Ministry of Health

HANDBOOK ON QUANTIFICATION OF HEALTH COMMODITIES

July 2013

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MSH/Health Commodities and Services Management

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For comments, suggestions or clarifications contact:

The Principal Secretary,

Ministry Of Health,

Afya House,

Cathedral Road,

P.O. Box:30016–00100,

Nairobi, Kenya.

Telephone: +254-20-2717077

Email: psph@health.go.ke

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Foreword

The Ministry of Health is keen to ensure provision of quality preventive, promotive and curative services to the lowest level of care. This requires strong, efficient and effective health care systems that ensure adequate availability of quality, safe and efficacious health commodities.

Health commodities in all health institutions constitute a large percentage of the budgetary allocation. However, most institutions incur substantial losses as a result of overstocking or under stocking health commodities. This is due to push supply systems, unreliable consumption and morbidity data, poor quantification procedures and lack of necessary knowledge, skills and tools at all levels of health care.

The Ministry of Health has adopted the shift from the wasteful push supply system to the cost effective demand-driven pull system so as to improve access to health commodities particularly in the public health facilities. Successful implementation of the pull system is dependent on proper determination of health commodity requirements at all levels of care so that available resources are utilized well and required health commodities are available in the required quantities. While this process may be tedious and time-consuming, it produces tangible gains.

This handbook has been designed to ease this process and is informative, educative and simple to use. It is our hope that it will assist health care providers to understand the quantification process and correctly apply the simple, systematically presented steps. If utilized as intended, this handbook will contribute to ensuring reliable access to adequate medical supplies in our health facilities.

Our sincere appreciation goes to USAID and MSH/HCSM for supporting the development, printing and dissemination of this handbook.

Dr. Francis Kimani
Director of Medical Services

Dr. S.K. Sharif
Director of Public Health

Abbreviations and Acronyms

3TC	Lamivudine
AMC	Average Monthly Consumption
ARV	Anti Retrovirals
AZT	Zidovudine
CP	Consumption Period
CS	Closing Stock
EFV	Efavirenz
FDC	Fixed Dose Combination
HCW	Health Care Workers
HIV	Human Immunodeficiency Virus
KEMSA	Kenya Medical Supplies Agency
MoMS	Ministry of Medical Services
MoPHS	Ministry of Public Health & Sanitation
MoS	Months of Stock
MSH	Management Sciences for Health
NASCOP	National Aids STI Control Programme
NVP	Nevirapine
OJT	On-the-job training
STGs	Standard Treatment Guidelines
TB	Tuberculosis
Tabs	Tablets

Note: For further clarification of terms used in this handbook refer to the glossary on page 20.

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Contributors

Prof. Simon Kangethe, MU/MTRH

Dr. Patrick Muthusi Wambua, NASCOP

Dr. Mohammed Hanif E. M. Hussein, Ministry of Health

Dr. Christabel N. Khaemba, Ministry of Health

Emily N. Ndemi, Githunguri Health Centre, Ministry of Health

Albert Assiago, Kihara Sub-district Hospital

Dr. Joseph Mukoko, MSH/HCSM

Dr. Janet Kimeu, MSH/HCSM

Dr. Charles Njuguna, MSH/HCSM

Dr. Cecilia Muiva, MSH/HCSM

Dr. Patrick Boruett, MSH/HCSM

Reviewers

Dr. Eunice Gathitu, Ministry of Health
Dr. Jackson Omondi, Ministry of Health
Dr. Oduor Onyango, Ministry of Health
Dr. Sammy Abuga, MSH/ HCSM
Dr. Chris Forshaw, Senior Pharmaceutical Adviser, Ministry of Health

Editors

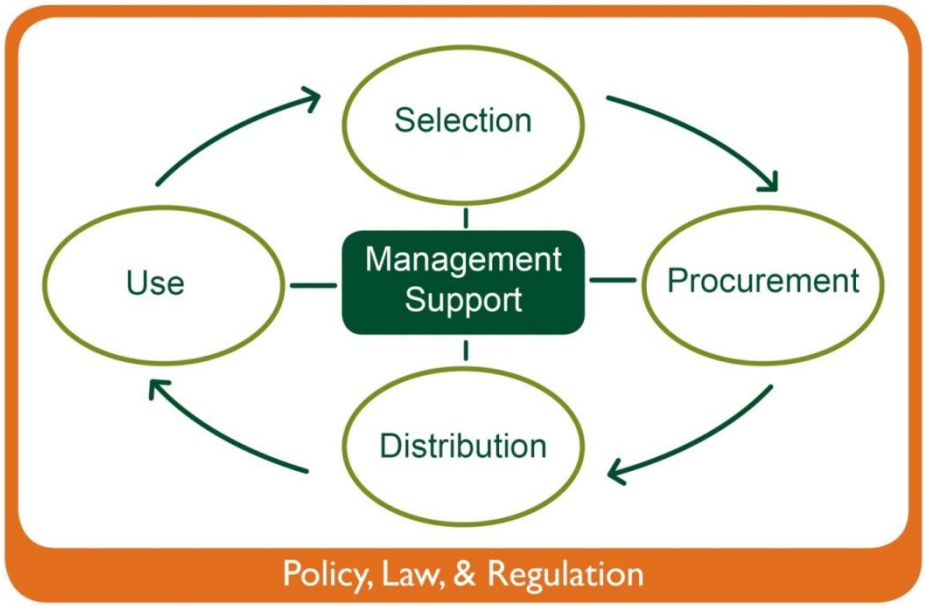
Dr. Micah O. Anyona, NASCOP
Dr. Josephine Maundu, MSH/HCSM
Dr. Ndinda Kusu, MSH/ HCSM
Dr. James Riungu, MSH/HCSM
Dr. Wambui Waithaka, MSH/HCSM

Introduction

Effective health services are highly dependent on the constant availability of required health commodities[1]. The management of health commodities involves four basic functions: selection, procurement, distribution, and use which follow in a cycle.

Quantifying requirements of health commodities is the first step in the procurement process, which aims at ensuring the constant availability of the right health commodities in the right quantities, at reasonable prices and with the required quality.

The Commodity Management Cycle



Source: Management Sciences for Health

The Basic Elements of Commodity Management

- **Selection**

  This is the process of identifying which health commodities should be made available at the facility based on the prevailing local health problems and needs, and the available competence and experience of the health providers. Careful selection is necessary because

[1] In the context of these guidelines, the term 'health commodities' has the same meaning as the terms 'health products', 'health supplies' and 'medical supplies', and denotes all the consumable items required for the provision of health services. As such it includes medicines, medical devices such as dressings, needles & syringes, and laboratory/diagnostic, dental, and radiological consumables. For practical purposes, 'consumable' means any item which will require to be replaced at least once a year.

resources for procurement of health commodities are usually limited hence the need to use them appropriately. In addition, there is a large variety of health commodities on the market.

For public facilities selection of items to be quantified is normally based on a standard (preselected) essential medicines list, e.g. the KEML 2010

- **Procurement**

This is the process of obtaining commodities that have been selected. It involves determining the quantity of each commodity required (i.e. quantification) and then obtaining it through purchase or donations.

- **Distribution**

This is the process of transferring/transporting commodities from one point to another, either within the same facility or from one facility to another. The primary goal of distribution is efficiently to deliver the procured commodities to the point of use.

- **Use**

Health commodities are meant to be used for diagnosis, treatment and management of various health conditions. The way in which they are used will influence the achievements of set objectives. According to WHO (1985), the rational use of medicines requires that patients receive medications appropriate to their clinical needs in the right doses that meet their individual requirements for an adequate period of time and at the lowest cost possible. The same general principles can be applied to other types of health commodities.

- **Management Support**

Management Support enables each of the components of commodity management to function well. This entails sufficient financing, adequately trained and supervised staff and good record-keeping, in order to provide accurate and reliable information. Management Support also involves proper planning of a health programme which includes community inputs.

The aim of this HANDBOOK is to provide its users at all levels of the healthcare system with a stepwise and systematic approach to quantification using two common methods, i.e. consumption-based and morbidity-based quantification. Each method outlined cites an example to assist the user in understanding the practical application of the steps involved.

The questions and answers in this handbook are practical and address some of the basic concerns in quantification of health commodities.

Key questions addressed are:

- What is quantification?
- What needs to be quantified?
- Why do we quantify?
- When should we quantify?
- How should we quantify?
  - using the Consumption-based Method?
  - using the Morbidity-based Method?
- How do we collect data on quantification?
- What if?

What is quantification?

Quantification is a process that involves estimating how much of a specific item is needed to serve clients for a specific period of time. It is the first step in procurement.

In order to estimate quantities, one must consider the following based on available data.

- What conditions are being managed?
- Which commodities are required?
- For what period?
- Capacity to deliver and maintain services including the level of care

What conditions are being managed? These may include malaria, HIV, TB, diabetes, etc. Depending on current priorities and level of facility, the information on the conditions being targeted may be obtained from morbidity data routinely compiled by the health facility and included in daily, monthly and quarterly reports.

Which commodities are required? The commodities required are those that are listed in the standard clinical and treatment guidelines, and essential medicine and medical supplies lists and therefore expected to be available in the health supply system. For example, for treatment of uncomplicated malaria, artemether-lumefantrine combination is the recommended 1st line treatment.

For what period? This refers to the duration for which commodities will be expected to last, i.e. 3 months - being the current duration of the KEMSA supply cycle.

Capacity to deliver and maintain services including:

- Level of care, e.g. health centers can quantify for anti-malarials but not for anti-cancer medicines.
- Human resource capacity, e.g. adequate and well trained staff to effectively manage the commodities at the health facilities.
- Storage capacity, e.g. availability of functional refrigerators for storage of vaccines or adequate space for storage of commodities.
- Financial capacity, i.e. commodity quantification must be done in accordance with the allocated and available budget.

Summary

Quantification is the process of estimating the quantities of required health commodities for a defined period

What needs to be quantified?

A wide range of items required to provide comprehensive health services will need to be quantified including:

- Essential medicines (as per KEML 2010)
- Essential medical supplies/medical devices
- Laboratory/diagnostic commodities
- Dental and radiological consumables

Summary

All consumable health commodities, e.g. medicines, medical supplies and devices must be quantified

Why do we quantify?

Quantification is important for the following reasons:

- ***To ensure constant availability:*** Good quantification ensures availability of the commodities at all times. Unavailability or stock-outs of health commodities may force patients to move from one health facility to another in search of an item thus jeopardizing their health, wasting time, incurring unplanned costs and reducing their confidence in the health care services provided.

☞ ***To minimize wastage:*** Good quantification ensures that there is minimal wastage. Wastage can arise from expiry due to overstocking and/or poor storage leading to damage or deterioration of health commodities.

☞ ***To cater for scale-up/rollout:*** Quantification can assist a facility to determine quantities required to start up a program or support scale-up/rollout. This can be useful where there is no consumption data or a facility is ordering a particular commodity for the very first time.

☞ ***To ensure cost-effectiveness:*** Quantification ensures only the needed commodities are procured. Hence funds are not spent on unnecessary items.

☞ ***To facilitate rational adjustments:*** Quantification offers a sound basis for adjustments which need to be done from time to time. Adjustments can be done to take account of:

- Insufficient funds
- Inadequate storage space
- High influx of patients
- Seasonal variation in disease incidence, e.g. malaria

☞ ***To facilitate good commodity management:*** Quantification informs all aspects of the commodity management cycle and in many cases it is the first step in procurement.

☞ ***To ensure clients satisfaction:*** In determining commodity requirements, the clients include health care workers themselves and patients. Constant availability of required commodities leads to satisfied health care workers who are able to get all commodities needed for their work and satisfied patients who are able to get what they need from the health facilities.

If quantification is not done at the right time several complications may occur including;

- Failure to correctly determine commodity needs

- Inconsistent availability of commodities / periodic stock-outs
- Inability to project requirements for scale-up/rollout
- Increased wastage
- Expiry of medicines or medical supplies
- Over-expenditure/lack of cost-effectiveness
- Irrational adjustments
- Poor commodity management
- Dissatisfied clients/health workers

Quantification which is properly done at the right time contributes to ensuring the 6Rs:

- The Right Commodity is available in . . .
- The Right Quantities at . . .
- The Right Time in . . .
- The Right Place at . . .
- The Right Cost for . . .
- The Right Client.

Summary

Good quantification is important to ensure constant availability of all commodities required

When should we quantify?

- When planning for routine re-supply e.g. daily, weekly, monthly, quarterly, annually
- When estimating commodity needs for a given facility
- When estimating the budget
- When estimating space requirements
- When starting a new programme
- When projecting for scale up/roll out
- When considering donations
- When planning to procure

Summary

Quantification timing is critical to ensure that the Six Rights of the supply chain are met

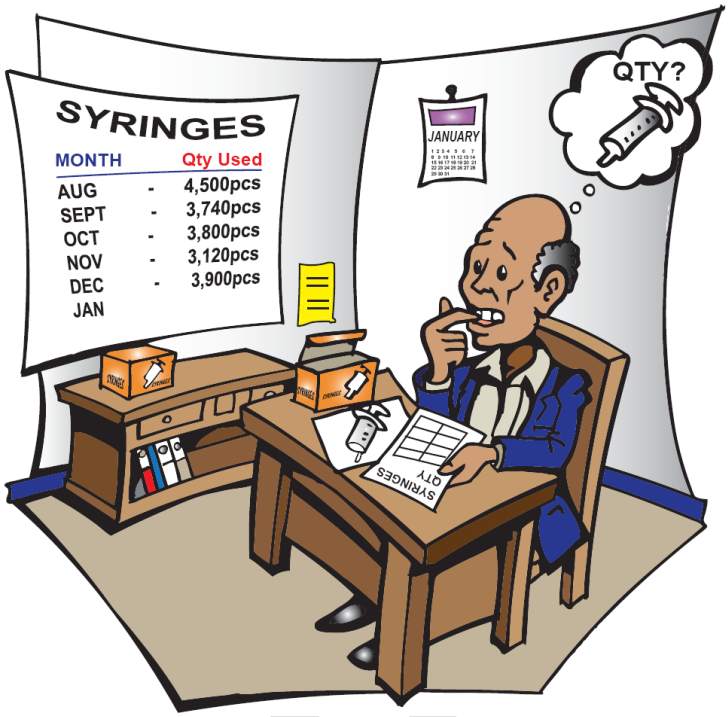
How should we quantify?

There are 2 main methods used in quantifying commodity requirements:

- ☞ Consumption-based method
- ☞ Morbidity-based method

Consumption-based method

This method uses on previous item consumption data to estimate future requirements.



Note: Consumption data does not indicate whether the health commodities were actually used appropriately

Quantification Using the Consumption-based Method

HOW TO QUANTIFY YOUR FACILITY HEALTH COMMODITY NEEDS

Step 1

Carry out physical stock-taking for each health commodity to determine Current Stock on hand (CS)

Step 2

Define your facility supply system parameters

Consumption Period = ... months

Maximum Months of Stock = ... months

Step3

Calculate consumption by adding all the quantities dispensed/issued in the medicine/commodity registers

Step 4

Adjust for any losses/ avoidable wastages and positive/negative adjustments

(Total quantities dispensed – losses) ± Adjustments = C1

Step 5

Adjust for Stock-outs if necessary

$$\frac{\text{C1 x Consumption Period (in days)}}{\text{Period in stock (days)}} = \text{C2}$$

Step 6

$$\text{Calculate Average Monthly Consumption (AMC)} = \frac{\text{C2}}{\text{Consumption Period (in months)}}$$

Step 7

Calculate the Maximum Stock Level

Maximum Stock Level = AMC x Maximum Months of Stock

Step 8

Determine the Actual Quantity to Order

Actual Quantity to Order = Maximum Stock Level – Closing Stock – Quantity on Order not yet received (if any)

Step 9

Determine the number of packs/order units to be ordered

(may need to round off to the next full pack/order unit – which may vary based on the supplier/source)

Example of Consumption-based Method of Quantification

Using the information provided, determine the quantities of amoxicillin 250mg capsules required by Elementaita Hospital whose total consumption in 6 months was 89,000 with 34 days out of stock. The closing balance was 30,000, 1,000 capsules were unaccounted for and 5,000 capsules were issued to a neighboring facility on loan. The order unit size is 1,000 capsules at a cost of Kshs 700.

Maximum months of stock for Elementaita hospital is 6 months.

Budget allocated for amoxicillin is Kshs. 40,000

Step 1	Determine the closing stock (CS)	30,000 (capsules)
Step 2	Define your facility parameters: Consumption period (CP) Maximum Months of Stock	CP = 6 months Max MOS = 6 months
Step 3	Calculate consumption by adding all the quantities dispensed	89,000 caps
Step 4	Adjust for any losses/ Avoidable wastages and positive/negative adjustment: Adjusted consumption (C1) = (Total quantities dispensed – losses) ± adjustments	(89,000 – 1000) – 5000 = 83,000 caps
Step 5	Adjust for Stock-outs if necessary: $\frac{\text{C1 x Consumption Period (in days)}}{\text{Period in stock (days)}} = \text{C2}$	$= \frac{83{,}000 \times 183}{149^*} = 101{,}940$ caps *149 = (183-34)
Step 6	Calculate Average Monthly Consumption (AMC) = $\frac{\text{C2}}{\text{Consumption Period (in months)}}$	AMC = 101,940/6 = 16,990 caps
Step 7	Calculate the Maximum Stock Level = AMC x Maximum Months of Stock	16,990 x 6 = 101,940 capsules
Step 8	Determine the Actual Quantity to Order = Maximum Stock Level – Closing Stock – Quantity on Order not yet received (if any)	101,940 - 30,000 = 71,940 = 72,000 caps
Step 9	Determining the number of packs/order units to be ordered (may need to round off to the next full pack/order unit which may vary depending on the supplier/source)	This is arrived at by dividing quantities derived in step 8 by order unit size. = 72,000 ÷ 1000 = 72

Budget Implications

The quantities to be ordered will have cost implications depending on the budget allocation for the facility. Using the amoxicillin example worked out above, determine the actual cost of the order. This is given by the order unit size x the unit cost = 72 x Kshs 700 = Kshs 50,400

The budget allocation for this item is Kshs. 40,000.

In this case the quantity to be ordered must be rationalized against the budget allocation.

Note:

Positive Adjustment means any other supply received from a source other than the normal supply **OR** any excess physical stocks realized during reconciliation of the physical stocks and Bin Card records.

Negative Adjustment means any quantities supplied to a different facility or service delivery point **OR** any deficit in physical stocks realized during reconciliation of physical stocks and Bin Card records.

Physical Stock – Recorded stock: If greater than zero then the adjustment is positive, if less than zero the adjustment is negative

Losses means any quantities removed from the pipeline for any reason other than consumption by the patients e.g. expiries, damages and pilferage.

Summary

- ☞ **Accurate consumption data is critical.**
- ☞ **Most recent accurate data yields highly valuable information**
- ☞ **Always ensure you adjust for losses, negative/positive adjustments and stock-outs during the consumption review period**

Morbidity-based method

This method uses the disease burden of a particular region to estimate the quantities of commodities needed for prevention and treatment of the disease. Common features are:

- ☞ Used for new programs or for programs where consumption data are not available
- ☞ Forecasts the quantity of medicines needed for prevention/treatment of specific diseases based on projections of the incidence of those diseases
- ☞ Requires accurate information on the population and morbidity as well as clinic attendances, and uses Standard Clinical Guidelines (SCGs) to project needs

NB: It is often more time-consuming than the consumption based method but may sometimes be the only applicable method

Quantifying Using the Morbidity-based Method

Step 1: Identify the health problems and suggest interventions to be taken.

Step 2: Identify the patient/client group targeted for the intervention.

Step 3: Obtain morbidity data (the number of people to be reached by each intervention)

Step 4: Based on the standard clinical guidelines for each group, identify the dose regimes to be used

Step 5: Establish a list of the medicines required for the dose regimes

Step 6: Calculate the quantity of commodity needed for a particular intervention e.g. treatment episode.

Step 7: Identify the maximum months of stock required

Step 7: Using the maximum months of stock, determine the total quantity of commodities required

Step 9: Combine the estimates for each commodity from the various interventions into one list.

Step 10: Adjust calculated quantities for anticipated growth/scale up, losses/wastages.

Step 11: Determine the final quantity to order.

Step 12: Determining the number of packs/order units to be ordered (this may include rounding off to the next full pack/order unit). This may vary based on the supplier/source.

Example of Quantification using the Morbidity-based Method

Kilimani health centre has 10,000 clients enrolled at the Comprehensive Care Clinic, the facility intends to initiate treatment for 1,800 adults in the next one month, 1,200 of these require regimen AZT+3TC+NVP and the rest require regimen AZT+3TC+EFV.

Determine the quantities of medicine that the facility should request for, taking into consideration the following:

- An initiation period of 14 days is required for patients on NVP but not for patients on EFV.
- Maximum months of stocks for this facility should be 2 months.
- Assume an anticipated growth of 5%

- AZT/3TC/NVP, AZT/3TC are available as fixed dose combination (FDC)

- NVP and EFV are available as single dose formulations
- Currently pack sizes are as follows:

Item Description	Pack Size
AZT/3TC/NVP	60tabs
AZT/3TC	60tabs
NVP	60tabs
EFV	30tabs

Step 1	Identify the health problems and suggest interventions to be taken.	The problem identified is HIV/AIDS. Initiate ART to eligible clients at Kilimani Health Centre
Step 2	Identify the patient/client group targeted for the intervention	1,800 adults
Step 3	Obtain morbidity data (The number of people to be reached by every intervention)	1,200 on AZT+3TC+NVP regime 600 on AZT+3TC+EFV regime
Step 4	Based on the standard clinical guidelines for each group, identify the dose regimes to be used	AZT/3TC/NVP (1tab bd) AZT/3TC/EFV (AZT/3TC 1 tab bd + EFV 1tab OD)
Step 5	Establish a list of the medicines required for the dose regimes.	AZT/3TC/NVP (FDC) tabs AZT/3TC (FDC) tabs NVP tabs EFV tabs
Step 6	Calculate the quantity of each commodity needed for a particular intervention, e.g. treatment episode	*1) 1,200 pts (Regimen AZT+3TC+NVP)* **1st 14 days (Initiation period)** **AZT/3TC:** 1bd x 14 days=28 tabs/patient For 1,200 pts = 1,200 x 28 tabs = 33,600 tabs **NVP:** 1od x 14 days = 14 tabs/patient For 1,200 pts = 1,200 x 14 tabs = 16,800 tab **Next 30 days (Continuation)** **AZT/3TC/NVP:** 1bd x 30 days = 60 tabs/patient For 1,200 pts = 1,200 x 60 tabs = 72,000 tabs *2) 600 pts (Regimen AZT+3TC+EFV)* **AZT/3TC:** 1bd x 30 days = 60 tabs/patient For 600 pts = 600 x 60 tabs= 36,000 tabs **EFV:** 1od x 30 days = 30 tabs/patient For 600 pts = 600 x 30 tabs = 18,000 tabs
Step 7	Identify the maximum months of stock required (MoS)	2 months

Step 8	Use maximum MoS to establish the quantities to be ordered	Multiply quantity required/particular intervention (obtained in Step 6) by maximum months of stock (identified in Step 7) **AZT/3TC/NVP:** 72,000 tabs x 2 mths = 144,000 tabs **AZT/3TC:** 36,000 tabs x 2 mths = 72,000 tabs **EFV**: 18,000 tabs x 2 mths = 36,000 tabs
Step 9	Combine the estimates for each medicine from the various interventions into one list	**AZT/3TC:** (72,000 + 33,600) = 105,600 tabs = 1,760 pkts **AZT/3TC/NVP:** 144,000 tabs = 2,400 pkts **NVP:** 16,800 tabs = 280 pkts **EFV:** 18,000 tabs = 600 pkts
Step 10	Adjust calculated quantities for anticipated growth.	Multiply Step 9 quantities x 5% **AZT/3TC:** 105,600 tabs Growth = 105,600 x 5% = 5,280 tabs **AZT/3TC/NVP:** 144,000 tabs Growth = 144,000 x 5% = 7,200 tabs **NVP:** 16,800 tabs Growth = 16,800 x 5% = 840 tabs **EFV:** 18,000 tabs Growth = 18,000 x 5% = 900 tabs
Step 11	Final quantities to order	Add quantities from Step 9 to those in step 10 **AZT/3TC:** 105,600 + 5,280= 110,880 tabs **AZT/3TC/NVP:** 144,000 + 7,200 = 151,200 tabs **NVP:** 16,800 + 840 = 17,640 tabs **EFV:** 18,000 + 900 = 18,900 tabs
Step 12	Determining the no. of packs/order units to be ordered (may need to round off to the next full pack/order unit depending on the supplier/source)	Divide quantities obtained in Step 11 by the pack size/order unit **AZT/3TC:** 110,880 tabs ÷ 60 = 1,848 packs **AZT/3TC/NVP:** 151,200 ÷ 60 = 2,520 packs **NVP:** 17,640 ÷ 60 = 294 packs **EFV:** 18,900 ÷ 30 = 630 packs

Summary

- **This is the method of choice if consumption data is not available**
- **Accurate morbidity data is critical for this method including; catchment area, disease/condition, prevalence rates**
- **Standard clinical guidelines should be strictly followed**

What if . . .?

- **Data is not available?**

  - *Consider other quantification methods, e.g. adjusted consumption or service level data*
  - *Make estimates based on other similar facilities or start with a small target population then scale up once you start collecting consumption data.*
  - *Start collecting and keeping Data for future reference*

- **There is insufficient human resource capacity to manage the commodities?**
  - *Consider using OJT, pooling resources, approaching other stakeholder*
- **There is inadequate storage/warehousing?**
  - *Consider suitable alternative storage areas*
- **There is poor distribution capacity?**
  - *Seek assistances from other stakeholders*
- **You are dealing with co-morbidities?**
  - *Quantify for all conditions that are contributing to use of the specific commodities required*
- **Ordered quantities are not available?**
  - *Consider substitution with other commodities in the supply chain system.*
  - *Consider alternative sources for supply*
- **Nutritional status of the patient is very poor?**
  - *Consider counseling, community support, home-based care, food by prescription programmes, CD funds.(e.g. ARV, TB, Nutrition programme)*
- **Cost of commodity required exceeds budget allocated - consider:**
  - *rational adjustment*
  - *prioritisation*
  - *checking calculation*

- *cost effective therapeutic alternative*
- *Consider lobbying for additional funding.*

Glossary

- **Average Monthly Consumption (AMC):** The average quantity of commodities consumed per month
- **Data** is a collection of facts that may be in form of pictures, numbers or words.
  Before manipulation it is referred to as raw data
- **Information** is data that has been processed and it is ready to be communicated to users
- **Lead Time:** The time between when the commodities are ordered and when they are received and available for use
- **Losses and Adjustments**

  Losses

  Quantity of stock removed from the pipeline for any reason other than consumption by patient, e.g. expired, damages, pilferage

  Adjustments

  Difference between the physical count and what is recorded in the register, any stocks issued to/received from another facility
- **Maximum Stock Level:** The level of stock of a commodity above which a store should not exceed under normal circumstances

  Maximum Stock Level = Minimum Stock Level + Review Period
- **Minimum Stock Level:** The level of stock of a commodity above which a store should not go below under normal circumstances

  Minimum Stock Level = Lead Time + Safety Stock
- **Months of Stock (MoS):** This is the period in months the stock of a particular commodity can last
- **Physical Count (Stock on Hand):** Quantities of usable stock available at all levels of the system
- **Review period (RP):** Interval of time between assessments of stock levels to determine if an order should be placed
- **Safety/buffer stock:** Reserve (additional) stock to cope with variability in consumption and lead time

  Safety stock = ½ X Review Period
- **Total Quantity dispensed (Consumption):** Quantities that are dispensed to clients/Patients at the end of the commodity pipeline

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Annex 1: Quantification Job aid for Medicine Needs

Republic of Kenya
MINISTRY OF HEALTH

HOW TO QUANTIFY YOUR FACILITY MEDICINE NEEDS

What is Quantification?

Quantification is the process of estimating the quantities of required medicines and supplies

SIMPLE STEPS TO QUANTIFICATION

Step 1:
Carry out physical stock taking for each drug to determine closing stock (CS)

Step 2:
Define your facility parameters for
Consumption Period = _____ Months
Maximum Months of Stock = _____ Months

Step 3:
Calculate Consumption by adding all the quantities dispensed in the Daily Activity Register (DAR) for each drug

Step 4:
Adjust for any losses/ avoidable waste reflected in the DAR as dispensed
Total quantities dispensed – losses/ avoidable waste = C1

Step 5:
Adjust for stock outs if necessary

$$C1 \times \frac{\text{Consumption period (in days)}}{\text{Period in stock (days)}} = C2$$

Step 6:
Calculate Average Monthly Consumption

$$\frac{C2}{\text{Consumption Period in Months}}$$

Step 7:
Calculate the Maximum Stock level
AMC X Maximum Months of Stock

Step 8:
Determine Actual Quantity to Order
Maximum Stock Level - Closing Stock

Quantification Worksheet

MEDICINE NAME	TOTAL CONSUMPTION	ADJUSTED CONSUMPTION (for Wastage & Losses)	ADJUSTED CONSUMPTION (for Stock outs)	Average Monthly Consumption	MAXIMUM STOCK LEVEL=MSL	CLOSING STOCK (CS)	QUANTITY TO ORDER
	Opening Stock + Receipts – Closing Stock	Consumption – Avoidable Wastage & Losses (units) = C1	C1 (unit)x CP (days) / Period in Stock (days) = C2	C2 / Consumption Period (Months) = AMC	AMC x Max MOS = MSL	Closing Stock in Units	Maximum Stock Level (MSL) – CS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
E.g. Paracetamol 500mg Tabs	2000+18000-5000 = 15000	15000- 100 = 14900	14900x180 / 150 = 17880	17880 / 6 = 2980	2980 x 6 = 17880	5000	17880- 5000 = **12880**

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Annex 2: Quantification Job Aid for Lab Commodities

REPUBLIC OF KENYA

QUANTIFICATION JOB AID FOR LABORATORY COMMODITIES

Quantification is the process used to determine how much of a product is required for the purpose of procurement or ordering from the supplier(s).

PREPARATION

Have a pen, paper, calculator, stock cards, DAR e.g for Laboratory commodities (MoH 642), laboratory registers and Bincards

Prepare a quantification worksheet (See example)

List laboratory commodities to be quantified

For each commodity, carry out the steps listed below

- **CP** ♦ Determine Consumption Period (CP) i.e. period over which consumption is being reviewed in months e.g 3 months
- **C** ♦ Determine consumption (C) i.e. quantity used during consumption period (CP). If there was a stock out during Consumption Period (CP), adjust as shown. NB CP must be in months
- **AMC** ♦ Calculate Average Monthly consumption (AMC). AMC = C/CP(in months)
- **Max MOS** ♦ Calculate Maximum months of stock (Max MOS). Max MOS = Desired CP +Buffer. E.g. if desired order period is 3 months and buffer required is for 1 months, then Max MOS will be 3+1 = 4 months
- **MSL** ♦ Calculate Maximum Stock Level (MSL) i.e. maximum quantity that a facility should have at any one time. MSL = AMC x Max MOS
- **SOH** ♦ Count Stock on Hand (SoH) for each item
- **QO** ♦ Calculate Quantity to Order (QO). QO =MSL - SoH

ADJUSTING CONSUMPTION FOR STOCK OUTS

Adjusted consumption for stock outs(C2) is given by the equation below:

Worked Example

Commodity Name	**RDT test kits**
Receipts	**900 Units**
Issues	**600 Units**
Stock on hand 9 (SOH)	**400 Units**
consumption period (CP)	**3 Months or 90 Days**
Period in Stock	**2 Months or 60 Days**
Maximum Months of Stock (Max MOS)	**4 Months**

Given that CP IS 90 days and the product was stocked out for 30 days, then the period in stock is 90 days-30 days = 60 days

Quantification Worksheet

CONSUMPTION (C)	ADJUSTED CONSUMPTION FOR STOCK-OUT (C2)	AVERAGE MONTHLY CONSUMPTION (AMC)	MAXIMUM STOCK LEVEL(MSL)	STOCK ON HAND (SOH)	QUANTITY TO ORDER (QO)
Issues	$C(\text{units}) \times \frac{(CP\ (\text{days})}{\text{Period in Stock}}$	$\frac{C2\ (\text{Units})}{CP\ (\text{Months})}$	**AMC x Max MOS**	**Closing stock in units**	**MSL - SoH**
600	$\frac{600 \times 90}{60} = 900$	$\frac{900}{3} = 300$	**300 x 4 = 1200**	**400**	**1200 - 400 = 800**

NB

1. Consider using the second in calculation ONLY if you had stocks out during the CP.

2. Maintain the same unit of measure throughout the calculations e.g. tests or kits/ packs

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