

## Pharmacovigilance 2019- Some Aspects of Fake and Counterfeiting of Drugs: Sudan Case- Abdeen Mustafa Omer, Occupational Health Administration

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The strategy of price liberalisation and privatisation had been implemented in Sudan over the last decade, and has had a positive result on government deficit. The investment law approved recently has good statements and rules on the above strategy in particular to pharmacy regulations. Under the pressure of the new privatisation policy, the government introduced radical changes in the pharmacy regulations. To improve the effectiveness of the public pharmacy, resources should be switched towards areas of need, reducing inequalities and promoting better health conditions. Medicines are financed either through cost sharing or full private. The role of the private services is significant. A review of reform of financing medicines in Sudan is given in this study. Also, it highlights the current drug supply system in the public sector, which is currently responsibility of the Central Medical Supplies Public Corporation (CMS). In Sudan, the researchers did not identify any rigorous evaluations or quantitative studies about the impact of drug regulations on the quality of medicines and how to protect public health against counterfeit or low quality medicines, although it is practically possible. However, the regulations must be continually evaluated to ensure the public health is protected against by marketing high quality medicines rather than commercial interests, and the drug companies are held accountable for their conduct.

Keywords: Counterfeits medicines, drug importers, quality of medicines, regulatory authorities

### ABBREVIATIONS

CMSPO Central Medical Supplies Public Organisation  
CRC Centre of Regulation and Competition

DAP Drug Action Programme  
DOP Department of Pharmacy  
FGDOP Federal General Directorate of Pharmacy  
FMOH Federal Ministry of Health  
FPPB Federal Pharmacy and Poison Board  
GMP Good Manufacturing Practice  
KS Khartoum State  
MOAR Ministry of Animal Resources  
MOH Ministry of Health  
NGOs Non Governmental Organisations  
NDP National Drug Policy  
RDFs Revolving Drug Funds  
SPSS Statistical Package for Social Sciences  
UK United Kingdom  
USA United States of America  
WHO World Health Organisation

### 1.DISCUSSIONS

In Sudan, with more than ten million people don't have adequate access to health care; twenty million inhabitants are without access to pharmacy, and a very low proportion of people being treated in hospitals. The investment, which is needed to fund the extension and improvement of these services, is substantial. Most governments in developing countries are ready to admit that they lack the financial resources for proper health and pharmacy schemes.

Moreover, historically, bilateral and multilateral funding accounts for less than 10% of total investment needed. Thus the need for private financing is imperative.

Many healthy utilities in developing countries need to work in earnest to improve the efficiency of operations. These improvements will not only lead to better services but also to enhanced net cash flows that can be re-invested to improve the quality of service. Staff productivity is another area where significant gains can be achieved. Failure of subsidies to reach intended objectives is due, in part, to lack of transparency in their allocation. Subsidies are often indiscriminately assigned to support investment programmes that benefit more middle and high-income families, which are already receiving acceptable service. Consumption subsidies often benefit upper-income domestic consumers' substantially more than low-income ones. Many developing countries (Sudan is not an exception) are encouraging the participation of the private sector as a means to improve productivity in the provision of health and pharmacies services. Private-sector involvement is also needed to increase financial flows to expand the coverage and quality of services. Many successful private-sector interventions have been under taken. Private operators are not responsible for the financing of works, nonetheless they can bring significant productivity gains, which would allow the utility to allocate more resources to improve and extend services. Redressing productivity, subsidy and cross-subsidy issues before the private sector is invited to participate, has proven to be less contentious.

Despite the constraints, over the last decade the rate of implementation of rural and peri-urban pharmacy supplies and healthy programmes has increased considerably, and many people are now being served more adequately. The following are Sudan experience in pharmacy supply and healthy projects:

#### **At community level:**

- Participatory approaches in planning, implementation and monitoring.

- Establishment and training of reliable financial and maintenance management.
- Sensitive timing of health and hygiene education.

At state and national level:

- Integrated multi-sectoral approach development.
- Training approach and material development for state and extension staff.
- Continuing support from integrated multi-sectoral extension team.
- Establishment of technical support system.
- Multi-sectoral advisory group including training and research institutions.
- Development and dissemination of relevant information for state and extension staff.

#### **10.1 Nanomedicines**

Nanomedicine is defined as the medical application of nanotechnology. Nanomedicine can include a wide range of applications, including biosensors, tissue engineering, diagnostic devices, and many others. In the Center for Nanomedicine at Johns Hopkins, we focus on harnessing nanotechnology to more effectively diagnose, treat, and prevent various diseases. Our entire bodies are exposed to the medicines that we take which can lead to unpleasant side effects and minimize the amount of medicine that reaches the places where it is needed. Medications can be more efficiently delivered to the site of action using nanotechnology, resulting in improved outcomes with less medication.

For example, treating cancer with current chemotherapy delivery techniques is like spraying an entire rose garden with poison in order to kill a single weed. It would be far more effective to spray a small amount of poison, directly on the weed, and save the roses. In this analogy, a cancer patient's hair follicles, immune cells, and epithelia are the roses being poisoned by the chemotherapy. Using nanotechnology,

we can direct the chemotherapy to the tumour and minimize exposure to the rest of the body. In addition, our nanotechnologies are more capable of bypassing internal barriers, further improving upon conventional nanotechnologies. Not only is our approach more effective at eradicating tumours under Research), but it also results in much higher quality of life for the patient.

Nanomedicine is the medical application of nanotechnology. Nanomedicine ranges from the medical applications of nanomaterials and biological devices to nano-electric devices, to nano-electronic biosensors, and even possible future applications of molecular nanotechnology such as biological machines. Current problems for nanomedicine involve understanding the issues related to toxicity and environmental impact of nano-scale materials and (materials whose structure is on the scale of nanometres, i.e. billionths of a metre). Functionalities can be added to nanomaterials by interfacing them with biological molecules or structures. The size of nanomaterials is similar to that of most biological molecules and structures; therefore, nanomaterials can be useful for both in vivo and in vitro biomedical research and applications. Thus far, the integration of nanomaterials with biology has led to the development of diagnostic devices, contrast agents, analytical tools, physical therapy applications, and drug delivery vehicles. Tracking movement can help determine how well drugs are being distributed or how substances are metabolized. It is difficult to track a small group of cells throughout the body, so scientists used to dye the cells. These dyes needed to be excited by light of a certain wavelength in order for them to light up. While different colour dyes absorb different frequencies of light, there was a need for as many light sources as cells. A way around this problem is with luminescent tags.

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