

# **Experiences from the Field**

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## **Strategies for Skills Transfer in Supply Chain Management for Developing Countries**

Kieran McGregor  
Yasmin Chandani

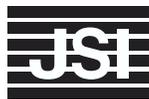


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November 1999



## **FPLM**

The Family Planning Logistics Management (FPLM) project is funded by the Office of Population of the Bureau of Global Programs of the U.S. Agency for International Development (USAID). The agency's Contraceptives and Logistics Management Division increases the awareness, acceptability, and use of family planning methods, and expands and strengthens the managerial and technical skills of family planning and health personnel.

Implemented by John Snow, Inc. (contract no. CCP-C-OO-95-00028-04), the FPLM project works to ensure the continuous supply of high quality health and family planning products in developing countries. FPLM also provides technical management and analysis of two USAID databases, the contraceptive procurement and shipping database (NEWVERN), and the Population, Health, and Nutrition Projects Database (PPD).

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## **Abstract**

In developing countries, international donors have traditionally provided contraceptives for family planning programs. With reduced financial resources and increased demand for services, donors and governments are looking for alternatives to donated products. Of critical importance is the transfer of appropriate supply chain skills to the governments and nongovernmental organizations that will manage these programs. Although these organizations can provide goods and services, they may lack the specific expertise to cope with the complexities of the contraceptive supply chain.

In Jordan, Mexico, and Malawi, all currently transferring logistics management responsibilities to national-level personnel, case studies were conducted to determine to what degree the supply chain management skills have been institutionalized. Trip reports and interviews with key personnel involved in logistics management provided the data. The degree of skills transfer was determined. The findings also provide certain steps in the process that should be followed to maximize institutionalization of supply chain skills. The conclusions offer insight into what factors to consider when supply chain management responsibility is transferred to developing country nationals.

**USAID**



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## Acronyms

AIDS	acquired immune deficiency syndrome
CBD	community-based distribution
CDC	Centers for Disease Control and Prevention
CDLMIS	Contraceptive Distribution and Logistics Management Information System
CHAM	Christian Health Association of Malawi
CHISU	Central Health Information System
CIS	Central Information System
CMS	Central Medical Stores
FPLM	Family Planning Logistics Management (project)
HMIS	Health Management Information System
IMSS	Mexican Social Security Institute
IPPF	International Planned Parenthood Federation
IUD	intrauterine device
JCLS	Jordan Contraceptive Logistics System
JI-IPEIGO	Johns Hopkins Program for International Education in Gynecology and Obstetrics
JSI	John Snow, Inc.
LIP	Logistics Improvement Plan
LMIS	Logistics Management Information System
MCH	Maternal and Child Health
MOH	Ministry of Health
MOHP	Ministry of Health and Population
NFPC	National Family Planning Council
NGO	nongovernmental organization
PHN	Population, Health and Nutrition
RH	reproductive health
RHU	Reproductive Health Unit
SDP	service delivery point
STI	sexually transmitted infection
TA	technical assistance
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development

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## Executive Summary

Historically, international donors have provided contraceptives for family planning programs in developing countries. Faced with decreasing financial resources and increasing demand for services, donors and governments are exploring alternatives to donated products for family planning programs. A key consideration is to ensure that appropriate supply chain skills are transferred to the governments and nongovernmental organizations (NGO) that assume management of these programs. Although governments and NGOs can provide goods and services, in many cases they lack the specific expertise required to address complexities of the contraceptive supply chain.

Case studies were conducted to determine to what extent supply chain management skills have been institutionalized in three countries—Jordan, Malawi, and Mexico—that are undergoing transfer of logistics management responsibilities to national-level personnel. Data were gathered through trip reports and interviews with key personnel involved in logistics management. In addition, to presenting the degree of skills transfer, the findings indicate certain steps in the process that should be followed to maximize institutionalization of supply chain skills. The conclusions provide insight into the factors to consider in transferring responsibility for supply chain management to developing country nationals.



## Background

The quality of family planning programs is directly related to the continuity of contraceptive use (UNFPA 1994). Family planning programs depend on the logistics system to provide an uninterrupted supply of contraceptive products. When the supply chain fails, users are unable to obtain the contraceptives they need or want. An erratic supply of contraceptives may result in the loss of credibility and eventual failure of the family planning program. Consequently, ensuring continuous availability of contraceptive products at the client level has been recognized as a key contributor to increased usage in family planning services (Ngallaba et al. 1994).

International aid agencies or development banks currently provide the vast majority of contraceptives and logistics system support for family planning programs in developing countries. The United States Agency for International Development (USAID) has been a leader in logistics system support for the past 30 years, with the United Nations Population Fund (UNFPA) increasing its participation during the past five years. Recently, other donors have started to recognize the importance of protecting their investments in commodities by ensuring that family planning program managers have sufficient skills to enable them to manage all the products they receive. Consequently, the provision of donated contraceptives is increasingly accompanied by investments aimed at strengthening the national logistics capacity for family planning programs.

According to the most recent annual report of worldwide population expenditures from USAID, since 1995 contraceptives and logistics continued to receive the second largest share of USAID support, after service delivery (FPLM 1998). In FY 1997, contraceptives and logistics accounted for 12 percent (\$54,589,920) of the agency's worldwide population expenditures, as shown in figure 1 (ibid.). The true logistics investments are probably higher because logistics components are part of many of the other activity types (for example, policy, evaluation, training, and others).

One reason for the increasing attention that is paid to logistics is the recognition of the benefits—cost savings, cost-effectiveness, and improved management. In the private sector, the management of logistical activities has become an important element of corporate strategy and has helped sustain a competitive advantage for many firms (Coyle et al. 1992). It has been estimated that, in the private sector, investments in supply chain management range from 15 to 25 percent of total commodity costs (Attwood et al. 1992; Balakrishna 1995). Many donors are beginning to recognize that applying some of the logistics system practices to the public sector can increase effectiveness and efficiency in the same way.

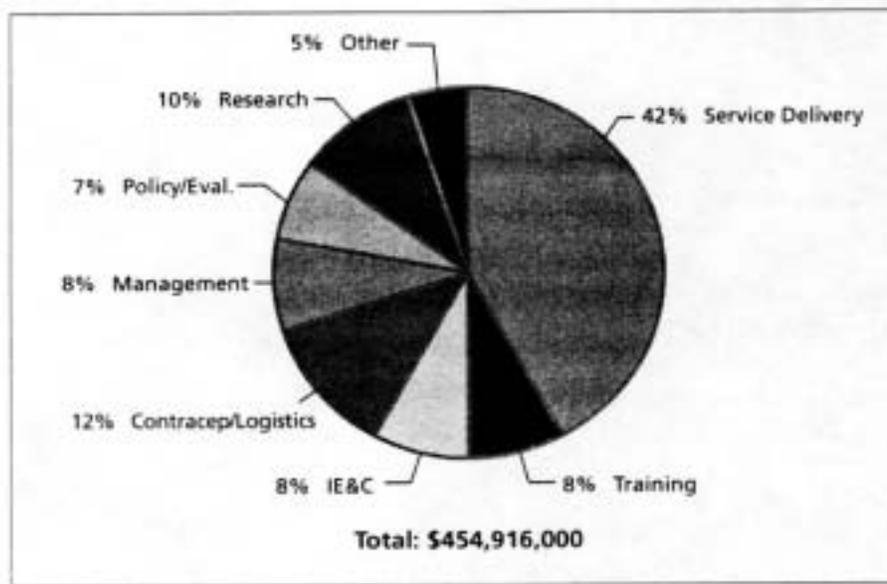
In an era of increasing scarcity of resources, measuring the impact of logistics system investments becomes even more important. Some major donors are beginning to phase-out of providing free contraceptives, which is often followed by the phase out of logistics system support. In an environment where countries will be expected to fund their own contraceptives, effective and efficient management of these supplies becomes more crucial. To ensure that family planning programs remain operational and effective in the event of withdrawal of commodity and logistical management support, it is critical to ensure effective transfer of supply chain management skills to national counterparts. This capacity building will promote national independence of the contraceptive logistics system and may contribute to increasing the visibility and importance of family planning programs within a country.

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However, it is not a simple process to demonstrate the actual or potential increase in effectiveness and efficiency for family planning programs in the developing countries that implement logistics systems. In the early stages of Family Planning Logistics Management (FPLM), emphasis was on doing the work, not measuring the impact. Substantiating increased effectiveness is further hampered by limited documentation of the relationship between investments in logistics support and the impact on family planning program outcomes, such as contraceptive availability.

Figure 1.  
USAID Worldwide Population Expenditures by Type of Activity,  
FY 1997



Although neither USAID nor UNFPA provides separate figures on logistics expenditures, data are available from the FPLM project, which has been providing logistics support in more than 30 countries for approximately 13 years. In 1997, FPLM provided technical assistance (TA) in contraceptive supply chain management in about 25 countries, with total expenditures of about \$8 million.

As with documentation of impact on efficiency and effectiveness, few written records document how thoroughly logistics management skills have been institutionalized in developing countries. To target TA more effectively for contraceptive supply chain management, it is desirable to measure and document the extent to which logistics skills have been transferred and institutionalized.

Specifically, two things are needed: (1) records from the transfer process of “lessons learned” and (2) additional written evidence of ways to maximize institutionalization of supply chain management skills in developing countries. One of FPLM’s current initiatives is to produce documentation to provide a clearer indication of the most effective strategies for logistics system capacity building. Eventually, the documentation may also enable donors to better plan exactly when and how TA in logistics can and should be phased out.

## Objective

This report draws from FPLM's 13 years of experience in providing supply chain management skills to developing country family planning programs. We will examine three countries, each with different levels of success in establishing functioning logistics systems, and each at a different stage of transferring logistics management responsibilities to national-level personnel. We discuss the following question in this report:

What are the key elements required to transfer supply chain management skills to governments/NGOs to ensure institutionalization of these skills and the effective functioning of contraceptive logistics systems?

## Approach

Information was gathered through a literature review, primary and secondary data collection, and in-depth, key informant interviews. The advantage of this approach was its cost-effectiveness, which allowed the researchers to draw relevant conclusions using existing literature and institutional knowledge.

Background data were gathered through a literature search focused on public sector logistics. Supplemental qualitative data were collected from consultant trip reports and key informant interviews with in-country personnel and logistics management consultants. Quantitative indicators were derived from published and unpublished documents, as well as directly from program implementers. The list of indicators was based on measures established by the Evaluation Project (Bertrand et al. 1994), and on those developed from FPLM institutional experience.

Three countries—Jordan, Malawi, and Mexico—were chosen as case studies. Selection criteria included geographic diversity, the availability and accessibility of existing data, and the extent of supply chain management skills transfer to date.

The approach had several limitations. Minimal attention was paid to the actual impact of donor withdrawal of contraceptives on product availability when the withdrawal occurred. In addition, the extent of institutionalization of skills was assessed with limited consideration of external factors that may have affected transfer of these skills, such as health sector or civil sector reform. This report establishes an association between improvements in logistics system functioning, as measured by the indicators, and transfer of supply chain management skills to family planning program personnel. However, no attempt is made to demonstrate that the improvements are evidence of institutionalization of these skills. Finally, because the three countries have completely different information systems, the available data used to analyze the results and draw conclusions were not always standardized.

## Developing an Enabling Environment for Transfer of Logistics Skills

The information gathered from the sources mentioned earlier in this report identified an approach that can and has been taken to ensure that supply chain management skills are effectively transferred to host-country personnel in family planning programs. Institutionalizing logistics system capacity within a country has been successful when transfer of skills in the eight essential areas of logistics management has occurred within a strategic framework, based on the following three elements:

- Establishing a country-specific logistics system and Logistics Management Information System (LMIS).
- Ensuring local ownership of the system.
- Promoting political support and buy-in for logistics.

In addition, institutionalization of logistics system capacity was always included as a component of implementation planning. From the start of the process in the three countries, plans were made for eventual complete ownership by the host country institution. Reliance on donated commodities and TA was viewed as a short- or medium-term strategy, and host countries were discouraged from delegating the logistical responsibilities to donors.

Promoting political support might sound like an obvious priority focus area, but, in reality, the process for transferring logistics system skills tends to follow a pattern where policymakers are brought into the process later rather than earlier. Frequently, policymakers do not know what a logistics system can do for them and, thus, do not understand the need to develop such a system. By first implementing the system and demonstrating its effectiveness, it is often easier to stimulate and nurture political support for logistics on an ongoing basis.

Before exploring the specific “lessons learned” from each of the country case studies, it is necessary to first examine the three components of the strategic framework and establish their importance in ensuring institutionalization of logistics management skills.

## Establishing a Country-Specific Logistics System and LMIS

One of the most important concepts in developing logistics systems is to use an organized framework to design a system that has the flexibility to change as the program environment changes. In addition, the overriding principle of logistics system design is that the system must be simple. It should not increase bureaucracy, but should obtain and move supplies, in a timely fashion, to the places where they are needed, at a reasonable cost (Owens et al. 1996). Logistics data elements are few and easy to define and understand, which facilitates the design of simple systems. However, to ensure effective operation of the system, reporting rates must be high and the reports must be correct.

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<sup>1</sup>See appendix A: The Components of Contraceptive Logistics System Support

The LMIS is the driving force behind the logistics system: the product flows down the logistics system in response to lower-level feedback about consumption and stock levels. An efficiently managed flow of information is at the heart of any efficiently managed flow of materials (Christopher 1994). Information from an LMIS is used to make key management decisions at all levels of the supply chain. Unless the LMIS provides complete, accurate, and timely data, the supply chain cannot operate efficiently or effectively. Logistics systems that lack an effective LMIS are commonly characterized by stockouts, expired stocks, and wastage (FPLM 1995).

Effective LMISs are important because they provide data to help managers improve the system by—

- Reducing commodity costs through minimizing loss, damage, and waste while correcting supply imbalances.
- Providing better customer service through continuous feedback on the number and location of customers being served.
- Enhancing program management by enabling continuous program monitoring, optimal resource allocation, and improved supervision and quality.
- Informing policymakers by providing decision-making data.
- Allowing greater control of contraceptive flows and accountability for the use of donated contraceptives.

The LMIS framework used by FPLM identifies the key data elements that need to be collected, but is flexible enough to be customized to respond to the local management needs of each country. Data elements can be extracted from existing forms, and data flow should mirror existing procedures and policies. Although it is essential to use what exists, it is also important to make sure the logistics system or LMIS works in the country setting, because the system will be accepted and used if there is a high level of satisfaction (*ibid.*).

Systems can be manual or automated, or a combination of the two. If a system is developed, it must be locally designed and adaptable. In many countries where FPLM has worked, automated systems were successful when a country-specific software application was developed rather than a single standardized application (*ibid.*). The local design and specificity to the country ensures that the data and LMIS will be used continually, and local expertise is readily available to address technical problems that arise.

The rapid flow of data from a well-designed LMIS is an important factor. Policymakers are much more likely to invest in a system that produces timely and appropriate data that can be used for effective decision making. Similarly, timely feedback of data increases the stakes for the health officers who collect data, because it conveys to the officers that their work is being used and is viewed as an important link in producing results.

### Ensuring Ownership of the Logistics System

Designing and implementing a country-specific system does not guarantee its adoption or use. Within the overall logistics system, a locally supported information system is essential for data utilization. If program managers, policymakers, and lower-level staff do not support the idea of an LMIS that produces data for decision making, it is highly unlikely that the information system will become an integral part of family planning program operations. From the beginning, involving participants from all levels of the system in the design process is a good strategy for promoting ownership. When the personnel in the host country help design and create the system, they are more likely to feel responsible for its effectiveness.

After a system is designed and documented, it must be disseminated. A core group of national trainers can be established to disseminate the system and promote feelings of ownership (Proper et al. 1993). A training group can develop and maintain a national training strategy and create training responsive to the country's needs. Developing and maintaining a central training team within the country has been shown to develop a high level of institutionalization requiring only a moderate level of effort (ibid.).

Ownership can exist at two levels: individual and organizational. The degree to which ownership of the logistics system is either individual or institutional plays a large role in determining the extent of institutionalization that can occur. In the short term, individuals who take a personal stake in ensuring the success of the system are often the reason that new systems are rapidly implemented and adopted. However, many developing countries experience rapid staff attrition and transfers at all levels of the health system. Maintenance of the system may be jeopardized when certain individuals depart.

In the long term, if supply chain management skills are to be institutionalized, it is vital for organizations to commit to the support of logistics, particularly because both contraceptives and TA for management of the supplies tend to be provided by donors. Ministry of Health personnel should be encouraged to play an active role in the design, development, and implementation of logistics systems to ensure that the system becomes a government entity instead of a donor project.

### Promoting Political Support and Buy-In for Logistics

Organizational commitment is more likely if a wide recognition of the importance of logistics exists. Supply chain management has not traditionally enjoyed strong policy-level support in the public sector in developing countries. In the past, logistics has not always been acknowledged as an important component of family planning programs, either by governments or many donors. The emphasis is often placed on increasing demand for products, but this should be accompanied by recognition of the supply side complexities. If resources are being channeled into increasing demand for contraceptive commodities, a well-functioning supply chain is essential.

Policy support for supply chain logistics is vital for ensuring a reliable supply of contraceptives and for the long-term sustainability of the contraceptive supply chain. It is important to realize



that policy-level support for logistics often needs to be established and nurtured since policy-makers and policies are in a constant state of flux as family planning programs mature.

After policymakers' support for supply chain logistics is assured, there is more incentive to make policies that support logistics improvement efforts. Several strategies can be combined to bring the profile of logistics to the attention of high-level policymakers, including—

- Regular meetings with key policymakers and program officers.
- Presentations at conferences, workshops, and other formal meetings.
- Creation of logistics seminars and workshops for policymakers and program officers.

Finally, within every organization, there are those “who make things happen.” Identifying an appropriate individual with sufficient decision-making authority to serve as a “logistics champion” will create a more proactive approach to supply chain management within the organization. A receptive or supportive policy environment includes a firm commitment by policymakers and senior program managers to implement supply chain improvements geared toward meeting customers' needs. Policies should include commitments to invest both financial and personnel resources to support management change, in general, and logistics improvements, in particular.

### Assessing the In-Country Logistics Systems

The case studies suggested that transfer of supply chain management skills to family planning program personnel had occurred in all three countries. However, no quantitative indicators exist to measure the degree of institutionalization or corroborate the findings.

In addition, in two cases, provision of logistics system support has not ended and, in the case of Mexico, the logistics system support has ended only recently. A long-term assessment of institutionalization would require a wait of several years to confirm the conclusions.

Nonetheless, in the absence of a quantitative measure for institutionalization of logistics skills, it is still possible to assess the performance of the logistics system using indicators established by the Evaluation Project (Bertrand et al. 1994) and developed from the FPLM experience. Although these do not directly measure transfer of supply chain management skills, they do provide an indication of how well the logistics system is performing. No attempt was made to link performance of the system with transfer of skills. However, measuring the logistics management capabilities of national-level personnel provided an indication of the success of logistics system support to date.

Following are the indicators used to assess the system:

- Percentage of key personnel trained in contraceptive logistics—personnel with “significant responsibility for the procurement, storage, distribution, and/or dispersment of contraceptive commodities” (ibid.).
- Percentage of contraceptive stockouts in health facilities—the percentage of service delivery points (SDP) that encountered a stockout of any method/brand during the past 12 months.
- Percentage of facilities that provide reports on a regular basis—assesses the proportion of facilities that send reports on either a monthly or quarterly basis, but does not measure the quality (accuracy or completeness) of the reports.
- Capacity for in-country logistics personnel to conduct their own forecasting exercises without external assistance—often, in the early stages of logistics TA, requirements estimation is conducted by or with the assistance of external consultants.
- Documentation of the logistics system—measures whether written guidelines about the policies and procedures of the logistics system exist at each level.
- Inclusion of logistics curricula in national training institutions.

A separate logistics training strategy is a good short-term method for transferring supply chain management skills. However, if logistics is to become an integral part of the service delivery system, including logistics curricula as part of the qualification process, health personnel can play a key role in ensuring institutionalization (Proper et al. 1993).

## Country Case Study—Jordan

### Background

In 1996, the Jordanian Ministry of Health (MOH) requested that a contraceptive logistics system assessment be conducted. The MOH was concerned that recent disruptions in contraceptive supply would undermine gains in its family planning programs, and it identified the need to improve the logistics system as a high priority (Hawkins et al. 1996). The assessment highlighted the following challenges:

- A weak logistics system that lacked an identified individual responsible for overseeing the contraceptive distribution system and ensuring its effective management.
- Excellent reporting rates at the SDP level, with 100 percent of Maternal and Child Health (MCH) centers submitting reports, but no reporting from the directorate level. All reports were lacking key logistics data elements, which affected forecasting and other key logistics management efforts.
- A perception by health personnel that the logistics system was informal and lacked guidance or protocols.
- Severe stockouts and confusion about the ordering process for contraceptive supplies. The shortage of methods caused severe setbacks in the family planning program's growth, which had been increasing for several years (*ibid.*). In 1995, intrauterine devices (IUD) were the most severely affected method, with a 63 percent decline in insertions from the previous year (*ibid.*).

The recommendations of the assessment included a suggestion that USAID provide a combination of short- and long-term TA to Jordan to develop and implement a contraceptive supply system. The mandate of the long-term resident advisor was to “work in partnership with the senior logistics officer [not yet recruited] and for all tasks [would] be responsible for transferring the necessary skills and technology to the senior logistics officer to ensure sustainability.” FPLM's presence began in Jordan in late 1996 with the placement of a resident advisor.

### Developing an Enabling Environment for Effective Logistics Skills Transfer Establishing a Country-Specific Logistics System and LMIS

The logistics procedures and forms for the SDP and directorate levels for the Jordan Contraceptive Logistics System (JCLS) were designed by Jordanian nationals, with the assistance of the FPLM resident advisor. During the first quarter of 1997, FPLM and the MOH conducted a comprehensive situation analysis for all levels of the system, which was designed to elucidate the procedures for current operations and the desired changes by the stakeholders. After the analysis was complete, a one-week design workshop was held, and invitees included health personnel from every level, including midwives from the SDP level and representatives from the International Planned Parenthood Federation (IPPF) affiliate and the MOH Supply Directorate. The results of the situation analysis were used to develop the JCLS to ensure that it best met the needs identified by the MOH personnel. The participants of the design workshop agreed on the design of the LMIS and the new inventory control system. Recommendations



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were presented to and approved by the policymakers. Step-by-step procedure manuals were also developed for the SDP and the directorate levels in the system.

After the new JCLS was approved by policymakers in the MOH, a training strategy was developed and also approved by the MOH. As part of the strategy, a core group of MOH personnel was selected as logistics trainers, including the senior logistics officer and her assistant. This group was trained using both logistics and methodology training, and the administration of a competency test to ensure quality control. The feedback from the group of 13 trainers was incorporated into the final version of the manuals and curricula for training other MOH personnel.

The JCLS has been operational since its introduction, and the health personnel identified it as being an important factor in helping decision makers. It is also used to provide feedback to users to enhance their future performance. An important innovation that was instrumental in enabling policymakers to provide feedback to personnel at lower levels was the computerization of all the reports coming in from the directorates and their SDPs. While reporting from these levels was traditionally very high, the aggregation of data at the central level was done manually, a slow and often inaccurate process. To ensure continuous monitoring of the entire logistics system from the central level, between 1997 and early 1999, a computerized Central Information System (CIS) was developed.

The CIS enhances the effectiveness of the JCLS. When the JCLS clinic reports are sent to the central level and entered into the computer, the CIS produces reports that the senior logistics officer uses when contacting the directorates. These reports identify clinics that have reporting problems: inaccurate or incomplete JCLS reports and logistics problems, such as stock imbalances or an unusual number of losses or adjustments. The directorate is notified about the problem, and the supervisor of the nurse/midwife at that clinic can pinpoint the source of the problem and work with the health worker to resolve it. The central level then follows up to see if problems were corrected. This continuous monitoring and feedback, using the CIS, has demonstrated to the directorates and the SDPs the importance the MOH has placed on procedures for the JCLS.

Feedback to the lower levels is also provided directly from central-level personnel. In addition to using the CIS to monitor the system, the senior logistics officer and her assistant regularly visited the field. Each directorate and a target of 25 percent of the SDPs are to be visited once a year. After the visits, all midwives in a directorate meet and are given positive and corrective feedback, based on problems identified by the visit and the CIS.

## Ensuring Ownership of the Logistics System

Based on the recommendations from the 1996 system assessment conducted by Hawkins and Binzen, with the strong urging of the USAID mission, the MOH agreed to recruit a Senior Logistics Officer to work with the FPLM Resident Advisor. This crucial step ensured MOH support of the logistics system from the beginning. The resident advisor wrote a detailed job description for the senior logistics officer, and the selection of a pharmacist gave the position credibility from the outset. The advisor was a coach and trainer to the senior logistics officer, who, in turn, was involved in all phases of the implementation of the new JCLS. As soon as

possible, all day-to-day functioning of the logistics system was turned over to the senior logistics officer. This vital step ensured that the running of the JCLS would be seen as an MOH function, not a project activity.

Organizational support was available throughout the process. The MOH requested assistance because it recognized the logistical limitations of its family planning program. From the beginning, FPLM elicited as much input as possible from MOH officials to ensure that the system would address the needs of the MOH. The way the situation analysis was conducted gave every health directorate director the opportunity to be visited and to provide support for improvements to the system. The full involvement of the MOH in the design workshop, and the ongoing emphasis on the Jordanians development of the logistics system, also played a key role in ensuring continued organizational support for the system. Training on the new system could have started earlier, but it was more important that the MOH first approve it as the official system.

### **Promoting Political Support and Buy-In for Logistics**

At the onset of the project, the MOH demonstrated its commitment by creating a contraceptive logistics unit composed of three individuals. By creating the position and title of Senior Logistics Officer, it emphasized the importance of the position and gave the officer the authority to operate effectively. One of the two positions was an assistant, recruited mainly for data entry, enabling the senior logistics officer to focus on managing the system. A third position, warehouse manager, completed the new logistics unit.

Since the Jordan project began, a concerted effort has been made to increase the visibility of the contraceptive logistics activities and the senior logistics officer. Several high-profile policy presentations have been given, with the senior logistics officer taking a leading role. Her confidence with the content of the logistics material and her ability to respond to questions from senior MOH staff, with the presentation of useful and appropriate data, raised the visibility of logistics in general, and her position and the unit in particular. She has gained the necessary level of respect and credibility among health officers at other levels in the system.

Political support for logistics became stronger after the policymakers saw the results of implementing a logistics system, including improved functioning of family planning programs, demonstrated by continuous contraceptive availability. The official recognition of the senior logistics officer as being in charge of all contraceptive supply issues shows the high level of acceptance of the system. The warehouse manager for contraceptive supplies at the central level will continue to work full time; an attempt is being made to officially make the assistant logistics officer's position full time. By the end of 1999, the senior logistics officer is expected to be the official supervisor for the assistant and warehouse manager.



### Assessing the Logistics System Training

By the end of 1998, 99 percent of the key logistics personnel had been trained. The training, held from February to August, included three directorate-level sessions of six days each and 26 health center—level sessions of five days each. In addition to training 24 trainers, a total of 476 personnel were trained at both directorate and health center levels. By the end of 1998, personnel from all 21 directorates had received training, with an overall pass rate of 98.3 percent. In 1999, three additional events were offered for untrained and new personnel.

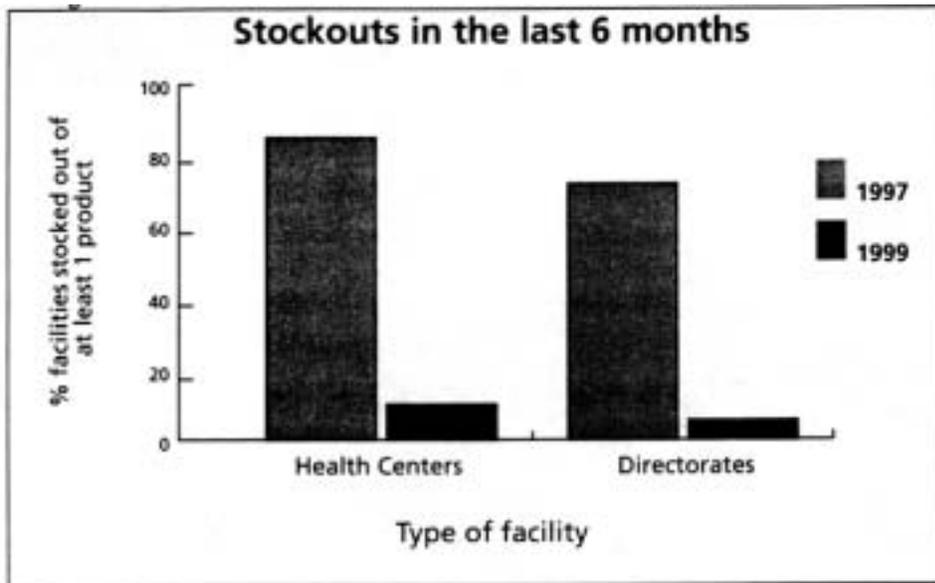
An evaluation conducted from August to October 1999 revealed that of those trained at the directorate level, 78 percent were still in place. More than 99 percent of the doctors, nurses, and midwives trained in logistics were still working at SDPs within the directorate.

Comparing the data collected as part of the national monitoring trips in 1999 with data gathered during the situation analysis, it is obvious that training had a measurable impact on improving the contraceptive logistics situation in Jordan. The assessment of storage practices in 1999 shows that no storage facilities had contraceptives with chemicals or insecticides, compared to 25 percent of health centers and 16 percent of directorate facilities in 1997. Moreover, in 1999, 100 percent of SDPs had adequate storage conditions, including terms of protection against water leakage, excessive temperatures, and direct sunlight.

### Stockouts

Stockout data were gathered as part of the situation analysis conducted prior to implementation of logistics support in Jordan. This enabled a comparison to be made of contraceptive availability after implementation of a logistics system and the JCLS (see figure 2). The 1999 figures show significant improvements, with only 3.7 percent of health centers stocked out of a product at the time of visit in 1999, compared to 25 percent in 1997. Directorates showed a greater improvement, with no stockouts in 1999.

Figure 2.  
Contraceptive Stockouts at Health Centers and Directorates in Jordan dunn Previous Six Months



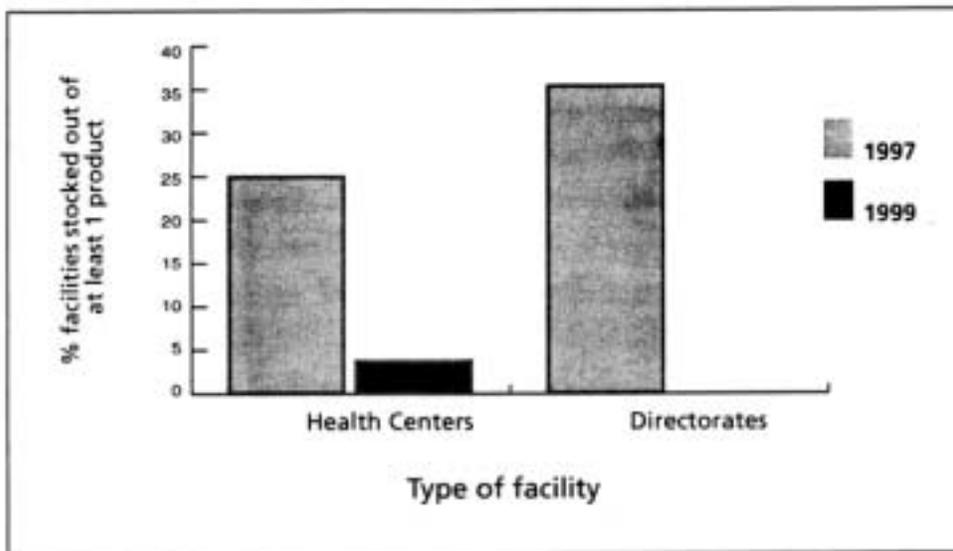
## Reporting

The system in Jordan was designed to enhance timeliness of reporting. Resupply at the SDP level only occurs when reports are delivered. Consequently, there is 100 percent reporting from all the MOH health centers and more than 98 percent reporting from all the SDPs participating in the system (see figure 3).

## Experiences from the Field

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Figure 3.  
Contraceptive Stockouts at Health Centers and Directorates in  
Jordan at the Time of Site Visit



## Forecasting

The senior logistics officer and USAID project officer have both been trained in forecasting and have participated in forecast preparation during the past two years. Currently, the senior logistics officer is able to prepare national forecasts with some assistance. It is anticipated that before logistics system support ends in 2000, this individual will be able to prepare the forecasts without external assistance. Although transfer of forecasting skills might not be possible in such a short time in another country, preparation of forecasts in Jordan is less challenging given the high quality of reporting and the computerized CIS. In addition, forecasts are updated quarterly, which gives the senior logistics officer more exposure to the exercise than would be the case in most countries, where forecasts are updated only once or twice a year.

## Documentation

Step-by-step manuals documenting procedures for the system exist at all levels. The manuals are used to answer routine questions from health staff and to train new personnel. The central operations manual has been compiled recently and is undergoing final revisions by the senior logistics officer and the logistics officer. There is also a detailed manual explaining the use of the CIS.

## University Curricula

The senior logistics officer is engaged in preliminary discussions with the midwife and nursing schools about incorporating the logistics training materials into part of the schools' national curricula.

## Country Case Study—Malawi

### Background

Malawi has received logistics technical support since the late 1980s. Until 1995, however, support was limited to assisting the family planning program in forecasting their annual contraceptive needs and placing orders, and to exposing health personnel to the importance of logistics. In 1995, TA targeted at developing and implementing a standardized logistics system in Malawi began with the design of the Contraceptive Distribution and Logistics Management Information System (CDLMIS).

Prior to the design and introduction of the CDLMIS, no standardized logistics system existed in the country, and a wide variety of methods were used at all levels to determine the quantities of contraceptives to order and/or issue (Thompson et al. 1997). Many of the problems expected in the absence of a system were present: frequent stockouts, irregular ordering, and lack of inventory control.

Public sector family planning services in Malawi are provided mainly through the Reproductive Health Unit (RHU) of the Ministry of Health and Population (MOHP) (more than 50 percent) and the Christian Health Association of Malawi (CHAM) (about 33 percent). Another key player has been the National Family Planning Council (NFPC), a wing of the ministry that served, until August 1999, as a coordinating body for family planning activities conducted by RHU, CHAM, and NGOs. Although much of the training focused on health personnel at the MQHP, members from CHAM, NFPC, and the Central Medical Stores (CMS) and Central Health Information Services Unit (CHISU) were all included in the design workshop and in developing and implementing the national training strategy.

## Developing an Enabling Environment for Effective Logistics Skills Transfer

### Establishing Country-Specific Logistics System and LMIS

In 1995, a design workshop was held to develop a standardized logistics system throughout the country. Participants were health personnel from all levels, including the SDP. Although there was some resistance to including clinic staff in a workshop when the output was to be policy decisions, the benefit of incorporating input from personnel who would actually be using the system was soon apparent.

Several factors combined to ensure that the design workshop created a logistics system specific to Malawi's needs. The first was that the design workshop also included a condensed but in-depth orientation to the principles of supply chain management, so the majority of participants who were unfamiliar with these principles could participate with the same basic knowledge and communicate using a common logistics language. The second advantage was that one participant from each of the three organizations—RHU/MOHP, CHAM, and NFPC—had received in-depth training in logistics management. Consequently, they were able to apply the theory and skills they had in managing supply chains to the design of their own system. This local expert-



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ise helped create a system built on existing procedures that “fit in” to the maximum extent with the routines of health personnel, while simultaneously ensuring that the system would work for supply chain management. Given the non standardized nature of the system, all the forms were completely redesigned, although ordering patterns were not fundamentally altered.

An important result of the CDLMIS development process was that it helped form a connection between the family planning and CMS personnel. Prior to the design workshop and subsequent training rollout, there was no coordination between the family planning service provider and pharmacist, both of whom play separate but crucial roles in logistics. However, both were trained together and, under the new CDLMIS, work closely together to manage supplies. Another important result of the training was establishing the idea of using information for decision making. Prior to the intervention, there was a disconnect between information gathered and ordering. Ordering was not done systematically and was not based on information about needs. The training helped make this connection, enabling users to see the benefits of using the information from the CDLMIS to place orders.

One flaw of the design workshop was that although central-level personnel were invited, little emphasis was placed on ensuring that there was a system in place for them to aggregate and analyze the information they were given. The assumption was that the lack of available data prevented central-level decision makers from using data to make supply chain management decisions. Reasoning was that after data reached the decision makers via the newly established system and LMIS, the data would automatically be used for decision making. This did not happen for several reasons explained below, and it provided a valuable lesson for future design and implementation of logistics systems.

One major limitation of the logistics system in Malawi is the lack of dedicated resources within the RHU to systematically analyze and aggregate CDLMIS data. There is a small unit but it is inadequate to fulfill the necessary logistics functions at the central level.

Another reason for data not being used at the central and regional levels is that during the design workshop, the assumption was made that Regional Family Planning Coordinators would be willing to complete the necessary forms crucial to maintaining the information flow for the CDLMIS. However, this did not occur, primarily because the importance of the logistics system and CDLMIS was not apparent to personnel at this level. Given the coordinator’s high placement in the RHU/MOHP, data calculations and form completion was considered a responsibility for a lower-level person and data at this level were lost. However, a combination of two things helped overcome this limitation: (1) the CDLMIS was redesigned because the health system was decentralized, causing information to bypass the soon-to-be-disbanded regions; and (2) the visibility and importance of logistics grew to the point where health personnel began to appreciate the necessity of completing forms and reporting in a timely fashion.

Despite these apparent bottlenecks at the central level, the CDLMIS has helped improve the contraceptive supply situation in Malawi. A Pathfinder/World Bank study in December 1997 concluded that “CDLMIS has already achieved significant gains in contraceptive availability” (Pathfinder International 1998). Since then, contraceptive availability has continued to improve in Malawi.

## Ensuring Ownership of the Logistics System

An element of the Malawi experience that contributed significantly to Malawian feelings of ownership of the system relates to the continuity of individuals involved in the system design and implementation. Each of the institutions involved in family planning in the public sector—RHU/MOHP, CHAM, and NFPC—were very careful to identify individuals who would be involved in the system at the time of the design workshop. Thus, the same individuals who designed the system have remained an integral part of the system. They were involved in the training curriculum design and implementation of the entire logistics system and LMIS. The fact that they have been able to observe the results of their work has contributed to their feelings of ownership.

Organizational commitment exists partly because of the combination of the commitment from each of the three organizations. It has grown as the logistics system has demonstrated visible improvements and results. The low level of commitment at the beginning was partly due to each organization's lack of experience with logistics. The individuals in question were not aware of what was needed to establish an effective logistics system or the benefits that could result from logistics investments. Once the benefits of logistics improvements were observed, the estimation of supply chain management skills increased tremendously, as did demand by key partners for logistics improvements. As an example, although a logistics subcommittee was established prior to 1995 to address logistics problems, it has only recently become an operational forum for resolving logistics problems.

Commitment on behalf of the RHU/MOHP has been slow to manifest itself and is impeding full ownership of the system. As mentioned previously, the lack of adequate resources at the central level is keenly felt in terms of the smooth operation of the logistics system. Although the post of a senior logistics officer has been approved, the funding required to fill the position still has not come through.

An FPLM Resident Advisor was appointed midway through the implementation process. Although he collaborates closely with the logistics officer and works out of the offices of the Reproductive Health Unit, there is a danger that he is carrying out certain routine activities that should be done by the RHU. In addition, although he commands sufficient credibility in terms of logistics, he is constrained by his position as a non-ministry employee and, therefore, cannot achieve everything required for the system to function effectively.

## Promoting Political Support and Buy-In for Logistics

One explanation for the lack of active recruitment of a senior level logistics officer is that logistics appears to have no individual “champion” above the RHU deputy director level within the MOHP (Dougherty 1998). This senior policy level support is key to ensuring the sustainability of the CDLMIS.

Despite the lack of a high-level “champion,” there is a relatively high level of political support for logistics among the donor community and the RHU/MOHP. The Logistics Subcommittee meets on a quarterly basis, and its mandate is to keep up to date on logistics developments and



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solve problems as they arise.

The committee consists of—

- Deputy Director, Clinical and Population Services, RHU/MOHP
- Representatives from CHAM and CHISU
- Representatives from three donors (USAID, DFID, and UNFPA)
- A representative from the CMS
- FPLM Resident Advisor

The quarterly meetings have been very effective in keeping logistics issues fresh in the decision makers' minds. The coordinated committee of government and donor representatives ensures the most efficient resolution of problems. Raising the profile of logistics management has produced positive outcomes—the MOHP and donors have formulated a five-year Logistics Improvement Plan (LIP). The LIP “provides a framework for the many logistics improvement activities being undertaken with assistance from multiple donors” and establishes goals and targets to be met (RHU/MOHP 1998). Furthermore, elements of the LIP have been incorporated into the Malawi National Health Plan 1999—2004, showing increased political support for logistics within the MOHP.

One accomplishment that has arisen out of the quarterly dialogue between the key players is that donors and the government are more likely to respond to logistics challenges that arise because they are forced to review them on a systematic basis. In addition, this has had the effect of ensuring that logistics is a component of other non-MOHP programs, such as CHAM and NFPC.

Another major outcome of both the quarterly meetings and the perceived improvements in the contraceptive distribution system is the proposal that drugs for the treatment of sexually transmitted infections (STI) and other reproductive health commodities be integrated into the existing CDLMIS. The benefits in managing available contraceptives and ensuring a continuous supply have been so visible that policy-makers would like to see the same benefits applied to other health commodities (Banda et al. 1999).

## Assessing the Logistics System

### Training

Since the design workshop in 1995, more than 1,500 key logistics personnel have been trained in supply chain management. The training strategy had multiple components and was geared toward enhancing a variety of different skills in host-country personnel:

- The training of trainers in 1996 established a group of 12 Malawian trainers; six formed the core group for developing and implementing the national logistics training workshops that have followed.



- The nationwide training of health personnel was held between August and December 1996. One thousand health staff from all four levels were trained in workshops ranging from one to five days.
- Forecasting skills were transferred to central-level personnel during a regional forecasting workshop in 1997. The six participants included representatives from RHU/MOHP, NFPC, and CMS.
- In early 1999, with the realization that lack of effective supervision was impeding logistics functioning, a supervisory training workshop was held for 55 personnel from all levels.
- In April 1999, training for district acquired immune deficiency syndrome (AIDS) coordinators from all three regions was conducted to enhance cooperation between district-level family planning and AIDS personnel.

According to a training impact assessment carried out the year after the training, the findings relating to accuracy and completeness were as follows:

- Eighty-six percent of the facilities visited were using stock cards. Of these, health centers and districts had an 82 percent accuracy rate and a 75 percent completeness rate, and regions had an 87 percent accuracy rate and an 87 percent completeness rate.
- Sixty-two percent of facilities visited were conducting regular physical inventories.
- Eighty-five percent of the proper storage guidelines were being applied at the facilities visited.

FPLM and the MOHP in Malawi conducted an evaluation of the CDLMIS at the community-based distribution (CBD) level in May 1999. They found that 87 percent (13 of 15) of primary supervisors and 100 percent of CBD agents interviewed had received formal CDLMIS training (Breton et al. 1999). In addition, the dropout rate was low; 14 of the 16 agents remained in their positions for three years or more.

## Stockouts

A baseline survey conducted in 1998 collected data on stockout rates from a sample of 14 percent of SDPs in Malawi that offer family planning services (Chandani et al. 1998). After a follow-up survey was conducted a year later, with stockout data collected from the same sites, the contraceptive availability results were compared (Banda et al. 1999). The overall indicator—the percentage of sites stocked out of at least one method/brand during the six months—remained virtually unchanged, at 95.5 percent in 1999 compared to 93.8 percent in 1998 (see figure 4). These figures were artificially elevated due to a nationwide stockout of one product that lasted from October 1998 to June 1999. For the three most popular products—Depo-Provera, LoFemenal, and condoms—there were significant improvements, with stockout rates dropping uniformly to approximately 7 percent for the three products during the six months. Results from the time of visit comparison show even more dramatic improvements, with no stockouts in Depo-Provera and condoms and the percentage of sites stocked out of at least one method or brand dropping from 81.6 percent in 1998 to 50 percent in 1999 (see figure 5).



## Experiences from the Field

Figure 4.  
Contraceptive Stockouts at 5BPs in Ma/awl during Previous Six Months

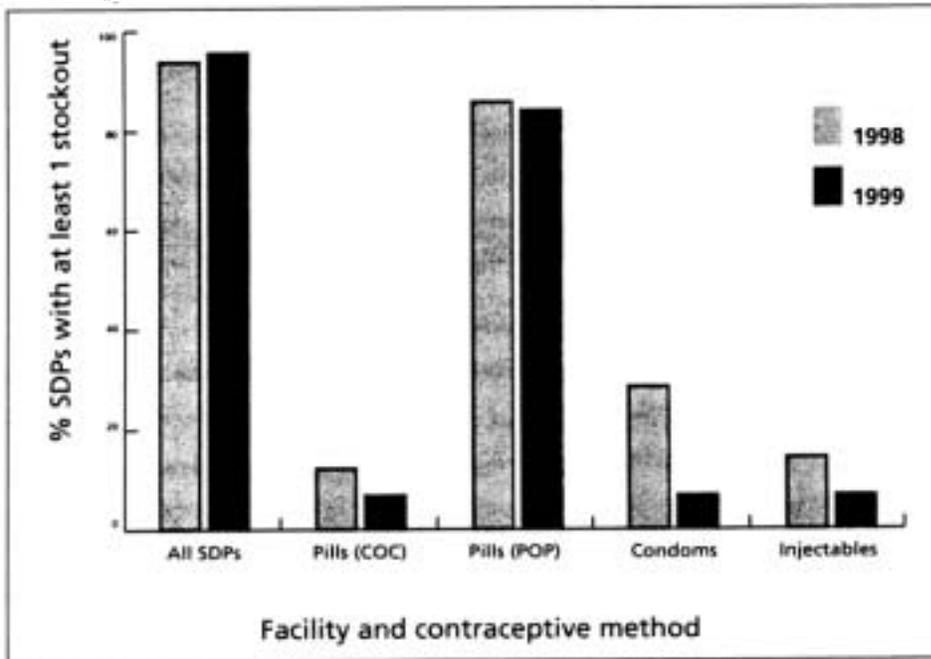
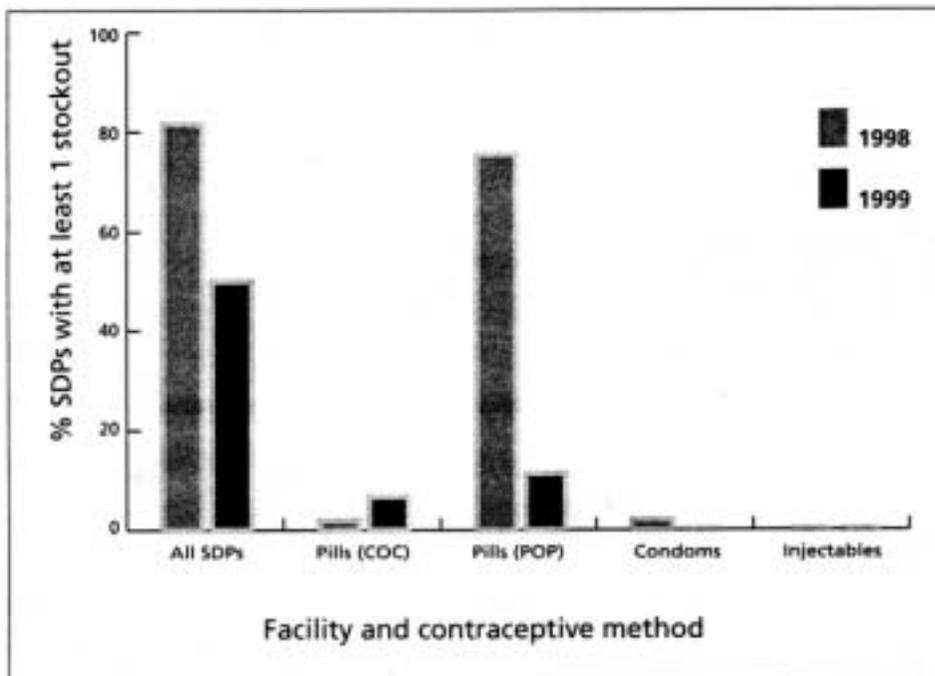


Figure 5.  
Contraceptive Stockouts at 5BPs in Ma/awl at the Time of Site Visit



## Reporting

Reporting rates for the CDLMIS appear to be higher than those for the national Health Management Information System (HMIS) (Dougherty 1998). As of 1998, approximately 80 percent of the districts regularly sent LMIS reports, and the LMIS reporting structure allows the RHU to pinpoint “reporting gaps” rapidly and take remedial action. At the SDP level, a survey in September 1999 found that more than 80 percent of health centers visited submitted LMIS reports to the district, although there appeared to be a three-month delay in achieving this level of reporting (Banda et al. 1999). At the lowest level, 100 percent of CBD agents visited were using the required LMIS form and more than 90 percent of primary supervisors were using their respective LMIS forms (Breton et al. 1999).

## Forecasting

Since the regional forecasting workshop conducted in Malawi in 1997, a core group of participants from all key organizations have forecast contraceptive commodities biannually, including the RHU, NFPC, and CHAM. In 1998, the first year following the training, the forecast was updated once without external assistance and once with the assistance from FPLM Washington. In 1999, the mid-year update has been conducted without the assistance of FPLM Washington.

In addition, all members trained in the use of the PipeLine software—one of the tools used in preparing contraceptive orders—continue to use the software to monitor supply status in the country.

## Documentation

Procedure manuals were developed, and they exist at all levels of the system. This means that, regardless of staff turnover, there are documented guidelines in place that enable new staff to continue following logistics system procedures and complete reports appropriately.

According to the training impact assessment—

- Eleven of 12 district family planning coordinators interviewed were able to find the answers to hypothetical situations in their procedure manuals.
- Eleven of 13 district-level pharmacy assistants were able to do the same.
- In general, the procedure manuals, health center handouts, and CBD Supervisor’s Logistics Manual were being used by most of trained personnel to find answers to questions.

In a more recent evaluation of the CDLMIS at the CBD level, 60 percent of supervisors interviewed had a copy of the CBD Supervisor’s Logistics Manual given to them at the time of their initial training (Breton et al. 1999).



### University Curricula

The RHU and various stakeholders, with assistance from the Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPEIGO), are in the process of incorporating CDLMIS training curricula into pre-service reproductive health training in schools of nursing, midwifery, medical assistants, and medical schools. Curricula will be available in December 1999 and will be implemented in schools during the following year.



## Country Case Study—Mexico

### Background

Unlike the two other countries used for case studies—Jordan and Malawi—Mexico no longer receives donated contraceptive commodities. During the past five years, USAID and UNFPA, the two donors that historically provided the majority of donated contraceptives, have phased out of free provision of contraceptive commodities. USAID stopped funding commodities for the MOH in 1995 and the Mexican Social Security Institute (IMSS) in 1994; the final shipment to NGOs providing family planning services took place in 1998. The phaseover strategy was developed jointly by the government and USAID in 1990 (Schenkel 1994). The intention was to reduce the value of contraceptives supplied by USAID by 25 percent annually until 1994, when commodities would no longer be donated. Mexico has two public sector and two NGO distribution systems providing contraceptives. The focus of the case study in Mexico was IIMSS, one of the public sector organizations responsible for providing family planning services for more than 30 percent of all women of reproductive age (IMSS/JSIIFPLM 1999).

IMSS has received TA for contraceptive logistics management since 1989; from 1989—1994, the TA focused solely on providing assistance with forecasting of contraceptive requirements. From 1994—1996, in the immediate wake of USAID's phaseout of commodity provision to IIMSS, no logistics system support was provided. However, in 1996, given IMSS's status as the largest provider of family planning services in the country, a decision was made to provide short-term assistance aimed at strengthening its logistics system, in particular, its LMIS. From 1996 to January 1999, FPLM provided assistance in designing and implementing a logistics system and LMIS, and in January 1999, it was incorporated into the National Statistics and Information System as the automated (official) version.

### Developing an Enabling Environment for Effective Logistics Skills Transfer

#### Establishing a Country-Specific Logistics System and LMIS

Before beginning logistics system support, the assessment team conducted a three-month-long assessment of all levels of IMSS to identify the respective strengths and weaknesses of the logistics system and LMIS. The assessment team was composed of IMSS personnel, and included an FPLM representative. The results of the assessment were aggregated and analyzed by the local team and, during the design workshop, were used to develop improvements to the logistics system.

Participants from all levels of the system attended the design workshop. The results from the assessment were the basis for designing the new system: decisions about the design were made by the in-country personnel who helped conduct the assessment and were responsible for implementing the changes. In an evaluation conducted from January to March 1999, when asked about lessons learned from the logistics improvement effort, management personnel identified two fundamental factors for success: involvement of the beneficiaries of the improvements in the design process and the team approach.



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The situation in Mexico was unique because IMSS had an existing information system that was automated at all levels. To avoid duplication of work for health personnel, IMSS wanted the contraceptive logistics data to be incorporated into the routine data collection for the existing information system.

Since all changes to the national information system have to be approved by the government Statistics Office, a crucial part of the development and implementation of the logistics system and LMIS included negotiations with the Statistics Office personnel. This process resulted in an information system that was not only country-specific but also program-specific and that only collected data identified by IMSS personnel as being crucial for supply chain management. The negotiations were successful in large part because of the priority that IMSS, the government, and various donors placed on the importance of logistics.

The LMIS is currently operational and has been used for decision making since September 1998. It began as a manual system and was incorporated into the national automated system in January 1999. Based on a recent evaluation, 100 percent of the reproductive health management personnel at the delegation level use the LMIS to manage their contraceptive supplies (IIMSS/JSL/FPLM 1999).

One area in which logistics system support was not focused, due to budget and time constraints, was in building IMSS's capacity for training. Although three LMSS personnel at the central level have been trained in logistics and have received some orientation in training techniques, IMSS does not have a core group of trainers or a documented training strategy. To date, this lack has not been felt as keenly as it might be, for several reasons.

As in many developing countries, there is relatively high staff turnover at the clinic level. This rapid attrition does not affect the continuing operation of the logistics and information systems as much as it might in other instances because of the checks and balances built into the information system. If incomplete forms reach the system, both the computer and the individual from the statistics office in charge of monitoring the system reject them and send them back for completion. Consequently, although they do not assess the accuracy of the completed forms, they are sure, in most cases, that the forms are complete.

IMSS also recognized that training is a weak area, and they worked with FPLM to develop training curricula before the assistance ended. The organization is committed to developing job aids and training to ensure that new personnel receive basic logistics training.

However, it is important to emphasize that the dearth of a core group of trainers and documented training materials must be addressed quickly. This will prevent a reversal of progress made in transferring supply chain management skills to IMSS personnel. In addition, it will ensure that the gaps in transfer of these skills, related to organizational practices, will continue to be filled. As an example, in the management and supply departments within IMSS, there is a continual rotation of personnel, which may prove to be an obstacle in ensuring institutionalization of logistics management skills, because logistics responsibilities may repeatedly pass to untrained staff. Given the lack of documentation of policies, procedures, and responsibilities, it is desirable to formulate a formal training strategy without delay.

## Ensuring Ownership of the Logistics System

Throughout the process, IMSS showed a high level of both individual and organizational commitment to implementation of logistics improvements. From the onset of transfer of supply chain management skills to LMSS personnel, IMSS identified a senior-level individual at the central level of the reproductive health division who was responsible for logistics. He participated in the assessment and design workshop and was tasked with ensuring the smooth and effective implementation and operation of the logistics system and LMIS. His position and background gave him sufficient authority and credibility to make managerial decisions to ensure that the implementation of the logistics system proceeded as planned. As a 10-year IMSS staff member and economist working with information systems, he was an early advocate of logistics and recognized its importance in enhancing cost-effectiveness. Due to his well-respected position, he was able to command the necessary authority and credibility to ensure that contraceptive logistics remained a priority for the reproductive health (RH) division of IMSS.

Organizational commitment by IMSS was also present from the beginning of the process. IMSS, unlike some public sector institutions, is currently economically stable and not bound by budget constraints. Partly because of this, after donors pulled out of commodity provision, IMSS was able to begin procuring its own contraceptives rapidly and easily. When the organization started conducting its own procurement and distribution, the staff realized that a significant number of purchases were wasted because of a lack of logistics expertise.

Because of this, logistics and its potential for cost savings became an important factor in developing and maintaining organizational support for logistics system implementation and changes.

## Promoting Political Support and Buy-In for Logistics

Political support for logistics exists among all the players, including IMSS, the government, and USAID (the major contraceptive donor). However, the extent of political support for logistics has grown since the system was put into place. The success of the logistics system and the newly integrated information system has played a major role in increasing the visibility and importance of logistics. Although LMSS personnel recognized that logistics improvements were necessary from the beginning, the level of political support and attention paid to logistics did not grow to its current level until after results of the logistics system improvements were observed. After policymakers realized that the new data being collected were useful and made their decisions and jobs easier, a higher level of support was achieved for logistics. Similarly, once the realization was reached that logistics improvements could result in significant cost savings, administrative-level personnel were much more likely to advocate for and approve such improvements.



# Assessing the Logistics System

## Training

Training occurred in two condensed periods, between June—September 1997 and February—June 1998. There were 49 workshops, including the design workshop and one forecasting workshop, and seven regional workshops. A total of 1,739 key personnel were trained in various aspects of logistics management, with 188 trained in the regions and 1,551 trained at the service-delivery level.

FPLM and USAID conducted an evaluation of IMSS's logistics system in the first quarter of 1999 (IMSS/JSIIFPLM 1999). The results of the purposive sample were as follows:

- IIMSS personnel: 87.5 percent knew the components of the logistics system.
- Health facilities: 80 percent observed correct storage procedures (based on a checklist of six items).
- Pharmacies and supply centers: 65 percent carried out monthly inventories, and 22 percent also carried out annual inventories.
- Doctors/nurses: 25.4 percent had a year or more in their posts and received training between 1996 and 1998.
- Procurement personnel: 21.5 percent had a year or more in their posts and received training between 1996 and 1998.
- Administrative personnel: 81.3 percent had a year or more in their posts and received training between 1996 and 1998.

## Stockouts

The evaluation assessed the stock situation at all 195 IMSS health facilities. The stockout rate was calculated for the preceding six-month period, and 8.2 percent of sites reported no stockouts within the last six months.

Looking at the assessment on a product-by-product basis, 10.8 percent of sites were stocked out of orals, 6.2 percent out of injectables, 8.7 percent out of IUDs, and 8.7 percent out of condoms. A separate but related indicator—percentage of sites stocked between minimum and maximum levels—indicated that inventory management skills were being used effectively. More than 70 percent of logistics managers at the facility level maintained their contraceptive supplies between their minimum and maximum levels (IMSS/JSIIFPLM 1999).

## Reporting

As noted previously, there is 100 percent reporting because the LMIS has a quality control mechanism to ensure completeness of reports. However, the evaluation showed that resistance to filling out forms was one of the main barriers to improving the logistics system. Management

personnel emphasized that consensus building and training were two strategies necessary to overcome the barriers.

### **Forecasting**

IMSS personnel are capable of and do prepare forecasts without external assistance. However, IMSS has been decentralized, so procurement of contraceptives is done locally, with monthly deliveries. However, although key personnel have been trained in forecasting using logistics data, forecasts are often still prepared using service statistics and demographic information (JIMSS/JSIIFPLM 1999). This is very likely because forecasting training was conducted in September 1998, after the requirements for 1999 had been established, and personnel have not had sufficient opportunity to practice using logistics data.

### **Documentation**

Due to the lack of funds available during the time period for provision of TA, no manuals were developed to document policies, procedures, and responsibilities. IMSS has committed to developing these documented reference guides, with job aids.

### **University Curricula**

There are no plans to incorporate logistics training into national training schools.



# Conclusions

## Key Elements for Institutionalization of Supply Chain Management Skills

It was found that—to varying degrees—institutionalization of supply chain management skills has occurred in all three countries. The following factors were identified as essential to the success of the process:

- Design of a country-specific logistics system and LMIS.
- Documentation of the system and systematic training of appropriate staff.
- Commitment at policy level within the host country.

An enabling factor in gaining commitment and interest of senior-level policymakers was the ability to achieve and demonstrate tangible results early in the process.

Table 1 demonstrates the time investment needed for the institutionalization process. Transferring supply chain management skills and institutionalizing logistics system capacity is a long-term process, not a quick fix. Before each country reached the stage where a customized logistics system could be established, a significant amount of TA had been provided.

<b>Factor</b>	<b>Mexico (IMSS)</b>	<b>Jordan</b>	<b>Malawi</b>
Existence of customized logistics system	1997	1997	1995
System procedures manual disseminated	No	Yes	Yes
Number of staff trained in logistics procedures	1739 (87.5 percent)	476 (99 percent)	1,500 (99 percent)
Policy-level support for logistics activities	High	High	Medium

## Comparative Success of the Institutionalization Process

The extent of the institutionalization of logistics skills varies among the three countries, which is largely attributable to the different stages of economic and social development in each of them. For example, the infrastructure in Jordan (roads, communications, and others) is more conducive to an efficient logistics system than is the infrastructure in Malawi.

A variability also exists because, while some elements of the institutionalization strategy were common to all three countries, each country employed a different model. The Jordan model appears to offer some advantages over the others. Jordan benefited from a full-time resident advisor and a senior-level local counterpart for the duration of the logistics system improvement process, which provided a two-fold benefit. First, having an external resource available to the country personnel while the system settles into place can be a more effective strategy than providing punctuated, short-term assistance. Second, the presence of a senior-level local counterpart ensured that the logistics function maintained local credibility and focus throughout the process.

Table 2 displays indicators relating to the success of institutionalization. The data were collected independently and under different conditions. However, the table provides an overview of the situation in each of the countries, so any direct comparison among the countries should be undertaken with caution.

Indicator	Mexico	Jordan	Malawi
Percentage of facilities reporting regularly	100	98—100	70—80
Ability of local staff to prepare national forecasts	Can prepare without external assistance.	Cannot prepare without external assistance.	Can prepare with limited external assistance.
Training materials incorporated into local schools and institutions	No plans to incorporate.	Preliminary discussions taking place.	Curriculum incorporated (Dec. 1999).

## Are Clients Receiving Products?

In logistics terms, one acid test of a system is the frequency of stockouts at the service delivery level. Table 3 illustrates the success of the three programs in reducing stockouts.

Product	Malawi		Jordan		Mexico
	1998	1999	1998	1999**	1999*
Pills (COC)	12.2	6.8	33.8	0	10.8
Pills (POP)	85.7	84.1	60.5	0	N/A
Condoms	28.6	6.8	23.1	1.2	8.7
Injectables	14.3	6.8	14.3	1.2	6.2
IUDs	N/A	N/A	14.0	0	8.7

\* Data available for “oral pills” and not broken down by COC and POPs. Baseline comparative data not available for Mexico.

\*\* Stockouts at time of visit.



## Experiences from the Field

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In conclusion, it is important to highlight the relevance of institutionalization of supply chain management skills to the broader health context outside family planning. Promoting the independence of contraceptive logistics systems through transfer of these skills is likely to play a significant role in enhancing the credibility and effectiveness of the respective family planning programs. Better management of commodities will result in clients being able to depend on a continuous supply of contraceptives, thus promoting the chances for increasing couple year protection coverage—and ultimately contraceptive prevalence rates—for the country in question. In turn, this is an important steppingstone for helping countries achieve broader health development goals, such as controlling population growth through reduction of unwanted pregnancies, and improving maternal and child health outcomes—for example, maternal mortality and infant mortality rates. In some cases (for example, in Malawi), attempts are being made to apply the benefits achieved with managing contraceptives to other health commodity categories, because skills in managing commodities will already be an integral part of the health system.

The study provides a useful lesson for program managers and organizations that provide TA in supply chain management. A wider range of lessons could have been drawn had there been a greater degree of compatibility of data among the three countries. Consequently, especially in the field of logistics management, where there is such a paucity of data, baseline measures should be collected prior to an intervention to allow for future assessment of impact. Similarly, program designers should ensure that data across countries are comparable, thus enhancing analyses of current interventions and promoting opportunities for more targeted future TA. Finally, there is a need for further research to investigate the association between logistics and other broader indicators relevant to family planning reproductive health.

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# Appendix A

## The Components of Contraceptive Logistics System Support

Traditionally, logistics system investments have focused on transferring supply chain management skills in six key areas (Family Planning Logistics Management, March 1997).

- Logistics Management Information System (LMIS)
- Forecasting
- Obtaining Supplies/Procurement
- Warehousing and Storage
- Distribution
- Organization and Staffing

As systems have matured, two newer areas of attention have emerged:

- Policy
- Adaptability

The elements above are interrelated, and they must all be considered when designing or strengthening a system (CDC/JSIJFPLM 1998).

