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Family Planning Logistics

Strengthening the Supply Chain

When their logistics systems improve, family planning programs can make contraceptives more available, help ensure steady supply, and deliver better care to meet clients' needs. As government and donor funding for contraceptives falls short of rising demand, an efficient supply chain stretches resources further.

Demand for contraception is growing. In developing countries an estimated 212 million more women will be using contraception in 2015 than in 2000. Increased demand requires not only more contraceptives, and thus more funds to obtain them, but also a stronger supply chain to deliver them. As demand grows, so will the volume of contraceptives that the supply system must handle. Costs will rise not only for procurement but also for distribution, staff training, and other key aspects of logistics. Pressures will mount for family planning logistics operations to become more efficient.

The objective of logistics management is simple: to deliver the right product, in the right quantity, in the right condition, to the right place, at the right time, for the right cost. In practice, however, managing family planning logistics is often complex. Contraceptive supply chains consist of many organizations, people, and procedures that, together, must accurately forecast demand and then efficiently order and deliver the right amount of contraceptives from one level to the next until they reach family planning clients.

Increasingly, family planning programs are making clients the focus of the supply chain—not just the final link. In the commercial sector focusing on customer service has become the hallmark of good logistics management. In family planning programs customer service translates to a client-centered approach. As programs do more to adopt client-centered approaches, more logistics managers see clients' needs as directing the supply chain, and fewer think of logistics management as just concerned with routine procurement, storage, and shipment.

Essentials of Good Logistics

How can programs strengthen delivery of supplies to clients? Consistent supply depends on both adequate funding and good logistics activities, including accurate estimates of supply needs, efficient procurement practices, and reliable, timely deliveries. The following steps are crucial:

Improve management and staff performance. People determine how well the supply chain functions. Providing leadership, training, supervision, clear expectations, and decent working conditions for supply chain staff can improve their performance and help them focus on meeting clients' needs.

Improve information systems. A strong logistics management information system (LMIS) collects and reports accurate data when and where needed. With better information, managers can estimate supply needs, account for products in the supply chain, reduce supply imbalances, and cut waste and losses.

Improve forecasting and procurement. Family planning programs depend on accurate forecasts of contraceptive use and estimates of quantities and types to be purchased. Better forecasts help to ensure that programs order enough supplies but not too many. Since forecasts and actual contraceptive use will inevitably differ, managers also can monitor key logistics data and prepare to deal with the differences.

Improve distribution. Distribution activities—including storage and transport—work best when they focus on moving supplies efficiently to clients, not just on moving them from place to place and keeping them on shelves. Storage should be secure, clean, and organized to reduce the costs of holding inventory. The transport system should ensure regular, complete coverage of all facilities in the supply chain.

Toward Contraceptive Security

Improving logistics can help ensure access to contraception. Only with consistent supply can everyone who wants to use family planning be able to choose, obtain, and use good-quality contraceptives—a concept known as contraceptive security. Few developing countries will be able to provide contraceptive security any time soon without continued support from donors. Countries that rely on donor funding will face a crisis if donor support continues to lag behind demand. Governments can help by strengthening logistics systems; they can provide more public funding for contraceptives, as part of their public health role; and they can encourage participation from the private sector.

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A New Look at Logistics

For family planning programs, a consistent supply of contraceptives does not happen by itself. Consistent supply results from a well-managed logistics system and from adequate and reliable funding. Logistics management is not just a set of operations to move products from one place to another but rather a key element in helping clients meet their reproductive health needs.

In the commercial sector strong logistics management, by helping to meet customers' needs, earns customer loyalty, boosts corporate profits, and increases the firm's market share. Similarly, family planning programs that improve their logistics management systems satisfy more clients, become more efficient, and achieve program goals.

Family planning clients often depend on ready access to contraceptives even more than consumers depend on commercial products. In the commercial sector a product stockout may inconvenience customers and lose revenue for the company. In family planning programs, however, contraceptive stockouts cause clients to discontinue their preferred methods or to stop using family planning altogether (35, 62, 70). The result can be unintended pregnancies and sexually transmitted infections (STIs), including HIV/AIDS.

Also, family planning programs that fail to provide continuous access to contraception can lose credibility with their clients and acquire a reputation for unreliability. Simply put, "No product, no program" (49).

In the past decade a growing number of countries have started to improve their family planning logistics systems. For example, Peru strengthened its logistics system after 1990, when nationwide stockouts occurred after a shipment of contraceptives was abandoned in a customs warehouse (60). Similarly, Jordan improved logistics management after 1997, when IUDs were over-ordered and 7,000 were destroyed because they had passed their labeled expiration date (116). Also, the Philippines began focusing more on logistics in the early 1990s, when nearly five years' worth of contraceptive supplies expired on the shelves in some provinces while severe understocks occurred in others because forecasting data were poor (82).

How can family planning programs meet the challenge to improve logistics? In 2000 the Family Planning Logistics Management (FPLM) Project, now the DELIVER Project, of John Snow, Inc. (JSI) published *Programs That Deliver: Logistics' Contributions to Better Health in Developing Countries* (49). The JSI report details how policy-makers and program managers can strengthen family planning logistics systems. It is based on the extensive experience of JSI and other logistics management experts over the past three decades in providing technical assistance to family planning programs in developing countries.

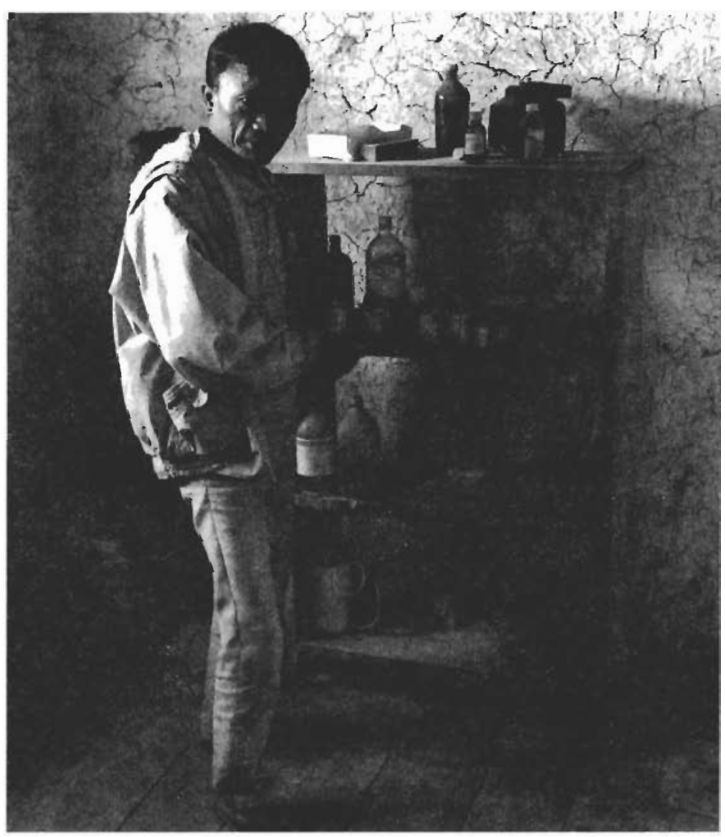
This issue of **Population Reports** is based on the JSI report. Examples in this report, primarily from family planning, can apply to all health service delivery programs. Statements that appear without references reflect the experience and expert opinion expressed in the JSI report. Readers may find *Programs That Deliver* on the Internet in the monograph section of the publications page at <http://www.deliver.jsi.com> or order the printed report from JSI by writing to DELIVER Project Publications, 1616 N. Fort Myer Drive, 11th floor, Arlington, VA 22209, USA, or by e-mail to <deliver_pubs@jsi.com>.

Securing Supply

Today, many developing countries cannot obtain enough contraceptives to meet demand. Yet demand for family planning is rising, while donor funding for contraceptive supplies is becoming less certain. Improving logistics management has become essential to make better use of existing supplies.

Demand for family planning is rising. In many developing countries the supply of contraceptives is not keeping pace with rising demand for family planning. For one thing, more women are in their childbearing years today than in the past (136). For another, a much higher percentage use contraception (146). Moreover, millions have unmet need for family planning—that is, they want to avoid pregnancy but are not using any contraceptive method—and thus can be considered potential family planning clients (119, 123).

In developing countries and countries of the former Soviet Union, the number of contraceptive users is projected to grow by more than 38% in 15 years—from 552 million in 2000 to 764 million in 2015 according to unpublished UN projections (12)—reflecting both population growth and the rising percentage of people practicing family planning. These numbers include users of both modern and traditional methods; currently an average of 88% of contracep-

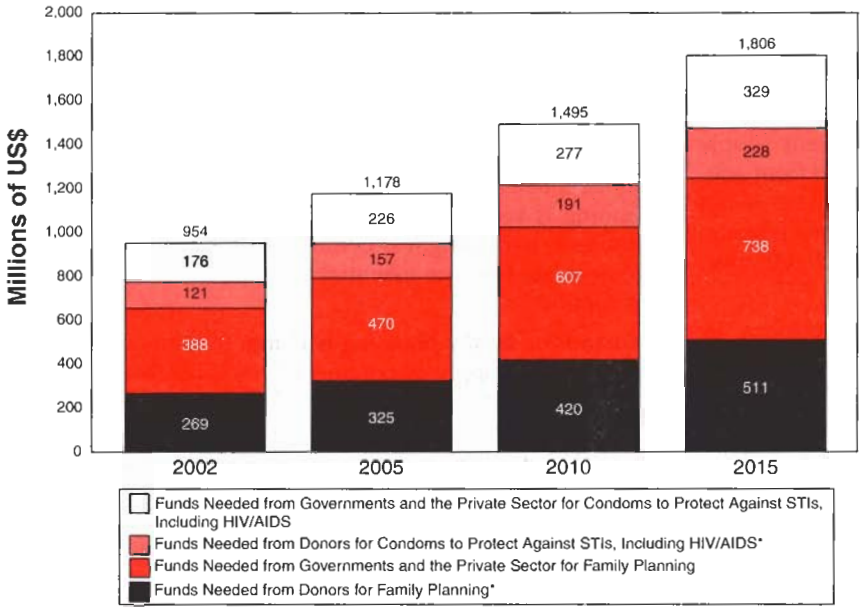


Philip Lieberman/Brown University

Like this health worker in rural Nepal, family planning service providers and their clients depend on the country's logistics system to provide enough supplies to meet demand. In many countries demand for family planning is rising faster than supply.

Figure 1. The Funding Crisis

Projected Costs of Contraceptives to Meet Demand, by Source of Funds



*Equals 41% of contraceptive costs for family planning or for STI protection, the average % donors paid in 1992–1996.

Source: Dodd, 2001 (38)

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tive users use modern methods in these countries and 86% are projected to be using them in 2015 (121).

Also, addressing the HIV/AIDS pandemic will greatly increase the need for condoms. The cost of supplying enough condoms will rise from US$297 million in 2002 to US$557 million in 2015, the United Nations Population Fund (UNFPA) estimates (38) (see Figure 1).

As demand rises, the volume of contraceptives that a country's supply system must handle will increase substantially. Distribution networks will need to expand and become stronger to serve the projected 212 million additional clients in 2015. Costs of storage, distribution, data processing, staff training, and other aspects of logistics management will rise. At the same time, programs will need to find secure funding to keep pace with the increasing demand. Only with consistent supply can everyone who wants to use family planning choose, obtain, and use good-quality contraceptives—a concept known as contraceptive security (see p. 19).

The funding crisis. Countries that depend on donor support to help meet the demand for contraceptives face a crisis. Total donor support for contraceptives, after reaching US$172 million in 1996, fell to US$131 million in 1999, according to UNFPA estimates. It rose in 2000 to US$154 million (38, 144).

It is unlikely that spending on contraceptives by governments and by clients through private-sector purchases has increased enough to compensate for declines and irregularities in donor support (144). Estimating government and private-sector spending for contraceptives is difficult, however. Countries itemize their family planning expenditures differently (109), and often spending on contraceptives cannot be separated from other family planning program spending or from other health expenditures (31).

Although inadequate to meet the demand, government spending on family planning is nevertheless substantial, especially considering that many governments are also struggling to provide basic supplies of food and water for their people (57). Many face rising economic and social problems, including the HIV/AIDS epidemic, and some face civil conflict and emergency situations.

Private foundations' contributions to population and reproductive health activities have increased fivefold since 1995 (71). Several foundations now contribute more to population assistance than many donor nations (32). Typically, however, they do not provide funding for contraceptives, as do donor countries. Some pharmaceutical companies offer large price reductions under specific conditions, but whether they will continue this practice is uncertain (71). Overall, support from foundations and from pharmaceutical companies has not offset the decline of support for contraceptive supplies from traditional donors.

The costs of contraceptives will continue to grow substantially, reaching a projected US$1,249 million in 2015 to meet family planning requirements (38). If donors' share equaled the 1992–1996 level of 41%, donors would need to provide US$269 million in 2002 and increase to US$511 million in 2015. Thus developing countries—primarily national governments and the private sector—would need to provide US$388 million in 2002, rising to US$738 million in 2015 (38). When the costs of meeting the need for condoms for STI/HIV prevention are added, donors would need to provide US$390 million in 2002 and increase to US$739 million in 2015. The amount of money that developing countries would need to provide would be US$564 million in 2002 and US$1,067 million in 2015 (38) (see Figure 1). These amounts reflect only the costs of contraceptives themselves, not the additional costs of providing good-quality services (38).

Declining funding for contraceptives has serious implications for health. Each US$1 million decline in contraceptive assistance would mean 360,000 additional unintended pregnancies, 150,000 more induced abortions, 11,000 more infant deaths, and 800 more maternal deaths, according to an estimate by UNFPA (144).

Without measures to help developing country family planning programs become self-sustaining—principally by increasing government spending for family planning and by expanding private-sector involvement (see p. 20)—inadequate donor funding for contraceptives threatens contraceptive security (32, 54, 144).

Declining funding is prompting many family planning programs to pay more attention to strengthening the supply chain. The role of logistics management is becoming even more important.

What Is Logistics?

In family planning programs the term "logistics" refers to activities concerned with selecting, financing, delivering,

and distributing contraceptives and other supplies. The term "supply chain" describes the many organizations that are linked in the delivery of supplies from manufacturers to clients and in the flow of information about clients' contraceptive needs. Similarly, the term "pipeline" refers to the flow of supplies through storage and transportation facilities—including port facilities, central and regional warehouses, district and sub-district stores—to service delivery points and ultimately to family planning clients. In practice, the terms "supply chain management" and "logistics" are often used interchangeably.

Family planning logistics systems are complex. Many local and international manufacturers provide contraceptives to programs, and a variety of donors, policy-makers, and program managers procure, finance, and deliver them. Central and regional warehouses and regional and local facilities store them, and transportation systems distribute them. At each stage of the supply chain, organizations and managers share information and coordinate their activities.

To do the job right, logistics systems require political commitment, leadership and management, and training and support for the people who make the supply chain work. Effective logistics management information systems (LMIS), skillful product selection, accurate forecasting and procurement, and reliable distribution, including storage and transportation, are crucial. Of course, programs need adequate funds to buy the supplies and support the logistics system.

Within the logistics system, each activity depends on all the other activities (see Figure 2). For instance, the mix of contraceptives that the system delivers should reflect clients' preferences and the capabilities of the service delivery system. The quantities of each contraceptive method procured should reflect accurate forecasts of consumption. Also, each stage of the logistics system should include monitoring and evaluation—of the quality of the products themselves and of the supply chain's performance (48).

Benefits of Better Logistics

With better logistics, family planning programs can make contraceptives more available, improve the quality of care, and stretch resources further—ultimately helping clients achieve their family planning intentions better. Around the world, better logistics management is linked to more contraceptive use, higher continuation rates, and client satisfaction (28, 59, 61, 81, 83, 116, 126). Improving logistics systems can provide better accountability and thus help assure the trust of policy-makers and donors.

Making contraceptives more available. A good logistics system ensures a reliable supply of contraceptives. For example, when the Jordan Ministry of Health installed a new contraceptive logistics system, only 10% of health centers and 5% of directorates in 1999 experienced contraceptive stockouts in a six-month period, down from 85% of health centers and 72% of directorates in 1997 (116).

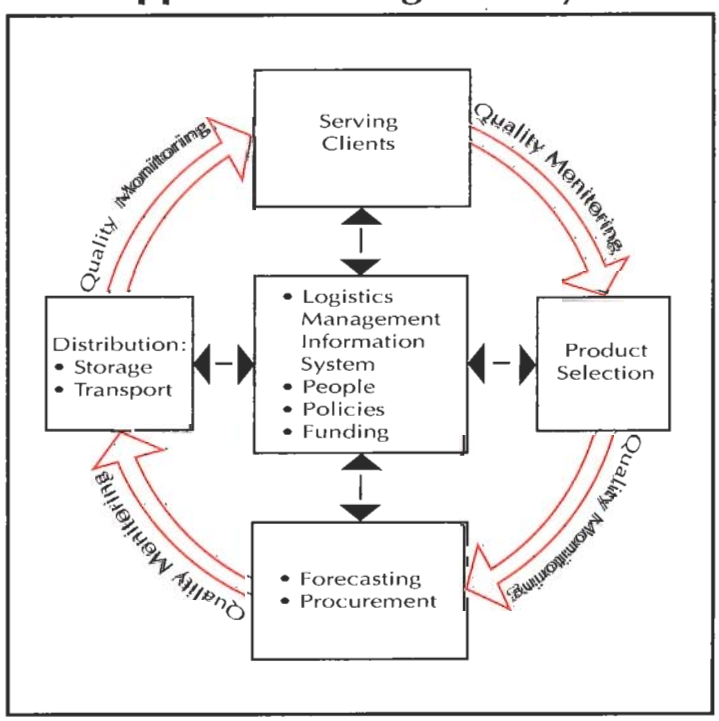
In turn, a steady supply of contraceptives enables more people to use and continue using the method of their choice. Increases in contraceptive prevalence, of course, also reflect rising demand for family planning and other service delivery improvements. But these increases cannot occur if contraceptive supplies are not available. In Tanzania, as oral and injectable contraceptives, IUDs, and vaginal foaming tablets became more available as the logistics system improved, contraceptive prevalence for modern methods more than doubled, from 7% in 1991 to 16% in 1994 (100, 126).

Improving quality of care. The supply chain affects quality of health care in two ways—the quality of the products themselves and their availability to providers and their clients. A good family planning logistics system ensures, at each step of the supply chain, that contraceptive supplies are protected—that they have been stored and handled properly, have not expired, and are not damaged—and that defective or out-of-date supplies do not reach clients (87). It also ensures that the correct methods in the correct quantities reach clinics and other service delivery points and are available to clients.

The sustained availability of a range of contraceptive methods is central to quality of care in family planning programs (19, 74). While there are many components of good-quality services, well-supplied programs make it easier for service providers to offer good-quality reproductive health care to clients (69, 87). Reliable supply also helps build staff morale, since staff do not have to disappoint clients seeking contraceptives that are out of stock.

Getting more for less. Improving logistics systems can cut program costs without sacrificing services. For example, a study in Bangladesh found that streamlining the distribution network by decreasing the number of levels in the supply chain from five to three would reduce logistics operating costs by 66% and would reduce transportation costs by 29% with no reduction in contraceptive supply (45).

Figure 2. Securing Contraceptive Supplies: The Logistics Cycle



Source: Family Planning Logistics Management, 2000 (48)

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A strong supply chain helps reduce program losses by minimizing waste and damage and preventing products from expiring on the shelves. In Kenya, introducing a new tracking and distribution system has helped reduce overestimates of demand and improved forecasts since 1995. Without accurate data on use or a reliable distribution system, for example, a US$600,000 supply of STI kits was projected to serve 143 sites for one year. When the new LMIS was put into effect, program managers were able to use the same supply of kits to serve more than 500 service sites for more than two years (117).

What Programs Can Do

When programs, policy-makers, and donors recognize that logistics systems are important to ensuring that contraceptives are continuously available, they can do more to strengthen the supply chain. Improvements to every part of the supply chain can help. The following steps are crucial:

- **Focus on meeting clients' needs:** Family planning programs can improve logistics systems by focusing on clients' needs at each step of the supply chain.
- **Improve management and staff performance:** People make the supply chain work. Good leadership, management, training, and support for supply chain staff can improve their skills and motivate them to serve clients better (see p. 7).
- **Strengthen information systems:** An LMIS that collects and reports accurate data on a timely basis helps program managers make accurate forecasts of demand for contraceptives and manage supplies efficiently (see p. 9).
- **Improve forecasting and procurement:** Better forecasting and procurement help to ensure that programs order neither too few nor too many supplies (see p. 13).
- **Get supplies to clients:** Distribution, including storage and transport, works best when it focuses on moving supplies to meet clients' needs, not just on storing and shipping (see p. 17).

PRACTICAL TIPS —

Making Clients the Focus

- Make a full range of contraceptives available at all service delivery points at all times.
- Understand that family planning clients differ, and identify the specific needs of different groups.
- Encourage providers to ask clients what they want on a regular basis, to listen to their answers, and to show genuine interest in their concerns. Clients' needs change over time, and so the procurement process must adjust to ensure that the supply chain continues to meet their needs.
- Through training and supervision reinforce the message that the logistics system should work to meet the needs of each and every client.
- Regularly provide direct feedback from clients to all supply chain staff to help them see where progress has been made and where they need to improve.

Clients Come First

An effective family planning program puts the client first. Policy-makers and managers can ensure that this focus exists throughout the program, including in the supply chain. A focus on the client recognizes that clients' concerns and preferences are valid and important. It provides a new perspective on delivering contraceptives.

In the commercial sector, meeting customer needs has become the hallmark of successful logistics management (18, 63, 72, 88). Logistics systems that once focused on shipping and warehousing goods now focus on serving customers (129). This change occurred in the 1990s, when businesses recognized that an emphasis on customer service helped improve logistics operations and provided a competitive advantage. In the family planning field customer service translates into a client-centered approach. Programs that offer good-quality services and products meet clients' needs better (87).

Unlike the commercial sector, most family planning programs do not have a single, easily defined standard of success. In the commercial sector a "bottom line" of profitability provides evidence of the positive effects of better service. In family planning programs success often depends on a combination of factors, including client satisfaction, contraceptive prevalence and continuation, cost-effectiveness, and program sustainability. Thus family planning programs may not recognize the importance of improving logistics to the same extent that private businesses do.

In the past, family planning logistics management has been concerned with ordering, storing, and shipping contraceptives. Today, however, as more family planning programs adopt client-centered approaches that improve the quality of service delivery, more logistics managers see that clients are the purpose of the supply chain, not just the final link.

Meeting Family Planning Clients' Needs

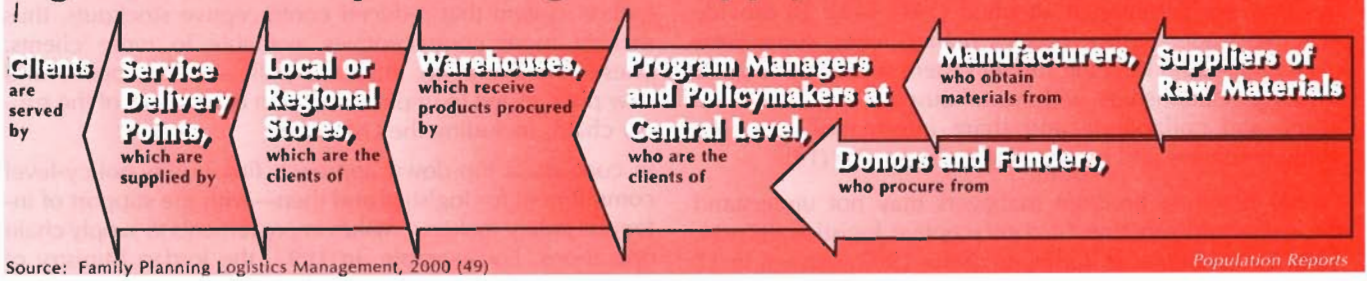
How can family planning programs focus the supply chain more on the client? Supply chains are client-centered when they provide:

- A dependable supply of contraceptives of clients' choice,
- Good-quality contraceptives,
- Contraceptives available when and where clients want them, and
- Contraceptives that clients can afford.

In other words, logistics systems meet clients' needs by following the "six rights"—delivering the right product, in the right quantity, in the right condition, to the right place, at the right time, and for the right cost (5, 25, 48, 49).

Programs can respond best to clients when they offer a continuous supply of a range of family planning methods from which clients can choose. Most people's contraceptive needs and choices change over the course of their reproductive lives, and some clients become dissatisfied with one contraceptive method and decide to use another. Ideally, family planning clients should be able to depend on ready access to a range of contraceptive methods throughout their reproductive lifetime.

Figure 3. Conceptualizing the Supply Chain



Source: Family Planning Logistics Management, 2000 (49)

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A new way to think about the supply chain puts the client first. Family planning clients are the purpose of the supply chain, not just the final link. Within the supply chain, contraceptives flow through a series of "internal clients." That is, people at each step receive supplies from the previous step and in turn provide supplies to the people at the next step. Managers who used to focus just on ordering, storing, and shipping supplies now also focus on serving their clients' needs at each step.

Programs that understand clients' contraceptive preferences usually can best determine the brands and quantities to offer. Programs can determine client preferences by looking at patterns of contraceptive use and by listening to what clients say. By correctly estimating the number of clients who would use each method, programs are more likely to order the right amount of supplies. Also, offering a range of methods helps ensure that, even if shortages occur, at least some methods will remain available (20).

Although most programs provide at least a few family planning methods, people often do not have easy access to the full range of modern methods (122). A 1999 study of 88 developing countries found that access to contraception is poorest in sub-Saharan Africa. Even in Asia and in Latin America, where access is better, many people do not have easy access to a range of choices (122).

For example, in Africa an estimated 53% of couples have ready access to oral contraceptives compared with 70% in Asia, including India and China, and 74% in Latin America and the Caribbean. In Africa just 13% have ready access to female sterilization compared with 42% in Asia and 52% in Latin America. In no region, however, do more than one-third of couples have easy access to vasectomy, and only 3% do in Africa (122).

Differences in family planning policies, availability of donor funding, and contraceptive delivery systems—rather than people's actual preferences—often explain variations in method mix among countries (27, 79, 140).

Internal Clients

Family planning programs must also consider the needs and expectations of "internal clients"—the people within the logistics system. People at each point in the supply chain receive supplies from the people at the previous point—and thus are their clients. In turn they provide supplies to people at the next point—and so have clients themselves. Just as family planning clients depend on service providers for their supplies, service providers are clients of local or regional stores, while regional managers are clients of central program managers and policy-makers who procure supplies (see Figure 3).

Like family planning clients themselves, internal clients within the supply chain have expectations of their suppliers. Family planning providers at service delivery locations are closest to the family planning client, but, unless they receive the products they need, they cannot adequately serve clients (87). Similarly, warehouses and stores in the distribution chain require logistics systems to operate effectively if they are to meet the needs of service providers.

National policy-makers and senior program managers are important internal clients because they control the allocation of funds and other resources for a country's supply chain. They are the clients of international donors and others who supply contraceptive products to developing countries. Donors, lenders, and other suppliers, in turn, expect that logistics systems will provide accurate data on stock levels, accountability for products, and cost-effective operations to assure themselves that the contraceptives they are paying for reach clients efficiently.

People and Performance

Family planning programs rely on skilled workers and good leadership to deliver contraceptives to clients. In family planning supply chains every employee is important, as is the service provider who works directly with the client. Businesses have recognized the value of people to the supply chain and have invested in strengthening their human resources through leadership, supervision, staff development, motivation, and training (90). The same holds true for family planning programs: Improving staff performance improves logistics performance.

Leadership

Strong leadership is vital to good family planning program performance (55, 118). In a long, complex supply chain, leaders at every level help to keep contraceptives and other supplies moving by:

- Establishing national and local strategies for selecting, allocating, and delivering supplies and services,
- Setting and communicating program performance expectations, and
- Ensuring that workers are knowledgeable, skilled, and committed (127).

Some leaders occupy formal supervisory positions—for example, as managers—while others have job titles that may not indicate their leadership role or may not have job titles at all.

In each family planning program some top managers should focus solely on contraceptive logistics, or else logistics may not get enough attention (141, 149). To provide effective leadership in logistics management, supervisors must understand how the supply system works, build good working relationships with warehouse or logistics managers, and collaborate and share information with the clinic managers and other staff they supervise (14).

Family planning program managers may not understand the value and function of contraceptive logistics (82, 84, 138). For example, in Turkey in 1996–1997, surveys in 17 provinces found that local health facility managers who were required to supply service statistics saw the task as a bureaucratic obligation with no relevance to their own jobs. They had no training in using data to monitor service delivery or to manage the flow of supplies and therefore had little incentive to collect good data. Not surprisingly, without useful data and trained personnel, the common results were contraceptive stockouts, poor storage conditions, and expired commodities (41, 94, 135).

Policy-makers can strengthen logistics. Government policies can support and strengthen logistics systems in many ways: Policy-makers can provide more resources, focus attention on improving supply chains, and help staff develop their logistics management skills. Policy-makers often play a pivotal role, as in Mexico, where logistics receives substantial financial and political support (115), and in Chile, where the Ministry of Health views logistics as protecting their investment in contraceptives and has provided funds to improve inventory tracking (114).

Policy-level support can come from either a "bottom-up" or a "top-down" approach. In a bottom-up approach, programs begin by strengthening logistics at the field level. Successes in the field help generate policy-level interest and support because improved logistics systems provide greater efficiency and accountability.

In 1998, for example, Malawi's family planning program first established a field-level distribution and logistics information system that reduced contraceptive stockouts, thus making more contraceptives available to more clients. These improvements attracted policy-level support, and new policies led to improvements in other areas of the supply chain, including the LMIS (6).

In contrast, a top-down approach first builds policy-level commitment for logistics and then—with the support of informed policy-makers—makes improvements to supply chain operations. For example, in 1997, the Jordan Ministry of Health decided to improve the country's contraceptive logistics system. It provided nationwide training and distributed procedures manuals to all service delivery and directorate-level supervisory staff who had been trained. The Ministry also introduced a new information system to collect and report both logistics and service statistics data, which provided policy-makers evidence of success that helped assure continued support (113, 116).

Improving Staff Performance

Managers can improve the performance of the supply chain by analyzing and improving staff performance. Often, managers do not clearly define standards for performance, and staff are not aware of expectations—or they may lack the skills to keep daily records and to track movement of supplies (50, 84, 96, 115). Also, tracking forms and other tools used in supply management often are poorly designed and difficult to use (13).

A number of systematic approaches can assess performance and help devise solutions to problems in family planning programs, including Performance Improvement (23, 92), Situation Analysis (98), and Operations Research (152). Program managers can use results of performance assessments to hold discussions with staff, make improvements, or present training and other performance-improvement needs to policy-makers and donors (49, 96, 116).

FPLM/SI

In Jordan a senior family planning logistics officer meets with a group of midwives to discuss contraceptive supply issues. Like logistics system workers themselves, service delivery workers need to understand the supply chain and their role in it.

Contraceptive logistics training. Assessments often find that the solution to weak contraceptive logistics management is staff training (24, 39, 41, 49, 60, 96, 98, 108, 116, 125). A variety of training approaches have helped improve performance, including competency-based training, classroom training, on-the-job training, internships and apprenticeships, study tours, distance education, and whole-site training (17, 51, 91, 132, 133). Also, job aids such as procedures manuals and quick reference guides can support training, ensure the consistency of the information provided, and contribute to the long-term continuity of the supply chain (52).

Most supply chain workers need to know how to keep daily records, monitor stock levels, and correctly record supplies received, distributed, and on hand. The quality of record keeping varies among programs and among different levels of the same supply chain.

In Jordan, for instance, a 1997 Situation Analysis found that only 30% of health centers and 25% of directorates kept accurate records of contraceptive inventories. In 1999, after widespread logistics training in clinics, 63% of health centers and 52% of directorates kept accurate records of their inventories (116).

In Chile in 1990 the family planning program had 4.5 years' worth of condoms on hand, far in excess of demand and thus in danger of deteriorating, since the standard shelf life of condoms is 5 years. By 1993, after training improved forecasting skills, the program could reduce condom stock levels to an appropriate 10 months' worth. This reduction not only helped minimize overstocks of contraceptives but also reduced the need for warehouse space (26).

Some programs have established a cadre of trainers to meet the continuous need for skilled employees (52). In Jordan in 1999 the Ministry of Health developed a cadre of logistics trainers because few staff had any logistics skills. This cadre of trainers now provides refresher training as well as training for new logistics workers (116).

Training can improve staff performance when the causes of performance problems are deficient skills, lack of knowledge, or poor attitudes. Training, however, cannot correct problems related to inadequate infrastructure, inappropriate regulations or policies, or other aspects of the organizational environment, such as insufficient information flow (49).

Sustaining Good Performance

Like all workers, supply chain staff need continuing support and reinforcement from managers and supervisors in order to keep skills fresh and sustain good performance. Often, organizations devote substantial resources to training without recognizing the importance of other aspects of job performance, such as good compensation systems, motivated workers, and skillful supervision.

Motivated staff sustain good performance (11, 68). Some studies have shown that pay is a powerful determinant of family planning job performance (29, 53, 75), while others have not (4, 78). Studies also have linked good performance to noneconomic factors such as accreditation, recognition, status, and employee commitment (16, 105).

Skillful supervision and effective monitoring can contribute to good-quality health care (15, 104). Supervisors can ensure that family planning logistics staff are doing their jobs correctly, are motivated, and focus on serving clients. In most logistics systems, however, supervisors work in central or regional offices and visit clinics and other service delivery points only once or twice a year.

A 1999 assessment in Nepal, for example, found that supervision took place sporadically, and in some places not at all. The average number of Ministry of Health supervisory visits to service delivery locations in the preceding six months was 1.5. The number of logistics supervisory visits averaged less than one (84).

Since supervisors have many different activities to monitor during site visits, they tend to have little time for discussion with staff and cannot help with on-the-job training or problem solving. In many cases the supervisor leaves the site without developing and discussing specific recommendations for improvement and with no written recommendations or plan for follow-up. Without guidance, staff often find it difficult to improve their own performance or the performance of the facility as a whole (9).

Even frequent supervisory visits may not help if supervisors are not trained to provide on-site support and guidance to staff. For example, an analysis in Botswana of maternal and child health and family planning facilities in 1995–1996 found that, although supervisors had visited over 90% of facilities at least once in the six months before the study, in only 65% of visits did supervisors ask the workers about problems. Moreover, in only 50% of visits did supervisors examine clinic records, in 43% observe service delivery, and in 38% make suggestions (3).

PRACTICAL TIPS —
Improving Staff Performance

- Define the supply chain and the roles of the people who work in it. Emphasize to staff that clients depend on them to do a good job.
- Include a "supply chain management" category in the job descriptions of all staff handling contraceptives and other essential health supplies.
- Establish mechanisms for supervising supply chain staff and for monitoring logistics operations.
- Provide staff with feedback and appropriate training. Reward superior performance.
- Identify and support both formal and informal leaders at all levels of the supply chain and encourage them to motivate their co-workers to focus on serving clients.

The Role of Information

In a family planning logistics system, contraceptives flow through the supply pipeline in response to information about client preferences, contraceptive use, and stock levels. A strong logistics management information system (LMIS) allows programs to manage and monitor the flow of contraceptive supplies, account for products in the supply chain, reduce supply imbalances, and improve cost-effectiveness. Data from the LMIS also are useful for evaluating programs and supply chain operations.

Information is valuable to logistics management, however, only if it is accurate, timely, and tailored to the specific audiences that will use it, including policy-makers, program managers, and logistics system staff. Donors are another important audience. Donors are more likely to support family planning programs that can provide reliable statistics on contraceptive supplies and their use and can account for the products that the donors have provided (see Profile, p. 11).

When programs first establish an LMIS, managers tend to use it only to schedule and manage the flow of supplies and to deal with supply problems. Then, as programs gain experience with the LMIS, managers use it to anticipate and prevent problems. In Kenya's family planning program, for example, the long-standing LMIS includes an automated system that collects data when supplies are delivered to

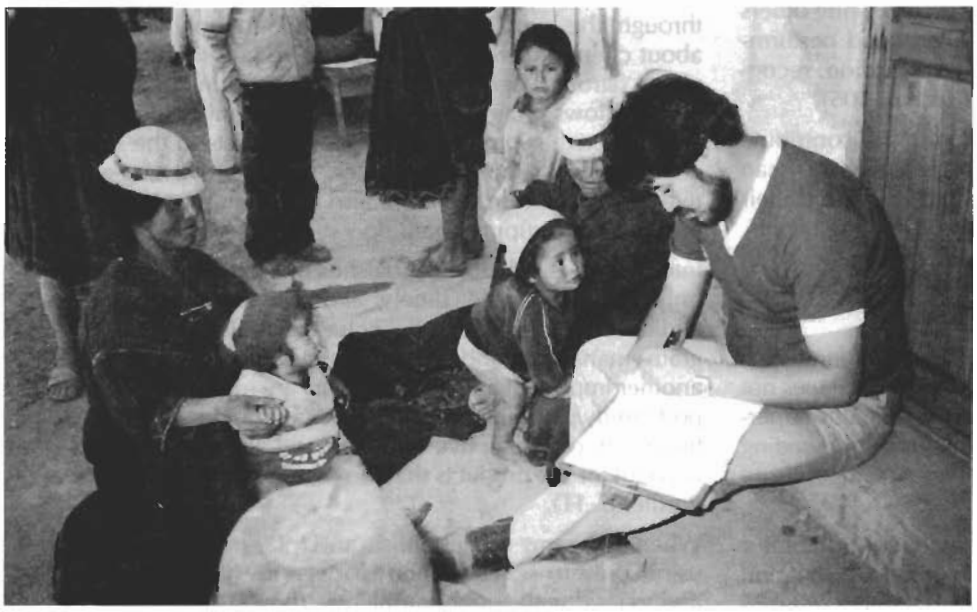
PRACTICAL TIPS —
Highlighting the Benefits of Logistics to Policy-Makers

- Collect and compile accurate data on the availability, use, and costs of contraceptives.
- Analyze the information carefully and creatively. Use it to explain to policy-makers how good logistics improves a program's reach, client service, and cost-effectiveness.
- Present the data in an easy-to-understand format, including tables, graphs, and charts.
- Identify a "logistics champion" within the family planning program—that is, someone in the program who recognizes the value of logistics and who can influence others to help.
- Respond to the concerns of specific policy-makers. For example, a Minister of Finance would likely be interested in cost-effectiveness, while a Secretary of Health would be more interested in numbers of clients served. Donors will want data that show the use of the supplies that they paid for.

district stores. Managers use this information to calculate the quantities needed to maintain a six-month supply, to schedule deliveries so as to prevent understocks, to reserve the appropriate-sized transport, and to plan an efficient travel route (150).

The LMIS is a central part of any logistics system. A strong LMIS provides data to:

- Improve client service by accurately forecasting contraceptive demand, procuring the products and quantities in demand, and monitoring to maintain adequate stocks;
- Lower costs by reducing loss, damage, and waste of supplies;
- Improve policy decisions and program management through better reporting and analysis;
- Identify when immediate supervisory action is required —for example, in the event of stockouts or losses;
- Ensure accountability for the use of supplies purchased with public funds or provided by donors.



PPLM153

In Bolivia a health worker conducts an exit interview with a family planning client, while her children look on. Program staff rely on data on the methods that clients use to help determine supply needs. A top priority for logistics management information systems is to collect and report good information on contraceptives distributed to clients.

Collecting Data

Only a few kinds of data are essential for managing the supply system, but they must be available for every product, at every level, all of the time. The five essential types of data for logistics are: stock on hand, consumption by clients, losses and adjustments, dates of orders and receipts, and amounts on order (25, 47, 48).

These data comprise the core of an LMIS. Together, they provide the information required for the key logistics functions—forecasting, procurement, and distribution. The first three—stock on hand, consumption by clients, and losses/adjustments—are recorded on local stock records and aggregated or reported to higher levels periodically. The others—dates of orders/receipts and amounts on order—are integral parts of individual transaction records. These are not routinely reported to higher levels but are valuable for special analysis, such as calculating how long it will take for contraceptive orders to arrive.

Stock on hand. Supply chain managers must know exactly what products and how much of each item are in stock and where the stock is located. Data about stock on hand provide this information. At the service delivery level, data on stock on hand guide decisions such as when to place a new order (48).

A well-designed LMIS converts data on quantities of each product (stock on hand) into data on how long supplies will last (months of stock on hand). To do so, managers compare available supplies with average rates of use. This calculation simplifies decisions about when to order supplies. Knowing that there are 1,254 condoms in stock does not tell logistics managers when to reorder, but knowing that this amount equals a three-month supply of condoms in stock does.

Contraceptive consumption. A top priority for every LMIS is to collect and report accurate information about clients' consumption, or use, of contraceptives and other supplies (2, 103, 106). In LMIS terminology, this information is termed "dispensed-to-client" data. Program managers use the data to determine how many supplies to order and to project needs.

If data on clients' contraceptive use are not available, a program can use data on the quantity of supplies issued by various levels of the supply chain closest to the client—for example, the number of contraceptives that subregional stores issue to service providers. Such data, however, are only a second-best alternative to dispensed-to-client data since they are not always accurate—that is, the number of contraceptives issued may not be the number given to clients.

Losses and adjustments. Even the best logistics systems experience some supply losses due to expiration, theft, damage, or mishandling. Losses and any other adjustments in supplies—such as transferring supplies from overstocked to understocked locations—must be recorded and reported separately from data on consumption. The separate records allow managers both to deal with the causes of losses and adjustments and to develop more accurate forecasts of client demand.

Dates of orders/receipts and amounts on order. Dated transaction records, usually called "issue vouchers" or "requisition and issue vouchers," govern the flow of supplies from one point in the supply chain to the next. To prevent contraceptives from being lost during shipment, both the facility sending a shipment and the facility receiving it must track the amount requested and the dates that the supplies were ordered and received. The interval between ordering and receiving products is known as "lead time."

When managers know how long it will take contraceptives to arrive, they can set maximum and minimum inventory levels and can calculate when to reorder. Managers who wait too long to reorder risk stockouts. Those who order too soon waste money on transportation and other supply functions and have more supplies on hand than they need, risking losses due to product expiration.

Recording and Reporting Data

A good LMIS records and reports data from all facilities in the supply chain. In general, LMIS data are recorded on stock-keeping records (store ledgers, inventory control cards, bin cards), transaction records (requisition and issue vouchers, packing slips), and consumption records (service records, daily activity registers).

Recording and reporting data are often difficult, especially where programs lack modern information technologies. In the Philippines in 1991, for example, data on consumption of contraceptives either were not available at all or were not put in the hands of supply chain managers. Instead of being allocated on the basis of clients' use, contraceptives were allocated to provinces in equal amounts, causing widespread supply imbalances. In 1997, after an LMIS had been developed as one step in strengthening the logistics system, data collection and record keeping improved. The program could allocate contraceptives on the basis of client consumption, reallocate overstocks to understocked areas, and monitor and evaluate performance better (82).

In many developing countries LMIS reports move from the service delivery level to more central levels on a fixed timetable (7, 60, 77). A better approach is to link reporting to resupply—such as when the LMIS report is also the request for new supplies. In Ghana, for example, contraceptive resupply is based on the dispensed-to-client data submitted through the LMIS. Because resupply depends on receipt of these reports, reporting rates come close to 100%, and stocks are adequately resupplied (28).

Another effective strategy is to gather LMIS data when supplies are delivered (150). In Bangladesh, for example, staff from service delivery points pick up monthly supplies from their sub-district stores and submit a monthly consumption report at that time. The sub-district stores can use these data to determine the quantities of supplies that service delivery points need (83).

In Turkey a "topping up" delivery system simultaneously gathers logistics data and delivers the right amount of contraceptive supplies. In this system a distribution officer with a fully stocked vehicle visits each health facility every four months. The officer makes a physical count of supplies on hand, calculates the average monthly consumption based on the total supplies on hand at the previous delivery visit, calculates a new maximum stock level, and then "tops up" the clinic stocks to that level. This system has substantially reduced stockouts and in some cases has eliminated them (40).

Automation. Programs prepare logistics reports by processing LMIS data either manually or by computer. At the service delivery and intermediate levels, logistics data processing is almost always manual. At the central level, however, computer processing is more common, particularly as the volume of data grows and reports become more complex.

As family planning programs manage more and more supplies, a computerized LMIS becomes essential. With automation, the quality, timeliness, and use of logistics data improve dramatically—because more supplies can be tracked, sites can be monitored regularly, data can be quickly aggregated, analyzed, and submitted to decision-makers, and information can be shared easily. Also, as family planning priorities, method mixes, organizational structures, and clients' needs change, computerized LMIS systems make it easier to respond.

There is further reason to automate LMIS in countries where family planning is being integrated with other health programs or decision-making is decentralizing. Computerized data processing is necessary to manage a wider array of products within integrated systems or to provide data to a larger number of managers within decentralized ones (7, 48).

Linking with Other Information Systems

Health information systems (HIS) are essential to health service delivery organizations. In developing countries where HIS are being improved, many people are asking whether to include the contraceptive LMIS in an umbrella HIS. Similarly, an increasing number of countries are considering integrating their contraceptive LMIS with their pharmaceutical LMIS.

Health Information Systems. In many developing countries the contraceptive LMIS is better developed and more sophisticated than the HIS, often because the contracep-

Profile:

Policy-Makers Can Use Logistics Data

When Dr. Wesley Sangala, Secretary for Health and Population, Ministry of Health, Malawi, headed the effort to redesign his country's family planning LMIS, he immediately realized that the information from the new system could be useful for communicating with donors.

"Without the new system," he said, "information about [contraceptive] consumption is not on my desk, and I doubt I have it. If donors should ask, I don't know the answers. It isn't right for donors to give without the satisfaction of knowing any more than vague ideas about how their commodities were used and without exact figures to back them up."

As Dr. Sangala recognized, donors may offer programs more support when the system ensures accountability.

Assessing the Supply Chain

This checklist helps assess how the supply chain functions. It suggests the main questions to ask about the various components of a supply chain.

More comprehensive, qualitative information about a supply chain can be obtained using an instrument such as the Logistics System Assessment Tool. Quantitative information on stock levels, storage conditions, and LMIS data can be obtained using the Logistics Indicators Assessment Tool. Both instruments, which are detailed, categorized lists of questions, are available from the DELIVER Project at John Snow, Inc., 1616 N. Fort Myer Drive, 11th Floor, Arlington, VA 22209, USA.

Client-Focused Service

- ❒ Has the program identified a list of products that it is committed to keeping available at all times, to all clients?
- ❒ Does the program track how well clients are being supplied with the contraceptives they want?
- ❒ Are the satisfaction of clients and compliance with service delivery standards measured regularly?
- ❒ How often do clients leave service delivery points without the product they came for?
- ❒ How often are facilities at any level out of stock?

Logistics Management Information System

- ❒ Does the LMIS cover, for every reporting period, the beginning inventory balance, supplies received, supplies issued, ending inventory balance, and system losses?
- ❒ Do workers throughout the system keep records for all contraceptives, by brand?
- ❒ Does the LMIS gather, aggregate, and report dispensed-to-user data?
- ❒ Is there a procedures manual for staff working with the LMIS?
- ❒ What percentage of facilities accurately report LMIS data regularly?
- ❒ Is LMIS information used for continuous monitoring of supplies, orders, and forecasts?
- ❒ Is feedback provided to all reporting facilities?
- ❒ Do stockouts trigger immediate supervisory action and placement of an emergency order?
- ❒ Do policy-makers and senior managers receive and use logistics reports?
- ❒ Is a clear, easy-to-understand LMIS report, showing trends in contraceptive consumption and stock levels, regularly prepared and circulated to all stakeholders?
- ❒ Are logistics data periodically cross-checked against service statistics, survey data, and physical audits?

Supply Chain Staff

- ❒ Does the organization have a logistics unit with adequate staff and budget?
- ❒ Are logistics staff performing appropriate activities?
- ❒ Does a senior logistics manager with sufficient decision-making authority have overall responsibility for managing supplies to meet program objectives?
- ❒ Are supply chain staff trained in contraceptive logistics?
- ❒ At all levels are job expectations, performance, and supervisory relationships based on clear written procedures and policies, and are these criteria made known to staff?
- ❒ Do staff members in the supply chain, including service providers, have adequate logistics management skills to play their roles in forecasting, requisitioning, storekeeping, inventory control, distribution, supervision, and LMIS reporting?
- ❒ Is there a permanent program to maintain and improve the performance of supply chain staff at all levels?
- ❒ How frequent is logistics staff turnover, and how is turnover handled?

Forecasting and Procurement

- ❒ Are periodic short-term and medium-term consumption forecasts prepared, updated, and validated for every program, commodity, and brand?
- ❒ Do procurement plans take into account inventory levels, shipment and handling schedules, and anticipated changes in program activity?
- ❒ Do program managers know and comply with procedures and schedules for ordering commodities from suppliers and donors, including trade, regulatory, and currency guidelines?
- ❒ Does the program actively monitor and manage coordination of donors and suppliers to ensure continuous supply?
- ❒ Are program managers aware of when funding decisions are made?
- ❒ Is any outside funding tied to specific brands, thus limiting contraceptive selection?
- ❒ Are projections of the cost of goods, warehousing, and transport included in program cost analyses and budgeting?
- ❒ Which claims on budget resources will receive priority if funding is less than required?
- ❒ Has a working relationship been developed with customs officials so that notice of customs problems comes early?

Warehousing and Storage

- ❒ Is storage capacity large enough to meet current needs, and does the program have plans to meet future needs?
- ❒ Do storage conditions meet acceptable standards, including guidelines for cleanliness, orderliness, arrangement and labeling of supplies, security, ventilation, light, temperature, fire safety, pest and water precautions, and use of pallets and shelves where appropriate?
- ❒ At least once a year does each storage facility clear out all obsolete, expired, and unusable items?
- ❒ Are physical inventories conducted at least annually at all storage sites?
- ❒ Does the program have and comply with procedures for assuring product quality, including verifying that received products meet procurement specifications, visually inspecting goods, sampling and testing as required, destroying unusable products, and recording client complaints about product quality?

- ❒ Are all contraceptives inventoried according to FEFO stock management procedures?

Distribution and Transport

- ❒ Are the push and pull links between levels in the distribution system working effectively?
- ❒ Does the distribution system have regular procedures to restock each level, such as maximum/minimum or topping up?
- ❒ Does every level maintain inventories according to these procedures?
- ❒ Have stockouts occurred during the previous year? If so, what products and brands were stocked out? How often did the stockouts occur, at what levels or locations, and how long did they last?
- ❒ Does the logistics system track and document commodity losses and investigate if large quantities of supplies are unaccounted for?
- ❒ Are transportation resources adequate, maintained, and used effectively?
- ❒ Has the distribution system suffered any serious transport-related disruptions?

Policy and Adaptability

- ❒ Is logistics information provided to appropriate policymakers both inside and outside the organization including the Ministry of Health, Ministry of Finance, and donors?
- ❒ Does the program rely on donors to supply contraceptives and to provide logistics technical assistance? If so, is there a long-term plan for local funding of contraceptive purchases and related logistics services?
- ❒ Can the logistics system obtain the financial resources, either internally or externally, to meet growing demand with adequate, regular supplies?

Sources: Family Planning Logistics Management, 1995 (42), Family Planning Logistics Management, 2000 (49), United Nations Population Fund, 1995 (145), Wolff, 1991 (152).

James Phillips/Population Council

This warehouse storage shelf is stocked with an ample supply of contraceptives. Products are labeled clearly, easily accessible, and organized for efficient management.

tive LMIS has received more donor support (102). Thus the contraceptive LMIS may attract the attention of policymakers who want to upgrade the HIS.

Merging the two systems is rarely appropriate, however, because they have different purposes, serve different users, and therefore have different operating requirements (49). HIS collect service statistics such as rates of health center use and types and number of health problems treated, information on births and deaths, surveillance data, and financial and management data. Compared with the contraceptive LMIS that reports data frequently and in great detail, HIS typically capture less detail and report information infrequently. For example, although a HIS may track the stock levels of 10 to 20 representative products, it does not provide enough data to manage the logistics systems—that is, data on quantities of all supplies provided to clients, stock levels, or losses at all facilities.

Some countries have tried to merge HIS and LMIS functions but found that slower reporting and loss of vital logistics details compromise the LMIS (85). The two systems, however, can be made compatible and complementary. For instance, summary LMIS data on stockouts can be reported to the HIS for planning purposes.

Pharmaceutical LMIS. Integrating the contraceptive LMIS with a country's pharmaceutical LMIS is more likely to succeed than trying to merge the LMIS and HIS. In most countries the contraceptive LMIS and the pharmaceutical LMIS historically have been separate, but they are similar in design and intended function. In merging the two systems, careful consideration must be given to the total volume of data processing required. For example, a contraceptive LMIS that effectively tracks 5 to 10 items manually will not easily be expanded to track an additional 1,000 pharmaceutical items.

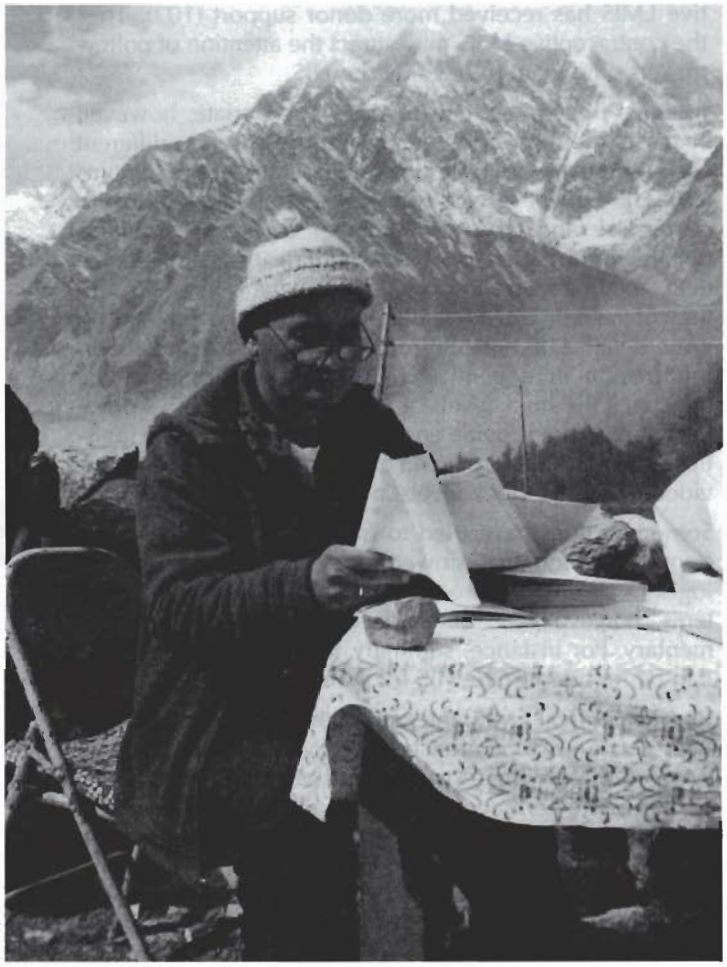
Integrating the two systems usually will require automation, at least at the central levels of the supply chain. Retraining logistics staff also may be needed at all levels of the system. Integration often takes years to accomplish and does not always succeed.

Forecasting and Procurement

Accurately forecasting contraceptive use helps ensure that enough supplies will be available to meet client demand, without having too many. Effective procurement—including calculating how many contraceptives should be ordered, of what type, and when they should be shipped—ensures that the program receives a continuous supply (47).

Forecasting

Forecasting the number of each type of contraceptive that clients are likely to use is the only way to ensure that programs order the right amount of each. Having too few contraceptives may result in stockouts and dissatisfied clients, while too many wastes resources and overburdens the supply system. Of course, factors other than inaccurate forecasts—including budget constraints, fluctuations in product availability from manufacturers, introduction



FPLM/JSI

With the Himalaya mountains behind him, this logistics field officer in Nepal reviews family planning program field reports as part of his responsibilities for monitoring logistics operations. To forecast supply needs accurately, programs use a variety of data, including client visits to service delivery sites and supplies used.

of new products, special promotional events, and complications in donor coordination—can cause supply disruptions.

At a minimum, a commodity forecast should be done annually to cover a three-year period (49). The LMIS provides the information needed to make forecasts and to develop procurement plans. Three sources of data help estimate contraceptive needs (47):

- **Historical consumption data.** The quantities of each contraceptive method that clients have received over a specific period of time provide a guide to future needs. To obtain the most accurate estimates, programs should use data on quantities actually provided to clients. If these data are unavailable, other statistics can help—for example, data on supplies issued to service delivery points, or inventory levels in the distribution system closest to the client. A drawback of these other data is that they make no distinction between contraceptives actually distributed to clients and contraceptives lost, destroyed, or stolen (25, 43).
- **Historical service data.** Regular management reports at service delivery sites provide other data for forecasting: the number of new clients and revisits for each method (or brand) (25). Forecasts prepared from service data can be inaccurate, however, if reporting systems are weak, if variations exist among programs in definitions of service data, or if demand is growing rapidly.
- **Population data.** Information from population surveys helps to project demand for contraceptive use several years ahead. Such data are most appropriate for new programs that do not have historical consumption or service data. Forecasts based on population data must make assumptions about growth of demand.

Validating the Forecast

Because it is about the future, a forecast can never be perfectly accurate (47). The forecaster must find ways to reduce forecasting errors as much as possible, however—that is, to validate the forecast.

To validate a forecast, the forecaster assesses the strengths and weaknesses of each type of data and, if needed, makes adjustments to the forecast. For example, a forecast based on historical consumption data from 90% of facilities reporting will be more accurate than—and thus should be used instead of—a forecast based on 50% of facilities. Also, service data from a period during extensive stockouts will not reflect actual demand. The forecaster reconciles the possible differences among forecasts derived from the different types of data (43, 47).

The forecaster must account for the effect on future consumption of program plans, new methods, and other influences on demand, such as publicity campaigns. The forecaster also must plan for the growth in the number of people of reproductive age and the percent using contraceptives. Program managers should be involved throughout the forecasting process because of their familiarity with their program needs and their knowledge of program plans. In addition, less predictable events, such as political and economic turmoil, and even bad weather, affect contraceptive demand and supply.

Estimating Requirements

While forecasting predicts future consumption, the process also must take into account supplies already on hand and on order. The estimated quantity of each type of contraceptive required in a given planning period can be calculated as shown in Figure 4.

If the net supply requirement is a negative number, then that amount must be obtained to maintain the desired stock level. If the number is positive, then there is a possible oversup-

Figure 4. Formula for Estimating Supplies Needed

Estimate of Requirements = Stock on hand at all levels + Quantities already ordered + Transfers expected from outside sources − Estimated consumption for the period − Losses and transfers to outside systems − Desired stock at end of period

Source: Family Planning Logistics Management, 2000 (49)

Population Reports

ply of stock, and no order needs to be placed (47). An overstock may suggest the need to reallocate contraceptive supplies so that clients in all locations have enough supplies.

Estimated requirements can be calculated using computer software programs designed for contraceptive logistics management. Such programs are powerful tools that can help managers with forecasting, managing supplies through the supply chain, and procurement planning (see box, p. 16).

Procurement

As well as receiving donated contraceptives, in which case the donating agency does the procurement, many family planning organizations acquire contraceptives on their own. They do so in a variety of ways—directly from manufacturers, through procurement agents, or through social marketing programs (139). They may procure contraceptives with their own funds or with credit from the World Bank. Program managers decide which option is most appropriate for their situation. Each option has its own set of complex regulations (154). Regardless of how managers procure commodities, the goal should be to make the procurement process as effective and efficient as possible (110).

Centralized versus decentralized procurement. Procurement that is centralized at the national level is often best for contraceptives. There are several reasons: International bidding is complex; central procurement can greatly reduce costs through economies of scale and volume discounts; centralized payment often increases suppliers' confidence and encourages more bidders; and centralized procurement facilitates quality control of goods entering the pipeline (7, 99, 148).

Many public health systems are decentralizing their management (1, 66) (see p. 21). Even if countries decentralize health care, the overwhelming advantages in cost, quality-control, effectiveness, and efficiency argue for keeping procurement centralized (148).

Competitive procurement. Programs often use competitive procurement to buy contraceptives on international markets. Competitive procurement involves soliciting sealed bids from all or a selected group of suppliers based on clear written product specifications, specified quantities, and established procedures (110). Competitive procurement usually lowers unit costs but requires substantial procurement expertise and at least 9 to 18 months to complete the procurement cycle (139).

Procurement agents. In some cases, programs use the services of a reputable procurement agent to make the purchases on their behalf. Sometimes programs may not have the experience to acquire contraceptives through competitive procurement, or sometimes manufacturers are unwilling to bid on the quantities required by a small program.

Two well-known organizations that serve as fee-based contraceptive procurement agents are UNFPA <www.unfpa.org> and Crown Agents <www.crownagents.com>. They can offer volume discounts, arrange pre-shipment quality testing, and obtain preferential freight and insurance rates.

Steps in contraceptive procurement. Because the procurement process takes a long time, programs must know the lead time required and take each of the steps early enough to ensure that deliveries follow the plan. The United States Agency for International Development (USAID), for example, begins procurement planning three years before it needs contraceptive supplies.

Contraceptive procurement usually follows eight steps (49):

Step 1 — Prepare procurement plan. Develop product specifications, specify timing of procurement activities, and estimate quantities needed.

Step 2 — Reconcile needs with funds. Available funds may not cover amounts needed, so program managers should have contingency plans that set priorities (145).

Step 3 — Select procurement method. Some programs require competitive international bidding, while others must or prefer to buy locally. Some programs have procurement units, while others prefer to use a procurement agent (139). Procuring contraceptives requires specialized knowledge and expertise, often related to the characteristics of the contraceptive method (see Table 1).

Step 4 — Select suppliers. Of course, contraceptives should be purchased only from reputable suppliers. Managers can obtain supplier references from respected agencies accustomed to procuring contraceptives—for example, UNFPA, the International Planned Parenthood Federation, and USAID.

Table 1. Procuring Contraceptives Requires Special Skills

Characteristics	Skills Required
Contraceptives (for example, condoms) require special testing protocols and procedures.	An understanding of testing protocols and knowledge of testing laboratories. Familiarity with national and international quality standards.
Unlike most drugs, some contraceptives (for example, Norplant implants) are not available in generic form. Equivalent products may be available only under brand names.	Knowledge of formulations and brands. Ability to draft specifications to maximize competition.
Contraceptives are manufactured in only a few developing countries. The scope for local purchasing at good prices may be limited.	International purchasing skills, including international contracts law and payment procedures.
There may be a limited number of contraceptive suppliers.	Advanced negotiating skills. Ability to obtain information on international market prices.
The quantities purchased by a Ministry of Health may be small and therefore unattractive to manufacturers.	Negotiation skills. Knowledge of pooled procurement options. Knowledge of bulk purchasing options.
Brand preferences may be a major factor in clients' acceptance of methods.	Knowledge of family planning program considerations. Ability to collaborate with service delivery and communication components of the program on issues related to branding.

Source: Family Planning Logistics Management, 2000 (49) *Population Reports*

Software for Procurement Planning

The requirement estimation formula (see Figure 4) has been applied in various computer software programs for reproductive health programs. One such software program is PipeLine, designed to assist program and logistics managers with forecasting, pipeline management, and procurement planning. PipeLine is currently used by program logistics staff and managers in 20 countries in Asia, Africa, and Latin America.

Designed by JSI, the PipeLine software program can be used to monitor total quantities of contraceptives consumed (actual and forecast), shipments of new products (planned, ordered, shipped, or received, and their value), inventory levels, and changes in inventory. From this information the software program can calculate procurement quantities and let the user know what actions to take for each shipment and when to take actions.

The program also predicts problems in the supply chain (for example, shortfalls, stockouts, or surpluses); calculates the procurement quantities needed and their estimated costs; and calculates consumption trends for up to 10 years to assist in forecasting. It can generate reports helpful to policy-makers, donors, and suppliers of contraceptives (46).

PipeLine is available from the Information Systems Manager, DELIVER/John Snow, Inc., 1616 N. Fort Myer Drive, 11th floor, Arlington, VA 22209, USA; by phone at (703) 528-7474; or on the Internet at http://deliver.jsi.com/software/software.html.

Step 5 — Specify terms and place the order. Planning and scheduling contraceptive shipments require careful attention. For security, convenience, and cost-effectiveness, when quantities ordered permit, programs should order shipments so that shipping containers are full. Contraceptives should not be mixed during shipment with toxic or flammable goods. Huge shipments that overwhelm a country's customs clearance, receipt testing, and warehouse capacity should be avoided. The frequency of shipments also depends upon such factors as the reliability of shipping services, and weather conditions. Programs often prefer to have excess stock on hand rather than face the risk that shipment failure might cause stockouts and require emergency shipments (145). Purchasing insurance for commodities ordered can save a program substantial amounts of money in lost or damaged supplies, as well as procurement time (14).

Step 6 — Monitor order status. Monitoring includes tracking the supplier's receipt of the order, order fulfillment, and shipping and receiving dates.

PRACTICAL TIPS — Improving Forecasting

- Ensure that the LMIS collects the most accurate data possible on contraceptive consumption, stock levels, transfers, and losses.
- Involve family planning program staff in forecasting demand for contraception. They are best placed to analyze LMIS data; they know the expected impact of program plans; and they understand clients' preferences among contraceptive methods.
- Prepare contraceptive forecasts using as many types of data as possible: logistics data, service statistics, and demographic data. Follow with a reconciliation of the individual forecasts to produce a single, consensus forecast. Obtain agreement from all key units within the family planning organization.
- Integrate forecasting of demand into regular supply chain management. Forecasting (and comparing the forecast with actual consumption) is a process, not a one-time activity.
- Plan for success. Take plans and projections of growing contraceptive use into account.

Step 7 — Receive and check goods. Besides adhering to local customs regulations, logistics managers should develop good working relationships to ensure that customs officials notify them immediately of any problems and can help resolve the problems quickly (145). Typically, the program checks the quality of contraceptives at the entry point into the country or at the central warehouse (112).

Step 8 — Make payment to suppliers. Programs must make payments to suppliers at the contracted time. Late payments, like nonpayments, jeopardize relationships with suppliers that can cause disruption throughout the supply chain.

Monitoring the Forecast and Distribution Cycle

The job of the forecaster does not end with placing an order for contraceptives. Particularly because procurement lead times are so long, continuous monitoring of key data will help program managers avoid over-supply or under-supply. Monitoring can indicate the need for adjustments to orders or delivery schedules. Quantities are monitored at all key points in the pipeline, including quantities:

- Needed, as calculated by the requirements estimate,
- Purchased by the program or promised by donors,
- Planned to be shipped by commercial suppliers or donors,
- Shipped by commercial suppliers or donors,
- Received by the program,
- Dispensed to clients, lost, or damaged (47).

After an order has been placed, programs may want to either increase or decrease the amount ordered. This option, while desirable, often may not be available or reasonable. Contracts may not allow changes to shipments, or such changes may be too expensive. Speeding up or delaying certain shipments may be more realistic than changing the amount of the order. Long lead times, however, may make shipment adjustments difficult to foresee, and they may cost extra (47).

The future is always uncertain. Forecasted contraceptive consumption rates will differ from actual consumption rates. While such differences cannot be eliminated, program managers can prepare for variability, for example, by negotiating flexible contracts with suppliers to help ensure a steady supply for clients.

Distribution

Distribution—that is, the storage and transportation of supplies—functions best in a family planning program when it focuses on getting contraceptives to clients, not just moving them from one point to another and keeping them on shelves. A distribution network that demonstrates its value to the program and its clients finds it easier to attract funds and policy support.

In some developing countries the distribution function of the health care logistics system performs extremely well. In Kenya, for example, the Division of Family Health within the Ministry of Health distributes contraceptives to 60 district stores and 530 service delivery points through its Logistics Management Unit (LMU) (see Profile, p. 19). Software developed by the LMU helps staff manage vehicle capacity and delivery routes (81).

In developed countries the commercial sector's distribution costs have been estimated at 15% to 20% of the value of goods being handled (95). Such general estimates can be misleading because costs depend on many factors specific to programs (30). The annual investment in the distribution system of a developing-country reproductive health program, however, should be at least this level. If the percentage is much lower, more resources probably are needed.

Streamlining Distribution

A single, central warehouse cannot effectively supply thousands or even hundreds of service delivery points. Thus most family planning programs use a tiered distribution network, with several storage and distribution levels. A typical contraceptive distribution network might have three to five levels. A five-level network might include, for example, central, regional, district, clinic, and community distribution points.

Today, as transportation infrastructures improve in developing countries and as programs focus more attention on cost-effectiveness, the trend is for contraceptive distribution networks to have the minimum feasible number of levels (49). Streamlining the distribution network can save money and, with fewer levels, contraceptives can reach clients faster (45). To determine the appropriate number of levels, managers should consider the total length of the pipeline, the desired frequency and speed of delivery of contraceptives, the cost of their transport, storage, and handling, and operational constraints.

Push versus pull. Supply chains use one of two distribution models: "push" (allocation) or "pull" (requisition). In a push system the highest level decides what contraceptives to move through the supply chain, how many, and when and where to allocate them. In a pull system each lower-level facility controls the flow of products through the supply chain by ordering the quantity needed. Some systems use a combination of these two approaches. For example, regional warehouses may pull from the central store and then push to health centers (48).

Either type of system can work effectively if logistics managers have the needed data. The appropriate distribution model depends on the needs of the program, the management skills of staff at each level, the logistics data available at each level, and the number of different contraceptive methods that the program offers (48).

A push system is usually best where data processing and analysis capabilities are strong at the central and intermediate levels. A push system is required where demand for contraceptives exceeds supply, because higher levels must ration supplies among competing service delivery facilities and their clients. Conversely, a pull system is best where the responsibility for program operations is decentralized or where staff at lower levels are well-trained in commodities management (152).

Improving Storage

Contraceptive supplies are stored at every level in the supply chain. Storage facilities include warehouses at central and intermediate levels, storerooms, clinics, depot holders, even the shoulder bags of health workers—wherever contraceptives are received, kept, handled, and issued.

Lack of adequate storage can mean that contraceptive supplies are spoiled and wasted. Keeping supplies secure is key.

Ensuring that clients receive an uninterrupted supply of good-quality contraceptives depends on keeping supplies secure, free from damage by insects, rodents, and other pests, and away from environmental hazards. Contraceptives should be stored away from excessive heat, direct sunlight, and water (14, 25, 48, 103). The storage area should be clean and well ventilated. Supplies should be organized and stacked to minimize damage (25, 48, 103, 137).

The potential for product loss or damage due to pests is a problem at many contraceptive storage facilities (111). Preventive measures include regularly inspecting storage facilities and designing or modifying them to keep pests out and to avoid conditions favorable to infestation. Programs considering the use of chemical pesticides should consult with country or regional experts. In many cases, nonchemical solutions are appropriate; if mice are the problem, getting a cat may be the best solution (101).

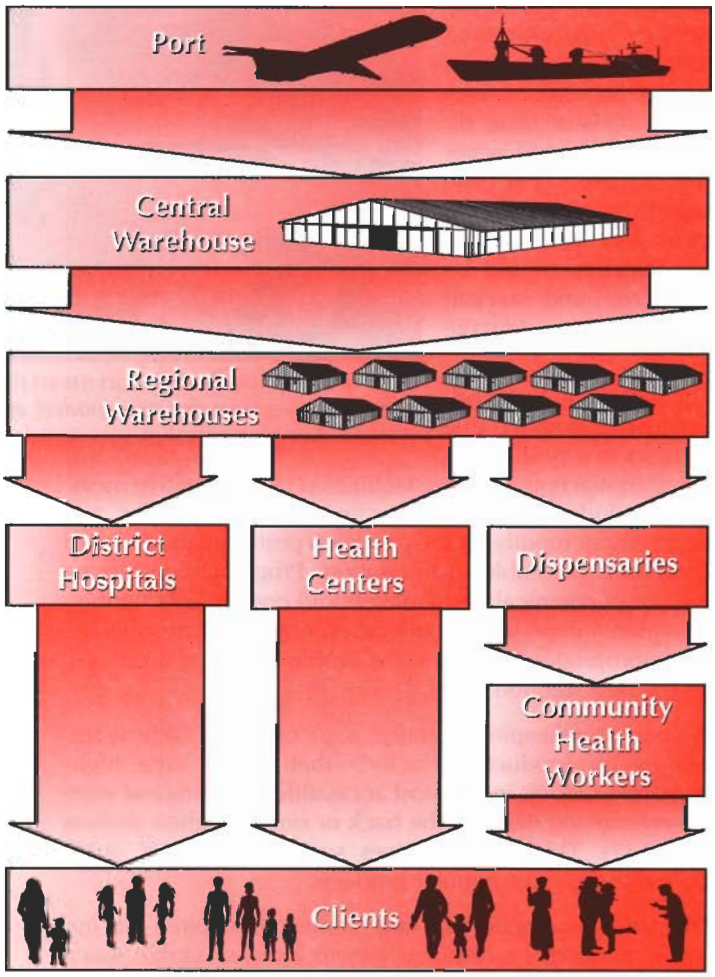
A good storekeeping practice is to organize large warehouses by product "velocity"—that is, to store high-demand products in the most accessible locations and store slower-moving items in the back or on the highest shelves (36, 137). This practice gives supply room staff quick access to the most popular products.

Discarding supplies that are damaged, expired, or no longer needed is a low-cost way to increase usable space and to improve efficiency (84, 124). Staff can manage their storage sites and service delivery points better when they

PRACTICAL TIPS — Improving Distribution

- Treat storage and transportation as one integrated distribution function. Focus on moving contraceptives to clients as quickly and efficiently as possible.
- Hang durable plastic wall charts outlining good storage practices in all warehouses and storerooms throughout the distribution network; use local languages.
- Eliminate waste and clutter to increase warehouse and storeroom space and efficiency at little cost. Make clear policies regarding disposal of unnecessary and unusable materials.
- Determine whether distribution will be based on a push or pull system, or a combination.
- Use LMIS information to fix supply imbalances, moving supplies from overstocked facilities to severely understocked ones.
- Conduct spot checks and regular supervisory visits to ensure that facilities are keeping accurate, up-to-date inventory records and are using the "First-to-Expire/First-Out" (FEFO) principle for distribution.
- Use max/min procedures to manage inventory.
- Ensure that delivery vehicles are properly managed.
- Minimize the number of transport links in the supply chain.

Figure 5. Basic In-Country Supply Pipeline



Source: Family Planning Logistics Management, 2000 (49) ***Population Reports***

have simple written guidelines regarding the disposal of unneeded, damaged, expired, or otherwise unusable products (14, 25). In many countries, however, disposal procedures are so complex that they are never carried out.

Theft also can disrupt the flow of contraceptives through the family planning supply chain. Many countries face theft of contraceptives. In Bangladesh, for example, all levels of the supply chain reported that theft was a problem, especially theft of the injectable contraceptive *Depo-Provera*. In response, the Directorate of Family Planning reduced the amount of time that contraceptives remained in storage and made it more difficult for people to enter storage facilities. All regional and district storage facilities were locked, and all padlocks were closed with signed paper, wax, and string that had to be broken to gain access to the stock (83). Programs must seek to balance protection from theft with ease of access by staff.

Managing Inventory Better

Family planning programs often can reduce the costs of holding and handling inventory. Supply chains should hold contraceptives as inventory for only one or more of the following four reasons (49):

- **Transportation efficiency.** Contraceptive supplies can be held in inventory until they can be grouped into batches for efficient delivery.
- **Safety stocks.** Some supplies should be held in inventory as a buffer against uncertainty, so that facilities do not run out of products when demand rises unexpectedly or if deliveries from suppliers are late—for example, if transport vehicles break down or roads wash out.
- **Limited storage capacity.** Often, the service delivery points closest to clients are small, with limited storage space. Thus products can be held as inventory at the next level of the supply chain, from which clinics and other service delivery points can be replenished frequently.
- **Anticipation of demand.** If programs expect more clients, the logistics system can store contraceptives and other supplies as inventory in anticipation. Without the extra inventory, the lag between ordering new supplies and receiving them could lead to stockouts.

FEFO. The fundamental principle of inventory management for health supplies such as contraceptives is "First-to-Expire/First-Out," usually known as FEFO. The FEFO inventory system, which tracks the labeled expiration date of the product, ensures that older stock are distributed first to avoid expiration. To implement a successful FEFO system, expiry dates of products must be known, workers must organize products so expiry dates are clearly visible, and staff must be properly trained (15, 48).

Max/min inventory method. Running out of contraceptives is the most serious problem, but having too many also is a problem. Programs that have more supplies than necessary waste storage space, contraceptives, and money. A common system to keep the appropriate amount of supplies on hand is the maximum/minimum (max/min) inventory management method. This method requires that each storage facility (or each level of the distribution system) set maximum and minimum desired stock levels for each contraceptive (or for every product), expressed in terms of a certain number of months of supply (5, 14, 25, 48).

Maximum stock levels are set high enough to guarantee an adequate supply at all times during the ordering cycle, but low enough to prevent overstock and waste. Minimum stock levels are set as low as possible but include a safety margin to prevent stockouts. For example, in Kenya, where the Division of Family Health uses the max/min system at all levels, central stores and depots have a 6 to 12-month supply of contraceptives; district stores maintain a 3 to 6-month supply; and service delivery points, a 2 to 5-month supply. Thus the total in-country stock ranges from a minimum of 11 months' supply to a maximum of 23 months' supply (152). This system works well for contraceptives that have a five-year shelf life. It would not work for products with shorter shelf lives.

Managing Transportation

A program's transportation system links the facilities in the supply chain, from port of entry into the country through central and regional warehouses to local service delivery points and their clients (see Figure 5). The keys to effective transportation management are to:

- Minimize the number of links in the distribution network,
- Use the appropriate type of transportation,
- Use each transport's capacity as fully as possible,
- Plan delivery routes efficiently to provide regular, complete coverage of all facilities,
- Keep vehicles in good repair through preventive maintenance programs and driver supervision, and
- Minimize emergency orders by routinely delivering adequate quantities of ordered contraceptives to all facilities in the network.

A family planning program itself can transport contraceptives, use commercial companies, or combine these two approaches (152). Many family planning programs use private distribution companies, as in Peru, where the Ministry of Health contracts out the transport of contraceptives from central-level warehouses to regional facilities (60).

When programs themselves manage transportation, they achieve greater flexibility in delivering shipments but face the burdens of buying and maintaining vehicles. Commercial transport is more likely to be feasible in countries with a well-developed transportation infrastructure and enough transportation companies to ensure competitive bidding for contracts. Commercial carriers are usually the most competitive on high-traffic routes. Logistics managers often contract for delivery from central to regional levels, which use major routes, and use program vehicles for delivery to district levels and locally (49).

The starting point for policy discussions about the best way to distribute contraceptives is an accurate cost comparison between an in-house distribution system and a contract system (44). While cost may determine when a distribution function should be contracted out, program managers should also consider the contractor's reputation, reliability, and accountability. The bidding and selection process for setting up a new contract can be lengthy and requires skills that many public sector programs lack. Programs also must be able to monitor the performance of private contractors. If programs fail to pay a contractor on time, the company may not deliver contraceptives on schedule or may hold them until payment is made.

Toward Contraceptive Security

Many family planning programs in developing countries cannot purchase and deliver enough contraceptives to meet demand, and the problem is worsening as funding becomes less reliable (see p. 4). Unless family planning programs can find ways to support their supply needs, contraceptive security—the ability of every person to choose, obtain, and use good-quality contraceptives and other essential reproductive health products when needed—is at risk.

Countries can adopt a variety of approaches to ensuring contraceptive supply. The commercial sector will need to expand its delivery of reproductive health supplies and services, including through social marketing (58, 107). In some countries public-sector programs charge user fees to help pay some of the costs of supplying contraceptives. Other countries have explored paying for contraceptives in part through community financing, national health insurance plans, and social security systems (58). A few countries, among them India, Mexico, and Vietnam, can also obtain locally produced contraceptives, which may cost less than imported ones.

Few family planning programs in developing countries are likely to achieve contraceptive security, however, without a sustained commitment from donors and without greater government commitment, as part of the responsibility for public health. Strengthening political support for contraceptive supply and improving family planning logistics systems are essential to achieve contraceptive security.

Moreover, health care delivery is changing. Increasingly, family planning services are being integrated with other reproductive health care. Many programs are decentralizing responsibility for family planning delivery, trying to become more efficient and to serve clients better.

Profile: Contraceptive Distribution in Kenya

Ali Gabon, a nurse practitioner in Lamu District, Kenya, has made a big difference in the lives of his fellow Kenyans. His one-man efforts in distribution have ensured that enough contraceptives are available to meet demand in even the most remote parts of his district.

The Lamu District extends into the Indian Ocean off the northeastern shores of Kenya, near the Somali border. It includes the main island of Lamu and some smaller isolated islands, accessible only by boat. Bandits infest the roads leading to the coast near the Lamu area, so all trucks carrying supplies must have a security escort, which Ali arranges. During the monsoon season, trucks carrying family planning supplies sometimes have to wait four or more days until the rains end and it is safe to load the boats.

Once in Lamu, the supplies are transported by donkey or four-wheel cart to the local warehouse. Ali then scours the docks for boats traveling to the remote outer islands and tries to persuade the owners to carry the supplies. Without his efforts, the contraceptive supply chain probably would never reach the remote clients of Lamu.

Expanding the Commercial Sector's Role

Expanding the role of the commercial sector can help countries achieve contraceptive security. Services in the commercial sector increase the number of places where people can obtain contraceptives and attract clients who can afford to pay for some services—thereby reducing the cost to the public sector (151).

Within each region, and particularly in Africa, the commercial sector for family planning varies from formal networks of medical practitioners and pharmacy chains to informal vendors selling in markets, bars, kiosks, and other small establishments (151). In most countries the primary commercial sources of modern contraceptives are pharmacies, shops, private hospitals, and private clinics.

The commercial sector frequently uses market segmentation to identify and serve different groups better. Currently, few national family planning programs use this technique to target subsidized contraceptives specifically to people most in need (128). Publicly funded programs, instead, often subsidize family planning services for everyone, including those who do not need subsidies (56, 143, 151). Family planning programs can use market segmentation strategies to help focus resources on clients most in need of subsidies, while promoting commercial sector services for those who are better able to pay and who often are willing to pay more (10). Programs can segment clients not only by their ability to pay but also by their choice of methods and by the type of provider they prefer.

The commercial market share for modern contraceptives—the percentage of modern contraceptive users who are served by the commercial sector—varies widely across countries and across regions, regardless of contraceptive prevalence. The largest commercial market share for family planning is in Latin America; the smallest, in sub-Saharan Africa (151). Differences in commercial market share often reflect differences in economic status among countries (76). Even in countries with higher income levels, the commercial market share may be constrained if the public sector widely subsidizes contraceptives.

In many countries the commercial sector is not fulfilling its potential to help people meet their reproductive health needs. Often, governments do not recognize the private sector's potential and thus do not create conditions that would favor more private-sector involvement. Government policies and programs often can encourage or deter the commercial sector from playing a larger role (120). To expand private-sector provision of public health services, governments and donors need to learn more about how companies operate, what motivates them, and how existing policies, including regulatory barriers, may impede the potential contribution of the private sector.

Lauren Goodsmith

This shopkeeper in Guinea, West Africa, sells condoms along with pharmaceutical drugs. The commercial sector could do more to supply contraceptives to clients who can afford to pay.

The payoff could be large. Even in countries with relatively small commercial sectors, modest increases in commercial market share for contraceptives could reduce public-sector commodity costs substantially. For example, if Kenya's commercial market share for contraceptives increased to 17% in 2015 from 14% in 1998, public sector commodity costs could decline by more than 10%—or over US$1.2 million (58).

Greater commercial sector participation could enable donors and governments to use their family planning resources more strategically—providing free or subsidized supplies and services to the poorest clients or to those at highest risk, while charging fees to those who could afford to pay. For example, in Egypt a market analysis found that 93% of family planning clients were willing to pay at least the current retail price of oral contraceptives, while only 22% actually were paying this much (21). Other studies in India, Jordan, the Philippines, and Turkey have found that many women who could afford to pay were instead using highly subsidized public-sector pills (56).

Social marketing. In many places social marketing—publicizing and selling products through retail outlets at subsidized prices—is the main source of contraceptives in the private sector. In some countries social marketing programs cover a sizable portion of the urban population and an increasing portion of the rural population. In 2000, based on social marketing sales figures for 59 countries, the number of couple-years of contraceptive protection supplied by social marketing programs increased to 23.4 million from 20.6 million in 1999 (37).

While social marketing is not strictly commercial, because it is subsidized, it often attracts clients who can pay something and prefer the contraceptive methods that are distributed in pharmacies and other social marketing outlets—primarily condoms and oral contraceptives (131). Of course, some people who could afford to pay full price buy the social marketing brands instead. Social marketing programs ideally should complement other types of service delivery—not substitute for them (67, 130). Subsidized social marketing products need to be carefully designed to attract clients with a limited ability to pay and not compete with the commercial sector for clients who are able to pay full price.

Health Care Delivery Is Changing

Many countries are integrating family planning with other health services, particularly other reproductive and maternal and child health services (7, 65, 73, 89, 97, 134). Well-integrated service delivery can reduce duplication, waste, and lack of coordination among programs.

When health care is integrated, often the supply chains are integrated too. Integrated supply chains can make service delivery more efficient through joint purchasing of com-

modities and other cost-sharing activities, such as integrated storage and transport.

Integration often complicates other aspects of logistics, however. The logistics systems of integrated programs must manage a larger array of products than just contraceptives (7, 64, 102). Forecasting and procurement become more complex, and broader information systems become essential. Integrated supply chains could be less reliable than supply chains that focus only on contraceptives (7, 49).

Little research has been done on the impact of integrated supply chains. Integrated supply chains could offer an advantage to family planning programs in attracting government commitment and support. Policy-makers often are more concerned with pharmaceuticals than contraceptives, and in some places family planning is still more controversial than other types of health care. Family planning program managers, however, may fear that contraceptives will be neglected or forgotten in an integrated supply chain in favor of other health products.

Decentralization. An accompanying trend is decentralization—shifting the responsibility for managing health care services from the central level to intermediate and community levels. Decentralization aims to improve access to health care services, as well as to build quality and efficiency, by putting more responsibility and authority in the hands of local managers close to delivery points.

Local managers, because they are closer to clients, should be able to make better resource allocation decisions than central-level officials. Also, decentralization may spark more local interest in and commitment to family planning programs (66). For effective decentralization of logistics systems, staff at local levels need to be well trained, and all parts of the system have a greater need to share information (64). Retraining is required throughout the supply chain (86).

Decentralization may not improve all aspects of service delivery, however. In particular, the logistics system is most efficient when information systems, product selection, forecasting, and procurement are centralized. In a centralized system the supply chain can be better controlled and kept focused on its core purpose of ensuring that supplies are available to meet clients' demand (1, 99). As program decision-making is decentralized, the size of the central logistics management staff is often reduced, and supply chain performance can suffer as a result (7).

Lauren Goodsmith

In Morocco a health worker explains the various contraceptive methods to a family planning client. Strengthening the supply chain helps provide widespread access to a range of methods.

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Health care delivery is changing. Donor funding for contraceptives has become less certain. More and more people need and want contraception and protection against HIV/AIDS and other STIs. Few developing countries will be able to pay the costs by themselves in the near future. If programs strengthen family planning supply chains, they can make better use of existing supplies and serve more clients. Ultimately, both an effective supply chain and secure sources of financial support for contraceptive supplies are crucial to meeting clients' needs and ensuring reproductive health for all.

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