Technical Brief

# Using Quantification to Support Introduction and Expansion of Long-Acting and Permanent Methods of Contraception

© 2003, Courtesy of Photoshare

A client undergoes a surgical procedure for contraceptive implants.

**Family planning programs working to introduce or expand the use of long-acting and permanent methods of contraception should build staff skills in quantification. They should also institutionalize the quantification process to ensure program capacity to respond to changes in demand and supply of these methods over time.**

**OCTOBER 2010**

This publication was produced for review by the U.S. Agency for International Development. It was prepared by the USAID | DELIVER PROJECT, Task Order 1, and EngenderHealth/The RESPOND Project.

U.S. Agency for International Development
www.usaid.gov

## Introduction

Many family planning programs have adopted a contraceptive security strategy that is founded on guaranteeing informed choice and client access to a full range of family planning methods. These methods are intended to reduce the unmet need for family planning, which is a key intervention for achieving national health and development goals.

Although these strategies have been successful in improving availability of and client access to the more widely used, short-acting resupply methods of family planning (oral contraceptives, injectables, and condoms), the demand, access, and use of provider-dependent, long-acting, and permanent methods (LA/PMs) of contraception (intrauterine devices [IUDs], hormonal implants, female sterilization, and vasectomy) have lagged behind despite their high effectiveness and popularity with users. The reasons for this lag include the following:

- lack of a supportive policy environment;
- insufficient resources for procurement of relatively costly hormonal implants;
- initially higher, up-front costs of these methods for users;
- cultural norms and beliefs that inhibit potential client acceptance and access to these methods;
- common myths and lack of knowledge about these methods among service providers and clients;
- specialized clinical skills and the supportive training and supervision systems required to be able to provide and maintain availability of these methods;
- challenges in ensuring a continuous supply of the different types of commodities required to provide these services, which include medical equipment, instruments, and expendable medical supplies, as well as the contraceptive devices themselves.

Although family planning programs that have invested in improving access to and use of LA/PMs have been able to create demand for these methods by increasing client awareness about their benefits, by expanding the number of providers trained to supply these methods, and by mobilizing resources for procurement of the commodities, supply chain challenges continue to pose barriers to provision of these methods. The lack of an established methodology for estimating the full commodity requirements and costs for LA/PMs, in addition to funding gaps, uncoordinated and untimely procurements, and poorly functioning inventory management and distribution systems result in supply imbalances and stockouts that leave clients without the method of their choice—or with no method at all. Therefore, an important step in a larger process for increasing access to LA/PMs is for family planning programs to invest in building and institutionalizing capacity in quantification—a supply chain management activity that is critical for family planning programs to be able to effectively respond to current and future demand for these methods.

## Quantification: A Supply Chain Management Best Practice

Quantification is the process of estimating the quantities and costs of the products required to provide a specific health service and determining when the products should be delivered to ensure an uninterrupted supply. Through the process of conducting a quantification, information on services and commodities from the service delivery level is linked with program policies and plans at the national level to estimate the total quantities and costs of the commodities[1] required and to plan procurements and shipment delivery schedules to maintain a continuous supply. The results of a quantification are used to inform supply chain decisions about product selection, financing, procurement, and delivery of the commodities. A quantification exercise for LA/PMs would help program managers to accomplish the following:

- Assess the availability and quality of data on LA/PM services and use of commodities.
- Develop the forecasting assumptions to estimate the effect of program plans and strategies, client acceptance of the methods, and other variables expected to affect demand for LA/PMs.
- Identify the funding needs and gaps for procurement of the required commodities.
- Leverage the sources, amounts, and timing of funding commitments.
- Develop a supply plan to coordinate procurements and shipment delivery schedules that will ensure a continuous supply of products.
- Advocate for additional resources when needed.

Family planning programs that plan to introduce or expand the use of LA/PMs should develop staff skills in quantification. They should also institutionalize the quantification process to ensure program capacity to respond to changes in demand and supply of LA/PMs over time.

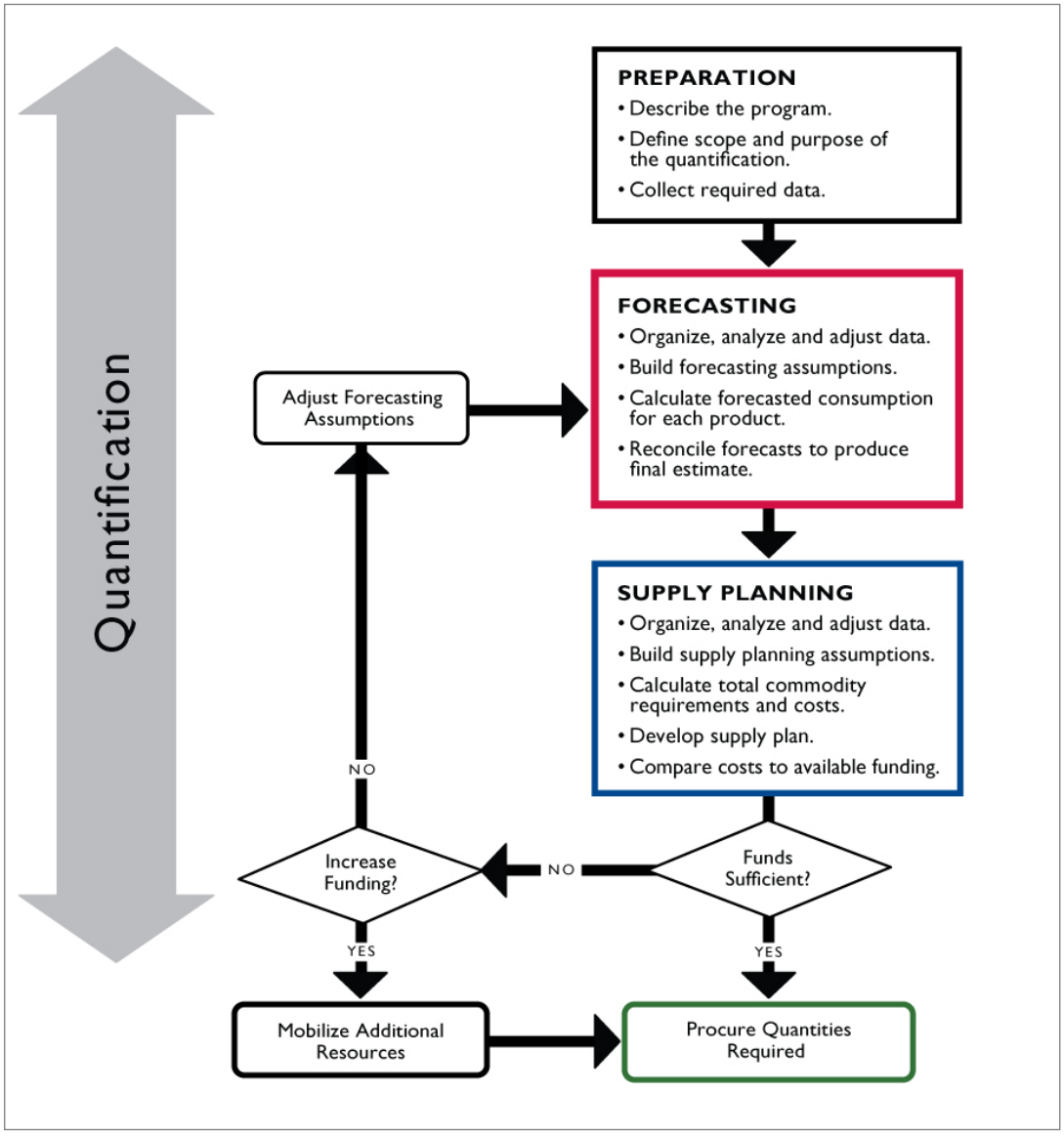
## The Quantification Process: Forecasting and Supply Planning

This technical brief describes two major steps in conducting a quantification—forecasting and supply planning—as depicted in figure 1 titled Steps in Quantification. It also provides guidance on

[1] The terms "commodities" and "products" used in this technical brief refer to the full range of contraceptive methods, medical equipment, instruments, and expendable supplies required for family planning service delivery.

how this process can be applied to estimate the quantities and costs of the different products that are required for provision of the long-acting and permanent methods of contraception.

**Figure 1. Steps in Quantification**[2]




During the process of conducting a quantification, the future demand for services and commodities is first analyzed and estimated through the forecasting step to arrive at the estimated quantity of each product that will be dispensed or used to provide the service during the period of quantification. In the supply planning step, the total commodity requirements and costs for procurement, the funding commitments and gaps, and the timing of procurements and shipments needed to ensure a continuous supply for the program are determined.

[2] USAID | DELIVER PROJECT, Task Order 1. 2009. *Quantification of Health Commodities: A Guide to Forecasting and Supply Planning for Procurement.* Arlington, Va.: USAID | DELIVER PROJECT, Task Order 1.

## Forecasting and Supply Planning for Long-Acting and Permanent Methods of Contraception

The general process and steps for conducting a quantification for the short-acting, resupply methods of family planning can be applied to quantification for long-acting and permanent methods of contraception. The key considerations in forecasting and supply planning for LA/PMs are presented next.

### A. Develop the List of Medical Equipment, Instruments, and Expendable Medical Supplies to Be Quantified for Each Method

Each of the clinical, provider-dependent, long-acting, and permanent methods of contraception requires either the insertion and later removal of a contraceptive device (IUD, hormonal implant) or the performance of a surgical procedure (female sterilization, vasectomy). Therefore, besides the device itself, medical equipment, instruments, and expendable medical supplies are needed, as well as local anesthesia supplies and drugs for pain management for implants, female sterilization, and vasectomy. Each facility that provides these methods should also have sufficient infection prevention supplies in stock, including supplies for disinfection or sterilization of reusable equipment and instruments, as well as personal protective equipment (PPE) for the staff performing the procedures and for disinfecting or sterilizing the instruments. A complete list of the medical instruments and expendable medical supplies needed to provide each LA/PM of contraception has been developed by The RESPOND Project of EngenderHealth.[3]

All of the different products required to provide LA/PMs should be registered and approved for use in the country and should be included on the National Essential Medicines List (NEML) and the National Medical Equipment and Supplies List in order to be procured and used by the program. Many of these products may already be approved for use as only a few are unique to LA/PM service delivery (e.g., trocar, uterine sound, tubal hook).

### B. Forecast Product Consumption

In forecasting the quantity of each product that will be needed to support introduction or expansion of LA/PMs, the multiple factors expected to influence demand for and use of these services must be taken into account to estimate the number of new users and continuing users for each LA/PM, in addition to the discontinuation rates for IUD and implant users. Determinants of increasing demand and use include (a) investment in communication campaigns; (b) availability of community outreach, mobile services, and clinical and counseling training events; (c) decentralization and/or expansion of the number of service delivery sites; and (d) diversification of the types of service providers who can provide each of the LA/PMs.

The estimated number of new users, continuing users, and discontinuation rates by method is used to determine the number of procedures (insertions, removals, and surgical sterilization procedures) that will be performed during each year of the quantification. Then, the quantity of each product needed is calculated based on a standard quantity of each product needed per procedure. The final output of the forecasting step is the estimated quantity of each product that will be used to provide LA/PMs in response to client demand for each year of the quantification. This quantity is the forecasted consumption.

---

[3] Cagatay, Levent, Carmela Cordero, and Roy Jacobstein. 2010. Medical Instruments and Expendable Medical Supplies Needed to Provide Long-Acting and Permanent Methods of Contraception. New York: EngenderHealth/The RESPOND Project.

For each LA/PM of contraception, the forecasted consumption should include the estimated quantity of the contraceptive device itself (IUD, hormonal implant) that will be needed, plus the quantities of reusable instruments and expendable supplies needed for insertion and removal. For implants, female sterilization and vasectomy, the forecasted consumption should also include the quantities of local anesthesia supplies and pain management drugs that will be required based on the estimated number of procedures to be performed.

## C. Reach Consensus on Assumptions about Factors Influencing Demand

An important part of the forecasting methodology for all contraceptive methods is (a) to conduct an assumptions-building workshop that serves as a forum for assessing the factors expected to influence demand for each of the methods and (b) to agree on the number of new users, the number of continuing users, and the discontinuation rates for each year of the quantification. The assumptions may be informed by population census data, survey data (e.g., demographic health surveys [DHS] or reproductive health surveys [RHS]), research studies, program data about the number of services provided (services data) and about the quantities of commodities used (consumption data), and the experience of other family planning programs. When historical data are not available or when data are not expected to be predictive of future consumption (e.g., when introducing new services or products, or scaling-up existing services), forecasts will necessarily be heavily assumption-based.

The forecasting methodology should include a review of research studies; the experience of other countries and programs; an analysis of program data; and consultation with program managers, commodity managers, service providers, and experts to inform assumptions about the factors expected to influence demand for LA/PMs including—

- the effect that program policies, strategies, advocacy, and other efforts to expand awareness of and access to these methods will have on demand (e.g., information, education, and communication [IEC]); community-based campaigns; expansion of services to lower levels of the health system; use of mobile units; integration of family planning services with HIV prevention and treatment services or with maternal health services or with both);
- the service capacity, including availability of competent providers, patterns of deployment, workloads, skills (clinical providers, supervisors, counselors), and service facility infrastructure;
- the knowledge, attitudes, practices, and preferences of potential users;
- the potential shift of users between various methods as awareness, use, and availability of LA/PMs increases;
- the supply chain capacity, including current availability of supplies, availability of funding for procurement, effectiveness of the inventory management, storage and distribution systems, and functionality of the logistics management information system (LMIS).

## D. Select the Types of Data to be Used for Forecasting

The three types of data used for forecasting consumption of the short-acting contraceptive methods are also used for forecasting long-acting and permanent methods – consumption data, services data, and demographic data. Where data availability and quality permit, a separate forecast of the estimated quantities of each product that will be needed to provide each LA/PM should be prepared using each type of data available. The forecasting methodology will depend on the type of data being used. Whichever type of data is used, the final output of the forecasting step will be the estimated

quantity of each product that will be used to provide the method to clients during each year of the quantification. The results of each forecast are then compared and reconciled to determine the final forecasted quantity of each product needed. This is the starting point of the next step in the quantification: the supply-planning step.

Some of the challenges when forecasting commodities for LA/PMs include the following:

- Forecasting the *quantities of reusable medical instruments needed.*
- Forecasting the *quantities of disposable instruments and expendable medical supplies needed.*
- Forecasting the *quantities of anesthetic supplies and pain management drugs needed.*

## E. Develop the Supply Plan

Supply planning for LA/PMs follows the same steps as for other contraceptive methods and for health commodities in general as described next and should include these items:

- maximum and minimum stock levels (which should include buffer stocks),
- desired stock levels,
- usable stock on hand of each product,
- quantities of product on order but not yet received,
- product unit cost,
- shipping and handling costs, and
- amount and timing of funding available for procurement.

PipeLine, a software tool that was developed by the USAID | DELIVER PROJECT [4] for supply planning of health commodities, may also be used for supply planning for LA/PMs. PipeLine uses data about the program, products, funding sources, suppliers, product per unit costs, shipping and handling costs, and current shipment data to estimate the total commodity requirements and costs for procurement and to plan and monitor future shipment quantities and delivery schedules. PipeLine is also used for routine monitoring and updating of funding commitments and shipment delivery schedules, and for assessing country or program level stock status.

### Estimate the Total Commodity Requirements and Costs

The previous data—once entered into the PipeLine database—allow program managers to estimate the total quantities and costs of all of the products that will need to be procured for each year of the quantification. For procurement purposes, a two-year quantification period (24 months) is recommended.

The forecasted consumption, which is the *estimated quantity of each product that will be dispensed or used* to provide the service for each year of the quantification, is the starting point of the supply-planning step. The forecasted quantities must then be adjusted to calculate *the quantity of each product that will need to be procured* to ensure a continuous supply for each year of the quantification. This step should take into account the following:

---

[4] USAID | DELIVER PROJECT, Task Order 1. 2007. *PipeLine 4 User's Guide.* Arlington, Va.: USAID | DELIVER PROJECT.

- the current stock on hand of each product in the country or the program,
- the desired stock levels (including additional quantities needed to cover supplier lead times and buffer stocks), and
- any quantities of products already on order at the time of the quantification.

The cost of the quantity of each product that will need to be procured is based on the historical or estimated per unit cost, and then the total cost for procurement of all the products is calculated. Any additional shipping and handling costs should also be included at this point.

### Plan the Shipment Quantities and Delivery Schedules

If using PipeLine to develop the supply plan, what quantities of each product will need to be procured, when they will need to be procured, and when they should be shipped can be determined. Drawing on the forecasted consumption and the stock status of each of product at the time of the quantification, program managers can plan and schedule the delivery dates for shipments to be able to maintain a continuous supply of products.

### Compare the Funding Available to the Total Commodity Costs

The final step in supply planning—and one of the most useful outputs of the quantification—is to compare the funding allocations and timing of disbursements to the planned shipment costs and delivery schedules to determine if and when gaps in supply may occur. At this point, the funding gaps will be identified and can be used to advocate for mobilization of additional resources for procurement if needed.

## F. Present Results of the Quantification to Key Stakeholders

Typically, a stakeholder debriefing is held to present the results of the quantification after the exercise has been completed. During the debriefing, the program priorities and plans, the factors expected to influence demand, the service expansion and potential use, and the methodology followed throughout the quantification exercise are presented. The sources and types of data used, the forecasting assumptions, the current stock status, the supply plan, and the funding analysis are also presented and discussed. Additional information or inputs may be provided at this time, which will need to be incorporated into the quantification. The results of the quantification are then used to advocate for support for the program, to coordinate procurements, and to mobilize additional resources if needed.

## G. Review and Update the Quantification on a Routine Basis

Quantification is not a one-time, budget-driven, annual exercise. The forecasted consumption and the supply plan should be monitored and updated on a routine basis or whenever critical assumptions or parameters change (e.g., when a policy decision is made to introduce or remove a product from the method mix, when a significant price reduction or expansion of service goes into effect that might cause an upswing in demand for a particular method over others, when uptake is much less than expected, or when there is a significant change in funding levels).

The quantification should be reviewed and updated quarterly—or at least every six months—for programs that are introducing new methods or products or that are expanding services rapidly. Actual data about (a) the number of users; (b) the quantities of products used; (c) the current stock on hand of all products required for LA/PMs; and (d) the shipment quantities received, on order,

and planned should be updated during the review. This process will allow program managers to adjust procurement and shipment delivery schedules if needed to correct any potential supply imbalances that could cause an interruption in services.

Conducting an annual quantification exercise, followed by routine monitoring and updating of the quantification throughout the year, is a recommended supply chain management best practice for improving commodity availability for LA/PMs. As data availability and quality improve, so will the accuracy of the quantifications and the responsiveness of the supply chain to meet changes in demand.

# Conclusion

Although this technical brief recommends investing in quantification as a supply chain management best practice for advancing contraceptive security for the long-acting and permanent methods of contraception, quantification alone will not resolve all challenges. Any efforts to build program capacity in quantification should go hand in hand with other activities to—

- improve collection, reporting, and use of logistics and services data to improve the accuracy and usefulness of the quantifications,
- strengthen procurement, inventory management, and distribution procedures to ensure uninterrupted availability of the products needed, and
- ensure an adequate complement of skilled, motivated, and enabled LA/PM providers, counselors, and supervisors to expand availability of LA/PM services, access, and use by clients.

# Bibliography


Cagatay, Levent, Carmela Cordero, and Roy Jacobstein. 2010. *Medical Instruments and Expendable Medical Supplies Needed to Provide Long-Acting and Permanent Methods of Contraception.* New York: EngenderHealth/The RESPOND Project.

Commodities Security and Logistics Division, Office of Population and Reproductive Health, Bureau for Global Health. 2008. *Contraceptive Security: Ready Lessons II. Lesson 8. Expanding Contraceptive Choice through Support for Underutilized Methods.* Washington. DC: USAID.

EngenderHealth/The ACQUIRE Project. 2010. *Reality ✓, Family Planning Forecasting Tool, User's Guide. Version 2.* New York: EngenderHealth/The ACQUIRE Project.

Jacobstein, Roy MD, MPH; Carmela Cordero, MD; and Jean Ahlborg, MD. August 2007. *ACQUIRE Clinical Update: Pain Management for Female Sterilization by Minilaparotomy.* New York: EngenderHealth/The ACQUIRE Project.

USAID | DELIVER PROJECT, Task Order 1. 2000. *Contraceptive Forecasting Handbook for Family Planning and HIV/AIDS Prevention Programs.* Arlington, VA: USAID | DELIVER PROJECT.

USAID | DELIVER PROJECT, Task Order 1. 2007. *PipeLine 4 User's Guide.* Arlington, VA: USAID | DELIVER PROJECT.

USAID | DELIVER PROJECT, Task Order 1. 2008. *Contraceptive Security Brief: Hormonal Implants.* Arlington, VA: USAID | DELIVER PROJECT.

USAID | DELIVER PROJECT, Task Order 1. 2009. *Quantification of Health Commodities: A Guide to Forecasting and Supply Planning for Procurement.* Arlington, VA: USAID | DELIVER PROJECT.

USAID | DELIVER PROJECT, Task Order 1. 2010. *PipeLine 5: An Addendum to the PipeLine User's Guide.* Arlington, VA: USAID | DELIVER PROJECT.

Wickstrom, Jane, and Roy Jacobstein. 2010. "Contraceptive Security: Incomplete without Long-Acting and Permanent Methods." In *Studies in Family Planning*. Forthcoming. New York: EngenderHealth/The ACQUIRE Project.

*The RESPOND Project, a five-year cooperative agreement funded by the U.S. Agency for International Development (USAID), will operate through September 2013. RESPOND works to increase the use of high-quality family planning (FP) services. It addresses the unmet need for healthy timing, spacing, and limiting of childbearing by improving access to long-acting and permanent methods (LA/PMs) of contraception.*

*The USAID | DELIVER PROJECT, Task Order 1, is funded by the U.S. Agency for International Development, and implemented by John Snow, Inc. The project improves essential health commodity supply chains by strengthening logistics management information systems, streamlining distribution systems, identifying financial resources for procurement and supply chain operations, and enhancing forecasting and procurement planning. The project also encourages policymakers and donors to support logistics as a critical factor in the overall success of their health care mandates.*



**USAID | DELIVER PROJECT**

**John Snow, Inc.**

1616 Fort Myer Drive, 11th Floor

Arlington, VA 22209 USA

Phone: 703-528-7474

Fax: 703-528-748

Email: askdeliver@jsi.com

Internet: deliver.jsi.com

**The RESPOND Project**

**EngenderHealth**

440 Ninth Avenue, 13th Floor

New York, NY 10001

Phone: 212-561-8000

Fax: 212-561-8067

Email: info-respond@engenderhealth.org

Internet: respond-project.org