for the first time, the MOH was able to make contraceptive needs forecasts, annual procurement plans and distribution charts with reliable data on consumption and inventory, which prevented commodity stockouts and losses.

2. DEVELOPMENT OF AN INTEGRATED MINISTRY OF HEALTH MEDICINE SUPPLY SYSTEM

2.1 Strategy of the Project Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System

In response to the positive results of the Contraceptive Logistics System and the MOH's request to improve the logistics of its health programs, PRISMA, in coordination with USAID, agreed to help the MOH organize and design an Integrated Logistics System. This was the basis for the 2003 project "Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System," which was an expansion of the project PRISMA had been developing since 1996, with USAID technical and financial assistance. During the second half of 2002, the country's national and institutional context was conducive to decentralization, the implementation of the Integrated Health Care Model and the relaunching of the SISMED in the MOH, for which reason, the MOH's General Health Directorate developed a proposal to expand the system to medicines and medical supplies and to develop the following interventions:

2.1.1 Operations

PRISMA has provided logistics services to the central office of the MOH. This service covers the reception of medicines and medical supplies sent by the PAAG to PRISMA's central warehouse and their subsequent transfer to the central warehouse of each DISA. Essential medicines were distributed to the DISA, and in some DISAs, contraceptives were sent to sub-warehouses, thereby increasing the number of distribution sites nationwide. In addition, PRISMA provided customs clearance, storage and distribution services for a group of essential medicines and medical-surgical supplies.

2.1.2 Technical Assistance

Technical assistance was the basic strategy used to achieve the objectives and results of the project "Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System."

Technical assistance shifted throughout the project implementation process. Initially, technical assistance was included as an indicator in the project's logical framework; however, each year the operating plans considered new, more extensive technical assistance strategies in the different project components in response to the needs identified during the implementation process. Aspects of the design and implementation of project technical assistance are detailed below:

Table 7 Technical Assistance Activities
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System:
2003 – 2006

Technical Assistance Activities	
2003	<ul style="list-style-type: none"> • Training at all health directorates in the application of version 1.2 software. • National SISMED technical meetings: evaluation and coordination • National SISMED workshop for medicine procurement nationwide • Preparation of SISMED procedural manuals.
2004	<p>Technical assistance activities were concentrated in the Huánuco DISA as a pilot study to test and validate the strategies for their subsequent expansion to other regions.</p> <p>The following activities were carried out:</p> <ul style="list-style-type: none"> • Preparation of SISMED procedural manuals for sub-warehouses and health care facilities • Preparation of training materials for training workshops for networks and micro-networks • Three SISMED training workshops for networks and micro-networks of the Huánuco DISA • Training in SISMED strategies in all health care facilities of the Huánuco DISA • Training in software at the DISA, institutional pharmacies, two hospitals (implementation units), 10 sub-warehouses and data entry sites of the Huánuco DISA • Preparation of the SISMED version 2.0 software manual for the DISA, hospitals, sub-warehouses and health care centers • One national technical meeting to plan medicines and contraceptive commodities for health interventions • Five macro-regional workshops to update system users to improve contraceptive information and logistics • Training workshop in Good Storage Practices (GSPs)
2005	<ul style="list-style-type: none"> • Preparation of training modules for SISMED processes and methodological guides for two target audiences: health care providers and pharmacy employees. • Total number of modules developed: 12 (six for each target audience). The modules were: selection, programming and estimating needs, procurements, warehousing and distribution, supply management, information systems, delivery and use of medications. • Materials were validated with personnel of the Lima Sur and Norte health directorates. • Training of trainers workshop with 29 participants, including DIGEMID and OGEI personnel of the central MOH level and representatives of the health directorates of Lima, Lima Norte, La Libertad, Ucayali, San Martín, Junín, Puno and Cusco. Representatives of San Marcos and Trujillo universities also participated, as did PRISMA staff members. • 18 pharmacists were hired (field implementers) for the health directorates: <ul style="list-style-type: none"> Ayacucho: 4 implementers Pasco: 2 implementers Junín: 4 implementers Cusco: 4 implementers Ucayali: 4 implementers • In the case of the San Martín DISA, the project worked with management personnel, covering their per diems and travel expenses for field implementation and supervision. • The cooperative agreement stipulated that the DISA would gradually assume payment of field operators, beginning in the fifth month of project implementation. • A one-week training workshop was held to strengthen the performance of field implementers. The following modules were implemented: SISMED and strategies, information system, developing training and supervision skills, procedural manuals and lessons learned in Huánuco. Coordinators of medicine offices of the health directorate participated and the strategies to be implemented in each directorate were disseminated.

Technical Assistance Activities	
	<ul style="list-style-type: none"> • Training at all health facilities in the strategies to strengthen the SISMED. SISMED procedural manuals were used for this activity, which were updated and adapted by each DISA. • Workshop to strengthen the procurement process in the seven DISAs, with the participation of the coordinator of medicine, economics, logistics, planning, procurements, as well as the SISMED coordinator and a representative of the Special Committee. Consultants were hired to train and provide on-the-job and offsite technical assistance. During the consultancy, a procedural manual for regional procurements was developed. • A training meeting on GSPs was organized, with the participation of personnel of the specialized warehouse, medicine sub-warehouses of the DISAs and hospitals. • The Operational Procedures Manual for the Specialized Medicine Warehouse in the seven DISAs was revised to implement GSPs. • In the DISAs of Cusco, Junín, Ucayali and Ayacucho, two work meetings were held with officials from the Huánuco DISA, the first with administrative employees of the DISA and the second with DIREMID technical personnel. This activity encouraged the sharing of experiences and exchange of knowledge among peers regarding SISMED administrative and technical management. These meetings did not take place in the Pasco DISA due to a change in the medicine office. They also were canceled in the San Martín DISA because of continuous strikes.
2006	<ul style="list-style-type: none"> • Preparation of the training modules and methodological guides for the SISMED. • Preparation of a book on supply system processes in the MOH, designed for personnel responsible for managing medicines and medical supplies in the health directorates and implementation units. • Preparation of interactive material on SISMED processes designed for personnel responsible for managing medicines and medical supplies in the health directorates and implementation units as well as for employees of pharmacies in the health care facilities. • Workshops on strengthening facilitators for medicine supply system processes. Workshops were held in Lima, Huancayo, Chiclayo and Arequipa, with the participation of 33 DISAs. • Design of an academic proposal for a specialized correspondence course on managing the medicine supply chain, in coordination with the TECSUP technological institute. • Development and validation of the model and procedures for the implementation of collective regional procurements of medicines and medical supplies. • Implementation of an exchange program in PRISMA medicine warehouses, for the purpose of developing GSPs.

In 2005, the technical assistance activities validated in Huánuco were offered to and agreed upon by each DISA and were formalized through a cooperative agreement between the DISA and PRISMA. The main activities included in this agreement are listed in the table below.

Commitments of the parties established in the DISA-PRISMA cooperative agreements	
A.	<i>PRISMA agrees to support management, training and supervision activities to strengthen SISMED activities through the hiring of pharmacists (field implementers) who will be responsible for implementing the strategies in the health networks and implementation units.</i>
B.	<i>To make the system sustainable, the DISA agrees to finance the costs of training activities at the health care facilities. PRISMA will contribute training materials and field implementers.</i>
C.	<i>PRISMA will cover 100 percent of the salaries of field implementers for five months, after which time the DISA will gradually cover this payment as follows: sixth month – 20 percent; seventh month – 30 percent; eighth month – 40 percent; and ninth month – 50 percent.</i>

- D. PRISMA will provide technical assistance to the implementation units for the regional and local procurement of medicines, as well as for administrative and logistics aspects of the public sector. For this training, the project will cover fees of consultants, facilitators and locales. The DISA will cover travel and per diem expenses of participants.*
- E. PRISMA will provide technical assistance to improve storage conditions in specialized warehouses, particularly with regard to personnel performance (GSP training), as well as provide operational personnel with work gear: helmets and belts, litters and signs.*
- F. The DISA agrees to provide facilities to implement GSPs in the specialized warehouses of the DISA and hospitals.*
- G. PRISMA agrees to support the implementation of the warehouse and pharmacy software in warehouses and specialized sub-warehouses, pharmacies and health care facilities.*
- H. PRISMA agrees to support the implementation of the SIGA in implementation units: DISA, the Daniel Alcides Carrion and Oxapampa hospitals.*
- I. PRISMA and the DISA will jointly develop mandatory work plans to define activities and responsibilities of each party.*

Taken from the Cooperative Agreement between the Pasco DISA and PRISMA.

2.1.3 Supervision

Monitoring and supervision developed unevenly throughout the project intervention, and was based on progress in the SISMED implementation process.

The section below discusses the main aspects of the design and implementation of the project supervision plan.

Table 8 Supervisory Activities
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Supervisory Activities	
2003	<ul style="list-style-type: none"> • Preparation of a proposal and instruments for the monitoring and evaluation of essential medicines of the MOH • Establishment of a team of supervisors of the SISMED
2004	<ul style="list-style-type: none"> • Final revision of supervision instruments • Preparation of a supervision timetable • Supervision and monitoring of strategy implementation in the Huánuco DISA
2005	<ul style="list-style-type: none"> • In the seven DISAs, the field implementers visited 100 percent of the health care facilities to strengthen the performance of personnel responsible for pharmacy services and to verify the implementation of the procedures taught during the training sessions. • The PRISMA team made supervisory visits to monitor activities and strengthen the work of implementers.
2006	<ul style="list-style-type: none"> • A SISMED model was developed using a continuous quality improvement approach, which was sent to the DISAs for its evaluation and subsequent institutionalization. • In the seven DISAs, field implementers visited all health care facilities to strengthen performance of personnel responsible for pharmacy services and to verify the implementation of procedures taught during the training sessions. • From the central level, PRISMA supervised the DISAs to strengthen the work of field implementers. • Evaluation meetings were held at the level of the health networks and in some cases the micro-networks, with the active participation of DISAs.

To monitor and supervise the implementation of intervention strategies in the networks, micro-networks, health care facilities and specialized medicine sub-warehouses, field implementers carried out this activity in the DISAs of the project intervention zone. Each implementer was responsible for designing and implementing a SISMED supervision and monitoring plan.

Supervision instruments were prepared and validated in a pilot study in the Huánuco DISA, after which final versions of the technical documents were completed.

The supervision manual includes methodology for the planning, implementation, reporting and monitoring of supervision. It also includes the following annexes:

- Form for facilities requiring priority supervision.
- Form for the supervision of health centers and posts.
- Instructions for completing the form for the supervision of health centers and posts.
- Recommendations for interacting with supervised personnel.

2.1.4 SISMED information system

The SISMED information system was designed to integrate and support each of the processes of the integrated system for the supply of medicines and medical-surgical supplies: selection, planning, procurement, storage, distribution and use implemented by employees at each organizational level of

the MOH system: those of health care facilities, data entry sites, DISAs and OGEI, permitting the provision of information at each level to health facility personnel, as well as managers of the DISAs and the central MOH office: top management, DIGEMID, DGSP, SIS, PAAG and OGA.

According to current SISMED regulations, the OGEI is responsible for designing, implementing and periodically updating SISMED software, for which reason resources and media are allocated for the exchange of information with the DISAs, hospitals and specialized agencies, in accordance with the technical requirements established by the DIGEMID, which channels the information needs of SISMED components. The DIGEMID analyzes the information delivered by the OGEI to make decisions at the central level.^{11,12}

The SISMED directive also stipulates that the information generated by the SISMED in the health care facilities, warehouse or specialized sub-warehouse must be recorded monthly in the Integrated Consumer Report (ICI) and in the Economic Movement Report (IME), setting the last day of every month as the closing date. The original ICI is sent monthly to the data entry sites established by the DISA, for subsequent submission to the medicine office of the health directorate. The IME is sent to the medicine office of the DISA for data entry and administrative processing. The consolidated ICI and IME information of the DISA is then sent to the central OGEI. The OGEI and the DIGEMID are responsible for consolidating SISMED information and making it available to users within five working days.

To fulfill these responsibilities, a software program was developed with PRISMA technical and financial support, which was field tested in the Huanuco DISA and subsequently expanded to the other project intervention zones.

The process to develop and implement the software began in late 2002, with version 1.0 developed in the Access platform and designed to register ICI and IME reports of the SISMED. This software was installed in the data entry sites (strategically located offices that collect the reports of a specific number of health care facilities under their jurisdiction) and in the Regional Directorate of Medicines, Supplies and Drugs (DIREMID/DEMID), where the reports were consolidated.

This software was improved over time, both in terms of its structure and the work platform. Version 1.2 was developed in Access and implemented in late 2003. This version was installed in all DISAs before the intervention, but it was no longer used after it was field-tested in the Huánuco DISA. In 2005, version 1.3 (for data entry only) was developed in the Visual Fox Pro platform. This version is currently in use.

For the management of warehouses, sub-warehouses and pharmacies, a software program was designed in Clipper and initially implemented in the pilot DISA (Version 2.0), which in 2005 was developed in Visual Fox Pro.

The 1.3 and 2.0 versions of the software were installed in all DISAs beginning in 2005.

In the MOH, to consolidate information nationwide, the OGEI developed a module that enabled the consolidated reports sent to each DISA to be imported and to generate a single database. This module has had several versions and has been modified and improved numerous times. Currently, it can be consulted for consumption and stock information via the MOH website.

¹¹ Ministerial Resolution N° 1753-2002-SA/DM of November 5, 2002 and published November 10, 2002

¹² Ministerial Resolution N° 367-2002/MINSA of May 16, 2005 and published May 19, 2005

In 2006, the following activities regarding the SISMED software were carried out:

- Final modifications to version 2.0.
- Preparation of users' and programming manuals.
- Preparation of interactive users' manuals (videos) of version 2.0.
- Workshops in Lima, Chiclayo, Huancayo and Arequipa to present the software and the latest advances of version 2.0.
- Preparation of the reporting module of version 2.0.
- Monitoring of the use and functioning of version 2.0 in the DISA.
- Installation and implementation of version 2.0 in the Huánuco, Pasco and Junín DISAs.

Integrated Administrative Management System

The Integrated Administrative Management System (SIGA) is an application that helps to organize and simplify administrative management procedures in the framework of the norms established by executive agencies of the health administration, particularly with regard to logistics.

The system integrates the administrative processes of accounting (financial and budget), stocking and personnel and has five modules and an interface:

- Budget processes module (MPP)
- Project implementation module (MEP)
- Payroll monitoring module (MCP)
- Logistics module (ML)
- Asset monitoring module (MP)
- Integrated system for the financial administration of the public sector (SIAF-SP)

The Ministry of the Economy and Finance developed the SIGA. The logistics and asset monitoring modules were implemented as a pilot program of the PAAG in 2003, through an agreement with the MOH, and with funding from the Inter-American Development Bank (IDB).¹³ In August 2004, it was installed in the implementation units, using the Huánuco DISA as a pilot test, with the participation of PRISMA, in the framework of the project to support SISMED implementation. The SIGA was later installed in the DISAs of the project intervention zones.

The purpose of the system is to improve processes to supply goods and services to health care service users in the framework of the modernization of the health administration.¹⁴

The following activities were carried out for SIGA implementation:

- Implementation of SIGA in the following DISAs and their implementation units (UE): Pasco, (three UE), Junín (eight UE) and Ucayali (three UE). In addition, SIGA was installed in the Huánuco DISA and the H. Valdizán Hospital, and in the Pasco regional government office. The project currently provides support in the use of the software.

¹³ www.minsa.gob.pe/siga

¹⁴ www.minsa.gob.pe/siga

- Training in the use and management of the software for UE personnel. Staff from logistics, assets, economics, budget and computer units participated. In addition, interactive users' manuals were prepared.
- General training in the General Catalogue of Goods and Services, Accounting Records, Expense Classifiers and Medicines, with the participation of all Junín, Pasco and Ucayali DISAs, and with speakers from the Ministry of the Economy and Finance.
- Development of a set of tools for monitoring and continual support in the use of the software in each UE. To this end, the project is incorporating virtual media to achieve greater accessibility, timeliness and efficiency of the processes.
- The costs of acquiring a private logistics system and SIGA costs were compared.

2.2 Results

Several national and international organizations were asked to present a proposal for the final evaluation of the project "**Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System.**" The proposal of the Cayetano Heredia University was selected.

In early June, the team of the School of Public Health and Administration of Cayetano Heredia University carried out the external evaluation of the project and presented its final report. The project evaluation used a variety of quantitative and qualitative techniques to collect information, both from primary and secondary sources. Information was collected from all levels of the MOH, in other words, from the central level, the DISAs and their different agencies, health networks and health care facilities.

The results demonstrate that the project intervention had a positive impact on the implementation of the SISMED in the DISAs in the project intervention area, particularly in the storage and distribution of essential medicines and in the planning, procurement, warehousing and distribution processes of the supply chain.

The main quantitative and qualitative findings of the evaluation were as follows:

2.2.1 Logistics operations under the responsibility of PRISMA

Within the operations intervention, PRISMA provided logistics services to the central MOH office. The services included customs clearance, storage and distribution of a group of essential medicines and medical-surgical supplies, including contraceptives, which were distributed to all DISAs. To demonstrate the results of this intervention, the following areas were examined:

- Trends and variability in delivery time
- Fulfillment of warehousing criteria.

Delivery time

The evaluation analyzed lead time for delivering commodities to DISAs, from the moment the requisition was received at the PRISMA warehouse. Two indicators were used: trend and variability of delivery time.

The trend analysis of medicine delivery time in the 11 DISAs in the study demonstrated that 64 percent of DISAs show a stable trend and 36 percent of DISAs in the central and southern highlands, southern highlands, coast and jungle have a significant increasing trend. In some DISAs, deliveries are made to sub-warehouses in remote areas. In others, the reception process takes much longer -- while the product may reach the warehouse, the receipt is signed only after several days. This practice is on the rise in several DISAs and should be controlled. Performance should be improved in the DISAs where this trend is apparent. Close monitoring of this indicator is needed to maintain or reduce delivery time. Overall, delivery time performance is acceptable.

Table 9 Trends in Delivery Times of Medicines, by DISA
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Trend			DISA
Stable	7	63.64 %	Ayacucho, Arequipa, Huánuco, Ucayali, Bagua, Ancash, Cajamarca
Decreasing	0	0.00%	
Increasing	4	36.34%	Junin, Apurímac, La Libertad, Amazonas
	11	100.00%	

Variability in medicine delivery time was measured using a variation coefficient. Delivery time was rated on a qualitative scale in which the least variation has the highest rating and vice versa. The rating scale considers a variation of 50 percent moderate, and takes into account the influence of geographic or climate factors during the year. The results show that only 27 percent of the DISAs have a "moderate" variability whereas 73 percent had a delivery time rated as "highly variable" or "inadequate," and therefore requiring improvement. The analysis by geographic location of the DISA shows that there is no clear pattern within each zone, therefore, the geographic factor does not by itself explain the high variability. Consequently, other factors that could affect delivery time should be examined.

Table 10: Variability in Delivery Time of Medicines, by DISA
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Variation	Rating	Number of DISAs	%
0.25 or less	Good variation	0	0%
More than 0.25 to 0.50	Moderate variation	3 (Huánuco, Apurímac, Ucayali)	27.3%
More than 0.5 to 0.75	High variation -Monitor and work to reduce-	6 (Amazonas, Bagua, Cajamarca, Ancash, Ayacucho, Arequipa)	54.5%
More than 0.75	Inadequate variation -improvement urgently needed-	2 (La Libertad, Junin)	18.2%

Compliance with storage criteria

With respect to compliance with storage criteria, central PRISMA warehouse compliance with storage criteria was 83 percent on average, which is considered a "good performance" rating according to the scale used in this evaluation. In addition, the warehouse has been GSP certified, in other words, it meets good storage practice standards. The table below details the results of the analysis of compliance by evaluation item:

Table 11 Compliance with Storage Criteria
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Processes	Compliance with warehouse operation
Reception	83.33 %
Location and physical control	75.00 %
Preparation and delivery	100.00 %
Administrative operations	66.67 %
Conditions, equipment and infrastructure	90.00 %
Average	83.00 %

Taking into account the aforementioned processes, the evaluation found that delivery time is stable but there is high variability for most of the 11 DISAs. Warehouse management demonstrated "good performance" and there is no evidence of quality issues with the products caused by storage, transport or handling.

This information was used to create the table below:

Table 12: PRISMA's Performance Results in Logistic Operations
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Indicator	Evaluation Item	Rating
DISA delivery time (11 DISAs, 358 deliveries)	Trends in delivery time	Acceptable performance. The evaluation found a stable trend, but DISAs with an increasing trend should be monitored and improved.
	Variability in delivery time	High variability. The operator should not be blamed for the high variability, but geography does not appear to be the only factor involved. Efforts should be made to reduce variability, investigating the causes that could be associated with the operator.
Warehouse management (PRISMA central warehouse)	5 items, 27 criteria	Good performance
Perceptions derived from the interviews	Service as logistics operator	Acceptable performance

Considering quantitative and qualitative data, the evaluation concluded that PRISMA's performance as a logistics operator was acceptable, given the operating conditions in the distribution routes to the destination points, which in many cases depend on exogenous factors not associated with the operator.

2.2.2 Technical assistance

Goals established in the logical framework for the technical assistance component were partially met. By the end of the project, it was expected that all warehouse managers of the 34 DISAs and all managers of the distribution sub-warehouses would be trained in warehouse management and administration. At the end of the intervention, the goal was met in the seven intervention DISAs, and the process had been expanded to include personnel of the health care facilities.

PRISMA also trained facilitators in the DISAs of Lima, Lima Norte, La Libertad and Puno, which were not in the project intervention area. In addition, it trained all warehouse managers of the 34 DISAs and all managers of the sub-warehouses in the use of the two versions of the SISMED software.

The results observed suggest that the training proposal is not comprehensive. There are designed and tested workshops on different aspects of the supply chain, including the definition of contents, presentations and manuals for participants. These are available only in the DISAs in the project intervention area, except for the SISMED software manuals, which are also found in the control DISAs.

Evaluation was the least developed component of the training package. In general, in the cases reported, evaluation focused on cognitive skills rather than improvements in procedures or trainees' attitudes. In addition, the project did not evaluate participants' views of the training, which is important for improving the process.

The design and implementation of training activities in the intervention area were carried out mainly by consultants with expertise in these areas, who coordinated with the central PRISMA team and field implementers. The participation of DISA personnel focused on the DIREMID, with only limited participation of training unit staff.

The interviewees value the introduction of other technical assistance methodologies such as exchange visits and on-the-job training by field implementers; however, these are not fully documented like the training workshops are.

Staff members of the DISAs in the intervention areas have a better knowledge and handling of the SISMED as an integral system than do those in the control DISAs, which associate the term directly with the software.

The institutionalization of technical assistance in the DISAs in the intervention area is generally associated with the existence of training plans that form part of the global training plan of the DISA as well as with the existence of DIREMID personnel trained in the implementation of these activities. However, high staff turnover has had a negative effect on institutionalization.

Relations between the DISAs and IDREH vary widely in terms of regulations and procedures that the IDREH has officially established. Two case DISAs and one control DISA prepared technical assistance plans following IDREH technical and administrative guidelines.

In the self-assessment of skills, 95 percent of DISA officials believe that they have the skills necessary to manage the SISMED (categories A and B of the self-assessment test) whereas 83 percent in the control DISAs believe they possess these skills.

The results of the evaluation of SISMED process skills in the case DISAs demonstrate the perception of greater mastery of sector management skills, information management, supervision and monitoring (100 percent, A and B combined) and of information management skills in the control DISA (100 percent, A and B combined) and warehousing (96.7 percent, A and B combined).

At the operational level (networks and facilities) in the case network, 88 percent of staff members (A and B combined) believe they have the necessary skills whereas in the control network the percentage is 81 percent.

The results obtained from evaluating skills in SISMED processes in the case network show a perception of greater mastery of programming, reception and delivery skills (100 percent A and B combined); in the control network, perceived skills are strongest for programming and reception of medicines (92.6 and 94.4 percent for A and B combined, respectively).

2.2.3 Supervision

The logical framework did not establish goals for the supervision component, for which reason compliance could not be measured with respect to project design; nevertheless, both case and control DISAs carried out supervisory activities, with varied progress in the planning, methodology and instruments and feedback from supervised employees.

The three case DISAs, all of the networks and between 50 and 80 percent of the micro-networks received at least one supervisory visit implemented as part of the PRISMA project in 2005 to strengthen all aspects of the supply chain. In the three control DISAs, 100 percent of the networks and facilities that are SISMED data entry sites have received at least one supervisory visit by DIREMID personnel for support in software implementation and essential medicine availability.

No case or control DISA has annual supervision plans registered with DIREMID. Only some specific plans by visit are registered.

The project designed a technical proposal that includes the methodology and instruments necessary for the integral supervision of SISMED at the regional level. Nevertheless, a review of the documentation of the DISAs (case and control) reveals that the proposed tools are not widely used and that several instruments are used mainly to verify the availability of essential medicines.

In the documentation provided by the DISAs evaluated (case and control), the project verified the existence of documents that include timelines and persons responsible for the implementation of recommendations based on findings. There is no record of compliance with the recommendations.

2.2.4 Information system

Implementation and use of SISMED software

The results show that versions 1.3 and 2.0 of the SISMED software have been implemented and are in use in the case and control DISAs. At the levels where information is consolidated (DIREMID and data entry sites), the implementation was 100 percent for version 1.3 in all case and control DISAs. Version 2.0 was installed in all warehouses and sub-warehouses of all DISAs. In the case DISAs, these processes began earlier, permitting their expansion to the other DISAs (control) based on the progress

and experience of the case DISAs. Use is widespread in health care facilities, without significant differences between control and case facilities.

Other SISMED management systems were being used simultaneously in some DISAs and hospitals, which were obtained before the SISMED software was developed and implemented. These systems must continue to be used because they are linked to other administrative management processes.

Availability of logistics information

In the project intervention area, information for the past three years is available, which can be obtained through the latest versions of the software. This does not occur with the control group, where information availability varies widely in terms of the period, system use and version utilized. Some DISAs have information for the past two years or only for 2005, in some cases through the system and even through version 1.2.

SISMED management system

Overall, case DISAs made more progress in the development and implementation of processes for the adequate management of the SISMED system as compared with the control DISAs, where several mechanisms and processes must still be developed to achieve the main objective of the system: to provide timely, quality information. In the case DISAs, there is a greater development and application of procedures for timely attainment, quality control and dissemination of SISMED information. These procedures are described in health facility manuals but require more dissemination.

All DISAs deliver medicine consumption and stock information within one month; nevertheless, case DISAs have higher compliance percentages for informant facilities with more consistent information, which can be attributed to the implementation of a more comprehensive quality control of the data as compared with the control DISAs.

There are limitations at operational levels in the case and control networks and health care facilities, especially in terms of the organization of information flow (closing dates, days and levels of delivery), which affect the timeliness of information delivery. At these levels, administrative personnel are mainly responsible for managing the system, sharing this task with pharmacy management, which affects SISMED management at that level. Personnel of health care facilities have had greater access to SISMED system training and therefore in the information system as compared with staff in the control network.

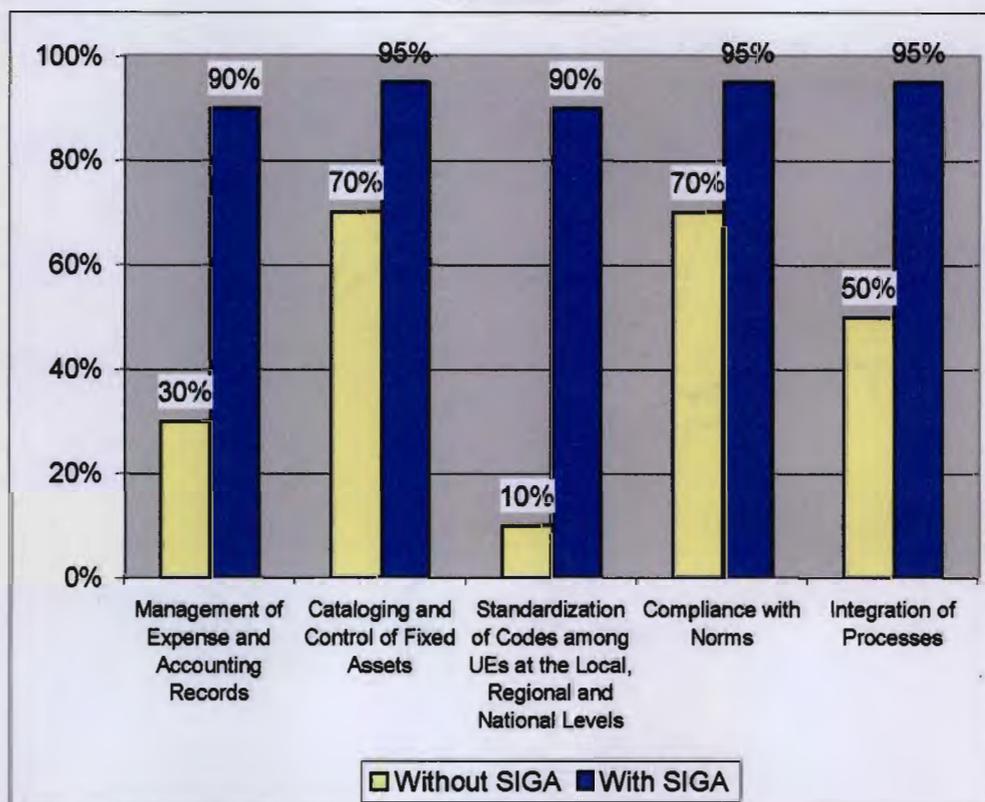
Information reported through the SISMED and that obtained from contraceptive movements of the Sexual and Reproductive Health Strategy do not coincide because the information systems are not integrated.

SIGA in the framework of the project

In all the DISAs evaluated, logistics and asset control modules have been installed. Nevertheless, the case DISAs had made greater progress in using the logistics module as compared with the control DISAs, which are currently building databases or no longer use the module because of alleged problems with the system.

Currently, the implementation units that installed the SIGA are implementing the entire logistics process with this system and have obtained significant benefits, such as improved logistics and accounting information, accurate, reliable data, minimization of budget errors and improved procurement. Working with SIGA has definitely contributed to improving logistics processes in a large percentage of the units (some of which are expressed in the figure below). In some cases, improvements surpass 50 percent, which clearly demonstrates that SIGA is the best tool for the public administration.

Figure 4: Comparison of Logistics Processes with and without SIGA in Implementation Units Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System, 2003 – 2006



Source: Technical Report. April – August 2006. PRISMA

In addition, because this system was developed for the entire public administration, it does not have to be designed for each UE and avoids dependence on the provider if the UE opts to purchase a system. In addition, it means significant savings in paper for document printing.

2.2.5 Management of the supply chain and logistic operations of the SISMED

Management of the supply chain

With respect to the management of MOH supply chains, the results observed in the DISAs in the project intervention area (case DISAs) and those without interventions (control DISA) were compared at

both the aggregate level and at the level of each stage of the chain. In general, the performance of the case DISAs almost duplicated the average performance of the control DISAs (1.88 relative index of difference). However, the case group achieved a performance level of 64.7 percent, which should be improved since levels over 70 percent compliance are considered acceptable. The compliance level of the control group was 34.4 percent, reflecting a poor performance level.

**Table 13 Compliance with Criteria of Key Document Usage by Supply Chain Process
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006**

Supply chain process	Compliance with criteria of document usage		Index of difference (Case/Control)
	Control DISA (%)	Case DISA (%)	
Selection (Cataloguing of goods and services)	33.33%	40.00%	1.20
Programming	13.33%	46.67%	3.50
Procurement	64.29%	78.57%	1.22
Storage	33.33%	83.33%	2.50
Distribution	28.48%	87.88%	3.09
Management	33.33%	51.85%	1.56
Average	34.35%	64.72%	1.88

In the performance analysis by process, the case DISAs exceed the control group in each of the six processes, with indices ranging from 1.2 to 3.5, demonstrating a significant difference, particularly in processes where the relative difference is between 50 and 250 percent. Specifically, the processes with the greatest difference are programming, storage, distribution and management. In the control group, no process achieved an acceptable level and only in procurements did the index exceed 50 percent (64.29 percent).

In the study of supply chain management, there was particular interest in evaluating performance in warehouse operations. The results, presented by control and case groups of DISAs, show that there is a global index of difference of 1.41 in favor of the case DISAs. In the disaggregate, the case DISAs also achieve better indices in three of the five processes (reception, preparation and delivery, administrative operations). No differences were found in the two remaining processes (location and physical control and conditions, equipment and infrastructure). It should be noted that the project did not develop any intervention in these areas. Neither the case nor the control group of DISAs achieved an acceptable rating. The results are presented in the table below:

Table 14 Compliance with Warehouse Operation Criteria
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Item	Compliance with warehouse operation criteria		Index of Difference
	Control DISA	Case DISA	
Reception	27.78%	66.67%	2.4
Location and physical control	33.33%	33.33%	1.0
Preparation and delivery	33.33%	66.67%	2.0
Administrative operations	55.56%	77.78%	1.4
Conditions, equipment and infrastructure	80.00%	80.00%	1.0
Average	46.00%	64.89%	1.41

In general, there was significant improvement in some supply chain processes in the DISAs participating in the project, particularly in procurements, warehousing and distribution. Nevertheless, processes such as selection and cataloguing, programming and management still require significant improvement. In the case of the control DISAs, progress was insufficient, with poor indicators in logistic operations and the use of documented criteria. The table below details the results obtained.

Table 15: Results of the Project Intervention
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

		Results of the project intervention	
		Significant	Not significant
Change in processes	Improvement to acceptable or better levels	- Procurements - Warehousing - Distribution	
	Improvement but not to acceptable level	- Planning and programming	
	Slight or no improvement		- Selection - Integral management

Some processes achieved acceptable levels whereas others did not although the change was significant. Other processes did not change significantly, suggesting that the project intervention did not have a major impact on those areas.

In the analysis of each stage of the supply chain, four of the six processes in the case DISAs obtained better results, which are attributed to project activities, as the table below shows:

Table 16: Contribution of the Project by Supply Chain Process
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

Supply Chain Process	Project Contribution
Selection and cataloguing	Insignificant differences between case and control DISAs, limited project impact
Planning and programming	Significant differences between case and control DISAs, significant project impact
Procurements	Significant differences between case and control DISAs, significant project impact
Warehousing	Significant differences between case and control DISAs, significant project impact
Distribution	Significant differences between case and control DISAs, significant project impact
Integral management	Insignificant differences between case and control DISAs, limited project impact

Logistic operations

The intervention in logistic operations in the MOH supply chain produced results in two areas:

- Fulfillment of purchase orders.
- Medicine availability or stocks.

With respect to the results of fulfillment of purchase orders, there are no significant differences in fulfillment and timeliness, which is associated with the management of procurement procedures. These procedures are mainly the responsibility of the central office, which makes centralized purchases. They have not been effectively linked to the distribution process. In the handling of purchase orders, the area most closely associated with the project intervention, the case DISAs had better results. The table below lists the results for each of the proposed indicators:

Table 17 Results of Fulfillment of Purchase Orders, by DISA
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 – 2006

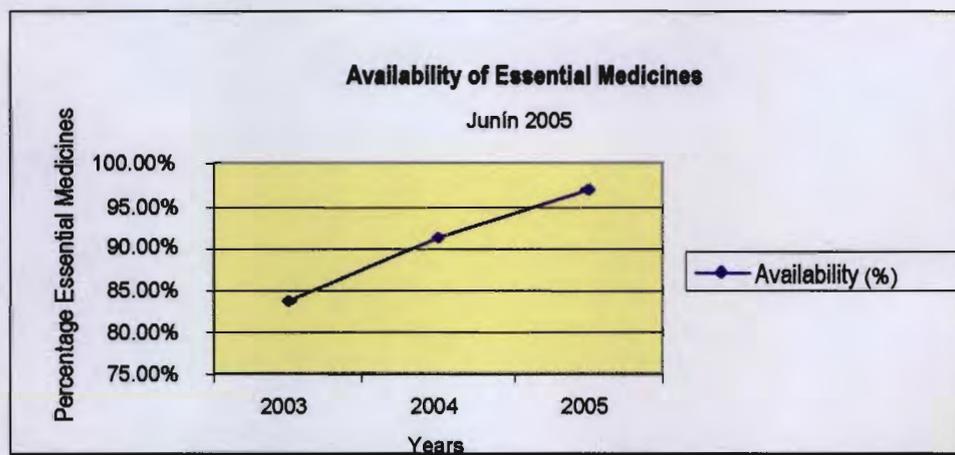
DISA	Indicator			
	Fulfillment (% Incompliance with purchase orders)	Unacceptable products (% of products)	Timeliness (% delayed purchase orders)	Registration quality (mistakes/ purchase orders)
Ancash	38.10%	0.00%	38.10%	1.48
Cajamarca	20.59%	7.64%	Not available	2
Average, group without intervention	29.34%	3.82%	38.10%	1.74
Ucayali (intervention)	30.77%	0.00%	30.77%	1.15

With respect to the availability of medical supplies or stock levels, results were measured in the following areas:

- Availability of essential medicines
- Medicine stock levels

The availability of essential medicines was evaluated in the Junín DISA, which is one of the DISAs participating in the project. The study found a clear trend of increasing availability of stocks in Junín, and a high level of availability, above 80 percent in 2003 and above 95 percent in 2005, reflecting the good performance of this indicator in this case DISA during the period, as the figure below demonstrates:

Figure 5



The analysis of the stock level, expressed in months of consumption, was based on the consumption and stock database for selected medicines to December 2005. The results demonstrate that, on average, the control DISAs maintained the highest stocks (Madre de Dios and Ancash) whereas the case DISA (Ucayali) maintained lower average stocks and a lower range. In reality, the range for Ancash and Madre de Dios is much higher if the stock items available for periods exceeding 12 months are included. Given that these three DISAs are all in difficult-access areas, it can be concluded that the Ucayali DISA is more efficient because it maintains a reasonable average stock. The table below details these results:

Table 18 Medicine Stock Level (Months of Consumption Available), with Availability up to 12 Months of Consumption, by DISA Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System, 2003 – 2006

Statistical indicator	Case DISA	Control DISAs	
	Ucayali	Ancash	Madre de Dios
Average (months of consumption)	2.61	4.50	5.29
Standard deviation	2.31	3.08	3.18
Range	9.19	11.00	12.47

Minimum	0.00	1.00	0.00
Maximum	9.19	12.00	12.47
Number of Items	116	177	91

The table below lists the number and percentage of medicines according to stock level expressed in months of consumption available, for both control and case DISAs. This information permits identifying the incidence of stockouts or overstocking. In the case DISA, there is a 20 percent availability at "zero," which means that there is a stock risk for those medicines, whereas the rest of the items have adequate stocks. In the case of the control DISAs, there is a clear tendency to maintain very large stocks (overstocking).

Table 19 Incidence of Number of Items, by Range of Availability
Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System,
2003 - 2006

Range (m/c months of consumption available)	Case DISA		Control DISA			
	Ucayali		Ancash		Madre de Dios	
	N° Items	%	N° Items	%	N° Items	%
No items m/c = 0	23	19.83%	0	0.00%	4	3.23%
0 < mc < 1	11	9.48%	11	3.72%	1	0.81%
1 <= mc <= 3	40	34.48%	66	22.30%	20	16.13%
3 < mc <= 12	42	36.21%	100	33.78%	66	53.23%
mc > 12	0	0.00%	119	40.20%	33	26.61%
Total	116	100.00%	296	100.00%	124	100.00%

CHAPTER III: CONCLUSIONS, LESSONS LEARNED AND CHALLENGES

1. DEVELOPMENT OF A NATIONAL CONTRACEPTIVE SUPPLY SYSTEM

The Contraceptive Logistics Project, which ended in 2002, led to a number of conclusions and lessons learned, which were valuable inputs for the development of the new project to support the implementation of the Ministry of Health's medicine and medical supply system. This section presents the main conclusions and lessons learned of the Contraceptive Logistics Project and the challenges posed for consolidating the contraceptive, medicine and medical supply logistics system.

1.1 Conclusions, Lessons Learned and Challenges of the Contraceptive Logistics Project

- ☑ The PRISMA outsourcing model worked well in Peru and would function well in countries with similar geography and communication constraints. The model ensured the adequate performance of the contraceptive logistics system nationwide and also built logistics expertise at the regional level. However, the outsourcing model has not built significant management capacity at the central level of the MOH.
- ☑ Therefore, it is necessary to continue with the institutionalization of logistics processes, in coordination with MOH personnel at all levels. The investment in training and supervision has been fruitful since it has institutionalized adequate logistics capacity at the intermediate level and in health care facilities. These levels have the capacity to manage the system without PRISMA's presence, as long as the commodities are supplied from the central level.
- ☑ Given that the MOH will develop the Integrated Medicine and Medical Supply System, it is important to hire an individual to oversee logistics at the central level. This employee should perform this duty exclusively to guarantee system management.
- ☑ To this end, it is important to review and adapt each of the processes, methodologies, instruments and other elements developed in the Contraceptive Logistics Project that serve as the foundation for the construction and development of the new integrated medicine and medical supply system of the MOH.

2. DEVELOPMENT OF AN INTEGRATED MINISTRY OF HEALTH SYSTEM TO SUPPLY MEDICINES AND MEDICAL SUPPLIES

2.1 Conclusions and Lessons Learned

- ☑ The projects **Contraceptive Logistics** and **Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System** have attempted to change an entire institutional system. While the projects have a limited duration, their activities were designed to achieve a sustainable systemic change that would permit improving the population's access to contraceptives and essential medicines over the long term.
- ☑ The project **Support to the Implementation of the Ministry of Health's Medicine and Medical Supply System** achieved positive results in the implementation of the SISMED in the DISAs where it

intervened, particularly in terms of the storage and distribution of essential medicines and in the supply chain processes of planning, procurements, warehousing and distribution.

- ❑ Notwithstanding the results produced by the project, the overall performance of the supply chain did not achieve the expected results because the system was not addressed as a whole. Qualitative information suggests that the high turnover of operating or executive staff, without the existence of mechanisms to transfer knowledge or its appropriation by the organization, creates high variability and limited consistency in the results, impeding knowledge permanence and process improvement. In short, the poor performance is due to the lack of a systemic approach, the lack of management attention and the absence of clear leadership to achieve effectiveness.
- ❑ In the area of capacity building, in coordination with DIGEMID, SISMED training modules and methodological guides were prepared. These materials are important tools for the institutionalization of processes at the national level and will permit staff involved in SISMED management to have access to proven, standardized training processes to be implemented in their services. In an effort to give continuity and sustainability to this process, the MOH should make their use mandatory.
- ❑ The DIGEMID is responsible for providing SISMED technical assistance developed by the project in DISAs not participating in the project. However, the DIGEMID has concentrated mainly on the use of the different versions of SISMED software.
- ❑ Significant advances have been made in the production of technical assistance materials and a virtual training program in medicine logistics is being developed by an institution of higher learning, which would permit continuity in training processes and access to training of personnel working in logistics management at the different levels of the system. As a complementary effort, it is important to strengthen the participation of the IDREH as a regulator of the human resource development process at the sectoral level with respect to SISMED technical assistance in the framework of the project. This would enable the profiles and contents to be formalized for all sector organizations in the short term.
- ❑ The technical assistance process developed reveals the weaknesses in the process to plan human resources at the regional and local levels. The lack of pharmacists and chemists limits the impact of technical assistance and requires prior training of the staff members responsible, who have varying levels of education.
- ❑ Initial progress has been made in designing a supervision proposal using a systemic approach for the SISMED that approaches the different components, processes and levels of system operation from an integral perspective. It is necessary to establish closer ties with internal SISMED users to better link the needs arising from service delivery with the processes of programming, procurement and supply of medical supplies and medicines. The supervision process can contribute to this if instruments are standardized and the results provide feedback to the entire system.

2.2 Challenges

- ❑ Given the specific sanitary and economic characteristics of medicines, a specialized organizational structure is needed for the integral management of the planning, organization, implementation and evaluation of the supply chain for medicines and medical-surgical supplies. In this intervention line, and taking into account the current context of political and organizational changes in government institutions, a national plan to strengthen the SISMED should be developed through interventions in DISAs, financed by DISA revolving funds, the Health Sector Reform Program (PARASALUD) and

external cooperation. It is not enough to provide training and supervision from the central level. It is also necessary to adapt experiences and build knowledge and skills to contribute to sustainability.

- ☑ To ensure the institutional sustainability of the supply system, offices responsible for the organizational design and planning of human resources in the DISAs and networks should consider creating positions at the different levels for personnel trained in the management of medicines and medical supplies.
- ☑ At the end of the project, there should be a **SISMED management training program** developed that is designed for at least two different audiences: DISA and health network staff. This requires revising profiles of skills in the framework of the decentralization process and the functions that correspond to each level with respect to the SISMED. The participation of local universities and institutes as program implementers is necessary to make these programs sustainable and to enable the academic program to be tailored to the concrete reality of the regional and local health situation, which could generate important synergies.
- ☑ The evaluation of the technical assistance process developed in the framework of the project should be improved by employing a systemic approach. This would make the project's contribution to SISMED results visible and would provide feedback to the training process. In addition, all technical assistance materials developed for DISAs in the project intervention areas should be disseminated for use by SISMED management. This material should be delivered in an organized, orderly fashion.
- ☑ The technical proposal to supervise the SISMED (guide and instruments) should be updated. These materials should be universally applied at the different levels and DIREMID teams and networks should strengthen their technical capacities for using them. Supervisory activities should always be a part of system management, especially in the implementation phases of the system. This would enable supervision to become a valuable tool for detecting errors and proposing improvements.
- ☑ The SISMED information system should be integrated with the central MOH, DISA and network system in an effort to reconcile data collected to avoid duplicating information in the data registry. This would also permit generating integrated information on the performance of the health system at each level.
- ☑ Regulations should be established for the mandatory use of SISMED and SIGA software at all levels of the MOH and in the DISAs. Although this recommendation may seem obvious, the evidence from the DISAs visited demonstrates that this software is not being used in many locations, in many cases due to a lack of knowledge and in others due to resistance on the part of personnel. As in all processes to implement systems, it is necessary to take into account the specific situation and technological capacities of each DISA, which means that the processes must be flexible. The goal is to have both systems adequately operating in all DISAs, networks, implementation units and health care facilities in the medium term.
- ☑ To improve the timeliness and quality of SISMED information, an information flow should be established that responds first to the information needs of the operational level and then to those of the DISAs and the MOH. The flow should include existing sub-systems (HIS, SIS, epidemiological surveillance, strategies, etc.), reconciling information, closing days, levels and delivery dates. This flow should be formalized in each DISA and should take into account the operational differences in each zone. In addition, to improve the quality of SISMED information, it is necessary for each level to formally and responsibly assume the process, from the information production units (health care facilities, warehouses and sub-warehouses) to the levels where the data are consolidated (data entry sites and networks).