FEDERAL MINISTRY OF HEALTH
NATIONAL MEDICAL SUPPLIES FUND

NMSF SUPPLY CHAIN MODEL: STATES' MEDICAL SUPPLIES FUND

PREPARED BY GAMAL KHALAFALLA MOHAMED, NMSF, DIRECTOR GENERAL APRIL 2013

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CMS Supply Chain Model: States' Medical Supply Fund

Introduction

For the past two decades, access to essential medicines was a central concern of the governments in most developing countries, UN agencies (such as WHO and UNICEF) and interested NGOs. Underlying the efforts to improve accessibility to essential medicines is the belief that regular availability of quality medicines at local health facilities leads to increased utilization of both curative and preventive services provided in those facilities.

The economic objective of a drug supply system is to ensure supply of safe, effective, good quality drugs at the least possible cost to the people who need them. This means that criteria of cost-effectiveness must be combined with criteria of quality (Dumoulin, et al 1998). The pharmaceutical supply system is the most straight forward. However, the proposed model by the National Medical Supplies Fund(NMSF) to establish a Medical Supply Fund (MSF) at each state is not that simple. MSF supply system will run from the manufacturers to NMSF and from NMSF to the patient passes through the MSF, MSF's health facilities and finally dispensed to the users.

In the MSF model, NMSF will provide a self-financing medicine supply system, which expected to remain viable for a relatively longer period. The question to be answered in this paper is: how the MSF will achieve this position? This document suggests that a number of measures must be put in place to make MSF a success story. It also gives an answer to the question of why such measures are important for the MSF's survival.

1. CMS: Historical Background

Central Medical Stores is the national center for procurement, storage and distribution of medical supplies in Sudan.

It was established in 1935 as a department in the Sudan Medical Services, and then transferred to the current building in 1954 as a department in the Ministry of Health, under a new name, the Central Medical Supplies. In February 1991, the Central Medical Supplies became a para-statal organization under the Organization Act 1991 which allowed the new organization to exercise the maximum possible autonomy within the framework of the Government of Sudan. It was subsequently renamed the Central Medical Supplies Public Corporation (widely known as CMS). The CMS facilities are located at the Industrial Area of Khartoum South - Alhuria Street. Its buildings were refurbished in 1988. The CMS plant is accommodated in two main buildings with a total area of 45,145 m2: The total roofed area is about 14,000 m2, and the Warehouse area is about 10,750 m2, giving 29,000 m3 storage area.The range of medical supplies at CMS includes medicines, vaccines and other biologicals, medical consumables and a wide range of medical equipment. These supplies are provided to public health facilities and the private sector in addition to many other organizations. Customers are responsible for the collection and delivery of the products that they procure from CMS. However, delivery service has been recently offered to those who are interested. This service is outsourced to Sudapost, the mail of Sudan (it is a governmental company).The CMS's Administration Board is nominated by the Council of Ministers. It is responsible for developing the CMS policies and supervising its implementation, including technical, administrative and financial issues. This is done through regular meetings of the Board. The CMS Director General is responsible for all executive activities of the institution. Before CMS was given autonomy, all medicines and medical supplies that it procured and warehoused were given free of charge to public

health facilities. However, from 1992, and since becoming a semi-autonomous organization, CMS is working on a cost-recovery system, to be in line with the cost- recovery policy that is implemented by government at all health facilities in the public health sector of Sudan.

Free Medicines at Hospital Outpatient Departments: In its efforts to contain the problems of those who cannot pay for their medicines, in 1996, the government announced a project for free treatment at hospital emergency units. The emergency free medicines project was intended to increase access for those who need emergency treatment in hospital casualty departments, regardless of their ability to pay. According to this project, all patients are entitled to receive free services including medicines, during the first twenty- four hours of admission. The NMSF receives a special budget from the Ministry of Finance and National Economy (MOF) for the free distribution of emergency drugs at hospitals' emergency departments. The medicines are distributed on monthly basis after their value has been deposited in the NMSF account. The budget allocated for this was SDG 60 million (around US$20 million) in the current fiscal year, which accounted for more than 35% of CMS sales. Financially, NMSF is following the government financial and accounting legislations (1995). NMSF presents to the MOF an annual operational budget for its own operational activities and capital expenditure. The MOF, on behalf of government, has also authorized the NMSF to add a margin to the cost of medical supplies. This margin is used to cover the expenses of all external and internal operations of CMS.

RDFs: by 2002, a Revolving Drug Fund Program (RDF) had been established in 17 States by CMS and MOF, as part of a drive to get medical supplies to all parts of the Sudan. The headquarter of the RDF project is the CMS. To start the RDF projects, the NMSF provided seed stock of essential medicines, and also provided funds for training of staff at the facilities and towards the logistic function for these medicines in the states. The RDF has thus become one of the mechanisms used by NMSF to distribute its supplies. The President of

the Republic responded by attending the RDF's opening ceremony at the CMSPO in 2001. On this occasion, the President decreed that the RDF should be established in all states and directed the FOM to fund the roll-out of the project. His Excellence also directed the Ministry of Justice and the Attorney General to draft a Federal framework Act for the RDF.

Global Fund: UNDP is a key partner to the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria (GFATM) and is the UN agency assuming the role of Principal Recipient of GFATM grants in Sudan. The FMoH has undertaken efforts to achieve this, through the establishment of a separate Procurement and Supply Management (PSM) Unit which was under the General Directorate of Pharmacy (GDP). However, recently, there is ministerial decree designating the NMSF as the preferred PSM implementation partner in Sudan. In line with the recent decision by the Ministry of Health regarding the integration of PSM interventions within the CMS. In addition to the increase in access to these services, there are several activities aimed at increasing demand for HIV, TB and malaria services in Sudan.

2. The Drawbacks of the Current Deferred Payment by Cheques

Although it is not very common in public organizations, NMSF, like many drug companies, offers deferred cheques only to preferred customers. The main aim of deferred cheques is to provide a financing source to NMSF's customers, especially MSFs. The deferred payment cheque is an instrument that orders payee to make payment upon the lapsing of a certain amount of time, counted as of the date of its issuance. The issuer at the expiration date must have sufficient funds deposited in the cheque-account payable to its order or authorization to overdraw funds. The maximum admitted term that may be provided for the payment of a deferred check is 60 days. In the event a cheque is not cancelled at the payment date due to lack of funds, the NMSF authorizes the intervention of the General Directorate of Sales in order

to foreclose the guarantee according to the proceedings established under the by-Law of Financial and Account Procedures 2011. The by-law specifies that the payee to pay either in cash, by certified cheque or by taking the payee to the criminal court. The MSFs must notify the NMSF of the deferred payment cheques that in the event of lack of funds on the payment date, the only recourse available will be the foreclosure of the warrant. Disadvantages of the deferred payments by cheque include NMSF must always keep track of its bank balance to make sure that deferred cheques have been collected; sometimes NMSF must take a criminal judicial procedures against MSF that issuing a cheque without sufficient balance in their accounts; cheques can be lost and the NMSF must be careful to not let that happen; NMSF never knows what can happen at states and some MSFs might not be able to repay the loan as agreed; to be monitored, the deferred cheque terms of payment requires a stringent accounting systems and highly trained accountants.

3. MSF New Model

Essentially, the underlying concept of the model is that MSFs can buy now and pay later. In principle, this model is based on the separation of medicine supply system from cash collection system. The separation of supply and cash collection system is applied at two levels: NMSF & MSF level and MSF and its health facilities level (Figure 1). Through flexible terms of payment, the MSF receives needed quantities from its NMSF on a deferred payment basis (Figure 1). The NMSF, therefore, will participate in vertical and horizontal expansions of the MSF, as demand for cheap quality medicines continues to rise. In addition, the proposed method of payment expedites the flow of medicines by bypassing the long accounting and auditing procedures. Moreover, it enables the NMSF to ship urgent MSF orders before receiving the payment. In this new payment method, NMSF wants to know that it will be paid, and that payment will be in a timely manner in accordance with signed contracts between each state and the NMSF.

In this MSF model, NMSF uses the health facilities' pharmacy as selling points. Accordingly, all health facilities (i.e. hospitals, health centres and people's pharmacies) receive both scheduled and supplementary drug orders regardless of their ability to make a payment at the time of delivery. This model will ensure that no facility will operate without medicines, and consequently no patient is put at risk. In fact, the MSF warehouse will not even ask whether the facility has paid for previous order or not. The cash collection is a separate mechanism with no direct link with medicine deliveries. This unique arrangement will enable the MSF to achieve a high level of drug availability at all health facilities.

Figure 1: CMS Supply Chain Model: States' Medical Supply Fund (MSF)

CMS grants State's MSF separate supply and cash collection mechanisms (cash and delivery are not linked together). This arrangement:

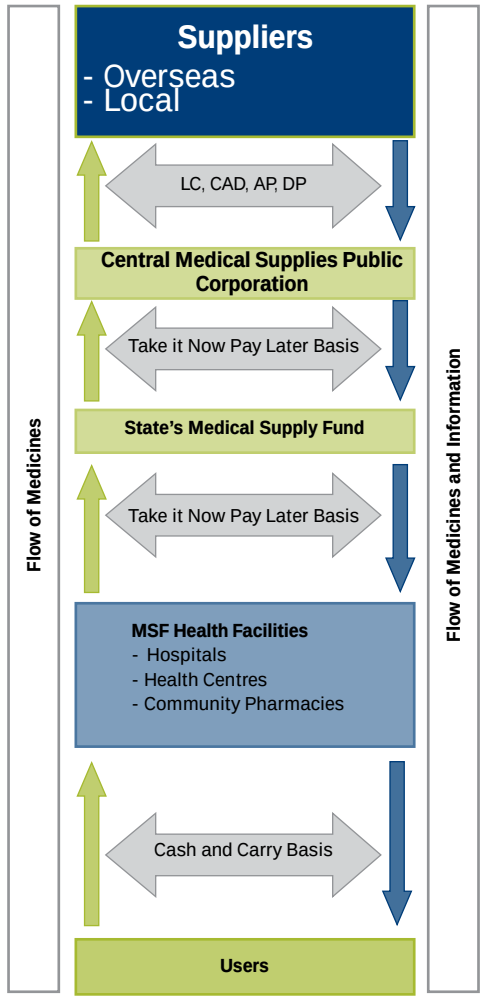
- finances the MSF expansion
- expedites flow of medicines
- enhances response to urgent orders
- improves availability
- reduces cost
- reduces expiration

State's MSF facilities receive the drugs regardless of payment (cash and delivery are not linked together). This arrangement:

- expedites flow of medicines
- enhances response to urgent orders
- prevents stock-outs
- improves availability

Medicines are dispensed on prescription issued by authorised medical staff solely against cash payment (no cash no drug). This arrangement safeguards MSF against:

- subsidies
- exemption (formal or informal)
- delays of collection
- pilferage



3.1 Objectives of this Model:

NMSF aims to support national Procurement and Supply Chain Management System in order to ensure the establishment of an agile system capable of securing consistent and uninterrupted supply of all medicines and other medical commodities including those distributed free of charge (such as health commodities provided by free medicines during the first 24-hours, Global Fund or donated by other organizations). To achieve this strategic goal, the NMSF signed a contact with 14 states that are agreed to unify their medical supplies in one establishment named Medical Supply Fund (MSF). The MSF will ensure the efficiency of the supply chain in Sudan. The primary aim of the MSF is to improve the utilization of Primary Health Care (PHC) services through establishment of a reliable and self-financing supply system of essential medicines of acceptable quality at low cost to the community (mothers and children, to those who can least afford them or those who have to travel great distances, that is, the poor and those in rural areas) with full area coverage and full cost recovery within the PHC. More specifically, the MSF was initiated, by FMOH and its medical supply agency NMSF to achieve the following objectives:

1. establishing an effective and a financially self-sustaining drug supply system at below-market prices of quality medicines. This offers an affordable cost to the states' population;
2. improving the quality of services by providing regular supply of assured quality medicines to all public health facilities;
3. enhancing better utilization of PHC services and fostering efficient use of public health facilities by reducing unnecessary burden on referral hospitals via improving supply of medicines to health centres;
4. Prescribing efficiency and compliance with treatment by, for example, reducing self-medication.

4. MSF Threatening Factors

The literature has shown that the success rate for the recovery of funds in settings where RDFs have been

implemented was about 50% (Shaw and Ainsworth 1996). The development of reliable, acceptable and self-sustainable medicines supply system through the MSF can be attributed to a number of factors. The main point is that an RDF, unless carefully designed and managed, will not work. The most common pitfall with revolving drug funds is that they soon fail to revolve (Cross, et al 1986). The authors of this study identified a number of reasons which lead to this outcome in the literature of RDFs in a variety of countries, of which Peru, Guatemala, India, Bolivia, Haiti, Senegal, Niger, Afghanistan, Mali, Indonesia and Thailand are examples. These reasons include undercapitalisation, prices set below the level of cost recovery, delays or failure to collect payment for dispensed medicines, rapid programme expansion without injection of additional capital, losses due to theft and deterioration, unanticipated international medicines price increases due to inflation or changes in parity rates, and foreign exchange restrictions (Figure 2). In addition to these RDFs' threatening factors, the new MSF model will be vulnerable to over stocks of medicine at both MSF and its HFs resulting in tied-up budget and expiration of medicines. The MSF is also vulnerable to theft and diversion of collected money for purposes other than purchasing of new medicines to replenish exhausted stocks. Finally, it may encourage political interference, such as donation and unauthorized exemptions from the payment.

5. Implementation of the MSF

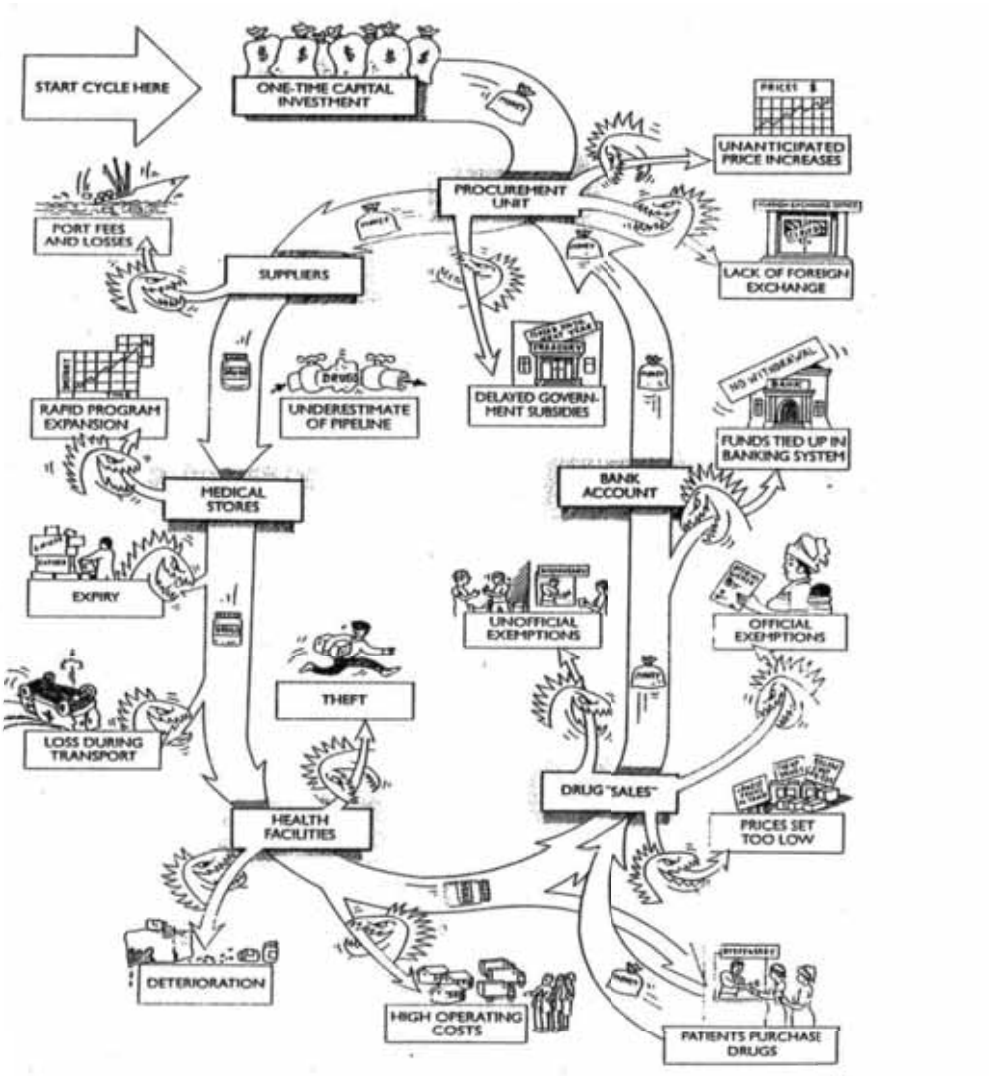
Revolving Drug Funds have been established in Peru, Guatemala, India, Bolivia, Haiti, Senegal, Niger, Afghanistan, Mali, Indonesia, Thailand and elsewhere. The establishment and/or maintenance of many of these programmes have been fraught with difficulties (Peter, et al 1986). A lesson learned from these experiences is that MSF survival depends on a regular supply of low-cost, high quality drugs to the health facilities. The regular supply of such medicines depends on reliable procurement, distribution and cash collection systems. If these systems are not well-established, the MSF will quickly stop functioning. In this section, we propose a set of measures based mainly on the lessons learned from the experience of Khartoum State in managing its RDF (Mohamed 2009, Witter, 2007).

5.1 Gradual Implementation at Central and State's Level

Despite the recognition of the great need for essential medicines, NMSF needs to pace enrolment of states in the new MSF model. This is because in reality the start-up effort to implement such a complex system as the MSF can only be done in phases. Success depends on developing and testing medicine supply procedures, selection and training of personnel, renovation or construction of facilities, financial management and supervision systems. A phased approach over a reasonable period of time will lead to a well-designed fee collection system, a management capacity building and a well-trained RDF staff. In addition, a phased approach offers advantage of firmly establishing a reliable medicine supply, effective financial management and efficient inventory and accountability systems. It will also allow time for lessons learned during each stage to be applied, so mistakes could be avoided in the next phase. At state level, NMSF needs to agree with MOH the gradual horizontal and vertical expansion of the MSF.

Figure 2: RDF Cycle of Terrors

Source: Managing Drug Supply (1997) 2nd edition



During the MSF implementation period, the NMSF does not intended to expand any further before ensuring that the capacity of the medicine supply system can provide a steady supply of essential medicines. The phased implementation of the MSF at state level must start at the health centres (HCs) level. Advantages of beginning at the HCs level are:

1. demand: communities are actively interested in ensuring a regular supply of essential medicines;
2. support for PHC expansion: increasing medicine availability at the health centres level attracts people for essential PHC services and lightens the burden on the hospitals;
3. lack of alternatives: rural and periurban population often have fewer choices in health care;
4. community involvement: the scarcity of drugs at health centres makes public reacts positively towards MSF. This is because MSF has resulted in a noticeable increase in the availability of medicines in those health centres supplied by the MSF.

5.2 Substantial Investments by NMSF

Substantial investment by NMSF will enable the MSF's goals to be secured. Therefore, NMSF must calculate initial capital investment accurately. According to its obligations set out in the agreement with the states' Ministry of Health (MOH), NMSF will provide the capital seed stock of medicines. This will set the foundation for the MSF to successfully mature, and to smoothly continue development. NMSF investment will not be only in medicines but will also include human resources training, infrastructure development, such as allocation of NMSF's warehouse in some state to the MSF and the establishment of an operational system of MSF management that would not totally rely on NMSF staff. This operational system should clearly define roles and responsibilities for MSF staff. NMSF will provide not only financial but also technical and managerial know-how during the early stages of the MSF implementation.

5.3 Commitment of Federal and State Governments

Literature shows that a firm commitment from the Federal and States' government is vital to the success of the RDF (Mohamed 2009). Therefore, the level of the political commitment from governments at both levels, which is a reflection of strong political will, is of paramount importance for the sustainability and success of the MSF. Much motivation must be given for the MSF to succeed. This could be by drawing attention to and praising its success, at the highest levels of the government. States health facilities should not be allowed to establish a parallel pharmacy to the MSF one. This monopoly will maximise the market opportunity for the MSF, resulting in increased MSF sales. In addition, the MSF revenues must be independent from being pooled in the Public Treasury. However, the state's governments must realize that the MSF would not continue for ever as an exceptional from the law of the public treasury. To legalise the MSF exceptional situation, the states' legislative assembly needs to approve a MSF Act. According to the Act, the MSF will be a juristic person that can sue and be sued. This gives the MSF legal independence from certain public sector regulations. The Act will, therefore, give the MSF project the legislative authority to conduct its business as an autonomous organisation under the direct supervision of the administrative board. The legalised autonomous status of the MSF allows it to hold funds, and regulate procedures for medicine supply management, cash collection, accountancy, supervision, audit and control, and staff development. However, precautions are needed to prevent the MSF from being completely isolated from the states' MOH management framework. Such situation will render the MSF to be more focused on profit-making than to promote PHC services (Mohamed 2009). As a result, the supply of medicines to remote and less profitable health centres will be neglected. In NMSF's view, the MSF should not be considered by its managers as a profit-making company but as an establishment for strengthening the health care system and improving the quality of health services by making quality

medicines readily available at affordable cost near to where people live. This is achievable only through the development of partnership between the MSF and other departments of the MOH in the provision of reliable, appropriate, integrated and acceptable health services, since the MSF is principally designed to make essential medicines accessible, particularly to the vulnerable groups in rural areas.

5.4 Medicine Selection

Medicine supply will be more regular in those facilities which will be enrolled in the MSF. Having a limited fund, the selection of a short list of medicines increases coverage by increasing purchased quantities of each item, and leads to maximum use of the small budget available to the MSF. The question is: should a project such as the MSF seek to provide a list of a few, selected medicines, or should it provide drugs to address all categories of ill-health? It should be decided by the MSF partners to have a limited list. The NMSF will propose a technical committee to be responsible for the selection of medicines to be included on the MSF drugs list. The starting point should be the Sudan National List of Essential Drugs. The technical committee in its medicine selection has to balance cost factors with those of efficacy, safety, ease of administration, and other local considerations. As a result, the supply of high- cost, low volume medicines should be left to the private sector, since such drugs can tie up working capital and result in losses due to low usage and expiry.

5.5 Forecasting and Quantification

Quantities delivered to each facility will be determined by the responsible person (pharmacist or assistant pharmacist in case of rural hospitals and health centres) at each health facility based on monthly consumption. The order book (stock book), printed by CMS will be collected and checked by the supervisory team leader. The stock book then is passed over to the MSF warehouse to be approved by the warehouse pharmacist. To ensure even distribution to all health facilities, the warehouse pharmacist needs to adjust the

quantities requested according to the available stocks. In determining its needs for medicines and other medical supplies, the MSF must use past consumption for calculating medicines. This is simple and will be most reliable due to expected stability of the prescribing pattern in the MSF facilities. In addition, the approach avoids mistakes resulting from transaction and unexpected changes in prescribing pattern and guarantees sufficient lead time between deliveries. Finally, it supports the MSF policy of consistently responding to demand.

5.6 Medicine Distribution

The MSF takes responsibility for ensuring medicines' deliveries to all health centres, including those in the rural areas, using temperature controlled trucks. Medicines' deliveries to health facilities will be carried out according to a strict programme that must be developed in the early stages of the project. However, hospitals can pick up their stocks using their own transport system, if any. This arrangement ensures the flexibility of deliveries to hospitals. Stock management could be done through a combination of manual (stock cards) and computer systems. Consignments to MSF could be divided into three or four instalments every year. Bulk consignments from NMSF will be shipped by land to the MSFs' warehouse in each state. To avoid stock shortages at the MSF warehouses, the NMSF should have at least a buffer stock for three months. This ordering system requires less storage space and minimises MSF capital requirements. This system has proved to be efficient, and stock surpluses and shortages are largely avoided (Mohamed 2009). At MSFs' warehouse and their health facilities, a lower limit stock of each item must be calculated. This early warning system will reduce stock shortages, even when deliveries from NMSF or SMF are delayed.

MSFs and their health facilities will receive their regular drug deliveries respectively from NMSF warehouse in Khartoum and the MSFs' warehouse in the capitals of state on a scheduled quarterly or monthly basis. This could be quarterly, in the case of far health

facilities or those with small volume consumption. The advantages of monthly delivery method also include:

1. Stocks can be replenished before they are exhausted;
2. Revision of medicine orders at the NMSF and each MSF Head Office is made by a qualified pharmacist;
3. Scheduled delivery from NMSF to the MSF and from MSF to the HF enforces routine supply and contributes to confidence in the entire NMSF and MSF systems;
4. Smaller amounts of stock and fund are required;
5. Spread of the workload over the time;
6. Supplies are replenished at scheduled intervals, saving administrative costs and transport time;
7. Few losses, because stock is delivered to the MSF which in turn delivers orders directly to the health facility.

Limitations of monthly delivery method are:

1. The responsible person must monitor its stock consumption.
2. Stock to be delivered must be ordered;
3. Deliveries of smaller quantities mean higher distribution cost.

5.7 Cash Collection

Currently, NMSF sells medicines and other medical supplies to MSFs based on differed payment by cheques. Accordingly, each MSF has a ceiling decided by the sales directorate. In the MSF new model, NMSF is going to take the risk of establishing a separate system for medical supplies and cash collection (i.e. cheques and ceiling will no longer exist). As a result, a sound cash collection system must be established at both NMSF and MSF levels. To do this, two units at both NMSF and MSF levels must be established to be responsible of medical supply and cash collection. Medical supply unit issues three copies of invoice and financial unit to be responsible for cash collection and reconciliation of cash against medicines sold to each MSF. The reconciliation should be conducted on monthly basis. The mechanism will enhance the flow of money in the NMSF account.

The MSF cash collection of medicine sales at health facilities is based on the answering the question of how much money should have been, and how much money actually was collected? A high collection rate depends on a sound drug management system. The MSF must start an inventory system. To do this, the MSF should introduce a new employment and cash collection policy. This policy obliges all MSF pharmacy staff to sign a contract with the MSF Head Office. According to the contract, the pharmacy staff with a supervision team conducts a stock inventory periodically. The cash collected by the supervision team must match with the medicines that had been sold during the specified period. Any deficit should be paid by the responsible person who signed the contract within one week. The cash collection system, in addition to accountability measures, regular supervision and vigorous use of disciplinary and legal measures will result in a high efficiency of cash collection and the entire elimination of a deficit.

5.8 Supervision of MSF And its Health Facilities

To ensure that new model is both effective and sustainable, it is essential not only to have a clear understanding of the model, but also to identify possible gaps and failures in the supply and cash collection systems. Therefore, from its inception, the MSF must include a comprehensive supervision, and monitoring and evaluation systems for medicine supply as integral components of the programme for cost recovery medicines and free ones. It should be considered by the MSF partners as one of key components of the MSF business. The supervision will focus on the actual work performed at MSF headquarters (by NMSF supervisors) as well as facility levels (by MSF supervisory teams), such as storage conditions, dispensing practices and general pharmacy environment (i.e. whether the pharmacy is organised, clean and tidy).

Flow of information from bottom-up (health facility to MSF and from MSF to NMSF) needs a feedback mechanism to be set up to assess the impact of MSF on the patients, financial performance, drug availability and key aspects of the cash collection and accounting system. It will

also evaluate the actual cash collected, real consumption data, and the number of users who benefited from the services provided by MSF. The logistic management information system under development by UNDP (principle recipient of the Global Fund) must be used starting point for the feedback mechanism. Findings and data collected by this system should inspire policy makers, MSF managers to continuously improve the service provided at health facility by maintaining steady supply of medicines and efficient cash collection system.

5.9 Miscellaneous

To ensure a continuous supply of medicines and to make sure that the initial capital is not depleted, NMSF must set stringent measures. These measures may include: a letter of guarantee from the state Ministry of Finance (MOF) equivalent to the total amount of medicines that have been delivered to the state. If it is not possible to issue such a letter, state MOF must give NMSF a blank cheque paid to NMSF. Secondly, the MSF's director must sign a contract or statement that taken him or herself accountable to NMSF, and agreed that he or she will pay the deficit resulting from his/her negligence or bad management within not more than one month from the date of detection of the deficit. This must also be applied to the person responsible for MSF pharmacy at HF level. Third, insurance premium to protect all MSF assets (fixed or current) against the medicines disappearance through pilferage or theft, human made or natural disasters, fire must be paid by NMSF for each state. Fourth, periodical physical counting of stocks must be conducted. This should be monthly at MSF warehouse and every two weeks at locality and health facility level. The incentive of staff must not be paid until the physical count of stocks is finished and deficit is paid by the responsible persons at MSF head quarter and facility levels. At HF level no cash is collected until reconciliation is made and no deficit is identified. Finally, to prevent drugs wastage and to ensure good storage conditions, all warehouses must be refurbished, well ventilated and secured against fire and theft and a cold room should

be installed. This is in addition to selection of competent staff by the NMSF and MSFs' board of administration, good management, and security measures.

6. Budgets and Resources

This proposal calls for the establishment of a Medical Supply Funds in 14 states based on cost recovery principle. The budgets needed to establish this type of projects could be divided into: Capital Fund for initially stocking the system (initial capital investment) and development costs which, include the costs of designing and planning the system, construction renovation of office and warehouse space, purchase of computers, vehicles and equipment, and the support of other health facilities. The total budget (including logistics, refurbishment and construction of warehouses, and medicines) for the project will approximately equal to US $ 32,208,711. US $ 9,771,211 is the local component and will be paid by CMS. The details and methodology for calculation will be discussed in the following sections.

6.1 Calculations of the Initial Capital for the seed stock

The RDF survival depends on a regular supply of low-cost, high quality medicines to the health facilities. If procurement and distribution are not reliable, the RDF will quickly stop functioning. To determine the initial capital investment required to meet this criterion, it is useful to think of the RDF drug supply system as a "pipeline" (MSH 2012). To assure a continuous supply of medicines at health facilities, the pipeline must be filled; once filled, consumption must be matched by purchases at the central level. The pipeline includes not only the flow of medicines from the MSF warehouse to the health facilities, but also the flow of money back to the MSF bank account to be used by MSF's procurement committee. Without the return of funds new procurement cannot be made, supply becomes erratic, and the system soon fails to revolve.

Two factors influence the amount of capital required to fill the pipeline: the diameter of the pipeline and the length of the pipeline. The diameter is determined by the volume of sales per month, which relates rate of drug consumption. The length of the pipeline represents the amount of time between the first commitment of the fund for drugs until the money collected from the sale of those drugs are again available for buying replacement stock. The length is determined by procurement practices, supplier lead times, the distribution network, stocking policies, cash flow arrangements and related factors. The investment capital required is simply the product of the diameter of the pipeline expressed in volume of sales per month and the length of the pipeline expressed in months.

The WHO (2004a, p. 45) has suggested a minimum global figure between US$ 12 and US$ 23 per capita annually as an appropriate target for public expenditure for drugs. However, we have used the current public per capita expenditure on pharmaceuticals (i.e. US$ 3.15) to calculate the budget for the initial stock. We have found that for the total number of population (18,611,830) in the targeted states, the annual turnover will be US$ 58,627,265. The NMSF will allocate 2-month stock for each state. Therefore, the total capital needed for the seed stock is approximately US$ 9,771,211.

6.2 Capitalisation Costs

Other than the capital fund for initially stocking the system (Working Capital), capitalisation or development costs include the costs of designing and planning the system, construction renovation of office and warehouse space, purchase of vehicles and equipment and the support of other health facilities. The total estimated capital for these different activities is approximately US$ 22,437,500 (Table 6.1).

6.3 Project Funding

The States Ministries of Health will work with Federal Ministry of Health to seek funds from both international, regional and local financers and/or donors to cover initial capital and other particular items.

Table 6. 1: Budget for establishment expenses other than drugs

Item	Quantity	Unit cost in US$	Total Amount
Double Cabinet, pick-up cars	45	20,000	900,000
Truck 5 tons	20	15,000	300,000
Computer and its accessories	50	3,000	150,000
Construction of New Warehouse (800 Sq.M)	11	150,000	1,650,000
Referbishment of pharmacy rooms at health facilities	5000	3,000	
Refrigerators	5000	500	2,500,000
Air Conditions	5000	300	1,500,000
Training of Staff	3125	100	312,500
Photocopier machine (heavy duty)	15	6,000	90,000
Stationaries and preparation cost	-	-	20,000
Other unseen cost	-	-	15,000
Total in US$			**22,437,500**

7. Evaluation

How will the Federal Ministry of Health evaluate the impact of this project, and the degree to which it has achieved its stated objectives? The project documentation should be designed to provide a framework for continuous internal and external evaluations, which includes evaluation of impact of the supervision methodology that should be based on a "continuous evaluation" principle: the scores for the Target Activities. Evaluation of the impact of the project on the health of population via enhancing access to medicines, especially on targeted group (i.e. child, mothers and vulnerable groups) needs to be conducted independently. The most likely format will be research. Other components of the programme can be a subject of research includes economics of the programme, service utilisation, rational use of drugs and their availability, affordability and accessibility, quality of services delivery, supervision methodology.

8. Conclusion

The MSF will demonstrate collaboration between NMSF and recipient states, and the justification for, and benefit of NMSF working within the recipient institutional structure. It can thus be stated that the MSF will support the restructuring of health services and fulfilled its objectives: a constant supply of essential medicines will reach a wide section of the population away from self-medication and questionable drugs, from flying hawkers or from high expensive brand medicine pharmacies; a more rational use of quality drugs, rising attendance rates at public health services. The new model of MSF also will lead to better utilisation of the PHC. However, careful considerations to prevent negative consequences of the MSF such as disincentives for the poor to join the programme, inappropriate exemption policies, uneconomical behaviour and political interference, decapitalisation of the programme and inefficiencies in revenue collection are needed.

In spite of the measures that have been set in this document, the MSF remains vulnerable to the medicines' disappearance through pilferage or theft, political interference, and the pressing economic environment and federal regulations of medicines importation. Innovative use of funds and application of a strict employment contract in the public sector institution may take MSFs' manager and HFs responsible persons for pharmacies accountable to NMSF and MSF respectively. Keeping within a proposed operational framework will maintain success and will guarantee future improvement in the MSF.

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