
Contraceptive Logistics Guidelines for Refugee Settings

Glenn Dixon



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FPLM

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Acronyms

AMC	average monthly consumption
CBD	community-based distribution
CPR	contraceptive prevalence rate
CYP	couple years of protection
DHS	Demographic and Health Survey
EPI	Expanded Programme on Immunization
FEFO	first-to-expire, first-out
FPLM	Family Planning Logistics Management
IUD	intrauterine device
JSI	John Snow, Inc.
LMIS	logistics management information system
NGO	nongovernmental organization
SDP	service delivery point
UNHCR	United Nations High Commissioner for Refugees
VFT	vaginal foaming tablet
WRA	women of reproductive age

1. Introduction

The guidelines presented in this manual provide an outline of basic contraceptive logistics management principles and procedures for use by program managers in camps for refugees or displaced persons.¹ By using the steps outlined in this manual, program managers can design and implement a simple contraceptive logistics system in refugee camps where family planning programs are just beginning and can improve the system in a camp where family planning programs are underway.

In the emergency phase of a refugee camp, other more pressing and immediate concerns (e.g., the causes of high mortality) will likely preclude design and implementation of a contraceptive logistics system. During this phase, we recommend that reproductive health kits be made available as soon as possible. Program managers should, however, implement a simple management information system to track quantities of each contraceptive method dispensed to clients. When conditions have stabilized, supply of reproductive health kits should be replaced by supply of contraceptives appropriate for the particular refugee population. Data obtained on quantities of contraceptives dispensed from reproductive health kits will be crucial in determining initial estimates of contraceptive requirements.

Although the principles and procedures of contraceptive logistics management are the same for a family planning program in a refugee camp as in other settings, a refugee camp presents special circumstances and challenges. This manual outlines adaptations for these circumstances, but refugee program managers should use the manual as a guide and make additional adaptations, as necessary, for their special situations. The reader should also note that the manual presents the basic elements of a contraceptive logistics system, simplified to enable refugee program managers to quickly and easily obtain and use the information necessary to manage contraceptive distribution.

The sample logistics forms referenced in this manual have been used by FPLM in contraceptive logistics systems in numerous developing countries. Copies of these forms as well as other useful information are also included in the appendices.

¹ Hereafter, for the sake of simplicity, both refugees and displaced persons will be referred to as “refugees.” The reader should also note that, in this manual, the term refugee camp refers both to a formal camp setting as well as to other settings where refugees and displaced persons are found.

2. Basic Steps In Managing Contraceptives

A contraceptive logistics system includes all activities that occur beginning with procurement of commodities to the point at which these contraceptives are dispensed to users. The essential principles of contraceptive logistics management explained in this manual are based on the following basic steps required to design and operate a contraceptive distribution system (see table 1):

Table 1. Basic Steps

STEP 1:	Select contraceptives (both the methods and brands to be used) (section 3).
STEP 2:	Estimate quantities to be procured (section 4).
STEP 3:	Identify sources and procure contraceptives. (As this step will typically not be handled by refugee program managers, it is not covered in this manual. Managers should consult their agency headquarters for assistance with procurement.)
STEP 4:	Develop a logistics management information system (LMIS) to record contraceptive distribution and client use (section 5).
STEP 5:	Develop procedures to efficiently manage contraceptive inventories (section 6).
STEP 6:	Develop procedures to ensure proper storage of contraceptives (section 7).

3. Selecting Contraceptives

Although refugee program managers and service delivery staff are good sources of information on contraceptive methods and brands preferred by a refugee population, central level staff will likely be responsible for the actual selection and procurement of contraceptives. Variables affecting selection of methods include:

- Client preference—it available, this information should be obtained from camp-specific survey data or from key informants in the camp (e.g., program managers or service providers); otherwise, use data from the refugees' county of origin, such as a recent Demographic and Health Survey (DHS).²
- Scope of family planning services offered and/or planned in the camp.
- Availability of trained service providers skilled in the clinical and counseling aspects of particular contraceptive methods.
- Local laws governing contraceptives.
- Availability of locally produced products.
- Preference of donor agencies.
- Time required to obtain desired contraceptives.

Because of the number of factors affecting selection, the refugee program manager should be aware that contraceptive methods and brands will likely vary from one family planning program to another and that no single set of guidelines can apply to all situations.

² See Section 4.1.2 “Sources of Population Data,” for additional sources.

4. Estimating Quantities of Contraceptives Needed

Through preparation of *contraceptive forecasts*, the program manager can estimate long-term (one year or more) aggregate requirements for all family planning service providers in a refugee camp (in contrast to *contraceptive orders* for immediate needs placed by each facility in a distribution system, as explained in sections 6.3 and 6.4). Ideally, estimates of long-term requirements are based on historical usage figures and knowledge of trends in contraceptive usage. In a refugee camp, such information is often not available or of poor quality. To start up a family planning program in a refugee camp, the program manager should use the best available population-based data to forecast initial quantities of contraceptives required. *A functioning logistics management information system (LMIS) should be implemented as soon as possible so that reliable data on actual quantities dispensed to users can be used to more accurately estimate contraceptive consumption and future needs.*

Depending upon the data available, the program manager can use one (or a combination) of the following data sources:

- *Population-based data* from surveys.
- *Logistics data* from quantities dispensed or sold to users.
- *Service statistics* from program records of client visits.

4.1 Using Population-Based Data

Population-based data should be used in the initial stages of a refugee camp when it may be the *only* source available; in more developed family planning programs, it may also be used to verify data obtained from other sources. Forecasts based on population data estimate the total need of a population for contraceptives, but not necessarily actual demand or the capacity of a system to manage and distribute these contraceptives. In addition, the special circumstances of refugees may result in increased need or demand for contraception at some times and, at other times, a decreased need or demand. Thus, *a population-based forecast should only be used until reliable logistics data can be obtained, which can then be the basis for greatly improved forecasting.*

How to Prepare a Population Data-Based Forecast

WRA (women of reproductive age) and CPR (the contraceptive prevalence rate) provide an estimate of the number of women at risk of pregnancy who are contracepting. Multiplying this number by the method mix provides an estimate of the number of users protected by a particular method, and finally, multiplying that number by the CYP (couple years of protection) Conversion Factor gives the estimated quantity of that contraceptive required for a one-year period. See tables 2 and 3.

The following formula can be used to convert population data into estimates of quantities of a contraceptive required:

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Table 2. Conversion of Population Data into Estimates of Quantity of a Contraceptive Required

Estimated consumption of a method	=	Estimated WRA x CPR x Method Mix x GYP Conversion Factor
Where:		
WRA	=	the number of women of reproductive age (15–49).
CPR	=	the Contraceptive Prevalence Rate: the percentage of the base population (WRA) using a contraceptive method.
Method Mix	=	the mix of contraceptive methods used by the population, expressed as the percentage that each method constitutes of all contraceptives used.
CYP (Couple Years of Protection) Conversion Factor	=	the quantity of a contraceptive commodity required to protect a user for a one-year period, i.e., the amount of a contraceptive needed to protect one couple from pregnancy for one year.

Table 3. Estimation of One-Year Requirement for Oral Contraceptives

Example		
Estimate a one-year requirement for oral contraceptives based on the following inputs:		
WRA	=	100,000
CPR	=	5%
Method Mix	=	50% (i.e., 50% of all contraceptives used are pills)
CYP Conversion Factor	=	15 cycles per year (see the Table below, “Sources of Population-Based Data,” for a list of GYP Conversion Factors)
Using the formula above:		
Estimated Consumption	=	100,000 (WRA) x .05 (CPR) x .5 (Method Mix) x 15 (GYP Conversion Factor)
	=	37,500 cycles of oral contraceptives

Table 4. Sources of Population-Based Data

Method	Procedure
WRA	If available, use camp-specific data (it may be necessary to estimate WRA from secondary data sources, e.g., data from registration of young mothers, nutritional surveys, feeding programs, EPI surveys, etc.). If above data are not available, use data from the most recent Demographic and Health Survey (DHS) for the refugees' country of origin.
CPR	Most recent Demographic and Health Survey (DHS) from refugees' country of origin.
Method Mix	DHS from refugees' country of origin.
GYP Conversion Factors	Use values from the following table.

Table 5. CYP Conversion Factors

Method	CYP Conversion Factor ³
Oral Contraceptives	15 cycles/GYP
Condoms	150 pieces/GYP
CuT 380A IUDs	3.5 GYP/insertion
Injectables	
Depo-Provera	4 doses (1 ml)/CYP
Noristerat	6 doses/GYP
Vaginal Foaming Tablets	150 tablets/GYP
NORPLANT	3.5 GYP/implant

NOTE: Be aware of potential problems in using these data sources to determine inputs for a population-based forecast.

Sources of Population Data

If available, the forecaster should use data compiled for the specific refugee population that will receive the contraceptive supplies. However, as it is likely that camp-specific data will not be available, the best secondary source is data specific to the population in the refugees' country of origin. Sources for country-specific data are presented in tables 4 and 5.

- Reliable camp-specific data on WRA and levels of sexual activity are often difficult to obtain.
- DHS values for GPR and method mix from the refugees' country of origin may not reflect actual values found in a refugee camp, as levels of sexual activity among refugees may differ from those experienced in the country of origin.
- Levels of sexual frequency and corresponding contraceptive demand may vary during different stages of a refugee program.
- There is considerable controversy over the use and accuracy of standardized GYP conversion factors. When possible, use country-specific factors.

³ These CYP conversions were developed by the Office of Population of the U.S. Agency for International Development. Whenever possible, we recommend using local conversion factors specific to the refugee camp or to the refugees' country of origin; in most cases, however, country- or camp-specific factors will not be available.

4.2 Using Logistics Data

In a beginning family planning program, a population-based forecast may be the only viable option for contraceptive forecasting. *Much more accurate contraceptive forecasting can be achieved, however, through use of reliable logistics data. It is imperative that a simple logistics management information system (LMIS) be implemented as quickly as possible so that a system is in place for collecting the necessary data.* (See section 5 for further information on designing a contraceptive LMIS.)

A logistics databased forecast uses any of the following sources of data:

- *Distribution (or issues)* data from a central facility, e.g., from a central warehouse to service delivery points (SDPs).
- *Data on sales of commodities* through private market outlets, e.g., pharmacies and shops.
- *Consumption (or dispensed to user)* data collected at SDPs.

Whenever possible, *use actual quantities dispensed to users* for a period of at least six months preceding the date of the forecast. In beginning family planning programs in refugee camps, it may be necessary to use more limited data, e.g., three months of dispensed to user quantities. In addition, the rapidly changing demographics of a refugee camp may dictate use of dispensed to user data from more recent and limited periods.

Please note also that quantities should always be recorded in units of contraceptives, e.g., cycles of pills, single condoms, injections of Depo-Provera®.

Estimating Future Needs Using Stable Logistics Data

If both the refugee population and contraceptive demand have stabilized (i.e., consumption is stable), and reliable logistics data are available for a specified period, the following formula should be used to forecast requirements (see table 6).

Table 6. To Estimate Future Use If Consumption Is Stable

Estimated use for next period	=	$\frac{\text{Number of units dispensed in past } n \text{ periods}}{n}$
<i>Example:</i>		
If 100,000 condoms were dispensed in the last four quarters, the estimated use for the next quarter would be:		
Estimated use for next quarter = 25,000		

Estimating Future Needs If Consumption Is Unstable (with Clear Trend)

In other cases, logistics data may not be stable but will exhibit a clear trend (either an increase or decrease in consumption). In such cases, the following formula should be used (see table 7).

Table 7. To Estimate Future Use If Consumption Is Changing

Estimated Use for Next Quarter	=	Number of Units Dispensed This Quarter	+	Average Change in use over Past N Periods
Where		Average Change in Use Over Past N Periods	=	$\frac{\text{Use in Period N} - \text{Use in Period 1}}{N - 1}$
<i>Example</i>				
If use in the 6 th quarter = 20,000 units, and use in the first quarter = 5,000 units:				
Average Change in Use Over Past 6 Quarters	=	$\frac{20,000 - 5,000}{6 - 1}$	=	$\frac{15,000}{5} = 3,000$
Therefore, estimated use for next quarter is 20,000 + 3,000 = 23,000				

Estimating Future Needs If Consumption Is Unstable (No Discernible Trend)

In many cases, however, logistics data will not be stable and will not clearly exhibit either an increase or a decrease in consumption. In these cases, the forecaster should follow these steps:

1. Gather the most recent periods of data (at least two periods), e.g., at least the last two quarters.
2. Compute a simple average for each period.
3. Plot the data points for these averages on a simple graph.
4. Extrapolate future needs by drawing a straight line through these data points.

NOTE: If a refugee population is not somewhat stabilized, these simple techniques for preparing a forecast based on logistics data are not appropriate. In cases where refugee populations and contraceptive demand are not stable, the forecaster should use population-based data to prepare a forecast, or use a combination of logistics and population-based data.

4.3 Using Data Based on Service Statistics

In some cases, family planning clinics may record client visits but not quantities dispensed to clients (although we strongly recommend that programs record quantities dispensed at each visit as well as client visits). Data on these visits can be converted to quantities dispensed as follows:

- multiply the number of client visits by the standard quantity of a contraceptive dispensed to a client at a visit
- OR
- if those quantities are unknown, multiply the number of clients receiving services by the appropriate GYP Conversion Factors.

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These techniques help the forecaster to derive estimates of quantities dispensed to users. Such estimates can then be extrapolated, as described above, to estimate future contraceptive requirements.

If refugee health facilities are not yet dispensing contraceptives, client visits for other health services can be a basis for making a crude estimate of contraceptive need. In fact, service statistics for other health programs might be the only reliable source of data for estimation of contraceptive requirements. For example, data collected for immunization, births, or registration of mothers might provide the only, although crude, estimates on which to base an initial contraceptive forecast.

5. Designing and Developing a Contraceptive Logistics Management Information System (LMIS)

To properly track commodities and to forecast future needs, a contraceptive distribution system must be supported by an information and recording/reporting system. An LMIS need not be complex, but, at a minimum, it must track:

- *Stock on hand*—the quantities of usable stock at service delivery points (SDPs), central storage facilities, and any intermediate facilities.
- *Rate of consumption*—the quantity of contraceptives dispensed to users during a specified period of time.
- *Losses/adjustments*—the quantity of contraceptives removed from the distribution system for any reason other than consumption by clients (e.g., expired product, theft, etc.).

As commodities move down a distribution system, useful information should move up the system. (In a refugee camp, the system may have only two or three levels, but the principle still applies.) A contraceptive logistics management information system should provide the optimal amount of information to allow program managers to make decisions on the quantities of contraceptives to be issued to SDPs in the camp. This objective can be achieved through the use of four essential logistics records. *Remember that quantities on these forms should always be recorded in units (pieces of condom, cycles of pills, etc.), never in cartons or boxes.*

Samples of these records are included in the appendices; they should be adapted as necessary for use in a particular refugee setting. The primary functions of each of these records are as follows:

1. **Stockkeeping records** (see figure 1)

Also referred to as stock cards, bin cards, or inventory records. They should contain four items of information:

- the current stock level
- the amount of stock on order
- quantity of stock received or issued
- losses/adjustments

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Figure 1.
Inventory Record

INVENTORY RECORD						
Commodity Number		Type of Commodity				Storage Location
Units Used		Maximum Months of Supply		Minimum Months of Supply		
Date	Transaction Reference	Quantity Received	Quantity Issued	Adjustments	Quantity on Hand	Quantity on Order

2. Stock transaction records (see figure 2)

Can be requisition vouchers (used only for requesting supplies), issue vouchers (used only to record issuance of supplies), or requisition and issues vouchers (used for both requesting and issuing supplies). These stock transaction records specify what is being ordered, shipped, or received, by whom, and when. A sample of a requisition and issue voucher is found as table 9, and samples of all three forms are included in appendix 3.

3. Consumption records (see figure 3)

Are used by service providers to record actual quantities dispensed to each client. Consumption data are the critical data items necessary both for proper functioning of the LMIS and for accurate forecasting. For complete recording of client consumption, we recommend use of a form similar to the daily activity register (See table 10), which has one line for each client served, including the actual quantities of contraceptives dispensed (e.g., number of condoms, cycles of orals). Total consumption for each commodity can then be obtained by totaling each column. Appendix Four includes a complete daily activity register and a monthly statistics form. The latter form is a simplified consumption record which does not require information on individual clients: each time contraceptives are distributed, a tick mark is made on the form; at the end of the month, these ticks can be tallied to obtain the aggregate monthly quantities dispensed to clients.

Figure 2.
Requisition and Issue Voucher

REQUISITION AND ISSUE VOUCHER					
Requisition and Issue Voucher No.: _____ Date: _____ Ship to: _____ _____ _____					
REQUISITION			ISSUE		Remarks
Article	Quantity on Hand	Quantity Requested	Shipped	Received	

REQUISITION	Requested by: _____	Date: _____
	Approved by: _____	Date: _____
ISSUE:		
	Approved by: _____	Date: _____
	Shipped by: _____	Date: _____
RECEIPT:		
	Received by: _____	Date: _____

Figure 3.
Daily Activity Register

DAILY ACTIVITY REGISTER									
SDP/Clinic Name: _____					Month: _____ Year: _____				
Date	Client Name	Client Number		Contraceptives Dispensed at this Visit (Units)					
		Year	Number	Oral Contraceptives	Injectables	Diaphragm	IUCD	Condom	Vaginal Foam Tablet

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4. Summary reports (see figure 4)

Provide aggregated totals from the above forms and should include stock balances, quantities received or issued, and losses and adjustments. In stable, established family planning programs, these reports are typically completed monthly or quarterly, but in a rapidly changing refugee camp, weekly reporting may be required. In addition to the example in figure 4, other examples of such reports are provided in appendix E.

Figure 4.
Report & Request for Contraceptives

REPORT & REQUEST FOR CONTRACEPTIVES							
Facility Type/Name: _____							
Report for Period Beginning _____, 19__ Ending _____, 19__							
Contraceptive	Beg. Balance	Rec'd. This Period	Issued	Losses	Ending Balance	Quantity Needed	Dispensed to Clients
Microgynon							
Lo-Femenal							
Marvelon							

Prepared by: _____ Explanation of Losses _____
 Checked by: _____
 Date: _____

6. Managing Contraceptive Inventories

Program managers use data collected in a contraceptive LMIS to properly manage contraceptive inventories: to decide *how much* stock should be ordered or issued and *when*, and to maintain proper stock levels of all contraceptives in order to avoid shortages and oversupply. The key steps in managing inventories are:

1. Assessing actual supplies on hand (section 6.1)
2. Determining optimal levels of supplies to keep on hand (section 6.2)
3. Placing orders for contraceptives (section 6.3)
4. Determining quantities of contraceptives to issue to service delivery points (section 6.4)

6.1 Assessing Supply Status

Through an assessment of supply status, the program manager can determine for all levels of the system whether balances on hand are too low, satisfactory, or too high. The necessary data for this assessment are obtained from:

1. *LMIS records*: Using these records, the program manager can compare the quantities of contraceptives in stock with the rate at which contraceptives are being used.
2. *Physical inventories of stocks on hand* at all levels of the distribution system: These periodic inventories should consist of actual counts of quantities of stocks on hand: condoms should be recorded in pieces, oral contraceptives in cycles, etc. They should be completed at least monthly at service outlets and quarterly at higher level storage facilities; in rapidly changing camps, inventories should be conducted more frequently, e.g., weekly at service delivery points and monthly at storage facilities.

Using these data, assess supply status by following these steps:

1. Convert the quantities of stock on hand at any level of the system into months of supply using the following formula (see table 8):

Table 8. Formula for Converting Quantities of Stock On Hand into Months of Supply

$\frac{\text{Balance on Hand}}{\text{Avg. Monthly Quantity Dispensed or Issued}} = \text{Months Supply on Hand}$
--

2. Compare the number of months of supply on hand to the recommended maximum and minimum stock levels for each level of the distribution system (see section 6.2 for information on setting maximum/minimum stock levels).

3. Use this information to identify storage facilities and service delivery points that are either over- or understocked, and take appropriate action as explained in section 6.4.

6.2 Establishing a Maximum/Minimum (Max/Min) Inventory Control System

Using a Max/Min System

In order to avoid understocking, which may lead to stockouts, and overstocking, which may lead to expired product and/or to overcrowded storage facilities, program planners should use a range of stock levels to express the desired quantities of stock on hand. For example, a family planning program may choose to maintain stock levels at all clinics of not less than three months of supply (the minimum stock level) and not more than six months of supply (the maximum stock level); thus, quantities either above or below this desired range indicate either an overstock or understock situation. The basic elements of the max/min (maximum/minimum) inventory control system are:

- **Lead time**—the time interval between the time supplies are ordered (or, in a push system, allocated) and when they are received and available for use.
- **Safety stock**—the buffer, cushion, or reserve stock (expressed in months of stock) kept on hand to protect against stockouts caused by delayed deliveries or unexpected increases in demand.
- **Maximum quantity**—the quantity of stock (months of stock) above which the inventory level should not rise under normal conditions. Routine orders or allocations should be for the amount required to bring the inventory level up to this point.
- **Minimum quantity**—the stock level (in months of stock) that, if reached or fallen below at the usual time of reorder or allocation, triggers the reorder of stock; it is typically the average quantity of stock used during the lead time plus the safety stock.
- **Emergency order point**—the stock level (in months of stock) that, if reached or fallen below *at any time*, triggers an emergency order; the emergency order point should always be greater than the longest lead time to receive an emergency shipment.
- **Review period** (also known as *order interval*)—the routine interval of time between reviews of stock level to determine whether or not an order should be placed or an allocation made.
- **Average monthly consumption (AMC)**—the average number of units of a single type of contraceptive that are dispensed in a month. The average is usually based on quantities that have been dispensed over a period of six months. In situations where demand is changing rapidly, the average should be based on shorter periods, such as two to three months.

How to Determine Max/Min Levels

The following are the basic steps necessary to determine max/min levels (all values should be expressed in months):

1. Determine the lead time for receiving supplies:
2. Determine the review period.

Determine a safety stock level for each brand and type of contraceptive. (If data for determining safety stock level are not available, use the formula in table 9).

Table 9. Formula for Determining Safety Stock Level

$\text{Safety Stock Level} \geq 1/2 \text{ Review Period Stock Level}$
--

3. Use these values for lead time and safety stock level in the following formula to determine the minimum stock level (see table 10).

Table 10. Formula for Calculating Minimum Stock Level

$\begin{matrix} \text{Minimum Stock} \\ \text{Level} \end{matrix} = \begin{matrix} \text{Lead Time} \\ \text{Stock Level} \end{matrix} + \begin{matrix} \text{Safety Stock Level} \\ \text{(Buffer against Uncertainty)} \end{matrix}$
--

4. Once the minimum stock level has been calculated, determine the maximum stock level using the following formula (see tables 11 and 12).

Table 11. Formula for Calculating Maximum Stock Level

$\begin{matrix} \text{Maximum Stock} \\ \text{Level} \end{matrix} = \begin{matrix} \text{Minimum} \\ \text{Stock Level} \end{matrix} + \begin{matrix} \text{Review Period} \\ \text{Stock Level} \end{matrix}$
--

Note: Once max/min levels are determined, the formula above can be transposed to yield the review period. This can be useful for staff who are familiar with a system's max/min levels and would like an easy reminder of the review period.

Table 12. Formula for Calculating Review Period

$\text{Review Period} \leq \text{Maximum Stock Level} - \text{Minimum Stock Level}$

5. Determine the emergency order point using the following rule (see table 13).

Table 13. Formula for Emergency Order Point

$\text{Emergency Order Point} \geq \text{Longest Lead Time for Emergency Shipment}$

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To facilitate organization of data and the calculations required for determining max/min levels, a worksheet like the example below may be useful (see table 14).

Table 14. Worksheet for Setting Max/Min Levels

Worksheet for Setting Max/Min Levels									
This worksheet provides general guidelines for determining minimum and maximum number of months of supply. The safety stock levels shown here serve as an example; you may need to make adjustments to allow for any unusual program characteristics, such as rapid changes in demand, uncertainty of supply, or other problems.									
Equation A				Equation B					
# Months between placing orders (review Period)	Safety Stock (in months of supply)	+	Lead Time (in months)	=	Minimum Stock Level (in months)	+	Review Period (in months)	=	Maximum Stock Level (in months)
1	0.5	+		=		+	1	=	
2	1	+		=		+	2	=	
3	1.5	+		=		+	3	=	
4	2	+		=		+	4	=	
6	3	+		=		+	6	=	

Choosing a Max/Min System

Although there are several variations specifying when orders (or issues in a push system) should be made in a max/min inventory control system, we recommend use in refugee camps of the *forced ordering version with emergency order point*. In this system, stock levels should be reviewed periodically (e.g., at least every three months although in a rapidly changing refugee environment, more frequent reviews may be necessary), and orders placed (or issues made) in quantities sufficient to bring stock levels up to the max level. If the supply of any product falls below the emergency order point at any time, an emergency order should be placed. Note that in this system the min level is used only to determine the max level.

**Table 15. Storekeeper's Decision Rule
(Forced Order Version with Emergency Order Point)**

<ul style="list-style-type: none"> • Review all stock levels at the end of each review period. • Order (or issue, in a push system) enough stock to bring stock levels up to max. • If the stock level for any contraceptive falls below the emergency order point at any time, place an emergency order.
--

Although max/min systems are simple to use, care must be taken in establishing the maximum and minimum levels, since a program's max/min supply levels determine how frequently an order should be placed and the average amount of stock to be maintained. The max/min system works well in any program if lead times are reasonably short, suppliers reliable, and max/min levels set appropriately. In programs where demand is changing rapidly (as may often be the case in refugee camps), it is crucial that the safety stock level and, accordingly, the minimum stock level be set higher. In new programs, where

no previous data on usage are available and it is not known how long it takes to fill orders, max/min levels should be calculated by using the best available estimates of lead time and of consumption or distribution for each level of the system. Once established, max/min levels should be reviewed periodically to ensure that they are appropriate for the current needs of the contraceptive distribution system.

The following is a simple example showing the steps to be used in setting max/min levels (see table 16).

Table 16. Setting Max/Min Levels

Example: Setting Max/Min Levels			
Assumptions			
Lead Time: 1 month			
Review Period: 3 months			
Longest lead time for emergency shipment: 1 week, or 25 months			
Step 1: Determine the lead time.			
Assume 1 month			
Step 2: Determine the review period.			
Assume 3 months			
Step 3: Determine the safety stock level.			
The safety stock level should be at least one half the review period stock level. Therefore, the safety stock level ≥ 1.5 months of stock.			
Step 4: Determine the minimum stock level.			
Minimum stock level	=	1 month (lead time) + 1.5 months (safety stock level)	= 2.5 months
Step 5: Determine the maximum stock level.			
Maximum stock level	\geq	2.5 month (min. stock level) + 3 months (review period stock level)	\geq 5.5 months
Step 6: Determine the emergency order point.			
Emergency order point $\geq .25$ months			
there, an emergency order should be placed (or an allocation made) if the stock level, at any time, falls below 1 week (.25 months)			
Note also that the review period can be derived from the max/min levels:			
Review Period	=	5.5 month (max) - 2.5 months (min)	= 3 months
(This final calculation confirms that the above max/min calculations were performed correctly as the review period was in fact set at 3 months.)			

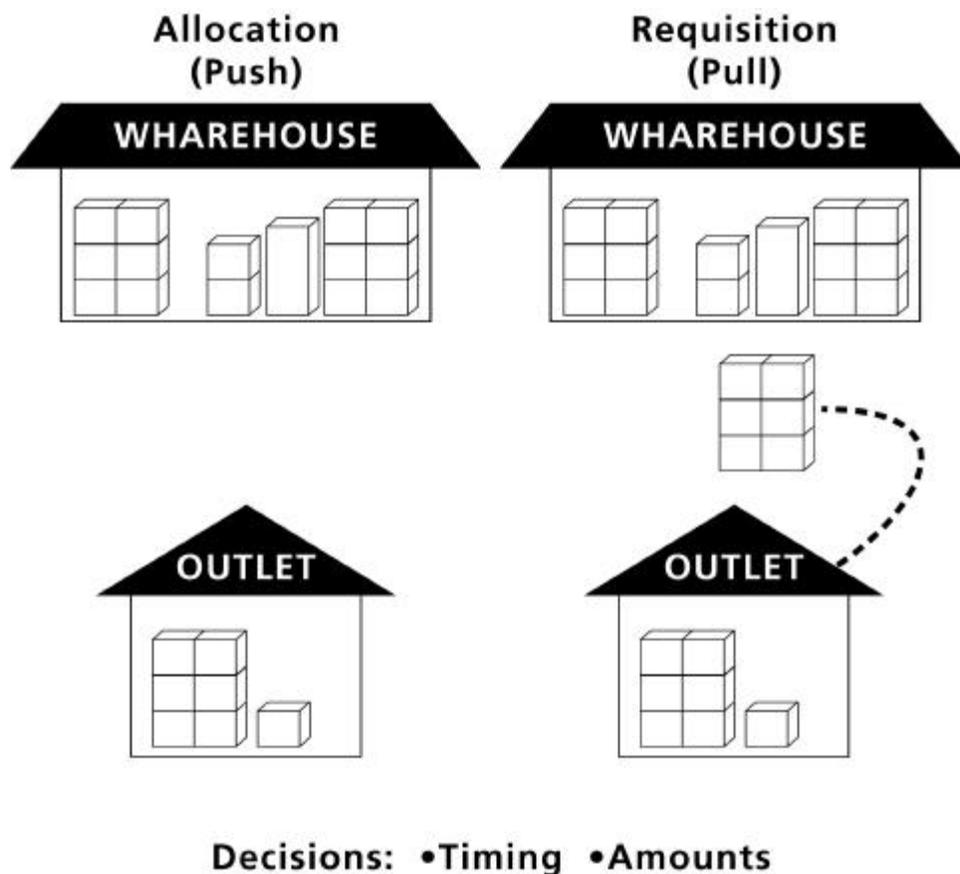
6.3 Placing Orders for Contraceptives

Who Should Make Decisions on Ordering?

The purpose of inventory management is to maintain adequate supply levels in order to avoid either undersupply or oversupply of contraceptives. *A key question in managing contraceptives is to determine who is best able to make decisions on when supplies should be ordered and in what quantities (i.e., should staff at service delivery points or at higher levels make these decisions?).* The location of decision making varies as follows:

- In a “*push,*” or *allocation, system,* staff at higher level storage facilities decide how often and how many supplies should be sent to the lower level storage facilities and outlets. These are referred to as *issues.*
- In a “*pull,*” or *requisition, system,* staff at service delivery points or lower level warehouses determine what supplies they need and submit a request; the higher level storage facilities then respond to that request. These are referred to as *orders.*

Figure 5.
Types of Inventory Control Systems



Factors to Consider in Choosing a “Push” or a “Pull” System

Both “push” and “pull” systems as well as combined systems are successfully in use in developing country family planning programs. In most refugee camps, we recommend implementation of a push system. However, if all of the following criteria are met, some refugee family planning programs may be ready to implement a pull system:

1. The family planning program and contraceptive distribution system are well developed.
2. Personnel at lower levels of the system have sufficient management skills to make logistics decisions.
3. Reliable logistics data are available at lower levels of the system.
4. Supplies are adequate to meet the needs of all SDPs, i.e., there are not frequent shortages in commodities which would necessitate rationing.

Types of Orders

There are two types of orders for obtaining contraceptive supplies:

- *Regular orders* are routine orders sent or placed periodically (e.g., monthly or quarterly) or when stocks fall to a predetermined reorder point.
- *Emergency orders* are placed to prevent stockouts when stocks are below accepted minimum levels. Emergency orders should be avoided as they may require more expensive means of communication and/or transportation than regular orders. They may also be impossible to fill, and stockouts could occur.

Program managers can reduce the occurrence of emergency orders by establishing and implementing proper procedures for maximum and minimum stock levels, as explained in section 6.2.

6.4 Determining Quantities to Issue or Order

Using the available data on average monthly consumption, quantities in stock, and max/min stock levels, program planners can calculate the quantities to be issued from higher level facilities to intermediate level facilities and service delivery points (in a push system) or the quantities to be requested by a lower level facility (in a pull system) (see tables 17 and 18).

Table 17. Formula for Calculating Orders or Issues

Quantity to be Issued or Ordered	=	Average Monthly Use	X	Maximum Months of Supply	–	Balance on Hand	–	Quantity on Order
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Contraceptive Logistics Guidelines for Refugee Settings

Table 18. Determination of Average Monthly Quantity Dispensed to Users and Quantity Dispensed to Users

Step 1: Determine Average Monthly Quantity Dispensed to Users

$$\frac{\text{Quantity Dispensed to Users in Last 6 Months}}{6} = \text{Average Monthly Use}$$

Example	
Cycles of Oral Contraceptives Dispensed to Users	Months
316	April
374	May
349	June
358	July
390	August
369	September
Total 2,156	6
	÷ = 359.3

Step 2: Determine Quantity to Be Issued

$$\text{Average Monthly Use} \times \text{Maximum Months of Supply} - \text{Balance on Hand} - \text{Quantity on Order} = \text{Quantity to Be Issued}$$

Example	
Assumptions: Maximum months of supply = 6	
Stock on hand = 420 cycles of Lo-Femenal	
Quantity on order = 570 cycles of Lo-Femenal	
360 cycles x 6 months	= 2,160 Cycles of oral contraceptives
-	420 Cycles on hand
-	570 Cycles already on order
=	1,170 cycles to be issued/ordered
=	1,200 (Rounded to make full carton)

7. Storing Contraceptives

Refugee program managers must ensure that storage facilities for contraceptives provide both adequate space and proper storage conditions. In refugee camps, the types and sizes of warehousing may vary from temporary structures such as prefabricated units, storage containers, and tents, to more permanent structures. Often family planning supplies will be stored in the same facility as medicines and other supplies.

The number of levels of warehouses for these supplies may be different in each refugee program according to the number and size of camps being supplied, the distance of the camps from the port of entry, and the administrative organization of medical services in the camps. In many refugee settings, relief items will be stored at a single, central storage facility under the management of a NGO contracted by UNHCR. Rather than establishing a parallel storage system, it may be more efficient to manage and store contraceptives at these warehouses; if so, program managers should ensure that correct procedures as described in this manual are followed.

In other instances, it may be necessary to establish a central warehouse to receive, store, and deliver supplies to intermediate level warehouses from which supplies are distributed to medical agencies and to camp health facilities for later distribution through dispensaries and service outlets. Finally, In other refugee camps, supplies may be delivered directly to service delivery points.

7.1 Determining Storage Space Requirements

In most refugee camps, a contraceptive logistics system will typically have only two or three levels: a central storage facility and service delivery points as well as, in some cases, an intermediate storage facility. While SDPs will require minimal storage space, perhaps only a cabinet, the central and intermediate level storage facilities will require more space. Regardless of the size of the facility, the same principles of supply management apply.

The storage space required for contraceptives depends on the maximum amount of commodities to be stored, which is a function of average monthly consumption (or projected monthly consumption), the lead time, and the quantity of safety stocks required. Space requirements should be calculated in terms of months of supply of all commodities to be stored, allowing for anticipated changes in demand. Please note also that, as a basic rule of contraceptive storage, cartons should not be stacked higher than 2.5 meters (8 feet) and at least 100 percent more floor space should be allowed for aisles, handling, and ventilation.

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To determine the actual floor space required for storage of contraceptives, use these steps (see tables 19 and 20).

Table 19. Determining Floor Space Requirements

1. Determine the number of cartons to be stored:	
$\frac{\text{Number of cycles/units to be stored}}{\text{Number of cycles/units per carton}} = \text{Number of cartons}$	
2. Calculate the space required:	
$\text{Number of cartons} \times \text{Carton size (l x w x h)} = \text{Storage space required in cubic meters}$	
3. Calculate the floor space required:	
$\frac{\text{Storage space required}}{2.5 \text{ meters (max. stack height)}} = \text{Floor space (in square meters)}$	
4. Floor space x 2 = Total Space Required (including handling and access space)	

Table 20. Determining Floor Space Requirements Example

1. Determine the number of cartons:	
$\frac{1,000,000 \text{ (cycles of oral contraceptives ordered)}}{1,200 \text{ (cycles per carton)}} = 833 \text{ cartons}$	
2. Calculate the space required:	
$833 \text{ cartons} \times .04 \text{ m}^3 \text{ (carton size)} = 33 \text{ m}^3 \text{ (or 1,108 ft}^3\text{)}$	
3. Calculate the floor space required:	
$\frac{33 \text{ m}^3 \text{ (volume)}}{2.5 \text{ meters (max. stack height)}} = 13.2 \text{ m}^2 \text{ (floor space)} \times \frac{2}{\text{(factor used for aisles and handling)}} = 26.4 \text{ m}^2$	
The floor space required to store this quantity of oral contraceptives is 26.4 square meters, or a floor space approximately 6.5m x 4m.	

To determine total floor space requirements, calculations should be performed for each contraceptive to be stored and those totals summed. Using recommended maximum stock levels for each level of the system, similar calculations should be completed for all storage facilities to ensure that all warehouses and service outlets have sufficient storage space.

7.2 Ensuring Proper Storage of Contraceptives

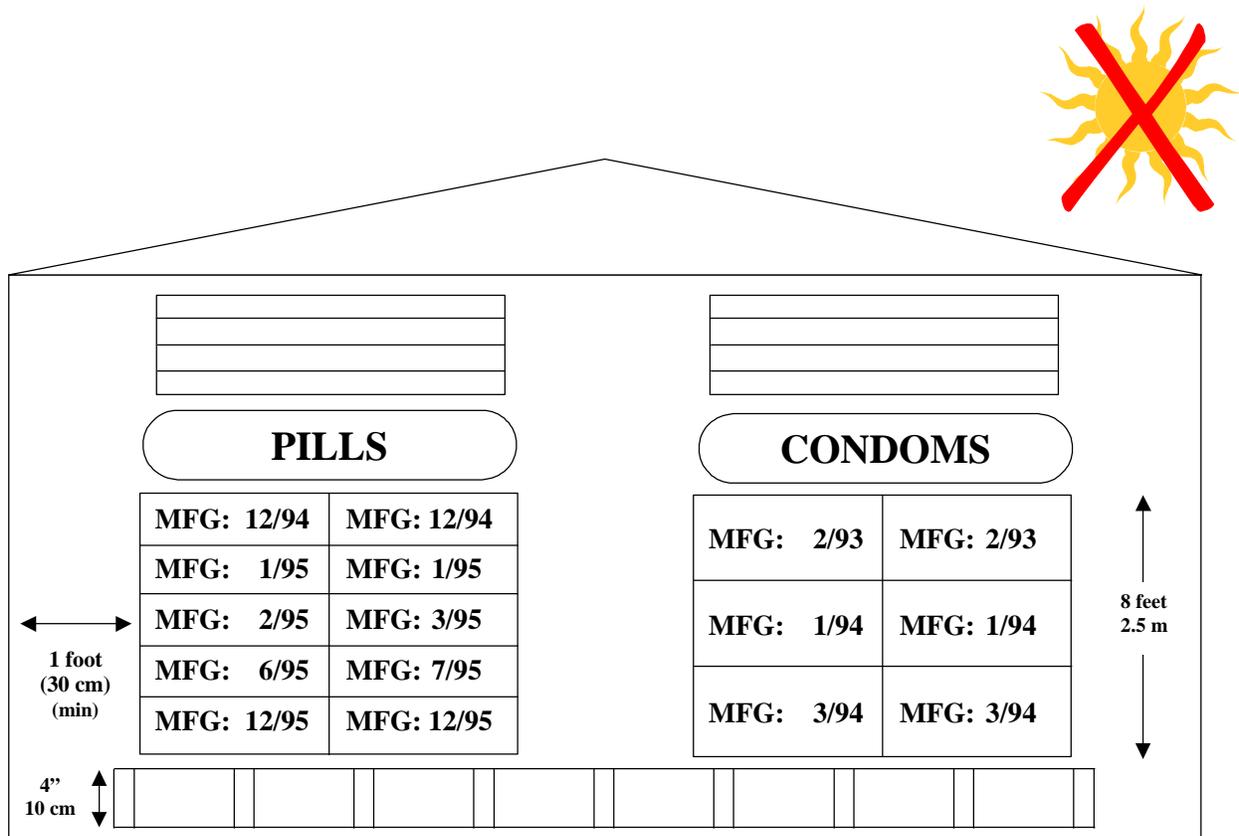
To ensure that contraceptive supplies do not remain in stock past their maximum shelf life, FEFO (first-to-expire, first-out) inventory control procedures should be adopted. In some cases, manufacturers will mark cartons with the product's date of expiration. In other cases, cartons will be marked with the date of manufacture. In the latter case, program managers should ensure that these cartons are hand-marked with the appropriate expiration date. *Commodities should always be stored so that the expiry date can be easily seen and so that the oldest product can be reached and distributed first.*

In addition to following proper FEFO procedures, program managers should ensure adherence to the following guidelines for proper storage of contraceptives (see table 21 and figure 6).

Table 21. Guidelines for Proper Storage

1. Clean and disinfect storeroom regularly.
2. Store contraceptives in a dry, well-lit, and well-ventilated storeroom, out of direct sunlight.
3. Secure storeroom from water penetration.
4. Make fire safety equipment available and accessible.
5. Store cartons of condoms away from electric motors and florescent lights.
6. Stack contraceptive cartons at least 10 centimeters (4 inches) off the floor, 30 centimeters (1 foot) away from the wall and other stacks, and no more than 2.5 meters (8 feet) high.
7. Arrange cartons so that identification labels expiry dates and manufacturing dates are visible.
8. Store contraceptives in a manner that facilitates first-to-expiry,first-out (FEFO) counting, and general management.
9. Store contraceptives separately, away from insecticides, chemicals, old files, office supplies, and other materials.
10. Separate and dispose of damaged or expired contraceptives without delay, in accordance with relevant local and donor regulations.

Figure 6.
Model Warehouse



7.3 Ensuring the Quality of Contraceptives

As contraceptives can become damaged and thus unusable, particularly if storage conditions are not good, it is important to recognize warning signs of potential quality assurance problems. *Contraceptives that have passed the expiration date should never be distributed* and should be quarantined and destroyed using program guidelines. For a list of visual indicators of potential quality assurance problems for different contraceptive methods, please refer to appendix 1. *Contraceptives that exhibit any of the indicated warning signs should not be distributed* pending further investigation of the product’s quality. For additional information on visual indicators of contraceptive quality problems, refer also to “Contraceptive Fact Sheets—A Tool for Logistics Advisors,” available from the Family Planning Logistics Management project (FPLM).

8. Institutionalizing the Contraceptive Logistics System

These guidelines have been prepared with the objective of assisting program managers in refugee camps to improve contraceptive logistics management in an existing family planning program or to design and implement a system for a new program. After a logistics system has been implemented, the following additional steps are recommended to assist program managers in strengthening and institutionalizing the system:

- Creation of a logistics coordination group.
- Preparation of a contraceptive logistics management procedures manual in which procedures for a particular refugee camp can be standardized and documented, thus facilitating training of staff involved in contraceptive distribution.

8.1 Establishing a Logistics Coordination Group

Organizing a logistics coordination group comprised of agencies involved in the provision of family planning services can improve both the logistics system and a family planning program's effectiveness. This group should meet at regular intervals, such as monthly or quarterly. Agenda items should include:

- Updates of current and planned activities in family planning as they affect supply, e.g., new initiatives or targeted campaigns, new distribution mechanisms such as community-based distribution (CBD), etc.
- Reports on the stock situation of the previous period, i.e., the quantity of contraceptives received, distributed and dispensed to users, and the current stock on hand.
- Discussion of other issues related to contraceptive stock management. Minutes of these meetings should be recorded and circulated to the participants with copies of the stock analysis reports from each participant attached.

8.2 Standardizing Contraceptive Logistics Management Procedures

Program managers should be encouraged to standardize the logistics procedures that they have adapted for use in their respective programs, and to record these procedures in a simple, concise logistics procedures manual. (Such manuals are often no more than 20 pages long, including annexes with the logistics forms used.) All staff responsible for handling, distributing, or dispensing contraceptives, or monitoring the supply system, should be trained in these procedures. A procedures manual can serve as support for the design of a training curriculum and as reference material for both program managers and staff in present and future family planning programs for refugees. In addition such a manual can serve as a resource for the design of logistics systems for other commodities used in refugee camps, e.g., distributions for STD drugs.

Appendix A
Visual Indicators of Contraceptive Quality
Problems

Oral Contraceptives

Do not use the pills in a packet if—

- a pill crumbles when it is pushed through the aluminum backing
- the aluminum packaging for any of the pills is broken
- the packet is missing pills
- some pills are not the correct color.

Condoms

Do not use condoms if—

- the condom packets are sticky or brittle
- condoms or their lubricant have discolored.

Condoms can be damaged by prolonged exposure to sunlight, temperatures over 400C, humidity, ozone (produced by smog, electric motors, and fluorescent lights), or contact with any oil (e.g., mineral or vegetable oils). Chemical products should not be stored in the same warehouse with condoms, as petroleum vapors and various types of liquid solvents damage the condoms.

IUDs

Do not use if—

- sterile packaging has been broken or perforated.
- there are missing parts.

Because IUDs are made of plastic, they should be protected from heat or direct sunlight. All product contents should be in the sterile wrapper, and the insert information must be legible. It is acceptable for the copper on copper-bearing IUDs to darken. (Note: Shelf life is different from use life; many IUDs are now effective for up to ten years after insertion even if the shelf life was near expiration.)

Injectables

Do not use if—

- vials are cracked or broken
- contents do not return to suspension after shaking.

Vials will remain potent and stable up to the expiration date if stored at room temperature (15-30°C). If contents separate, shake to restore suspension.

Implants

Do not use if—

- the implant's sterile packaging is broken
- some of the capsules are missing

The implants must be protected from excessive heat and direct sunlight, and must be stored in a dry place.

Vaginal Foaming Tablets

Do not use if—

- the package has broken or missing tablets
- the package is puffy (this indicates a moisture leak)
- the foil laminate has cracks
- the tablets vary in color
- the tablets are soft, crumbly, wet, or damp.

Diaphragms

Do not use if—

- the diaphragm looks dirty
- the diaphragm shows holes or cracks when held up to a light.

Since diaphragms are latex, they should be stored in the same storage conditions as condoms.

Spermicidal Jelly

Do not use if—

- the jelly tube is wrinkled or leaking
- the applicator cannot be screwed easily onto the top of the tube.

Spermicidal Foam

Do not use if—

- the tip is caked so that foam cannot be released
- there is little or no pressure in the can
- foam is of uneven consistency or has separated.

The can of foam should not be exposed to intense heat or extreme fluctuations in temperature or humidity. It should be stored upright.

Appendix B

Stockkeeping Record

INVENTORY RECORD						
Commodity Number		Type of Commodity				
Units Used		Maximum Months of Supply		Minimum Months of Supply		Storage Location
Date	Transaction Reference	Quantity Received	Quantity Issued	Adjustments	Quantity On Hand	Quantity On Order

Explanation of Adjustments

Appendix C
Stock Transaction Record
(Requisition and Issue Voucher)

REQUISITION AND ISSUE VOUCHER					
Requisition and Issue Voucher No.: _____ Date: _____ Issue to: _____ _____ _____					
REQUISITION			ISSUE		Remarks
Commodity	Quantity on Hand	Quantity Requested	Quantity Issued	Quantity Received	

REQUISITION		
Requested by:	_____	Date: _____
Approved by:	_____	Date: _____
ISSUE:		
Approved by:	_____	Date: _____
Shipped by:	_____	Date: _____
RECEIPT:		
Received by:	_____	Date: _____

Appendix D
Consumption Record
(Daily Activity Record)

Contraceptive Logistics Guidelines for Refugee Settings

MONTHLY STATISTICS REPORT

SDP/Clinic Name _____

Month and Year _____

PRODUCTS DISTRIBUTED*

Method	Quantity																		Total	
Condoms																				
VFTs																				
Orals																				
IUCD																				
Injectables																				

*Express all quantities in units dispensed, e.g. pieces for condoms and cycles for orals.

(Signature): _____

Date completed: _____

Appendix E

Summary Reports

REPORT & REQUEST FOR CONTRACEPTIVES

Facility Type/Name: Depot: _____
 Report for Period Beginning: _____, 19__ Ending _____, 19__

Contraceptive	Beginning Balance	Received This Period	Issued	Losses	Ending Balance	Quantity Needed	Dispensed to Clients
Oral Contraceptives:							
Depo-Provera®							
Norplant							
Copper T							
Condoms							
Foaming Tablets							
Gloves							

Submitted: _____ Date: _____

Explanation of losses: _____

Contraceptive Logistics Guidelines for Refugee Settings

Quantity of Contraceptives Dispensed

Month	Oral Pill					Injectables	IUD	Condom	Vaginal Foaming Tablet
January									
February									
March									
1 st Quarter Total									
April									
May									
June									
2 nd Quarter Total									
July									
August									
September									
3 rd Quarter Total									
October									
November									
December									
4 th Quarter Total									
Year Total									