



## Commentary

## Drug shortage crisis in Sudan in times of COVID-19

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## ABSTRACT

Sudan is witnessing severe drugs, medicines, and medical supplies shortages, which present a major impediment to the provision of emergency healthcare services. Drug insecurity in Sudan is as a result of several accumulated factors, primarily due to worsening economic condition, inappropriate pricing policy, privatization of the pharmaceutical sector, poor manufacturing and weak regulatory system. These could threaten patient health through replacement of highly efficacious medicines with less effective alternatives and by impacting the scheduling of urgent medical operations and procedures. Drug and medicine shortages are of catastrophic impact especially amid the current epidemic of COVID-19 where these are salient needs. Efforts should be quickly directed to ensure immediate access to pharmaceutical products and other essential health commodities. Effective policies on drug importation, production, pricing, and distribution should be established to avoid the consequences of an impending crisis.

## 1. Introduction

Sudan is a country which solely depends on imported drugs. Its current political and economic situation has continuously failed to manage severe shortages in its supply of drugs and medicines for its populations. Drug supply in Sudan is preserved by public and private sectors. In the public sector, procurement is maintained through the National Medical Supply Fund (NMSF) indirectly through local and global tenders. The commodities (78% from essential medicines list) are supplied mainly to state hospitals and public facilities. In the private sector, medicines supply is provided by local manufacturing factories and through direct

importation from international manufacturers. The total value of pharmaceutical market (TPM) according to National Medicines and Poisons Board (NMPB) records estimated to be US \$650 million, the share of public sector was US \$155 million (24.0%), and the share of private sector was US \$495 million (76.0%) [1]. The current share of local manufacturing in production of essential medicines in Sudan is only 5%. A large number of local pharmaceutical factories have stopped operating due to limited access to raw materials. According to the data from the Ministry of Trade and Industry, of the 27 pharmaceutical factories in Sudan that cover 45% of the country's consumption, only 19 factories are operating at half the production capacity [2].

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National Health Insurance Fund (NHIF), established in 1995, is responsible for ensuring access to essential health services for the insured population throughout the country. As of 2014, coverage has only reached 37.3% of the population [3]. Government public facilities are providing free medicines for emergency treatment. Unfortunately, during COVID-19 pandemic, these hospitals were completely non-functional across the country due to lack of essential medicines, medical supplies and personal protective equipment [4].

Aggravated and accentuated by the COVID-19 epidemic in the country, Sudan is experiencing multiple crises [5] including the current drug shortages. As of October 19 2020, there are 13,691 confirmed COVID-19 cases and 836 deaths. Most of the cases are in the capital Khartoum. The need to care for COVID-19 patients have resulted into increase in demand of health commodities. With such a scenario, the overall performance of medicine supply framework needs to be evaluated, examined and improved upon. Drug management operations rely basically on a good policy that ensures accessibility and availability of medicines and drugs. It is necessary that essential medicines reach patients in need of them. However, there is evidence that limited local manufacturing is the main hurdle to access to medicines not only in Sudan but in many countries [6] of Sub-Saharan Africa. This paper aims at providing in depth analysis of root causes that contribute to drugs, medicines and other health commodities shortages in Sudan in times of COVID-19 pandemic.

## 2. Factors contributing to drug shortages

Sudan is categorized as a lower-middle income country and there are many areas for development to improve the health indicators of the country. This is exemplified by the unavailability of essential drugs and other health commodities [7]. Access to key medicines for Sudanese in several regions of the country relies majorly on donations from nongovernmental organizations [8]. In Sudan, drug price affordability is the most important factor, since poverty is deep and widespread. There are many factors contributing to this dismal situation of the country's drug supply.

### 2.1. Political instability

Sudan has been suffering from a protracted economic crisis, desiccation, and war. Drug shortages are currently emerging as a major threat, and serious health crisis, specifically in urban areas [9]. Pharmacies in the capital Khartoum are running out of drugs and medicines. The economic situation of the new transitional government and the scarcity of hard currency resulted in the removal of subsidies for many essential consumer goods. The political instability results into uncertainties for many businesses to thrive. There is also a lack of a blueprint from the government in developing the pharmaceutical sector. Corruption and bad governance also contribute to this bleak scenario.

### 2.2. Economic instability

Historically, drug importation and manufacturing problems have always been related to the decline in the local currency relative to the United States Dollar in Sudan [1,5]. The shortage of hard currency, difficulty in accessing raw materials, manufacturing issues, regulatory system issues, as well as many other meandering pathways within distribution chains are some of these factors. Economic instability is brought about by having no clear economic plans by the government [5]. There are no investors from outside the country because of the uncertainty and risk. Major pharmaceutical companies see it as a major risk to invest in the country because of the economic instability.

### 2.3. Currency inflation

The value of Sudanese Pound has declined dramatically after the

secession of South Sudan in 2011. This has pushed over the economic inflation to higher levels because Sudan mainly depends on imported drugs. By November 2016, the previous Sudanese government implemented new policies which have led to significant rise in the price of drugs. The economic sanctions imposed by the United States against Sudan prevent Sudanese drug manufacturing enterprises from buying their raw materials, which means they have to buy them from third parties, resulting in increase of medicine prices. In December 2017, local drug manufacturers completely stopped selling their drugs due to massive fluctuations in the rate of dollar exchange price. Inflation rate has reached 114% in May 2020. The Central Bank of Sudan is unable to provide the \$55 million needed to import essential medicines and unfortunately majority of the population are facing extreme financial hardship and cannot afford basic healthcare costs [3].

### 2.4. Lack of price control

The National Medicines and Poisons Board (NMPB), the drug regulatory agency of Sudan, is not able to control the prices of imported medicines and 23% of selected imported medicines approved by agency were ten times more expensive than the internationally recognized reference price. Furthermore, retail price of more than 90% of overall originator drugs was equal to or more than their costs listed in the British National Formulary. Other findings show that the price of drugs distributed by the central medical supplies was almost twice as the established price set by the agency showing a clear inability by the government to control medicine prices [10]. At times, the struggle in retail price of local medicines and drugs between medicine regulatory agency and local manufacturers continuously emerge, leading to labor strikes in local drug manufacturing companies.

### 2.5. Privatization of pharmaceutical sector

A published data on healthcare system financing in Sudan had indicated that 65% of funding is from private sources, almost all of which is out-of-pocket expenditure, as the spending by the private sector had grown rapidly (57% in between 1995 and 2013), pointed to a significant gap as result of the absence of government expenditures [1]. The former ruling regime pursued a policy of privatization, which resulted into corruption, disjointed financing, and stagnation of the healthcare system [3]. The pharmaceutical industry which was originally under state control has been given to the private sector. There was a shift of the overall processes, responsibilities, and functions (totally or partially) from the government to the private companies [11] in alignment with the framework of neoliberal economics. In other words, it means less governmental responsibility and regulation. The adaptation of privatization policy and price liberalization strategy by the government in 2018 to mitigate the shortage of medicine was thought to solve the crisis [12] but is touted to be the cause instead. This dynamic has resulted into private pharmacy owners having more power to strike in order to ensure the government pass a new price list for local drugs that is unaffordable by the public.

## 2. Challenges of COVID-19 in Sudan

As the country continues to identify COVID-19 cases, there is an increase pressure to address several issues within the health system to continue the fight [5]. There are issues with laboratory testing as only four laboratories are capable; the Central Laboratory of the Military Hospital in Omdurman; the National Laboratory for General Health in Khartoum; the Blue Nile Laboratory; and the Central Red Sea Laboratory. These laboratories need to have a continuous supply of necessary reagents for testing which are only available outside the country. This makes the collection of samples slow. Many cases of sudden deaths particularly among the elderly with chronic diseases prompted more investigation and testing. Policies like banning burials in any cemetery

without a death certificate and an official burial permission have been promulgated because of testing issues.

From the side of the health workforce, there has been a strong demand for safety as more health workers got infected. Strike action by medics and nurses have been held in many hospitals in Khartoum as they clamoured for more demands from the Sudanese Ministry of Health such as more hygiene and sterilisation measures in the hospital, better accommodations within or near the hospital, transport between work and home, and the availability of personal protective equipment (PPE) [13]. Medical quality PPE can only be sourced from reputable manufacturers in other countries. The worsening situation pushes many Sudanese health workers not to go to work as they are harassed being thought of as the ones spreading the virus. Shops refuse to serve them and are shunned. There is an imminent threat of a collapse of the healthcare system if the situation continues as many health workers are getting more exposed to and infected with COVID-19.

The drugs, medicines and medical supplies shortage is accentuated by the ripple effect it creates with increase in COVID-19 cases as a result [14, 15]. A nationwide lockdown became the major response similar to what other countries did [16,17]. Lockdowns also adversely affected the provision of pharmaceutical services to many patients particularly in rural areas far from the capital Khartoum, where lack of medication is widespread. During these lockdowns, markets are closed, gatherings are banned, public transport is halted, curfew is imposed, and land borders are closed. Further down the line, all other elements are affected, churning into a vicious cycle affecting the state of economy and eventually back to inability to improve the pharmaceutical industry and the supply of medicines and drugs.

### 3. Conclusion and recommendations

It is clear that Sudan is witnessing multiple crises. The transitional government is struggling to fight COVID-19 within a backdrop of deteriorating economic conditions. The unavailability of medicines, particularly life-saving drugs is a real threat. Efforts should be quickly directed to ensure immediate access to pharmaceutical services and establish a smooth supply of drugs and medicines in Sudan. Effective policies on drug importation, production, pricing, and distribution should readily be established to avoid the consequences of an impending crisis. Long-term solutions and effective pharmaceutical policies should be in place as part of the approaches to health systems strengthening with medicines and health technologies being one of its building blocks while COVID-19 is not disappearing soon.

### Declaration of competing interest

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### Author contributions

Yasir Ahmed Mohammed Elhadi and Don Eliseo Lucero-Prisno III developed the concept for this commentary and wrote the first draft. Mohamed Babiker Musa, Salma Elmukashfi Eltahir Mohammed, Mohamed Abdul Kareem Adam Modber, Attallah Ahmadi, Yusuff Adebayo Adebisi and Yasir Ahmed Mohammed Elhadi revised the second draft, assisted with data gathering and prepared the manuscript with an important contribution from Aniekon Ekpenyong, Khlood Fathi Hassan, Sylvester Adeyemi, Alaa Dafallah and Xu Lin. All the authors contributed, read, and agreed to the final manuscript.

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