



# MEDICINES AND MEDICAL SUPPLIES AVAILABILITY REPORT

Using absorbent gauze availability survey as an entry point

A CASE OF 71 DISTRICTS AND 30 HEALTH FACILITIES ACROSS MAINLAND TANZANIA

10<sup>th</sup> - 20<sup>th</sup> MAY, 2011







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## List of abbreviations

ALU	Artemether Lumefantrine
CAG	Controller and Auditor General
CHF	Community Health Fund
CMS	Central Medical Store
CSF	Cost Sharing Fund
DMO	District Medical Officer
GF	Global Fund
HBF	Health Basket Fund
HF	Health Facility
HSSP	Health Sector Strategic Plan
ICESCR	International Covenant on Economic, Social and Cultural Rights
ILS	Integrated Logistic System
L/T	Long Term
MSD	Medical Store Department
MoFEA	Ministry of Finance and Economic Affairs
MoHSW	Ministry of Health and Social Welfare
MP	Member of Parliament
MTEF	Medium Term Expenditure Framework
M/T	Medium Term
NHIF	National Health Insurance Fund
OIG	Office of the Inspector General
PCSS	Parliamentary Committee for Social Services
PMO-RALG	Prime Minister's Office-Regional and Local Government Authorities
PMU	Procurement Management Unit
PRO	Public Relations Officer
PSU	Pharmaceutical Services Unit
SDC	Swiss Development Cooperation
S/T	Short Term
UDHR	Universal Declaration of Human Rights
UN	United Nations
URT	United Republic of Tanzania
VP	Vertical program
WHO	World Health Organization

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1 Sikika planned to interview MoHSW and MSD as the key stakeholders during the survey, but regrettably the two parties did not respond to the invitation to take part, further more a draft copy of the report was sent for their comments and up to the time of printing no comments had been received.

## Executive Summary

Health service delivery at the district and facility levels has been greatly affected by the persistently poor availability of essential medicines and medical supplies, an example here is the lack of absorbent gauze for a period of about three to six months prior to and during a survey conducted by Sikika between May 10 to May 20, 2011.

This study was designed to find out (1) the extent of the problem; (2) how long the availability problem had persisted prior to the survey; (3) actions being taken by service providers to mitigate the problem; (4) potential complications/challenges that the facilities and patients faced as a result of the problem; and (5), what other essential medicines and medical supplies were currently out of stock or in low supply. The system used to procure and distribute absorbent gauze applies to the entire essential medicines and supplies list; hence problems discussed and recommendations given apply to the whole system and are thus discussed in this report.

Sikika conducted the survey using two structured questionnaires, in response to complaints received from service users and providers about the lack of gauze. A total of 71 District Medical Officers (DMOs) or their representatives and 30 facility in-chargers were interviewed via mobile phones. DMOs are responsible for all facilities in a district hence their responses give a wide picture of the situation, whereas facility in-chargers give specific pictures of individual facilities. One DMO, one clinical officer, and one nurse in-charge of a dispensary were interviewed face to face as key informants. For purposes of regional comparison, telephone interviews with officials of central medical stores of Kenya and Uganda were also conducted, after finding out that there was a stock-out of gauze at the Tanzanian central medical store.

The results showed that absorbent gauze was unavailable at 48% of the districts interviewed, and this had persisted for a period ranging from three to six months. Only 8% of the districts had sufficient quantities. Similarly, 37% of the facilities did not have gauze, and only 10% had sufficient quantities<sup>2</sup>. Facilities had to wait for two months on average to receive orders once they had placed them with the Medical Stores Department (MSD) via DMOs. Most of the DMOs and facility in-chargers did not order exactly what they needed in terms of quantities. They more often ordered less than what was required. The mismatch could be attributed to several reasons, the most important being lack of funds in their MSD accounts. Theoretically, DMOs and health facility in-chargers had access to, apart

<sup>2</sup> The difference in responses between districts and facilities can mainly be explained by the fact that not all facilities had been sampled in each district survey. The facility sample size was purposely made small only to give a narrow facility picture, especially how facilities dealt with the problem.

from the funds held at the MSD, other sources of funds with which they could purchase supplies from the private market. In practice, however, not all of them could access such funds due to difficulties associated with the collection and administrative bureaucracies. 49% of the DMOs had to cancel or reduce the number of elective surgeries, reserving whatever supplies of gauze they had for emergency purposes. Service providers also were faced with increased levels of complaints from service users, which affected their work morale. At the same time, other essential medicines and medical supplies such as surgical gloves, syringes and ALU were in short supply or running out.

Sikika recommends that:

1. The ordering cycle be shortened from the current three months to one month;
2. the order, order revision process, and order forms used simplified so that even staff who are not qualified pharmacy technicians or pharmacists are able to understand and use the ordering process and forms effectively;
3. the allocation and disbursement of centrally available funds as well as access to locally available funds be reviewed;
4. the Central Medical Store and supporting institutions should be better organized and governed.

## CHAPTER ONE: Introduction

*“Yet despite the integral role of medicines in health system performance, the availability of essential medicines in developing countries continues to be a challenge. Each year, more than 10 million children in the developing world die of conditions that could be prevented or cured with existing vaccines or medicines. Similarly, an estimated 1,000 women die every day from complications during pregnancy or childbirth, many of whom could be saved with access to appropriate care — including appropriate medicines”*

(Roberts, M. and Reich, M., 2011, pg. xi).

### Shortage of Medicines and Medical Supplies

The availability of essential medicines and medical supplies continues to be a challenge in most public health facilities in Tanzania, as in most developing countries. It is generally accepted that the budget allocated for the health sector, and within that, for medicines and medical supplies, is not sufficient to cater for all of the citizens’ needs. It can also be argued that the resources available are not being effectively and efficiently utilized. In this survey, for example, it was found that absorbent gauze, an essential appliance, was in short supply or out of stock in the majority of the districts (92%) and facilities (90%). The shortages were attributed to, among others, the relatively long order cycle, limited funds allocated and disbursed from the central government, difficulty in accessing alternative local funds, and a stock-out at the central medical store. These problems apply equally to all essential medicines and medical supplies as they all depend on the same procurement and distribution system.

People in authority (e.g. Members of Parliament, ministers and the Controller and Auditor General) and citizens have on several occasions highlighted the general systemic problems in the procurement and distribution of pharmaceuticals, but the problems still persists. This is despite of the fact that the Government of Tanzania acknowledges and even proclaims that access to health care is a necessity and a basic right to each citizen. The Universal Declaration of Human Rights (UDHR) states that, “everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing, and medical care” (UN, 1948, Article 25 emphasis added). Also, the International Covenant on Economic, Social and Cultural Rights (ICESCR) recognizes the right to health in Article 12 (UN, 1966). The Tanzanian parliament ratified the ICESCR treaty in 1976, and the UDHR is recognized in the constitution. As such the state and its agencies are obliged to ensure that this right is effected (URT, 1998, pg.18, Article 9f). Hence, by implication, a poorly performing medicines and medical supplies procurement and distribution system would in principle be denying citizens their right to medication.

Sikika, as a non-governmental organization, has been advocating for quality health services for all Tanzanians since 2000 ([www.sikika.or.tz](http://www.sikika.or.tz)). Sikika strives to achieve its vision and mission through monitoring health systems social accountability across all levels of government (ibid). Sikika has made a number of contributions towards strengthening Tanzania's health systems by conducting and publishing various research documents, e.g., "Health sector budget analysis 2010-2011"; "Petty corruption in health services in Dar es Salaam and Coast Regions 2010"; "Allowances, seminars, vehicles and travel 2010"; "Unnecessary expenditures 2010"; and other publications ([www.sikika.or.tz/research.html](http://www.sikika.or.tz/research.html)). Sikika also makes a direct contribution to health sector planning through its membership in various technical working groups within the Ministry of Health, and its close working relationship with the Parliamentary Committee for Social Services.

The availability of essential medicines and medical supplies is one of the parameters with a significant bearing on Sikika's achievement of its stated vision: "Quality health services for all Tanzanians." The importance of the pharmaceutical procurement and distribution system to the health sector is highlighted by the fact that spending on medicines accounts for more than 30% of the total government health budget (Sikika 2011, pg.16). This is also further underscored by the fact that the availability of medicines at a health facility is a major motivator for patients/the general public to visit a health facility, presenting an opportunity for health interventions that can directly impact on the general well-being of the society. In this report Sikika makes the following recommendations, which will, to some extent, help improve the system.

1. Shortening the ordering cycle from the current three months to one month;
2. improving the order, order revision process, and simplifying the order forms used, so that even staff who are not qualified pharmacy technicians or pharmacists are able to understand and use the ordering process and forms effectively;
3. improving allocation and disbursement of centrally available funds as well as improving access to locally available funds;
4. better organization and governance of the central medical store and the supporting institutions.

## Structure of the Report

In this document, Sikika reports the results of a survey conducted to track the availability of absorbent gauze in 71 districts and 30 health facilities across Tanzania main land. Sikika will share the study's findings with all relevant stakeholders. We hope that the findings will help in the diagnosis of the pharmaceutical procurement and distribution system problems, and aid in the reforms required to improve the system.

The document is organized into five chapters. *Chapter One* introduces the topic, sets out the problems and gives a summary of the governance structures of the public pharmaceutical supply system. The structures and functions of the various bodies involved in pharmaceutical procurement and distribution are also described. *Chapter Two* sets out the methodology used in conducting the study and points out limitations and steps taken to minimize them. *Chapter Three* presents the findings of the survey. It presents an analysis of the distribution problems and touches slightly on procurement problems as well. *Chapter Four* summarizes and discusses main findings. *Chapter Five* lists recommendations to resolve the problems identified in the study. The recommendations are annotated with possible implementation duration: Short Term (S/T) refers to immediate to 6 months, Medium Term (M/T) refers to 6 months to 1 year, Long Term (L/T) refers to a period of 1 to 2 years.

## The Pharmaceutical System

### Human Resources

Tanzania has a population of about 40 million people (population estimates 2007). There are about 4,185 public pharmacies within public health facilities (dispensaries, health centres or hospitals) and 1,056 private pharmacy/ medicine outlets. The country has about 1,506 trained pharmaceutical human resources, of which 703 are pharmacists (health workers with pharmaceutical knowledge, trained to a degree level). Most of the pharmacies and pharmacists are concentrated in urban centres; the density of pharmacists per 10,000 is 1.37 in Dar es Salaam, compared to 0.1 in Dodoma (URT 2009, p. 19). In summary, there is a big pharmaceutical human resources gap given the population's need; and this gap is more pronounced in rural areas. The Health Sector Strategic Plan III acknowledges that there is need to train more pharmaceutical personnel. However, there is no detailed translation of this plan into the Medium Term Expenditure Frameworks (MTEFs).

### The Supply System

The governance of health care in Tanzania has largely been decentralized since 1998 (Macha et al, 2011, pg.14). The system can broadly be classed into three functional administrative levels - district, regional and national (URT 2009, pg.7).

The Ministry of Health and Social Welfare (MoHSW), has overall responsibility for health policy and the development of guidelines, donor coordination, overall health budget preparations, human resource planning and quality assurance (ibid). The Pharmaceutical Service Unit (PSU) within the ministry is charged with the responsibility of overseeing all matters pertaining to pharmaceuticals. It oversees the formulation and implementation of the country's drug policy. It is involved in the preparation of the annual medicines and medical supplies budget required for all public health facilities in Tanzania (ibid).

Under the decentralized system, district councils have the full mandate for planning, implementation, monitoring and evaluation of health services, with the MoHSW through the PSU playing only a support and oversight role. District level planning and budgeting for health services falls under the responsibility of the Council Health Service Boards (CHSBs), which co-ordinate these activities with the various committees at the facility level.

The Full Council (FC) is the responsible organ for district level budget approval. The monitoring and supervisory functions for the implementation of the district level health plans are carried out by the Council Health Management Teams (CHMTs), which report back to the Full Council. The next level of authority above the FC is the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG) and the MoHSW.

### Procurement and Distribution

The Medical Stores Department (MSD) is a public, non-profit organization created in 1993 by an Act of Parliament. It is the only national agency that is responsible for the procurement and distribution of essential medicines and medical supplies to government health facilities.

MSD procures medicines and medical supplies by advertising tenders to international and local suppliers. The MSD Tender Board manages the tendering process as prescribed by the Public Procurement Act 2004.

With regards to distribution, since 1984 dispensaries and health centres have been supplied with medicines and related supplies through a “push system<sup>3</sup>.” However, the system has not been reliable in addressing the needs of health facilities. Hence, the MoHSW has developed a new system that will ensure provision of the items according to facility needs while taking into consideration their budget allocation – the “indent system”–, which has now been superseded by the Integrated Logistic System<sup>4</sup> (ILS).

The DMO plays an important role in the pharmaceutical supply chain, in that “all ordering and supervision starts and ends with the DMO Office” (URT, 2008a). A facility determines its needs and makes orders to the MSD via the DMO. The MSD packs the supplies and delivers them to the DMO, who then distributes them to the health facilities (i.e. health centres and dispensaries). District, regional and referral hospitals order directly from the MSD.

3 It is where a health facility's medicines are determined centrally, packed in a standard kit and delivered on a regularly basis, in this case quarterly. Because the kits are standardized, it does not take into account variability between different facilities needs.

4 It is a system for managing the various categories of health supplies using one set of procedures (<http://msd.or.tz/pages/ils.html>)



It must be noted that MSD is currently rolling out a direct delivery system to facilities, removing the distribution role of DMOs. The aim is to streamline the process and take total ownership of the delivery chain. Sikika supports this move as it has the potential of improving accountability in as far as deliveries are concerned. At the least, health facilities will only have one party to blame should they experience any problems with their delivery.

## Sources of Funds

The government has put in place different mechanisms for health care financing, other than the centrally administered budget. These mechanisms are geared towards the capitalization of facility pharmacies and are based on cost sharing schemes such as the Community Health Fund (CHF), user charges and the National Health Insurance Fund (NHIF). In general, the main sources of funding for the health sector in Tanzania come from the Government of Tanzania (GoT), the Global Fund (GF) and other development partners, where expenditure for medicines and medical supplies accounts for more than a third of the total health budget (URT 2007, pg. 20). In 2006 - 2007 the GoT contributed 53% and development partners, including the Global Fund, contributed 47% (URT 2008b, pp.25-28). The 2011/2012 MoHSW budget shows that the GoT's contribution has decreased to 39%, whereas the development partners' contribution has increased to 61% (URT 2011, pp xii–xviii).

At the local health facility level, the funds come from the Ministry of Health through a special account managed by the MSD, and also through user fees (e.g., registration fees, health contribution services, drug revolving fund, community health funds, or the national health fund). Districts and health facilities have some degree of direct control over the use of user fee funds, and thus they can buy essential medicines and medical supplies from private suppliers in the event that the MSD does not have the items in stock. In theory, all of these funding sources should lead to a reliable procurement system guaranteeing the availability and accessibility of essential medicines and medical supplies at all times. However, in practice, this does not happen smoothly, mainly because of the difficulty associated with the collection of and access to these alternative funds (URT 2007a, p.88).

## Oversight

The problems with the pharmaceutical procurement and distribution system are well known and have been continuously raised over the years. However, improvement in terms of citizen satisfaction with the availability of and access to essential medicines has been minimal.

In this section we highlight some of the questions and reports raised by auditors and members of parliament, as well as some ministerial comments.

## Controller and Auditor-General

The most recent (2010/11) report of the Controller and Auditor General (CAG) uncovered a series of shortcomings which point to failings in the procurement and distribution system. The report showed that 8 billion Tanzanian shillings worth of medicines had expired within MSD stores while at the same time facilities were experiencing shortages of key medicines. MSD records indicated that they had 5.2 billion Tanzanian shillings worth of stock at hand, a figure that was later revised to 151 million, a significant variation from original figure (<http://in2eastafrika.net/msd-drugs-worth-8bn-spoiled/print/>).

Another audit conducted by the Office of the Inspector General (OIG) of the Global Fund (GF) grants to Tanzania in 2009 identified weaknesses in the procurement and supply chain management. Excessive delays were frequently experienced in the procurement process due to lack of coordination in procurement planning among government departments, and also capacity shortcomings in the MSD and Procurement Management Unit (PMU) within the MoHSW.

The OIG also raised concerns about the ability of the computerized inventory system used by the MSD to track and keep account of medicines and medical supplies at all levels of the supply chain. It was also found that earlier recommendations on corrective measures for the system had not been implemented. The Integrated Logistic System (ILS), the new ordering system, does not take into account the possibilities of theft and inappropriate use of medicines (GF, 2009).

## Parliament

Sikika analyzed all of the questions raised by Members of Parliament (MPs) with regard to medicines and medical supplies for the financial years 2007/08, 2008/09, and 2010/11 (see Table 1 below). The questions raised revolved around the same themes of the poor availability of medicines at health facilities, poor procurement and distribution planning by the MSD/MoHSW, insufficient funds, and delayed disbursement from the MoFEA. An example here is a question raised by the then MP for Karagwe (Hon. Gosbert Begumisa) in 2007 regarding the continued failure of the MSD/MoHSW to provide an adequate and continuous supply of medicines and medical supplies to health facilities. The then Minister of Health promised to remedy the situation and that a comprehensive report would be produced within six months. With no improvement from the 2007 ‘promise’, and in response to MPs questioning the performance of the MSD and the MoHSW in 2011, the Minister promised a “total overhaul of the administrative and operational systems of MSD” (<http://www.thecitizen.co.tz/news/5-political-news/12814-complete-overhaul-awaits-msd-to-enhance-efficiency.html>). Time and again, stakeholders have complained about the performance problems in the medicines supply system, but there seems to be no political accountability in addressing these problems.

**Table 1: Questions raised by MPs on medicines and supplies issues for financial years 2007/08, 2008/09 and 2010/11**

	2007/08	2008/09	2010/11
Number of questions from MPs	124	165	99
Questions on medicines and medical supplies	62	79	49
Number of MPs who raised questions	47	43	38
% of MPs who contributed to issues of medicines and medical supplies	37.9	26.1	38.4

## Rationale of the Study

A lot of effort and investment has gone into restructuring the pharmaceutical procurement and distribution system in Tanzania. In spite of this, the availability and accessibility of essential medicines and medical supplies is still a major problem, with stock-outs being a common occurrence (URT, 2007a).

A literature review reveals that there are a number of published reports on medicines' availability surveys in Tanzania, conducted over the years (URT2007, URT 2008a and URT 2008b). Medicines availability surveys, by nature, act as a monitoring tool for the functioning of the pharmaceutical procurement and distribution system, and hence need to be done periodically and systematically. In general, most of the previous surveys highlight the poor availability of essential medicines and medical supplies in public health facilities, and some try to highlight some of the causes. This report adds to this body of continuous periodic surveys trying to monitor the improvement in availability of essential medicines and medical supplies. The report highlights problems in the procurement, ordering and distribution of essential medicines by looking at the availability of the essential medical supply "absorbent gauze" which service providers and users complained of being lacking in many public facilities. It is important to note that absorbent gauze is used here as an entry point for discussing the problems facing the public pharmaceutical procurement and distribution system in Tanzania. At the same time, the shortage or stock-out of gauze is a serious problem that has immediate consequences for the patients who need it. Sikika will use the findings of this report and other future researches to advocate for improvements in the medicines procurement and distribution system.

## CHAPTER TWO: Study Design

### Objectives

The main objectives of the survey were to find out: (1) the extent of the problem; (2) how long the availability problem had persisted prior to survey; (3) actions being taken by service providers to mitigate the problem; (4) potential complications/challenges that the facilities and patients faced as a result of the problem; and (5), what other essential medicines and medical supplies were currently out of stock or in low supply.

Other general objectives, which were not directly addressed by the DMOs and health facilities, but by other stakeholders (the MSD, the MoHSW, and independent pharmaceutical wholesalers) were to find out: (1) where or why there was a problem regarding the procurement of gauze; (2) what had been done so far to solve the problem; and (3), the availability status of absorbent gauze in the Kenyan and Ugandan central medical stores. The Kenyan and Ugandan cases were meant to serve as regional performance comparison stores in as far as procurement of gauze is concerned.

### Methodology

The study mainly focused on two target groups: (i) District Medical Officers, and (ii) health facility in-charges (responsible for ordering medicines and medical supplies for their districts) and health facilities, respectively. The survey was done through telephone interviews. The survey tools consisted of two slightly different questionnaires for two groups.<sup>5</sup> The questionnaires comprised mainly open ended questions, which were later coded for analysis. For each target group, the questionnaire addressed issues of medicines supply management around ordering, stock availability, distribution, projected average demand, sources of alternative funds, and how availability issues impact health service delivery. One DMO, one medical officer and one nurse in-charge were interviewed face-to-face. These provided valuable information on the situation faced by their patients and facilities.

A phone call to the Pharmaceuticals Services Unit (PSU) of the MoHSW was made to inquire about whether they were aware of the problem. This was done using a short, structured questionnaire. Telephone interviews were also conducted with representatives of central medical stores in Kenya and Uganda.

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<sup>5</sup> DMO questionnaire had an additional question to gauge their workload, i.e. the number of facilities from which they collected orders and distributed to. The findings were not discussed in the report but the table showing this is annexed as number 6.

The study assessed the availability and supply of absorbent gauze for 71 Districts/ DMOs (from 19 regions) and 30 health facilities (from 19 districts across mainland Tanzania) of which one was a district hospital, 10 health centres, and 19 dispensaries.

Purposive and snowball sampling techniques were applied. The selection was done based on the availability of mobile telephone numbers of potential respondents from a previous research project (Human Resources for Health Tracking Study, yet to be published) conducted by Sikika at district and facility levels. Respondents were also asked to give additional phone numbers, which expanded the list of possible respondents. The sampling, though not randomly done, covered more than half of the districts in Tanzania. The DMOs interviewed represent about 54% of all districts in Tanzania (71 out of 132<sup>6</sup>).

Data collection was done from the 10th to the 20th of May 2011 by two research assistants trained in interview skills, especially on how to ask the questions. This aspect was of added value to the study as it helped to maintain uniformity and thus reduce any biases that could occur due to individual styles or interpretations of the questions. The telephone interviews were conducted using the two question lists. Three questionnaires were sent by e-mail as requested by respondents. Two in-depth interviews were also conducted: one with a DMO and one with a medical doctor. A total of 108 telephone calls were made, of which 101 responded (including two out of the three emails sent). Seven people declined taking part in the interview due fear of having to disclose information over the phone, and not having time to participate. Their non participation does not in any significant way affect the results of this study as their characteristics were similar to those that participated. Tanzania has no specific law regarding the right to access information. However, certain elements of this right appear in Article 18 (d) of the Constitution: *“Every citizen has a right to be informed of various events in the country and in the world at large which are of importance to the lives and activities of the people and also issues of importance to society”* (URT 2005, Article 18(d)). This point was conveyed to the respondents who had reservations about information disclosure.

The data was entered and analyzed using the Statistical Software for Social Sciences (SPSS), where all calculations were automatically done and are presented in the report in the form of tables or graphs.

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6 The official PMO-RALG website indicates that there are 114 districts. However, these have since been increased.

## Limitations

The findings of the study are limited to the questionnaires and interviews used to collect the information. Our target sample is not completely randomly selected, as we were restricted to our initial contact list and additional contacts given by respondents. The way the contact list was developed could have created a geographical bias, as most respondents provided contact information for nearby colleagues. Despite this, and as mentioned earlier, it is worth noting that the respondents interviewed represent 56% of districts, where about 57% of all public facilities in Tanzania are found.

The study only provides a picture of the cross sectional status of the availability of absorbent gauze during the interview period and the preceding months when there was a stock-out or shortage, in the respective areas of the respondents.

## CHAPTER THREE: Study Findings

### Availability of Absorbent Gauze

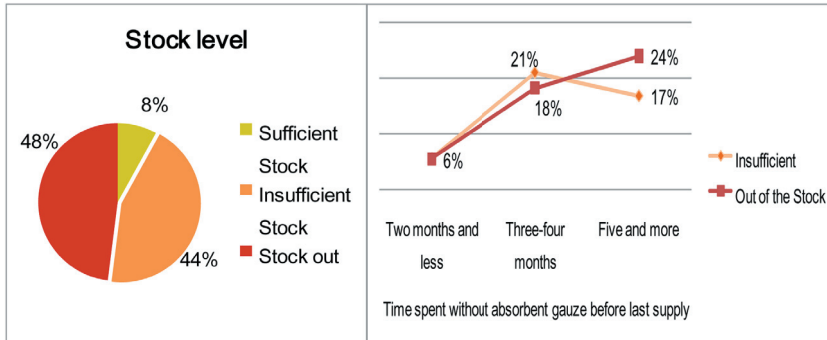
#### District Level

It was found that 48% of DMOs did not have gauze in stock. Although a slight majority had gauze in stock, most of them did not have sufficient stocks (31 out of 37 DMOs). Stock levels were defined as insufficient when the respondent knew or felt that the number of gauze rolls they had in stock at the time did not match their projected demand, up to the next ordering date. Overall, 92% of all the DMOs had gauze availability problems (i.e., they either did not have gauze in stock at all, or had insufficient levels of stock).

Availability problems existed for a period between three to six months before this survey was done. 42% of DMOs reported that they did not have gauze for three to six months, and a few for longer than six months. Similarly, the ones who reported having insufficient quantities of gauze had been suffering for about the same period, with 38% reporting being short of stock for a period of three to five months. The length of time the DMOs and facilities have to wait in the case of stock-outs is also affected by the order cycle. As mentioned in the introduction, most public health facilities place orders on a quarterly basis via their DMOs, so automatically any item missed on a current order has to wait until the next order or be bought outside the usual procedure (from private wholesalers). The quarterly ordering cycle restriction is mainly adapted to decrease workload and distribution costs placed on the system. This does not affect district, regional and referral hospitals, which are free to place orders with the MSD at any time. For specific percentages of the reported length of time the DMOs were out of stock or had insufficient levels of stock. (See Figure 1 below)



**Figure 1: Availability of absorbent gauze at district level**



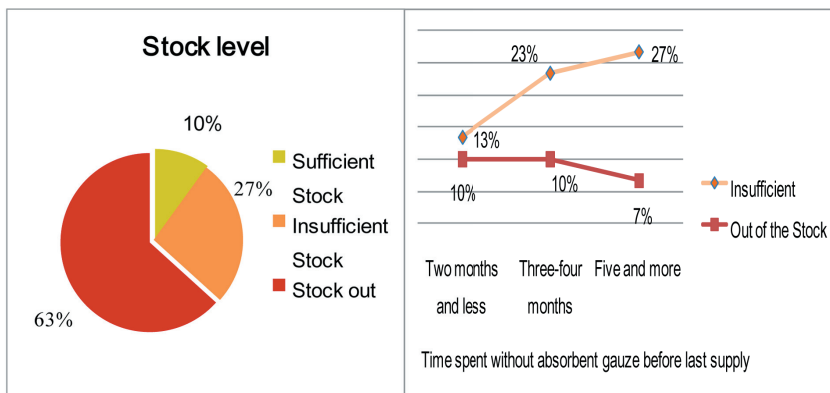
**Health Facility Level**

The majority of the facilities did not have gauze in stock (63%), and of those who had gauze, only 10% had sufficient quantities to last them until their next order.

Put in another way, the results tell us that 90% of the respondents at the facility level had availability problems, that is, they either had no gauze at all or had insufficient stock levels. About 36% of the facilities had no stock at all, and 17% had insufficient stock levels for at least three or more months prior to the survey. These results correspond to what was reported by the DMOs, confirming the presence of the problem.

Figure 2 below shows the specific percentages of the length of time the facilities were out of stock or had insufficient levels of stock.

**Figure 2: Availability of absorbent gauze at health facility level**



## The Ordering Process

### Order vs Delivery

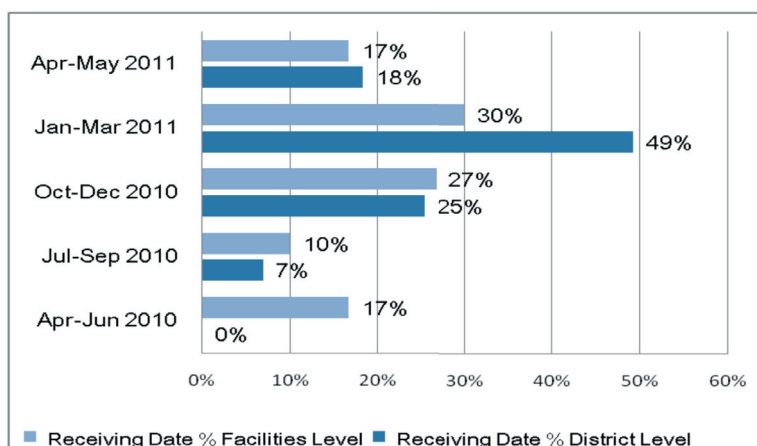
#### District level

Most, if not all, respondents interviewed usually placed their orders on a quarterly basis. When we inquired about the last dates they had ordered and received absorbent gauze, we found that 49% of the DMOs received their last supply between January–March 2011, 18% between April–May 2011, and about 32% received their supplies in mid to late 2010.

#### Health Facility Level

Here the findings show that 30% received the last delivery of gauze between January and March 2011; 27% between October and December 2010; and a significant percentage of facilities had not received any gauze supplies for the previous four quarters - 17% received their last supply between April and June 2010.

**Figure 3: Respondents who received a supply of gauze in the previous four quarters**



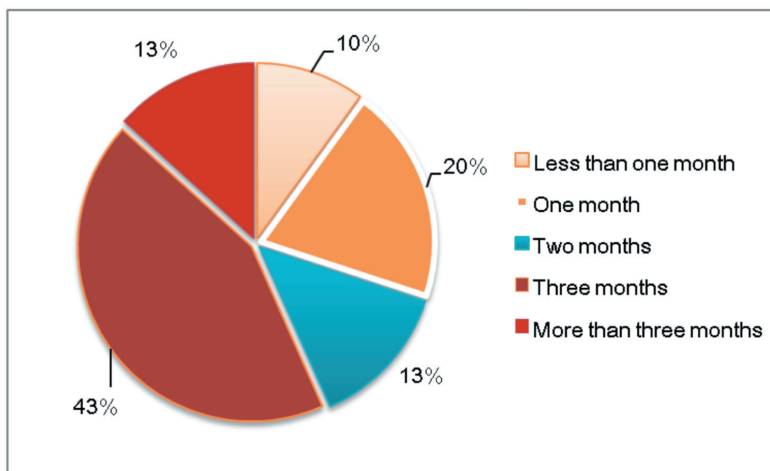
## Order Waiting Times

#### Health Facility Level

When health facilities were asked how long they had to wait from the time they placed an order to the time they received the supplies, about 70% said that they had to wait for two or more months, and only 10% had their orders delivered in less than a month (See Figure 4 below). DMOs receive supplies from the MSD and are responsible for distributing them to the health facilities, so there would be a time difference (delay) between the order reaching the DMO and reaching the facility. This weakness is being addressed, as evidenced by a pilot study conducted by the MSD in Tanga Region. In Tanga medicines

were delivered directly to health centres, reducing the time facilities had to wait for their orders. The study does not indicate, however, how much time was reduced. The plan is to scale up the operation to the rest of the country this year, depending on the availability of funds (MSD, 2011). The study also uncovered non-operational health facilities, which were allegedly ordering medicines, highlighting an important problem in the system: leakage. Although it is beyond the scope of this study, a recommendation for further studies is to try to quantify the level of leakage and investigate the causes of leakage.

**Figure 4: Order waiting times at 30 health facilities**



### Projections vs Actual Orders

DMOs and facilities do their ordering on a quarterly basis; hence, they have to forecast demand for three months using a formula provided by the MSD and order accordingly. In this section we look at this projected quarterly demand and compare it to what was actually ordered by DMOs and health facilities respectively. This comparison will help to gauge whether DMOs and facilities order according to their needs. A difference in the two values could give us an idea of whether this contributes to the availability problem at both levels.

### Comparison at District Level

The survey found that DMOs' orders to the MSD were generally lower than their quarterly demand/usage. On average a district needed 148.3 rolls (Std. Dev of 79.7) but the average district order was 108.4 rolls (Std. Dev of 63). There is a wide variation between districts as seen by the calculated standard deviations, and this is just a reflection of the different needs of each district. The table showing the distribution for each district is provided in Annex 7. The main cause of this disparity seems to be the need to balance the limited

funds available in the MSD account against the need for the various essential medicines and medical supplies. All facilities are allocated a fixed amount of funds against which they can charge medicines and medical supplies.

### Health Facility Level

At the facility level, a similar situation was found: a mismatch between demand and ordered quantities. On average a health facility needed 11.8 rolls per quarter (with Std. Dev of 15.2) but on average they ordered 8.03 rolls (with Std. Dev of 12.9). The table showing facility distribution of gauze is provided in Annex 8.

The fact that there is a mismatch between actual demand and what is ordered could be a contributing factor in the current availability status of the item. However, the significance of this would also depend on whether or not what is ordered is what is received. If DMOs and facilities received 100% of what they ordered, and they were still having availability problems, then we could say that the disparity between actual demand and what is ordered is a major factor.

### Demand and Supply

Here we analyze the difference between what is actually needed per quarter and what was actually received, in order to demonstrate the demand gap.

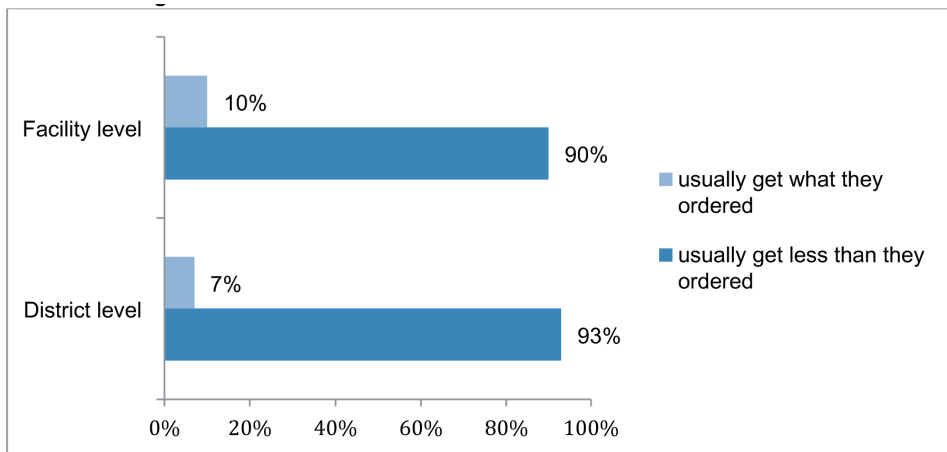
From Table 2 below it can be seen that there is a big gap between projected quarterly demands and the actual quantities of gauze received most recently, at both levels. The gap certainly contributes and in part explains some of the causes of shortages/stock-outs.

**Table 2: Descriptive statistics of projected quarterly demands compared to last ordered quantities and actual gauze rolls received**

	District level		Facility level	
	Mean	Std. Deviation	Mean	Std. Deviation
Quantity (rolls) of gauze last ordered	108.4	63.0	8.03	12.9
Average quarterly demand of gauze	148.3	79.7	11.8	15.2
Quantity (rolls) of gauze received most recently	40.1	25.7	4.7	3.8
Difference between demand and quantity received	108.2	78.1	7.1	14.2

Findings show that 93% of the DMOs and 90% of health facilities habitually receive less gauze than they order. This could indeed be another factor that contributes to the perpetual shortages or stock-outs.

**Figure 5: Responses to whether the amount ordered is the amount received: comparison between received and ordered amounts of absorbent gauze**

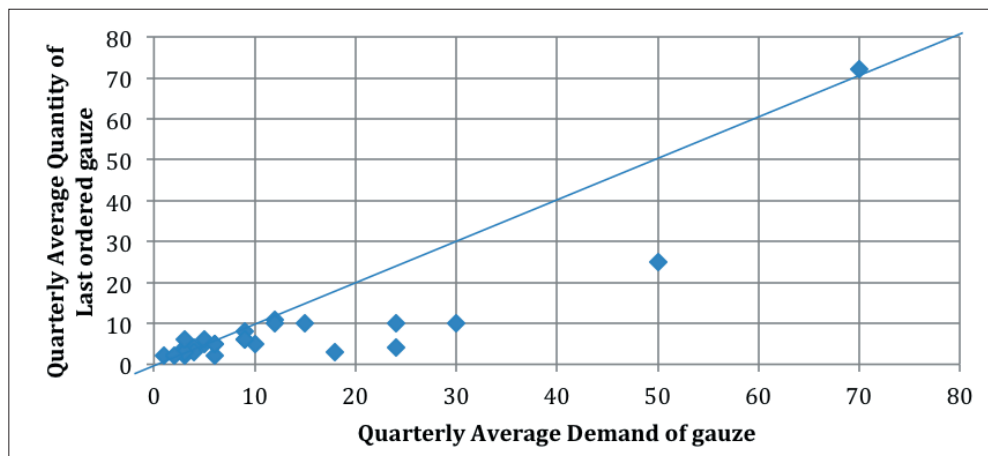


The scatter plots below give further information on the relationship between the distribution of gauze demand at district and facility levels against the ordered amounts. In a rational ordering system all orders would fall on the unity line.

### District Level

The DMOs’ correlation between the projected demand per quarter and the last order is a weak positive ( $r = 0.27$ ). DMOs have the authority to amend the orders coming from health facilities, in line with what they deem to be the correct amount required. The results show that there is a mismatch between what DMOs send to MSD as the final order, and what is actually needed. Figure 6 reveals that most of the values are positioned below the unity line (63%), which means that the actual demand is usually higher than the ordered amounts. However, the number of values above the unity line is also significant (37%), since it implies ordering above what is required. This gives a complex picture of the ordering habits that may distort and complicate the task of demand forecasting by the Central Medical Store, and hence a vicious cycle of stock-outs or low availability of essential items.

**Figure 6: Scatter plot showing last quarterly order versus projected quarterly demand at district level**

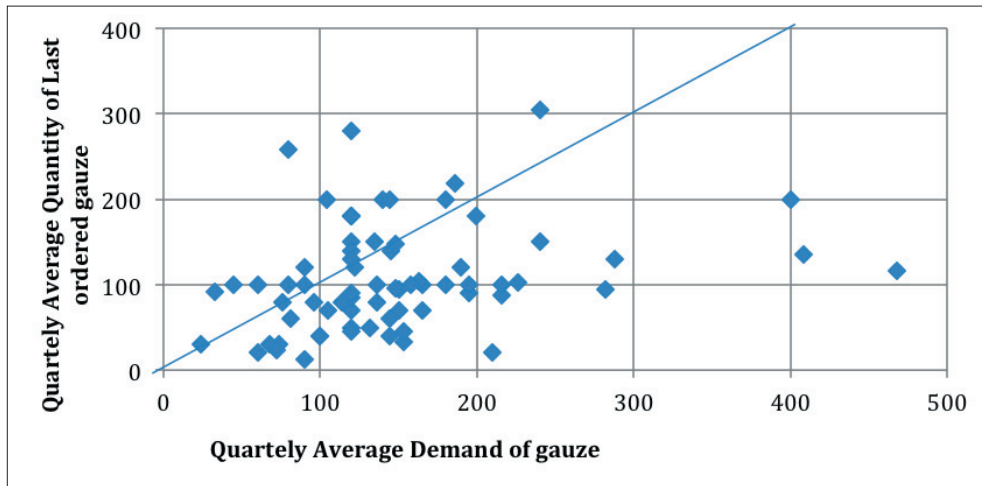


### Health Facility Level

At the facility level, the correlation between the projected demand of gauze rolls and the ordered quantities is strong ( $r=0.88$ ). This implies that facilities’ orders are comparatively more aligned to their demands, compared to the DMOs’ orders. Nevertheless, most values are below the unity line, which means that in these cases the average demand is higher than what was ordered.

The difference in correlations between the districts and facilities could be explained by the fact that facilities, even though they order less than they need, they order more closely to what they need. On the other hand, DMOs (in some cases represented by district pharmacists) amend these orders upon receiving them, based on their best judgment of the facilities’ intentions, which may not be aligned to the actual needs of the facilities. DMOs mostly amend the orders based on the formula placed on the ordering form; however, they sometimes make independent judgments based on experience drawn from various health facilities in the district. The task facing DMOs is complicated by the fact that in some facilities there are no suitably trained or qualified personnel to write a medicines order, which leads to increased errors. At times the DMOs cannot make out the orderer’s intentions. A recent visit made by Sikika to Mpwapwa District revealed critical shortages of health workers in some facilities. There was a case where a health centre (Rudi Health Centre) with a workload of 50 to 70 patients per day had only one staff member (a nurse), who was expected to carry out all functions, from dressing wounds to ordering medicines. These ordering errors at facility level result in poor demand data, which forms the basis of the annual quantification process for the purposes of procurement by the MSD.

**Figure 7: Scatter plot showing last quarterly order versus projected quarterly demand at health facility level**



### Steps Taken by DMOs and Health Facilities

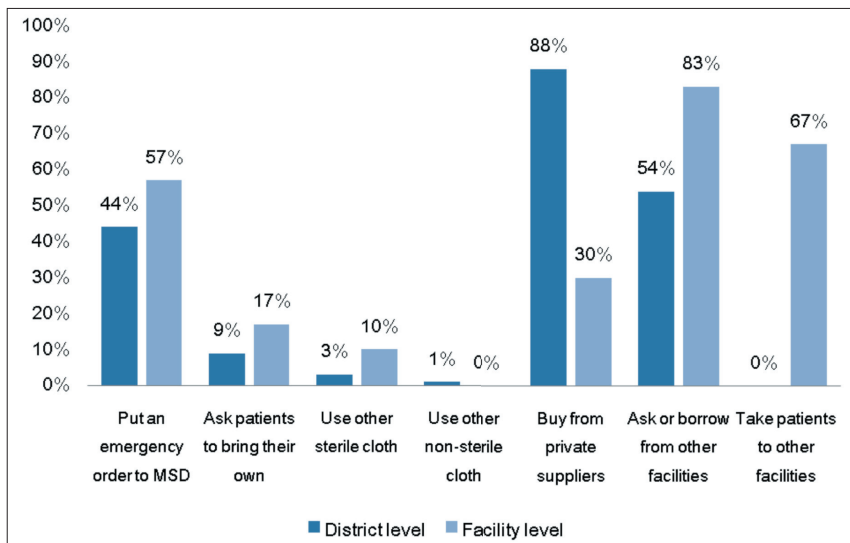
On answering<sup>7</sup> the question on exploring the steps taken to deal with a shortage or stock-out, most DMOs (87%) said that they bought stocks directly from private suppliers, 54% borrowed from other facilities, and 44% put “emergency orders to MSD.”<sup>8</sup> Only district, regional and referral hospitals are able to order directly from the MSD as and when they need to.

At the health facility level, the most common ways to reduce the problem are to borrow from other facilities (83%), and closely related to that, to send patients to other facilities (67%). 57% put “emergency orders to MSDs” via DMOs, whereas 30% bought from private suppliers.

<sup>7</sup> Respondents could provide more than one answer.

<sup>8</sup> Health centres and dispensaries cannot place emergency orders directly to MSD, but district, regional and referral hospitals can order directly. This means that facilities ask for urgent orders via DMOs, who may use district hospitals to get the items.

**Figure 8: Steps taken to deal with a shortage or stock-out at DMOs and health facilities**



### The Importance of Alternative Funding

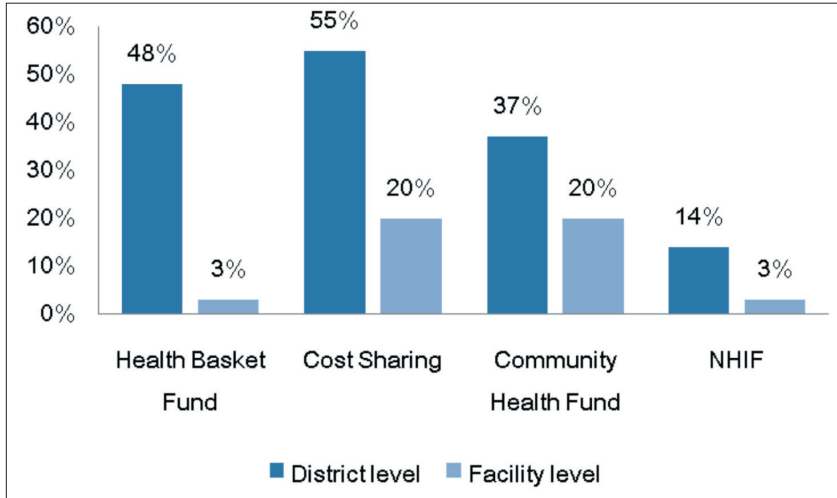
The money allocated by the central government to each facility and held in the MSD account cannot be withdrawn to purchase medicines from private pharmaceutical suppliers in the event that the MSD is out stock . The availability of alternative funds that are controlled by a facility can play a significant role in mitigating any shortages occurring at the MSD.

Those DMOs who said that they bought from private suppliers were asked where they got the funds to do this. Figure11 shows the sources of these funds. The funds most commonly used by the DMOs are from cost sharing methods (55%) and the Health Basket Fund (48%).

At the facility level, 20% of respondents reported that they mostly used cost sharing and another 20% the Community Health Fund. These funds can play a significant role in cushioning the effect of stock-outs as a result of MSD inefficiencies. However, there are problems in the collection of and access to these funds.



**Figure 9: Sources of funds used to purchase medicines and medical supplies from private suppliers**

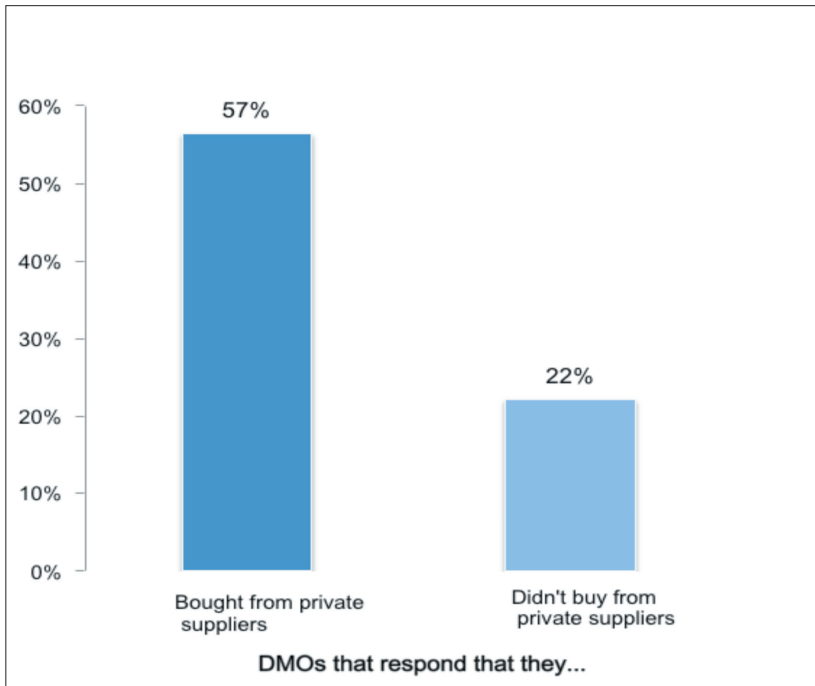


The ability to buy from other suppliers depends on the availability of alternative funds. That is, those facilities that have a good user fee collection system and active health facility committees that can request funds from the district accounts are better placed to mitigate any shortfalls in the usual ordering system. In order to determine whether the ability to purchase had an effect on the availability of absorbent gauze, we compared those DMOs and facilities that said they purchased from private suppliers with those who did not.

### District Level

Most DMOs (62 out of 71, or 87%) reported that they often purchased from private suppliers. When we looked at the availability of absorbent gauze by whether or not a DMO bought from private suppliers, we found that 57% of those who made private purchases had gauze in stock, compared to 22% of those who did not buy from private suppliers. This implies that the availability of alternative funds plays a significant role in mitigating stock-outs at the district level.

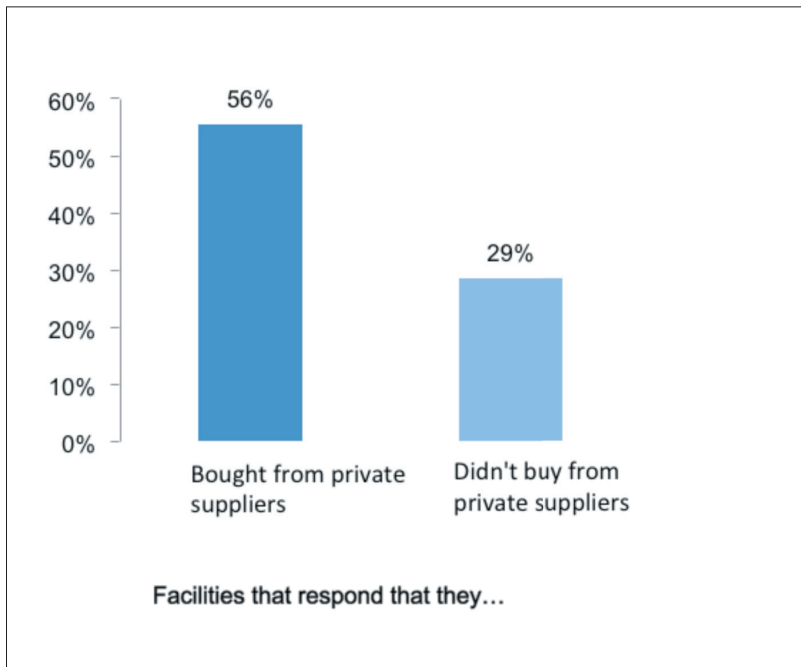
**Figure 10: Comparative gauze stock status of DMOs who reported buying and those who did not report buying from private suppliers**



**Health Facility Level**

Like the DMOs, most of the facilities that reported using private suppliers had absorbent gauze in stock (56%) compared to 29% who did not buy from private suppliers.

**Figure 11: Comparative stock status of facilities who reported buying and who reported not buying from private suppliers**



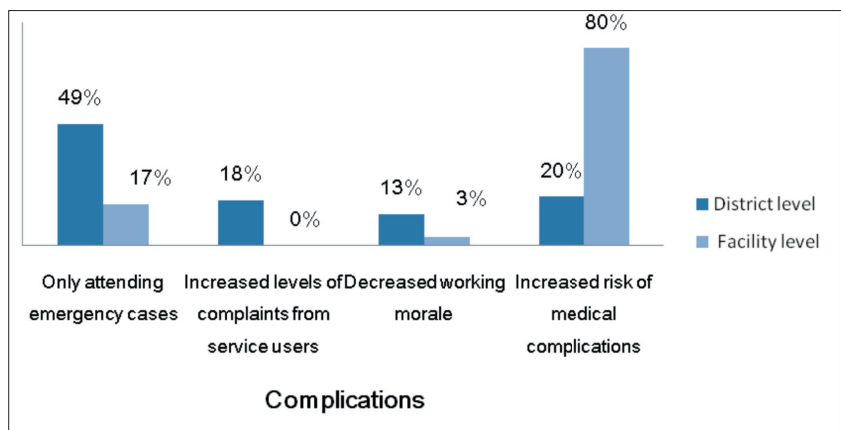
### Consequences of Gauze Shortages

Due to its functions and importance, as discussed in the introduction of this report, absorbent gauze availability problems are likely to impact service delivery at facilities. The survey asked DMOs and health facility in-charges to list these complications or impacts on service delivery. Around 49% of DMOs said that they had reduced or stopped elective surgeries and were only attending to emergency cases; and 20% said that there was a possibility of increased levels of medical complications such as cross infections.

At the facility level, 80% thought that the likelihood of cross infections would increase, and 17% cancelled or reduced the number of elective surgeries.

Figure 12 below gives a list of complications/impacts as reported by DMOs and health facilities.

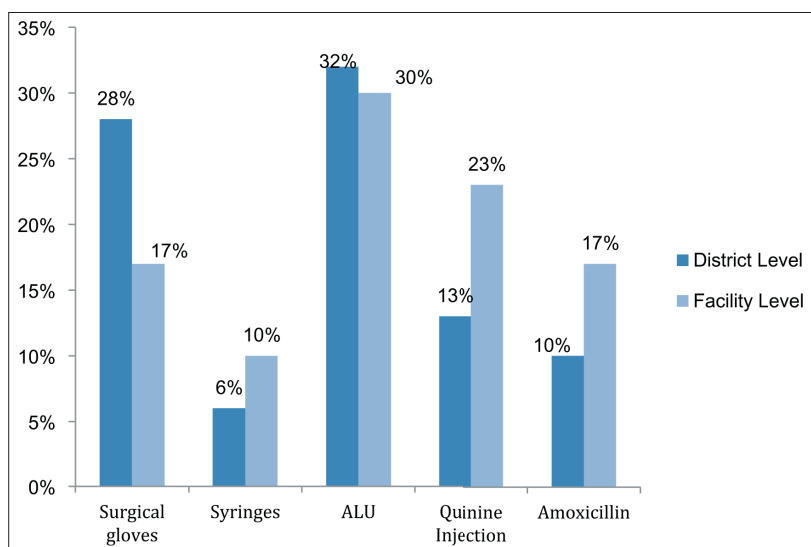
**Figure 12: % Respondents answering questions on the kind of complications/impacts due to the shortage of gauze**



### Other Essential Medicines and Medical Supplies

Apart from absorbent gauze, the survey also aimed to find out what other essential medicines and medical supplies were either out of stock or in short supply. Figure 13 below is a summary of some of the items that were reported to be out of stock.

**Figure 13: Other essential medicines currently out of stock**



## District Level

About half of the DMOs who reported that they had all essential medicines in stock also reported that the stock levels were not sufficient. About 32% of DMOs reported being out of at least one type of ALU (they are usually three types), and 28% reported stock-outs of surgical gloves. Surgical gloves were reported to be in short supply in 58% of the cases at the DMO level. The majority (68.85%) of the DMOs had sufficient stocks of ALU.

## Health Facility Level

At the facility level there was a general shortage of syringes (50% of all health facilities), Amoxilin (50% of the health facilities), and 30% of HFs reported being out of at least one type of ALU. Also, other medicines and medical supplies (surgical gloves and quinine injections) were in short supply. As with the case of absorbent gauze, these shortages have an impact on the ability of health facilities to deliver the standard of care expected by citizens.

## Interviews

The survey assistants also recorded other information outside the scope of the two main questionnaires used.

## District Medical Officer

As already seen, DMOs are key players in the ordering and distribution of medicines and medical supplies from MSD to health facilities. Their main role is revising the orders emanating from health facilities before sending them to MSD, and receiving goods from MSD and redistributing to the health facilities. The DMO painted a very bleak picture in as far as availability of gauze was concerned in the district. He gave vivid examples of how health workers were making difficult choices in terms of who to treat and not to treat. They were sometimes forced to spend their own money to fund some of their patients' requirements. Facilities often received their orders late and sometimes missing a number of items which they have been invoiced.

The DMO also complained about the limited and unequal allocation of the medicines budget, giving an example of a health centre in his district where he had to subsidize the budget on a quarterly basis to the tune of about Tsh. 6,000,000/=. This amount is about three times the amount allocated by the central government to the facility for medicines and medical supplies per quarter.

Another issue discussed was the workload facing DMOs. He said that the workload was in most cases huge, but varying from district to district. The huge workload is in part a result of having few or lack of suitably trained personnel within the DMOs office and also at the health facility level. Health facilities without suitably trained personnel would often take too long to have errors in their orders corrected. Interviews with the clinical officer and the nurse validated what the DMO had reported, cases of orders arriving late, goods missing, shortage of qualified personnel and others.

### Uganda and Kenya

An official at the medical store in Kenya reported that they had absorbent gauze in stock and that they did not have any supply problems related to the item. However, the procurement director later clarified that there had been a shortage about four months previously, but they had managed to purchase the item from a local supplier. The cause of the shortage was mainly due to a global shortage of cotton, material used to make gauze, and the resulting high prices. The Uganda Central Medical Store requested written questions to be sent to them. The research team complied, but up to the time of writing this report, no response had been received from Uganda.

### Private Pharmaceutical Wholesalers

Two Tanzanian wholesalers, Salama Pharmaceuticals Ltd and Astra Pharmaceuticals Ltd, were interviewed regarding the availability of gauze. Salama Pharmaceuticals Ltd was not aware of the shortage, as they had the item in stock. However, when probed further it was discovered that absorbent gauze comes in different sizes, and that the size they had in stock was not the one specified in the MSD catalogue. Nevertheless, the item was suitable for use by health facilities.

Astra Pharmaceuticals Ltd, on the other hand, were aware that there was a shortage, and pointed the global cotton crisis as the cause of gauze shortage.

### Pharmaceutical Services Unit (PSU)

The Ministry of Health is ultimately responsible for the availability of pharmaceuticals in all government health facilities. Through the Pharmaceuticals Services Unit, the ministry is charged with ensuring that the MSD performs its functions as described in the MSD Act 1993. The PSU is also responsible for the quantification of all pharmaceuticals and related medical supplies, an exercise done on an annual basis in conjunction with the MSD. An official at the PSU claimed being unaware of the shortage of gauze and declined answering any further questions without official authorization from the Permanent Secretary. He only directed Sikika to seek explanations from the MSD.

## MSD

Sikika sought to interview the directorates of procurement and customer services at the MSD, but unfortunately they were both unavailable. A letter requesting information on the shortage of absorbent gauze was written to the director general, but there has been no response to date.

Sikika, however, managed to interview a senior MSD personnel unofficially and learnt that the main reason that gauze was in short supply or out of stock was the global scarcity of the cotton, which had pushed the prices up. Quantification of needs is usually done annually, whereby tenders are then advertised and suppliers are required to supply the goods for the whole year, albeit in one to three deliveries. So it is also likely that the amount of gauze ordered for the year was not sufficient to cater for the needs, implying a quantification error or purposely procuring less than needs due to budget constraints. MSD internal procedures, which are dictated by the Public Procurement Act 2004, do not allow for emergency purchases if an item is running low or is out of stock, unless a user (health facility) makes a request.<sup>9</sup> This means that only when an item runs out and an order is made can something be done. Furthermore, MSD prices are advertised in a catalogue and are usually fixed for a financial year. The implication of this is that any items procured at a higher price than the catalogue price have to be sold at a loss. This creates a disincentive to solve the problem where a shortage results in higher market prices of the commodity. The official also said that some of the staff responsible for managing the procurement system were incompetent and that there was a general lack of accountability.

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<sup>9</sup> The law is designed to prevent the agents (MSD and other procuring bodies) from generating orders even where there are no needs. This can potentially occur where there are close unlawful relations between suppliers and officers of procuring bodies.

## CHAPTER FOUR: Discussion and Conclusions

The availability and accessibility of medicines and medical supplies are huge challenges facing most nations' health systems, but the challenge is even greater for developing nations such as Tanzania. These are faced with multiple priorities with limited financial resources. The limited resources are often plundered or mismanaged, and thus serve the interests of a few individuals. A specific and apt example here is the recent case uncovered by the CAG where 8 billion Tanzanian shillings worth of drugs were found to have expired at the MSD, while at the same time health facilities continue to have perennial shortages of essential medicines.

In short, the survey confirmed that DMOs and health facilities faced serious shortages and sometimes stock-outs of absorbent gauze, mainly due to the unavailability of the item at the central medical store. Nevertheless, there were other factors that played a role and still play one in the poor availability of medicines and medical supplies at the facilities. These are discussed in more detail in this section. Specific and general recommendations on what interventions are required to improve the availability of medicines and medical supplies are also presented.

### The Ordering Cycle

One of the factors that affect the availability of essential medicines in the districts' health centres and dispensaries is the order cycle. Facilities order once every three months, which means that if facilities miss any items in their orders, they would have to wait for three months before they can reorder those items. This restriction/cycle program is run by the MSD and is designed to reduce the workload at the MSD central and zonal stores. Shortening the order cycle would have the effect of reducing the number of out of stock days for some items, which may be out of stock at the health facility but in stock at the MSD. This may come at an increased cost to the MSD, but if executed well the costs could be offset by the benefit associated with regular/high turnover of stock (e.g., improved stock holding levels leading to fewer drugs that expire at MSD stores).

### Ordering and Delivery

Another factor contributing to the problem is the way the orders are compiled and sent to the MSD, and how the MSD acts on the orders and sends them to the DMOs and health facilities. As already discussed, health facilities compile their orders on a quarterly basis, and thus they have the challenge of forecasting demand for three months. Most facilities knowingly ordered less than their projected demands, then when their orders were sent to the DMOs, it was possible that orders were further revised, mostly downwards. So by the time the MSD got the orders they would send less than what was requested. In the end,



health facilities can never have stocks that are aligned with their demands. This particular observation raises three questions that need to be addressed: (1) *Why do facilities order less (or sometimes more) than what they need?* (2) *Why do DMOs revise the orders?* and (3), *Why does the MSD send less than what is ordered?* In a perfect/logical system, health facilities would compile their orders so that they reflect their quarterly projected demand, and then forward them to DMOs who would confirm that the calculations were sound and then send them to the MSD, who would fulfill the order as it is. DMOs are meant to act as a check for health facilities' orders, so it is in their mandate to revise the orders. For the system to work, however, this needs to be done in consultation with the health facilities. The extent to which this happens is unclear. With regard to the MSD sending less than what is ordered, the main reason could be that they ration out supplies that they think they are low on so that everyone gets some (URT, 2007a, p. 32). Another possibility could be that they revise all orders downwards, working on the assumption that all orders are inflated.

### Essential Medicines and medical supplies

The survey assistants probed some of the respondents as to why there were anomalies in the ordering process. From the answers that were recorded, we could see that the main contributory factor was the unavailability of funds. On closer analysis the issue of problems associated with funds can be divided into four groups: (i) insufficient funds, (ii) inequitable allocation, (iii) erratic and/or less than satisfactory disbursement by the MoFEA, and (iv) difficulties in accessing alternative sources of funds - where alternative sources of funds means funds other than those disbursed by the MoFEA into MSD accounts.

### Health Facility Funding

Health facilities order from the MSD based on their financial capabilities. According to one DMO, dispensaries in his district are allocated Tsh.1,170,000 each, and health centres about Tsh. 2,430,000 each per quarter, from which they have to buy all of their essential medicines and medical supplies. The facilities have to balance their needs with what they can afford, and this explains why sometimes they order less than what they need. Some ordered more than their projected quarterly demand, and the assumption here is that they had sufficient funds to afford the costs of the extra goods. This gives a mixed picture in which some facilities have excess whereas others have insufficient funds. The allocation of funds seems to be based on the type of facility only and not on the usage of the facility by the population. This may explain the difference in ordering behavior, where facilities attending to a comparatively lower number of patients may have excess funds while ones with high patient attendance have insufficient funds. Indeed this unequal allocation of resources for drugs was highlighted in the 2008 CAG Audit Report (URT 2008c, pg.20), and as usual, no corrective measures have been taken.

## Alternative Sources of Funds

DMOs and facility in-charges faced with the critical shortage of gauze have been responding to the crisis in a number of ways. In our survey the majority of DMOs said that they were buying supplies directly from private suppliers using alternative sources of funds, namely CHFs and cost-sharing funds. At the facility level, only 30% reported that they were doing the same. Facilities primarily referred patients to other facilities where they thought they had the item in stock or borrowed from such facilities. It is not clear how successful they were. The availability of funds that are under the direct control of DMOs and health facilities can play a great role in improving the availability of essential medicines and medical supplies. Health basket funds, community health funds, and national health insurance funds are innovative ways through which Tanzanian health services are financed. These funds have the potential to improve health services at the facility level. However, there are currently problems in the collection and administration of, as well as access to, these funds (URT 2007a, pp. 21-26). The situation is particularly worse at the lower health facility level, and perhaps this explains why only 30% of the health facilities said that they bought from private suppliers using these funds.

## Problems at the Central Medical Store

A drug tracking study done in 2007 (URT 2007a, pp. xii-xiii) identified three main weaknesses of the drug supply system in Tanzania: (1) essential medicines were consistently insufficient or out of stock at the MSD, encouraging a system of rationing; (2) insufficient attention was being paid to the procurement and distribution of essential medicines compared to specific vertical program supplies (vertical program refers to supplies for family planning, AIDS, immunization, malaria, TB, leprosy, nutrition and eye programs); and (3) vertical program distribution was not being invoiced at the level that covers costs, and in effect the vertical programs were being subsidized by the sale of essential medicines and medical supplies. Based on a recent interview Sikika had with an MSD official, the third weakness seems to have been addressed, and in fact the official claims that they mainly depend on income from these programs to run the MSD. The improvement is mainly due to: (1) the introduction of the ILS, where all ordering and delivery is done using the same platform (software, forms and transport trucks), and (2) improved funding arrangements for the program through which donors deposit monies on time directly into MSD accounts. The markup to cover MSD costs also seems to have been revised. There is no evidence that the other two weaknesses have been addressed, and we suspect they may be a factor in this particular case of the poor availability of gauze.

A senior MSD staff highlighted this problem during an unofficial interview. Poor procurement planning is to a large extent the result of the poor demand data received from facilities, poor inventory management at the central and the zonal medical stores, and the lack of accountability and/or lack of necessary skills of inventory managers.

It would have been interesting to know the quantity of gauze procured for 2010/2011, assuming this was done under the competitive tendering system previously used. Unfortunately, our efforts to get this information from the MSD were unsuccessful. It is worth noting that in 2007/08, the MSD advertised a tender for 180,000 gauze rolls (an average of 3 rolls per health facility per month), but in 2008/2009 it advertised for only 68,000 rolls - an average of 1.13 rolls per health facility per month. Our survey found that the average gauze demand per facility was around 11.8 per quarter (i.e., about 3 rolls per month), hence 180,000 rolls would be about right for the MSD to procure for the year.

Absorbent gauze is made from cotton, which is a commodity traded on world commodity markets. Prices fluctuate from time to time depending on demand, supply and speculative investment activities. It may be wise for the MSD to always keep a comparatively higher buffer stock of such medical supplies to insulate itself from unpredictable market forces.

## CHAPTER FIVE: Recommendations

Shortages or stock-outs of essential medicines and medical supplies are common occurrences in Tanzania. The survey has shown that apart from gauze, there were a number of other essential medicines and medical supplies that were in short supply, including gloves, syringes and quinine injections. This perennial problem needs to be addressed by the respective responsible organs – MoFEA, MoHSW (through the PSU), the MSD and the PMO-RALG. All recommendations made by previous studies on this issue need to be revisited and evaluated with regard to whether or not they have been implemented. This study makes the following recommendations, each of which is annotated with the relative duration of time required for implementation: Short Term (S/T) refers to immediate to 6 months, Medium Term (M/T) refers to 6 months to 1 year, and Long Term (L/T) refers to a period of 1 to 2 years.

- 1. Ordering cycle:** The MSD, in conjunction with the MoHSW, should review the three-month order cycle. Cutting down the time spent on order preparation and delivery will have the immediate effect of reducing the number of days a facility is out of stock of a particular item that is available at MSD stores. Sikika suggests instituting a one-month cycle. (M/T)
- 2. Ordering and order revision/fulfillment process:** There is an urgent need to revise and bolster the way orders are created, taking into consideration the qualifications and workloads of the responsible personnel. The key informant interviews revealed that the workload of DMOs often leaves them with limited time to scrutinize the orders. Not all districts have pharmacists who are suitably qualified to help with the orders; and dispensary and health centre staff are often few and poorly trained.
  - The MoHSW/ PSU should translate HSSP III goals of increasing the numbers of trained health care workers into specific objectives, e.g., the number of pharmacy staff to be trained and by when. (L/T)
  - The MoHSW/ PSU should ensure that all health facility workers are sufficiently trained for making orders using the appropriate MSD forms. (S/T)
  - MoHSW/MSD should use computers or other electronic means (mobile phone technology/SMS) in the ordering process at least at the district/DMO level, in line with the HSSP III (2009-2015) strategic objective for ICT, to “expand country-wide information network at the regional and district level.” This will serve to improve the timely and accurate processing of orders, as well as the capturing of accurate demand data. (L/T)

### 3. Access to centrally allocated and locally available funds:

- The MoFEA, in conjunction with the MoHSW /PSU, should ensure the timely and regular disbursement of funds as agreed. The MoHSW should monitor and report on the disbursements and aggressively pursue the MoFEA for compliance with the agreed schedule. (S/T)
- The MoHSW/PSU should use the essential medicines funds allocation formula, which takes into account population, disease burden and under five mortality rate for facilities, and monitor it for effectiveness. That is, the MoHSW/PSU should measure the availability of medicines before and after application of the formula, particularly where there is a resulting funding increase. (S/T)
- The PMO-LGA and the MoHSW should investigate and find solutions to the obstacles faced by health care facilities when trying to access user fees, in many cases held in district accounts, which could go a long way in helping to procure medicines from alternative suppliers when the MSD is out of stock. Districts should monitor the effectiveness of the use of these funds in improving the availability of medicines and medical supplies. (M/T)

### 4. Stock-out at central medical store:

- The MSD should regularly review contingency plans for all medicines and medical supplies vulnerable to global availability and price fluctuations. Tanzania is particularly exposed to this risk due to the fact that more than 70% of its pharmaceuticals are imported, and even the 30% produced locally depend on imported raw materials (GTZ, 2007, pg. 30). (S/T)
- The MSD should have mechanisms to order alternatives to out-of-stock items, particularly from the local market. If there are no provisions for such actions within the Procurement Act 2004, then a case should be made for inclusion of the option. In this case we found that Salama Pharmaceuticals Ltd, a local wholesaler, had available supplies of gauze that were suitable for use, the only difference with the out-of-stock item being the size and price. (M/T to L/T)

- The MSD should become more customer oriented, use regional benchmarks to establish good performance in terms of service delivery and customer satisfaction. The MSD should monitor order delivery times, accuracy, out-of-stock items, and most importantly, customer satisfaction on each order delivered. (S/T)
- Stock-outs due to poor procurement planning should be reviewed. Directors who have authority over managers/employees should hold to account incompetent or negligent staff, particularly where performance problems are attributed to an individual. The MSD management should ensure that all employees have clear contracts, showing roles and responsibilities against which their work can be evaluated and accountability enforced. (M/T)
- The PSU should actively monitor and report on the performance of the MSD. Where appropriate, particularly with regard to accountability at the director level, the PSU should report to the Minister of Health for appropriate actions to be taken. (S/T)

Improving the availability of and accessibility to essential medicines may add extra costs to the procurement and distribution system. However, poor availability also carries a high cost, which is often not quantified.

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# Annexes

## Annex 1: Questionnaire 1 for DMOs

### QUESTIONNAIRE FOR DMO

Sikika

QN \_\_\_\_\_

Tel. 022 2666355/7 Fax: 022 2668015

- A. DATE \_\_\_\_\_
- B. TIME OF CALL: START \_\_\_\_\_ FINISH \_\_\_\_\_
- C. NAME OF INTERVIEWER \_\_\_\_\_
- D. NAME OF REGION \_\_\_\_\_
- E. NAME OF DISTRICT \_\_\_\_\_
- F. NAME OF PERSON GIVING INFORMATION \_\_\_\_\_
- G. TELEPHONE NUMBER OF PERSON GIVING INFORMATION \_\_\_\_\_
- H. POSITION OF PERSON GIVING INFORMATION
1. Medical Doctor
  2. Pharmacist
  3. Pharmaceutical Technician
  4. Health Secretary
  5. Clinical Officer
- \_\_\_\_\_

Q1: Do you have surgical gauze in stock?

1. Yes
2. No

Q2: IF No to Q1. For how long have you been out of surgical gauze before last supply?

\_\_\_\_\_

Q3: If Yes to Q1. Do you have sufficient gauze?

- 3. Yes
- 4. No

Q4: If No to Q3. For how long have you not had sufficient quantities?

\_\_\_\_\_

Q5: When you order gauze, do you usually get the amount you order?

- 1. We usually get what we order
- 2. We usually get more than we order
- 3. We usually get less than we order
- 4. Other (specify) \_\_\_\_\_

Q6: When did you last order a supply of surgical gauze?

\_\_\_\_\_

Q7: What quantity of gauze was ordered last? \_\_\_\_\_

Q8: What is your average quarterly demand or usage of gauze?

\_\_\_\_\_

Q9: What quantity of gauze was received last? \_\_\_\_\_

Q10: When did you last receive a supply of surgical gauze?

\_\_\_\_\_

Q11: How many medical facilities do you distribute to?

\_\_\_\_\_

Q12a: What number of gauze did you distribute to dispensaries?

\_\_\_\_\_

Q12b: What number of gauze did you distribute to health centres?

If there is shortage/stock out what steps do you / are being taken to deal with it?		1.	Yes
		2.	No
Q13	We put in an emergency order with MSD		
Q14	We ask patients to bring their own		
Q15	We use other sterile cloth		
Q16	In some circumstances we use other non-sterile cloth		
Q17	We buy from private suppliers		
Q18a	Ask/borrow from other facilities		
Q18b	Other (specify)		

Q19: If YES to Q17. Where do the funds come from? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Q 20: Has the shortage/stock out of surgical gauze caused any complications or impacted on your service delivery? YES/NO. Please explain.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Apart from gauze, indicate whether any of the following essential medicines or medical supplies is currently out of stock.		1. Yes 2. No
Q21	Surgical gloves	
Q22	Syringes	
Q23	ALU	
Q24	Quinine injection	
Q25	Amoxicillin	
Q26	Others (Specify)	

If NO to Q 21, 22,23,24,25 and 26 respectively

Apart from gauze, indicate whether any of the following essential medicines or medical supplies is currently shortage.		1. Yes 2. No
Q27	Surgical gloves	
Q28	Syringes	
Q29	ALU	
Q30	Quinine injection	
Q31	Amoxicillin	
Q32	Others (Specify)	

Thank you for your cooperation

## Annex 2: Questionnaire 2 for Facilities

### QUESTIONNAIRE FOR HEALTH FACILITY

Sikika Tel. 022 2666355/7

Fax: 022 2668015

- I. DATE \_\_\_\_\_
- J. TIME OF CALL \_\_\_\_\_
- K. NAME OF REGION \_\_\_\_\_
- L. NAME OF DISTRICT \_\_\_\_\_
- M. NAME OF HEALTH FACILITY \_\_\_\_\_
- N. NAME OF PERSON GIVING INFORMATION \_\_\_\_\_
- O. TELEPHONE NUMBER OF PERSON GIVING INFORMATION \_\_\_\_\_
- P. POSITION OF PERSON GIVING INFORMATION
1. Medical Doctor
  2. Pharmacist
  3. Nurse / in charge
  4. Health Secretary
  5. Other (specify)
- Q. TYPE OF HEALTH FACILITY
1. Referral Hospital
  2. Regional Hospital
  3. District Hospital
  4. Health Centre
  5. Dispensary
  6. Other (specify)

Q1: Do you have surgical gauze in stock?

7. Yes
8. No

Q2: IF No to Q1. For how long have you been out of surgical gauze before last supply?

Q3: If Yes to Q1. Do you have sufficient gauze?   
 9. Yes  
 10. No

Q4: If No to Q3. For how long have you not had sufficient quantities?  
 \_\_\_\_\_

Q5: When you order gauze, do you usually get the amount you order?  
 5. We usually get what we order  
 6. We usually get more than we order   
 7. We usually get less than we order  
 8. Other (specify)\_\_\_\_\_

Q6: When did you last order a supply of surgical gauze?  
 \_\_\_\_\_

Q7: What quantity of gauze was ordered last? \_\_\_\_\_

Q8: What is your average quarterly demand or usage of gauze?  
 \_\_\_\_\_

Q9: What quantity of gauze did you receive last?  
 \_\_\_\_\_

Q10: When did you last receive a supply of surgical gauze?  
 \_\_\_\_\_

Q11: When you place an order, how long does it take to receive your supply?  
 \_\_\_\_\_

If there is shortage/stock out what steps do you take to deal with it?		3. Yes
		4. No
Q12	We put in an emergency order with MSD	
Q13	We ask patients to bring their own	
Q14	We use other sterile cloth	
Q15	In some circumstances we use other, non-sterile cloth	
Q16	We buy from private suppliers	
Q17	Take patients to other facilities	
Q18	Ask/borrow from other facilities	
Q19	Other (specify)	

Q20: If Yes to Q16 Where do the funds come from? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Q 21: Has the shortage of surgical gauze caused any complications or impacted on your service delivery? YES/ NO Please explain.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Apart from gauze, indicate whether any of the following essential medicines or medical supplies is currently out of stock.		3. Yes 4. No
Q21	Surgical gloves	
Q22	Syringes	
Q23	ALU	
Q24	Quinine injection	
Q25	Amoxicillin	
Q26	Others (Specify)	

If NO to Q to 27 respectively

Apart from gauze, indicate whether any of the following essential medicines or medical supplies is currently in short supply		3. Yes 4. No
Q27	Surgical gloves	
Q28	Syringes	
Q29	ALU	
Q30	Quinine injection	
Q31	Amoxicillin	
Q32	Others (Specify)	

Thank you for your cooperation



### Annex 3: Districts/ DMOs interviewed

Districts	Region
Arumeru	Arusha
Arusha Rural	
Karatu	
Longido	
Ngorongoro	
Bahi	Dadoma
Dodoma Urban	
Kongwa	
Mpwapwa	
Iringa Urban	Iringa
Ludewa	
Makete	
Mufindi	
Njombe	
Bukoba	Kagera
Kasulu	Kigoma
Kibondo	
Kigoma Rural	
Kilwa	Lindi
Lindi Urban	
Liwale	
Ruangwa	
Hanang	Manyara
Mbulu	
Babati Rural	
Simanjiro	
Musoma Rural	Mara
Musoma Urban	
Rorya	
Serengeti	
Tarime	
Chunya	Mbeya
Ileje	
Kyela	
Mbarali	
Mbozi	
Rungwe	

Districts	Region
Kilombero	Morogoro
Morogoro Urban	
Mvomelo	
Ulanga	
Masasi	Mtwara
Mtwara Rural	
Nanyumbu	
Buanda	Mwanza
Geita	
Magu	
Nyamagana	
Sengerema	
Ukerewe	Pwani
Kisalawe	
Mbinga	Ruvuma
Namtumbo	
Tunduru	
Bariadi	Shinyanga
Kishapu	
Maswa	
Shinyanga Rural	
Shinyanga Urban	
Ilamba	Singida
Singida Rural	
Singida Urban	
Igunga	Tabora
Sikonge	
Tabora Urban	
Urambo	
Handeni	Tanga
Kilindi	
Lushoto	
Muheza	
Pangani	

## Annex 4: Number of facilities interviewed per district and type of facility

District Name	District Hospital	Health Centre	Dispensary
Bagamoyo			Kilomo
			Mataya
Bukoba- Rural			Rubafu
Ilala		Buguruni	Tabata
Ilamba		Bomani	Kisana
			Kisilili
Iringa Urban			Migoli
Karawe			Ihembe
Kibaha		Mlandizi	
Moshi Rural		Mwika	Kiboroloni
Moshi Urban		Majengo	
		Msaranga	
Mpanda	Mpanda	Tambaza	Ikola
Mtwara Rural		Nanguruwe	
Mwanga			Mgagao
Newala		Kitandali	Makote
			Mkunya
Ngara			Kasulo
Nzega			Nata
Sikonge		Tutuo	Ipole
Sumbawanga			Majengo
Temeke			Mjimwema

### Annex 5: Other essential medicine currently in short supply

Medicine	District level				Facility level			
	YES		NO		YES		NO	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Surgical gloves	30	57.7	22	42.3	14	46.7	10	33.3
Syringes	31	45.6	37	54.4	15	50.0	12	40.0
ALU	15	31.3	33	68.8	13	43.3	8	26.7
Quinine injection	27	43.5	35	56.5	10	33.3	13	43.3
Amoxicillin	31	49.2	32	50.8	15	50.0	9	30.0

## Annex 6: Number of health facilities under DMOs

Number facilities	Frequency	Percentage
13	1	1.4
16	1	1.4
17	1	1.4
18	3	4.2
19	1	1.4
20	2	2.8
22	2	2.8
23	1	1.4
24	1	1.4
25	3	4.2
26	1	1.4
27	1	1.4
28	2	2.8
29	4	5.6
30	3	4.2
32	3	4.2
33	1	1.4
34	3	4.2
35	1	1.4
36	2	2.8
37	1	1.4

Number facilities	Frequency	Percentage
38	1	1.4
40	2	2.8
42	1	1.4
44	1	1.4
45	2	2.8
47	1	1.4
48	5	7.0
49	2	2.8
5	1	1.4
53	1	1.4
58	2	2.8
59	2	2.8
6	1	1.4
60	2	2.8
65	1	1.4
7	1	1.4
8	2	2.8
86	1	1.4
9	4	5.6
<b>TOTAL</b>		
2322	71	100.0

## Annex 7: Absorbent gauze project demand, amount ordered, and received at district level

District	Amount needed/ projected de- mand	Amount ordered	Amount received last
ARUMERU	120	280	40
ARUSHA RURAL	60	100	10
BABATI RURAL	104	200	102
BAHI	150	95	20
BARIADI	120	70	33
BUANDA	158	100	50
BUKOBA	120	85	18
CHUALYA	148	96	40
DODOMA URBAN	148	148	100
GEITA	114	80	26
HANANG	408	136	80
HANDENI	144	60	40
IGUNGA	136	100	40
ILAMBA	153	45	34
ILEJE	120	180	35
IRINGA URBAN	81	60	25
KARATU	74	30	21
KASULU	216	88	36
KIBONDO	186	218	167
KIGOMA RURAL	80	100	32
KILINDI	165	100	60

KILOMBERO	288	130	40
KILWA	120	90	20
KISALAWA	195	100	25
KISHAPU	210	20	18
KONGWA	68	30	25
KYELA	105	70	22
LINDI URBAN	120	130	34
LIWALE	120	180	36
LONGIDO	96	80	32
LUDEWA	72	24	12
LUSHOTO	100	40	40
MAGU	33	92	24
MAKETE	120	150	60
MASASI	282	94	64
MASWA	122	120	60
MBARALI	120	140	70
MBINGA	80	258	20
MBOZI	240	305	86
MBULU	144	200	50
MOROGORO MC	195	90	30
MPWAPWA	132	50	30
MTWARA RURAL	140	200	60
MUFINDI	90	100	8
MUHEZA	90	120	48
MUSOMA RURAL	24	30	30
MUSOMA URBAN	199	180	40

MVOMELO	190	120	20
NAMTUMBO	120	50	48
NANYUMBU	150	70	18
NGORONGORO	120	180	32
NJOMBE	135	150	44
NYAMAGANA	144	40	54
PANGANI	165	70	16
RORYA	145	140	34
RUANGWA	60	20	16
RUNGWE	226	102	24
SENGEREMA	90	12	28
SERENGETI	153	33	33
SHINYANGA RU- RAL	76	80	60
SHINYANGA UR- BAN	400	200	32
SIKONGE	136	80	20
SIMANJIRO	100	40	20
SINGIDA RURAL	216	100	60
SINGIDA URBAN	163	104	10
TABORA URBAN	120	45	18
TARIME	180	100	50
TUNDURU	468	116	50
UKEREWE	180	200	60
ULANGA	45	100	80
URAMBO	240	150	30

## Annex 8: Absorbent gauze project demand, amount ordered, and received at facility level.

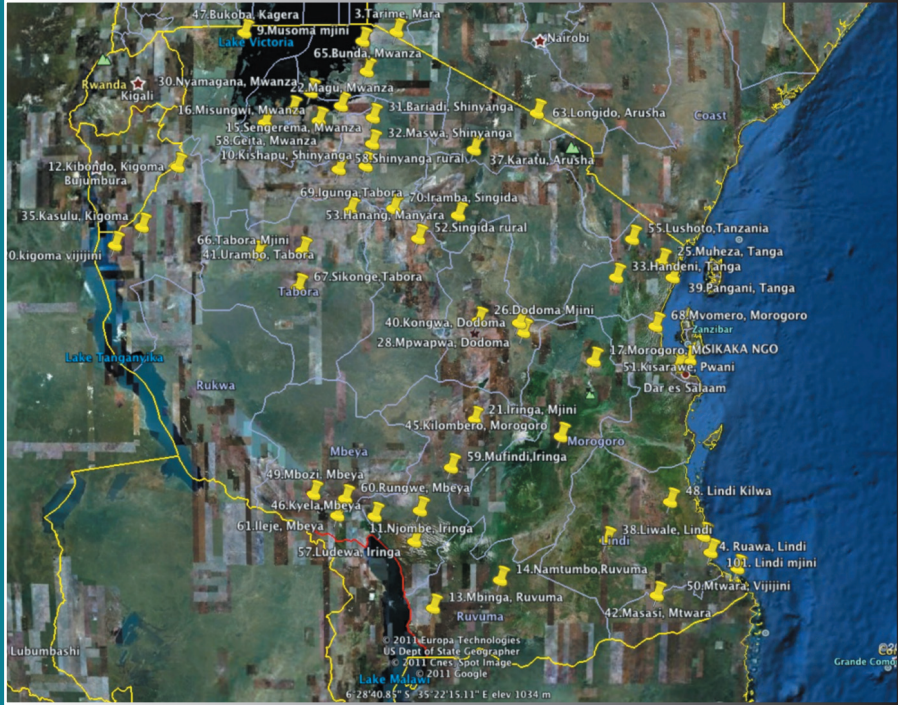
Name of Facility	Amount needed/ projected demand	Amount ordered	Amount received last
KASULO	3	4	3
NATA	3	3	2
IPOLE	1	2	1
IKOLA	9	8	8
RUBAFU	6	2	1
MAJENGO	9	6	2
TUTUO	6	5	5
TABATA	3	3	2
MGAGAO	5	5	5
KIBOROLONI	5	6	3
MAJENGO	18	3	3
MSARANGA	4	4	12
MWIKA	15	10	10
MKUNYA	3	3	1
MAKOTE	3	3	3
KITANDALI	12	11	6
NANGURUWE	10	5	1
KISILILI	3	2	4



KILOMO	9	6	12
MATAYA	4	3	3
BUZA	3	3	2
TAMBAZA	12	10	10
IHEMBE	3	6	2
MPANDA	70	72	6
BUGURUNI	30	10	3
BOMANI	24	4	2
KISANA	2	2	2
MJIMWEMA	50	25	15
MIGOLI	6	5	6
MLANDIZI	24	10	6







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