Operational Research on the Best Practices on: Procurement, Supply & Distribution Systems of Drugs in the Public & Private Sectors in Sudan

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Introduction & Background:

In the last years medicines supply system play an important role in the general policies and plans of pharmaceutical sector, and there is continuous need to increase the efficacy of the supply system because there are never enough resources to everything, so choices have to be made about best ways to save or make use of the available resources (Money – Time – Human work) in most efficient ways.

Supply system in Sudan include many organizations with different strategies and goals such as public sector organizations (CMS + Khartoum RDF), private sector (Whole sellers + Local manufacturers) and also NGOs sector, these three sectors represents the key players in Sudan drug supply flow today.

Although drug supply system in Sudan is very complicated, there are good opportunities towards great improvement in the practice and procedures that are applied in each part of the system at different levels.

The decentralization issue is grown in wide way in Sudan so the system of drug procurement - supply and distribution have to be re-arranged in past years in a way that insure the availability of needed medicines in sufficient quantity, good quality and at the needed time with lowest possible cost.

The evaluation of procurement system (Structure – Methods - Procedures & Financing) is important because it reflects the strategies that are used by different supply organizations in the country and it will determine facts about whether these strategists serve the goals and objective of those organizations. This is because their objectives are differ from one to another and each cover specific needs to itself and the market, beside that it determine and explain the types of medicines that are available and shaped the picture of Sudan medicines market in relation to needs of medicines according to bases of consumption and diseases pattern through the country.

The regulations of financing system in the country directly affect the efficacy of the procurement-distribution system relationship in both public and private sectors because access to adequate funds and budgets is difficult especially when it is in foreign currency and also the payment mechanisms affect the suppliers' performance and of course the stability and durability of regular supply.

The analysis of all procurement & supply procedures which include (selection of drugs – quantification –process – ordering – payment – receiving drugs) in time wards is important so as to determine the time consuming processes and how to decrease these efforts and money towards effective system.

There are great evidences about the cost of storage and distribution of medicines represents significant component of medicines expenditure budgets, the quantity or nature of medicines some times affect transportation cost to extent of doubling the cost of medicines it self especially if it is transported to remote areas and this becomes great load on the governments (federal & states) and also private institutions or distribution agencies in country like Sudan, because medicines need special care through transportation from area of supply to the area of consumption.

The evaluation of distribution system should consider the capability and the capacity of the current system to cover the large geographical areas of the country (reaching remote areas) and its ability to fit and comply with the federal governmental system and to what extent it consider the differences between national/regional/district levels of distribution needs.

The types of delivery system that are running in public sector have to be studied to evaluate its effectiveness. More over the delivery costs of several orders to the states (small warehousing stores) from CMS and Private sector through the year must be monitored.

The distribution costs is highly affected by the map of demand and consumption in the country and existence of highly consumption rate of drugs in some areas like Gadarif & Blue Nile states during summer and falling seasons greatly increases the costs of delivery, and when combined with cost of delivery to the lower levels (health facilities) in such areas and similar areas lead to increase the cost dramatically.

The private sector last years play important role in medicines market in Sudan, in 2004 it represent 70% of the market share (include agencies & local manufacturers) and this may be due to the convenient environment for investments in medicines in Sudan and some opinions saw that if the public sector did not develop in an efficient way the private sector will take over the market, but still the private sector help in maintaining the supply of some kinds of medicines that does not supply by other sectors in adequate quantities.
There is incident need to increase the incorporation of the private sector into the public pharmaceutical system in different levels of the supply chain to insure the achievement of the best services quality.
The degree of decentralization and number of levels in the supply system indicate the simplicity and flow of the pivotal operations and how much the output services satisfy both the services providers and the end user of the services.

Study Rational:-

Through the last years there is no systematic evaluation or assessments that have been developed or conducted to assess the current system.
The study will consider the different parts of the supply system and it will be expected to help in the development of policies and plans of interventions to overcome the drawbacks of the system.
It is important to know which part(s) of Sudan drug supply system need to be developed or redesigned and then plan for make useful changes to match well with the expected political and social changes and health sector reform in Sudan.

General Objectives:-

- To assess the drug supply system practice in the public & private sectors in Sudan concerning the supply chain and the major affecting factors.

Specific Objectives:-

1. To evaluate the implementation gap of the best practice in drug procurement processes in the public sector in Sudan.
2. To measure the distribution cost through out the distribution channels in the public & private sectors.
3. To identify the main problems that affects the efficacy of the supply chain in the public & private sectors and how to over come it in most cost effective interventions.
4. To propose solving scenarios and plans in these areas.

Study Methodology

Study Design:-

- The research is basically designed as descriptive method in mixed qualitative & quantitative manner to study the process of procurement, supply and distribution in supply system.

- The study of procurement & supply will be based on the gap analysis in the implementation of the Operational principles for Good Pharmaceuticals Procurement Practices GPPP that developed by WHO 1999, and these will including quantitative and qualitative data collected from each level include procurement & supply process in CMS, states RDF and the selected health facilities and drug outlets.

- The study of distribution chain will be based on the comparative cost analysis between the current distribution system and the model of direct delivery system and to collect quantitative data on the fixed, delivery, operating and total variable cost and other costs considering supply chain of public health facilities in federal and states level.

Study area:-

- The study will be conducted in a way so as represent federal situation in four areas (North - Middle – East - in addition to the capital) (West - south will be excluded).
- From each area one state will be selected according to distances from the CMS and take in consideration the availability of health services in different levels.

Study Population:-

The study will consider the different public & private organizations serve in the area of pharmaceutical supply in public institutions which include:-

A- Suppliers:-

⇒ Central Medical Supplies (CMS).
⇒ Central Revolving Drug Fund (RDF).
⇒ Private Companies (Exporter & Local manufacturer).
⇒ States RDF.

B- Health facilities:-

⇒ Public Hospitals.
⇒ Public Health Centers.
⇒ Private pharmacies.

Sample size & sampling technique:-

- To get a clear view and representative data for the system at different levels of supply chains (federal & states) the data will be collected from different levels in the states. The southern & western sections will be excluded because the absence of complete and clear governmental health sector.

The type of sampling used is stratified cluster in the populations targeted.

- The determination of states will be determined according to the distance from CMS because the distribution of medicines is affect by the distance factor and then categorized into zones as follows:-

State	Capital	Distance in Km	Zone
Khartoum	Khartoum	0	Zone 1 > 0 Km
Gazeira	Wad medani	230	Zone 2 > 400 Km
White Nile	Kosti	310	
Nile state	Eldamer	314	
Sennar	Senga	390	
Gadarif	Gadarif	411	Zone 3 > 800 Km
Northern State	Dungula	480	
Blue Nile	Dmazeen	522	
Kassala	Kassala	627	
North Kordofan	Obied	630	
South Kordofan	Kadogeli	860	Zone 4 > 1200 Km
Red Sea	Port Sudan	1200	

- From each zone the selection have been randomly done and the states selected are:-

Zone 1	Zone 2	Zone 3	Zone 4
Khartoum state	Sennar State	Northern state	Red Sea state

The sample size & sample selection will be as follows:-

The overall selection of the sampling protocol will be according to the standard study protocol based on WHO & Essential drugs & medicines & Drug Action Programme that recommend this approach of sampling technique to get easily comparative results that mentioned in the Manual for Core Indicators on Country Pharmaceutical Situations 2003 with some adjustment related to the purpose of the study.

⇒ **The selection of the suppliers will be based on:-**

- The selection will represent the market share in the public - private sector market which is 21 % for the public suppliers, 23 % for the local manufacturing and 56 % for importation by the wholesalers. So the sample size will be 2 public suppliers 2 local manufacturers and 4 wholesalers (2: 2: 4) to represent the market share ratio.
- The Public institution Suppliers will be (CMS and Khartoum RDF).
- For the local manufacturers they will be categorized into 2 groups one which has agents in the states and the other which hasn't agents and from each group one manufacturer will be selected randomly.
- For the local drug wholesalers they will be categorized into 2 groups one which has agents in the states and the other which hasn't agents, from **group 1** tow wholesaler will be selected randomly & from **group 2** tow wholesalers will be selected randomly.

⇒ **The selection of health facilities will be as follows:-**

❖ Special federal supply system will be studied as follows:-

- 1 federal hospitals served by the federal ministry of health supply system which is Khartoum Teaching hospital will be selected to represent these type of hospital.
- 1 federal hospitals not served by the federal ministry of health supply system will be randomly selected to represent this group.

- ❖ 30 States public hospitals will be selected as follows:
  - From each state 6 state hospitals will be selected in stratified random sampling, as follows:-
    1. The main biggest public state hospital will be chosen.
    2. One hospital in the most rural area in the state will be chosen.
    3. Four middle level public hospitals randomly selected.

- ❖ 30 States public health Centers will be selected as follows:
  - From each state 6 state health Centers will be selected in s stratified random sampling, as follows:-
    1. The main biggest public state health Center will be chosen.
    2. One health center in the most rural area in the state will be chosen.
    3. Four middle level public health Centers randomly selected.

NB: The study will exclude health facilities that served by military-police system, NGOs system & health insurance).

⇒ 6 Retailer Pharmacies and the selection will be based on chosen of closest pharmacy to each public sector health facilities selected in each state total of 30 pharmacies.

⇒ 5 governmental warehousing stores (the main one in each state).

*** Health facilities (Hospitals & Health centers) will be selected to represent the different levels in urban and rural areas in each state.**

Study Tools:-

1. **Interviews**:-

The interviews in generally seeking definitions of the different policies & process held by different types of organizations in the area of procurement and supply

- **CMS** mainly (chairperson, tender manager, planning officer, sales officer, warehouse officer & distribution officer) & other 5 staff.
- States RDF mainly (chairperson, planning officer, sales officer & warehouse officer) & other 5 staff.
- Federal MOH (director general directorate of pharmacy & supply director).
- States MOH (director directorate of pharmacy).
- Hospitals (senior pharmacists & hospital warehouse officer).

2. **Surveys** using data collection forms.
3. **Check Lists** it will be used to evaluate process in some points in the procurement in CMS & RDF.
4. **Records review** (documents & reports).
5. **Questionnaires** targeting the retail pharmacies in each state - (non self administered).

Data Analysis:-

The data analysis will include mixed analysis method according to the type of data.

- Manual analysis.
- Computer programs e.g. SPSS + MS Excel + MS Access.

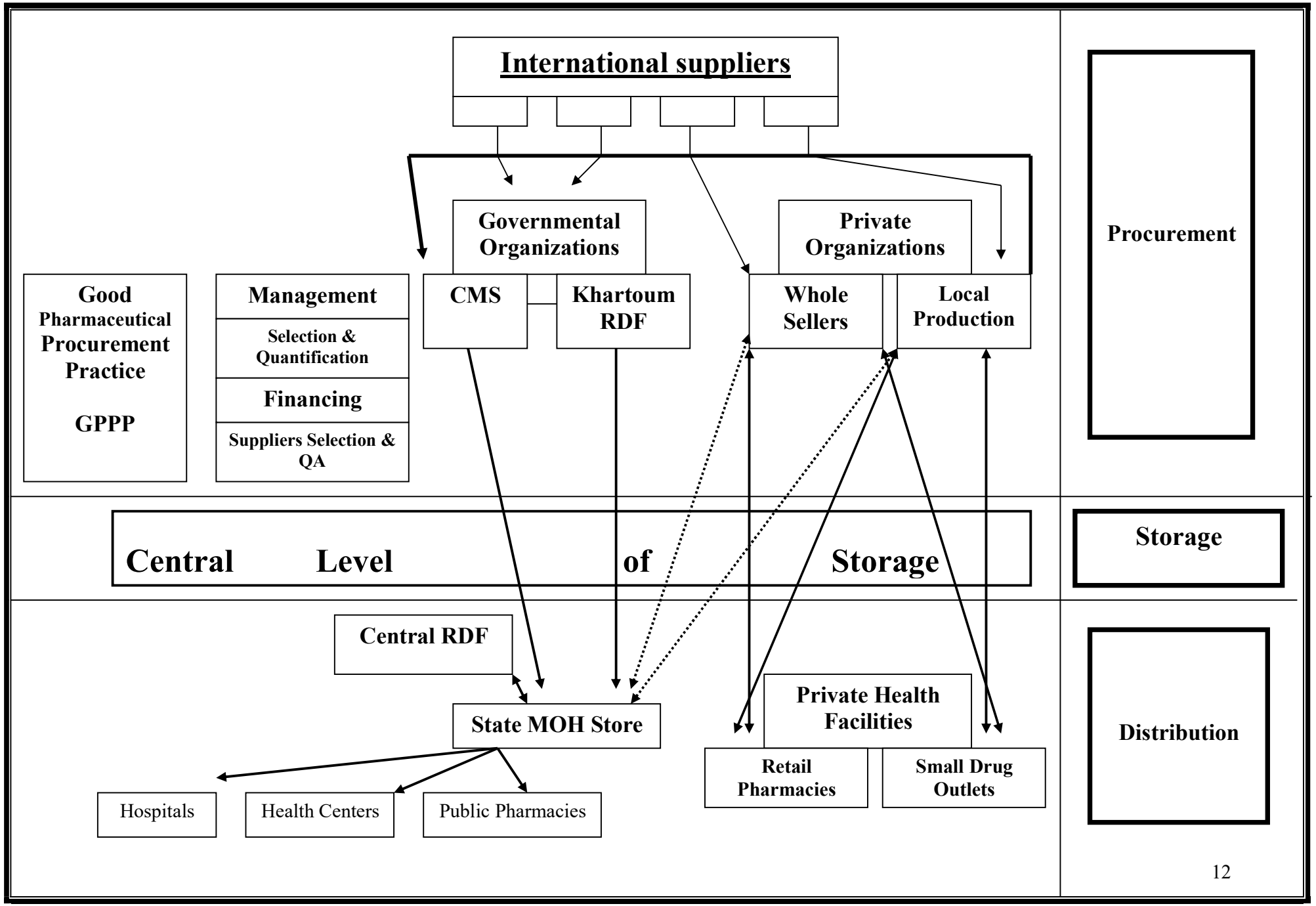
The Study Variables:-

- Percentage by value of MOH drugs purchased through a central procurement system
- Percentage of average international price paid for last regular procurement of a set of indicator drugs
- Weighted average percentage of inventory variation for a set of indicator drugs in MOH storage and health facilities.
- Average percentage of individual variation for a set of indicator drugs in MOH storage and health facilities.
- Average percentage of stock records that corresponds with physical counts for a set of indicator drugs in MOH storage and health facilities.
- Average percentage of a set of unexpired indicator drugs available in MOH storage and health facilities.
- Average percentage of time out of stock for a set of indicator drugs in MOH storage and health facilities.
- The percentage of health facilities with fully functioning drug supply system (process – management)
- Percentage of health facilities that fully comply with GPPP guide lines.
- Average leading time between placing orders and receiving the drugs for the health facilities.
- The frequency of finding damaged/ about expired products from CMS & private companies.
- The services quality degree of different suppliers according to the performance indicators.
- The relationship between the supplier and customers in terms of communication means, delivery system and complaints utilization.
- The supply system setup in areas of (management, responsibilities, procedures, selection, quantification, financing and quality assurance of the products) in order to analyze the gap.

Work Plan:-

Because it is federal level research the plan is designed to take sufficient time to make proper implementation of the proposed view of the study.
The study will take 30 weeks or less.

Activities in weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Determine and identify the sample	X	X																											
Prepare data collection forms & questionnaires			X	X	X																								
Select and train data collectors						X	X	X																					
Complete interviews & distribute/collect the questionnaires									X	X	X	X																	
Conduct Field Surveys.													X	X	X	X	X	X											
Data entry																			X	X	X								
Data analysis																						X	X	X	X				
Reporting																										X	X	X	X


International suppliers
Governmental Organizations
Private Organizations
Procurement
Good Pharmaceutical Procurement Practice
GPPP
Management
Selection & Quantification
Financing
Suppliers Selection & QA
CMS
Khartoum RDF
Whole Sellers
Local Production
Central Level of Storage
Storage
Central RDF
State MOH Store
Private Health Facilities
Retail Pharmacies
Small Drug Outlets
Distribution
Hospitals
Health Centers
Public Pharmacies

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