

# Contextualized Strategies in Handling Medical Products, Vaccine and Technologies for Millennium's Sustainable Achievements in HIV/AIDS Care

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## ABSTRACT

Realization of global health goals is dependent on how efficiently and effectively ill health resulting from Non-Communicable Diseases, emerging and reemerging infectious disease including HIV/AIDS are handled within health systems. Medical products, vaccines and technologies management for access and appropriate use is considered critical towards achievement of quality service delivery. Diversity in health systems context may not allow for uniform conformity to health goals and human rights thus this study purposed to assess contextual strategies by various facilities in Kenya in managing medical products to achieve sustainable goals in the millennium. The study focused on three themes; accessibility, management and diagnostics technology application. Health workers, in-charges and County coordinators were considered suitable as study respondents and sampling was done using multistage techniques. Qualitative methodologies were employed to collect extensive data from individuals, program and event. The results indicated that stock out still exist although at a lower level of 34% and facilities applied innovative strategies such as borrowing across facilities (40%), special orders (33%), other drugs for opportunities infections were bought by clients (17%) and 10% did take any action. Computerization for stock management specific to HIV drugs was reported at 30%. Diagnostic technology was lagging with facilities referring clients, or taking sample and referring them elsewhere, while some tests were not utilized although important for patient management. Study recommends up-scaled implementation electronic management of medical supplies and investment in diagnostic technologies to realise quality services and better health outcomes.

**Key words :** Medical products, vaccines, technologies, HIV/AIDS, Kenya

## INTRODUCTION

Globally, Health systems is experiencing challenges associated with ill health as climatic changes continue to materialize and human population continue to evolve genetically and socially. Over the years there has been an upsurge of Non-Communicable Diseases (NCDs), emerging and re-emerging infectious diseases and evidence show that these diseases can be managed through effective treatment and preventive measures using vaccines,

pharmaceuticals and innovative medical technologies which encompasses a wide range of devices, diagnostics together with technological process for disease detection, monitoring and treatment of medical conditions. <sup>[1]</sup>

Scientific evidence from existing literature indicate that medicine products are critically important in achieving high quality service delivery particularly, when they are used appropriately, they have the potential of saving lives and improve overall

health of an individual and their networks. On the contrary, shortfalls in access to essential medical products, irrational use and compromised quality of such medical products can jeopardise patients' safety leading to undesirable health outcomes.<sup>[2]</sup>

It is estimated that 30 percent of global population have limited access to essential medical products thereby understating the reality of benefits associated with medical products.<sup>[3]</sup> In Low- and Middle-Income Countries (LMICs) the challenge is much more wide spread with countries experiencing extremely low immunization coverage as much it is recognizable that immunization is one of the cost-effective intervention to halt the spread of diseases and overall improve health especially among children. In Kenya, like many other developing countries in the region is yet to achieve targets set by Global Vaccine Action Plan (GVAP) which requires that counties to attain at least 90% in national immunization coverage.<sup>[4]</sup>

A resolution adopted by United Nation Commission of Human Rights (UNCHR) recognizes "that access to medication in the context of pandemic such as HIV/AIDS, is one fundamental element for achieving progressively in the full realization of the right to health." Following on, a number of studies and resolution have been made to reinforce the commitment and as such, in October of 2009 UN, Human Rights Commission adopted resolution 12/24 on "access to medicine in the context of the rights of everyone to the enjoyment of the highest attainable standard of physical and mental health." Further to this, UN recognizes that implementation of such policy declarations in the different context may not be the same given the resource capabilities and thereby provided a clause that declare "all states to apply measures and procedures for enforcing intellectual properties rights in such a manner as to avoid creating barriers to the legitimate trade of medicine, and to provide for safe guards against the abuse of such measures and procedures."<sup>[5]</sup> Based on this

background, it is necessary to assess contextual strategies put in place, specifically in Kenya so as to ensure uninterrupted supply of medicine, vaccines and appropriate technologies resulting to sustainable health outcomes in the millennium.

The existing literature show no clear strategic framework put in place to manage medical products in health systems. This study seeks to document practical strategies by different facilities that will go a long way in ensuring success in HIV/AIDS services integration, and form a guiding principle to the bodies mandated by government bodies assessing priority products; executes international trade agreements including handling capacity enhancement and pricing; support rational use and adherence of HIV drugs. The expected end results is an efficiently functioning health system that ensures equitable, quality, safe and cost-effective medical products, vaccines, and technology.

## **MATERIAL AND METHODS**

### **Study design**

The study adopted multiple approaches to qualitative study design given the importance of context in the management of medical products. Case studies, observation, one on one in-depth and questionnaire guided interviews approaches were deployed to allow for inclusion of varied perspectives among the different categories of health workforce in HIV/AIDS service provision.

### **Study settings**

Intensive interventions have been put in place to halt the spread of HIV and Kenya has since seen a sharp decline in HIV incidence. However, it still remains one of the top six "high burden" disease countries. The estimated number of People Living with HIV (PLHIV) is about 1.5 million including 105,200 children under 15 years. The Five Counties selected for inclusion in the study were considered based on unique characteristics. For Example Homabay was

selected for having highest prevalence in the country of 25%, Nairobi one of the populous cities with cross cultural dynamics, Mombasa selected for having larger percentage of key population particularly drug users and Men having Sex with Men (MSM), Kajiado a county that hosts marginalised "MAA" community and Garissa County a transport corridor with one of the lowest prevalence rates compared to national average. The study targeted health workers in HIV/AIDS treatment and care service centres, hospital and Comprehensive Care in Charges with extensive knowledge on management of medical products and vaccines.

### **Sampling procedure**

The five counties were sampled purposively based on prevalence rates, high or low volume population and key population characteristics. The health facilities were stratified as County referral hospital and health centers and which the respondents were drawn from. The health workers assigned duties in Comprehensive Care Centers (CCCs) of the selected for health facilities were censured to participate in the study, with exception of those who were not on duty at the time of study and those who did not consent to participate in the study. In total, the study obtained views from a total 30 health workers, eight (8) County AIDS Services Coordinators (CASCOs) and five (5) Sub- County AIDS Services Coordinators (Sub-CASCOS).

### **Ethical consideration**

#### **Rights on Institutions Involved**

This study was approved by Scientific and Ethics Review Committee of University of Nairobi and Kenyatta National Hospital after it was established to confirm with requirements for handling human subjects. All the health facilities sampled were briefed about the purpose of the study, expected outcomes, benefits and risks. A written permission by institutional heads based on this common understanding.

#### **Consent**

The health workers were given opportunity to decide to be part of the study or not on the basis that participation was purely voluntary and they had the right to refrain from answering questions they felt uncomfortable with, coupled with the understanding that their choice of participation will not subject them to any kind of prejudices.

**Anonymity:** The research assured participants that no individual or their institution would be identified when research findings are published. Records were coded without personal names appearing and with the identification "key" kept separately. where anonymity was not of importance permission was obtained to link certain information to the research parties.

#### **Risks and benefits**

The study made prior declaration to the participant that there will be no direct or immediate benefits or risks tied to the study. However, publication of study findings and recommendation would be shared with local and national authorities in charge of health services to guide their decision towards improvement of HIV/AIDS services. The participants were also informed about the amount of time the study will cost them and agreement to participate in the study was based on the information provided by the researcher.

#### **Scientific integrity**

The researcher has ensured the study context and material provided are free from distortion to suite individual interest. All, contribution either by mentors, research assistance and scholars in the study field of interests have been acknowledged appropriately and by extension the researcher maintained scientific integrity further by avoidance plagiarism.

#### **Data collection**

The qualitative approach used, facilitated extensive collection of data from

individual health workers, programmes practices within CCCs particularly for the management of medical, products, vaccines and technologies including events such as stock outs and action taken, should such events occur. Case study, observation and interviews allowed triangulation so as ensure that a single data or information source does not unduly influence the analysis, thereby enabling research process to be of desirable level rigour, consistency and validity of research outcomes.

Key Informant Interviews (KII) were conducted with Facility/hospital/CCC in charges, CASCOS, and Sub-CASCOS to obtain information on management support systems in place to ensure reliable access to medical products, vaccines and technology. A semi structured questionnaire was specifically for health workers in CCCs for purposes of obtaining information related to the extent of stocks outs, if any and the actual practices such as inventory management of medical supplies and diagnostic procedures.

### Data Analysis

The descriptive statistics was generated from excel sheet entries and presented as a table, pie charts and a graph with aim of showing trends in the management of medical products and technologies.

Data generated from KIIs were analyzed manually and using NVivo computer software. The research categorized data into main themes before data collection and later revised the themes during analysis as: access and availability of medical products; vaccines and technology; management of medical supplies; and technology application in diagnostics. This data was reported as verbatim and/or excerpts to give detailed meaning in interpretation of facts presented.

## RESULTS

### Access and availability of medical products

Results in **Figure 1** show that majority (66%) of respondents thought

frequency of stock outs were quite often (Once a month) and 34% reported stock out as occasional (once in a quarter).

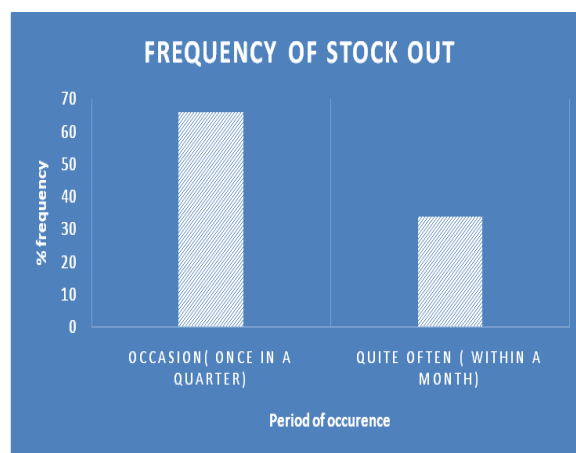


Figure 1: Frequency of stock out

Narrations from KIIs also indicated that stock outs still exist but to a smaller extent particularly re-organisation and implementation of integrated services strategy. Most respondents acknowledged that integration has lessen stocks outs as various CCC sections are now staffed and process of ordering drugs has been improved.

*“for us to get medicines or medical supplies, we have to rely on the County referral hospital. so the moment they have not received, we tend to have some shortage because we only get the supplies whenever they get.” FICM 2*

*“Before, we used to get medicines from Isiolo normally the Dasco’s would go there to pick the medicines for the counties but nowadays we’ve employed a pharmacist who does that link and we are improving. We have plans that we can order drugs for ourselves and not picking from Isiolo. We are also having plans for the pharmacist to order drugs directly from KEMSA.” MBSA 8*

*“It is consistent because we’ve never had out of stock. We’ve not experienced any out of stock since integration.” KWG 9*

*“...before we used to have frequent stock outs especially of commodities but right now despite having some few challenges it is much better, you are able to order in good*

time then facilities are able to receive their commodities.” **LKN 9**

The **figure 2** highlights the response to occasion stock outs of medication for Opportunistic Infections (OIs) and ARVs by health care workers. 40% of the facilities

borrowed ARV drugs from other facilities, while 30% placed orders for the same supplies. 17% of the facilities usually referred patients to purchase OIs medication from outside suppliers while 10% followed none of the above measures.

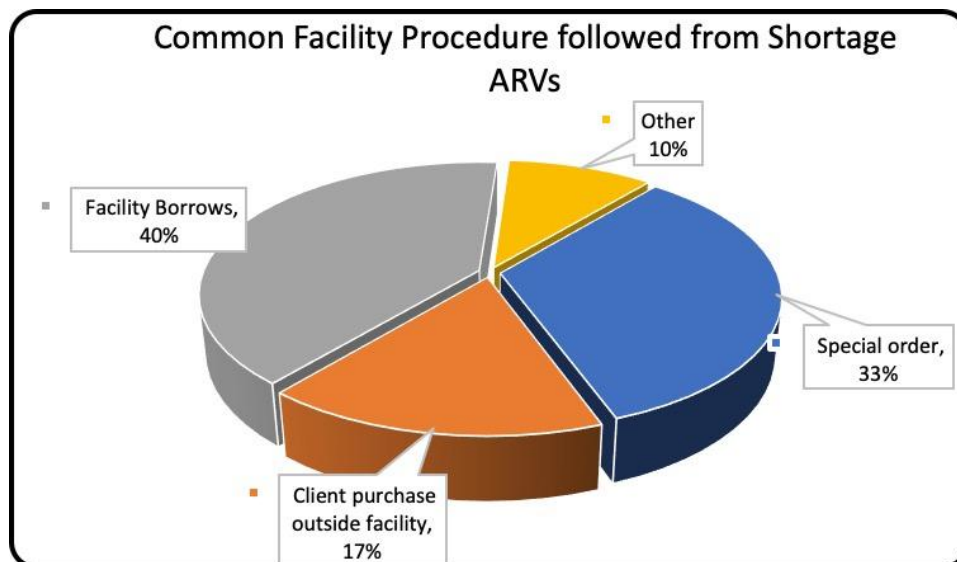


Figure 2: Action on ARVs shortage

### Management of medical products and vaccines

Data on inventory management in **figure 3** indicates that 34% stock cards were available and visible for verification, while 63% reported that stock cards were available although not physically available for verification. Very small proportion (3%) of facilities reported as not having stock cards.

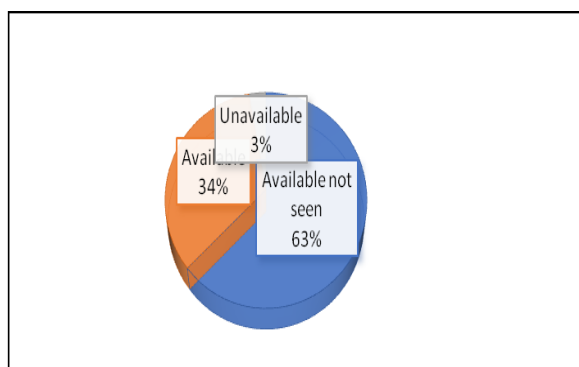


Figure 3: Availability stock register/stock cards

In examining computerized inventory system within the pharmacy department, **figure 4** show that majority of the facilities (37%), while 30% reported computerization

of stock maintenance systems for ARVs only and 33% reported not having computerized systems for all medicine.

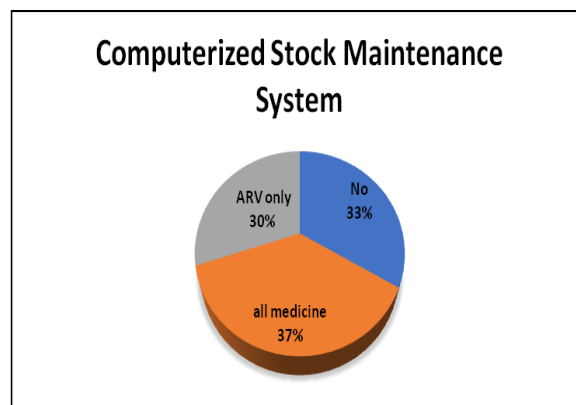


Figure 4. Computerizations of stock maintenance system

### Diagnostics and medical technology process

**Table 4.9** shows tests carried out by facilities across the selected counties. Notable of all the key areas of testing, haemoglobin tests were mostly at 80% conducted at the facility, collected sample, and sent elsewhere constituted 3.3%, while circumstances where clients were sent elsewhere for test due to their inability to

carry out the test comprised of 13.3 %. Urinalysis was largely, 96.1% conducted at the facilities where specimen collected and in very rare occasion (3.4%) collected specimen was sent elsewhere for analysis. For Liver Function Test (LFT), results indicate that patients were mostly (55.2%) sent elsewhere and only 13.3% of the

incidence the facilities were able to conduct LFT. Under unusual circumstance some test where not requested for and therefore not utilised although critical in HIV/AIDS care, they included; CD4 count at 3.4%, Viral Load (VL) and Renal Function Test (RFT) with similar rate of 6.9%.

Table 1: Diagnostic procedure and Test areas

Test Area	Haemoglobin (HB) Test	Full blood count	CD4 count	Liver Function Test	Viral Load	TB sputum test	Chest X-Ray	Urinalysis	Renal function tests (serum creatinine)
Conduct test	80.0	62.1	62.1	31.0	13.8	65.5	48.3	96.6	41.4
Collect specimen, send elsewhere	3.3	10.3	17.2	3.4	48.3	17.2	3.4	3.4	6.9
Send Client Elsewhere	13.3	27.6	17.2	55.2	34.5	13.8	48.3	-	34.5
Test not utilized	-	-	3.4	6.9	-	-	-	-	6.9
Don't know	-	-	-	-	3.4	3.4	-	-	10.3

## DISCUSSION

This study provides evidence that considerable efforts had been put in place to manage medical products and vaccine. Stock outs less frequent at 34 percent i.e. experienced at least once a quarter and smaller proportion of 34 percent experienced stock outs once every month. Overall, there gap still exist to reach 100% accessibility of medicine and other medical products hence there need to strengthen medical products and vaccine system to achieve desired goals in HIV/AIDS treatment outcomes.

Rational use and adherence of medicine starts from dispensing and ensuring continuity is evident when health facilities put in places innovative mechanism in tackling shortages of medication required by clients seeking HIV/AIDS related services, these facilities were seen to establish a cross link with other facilities to facilitate borrowing and making special orders through the established supply chain. These strategies although little, responds to World Health Organization (WHO) directives to ensure capacities and use of HIV drugs to maximize safety and reduction of resistance in HIV co-morbidity and appropriate use of

such medical products as demonstrated literature from local context. [6,7]

Reporting facilities made efforts to realize efficient management of vaccines products, this was evident by existence of registers or stock cards. All most all facilities, 97 percent reported existence of registers/stock cards but only 34 percent provided tangible evidence of the same. Computerized system to manage medical products reported at an average of 67 percent out of which 37 percent used the computerized system for ARVs leaving out other products. Strengthening of medical products system coincides with uninterrupted supply in LMICs. [8]

Medical equipment for diagnosis mostly required for HIV co- morbidity and routine medical check-up among CCC patients for example Liver Function Test (LFT), viral load (VL), chest X-ray and Renal Function Test (RFT) were rare tests among reporting facilities at 31,13.5,48.3 and 41.4 percent respectively. These phenomena described inability of medical products system to support effectively and efficiently the delivery of services. This further explains the increased need for referral at an average of 92 percent for both health centres and Sub county referral

facilities.

## CONCLUSION AND RECOMMENDATION

Local health facilities implementing context specific mechanism to ensure continuity and sustained access to medical product, vaccines and technologies. However, there is a lot more investments that needs to be done to achieve above 90% ARV national coverage.

There is considerable level of technology application in inventory management and stock tracking of medical supplies. Nevertheless, automation of pharmacy needs to be scaling up in order to realize the level of efficiency required.

Diagnostics capabilities in most facilities still low and facilities have established cross linkages to fill the existing gaps but this gap raise additional challenge in continuity in care continuum in a timely manner.

The study recommends up-scaled implementation electronic management of medical supplies so as to ensure need based selection medical products and uninterrupted supply without understating infrastructure investment for diagnostic technologies that is essential to providing comprehensive management of HIV/AIDs services and minimising missed opportunities in management of health conditions among patients and their networks.

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