

Basic Techniques for Managing Drugs and Supplies

A Five-Session Tool for:

Capacity Building



Planning



Supervision

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Introduction to the CPS Tool

Traditional training methodologies often transfer volumes of information in lengthy classroom sessions, too frequently sacrificing continuity of implementation. While much information is transferred in these intensive trainings, in many cases participants are overwhelmed by information overload and do not have the opportunity to apply the new practices and methodologies to their daily work.

To provide a mechanism for long-term professional empowerment and hands-on practical implementation, the Rational Pharmaceutical Management (RPM) project developed the Capacity Building, Planning, and Supervision (CPS) implementation strategy to train personnel in decentralized health-care settings in sound drug management techniques. The CPS provides a mechanism for continuity through short training sessions, which can be taught singularly or in tandem. This way, drug management practices can be strengthened and practiced over a more realistic period of time, such as three to six months, with follow-up training and monitoring to solidify the new skills.

Using the practical and simple CPS tool, participants analyze their facility's problems, improve their problem-solving skills, and plan activities to implement identified solutions. Pharmacy and medical administrators working as a supervisory team can use this tool to prepare and conduct CPS sessions for pharmacy managers of warehouses, health centers, and hospitals.

Every CPS session introduces standard techniques for managing drugs and supplies, improving drug use, and minimizing losses and costs at any health system level. The CPS tool comprises five modules that are designed to be applied in five sessions, or individually. In addition, any health professional can learn the drug management techniques simply by reading and using the materials.

This manual contains the following five sessions, each containing capacity building, planning, and supervision segments:

- Session 1: Evaluating Your Storeroom**
- Session 2: Procurement of Drugs and Supplies**
- Session 3: How to Order Drugs and Supplies; Distribution Systems for Health Facilities**
- Session 4: Receiving Drugs and Supplies, Using Information Systems, and Comprehending Costs**
- Session 5: Rational Use of Drugs**

The sessions sequenced so that once capacity building is under way, planning and problem solving can begin, followed immediately by monitoring and supervision. Each section, described below, is identified in every session by a matching symbol:

Capacity Building: In most cases, capacity building begins during a one-day in-service session. Each module addresses several of the following drug management subjects:

- Stock management in storerooms and warehouses
- Practice in filling out stock cards
- How to calculate the quantity to order of each item
- Procedures for ordering drugs and supplies
- Factors to consider in distributing drugs and supplies to health facilities
- Procedures to follow when receiving drugs and supplies
- Promotion of rational drug use
- Supervision and monitoring of pharmacy services



Planning: As soon as a session is completed, pharmacy and warehouse managers plan their individual activities for the following month. Supervisors review plan implementation during follow-on site visits. Instructions in each session help identify problems, plan activities, and facilitate supervisory visits for your facility.



Supervision: The CPS strategy emphasizes self-monitoring using indicators, but it is recommended that a member of a supervisory team visit the facilities at least monthly at the start of CPS implementation. This allows supervisors to continue capacity building exercises, document improvements in drug management, and review problems in the facilities. A series of management tools permit local pharmacy personnel and warehouse managers to identify and analyze their operational problems. The tools encompass—

- Rapid diagnostics of the logistics system
- Methods of investigating operations with the aim of improving service levels
- Data indicators to monitor levels of service

Every session includes several elements, detailed below, that facilitate sustainable capacity building. They are identified throughout this manual by their corresponding symbols:



Topics to be covered and approximate time needed to review and practice the material



Training plan that details the session's training goals



General information, instruction, and practice on how to manage drugs

Checklists and reference tables that facilitate individual work and planning



Indicators for monitoring progress

The table below is an example of the training plan used for each of the in-service sessions. The actual training plans for each session have in boldface print the activities that are part of that session.

Category	Activity	By Whom?	Date to Complete?	Result
Cleaning and stocking				
Stock protection				
Expiration dates				
Stock cards				
Order and data forms				
Min/Max stock levels				
Quantity to order				
Receiving items				
Distribution system				
Rational use of drugs				
Other comments: <hr/> <hr/>				

Session 1: Evaluating Your Storeroom¹



Minutes	Theme
15	Introduction of the Drug Management Cycle
90	Inventory Control: Introducing the Stock Card
90	Cleaning, Stocking, and Protecting Drugs and Supplies
45	How to Prepare and Conduct CPS Meetings

¹ “Session 1: Evaluating Your Storeroom” is part of a five-session series entitled *Basic Techniques for Managing Drugs and Supplies* published by Management Sciences for Health, April 2000.



Session 1: Training Plan Evaluating Your Storeroom

Consists of three parts: Capacity Building, Planning, and Supervision for your workplace

Note: Only the bolded activities are part of this session.

I. Capacity Building

How to keep the storeroom clean and orderly

How to protect drugs and supplies from environmental factors

How to monitor periodically that expired drugs and supplies are removed

How to fill out a stock card, order request, and consumption data form

How to calculate the minimum and maximum stock level of each item

How to calculate the quantity of each item to order and ordering procedures

Learn the procedures for receiving drugs and supplies

Learn the factors to consider in distributing drugs and supplies to health facilities

Learn the need for a good information system

How to promote the rational use of drugs

II. Planning

Individual Plan for Improving Your Facility

Category	Activity	By Whom?	Date to Complete?	Observation
Cleaning and stocking				
Stock protection				
Expiration dates				
Stock cards				
Order and data forms				
Min/Max stock levels				
Quantity to order				
Receiving items				
Distribution system				
Rational use of drugs				

Other comments:

III. Supervision

How to monitor your work using data from the information system

How your work affects the local budget

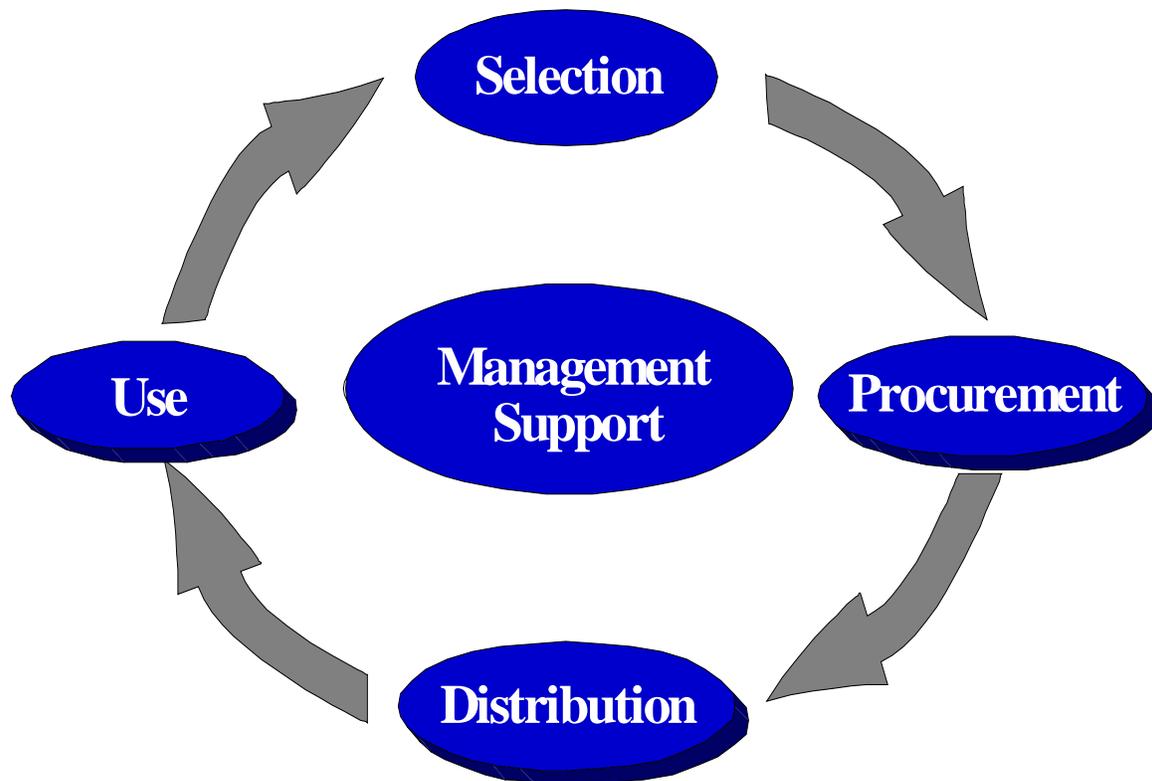
How to prepare and conduct CPS meetings

Capacity Building Evaluating Your Storeroom

I.1. Drug Management Cycle (Logistics Cycle)

The Drug Management Cycle helps managers to visualize the steps and relationships of the drug supply system. Provincial or district warehouses work primarily in the *Procurement*, *Distribution*, and *Use* segments of the drug management cycle.

Drug Management Cycle



Brief definitions of the drug management cycle's components:



Selection: Deciding which drugs and supplies to purchase

Procurement: Process of ordering drugs and supplies

Distribution: Receiving drugs and supplies, inventory control, distribution and transport to health facilities, information system of receipts and distributions

Use: Prescribing and dispensing drugs and supplies

I.2. Inventory Control: Introducing the Stock Card

The stock card is the basis of inventory control activities and provides information essential to management decisions. Managers often use information from the stock card to determine the quantities of drugs and supplies to order, quantities received, security stock levels, maximum and minimum stock levels, and expiration dating. The stock card is central to assuring that stock levels are adequate for current needs. The stock card also records valuable information that managers can use to evaluate and improve the distribution of drugs and supplies.

On the following page you will find a sample stock card to refer to for Sessions 1 and 2.



1.2.a. Basic Components of a Stock Card

Always have a separate stock card for each inventory item.

Name and Strength – Name and strength of the drug (Example: aspirin tablets, 325 mg)

Unit – Dispensing or distribution unit of measure. It is important to determine in what unit the item is going to be distributed (i.e., by bottles of 500 tablets or base units such as by tablet, capsule, milliliter, etc.). When supplies don't arrive in predetermined units of measure, the employees in the storeroom become confused when attempting to fill out stock cards.

Item Code – Unique drug identification code used by a health system

Expiry Date – The date printed on the container of drugs and supplies that is determined by the manufacturing company. When the item passes this date, the manufacturer does not guarantee the potency, purity, or safety of the product.

Average Monthly Consumption – The average quantity of a stock item expected to be consumed per month. It is calculated based on previous consumption data from a specified number of months.

Minimum Stock Level – When stocks are depleted to the minimum stock level, you must reorder the item.

Maximum Stock Level – This is the total quantity necessary to meet the needs of all health facilities in the distribution area.

1.2.b. Stock Cards and Registers

All stock cards and inventory control registers must be maintained in a clean, legible, and up-to-date manner. For more details on how to fill and use stock cards, see the section on stock cards in Session 2.

1.2.c. How to Monitor Periodically That Expired Stock Items Are Removed

The goal of monitoring stocks periodically is to limit wastage of money, drugs, and supplies due to expiration.

- On a monthly basis, examine the invoices for all drugs and supplies received during the last three months.
- If any of those stock items has only two months left before expiring, check the average monthly consumption quantity of the item to determine if you will use it during the next two months.

- If any of the stock items will expire shortly, and you will not use it during that period of time, quickly return it to your distribution warehouse.
- The district or provincial warehouse will send these items to those pharmacies that need them.

I.3. Storage of Drugs and Supplies

Not only is it necessary to protect drugs and supplies from excessive heat, light, humidity, rats, and insects, but also against theft, expiration, damage, and fire. Here are some things to consider to adequately store your drugs and supplies (See the Storage Recommendations and Checklist for additional information):

Heat – Very often heat accelerates the deterioration of drugs, and it is an important factor to consider in tropical countries.

- Air conditioning, if available, will resolve the problem
- Other, cheaper alternatives exist, but aren't as effective in reducing temperature in storerooms (window fans, exhaust fans, and high ceilings)
- Always keep vaccines in the refrigerator

Light – Some items deteriorate when exposed to light. Verify that items that are sensitive to light are packaged adequately to protect them from light. See the guide following this section.

Humidity – Mildew is caused by humidity and is difficult to combat. When it is not possible to get air conditioners and dehumidifiers, the following measures will minimize destruction caused by humidity:

- Construction of the storeroom to promote circulation of air
- Spaces between shelves and floor pallets to allow circulation of air
- Prevent drugs and supplies from being exposed to air by using closed containers

Rats and Insects – Some ways to protect against rats and insects are—

- Prohibit the consumption of food in areas where stock items are stored
- Clean the storeroom areas regularly

Theft – Minimize theft through the following actions:

- If doors are not properly secure, perform periodic audits to detect any theft
- Allow only authorized persons into the storeroom
- Place strong locks on doors and security bars on windows
- Maintain good control of stock cards and registries to detect theft should it occur
- During distribution to the health facilities, carefully verify quantities delivered

Expiry Dating – Minimize losses due to expired drugs and supplies by using the following methods:

- Calculate stock requirements correctly
- Distribute drugs and supplies using the FEFO method (first expired, first out)
- Note expiry dates on stock cards
- Return excessive stock items to warehouses for redistribution to other health facilities

1.3.a. Monitor the Environment

See the tables on the following two pages. Use the first, “Storage Recommendations for Stocking Some Essential Drugs,” as a reference for protecting several common drugs. Use the second, “Checklist for Evaluating the Storeroom,” as a checklist to evaluate your storeroom for security, theft, and protection of drugs and supplies. Perform this monitoring periodically, at least every six months.

Storage Recommendations for Stocking Some Essential Drugs

Drug	Storage Temperature	Protect Against	Indicator Of Deterioration	Comments
Acetylsalicylic Acid	< 30C	Light, humidity, heat	Acetic acid smell	Very stable
Aluminum Hydroxide tab.	< 25C	Air, humidity, heat		
Ampicillin for oral susp.	< 25C	Air, light, humidity		Reconstitute and store in refrigerator
Benzoic/Salicylic Acid oint.	< 30C	Heat		Stable
Benzyl benzoate lotion		Air, light, heat		
Benzylpenicillin	< 30C	Heat		
Chlorhexidine	< 37C	Light, heat		
Chloroquine HCl tab.		Air, light		Very stable < 30C
Chlorpromazine gluconate inj.		Light	Brown or violet	
Dapsone		Light, humidity	Discoloration without deterioration	
Diazepam inj.		Light		
Ephedrine sulfate or epinephrine inj.	< 25C	Light, humidity, air	Red	
Ergometrine inj.	< 15C	Heat, light		Store in refrigerator
Ferrous sulfate and folic acid tab.		Air	Color and consistency change	
Isoniazid	< 25C	Heat, light		Stable for one year
Iodine solution	< 35C			Very stable
Lidocaine HCl inj.				Very stable
Metronidazole tab.		Humidity, light		Stable
ORS sachets	< 25C	Air, humidity	Dark brown, no bubbles	< 25C if possible
Paracetamol/acetamenophen elixir		Air, light		
Phenobarbital tab.		Air, humidity		Don't store in refrigerator
Piperazine elixir		Air, humidity, light		Stable
Phenoximethyl penicillin tab.	< 30C	Humidity		
Procaine	< 30C	Heat		Very stable
Retinol (Vitamin A) caps.	< 15C	Air, humidity		Store in refrigerator
Sulfacetamide ophthalmic ointment	15 to 18C	Air, humidity, light		
Sulfamethoxazol/trimethoprime tab.		Air, humidity, light		
Tetracycline tab.		Air, light		
Thiobendazol		Humidity	Brown	

Checklist for Evaluating the Storeroom

Inside		Yes	No
Easy movement about storeroom			
Windows	Sashes in good shape Security bars intact Windows clean Mosquito screen intact		
Doors	Frames in good shape Doors in good shape Hinges in good shape Locks in good shape		
Good air circulation	Shelves and pallets a distance of 0.5 to 1.0 meter from wall; pallets about 10 mm off floor		
Ventilators	Security bars intact		
Ceiling	Smooth with no false ceiling		
Walls	Clean Painting in good condition Signs of dampness		
Floor	Clean Smooth Intact		
Shelving	Intact Smooth surfaces Clear markings or signs		
Cabinets	Intact Closed Function well		
Refrigerators and freezers	Function well		
Cold room	Functions well		
Special storage	For narcotics and psychotropics		
Pests	Free of insects Free of rats		
Utilities	Existence of electric current Presence of running water		
Outside			
Roof	In good condition		
Walls	In good condition		
Surroundings	Free of trash, litter, tall grass		

Adapted from “How to Assess Health Services Logistics with Particular Reference to Peripheral Health Facilities” (World Health Organization, 1985).

Planning Evaluating Your Storeroom



II.1. Individual Plan to Improve Your Storeroom

- Obtain a copy of “Session 1: Training Plan.”
- Review the topics that were covered. The training plan of each session has in **bold** the information in which you were trained during Session 1.
- List in the “Individual Plan for Improving Your Facility” table some activities that you want to complete during the next month and others that will take longer than one month.
- For each activity, note who will complete the activity and the date planned for completion of the activity.
- As you complete each activity, note the result of the activity.
- Plan expected dates for supervisory visits. The supervisory team will visit each storeroom to determine the extent of implementation of the planned activities and provide technical assistance if needed.

Supervision Evaluating Your Storeroom



III.1. How to Monitor Your Work Using Data Indicators

The following data indicators can be used periodically to help you manage your work:

Indicator 1: Cost of Expired Drugs and Supplies During the Last Month



Calculate this way (See the following table, “List of Expired Drugs and Supplies,” to assist with this indicator):

- Make a list of all expired drugs and supplies during the last month
- For each item, count the quantity expired
- Multiply the unit cost times the quantity expired for each item
- Add up the total cost of all expired items
- Send the results to the Supervisory Team when you send your consumption data

For example:

Total cost per expired item = Unit cost x Units expired

Total cost of all expired items = Add together the total cost per expired item for all items

III.2. How to Prepare and Conduct CPS Meetings for Storeroom Managers

The following checklist serves to orient the supervisory team during preparation for training:

Activity	By Whom?	Date Completed
Determine if training will be held as one large session, session by session, or one per month		
Determine how many persons will be trained		
If the training involves travel by the storeroom managers, arrange transportation, lodging, and per diem for each person (multiply number of persons by unit cost)		
Arrange transportation (or gasoline), lodging, and per diem for each member of the supervisory team (multiply number of persons by the unit cost)		
If the plan is to hold a large training session at one time, arrange for a classroom		
Arrange for money to cover tea breaks for all participants and facilitators		
Produce enough copies of the CPS manual or of the pertinent session, if being held by session, for all participants		
Produce enough forms for 6 months, if necessary, for the following: (1) Stock cards (2) Drug and supplies orders (3) Consumption data (4) Consultation data		
Purchase enough of the following materials for all participants of the sessions: (1) Folder (2) Notepad (3) Pencil with eraser and pen (4) Calculator (when necessary for the session) (5) Flip charts and pens (6) Masking tape		

Session 2: Procurement of Drugs and Supplies²



MINUTES	THEME
30*	Review of Session 1
30	Programmed Procurement
180	How to Calculate Quantities to Order

* If the training is implemented as one session per month, it is necessary to review the previous session. For training held as one large workshop for all five sessions, review will be done during supervisory visits on site.

² “Session 2: Procurement of Drugs and Supplies” is part of a five-session series entitled *Basic Techniques for Managing Drugs and Supplies* published by Management Sciences for Health, April 2000.



Session 2: Training Plan Procurement of Drugs and Supplies

Consists of three parts: Capacity Building, Planning, and Supervision for your workplace

Note: Only the bolded activities are part of this session.

I. Capacity Building

How to keep the storeroom clean and orderly

How to protect drugs and supplies from environmental factors

How to monitor periodically that expired drugs and supplies are removed

How to fill out a stock card, order request, and consumption data form

How to calculate the minimum and maximum stock level of each item

How to calculate the quantity of each item to order and ordering procedures

Learn the procedures for receiving drugs and supplies

Learn the factors to consider in distributing drugs and supplies to health facilities

Learn the need for a good information system

How to promote the rational use of drugs

II. Planning

Individual Plan for Improving Your Facility

Category	Activity	By Whom?	Date to Complete?	Observation
Cleaning and stocking				
Stock protection				
Expiration dates				
Stock cards				
Order and data forms				
Min/Max stock levels				
Quantity to order				
Receiving items				
Distribution system				
Rational use of drugs				

Other comments:

III. Supervision

How to monitor your work using data from the information system

How your work affects the local budget

How to prepare and conduct CPS meetings

Capacity Building

Procurement of Drugs and Supplies

I.1. Programmed Procurement Method

Programmed procurement is characterized by periodic inventory review. The stock card is the basis of this periodic review. Managers count the available inventory of each stock item and then place an order to bring stock levels back to the calculated maximum stock level. Refer to the following definitions as you practice these calculations.

I.2. Definitions of Calculations from the Stock Card



The stock card provides information so the storeroom manager can make better decisions on the distribution of stock items. The stock card can be used to obtain the following calculations and information:

C_A = *Average Monthly Consumption*. Normally, the average number of units expected to be dispensed or distributed per month

S_O = *Stock on Order*. The number that tells you the total quantity ordered of an item that has not been disbursed

PP = *Procurement Period*. The established time interval until the next order will be placed

SS = *Safety Stock*. The reserve stock of an item needed to prevent stock-outs due to either late receipt of orders or to an increase in use of the item

S_{max} = *Maximum Stock Level*. The total quantity necessary to meet the needs of all health facilities in the distribution area

Q_O = *Quantity to Order*. The number that tells you the total quantity to order of an item in the current requisition

S_B = *Stock on back order*. The quantity of stock back-ordered to lower levels

S_I = *Stock now in Inventory*. The quantity of an item available for dispensing or distribution, including safety stock

D_{exp} = *Expiry Date*. The quantity of a product likely to expire before use

Typical Stock Card

Name and Strength		Unit	Item Code		Expiration Date				
Paracetamol 500 mg		1000 tablets	P500		October 23, 2001				
Average Monthly Consumption			Minimum Level			Maximum Level			
RECEIPTS				DISBURSEMENTS			STOCK		
Date	Doc. No.	Quant.	Loc.	Doc. No.	Quant.	Dest.	Quant.	Unit Value	Total Value
Jan 1	1997 Inv.						50		
Jan 15				Req #1	5	North	45		
Feb 18				Req #3	20	South	25		
Mar 22				Req #10	5	West	20		
Apr 6				Req # 43	8	East	12		
May 10	LI-3	100	Unipac				112		
May 15				Req #50	25	East	87		
Jun 20				Req #53	30	West	57		
Jun 30				Req #59	25	South	32		
Jul 1				Req #62	15	North	17		
Aug 3				Req #70	17	South	0		
Sep							0		
Oct							0		
Nov 4	SU-15	200	Unipac				200		
Nov 6				Req #72	30	South	170		
Nov 8				Req # 78	40	East	130		
Dec 31	Inventory						130		

Doc. No. = Document Number

Quant. = Quantity

Loc. = Location

Dest. = Destination

I.3. How to Do the Calculations



Use data from the previous page (Typical Stock Card) in the exercises that follow. These calculations are used in a system of programmed procurement, which is the system used most by governments.

Average Monthly Consumption (C_A)

Average monthly consumption can be calculated using the sum of quantities dispensed or distributed over a period of time, normally 12 months. You can use the monthly disbursement data from the previous page to review how disbursements were broken up during the year:

Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
Number Disbursed	5	20	5	8	25	30+25	15	17	X	X	30+40	0	220

Note that in the month of August there was a stock-out and no paracetamol could be distributed during September and October. For those months you can count disbursements as “X.” Note also that in December there was no distribution at all, but there was stock on the shelves. For this month, count disbursements as “0.”

Further you must only count 10 months for the formula below, since there were 9 months when drugs were distributed, plus 1 month when there were drugs in stock but none were requested for distribution. You should not include in the formula the months of September and October, since stock-out of paracetamol occurred. Finally, divide the total number of paracetamol units consumed during the year by 10 (9 + 1 months).

To review: X = stock-out, therefore do not count this month in the formula
0 = stock exists but not requested, therefore count this month in the formula

$$\begin{aligned}C_A &= \frac{5 + 20 + 5 + 8 + 25 + 55 + 15 + 17 + 70 + 0}{10} \\ &= \frac{220}{10} \\ &= 22 \text{ bottles of 1000 tablets per month, or 22,000 tablets per month.}\end{aligned}$$

Stock on Order (S_O)

This is calculated by multiplying the Average Monthly Consumption (C_A) by the Procurement Period (PP). If the drugs and supplies are reordered every 6 months (PP), then—

$$\begin{aligned} S_O &= C_A \times PP \\ &= 22,000 \text{ tablets per month} \times 6 \text{ months} \\ &= 132,000 \text{ tablets, or } 132 \text{ bottles of } 1000 \text{ tablets} \end{aligned}$$

Safety Stock (SS)

Safety stock is necessary to protect the storeroom from stock-outs and provides a safety net for variation within the procurement system. There is no single formula for calculating the safety stock level; however this number is usually calculated from the Average Monthly Consumption. For example, if stock is normally distributed every 6 months and you intend to have enough safety stock for 2 months to account for slower than normal delivery, then—

$$\begin{aligned} SS &= 2 \times C_A \\ &= 2 \text{ months extra for distribution} \times 22,000 \text{ tablets per month} \\ &= 44,000 \text{ tablets, or } 44 \text{ bottles of } 1000 \text{ tablets} \end{aligned}$$

Maximum Stock Level (S_{max})

The maximum stock level is used to define the total quantity of an item to stock. To do this, you must sum the safety stock (SS) and the quantity of Stock on Order (S_O). For this example the Procurement Period is also 6 months:

$$\begin{aligned} S_{max} &= SS + S_O \\ &\quad \text{or} \\ &= SS + (C_A \times PP) \\ &= 44,000 \text{ tablets} + (22,000 \text{ tablets} \times 6 \text{ months}) \\ &\quad \text{or} \\ &= 44 \text{ bottles} + (22 \text{ bottles} \times 6 \text{ months}) \\ &= 176,000 \text{ tablets, or } 176 \text{ bottles of } 1000 \text{ tablets} \end{aligned}$$

Quantity to Order (Q_O)

Using the figures for Maximum Stock Level (S_{max}), Stock on Back Order (S_B), Stock Now in Inventory (S_I), and Stock on Order (S_O), it is possible to calculate the quantity of each stock item to order at one time. Use the S_{max} value calculated above for paracetamol (176,000 tablets, or 176 bottles of 1000 tablets). The quantity of Stock on Back-Order (S_B) can be gathered from past records, and for this example is 5000 tablets. From the sample stock card use the inventory level, or Stock Now in Inventory (S_I), for July 1 (1000 tablets x 17 bottles, or 17,000). Use the figure for Stock on Order (S_O) calculated previously (132,000 tablets, or 132 bottles of 1000 tablets):

$$\begin{aligned} Q_O &= (S_{max} + S_B) - (S_I + S_O) \\ &= (176,000 + 5,000) - (17,000 + 132,000) \\ &= 181,000 - 149,000 \\ &= 32,000 \text{ tablets, or 32 bottles of 1000 tablets} \end{aligned}$$

Quantity of drugs and supplies likely to expire before use (D_{exp})

Finally, it is possible to calculate the quantity of a product likely to pass the expiry date. This calculation helps in using the stock before it passes the expiry date, which causes waste of drugs and money. It also helps determine if stock-outs could occur, caused by the loss of stock due to expiry. To calculate the quantity of paracetamol at risk of passing the expiry date (D_{exp}) we'll assume there are 2 months to expiry and today's date is June 20. Using the sample stock card for paracetamol, calculate the following:

$$\begin{aligned} D_{exp} &= S_I - (\text{No. of months until expiry date} \times C_A) \\ &= (57 \text{ bottles} \times 1000 \text{ tablets}) - (2 \text{ months} \times C_A) \\ &= 57,000 - (2 \times 22,000) \\ &= 57,000 - 44,000 \\ &= 13,000 \text{ tablets, or 13 bottles} \end{aligned}$$

In this example the quantity likely to expire is 13,000, because the current stock exceeds the quantity likely to be consumed over the next 2 months.

I.4. Maintenance of Stock Cards and Stock Registers

Always keep stock cards and stock registers clean, in order, and up to date.

Planning Procurement of Drugs and Supplies



II.1. Individual Plan to Improve Your Facility

- Obtain a copy of “Session 2: Training Plan.”
- Review the topics that were covered. The training plan of each session has in **bold** the information in which you were trained during Session 2.
- List in the “Individual Plan for Improving Your Facility” table some activities that you want to complete during the next month and others that will take longer than one month.
- For each activity, note who will complete the activity and the date planned for completion of the activity.
- As you complete each activity, note the result of the activity.
- Plan expected dates for supervisory visits. The supervisory team will visit each storeroom to determine the extent of implementation of the planned activities and provide technical assistance if needed.

Supervision Procurement of Drugs and Supplies



III.1. How to Monitor Your Work Using Data Indicators

The following data indicator can be used periodically to help you manage your work:

Indicator 1: Percentage of Stock Cards Up-to-Date



Calculate this way:

- Randomly select 10 stock cards of those items dispensed or received in the last several days
- Count the stock cards that are filled out and up to date
- Divide the number of stock cards that are filled out and up to date by 10
- Multiply by 100
- The result is the percentage of stock cards filled out and up to date
- Send the results to the supervisory team when you send your consumption data

For example:

$$\% \text{ up-to-date} = \frac{\text{number up-to-date}}{10} \times 100$$

Session 3: How to Order Drugs and Supplies; Distribution Systems for Health Facilities³



MINUTES	THEME
60*	Review of Sessions 1 and 2
60	How a Health Facility Fills Out an Order Form
60	How to Prepare an Order Requested by a Health Facility
120	Distribution to Health Facilities: By Kit and by Open Stock

* If the training is implemented as one session per month, it is necessary to review the previous session. For training held as one large workshop for all five sessions, review will be done during supervisory visits on site.

³ “Session 3: How to Order Drugs and Supplies; Distribution Systems for Health Facilities” is part of a five-session series entitled *Basic Techniques for Managing Drugs and Supplies* published by Management Sciences for Health, April 2000.



Session 3: Training Plan How to Order Drugs and Supplies Distribution Systems for Health Facilities

Consists of three parts: Capacity Building, Planning, and Supervision for your workplace

Note: Only the bolded activities are part of this session.

I. Capacity Building

How to keep the storeroom clean and orderly

How to protect drugs and supplies from environmental factors

How to monitor periodically that expired drugs and supplies are removed

How to fill out a stock card, order request, and consumption data form

How to calculate the minimum and maximum stock level of each item

How to calculate the quantity of each item to order and ordering procedures

Learn the procedures for receiving drugs and supplies

Learn the factors to consider in distributing drugs and supplies to health facilities

Learn the need for a good information system

How to promote the rational use of drugs

II. Planning

Individual Plan for Improving Your Facility

Category	Activity	By Whom?	Date to Complete?	Observation
Cleaning and stocking				
Stock protection				
Expiration dates				
Stock cards				
Order and data forms				
Min/Max stock levels				
Quantity to order				
Receiving items				
Distribution system				
Rational use of drugs				

Other comments:

III. Supervision

How to monitor your work using data from the information system

How your work affects the local budget

How to prepare and conduct CPS meetings

Capacity Building

How to Order Drugs and Supplies

Distribution Systems for Health Facilities

I.1. The Order-Supply Form



I.1.a. *How to Order Items Using the Order-Supply Form*

These items are important to include in an order-supply form. See the following page for a sample order-supply form. The following items are found at the top and on the left side of the sample form.

- **Ordered By:** the name of the facility or organization
- **Date Ordered:** the date you fill out the form
- **Supplier:** the name of the storeroom, warehouse, or hospital that will send the stock items you request on this form
- **Items Ordered: Code:** the stock number or code of the item if used by the health system, such as a national code
- **Items Ordered: Description:** the name, strength, and size of the package for the stock item
- **Items Ordered: Stock Level:** the current quantity of the item in your storeroom that can be distributed or dispensed
- **Items Ordered: Quantity Ordered:** the quantity of packages you are ordering for each stock item
- **Ordered By: Authorized signature:** the person authorized must sign his/her name, legibly
- **Ordered By: Approval signature:** the person responsible for approving the order must sign his/her name legibly

Make sure the same unit is used consistently for “items ordered” and “quantity ordered.” For example, if the stock unit on the paracetamol stock card is bottles of 1000, then indicate the number of bottles in stock and the number of bottles to order, not the number of tablets.

I.1.b. *Send the Order Form*

- Keep a copy of the order form you have filled out
- Send the other copy or copies to the storeroom, warehouse, or hospital from which you normally receive drugs and supplies

1.1.c. How to Fill an Order Using the Order-Supply Form



When the storeroom, warehouse, or hospital receives the Order-Supply form already filled out by the requester, you must reserve space in your storeroom or warehouse to collect the stock items ordered. Using the same document as shown on the previous page, fill out the middle column as described below:

- **Date Received:** the date you received the order
- **Items Supplied: Quantity Supplied:** note the quantity of each item removed from stock to send to the requester
- **Items Supplied: Expiry Date:** for each item, write the date that the item will expire
- **Items Supplied: Unit Value:** write the value of a single unit for each item
- **Items Supplied: Total Value:** calculate the total value of each item like this: multiply the unit value times the quantity of the item supplied
- **Supplied By: Authorized Signature:** the person responsible for the supply order must write his/her name legibly

Note that the “Items Received” activity is covered in Session 4 of this manual.

1.1.d. Send the Order Form

- Keep a copy of the order form you have filled out
- Send another copy to the requester together with the items supplied

1.2. Distribution System for Drugs and Supplies

The objectives of a distribution system are to ensure the following:

- Availability of drugs and supplies in the most economical way possible
- Appropriate drugs and supplies available at the correct time and place when needed
- Safe, secure, and punctual transport of drugs and supplies in a punctual manner from distribution points to the requisitioning facilities

Storeroom managers must be able to use the system (e.g., stock cards and stock registers) to reach an efficient level of stock control. They must be able to ascertain stock availability and to locate any stock item at any moment. This information, together with the average monthly consumption of drugs and supplies, is useful in determining the quantities to order and the normal time for submitting the order form.

The quantities to be sent are determined by the personnel working in the supplier storeroom or warehouse. The personnel who placed the original order confirm the quantities received upon delivery.

The order or replacement time must be defined with the objective of reaching a balance between the cost of maintaining the inventory and the transportation cost. To determine the order period for a health system, the following factors must be taken into account:

- Space available to store each stock item
- Availability and capacity of the vehicles
- Transportation cost
- Seasonal factors that could influence transportation (e.g., heavy rains)
- Number and capability of personnel at each level of the system
- Other factors, such as security to prevent theft

I.3. Managing Transportation

Transportation system management includes the selection of various forms of transport, the acquisition of vehicles, and the optimization of available transport methods through a prudent system of travel routes and supply periods.

The transport system is generally the least trustworthy component of the distribution system and a source of great frustration. Even so, a systematic plan for transport can help improve the continuity of drug supply, even if a few problems persist. In planning for transport, the following questions must be considered:

Push or Pull:

Is distribution done by a push or pull system?

Pull system: The health facility, which uses the drugs and supplies, is responsible for determining its own needs and how many to order. Transportation must be coordinated with the warehouse/storeroom.

Push system: The central warehouse is responsible for determining how many drugs and supplies to order and send to the health facility. Transportation is coordinated by the warehouse.

Method of Transport:

Which is the best method of transport in terms of speed, security, local availability, total costs, road conditions, and special conditions needed for maintaining drugs and supplies?

Roads and Delivery Schedules:

Which is the best route, taking into consideration the distance, road capacity, weather conditions, and the location of refueling stations, in order to guarantee availability of drugs and supplies at the lowest operational cost?

Delivery Frequency:

What is the best frequency for making deliveries, taking into consideration normal work hours, road conditions, storage space in the storeroom, and the cost of maintaining inventory?

I.4. Kit Distribution System

In the kit distribution system, all drugs and some supplies are packaged in sealed boxes at a central location. The boxes are then distributed to the health facilities where they will be opened and used. The system has the following characteristics:

- Essential drugs and supplies are determined for a certain number of patients, normally 1000
- With sealed containers, the system of kits can reduce damage and theft
- The system regulates the delivery of drugs and supplies to health facilities
- The system reduces the quantity of drugs detoured to hospitals

Use the following form to report the movement of kits. It is also possible to use the standard order-supply form, where a kit becomes a single stock item.

I.5. Characteristics of a Well-Managed Distribution System

- **Conserve** the drugs and supplies so that the integrity of the packaging is maintained and so that items are easily accessible in the storeroom
- **Optimize** inventory management to prevent stock-outs or overstocking yet maintain enough inventory to sustain good service levels at all of the system's distribution points
- **Locate storage warehouses** to optimize the infrastructure available for storing stock when needed and to facilitate distribution to peripheral health facilities
- **Maintain a register of drug and supply needs** to prevent future stock-outs and to analyze consumption data

Planning

How to Order Drugs and Supplies

Distribution Systems for Health Facilities



II.1. Individual Plan to Improve Your Facility

- Obtain a copy of “Session 3: Training Plan.”
- Review the topics that were covered. The training plan of each session has in **bold** the information in which you were trained during Session 3.
- List in the “Individual Plan for Improving Your Facility” table some activities that you want to complete during the next month and others that will take longer than one month.
- For each activity, note who will complete the activity and the date planned for completion of the activity.
- As you complete each activity, note the result of the activity.
- Plan expected dates for supervisory visits. The supervisory team will visit each storeroom to determine the extent of implementation of the planned activities and provide technical assistance if needed.

Supervision

How to Order Drugs and Supplies

Distribution Systems for Health Facilities

III.1. How to Monitor Your Work Using Data Indicators

The following data indicator can be used periodically to help you manage your work:

Indicator 1: Percentage of Stock Items that were Out of Stock at Least Once During the Last Month

- At the end of each month, select at random the stock cards of 10 stock items
- Study each card for quantities distributed or dispensed during the month
- Count the number of stock cards where the stock level reached 0 (zero) at least once during the month
- Send the result to the district or provincial warehouse when you send your consumption data

For example:

$$\% \text{ out-of-stock} = \frac{\text{Number with stock at 0}}{10} \times 100$$

Session 4: Procedures for Receiving Drugs and Supplies, Using Information Systems, and Comprehending Costs⁴



MINUTES	THEME
60*	Review of Sessions 1, 2, and 3
60	Procedures for Receiving Drugs and Supplies
60	Information and Feedback System
120	Understanding the Cost of Drugs and Supplies Using ABC/VEN Analyses

* If the training is implemented as one session per month, it is necessary to review the previous session. For training held as one large workshop for all five sessions, review will be done during supervisory visits on site.

⁴ “Session 4: Procedures for Receiving Drugs and Supplies, Using Information Systems, and Comprehending Costs” is part of a five-session series entitled *Basic Techniques for Managing Drugs and Supplies* published by Management Sciences for Health, April 2000.



Session 4: Training Plan Procedures for Receiving Drugs and Supplies Using Information Systems Comprehending Costs

Consists of three parts: Capacity Building, Planning, and Supervision for your workplace

Note: Only the bolded activities are part of this session.

I. Capacity Building

How to keep the storeroom clean and orderly

How to protect drugs and supplies from environmental factors

How to monitor periodically that expired drugs and supplies are removed

How to fill out a stock card, order request, and consumption data form

How to calculate the minimum and maximum stock level of each item

How to calculate the quantity of each item to order and ordering procedures

Learn the procedures for receiving drugs and supplies

Learn the factors to consider in distributing drugs and supplies to health facilities

Learn the need for a good information system

How to promote the rational use of drugs

II. Planning

Individual Plan for Improving Your Facility

Category	Activity	By Whom?	Date to Complete?	Observation
Cleaning and stocking				
Stock protection				
Expiration dates				
Stock cards				
Order and data forms				
Min/Max stock levels				
Quantity to order				
Receiving items				
Distribution system				
Rational use of drugs				

Other comments:

III. Supervision

How to monitor your work using data from the information system

How your work affects the local budget

How to prepare and conduct CPS meetings

Capacity Building Procedures for Receiving Drugs and Supplies, Using Information Systems, and Comprehending Costs



I.1. Procedures for Receiving Drugs and Supplies

After your facility orders the supplies, and the distribution facility delivers the supplies, you are ready to receive. As with ordering and delivering, which you practiced in Session 3, receiving should be documented. Refer to the right-hand column of the order-supply form, on the following page, as you practice these steps:

- Place the drugs and supplies in a secure area in the storeroom
- Obtain the order-supply form that accompanied the delivery
- One by one, count the boxes or containers of each item received and put the number in the column, **Items Received: Quantity Received.**
- After counting all the items, record any discrepancy between the **Quantity Supplied** and the **Quantity Received** in the **Discrepancy** column.
- Sign in the **Received By: Authorized Signature** space at the bottom of the form
- Have another responsible person recount the items received
- The second person will confirm the recount by signing in the space at the bottom of the form, **Confirmed By: (Quantity Received, Discrepancies, Expiry Dates above), Authorized signature**

I.2. Information and Feedback System



The drug and supply information and feedback system is a combination of items including the following:

- Inventory level, receipt, and distribution registers
- Consumption data
- Consultation data
- Procedures that govern the use of stock cards
- Flow of information to upper and lower levels in the distribution system

It is relatively simple to imagine and follow the flow of a single stream of drugs and supplies from the central warehouse to provincial and district warehouses, and finally to hospitals and health centers. It is much more difficult to comprehend and follow the flow of documents used in such a distribution system at all distribution levels.

When you initiate a new procurement program or when an old program requires a change in the amount of drugs and supplies to be distributed, you must consider all aspects of the information system during the planning process. All the forms and documents necessary for such a system must be available and all personnel must be trained on their correct use before beginning distribution activities.

In these sessions we have worked with the following documents:

- Order-Supply Form
- Typical Stock Card

Using these documents, we have practiced and reviewed the flow of information for stock management. However, in addition to these forms, some health facilities use various books, forms, or registers to assist in documenting the consumption of drugs and supplies. Reporting the quantities consumed of each stock item during a specified time period must be done on standardized forms.

The flow of drug and supply consumption data should be as follows:

- The consumption data forms are collected by the warehouses from the health facilities
- Warehouses consolidate the consumption data and prepare a report of all facilities in that geographic area
- Warehouses send the consolidated reports to the procurement office of the health system

It is important to consistently report on your operations because, without adequate data, the quantity of drugs and materials purchased by the procurement office will be inaccurate. This miscounting will cause stock-outs in health facilities.

I.3. Understanding the Cost of Drugs and Supplies Using ABC/VEN Analyses

I.3.a. ABC Analysis

Background: This is a practical exercise using ABC analysis techniques, a method of classifying drugs by rate of use and cost within a health facility or system. It will help you understand the actual cost of drugs and supplies handled by your warehouse. This activity can also be used to analyze which drugs and supplies to purchase.

Instructions: The classification of items in your warehouse into categories A, B, and C only requires that you know the unit cost of each item and the annual consumption of each item. While the time period covered doesn't have to be one year, it is common to do so to cover seasonal variations. Sample Form 1 following this section demonstrates the calculation of the value of drug purchases. Using the data from Sample Form 1 as a basis, the next form, Sample Form 2, shows the format to use in performing the ABC analysis. To understand the process, please read the following steps:

Sample Form 1

1. Multiply the units of the item consumed for the year (column 2) by the most recent unit cost (column 3) and get the value of annual consumption of that item in US dollars (column 4).

$$\text{Units Consumed} \times \text{Unit Cost} = \text{Annual Value}$$

2. Repeat the calculation for all other items.
3. In column 5 do the following: compare the annual consumption value (column 4) of all items and rank them so that the most costly item is first in the column, and the least costly is last in the column (example: the most costly item in this form is tetracycline capsules, \$36,000, which would be the first item in the column).

Sample Form 2

1. Copy into Form 2 the drug descriptions (column 2) and annual values (column 3) of all the drugs and supplies from Form 1. You must copy according to the ranking in column 5 from Form 1 (example: tetracycline capsules would be the first item on Form 2).

2. Calculate the cumulative annual value (column 4) by adding the annual value of each item (column 3) to the cumulative value of each item preceding it. For example: the annual value of Tetracycline is \$36,000 and the cumulative annual value would be \$36,000 since this is the first item; however, for the subsequent item, tetracycline injectable, the annual value is \$28,000 and the cumulative annual value is \$64,000 (36,000 + 28,000).
3. Repeat #2 for each item.
4. Calculate the cumulative annual value of each item as a percentage of the total value (column 5). For example, the cumulative annual value (total at bottom of column 4) of all drugs is \$160,000, and for tetracycline capsules the value was \$36,000, which would calculate to 22.5% of the total ($36,000 \times 100 \div 160,000$). Enter 22.5% in column 5 for tetracycline.
5. Place the cumulative value as a percentage of the total for each item in corresponding order in column 5. For example, the cumulative value as a percentage of the total for the first item in column 4 is placed in the first position in column 5, etc.
6. To finish, using column 6, classify the drug items into classes A, B, and C. In general, these categories are broken up as follows:
 - A = Those drugs that constitute the top 20% of expenditures when considering cost of the drugs
 - B = Those drugs that constitute approximately the next 10%
 - C = All other drugs, or those in the lower 70%

Observe the ranking and cumulative value of each item. Determine if they make sense for your health facility. For example, are there drug and supply items on the list that can be substituted with cheaper but equal items? Complete the Vital, Essential, and Non-essential (VEN) analysis described next and discuss findings of this exercise with the committee to decide if they indicate indiscriminate use of expensive antibiotics or other drugs when compared with treatment guidelines.

Sample Form 1: Calculating the Annual Value of Drugs and Supplies

Date: _____

(1) Drug Description	(2) Units Consumed Per Year	(3) Unit Cost (\$)	(4) Annual Value (\$) (Col.2 X Col.3)	(5) Rank
Ampicillin, tab. 500 mg	900	\$0.50		
Antalgin, inj. 250 mg/ml	300	5.00		
Paracetamol, syrup 120 mg/ml	250	10.00		
Chloramphenicol, cap. 250 mg	1,000	16.00		
Tetracycline HCl 250 mg, cap.	2,400	15.00	36,000	1
Ampicillin, syrup 125 mg, cap.	25,300	1.00		
Streptomycin, inj. 1000 mg	300	20.00		
Thiamine (Vit. B1), tab.	800	0.50		
Ethambutol HCl, tab. 250 mg	600	2.00		
Phenylbutazone, tab. 200 mg	200	8.00		
Ampicillin, tab. 250 mg	800	4.00		
Antalgin, tab. 500 mg	1,000	5.40		
Kanamycin, inj. 1000 mg	2,000	6.00		
Chloramphenicol, susp. 125 mg	300	14.00		
Paracetamol, tab. 500 mg	100	30.00		
Rehydration Salts 1000 ml.	700	2.00		
Diphenhydramine HCl, inj. 10 mg	150	6.00		
Penicillin procaine G- 3 mu	400	5.00		
Dextromethorphan, syrup 10 mg	700	7.00		
Oxytetracycline HCl, inj.	5,600	5.00	28,000	2

Sample Form 2: Calculating the Cumulative Annual Value of Drugs and Supplies and ABC/VEN Analysis

Date: _____

(1) Rank of Annual Value	(2) Drug Description Reference year:	(3) Annual Value (\$)	(4) Cumulative Annual Value (\$)	(5) Cumulative Annual Value as % of Total Value	(6) ABC Rank	(7) VEN Rank
1	Tetracycline HCl 250 mg, cap	36,000	36,000	22.5%		
2	Oxytetracycline HCl, inj	28,000	64,000	17.5%		
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20				100%		
	TOTAL VALUE		160,000			

1.3.b. Establishing VEN Categories



Background: This is a practical exercise that categorizes drugs and supplies into three types according to their health impact.

Vital (V) drugs are necessary for supporting life.

Essential (E) drugs are effective for treating serious diseases.

Nonessential (N) drugs are used for treating mild diseases, or providing symptomatic therapy, or they have doubtful effectiveness.

VEN classification is unique for every health system. This exercise will help you understand the criteria used in evaluating drugs according to their health impact. VEN analysis provides a point of departure for better identifying which drugs and supplies to stock in your health system.

Instructions for VEN analysis:

1. Imagine that you have been selected as a member of the committee to help the Ministry of Health decide which of the 20 drugs used in the previous ABC analysis are either, Vital, Essential, or Nonessential.
2. Use Sample Form 2, column 7, to help the committee make the decision. Choose V, E, or N for each drug in the list and justify your classification. For example, Antalgin Tablets, 500 mg, is a product with a commercial name, which has little or no therapeutic advantage in relation to aspirin; therefore, it must be considered, “Non-essential” or “N.”
3. Continue using Form 2 and write V, E, or N for each drug in column 7.
4. Count how many drugs are nonessential. Look closely at the justification for purchasing these drugs, especially if resources are scarce. Usually a health system can discontinue the use of these drugs and prevent wasting money.
5. Closely study the values of annual use for drugs in groups A and B of the ABC analysis.
6. Discuss if the pattern of diseases in your health system support each of these drugs when considering rational drug treatment. Discuss for which drugs the quantities stocked can be reduced, and which drugs can be substituted with therapeutic equivalent drugs that are less costly.

Procedures for Receiving Drugs and Supplies Using Information Systems Comprehending Costs



II.1. Individual Plan to Improve Your Facility

- Obtain a copy of “Session 4: Training Plan.”
- Review the topics that were covered. The training plan of each session has in **bold** the information in which you were trained during Session 4.
- List in the “Individual Plan for Improving Your Facility” table some activities that you want to complete during the next month and others that will take longer than one month.
- For each activity, note who will complete the activity and the date planned for completion of the activity.
- As you complete each activity, note the result of the activity.
- Plan expected dates for supervisory visits. The supervisory team will visit each storeroom to determine the extent of implementation of the planned activities and provide technical assistance if needed.

Supervision
Procedures for Receiving Drugs and Supplies /
Using Information Systems
Comprehending Costs

III.1. How to Monitor Your Work Using Data Indicators

Indicator 1: Wait Time: Average number of days that elapsed between sending an order to the warehouse and receiving the drugs and supplies



- Obtain your facility's Order-Supply forms for the last 3 to 6 months
- Calculate the number of days that elapsed since you sent each order to the warehouse and the date that you received the drugs and supplies
- Sum the total number of days for all orders and divide by the number of Order-Supply forms you counted
- The result is the average number of days
- Send the result to the district or provincial warehouse when you send your consumption data

For example:

$$\text{Wait Time} = \frac{\text{number of days elapsed between orders}}{\text{number of orders}}$$

Session 5: Rational Use of Drugs⁵



MINUTES	THEME
60*	Review of Sessions 1, 2, 3, and 4
15	Introduction of Rational Use of Drugs
30	Problems with the Rational Use of Drugs
30	Promotion of Rational Use of Drugs
60	How to Monitor Your Work

* If the training is implemented as one session per month, it is necessary to review the previous session. For training held as one large workshop for all five sessions, review will be done during supervisory visits on site.

⁵ “Session 5: Rational use of Drugs” is part of a five-session series entitled *Basic Techniques for Managing Drugs and Supplies* published by Management Sciences for Health, April 2000.



Session 5: Training Plan Rational Use of Drugs

Consists of three parts: Capacity Building, Planning, and Supervision for your workplace

Note: Only the bolded activities are part of this session.

I. Capacity Building

How to keep the storeroom clean and orderly

How to protect drugs and supplies from environmental factors

How to monitor periodically that expired drugs and supplies are removed

How to fill out a stock card, order request, and consumption data form

How to calculate the minimum and maximum stock level of each item

How to calculate the quantity of each item to order and ordering procedures

Learn the procedures for receiving drugs and supplies

Learn the factors to consider in distributing drugs and supplies to health facilities

Learn the need for a good information system

How to promote the rational use of drugs

II. Planning

Individual Plan for Improving Your Facility

Category	Activity	By Whom?	Date to Complete?	Observation
Cleaning and stocking				
Stock protection				
Expiration dates				
Stock cards				
Order and data forms				
Min/Max stock levels				
Quantity to order				
Receiving items				
Distribution system				
Rational use of drugs				

Other comments:

III. Supervision

How to monitor your work using data from the information system

How your work affects the local budget

How to prepare and conduct CPS meetings

Capacity Building

Rational Use of Drugs

I.1. Introduction: What Is the Rational Use of Drugs?

The rational use of drugs requires that patients receive drugs appropriate to their clinical needs, in adequate doses and quantities, and at the least expensive cost to the patient and/or health system.

There are five important criteria in the rational use of drugs:

- Correct diagnosis depending on the state of the patient
- Prescribing of most efficient, safe, and economic drug treatment according to the condition of the patient
- Correct dispensing of the prescribed drug
- Appropriate packaging and labeling of the prescribed drug
- Patient compliance while taking the prescribed drug

I.2. Problems with the Rational Use of Drugs



The irrational use of drugs can destroy all the benefits of careful, cost-effective selection, procurement, and distribution of drugs. All the resources spent on bringing a drug to the health facility will be lost if the process cannot guarantee that the correct drug is prescribed and dispensed to the correct patient, in adequate dosage, with clear instructions, and in packaging that maintains the quality of the drug.

There are various common procedural and practical obstacles to the rational use of drugs. Some obstacles in the areas of diagnosis, prescribing, dispensing, packaging, and poor compliance are listed below.

I.2.a. *Diagnosis*

- Complex diseases or health problems

Example: Patient has many symptoms but is embarrassed to talk about the main one, so it does not get addressed.

- Lack by prescribers of appropriate training and skills to give proper diagnosis

Example: Prescriber doesn't do a physical exam and prescribes drugs based solely on oral information provided by the patient.

- Overworked prescribers

Example: Health facility has only one prescriber and an average of 300 patients per day for consult.

- Lack of basic diagnostic equipment and tests

Example 1: No microscope or reagents to examine blood and urine.

Example 2: No x-ray machine to test a patient suspected of having tuberculosis.

1.2.b. Prescribing

- Using expensive drugs when equivalent ones are available in the local market

Example 1: The antibiotic cefalexin is more expensive than cotrimoxazole in treating simple infections.

Example 2: Ampicillin injection is prescribed when the patient could take ampicillin tablets, which are cheaper, easier to take, and involve lower risk of side effects.

- Selecting the wrong drug for the patient's illness

Example: An antidiarrhea drug is prescribed when the patient is dehydrated with simple diarrhea and only ORS (oral rehydration solution) is needed.

- Prescribing several drugs when fewer drugs would provide the same effect

Example: Chloroquine and paracetamol are prescribed when the patient has fever, but does not have malaria.

- Prescribing drugs when the disease is self-limiting and the patient would get better without taking any drugs

Example: Ampicillin is prescribed but the patient has a simple cold, without sore throat, cough, or fever.

1.2.c. Dispensing

- Wrong interpretation of the prescription

Example: Ampicillin is prescribed, but amoxicillin is dispensed. Because the adult dosage is four times daily for ampicillin and three times daily for amoxicillin, this may lead to excess medication of one tablet daily, contributing to unsafe and costly practices.

- Wrong quantity dispensed

Example: Penicillin is prescribed to be taken one tablet four times daily for five days (should be a total of 20 tablets), but the patient only receives 12 tablets, which is only sufficient for three days.

- Labeling incorrect or inadequate

Example: Cotrimoxazole is dispensed, but the name of the drug is not written on the container label, meaning that the drug will be unidentifiable once the patient leaves the pharmacy.

- Errors when selecting the drug to dispense

Example: Paracetamol 200 mg is prescribed for a child, but only Paracetamol 500 mg is available in the pharmacy. The higher dosage pill is given to the child's mother, without telling her to divide the tablet before giving it to the child.

- Unsanitary practices

Example: Twenty tablets of aspirin 500 mg were being counted when one tablet fell to the floor. The tablet was picked up and given to the patient anyway.

1.2.d. Packaging

- Poor quality of packaging material

Example: Packaging material must protect the drug against sun and humidity to ensure the integrity and quality of the dosage form taken by the patient.

- Inadequate container size when repackaging the drug

Example: The size of the packaging container must conform with the quantity of medication dispensed. In the case of oral drugs, a container too large could cause breakup of the item inside.

- Inadequate labeling and identification of the drug

Example: After the patient leaves the health center and arrives home, it is very easy to forget the instructions given by the prescriber and dispenser of the drug. For this reason, it is very important to have, at a minimum, the following information on the container label:

- a. Name of patient
- b. Date drug was dispensed
- c. Name of the drug
- d. Strength of the drug
- e. Quantity dispensed
- f. Instructions on how to take the drug during the day (example: 1 tablet 4 times daily)
- g. Instructions on how long to take the drug (example: for 5 days)
- h. Comments, instructions, or warnings specific to the drug (example: take with milk, may cause drowsiness)

Example of an Appropriate Label

Patient Name: Abraham Oberi	Date: May 25, 1998
Drug Name and Strength: Aspirin 500 mg	Units and Dosage Form: 8 tablets
Instructions: Take 1 tablet 4 times daily for 2 days	
Comments: Must take the drug with food to prevent stomach irritation	

1.2.e. Poor Compliance

Compliance is the degree to which the patient carries out the physician's instructions on how to take the prescribed drug and treatment. Many studies about outpatient compliance carried out in developing countries indicate that only about 50% of patients follow the instructions given by the physician. The main cause of poor compliance identified in these studies was poor interpretation of the directions, leading to taking the medication in the wrong dosage or frequency. Some common errors with respect to patient compliance are—

- Improper labeling: Neither the name of the patient nor the name of the drug are on the container labels when dispensed. If two or more drugs are dispensed together, the patient does not know which drug he/she is taking.
- Inadequate instructions: The instructions on dosage frequency must be written on the drug label, or the patient could forget how to take it when he/she arrives home and becomes involved in other activities.

- Treatment or instructions that do not consider the socioeconomic and cultural aspects of the patient: In cases where the patient does not know how to read, proper instructions would include graphic symbols of how to take the drug. For example, for a treatment of five days, you could number the days 1 to 5, and below each day, make a mark for each time the drug must be taken that day.

I.3. Promotion of Rational Drug Use

There are methods to promote rational drug use. The following is a list of some examples of educational, management, and regulatory activities that will promote the rational use of drugs.

I.3.a. Improve the Consultation Process

- Take a complete history of the patient's illness. Verify the main reason the patient came for the clinical visit, all accompanying symptoms, and the way the problem developed over time.
- Perform a physical examination relevant to the patient's symptoms and medical history.
- Prescribe drugs and treatment according to standard practice guidelines. Note that some health problems are self-limiting and the patient will get better without taking drugs.
- Do laboratory exams relevant to the complaints. Even when no laboratory is available, the prescriber could visually examine body fluids for evidence of disease.

I.3.b. Improve Poor Prescribing Habits

- When many drugs are prescribed for one patient, verify that they are absolutely necessary for treating the diagnosed condition.
- Use standard treatment schemes for common illnesses.
- Verify a second time that the drug is correct before dispensing it to the patient.

1.3.c. Improve Dispensing Practices

- Recruit and train competent personnel.
- Organize the dispensing area so it allows for efficient work flow, can be easily cleaned, and is secure against theft.
- Verify the quantity of the drug that you are giving the patient.
- Give correct and adequate instructions to the patient.

1.3.d. Improve Compliance

- Label the prescription container adequately (written or in symbols) before dispensing to the patient.
- After giving instructions to the patient about how to take the drug, ask for feedback to verify the patient's understanding of drug dosage.
- Consider local beliefs and customs that influence drug use when prescribing and dispensing.

Planning Rational Use of Drugs



II.1. Individual Plan to Improve Rational Drug Use in Your Health Facility

- Obtain a copy of “Session 5: Training Plan.”
- Review the topics that were covered. The training plan of each session has in **bold** the information in which you were trained during Session 5.
- List in the “Individual Plan for Improving Your Facility” table some activities that you want to complete during the next month and others that will take longer than one month.
- For each activity, note who will complete the activity and the date planned for completion of the activity.
- As you complete each activity, note the result of the activity.
- Plan expected dates for supervisory visits. The supervisory team will visit each storeroom to determine the extent of implementation of the planned activities and provide technical assistance if needed.

Supervision Rational Use of Drugs

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III.1. How to Monitor Your Work Using Data Indicators

The following data indicators can be used periodically to help you manage your work:

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Indicator 1: Average Number of Drugs Prescribed per Patient Visit

- Once every three months, collect information of 30 patients who were prescribed drugs
- Record the number of drugs written for each of the 30 patients
- Divide the number of drugs prescribed by 30

For example:

$$\text{Average number of drugs prescribed per visit} = \frac{\text{total number of drugs prescribed}}{30}$$

Indicator 2: Percentage of Patients Who Are Prescribed Antibiotics

- Collect information of the same 30 patients in Indicator 1 above
- Count the number of patients prescribed antibiotics
- Divide the number of patients prescribed antibiotics by 30 and multiply by 100

For example:

$$\% \text{ patients prescribed antibiotics} = \frac{\text{total number of patients prescribed antibiotics}}{30} \times 100$$

Indicator 3: Percentage of Patients Who Receive Injectables

- Collect information of the same 30 patients in Indicators 1 and 2 above
- Count the number of patients who were prescribed injectables
- Divide the number of patients who were prescribed injectables by 30 and multiply by 100

For example:

$$\% \text{ patients prescribed injectables} = \frac{\text{total number of patients prescribed injectables}}{30} \times 100$$

Indicator 4: Percentage of Drugs Prescribed from the Essential Drugs List (EDL)

- Collect information of the same 30 patients in Indicators 1, 2, and 3 above
- Count the number of drugs prescribed that are on the EDL
- Count the total number of drugs prescribed for the 30 patients
- Divide the number of drugs prescribed that are on the EDL by the total number of drugs prescribed for the 30 patients and multiply by 100

For example:

$$\% \text{ EDL drugs prescribed} = \frac{\text{total number of drugs prescribed from EDL}}{\text{total number of drugs prescribed}} \times 100$$

Indicator 5: Percentage of Drugs Prescribed According to Standard Treatment Guidelines (STGs)

- Collect information on the same 30 patients in Indicators 1, 2, 3, and 4 above
- For each patient, compare the drugs prescribed with those outlined in the STGs
- Record the number of times a drug prescribed does not match those recommended in the STGs
- Divide the number of times the drug prescribed does not match the STGs by the total number of drugs prescribed on the 30 prescriptions and multiply by 100

For example:

$$\% \text{ STG drugs prescribed} = \frac{\text{total number of drugs prescribed from STGs}}{\text{total number of drugs prescribed}} \times 100$$

Send the results of the above indicators when you send your monthly consumption data.

Annexes

Forms for Supervision and Monitoring

- Annex 1: Inventory Control Form
- Annex 2: Supervisory Checklist for Pharmacies
- Annex 3: List of Monthly Consumption of Drugs
- Annex 4: Indicator Checklist

Annex 2: Supervisory Checklist for Pharmacies

Country Name
Ministry of Health

Province: _____

Date (M/D/Y): ____/____/____

District: _____

Health Facility: _____

1. Storeroom/Warehouse	Yes	No
Is the storeroom clean – no trash inside or near storage areas?		
Is the storeroom neat – all products arranged for easy access?		
Are the ceiling, doors, and windows well secured?		
Is there a security system for the storeroom?		
Are all products and containers off the floor?		
Are the containers stacked in a secure manner?		
Is there sufficient space to receive new shipments?		
Are different products mixed together?		
Are items with shorter expiration dates stored in front of others (FEFO)?		
Can the supervisor easily locate a sample of five commonly supplied drugs?		
Is the storeroom equipped with air conditioning and refrigeration?		
Is the storeroom/pharmacy easily accessible by patients/health workers?		
Are humidity and water infiltration problems in the storeroom?		
Are there damaged, expired, or excess levels of stock?		
Is there a list of already expired products?		
Is there a list of drugs that will expire before they are used?		
Have there been stock-outs of key or vital drugs in the storeroom?		
2. Documentation	Yes	No
Are there registers with separators for easy retrieval of storeroom documents?		
Is there an index to indicate where documents are located?		
Are similar documents stored together?		
Are there separate registers for orders, invoices, receipts, and distributions?		
Are registers organized with the most recent documents on top?		
Is it possible to easily retrieve the latest invoice and supply documents?		
Is there documentation showing the average quantities needed of each product?		

3. Inventory	Yes	No
Are there documents showing inventory results?		
How often are inventories conducted?		
Are stock cards filled out according to procedures?		
Are the last two receipts or distributions recorded on individual stock cards?		
Is there a difference between the stock card count and the actual physical count for five commonly used items?		
4. Distribution	Yes	No
Is there a distribution plan for the health facilities supplied by the storeroom?		
Is there a calendar documenting shipments to other health facilities?		
Are there invoices describing products and quantities distributed?		
Is there documentation of receipt of shipments by supplied health facilities?		
Was each product in the storeroom used at least once over the last three months?		
Are there orders prepared for distribution over a month ago but not yet distributed?		
5. Orders	Yes	No
Have order forms been signed by authorized staff?		
Have supply forms been signed by authorized staff?		
Do all product items on order and supply forms have product code numbers?		
Are all orders prepared based on inventory levels?		
Are all quantity calculations based on minimum and maximum stock levels?		
Are all orders based on previously calculated periodic needs?		
Was there any product stock out due to lack of timely ordering?		
Is there a timetable for sending order and supply documents to supervisors?		
Have there been occasions requiring an emergency order of products?		

6. Calculating Periodic Quantities Needed	Yes	No
Is there a formula or method to calculate periodic needs?		
Do needs calculations take into account the number of medical consults?		
Do needs calculations take into account stock cards and supply form quantities?		
Is a monthly consumption form regularly calculated and sent?		
Are needs calculations based on morbidity information from the service area?		
7. Information and Feedback	Yes	No
Is there a system for sending and feedback of drug and supply information?		
Are stock movements recorded the same day on individual stock cards?		
Do documents exist to record losses and returns of each product?		
Do all order and supply forms have unit and/or total prices for each product?		
8. Social Fund	Yes	No
Is there documentation of drug fees received from patients?		
9. Human Resources	Yes	No
Is there a list of persons who work in the storeroom/pharmacy?		
Is there a job description for persons working in the storeroom/pharmacy?		
Do foreign personnel work in the storeroom/pharmacy?		

Supervisor

Pharmacy/Storeroom Director

Date (M/D/Y): ____/____/____

Annex 4: Indicator Checklist

Indicator	Result	Comments
The cost of expired drugs and supplies during the last month (Session 1)		
Percentage of stock cards up-to-date (Session 2)		
Percentage of stock items that were out of stock at least once during the last month (Session 3)		
Wait time: Average number of days that elapsed between sending an order to the warehouse and receiving the drugs and supplies (Session 4)		
Average number of drugs prescribed per patient visit (Session 5)		
Percentage of patients who are prescribed antibiotics (Session 5)		
Percentage of patients who receive injectables (Session 5)		
Percentage of drugs prescribed from the Essential Drugs List (EDL) (Session 5)		
Percentage of drugs prescribed according to Standard Treatment Guidelines (STGs) (Session 5)		