

# HEART

HEALTH & EDUCATION ADVICE & RESOURCE TEAM

## **Helpdesk Report: National pharmaceutical procurement and supply chain institutions**

**Date:** 15 April 2016

**Query:** 1) What examples are there of effective national pharmaceutical procurement and supply chain institutions in low income countries?

- a. What are their governance structures?
- b. How independent are they from government?
- c. How do they raise money?

2) What examples exist in the literature of reform of national pharmaceutical procurement and supply chain institutions in low income countries?

- a. Description of reform processes, who the stakeholders were, who drove the change and what changed
- b. Are there common factors that determine successful and unsuccessful reform?

**Purpose:** Background reading for Task Force

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### **1. Overview**

Examples of national pharmaceutical procurement and supply chain institutions were identified through rapid search and input from experts. Institutions identified were largely from Africa. Up-to-date details of the governance of these institutions was not easy to find within the scope of this work. The resources in the annotated bibliography of this report include grey literature and media articles to give some information where strong evidence in this area is lacking. This overview highlights some of the findings on institutions from different countries.

Kenya is the main example for which some detail of governance was found. After reform of the Kenya Medical Supplies Authority (KEMSA) 2008 the Board of Directors was led by a competitively recruited chairperson. The membership of the Board aims to include prominent leaders from different fields, not limited to civil servants. An Inter-agency Coordinating

Committee on procurement was been established to address coordination within the medicines supply system. One of the aims of the reform of KEMSA was to increase autonomy from the government. The extent to which this was achieved is not clear from the literature identified. The budget for medicines and health commodities comes from county governments who receive a predetermined allocation from the federal government (Yadav, 2014). An earlier document states that other funds may come from gifts, grants, and donations (Johnson et al, 2008).

The Minister for Medical Services dissolved the KEMSA board of directors in 2008 and appointed a task force to improve the drug supply problems in Kenya (Muga, 2008). The task force identified interference with the management of KEMSA, lack of autonomy due to heavy representation by Ministry of Health staff, ineffective accountability and supervisory mechanisms, and parallel procurement procedures by development partners. One of the main aims of the reform of KEMSA was to increase autonomy from the government. The extent to which this was achieved is not clear from the literature identified. A government KEMSA assessment team found dual procurement processes between the Ministry of Health and KEMSA despite a Legal Notice establishing KEMSA as the procurement agency (Johnson et al, 2010). The procurement of medical supplies was transferred to KEMSA in 2009 and an Inter-agency Coordinating Committee on procurement has been established to address coordination within the medicines supply system. The key aspects of the reform noted by Yadav (2014), detailed further in section 2, include:

- Recruiting leadership talent
- Creating an appropriate legal framework
- Robust and effective governance structure
- Greater transparency
- Robust quality assurance
- Adequate Staffing
- Transparent and effective procurement department
- A demand-driven (pull) distribution system and investments in ICT
- Outsourced transport-focus only on areas of comparative advantage
- Creating a customer oriented KEMSA

On building a change coalition, Yadav (2014) notes past problems with motivating middle management and operational staff of the need for change. Leadership and visioning were the key components of building an internal and external coalition for change. Devolution also provided external stimuli for the last phase of the KEMSA transformation project.

In Zambia, Medical Stores Limited (MSL) state on their website that they are an autonomous government agency. Details of governance or reform of MSL were not identified within the scope of this review. Medical facilities in Zambia are given an annual drug budget by the Ministry of Health (MOH) and have responsibility for procurement from MSL. Governance at lower levels is reported to be poor with no external controls and weak accountability (WHO, webpage accessed 2016, date information published unknown).

The National Medical Stores (NMS) in Uganda is an autonomous government corporation (USAID, 2009). The Manager of NMS notes, on their website, that the organisation struggled with decentralised funding and that capitalisation is not an issue since recentralised funding has been established. Details of governance and reform were not identified within the scope of this report.

In Sierra Leone the National Pharmaceutical Procurement Unit (NPPU) was set up in 2012 as the central body which for pharmaceutical procurement. Local staff capacity was built by international supply chain professionals through mentoring, on the job training and

professional training courses (Juma, 2014). Further information on the governance of NPPU was not identified.

In Mozambique the health commodity supply chain institution is the Central de Medicamentos e Artigos Médicos (CMAM). USAID, the Global Fund and the World Bank support the funding of this institution (Spisak et al., 2016). The Ministry of Health and its partners have developed supportive action plans and policies, such as the Supply Chain Logistic Plan of Action 2012 and the Pharmaceutical Logistics Strategic Plan 2013. Some improvements were made in information flows, distribution to districts, and auditing of provincial stores. In 2013 a year-long grant arrangement with USAID was trialled where disbursements were given based on CMAM meeting performance targets (Serumaga et al, 2014). Indicators were selected in areas previously difficult to change including supply planning, distribution planning, and warehouse management. Evaluation showed improvement in all of these areas including stock status reports and physical counts, picking accuracy, order cycle times and distribution planning.

Govindiraj and Herbst (2010) assessed central medical supplies reform in Burkina Faso, Cameroon and Senegal but advise treating their findings with caution as there were difficulties in accessing quantitative data. They emphasise the importance of a strong regulatory framework. This includes the conventions, laws, regulations, and administrative acts that increase the flexibility of some decision making rights, whilst constraining others, with an emphasis on social obligations, accountability, and transparency. Important external factors for efficiency and equity outcomes include technical assistance, government subsidies, and relevant external policies, institutions, and regulations.

In this report some resources were identified on the institutions in Ethiopia, Tanzania, Congo, Malawi, Liberia and Zimbabwe and are included for reference. Detail found on these countries was insufficient for answering this helpdesk question.

## 2. Kenya

### **Kenya Medical Supplies Authority (KEMSA). A case study of the ongoing transition from an ungainly bureaucracy to a competitive and customer focused medical logistics organization**

Yadav P. (2014) World Bank

<http://www->

[wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/10/28/000470435\\_20141028095512/Rendered/PDF/918640WP0P14870e0ongoing0Ttransition.pdf](http://wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/10/28/000470435_20141028095512/Rendered/PDF/918640WP0P14870e0ongoing0Ttransition.pdf)

This document describes KEMSA's transformation from 2008 to 2014. The government of Kenya and its development partners started realising the need for broader, deeper, and integrated reform at KEMSA. The guiding principles of these reforms were that KEMSA's institutional capabilities can be improved by creating appropriate organisational structures, attracting the right talent to leadership and management roles, creating a performance management plan, and streamlining operational processes. This period of KEMSA's transformation also included extensive support from development partners. In 2011, USAID created the Kenya Medical Supplies Agency (KEMSA) Support Program and the World Bank supported multiple capital investments in KEMSA during this period, including the capitalisation of KEMSA from the Health Sector Support Program (HSSP).

The key aspects of the reform and transformation process include:

- **Recruiting leadership talent.** To attract the “best and the brightest” in its leadership roles, it required a competitive recruitment for the Chief Executive Officer (CEO) and several high-level managers. The team assembled included people with strong commercial sector experience in the healthcare, financing and logistics industries and

not civil servants or career bureaucrats. These individuals brought a different working style and culture to KEMSA.

- **Creating an appropriate legal framework.** The Kenya Medical Supplies Authority Act No. 20 of 2013 was passed which transitioned KEMSA from a Public Agency to a Public Authority with greater autonomy. This enabled greater financial autonomy for KEMSA to effectively carry out its mandate in a new devolved health system. Greater flexibility was provided for KEMSA to set a higher salary scale for its staff.
- **Robust and effective governance structure.** The new Board of Directors of KEMSA was to be led by a competitively recruited Chairperson. The membership of the board included prominent leaders from different fields and was not limited to civil servants. Specific board committees were created with clearly outlined charters, roles and responsibilities. Board members were provided training on financial oversight and board governance to equip them to manage their oversight and governance roles.
- **Greater transparency.** An agreement was made in 2010 with World Bank assistance which stated all procurement contracts awarded by KEMSA were to be posted on the KEMSA website and made available publicly in other ways. This was successfully implemented to a large extent and details of contract awards were available to the public. This enhanced confidence in the transparency of the procurement function at KEMSA.
- **Building a change coalition.** Attempts to reform or bring about significant positive change at KEMSA had failed in the past because of the inability to motivate middle management and operational staff of the need for change. There was a lack of vision making it difficult to achieve an organisation-wide consensus on goals. Such a vision was also critical to building support for change among external stakeholders of KEMSA. Leadership and visioning were the key components of building an internal and external coalition for change. Since change is also easier to achieve in response to external stimuli, devolution provided such external stimuli for the last phase of the KEMSA transformation project. Devolution and the critical debate about the future of KEMSA since 2009 provided both the necessity and urgency to the transformation project.
- **Robust Quality Assurance.** KEMSA management developed strong collaborations with the Poisons and Pharmacy Board (PPB), the National Quality Control Laboratory (NQCL) and created a robust internal QA department.
- **Adequate Staffing.** A work load analysis study conducted by Deloitte was used to inform the optimal staffing levels within each department in KEMSA. Important policy standards were also put in place before hiring new employees. An in-service integrity testing program was also put in place. Apart from expanding the staff base, comprehensive and relevant training programs were institutionalised for existing and new staff at KEMSA.
- **Transparent and Effective Procurement Department.** The Procurement Department now has 23 full time staff who are involved in developing tender specifications, bid solicitation, contract / price agreement issuance, receipt and processing of purchase requisitions and orders, payments authorisations, contract management, post-contract performance review, etc. 95% of value procured by KEMSA is through open national tender or International Competitive Bidding. KEMSA has started procuring through indefinite quantity framework contracts which allow quick ordering under pre-negotiated terms and conditions from local suppliers. KEMSA has put procedures in place to ensure that the administrative data on tenders, bidders, and suppliers are collected and stored in a structured way, available for review and analyses in the future.
- **A demand-driven (pull) distribution system and investments in ICT.** A pull model required investments in ICT to facilitate the data flow of requisitioned quantities, stock on-hand and other information sets from the health facilities. KEMSA, with assistance from USAID, invested in a homegrown enterprise resource planning system

implemented by Alliance Technologies that went live in July 2010. KEMSA also implemented a Logistics Management Information System (LMIS). The KEMSA e-mobile service allows health facilities to place their orders to KEMSA over mobile phones.

- **Outsourced transport-focus only on areas of comparative advantage.** KEMSA's executive management realised that operating a transport fleet was not their comparative advantage and it could be managed more effectively by private transporters.
- **Creating a customer oriented KEMSA.** A well-functioning customer service department had to be created which integrated process, organisation, people and technology to provide high degree of service to health facilities who would place their orders or call regarding other queries. A clear division of roles and responsibilities within the customer service department and some degree of workflow standardisation enabled this.

In the new devolved model, budget for medicines and health commodities will come from county governments who will receive a predetermined allocation from the Federal Government. Counties (health facilities and hospitals) will submit their orders to KEMSA. Upon submission of orders and payment, KEMSA will process the order and deliver commodities to the specified health facilities in the country. KEMSA will replenish its stocks using the funds realised from sale of medical commodities to county health facilities.

For the future this report recommends:

- Objective communications to dispel perceptions based on past performance
- Third party measurement of Key Performance Indicators
- Maintaining ubiquity and uniformity of service
- Efficient financial flow and inventory management
- Understanding KEMSA's customers and enhanced value proposition
- Serving as eyes and ears to the Ministry of Health
- Offering flexibility in delivery frequency
- Co-invest in building county capacity for requisitioning and quantification
- Maintaining and enhancing the comparative advantage of lower sourcing cost
- Greater transparency on KEMSA's website

#### **Assessment of Kenya Medical Supplies Agency (KEMSA)**

Johnson MG, Hazemba OO, Kimeu J, Kirika R, Thuo M. (2008) MSH/SPS Regional Office, Nairobi

[http://pdf.usaid.gov/pdf\\_docs/Pnadn474.pdf](http://pdf.usaid.gov/pdf_docs/Pnadn474.pdf)

The Government of Kenya has pursued a reform agenda for the procurement and distribution of drugs and other medical supplies as a major priority since the early 1990s. As early strategy components, the establishment of the Health Sector Reform Secretariat and the development of the National Drug Policy in 1994 combined to produce both the structure and early policy framework required for eventual change.

The Kenya Medical Supplies Agency (KEMSA) was established as a state corporation under Cap 446, through the Kenya Medical Supplies Agency Order 2000 (Legal Notice No. 17 of 11th February, 2000). This was a radical step intended to contribute in the reversal of the decline of the health status of Kenyans through the improvement of medicines and medical supplies availability. The Public Procurement and Disposal Act of 2005 and its subsequent Public Procurement Regulation of 2006 further demonstrate the Government's commitment to remain on an aggressive path towards transforming the way government agencies interface with industries, at home and abroad.

Since its inception in February 2001, KEMSA as an approved state corporation has made many strides and provided a significant service in support of healthcare. Since late 2006, KEMSA has converted all 141 hospitals in Kenya to the 'pull system' and established direct monthly deliveries with open tender commercial transporters. However, the Agency continues to struggle through countless setbacks, only achieving partial acceptance and functionality, since its establishment. Although recognised by many as an improved organisational approach from its government predecessor (the Medical Supplies Coordinating Unit), KEMSA as the lead commercial activity in support of Kenya's public health sector has struggled for most of the first seven years of its existence. There are many factors and reasons for this apparent struggle – the least of which stems from KEMSA's inability to effectively demonstrate sustained improvements in accountability, transparency and overall service delivery. These shortfalls, whether actual or perceived, are of concern to those outside the organisation especially to the over 4000 health facilities, some of which are at considerable distances from central operational base in Nairobi.

Substantial efforts continue; to find the right solutions which would allow KEMSA to not only achieve the intended mandate, but also to optimise its support to health service delivery across all of Kenya. Since 2003, several initiatives have attempted to move KEMSA closer to its intended functionality. A Memorandum of Understanding (MOU) between the Ministry of Health, the KEMSA Board of Directors and the Development Partners reached near final approval, only to fall short of actual implementation. Introduction of a ministerial committee and supporting management consultant agency in 2004, are key examples of productive efforts to address KEMSA's plight, resulting in partial consensus building and modest gains towards long-term capacity and improved performance.

The authors suggest the biggest challenges which hinder KEMSA's ability to achieve full acceptance and operational success are the combined effects of inadequate funding and lack of timely allocation of both approved procurement and operational budgets which the Agency must have to sustain operational viability. At the core of these major shortfalls lies the reality that the Ministry of Health continues to with-hold a major portion of the procurement of medical supplies from KEMSA. Although past agreements had been reached to finally transfer all medical commodities procurement activities and funding to KEMSA, in practice the MOH continues to maintain control of a large portion of the annual medical supplies procurement contracts.

On the other side of the equation, over the last few years (pre-2008), KEMSA has failed to implement even the basic internal core process improvements required to build confidence in its stakeholders. These improvements would include the manner in which supplies are stored and the way the Agency relates to development partners and facility customers. Measured improvements in both would go a long way in changing perceptions and would increase effectiveness in accountability and service delivery.

Although previous assessments do acknowledge some level of improvement, many aspects of the Agency's performance continue to require management's leadership. The failure by KEMSA to show substantial improvement in core processes is viewed externally as limited capacity which translates into lack of confidence in KEMSA as an organisation. The Agency continues to be overwhelmed with the day to day challenges of meeting basic mission requirements (procurement, receiving, storage and logistics/ distribution) because of effects of failed corrective actions and persistent inadequate funding. In the end, the current (at time of writing, 2008) outcome in the way KEMSA is viewed externally is much the same - many customers, development partners, stakeholders, and most critically, the Ministry of Health lack full confidence in KEMSA, thus are reluctant to commit to transferring the full procurement mission and funding to the Agency.

KEMSA operates under the direct supervision of a Board of Directors as specified in the Legal Notice. A Vice-Chairman is elected from amongst the board members. Members of the

KEMSA Board serve a term of three years and are eligible for re-appointment. KEMSA is financed primarily from allocated funds from Treasury. The Minister of Health determines the amount “necessary to enable the Board to carry out its functions, having regard to the estimates for the year”. Other Agency funds may come from gifts, grants and donations. The CEO has the day to day oversight of all the Agency’s funds and bank accounts. External Audits of the Agency’s accounts and funds are conducted directly by the Auditor General’s (State Corporations) Office and by an independent and reputable audit firm appointed by the Board. Since all funding earmarked for medical commodities comes from the Treasury to the Ministry of Health for management oversight and control, KEMSA as an Agency is also subject to external audit by the principal auditing office that conducts external audits on the Ministry.

This review highlights findings, gaps and recommendations in a number of areas. Gaps identified in the governance area are as follows:

- Though established as a State Corporation by Legal Notice No. 17, 11 February 2000 as the procurement agency for MOH, dual procurement processes continue between MOH and KEMSA. In practice only a partial mandate for procurement of health commodities has been ceded by Ministry of Health.
- The Board composition is drawn almost exclusively from government and health sectors, with limited private and commercial sector representation. Commercial sector representation from retail and supply chain sector is too inadequate to benefit KEMSA’s commercial activities mandate.
- KEMSA’s Board established advisory and oversight committees to provide checks and balances over Procurement, Finance, HR and Technical Services. The Procurement Oversight Committee was originally chartered to ensure transparency and accountability of KEMSA’s management and execution processes on procurement. Procurement lead times have increased since the establishment of the Procurement Oversight Committee, thereby causing delays in the procurement processes.
- KEMSA has developed a Business Plan, Strategic Management Plan and various procedures for its operating departments and functions. Interviews at multiple levels during the assessment identified that most of the staff throughout the organisation have not seen these documents. Additionally, management meetings are being conducted only with managers at the department level and above. The organisation’s strategic documents are not communicated to staff; so uniform understanding of the purpose, direction and approaches to service delivery is limited.
- KEMSA has 120 full time and contracted staff members and 226 casual workers to support its daily operations. Review of the staff establishment has not been conducted since 2003. Gap: KEMSA does not have the appropriate number and mix of skill sets to conduct effective operations to meet its prescribed mandate and meet future mission growth and complexity.
- KEMSA is funded by the Treasury through the Ministry of Health for all its operations and services, including the procurement of medical materials. Current year funding is severely limiting the organisation’s capacity at all levels to effectively implement its business and strategic management plans. Inadequate funds are provided to fully meet current expectations and responsibilities as provided in the Legal Notice.
- Late disbursement of budget allocation to KEMSA severely limits its ability to promptly pay vendors, required transport support, and warehouse rentals. KEMSA’s mission execution is constrained to sustain uninterrupted operations and service delivery.

#### **Report of the KEMSA Task Force**

Muga RO. (2008) Not available online, provided by DFID adviser

From July 2007, KEMSA's performance started declining. By the end of June 2008 KEMSA's operations had come to a halt. The Minister for Medical Services dissolved the Board of Directors and appointed a Task Force to provide the Government with independent thinking about the problems of drug supply in Kenya. This report presents the key findings.

Key findings on the governance and institutional structure include:

- There has been undue interference with the management of KEMSA. This is epitomised by politically motivated employment of staff under contract and casuals.
- Heavy representation by the Ministry of Health in the Board makes it difficult to foster autonomy of the agency.
- The board drifted from its oversight role to management control over tender evaluations.
- The reporting system does not reflect effective accountability and supervisory mechanisms.
- Development partners were said to be instituting parallel procurement procedures and applying wrong approaches in providing technical assistance. The approach used by E-sokoni in building capacity perpetuated dependency on Technical Assistance.

Recommendations for governance and institutional structures include:

- The Government should delineate the roles and responsibilities and define clear modes of operation between KEMSA, the parent Ministry and other relevant ministries – in which case the procurement function should be solely left to KEMSA while the Ministry retains the oversight function.
- The Government should appoint a leaner board and balance its composition taking into account diversity and experience and cross-sector representation.
- KEMSA should adapt and operationalise the proposed organisational structure.
- The Ministry of Medical Services should establish a monitoring unit within or outside the headquarters procurement unit to monitor procurement at KEMSA and health facilities.
- The Permanent Secretary in the Ministry of Medical Services should, in line with the *Public Officer Ethics Act, 2003*, institute clear procedures for addressing conflict of interest within the Board and management of KEMSA. Errant officers should face disciplinary measures including prosecution and revocation of their appointments.

The key financing agents of KEMSA are Government of Kenya and Development Partners. However, findings indicate that the financing mechanisms are ineffective and uncoordinated and not in line with the harmonised funding mechanisms envisaged in the Joint Financing Agreement and Sector Wide Approaches. The budgetary allocation for KEMSA's operation is also inadequate.

Recommendations in the area of financing include:

- KEMSA should urgently establish Kenya Medical Supplies Agency Fund. Funds from the Government of Kenya and any other sources will be channelled through the Fund in order to provide adequate resources for operations.
- The Medium Term Expenditure Framework process should prioritise KEMSA in a bid to allocate adequate resources for its operations including the anticipated commercialisation agenda.
- The Ministry of Medical Services and the Ministry of Public Health and Sanitation should open accounts with KEMSA for all their facilities. These accounts should be credited with quarterly allocations for drugs and other medical supplies.
- The Ministry should finalise the negotiations of the Joint Financing Agreement (JFA) under the Sector Wide Approach process to facilitate the creation of a pooled fund for medical supplies.



### **Experience with supporting pharmaceutical policies and systems in Kenya. Progress, lessons and the role of WHO**

Mbindyo R, Okello D and Kimani F. (2010) WHO

<http://apps.who.int/medicinedocs/documents/s17551en/s17551en.pdf>

The public and faith-based systems are the major players in the bulk procurement and supply of medicines in Kenya. The public sector agency (KEMSA) was established in 2001 through Legal Notice, with the mandate to develop and operate a viable commercial service for the procurement and sale of drugs and medical supplies. However, there have been challenges in operationalising this mandate. The Ministry of Health and numerous other players continued to undertake the procurement function, with KEMSA undertaking warehousing and distribution. As part of elaborating the sector-wide approach in Kenya, the procurement of essential medicines was transferred to KEMSA in 2005, but the procurement of medical supplies remained with the Ministry, although KEMSA's procurement procedures were evolving into a cost-effective system. A Ministerial Task Force set up in 2008 to address medicines supply problems following the post-election events, established that KEMSA had not been de-linked from the Ministry nor fully operationalised in accordance with the legal provisions, and had therefore not fulfilled its mandate. Implementation of the Task Force recommendations is ongoing and, among other actions, new governance and management structures are in place for KEMSA. The procurement of medical supplies was transferred to KEMSA in 2009 and an Inter-agency Coordinating Committee on procurement has been established to address coordination within the medicines supply system.

Personnel from KEMSA have received orientation on the concept of essential medicines and training on the principles of good pharmaceutical procurement and drug supply management. Warehouse design, reorganisation and refurbishment were also supported to facilitate proper storage of essential medicines at KEMSA. To gain more experience in electronic warehousing and distribution, in mid-2008 WHO organised a benchmarking visit for senior KEMSA personnel to study the supply chain management system put in place by the Government of China, Hong Kong Special Administrative Region. These efforts are contributing to ongoing restructuring of the national medicines supply systems, supported by various partners. Indeed, marked improvements have been noted in the public sector supply of essential medicines, attributable to the capacity building efforts and institutional reforms already described.

### **Kenya's medical supply agency transforms to improve service delivery and save lives**

Muthembwa K. (2015) The World Bank Blog

<http://blogs.worldbank.org/nasikiliza/kenyas-medical-supply-agency-transforms-to-improve-service-delivery-and-save-lives>

**Blog:** Since reform of KEMSA the counties now pool the orders received from health facilities and share them with KEMSA online and pay for their medical commodities on a 'demand-driven' supply system. The online portal allows the county health teams to chat with KEMSA staff and to keep track of their orders in real-time. The portal has reduced significantly challenges related to manual ordering processes, creating operational efficiency and cost effectiveness. Also, public health facilities have the option of placing orders for supplies instantly via e-mobile. KEMSA has the requisite transport system in place which includes outsourced transport, courier service and own fleet. This ensures timely dispatch of all commodities ordered by health facilities from any corner of the country. The counties receive their supply within four working days, down from a month.

According to Dr. John Munyu, KEMSA's CEO, the new business model is "self-sustaining, has reduced the need for government support, and it is working well in all the 47 counties.

Besides, the funds realised from sale of medical commodities to county health facilities are used to replenish stocks. The ERP platform provides timely and accurate supply chain data that helps forecasting, inventory replenishment, and quantification, adds Dr. Munyu.”

### 3. Zambia

#### **Medical Stores Limited (Zambia)**

<http://www.medstore.co.zm/>

Medical Stores Limited (MSL) is an autonomous government agency established by an act of Parliament with the express objective of furnishing to the nation good quality drugs and medical equipment at accessible prices, made available through approved government and non-government agencies throughout Zambia.

Through this act the Ministry of Health delegated the drug supply function to Medical Stores Limited, hence the formation of an autonomous institution.

MSL is responsible for ensuring continuous distribution of pharmaceutical products in a financially viable and sustainable manner. It consists of three directorates namely; Finance and Administration, Pharmaceutical Standards and Transport and Logistics.

#### **Drug procurement system (Zambia)**

WHO. Webpage accessed: 7.4.16

[http://www.who.int/profiles\\_information/index.php/Zambia:Drug\\_procurement\\_system](http://www.who.int/profiles_information/index.php/Zambia:Drug_procurement_system)

The organisational structure and procurement policies of essential medicines in Zambia are based both on the principles of decentralisation and the autonomy of each facility within the drug management and distribution system (i.e. Medical Store Limited (MSL) → Hospital and MSL → District → health centres). Each facility is granted an annual drug budget by the MOH and is kept responsible for its own procurement decisions. Governance arrangements are quite poor at lower levels, and suffer from the absence of external control and weak accountability.

#### **Purchasing in power asymmetry – A study of vaccine procurement for developing countries**

Pazirandeh A. (2012) Lund University Thesis

[http://www.tlog.lth.se/fileadmin/tlog/Utbildning/Kurser/humanitarian\\_logistics/Licentiate\\_Ala.pdf](http://www.tlog.lth.se/fileadmin/tlog/Utbildning/Kurser/humanitarian_logistics/Licentiate_Ala.pdf)

Extracted from this thesis are selected details from Zambia case study on vaccine procurement:

In Zambia the ministry of health (MOH) has ownership of vaccines and immunisation programs. MOH has been involved in planning and purchasing of vaccines since the country's independence in 1964. MOH receives external funds from Global Alliance for Vaccines and Immunization (GAVI) and UNICEF. According to WHO factsheet on Zambia, as of 2011 they finance 19 percent of their national immunisation program, while the remaining part is financed by international sources.

The MOH outsources most part of its vaccine purchase process to UNICEF. There are however, small portions of specific vaccines directly procured by the MOH. The MOH has also set up an initiative called the Drug Supply Budget Line (DSBL) in cooperation with other partners like WHO and UNICEF, to support, organise and advise parties. Key areas of DSBL

work are, coordinating activities related to procurement and supply chain operations and their management for essential medicines and medical supplies, working closely with various programs and government institutions such as Medical Stores Limited and the Pharmaceutical Regulatory Authority. Major input of DSBL from 2007 to 2011 has been reported to be accurate forecasts, assured funding, and effective procurement. The DSBL acts as an advisory to the MOH and is not directly involved in procurement of vaccines.

Zambia MOH uses technical specifications and quantities specified by UNICEF as the purchasing partner to MOH. Suppliers for routine vaccines purchased through UNICEF, are also selected by the organisation (i.e. UNICEF) and in accordance with the WHO pre-qualified lists. Contracting is also carried out by UNICEF. Expedition and follow-up of orders and supplier relationships are also carried out by UNICEF and hence in accordance with their routines.

Price for routine vaccines, and supplier commitment to continue production, are the main market characteristics impacting purchasing strategies practiced by Zambia. In the vaccine market, suppliers could easily switch from routine vaccines that are important for developing countries to vaccines more expensive and probably more profit generating for the industrial countries market. The main reason behind purchasing through UNICEF is to take advantage of the economies of scale.

#### 4. Uganda

##### **National Medical Stores (NMS) (Uganda)**

NMS. Web page accessed: 8.4.16

<http://www.nms.go.ug/>

Foreword from the General Manager:

The role of NMS is stipulated in the mandate that is provided for in the [NMS Act](#) which is to procure, store and distribute essential medicines and other medical supplies to public health facilities. So they ensure that all institutions get the medicines and essential medical supplies in line with the budget allocated to them by the Parliament of Uganda.

Decentralisation of funding to health facilities and districts was a challenge and NMS did not have enough capitalisation and as a result we had to borrow from banks and pay interest. It was a difficult time because NMS were working like a private facility. In the past 3-4 years, government had to recentralise funding and now capitalisation is no longer an issue.

NMS have Public Private Partnerships (PPPs) under an innovation called “The Last Mile”. Traditionally they would deliver the medicines at the District Health Officers’ (DHO) office for the districts to deliver them to health facilities but because the districts lacked funding and transportation, the items would not be delivered in time. Four years ago, NMS took that function from them where they now deliver the medicines to the DHO’s Office and then hand it over to private transporters. They also partner with the private sector when it comes to purchase of medicine and other related items because they do not manufacture medicines as government.

NMS also have PPPs in areas to do with the loading of medicines and other medical supplies on trucks, canteen services, cleaning among others. But in future we are looking towards exploring more technical PPPs when we expand our warehouse.

##### **Uganda National Medical Stores and USAID | DELIVER PROJECT Training Improves Product Distribution**

USAID (2009) USAID | DELIVER PROJECT, Task Order 1.

[http://deliver.jsi.com/dlvr\\_content/resources/allpubs/logisticsbriefs/UDPHoldLogiTrainImpr.pdf](http://deliver.jsi.com/dlvr_content/resources/allpubs/logisticsbriefs/UDPHoldLogiTrainImpr.pdf)

Supply chain systems must offer continuous and efficient distribution of medical supplies to service delivery points. In Uganda, this is the responsibility of the National Medical Stores (NMS). An autonomous government corporation, created by statute in 1993, the NMS ensures the financially responsible and sustainable distribution of pharmaceutical products.

Together, the NMS and the USAID | DELIVER PROJECT organised a training on logistics and effective stores management in January 2009 for all NMS stores personnel. Participant questionnaire showed a significant improvement in staff understanding and knowledge of logistics.

### **20 year milestone for NMS in Uganda**

Waiswa B. (2013) East African Business Week, December 10<sup>th</sup>, 2013

<http://www.busiweek.com/index1.php?Ctp=2&pl=283&pLv=3&srl=68&spl=107&cl=10>

News article:

NMS has been told to improve on their service delivery despite remarkable success in the last two decades.

The advice was made by Health Minister Ruhakana Rugunda during an event to celebrate twenty years of NMS in Kampala. The minister also urged NMS to buy from local drugs manufacturers.

The organisation last week celebrated 20 years of incredible success in which they have recorded a number of achievements most notable being increased supply of drugs in upcountry health centres.

Moses Kamabare, the General Manager of NMS speaking during a dinner to mark 20 years said the body has undertaken fundamental reforms. These reforms include publishing a national medicines and medical supplies delivery schedule to ensure proper planning. This, according to Kamabare has promoted accountability and helps to ensure government hospitals and health facilities never run out of drugs and other medical supplies throughout the year. Kamabare said they stopped dealing with the private sector and concentrated on government health facilities to ensure steady and predictable supplies. Government through NMS also started labeling the drugs and other medical supplies to stop theft of the supplies.

The other major reform has been the creation of a new innovative last line delivery system taking the medicines beyond the district health offices up to the individual health facilities. In this period, NMS has had challenges which included lack of health workers, bad roads especially upcountry, delayed placing of delivery orders and cumbersome procurement process. These have been a hindrance to NMS execution of their mandate. Kamabare told a congregation at the celebration that NMS is looking at embracing ICT measure to boost their operations.

### **NMS celebrates 20 years**

Vision Reporter (2013) New Vision

[http://www.newvision.co.ug/new\\_vision/news/1335306/nms-celebrates](http://www.newvision.co.ug/new_vision/news/1335306/nms-celebrates)

News article:

It is 20 years since the Government set up the National Medical Stores (NMS). The corporation has the mandate to procure, store and distribute medicines and medical supplies to all government health facilities in a financially viable and sustainable manner. It procures

and distributes essential drug kits, drugs for sexually transmitted infections and family planning products in line with the national drug authority policy. It is also expected to ensure efficient and economic procurement of medicines and other medical supplies of good quality, secure safe and efficient storage, administration, distribution and supply of medicines.

It is also meant to establish and maintain systems to ensure the quality of goods supplied and estimate the current and future needs as a basis for procurement, planning and budgeting. By the time the corporation was set-up, there were less than 40 districts. The number of districts has since increased to 112. As the number of districts increased, the number of health facilities also increased.

This meant that NMS has to expand its coverage as a national medical procurement and distribution institution. A few years later, NMS, which initially was supposed to procure and distribute drugs and other medical supplies exclusively to public health facilities, was asked to start providing its services to the police, army and prison facilities. The number of health facilities served by NMS currently stands at 3,000, including the heart institute, cancer institute, Butabika mental hospital and the national blood bank. NMS has seven regional customer-service centres.

According to NMS acting head of stores and operations, Norbert Kazibwe, when the corporation started, it had 17,949 square metres of storage space. But the storage facilities were located in Kampala city, Entebbe and Banda, a Kampala suburb. With the rental storage facilities scattered, Kazibwe says processing an order for drugs for a health facility took several days. He says the corporation reduced the storage space to 7,200 square metres after the construction of its own ware house in Entebbe-the biggest drugs warehouse in East Africa. With all the drugs and other medical items under one roof, now it takes a maximum of three hours to process an order for medicines. "It used to take a whole week to process an order in the past. We are proud of this achievement," he explains. Before a new warehouse was established, boxes of drugs would be piled on the floor, rendering the medicines susceptible to damage. "We were not utilising space well. But in the new ware house, we use shelves and we are utilising space better," Kazibwe says. The new ware house has 8,000 pallet locations (shelves) and can hold 2,700 different types of medicines. The ware house has seven cold rooms, five of which serve as vaccine storage facilities while the two are used for keeping some of the essential drugs. On average, Kazibwe explains that NMS offloads five trucks of medicines and other medical supplies every day. NMS, according to him, processes 200 drugs orders from health facilities on average every day. In order to successfully handle the enormous work associated with provision of drugs to a population that suffers from a number of ailments, NMS operates day and night shifts for workers, who run the ware house. The corporation has 15 drugs distribution trucks, seven of which, have inbuilt cold storage facilities. The trucks were acquired in 2009. The warehouse is run by an electronic enterprise resource planning system that tracks transactions of employees. The system is also used to monitor stock levels and manage replenishments from the suppliers.

### **Supply Chain Information Management and Service Delivery in Public Health Sector Organizations: A Case Study on National Medical Stores of Uganda**

Pule S. (2014) International Journal of Supply Chain Management

<http://ojs.excelingtech.co.uk/index.php/IJSCM/article/download/959/pdf>

In East Africa, health sector service delivery management is still faced with numerous challenges, most of which, attributed to poor supply chain information management systems. In Kenya, for instance, the country faces great challenges in data collection, analysis, evaluation and interpretation of health indicators to guide evidence based policy making. This is because of lack of low institutional capacity, lack of clear functional linkages between the different components of the health system, inadequate funding, among others.

In Rwanda, however, government initiated TRACnet systems to help manage health data, the system is largely paper based and has significant limitations, ranging from being slow in passing data/information from one program area to another or passing it from one system to another, which results in limited data entries, duplication, loss of critical information, higher costs, and missing opportunities for timely intervention and prevention.

In Tanzania, a health information system was initiated to help supply each level of the health sector with the necessary information in a timely and accurate manner. However, the system was limited by members of the health Ministry being frustrated by the difficult process of implementation. For instance, data collection and reports to senior management were accorded little attention yet it was a key factor in improving the effectiveness of health care within the country.

Similarly, in Uganda, the sector faces numerous information related challenges, which include but are not limited to, lack of sufficient funds to invest in information technologies, insufficient technical capacity and poor institutional collaboration, which renders service delivery a challenge. To be specific, poor information and supply chain coordination among partner institutions like the Ministry of Health, NMS and health centres has continued to affect procurement, storage and distribution of drugs within the country.

This paper describes the relationship between supply chain information management and service delivery efficiency in public health sector organisations. The three specific objectives of this paper are to: examine the relationship between supply chain information processing and service delivery; assess the relationship between supply chain information storage and service delivery; and lastly, to evaluate the relationship between supply chain information flow and service delivery. The researcher employed a positivist approach using a descriptive, case study and correlational designs. Using a five point Likert scale questionnaire, data was collected from a sample of 148 respondents. Of these, 56 respondents were from the National Medical Stores (NMS), while 92 were from supplementary sources (Mulago Hospital and Kisenyi Health Centre IV). Data were analysed using means, and the Pearson Linear Correlation Coefficient. Findings revealed that supply chain information management was at an average mean of 3.97, interpreted as high, while service delivery management was at an average mean of 2.94, interpreted as moderate. Correlation results on the other hand, indicated a positive and significant relationship between supply chain information management and service delivery of r-value 76% and Sig. value of 0.002. In light of this, the researcher concludes that supply chain information management positively contributes to service delivery, and that the findings of this paper can act as a cornerstone for managers to comprehend the importance of information management within the supply chain process, and in particular, appreciate the value of data collection, information storage and sharing within the supply chain network, if service delivery decisions are to be maximised.

## 5. Mozambique

### **Using performance-based financing (PBF) to motivate health commodity supply chain improvement at a central medical store in Mozambique**

Serumaga B, Spisak C, Rosen J, Morgan L, & Eichler R. (2014). BMC Health Services Research, 14(Suppl 2), P148.

<http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-14-S2-P148>

The predominant model of public health commodity supply chains in developing countries is one dominated by a central medical store (CMS). In this model, the CMS plays the pivotal role of procurement, storage and warehousing of all health commodities before they are distributed to the next level in the supply chain. Challenges with technical and organisation capacity at the CMS level has led to longstanding difficulties in creating sustainable performance improvements in several countries. In Mozambique, the central medical store (Central de Medicamentos e Artigos Médicos-CMAM) receives significant US government

support (through USAID) for both health commodities and technical assistance. The authors tested the effectiveness of a PBF scheme between CMAM and USAID, to improve the functioning of the CMS in Mozambique.

In January 2013, USAID entered into a year-long government to government grant arrangement that conditions disbursement of tranches of USAID support on specific results at CMAM. The disbursements would take the form of a fixed amount reimbursement award (FARA) of up to \$125,000 per quarter (\$500,000 per year) if CMAM could demonstrate meeting quarterly targets on six performance indicators. These indicators were related to planning, distribution, and warehouse management. The aim of the PBF program was to spur innovation, hard work and improve warehousing.

The authors hypothesised that the incentive would lead to improvements through three pathways:

1. Improved staff motivation and morale due to individual or group bonus payments
2. Improved collaboration between and within CMAM departments due to the need for cooperation among departments in order to achieve the performance targets, and
3. Increased targeted investments in infrastructure, systems and human resources, due to the additional funds available to CMAM through the grant.

Indicators were selected in areas where change had previously been difficult to achieve, where baseline data could be collected, where performance was entirely under CMAM's control, and for which measurable targets could be set and achieved within 1 year of the program. Baseline data was collected in the last quarter of 2012.

Improvements were found in all indicators over one year. Matching records of stock status reports and physical counts improved from 70% at baseline to over 85% by 2013. There were improvements in picking accuracy, order cycle times and distribution planning. The incentive led to better collaboration between CMAM departments.

The authors found process improvements due to the PBF scheme, possibly leading to increased availability of health commodities.

### **Results-Based Financing in Mozambique's Central Medical Store: A Review After 1 Year**

Spisak C, Morgan L, Eichler R, Rosen J, Serumaga B, & Wang A. (2016). *Global Health: Science and Practice*, 4(1), 165-177.

<http://www.ghspjournal.org/content/4/1/165.full>

In Mozambique, underperformance at CMAM has negatively affected the functioning of the supply chain as a whole, resulting in inaccurate information about stock levels and expiries, as well as delayed and inefficient distribution. Many strategies have been tried to improve the performance of CMAM. A warehouse management system was introduced, for example, providing tools to better control and manage stock and data. A monitoring and evaluation (M&E) framework was developed and a dedicated M&E unit created within CMAM to routinely track performance. And an electronic payment system—e-SISTAFE—has enabled CMAM to pay some suppliers and manage limited funds, independent of the Ministry of Health's Department of Administration and Finance (DAF).

Donor financial and technical support has been significant. CMAM receives technical assistance and commodities from the US Government (USG); operational funding and commodities from the World Bank; and commodities from the Global Fund to Fight AIDS,

Tuberculosis and Malaria (The Global Fund). The USG alone invests an average of US\$10–15 million annually for technical assistance to CMAM.

Additionally, the Ministry of Health and its partners have developed supportive action plans and policies, such as the Supply Chain Logistic Plan of Action 2012 and the Pharmaceutical Logistics Strategic Plan 2013, which includes a performance indicator and monitoring framework. These plans identify several goals:

- Improved quality and timeliness of information flow between districts, provinces, and CMAM, and better use of this information for planning and procurement
- Better planning for distribution from provincial warehouses to the districts
- Stronger supervision and internal audit of province/district stores by CMAM

Despite these improvements, CMAM has lacked data to demonstrate improved supply chain outcomes, and stakeholders in Maputo believed that CMAM's performance was not improving as expected. In this context, result-based financing (RBF) was proposed, both to realign incentives and to catalyse other investments in CMAM.

This paper reviews the first year of the results-based financing (RBF) programme in Mozambique, which began in January 2013. The program aimed to improve the performance of the central medical store—Central de Medicamentos e Artigos Medicos (CMAM)—by realigning incentives. The authors completed in-depth interviews and focus group discussions with 33 key informants, including representatives from CMAM and donor agencies, and collected quantitative data on performance measures and use of funds.

The RBF agreement linked CMAM performance payments to quarterly results on 5 performance indicators related to supply planning, distribution planning, and warehouse management. RBF is predicated on the theory that a combination of carrot and stick—i.e., shared financial incentives, plus increased accountability for results—will spur changes in behaviour. Important design elements: (1) indicators were measured against quarterly targets, and payments were made only for indicators that met those targets; (2) targets were set based on documented performance, at levels that could be reasonably attained, yet pushed for improvement; (3) payment was shared with and dependent on all staff, encouraging teamwork and collaboration; (4) results were validated by verifiable data sources; and (5) CMAM had discretion over how to use the funds.

The authors found that CMAM's performance continually improved over baseline and that CMAM achieved many of its performance targets, for example, timely submission of quarterly supply and distribution planning reports. Warehouse indicators, such as inventory management and order fulfilment, proved more challenging but were nonetheless positive. By linking payments to periodic verified results, and giving CMAM discretion over how to spend the funds, the RBF agreement motivated the workforce; focused attention on results; strengthened data collection; encouraged teamwork and innovation; and ultimately strengthened the central supply chain.

Policy makers and program managers can use performance incentives to catalyse and leverage existing investments. To further strengthen the approach, such incentive programs can shift attention from quantity to quality indicators, improve verification processes, and aim to institutionalise the approach.

## 6. Sierra Leone

### **Building the capacity of Sierra Leoneans in supply chain on the National Pharmaceutical Procurement Unit (NPPU) project (a case study)**

Juma M, Lansana J, Dawoh F. (2014) Journal of Pharmaceutical Policy and Practice, 7(Suppl1), O25.



<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4304318/pdf/2052-3211-7-S1-O25.pdf>

A need to strengthen the supply chain and capacity of local supply chain professionals in Sierra Leone was identified following a supply chain assessment in 2010. In 2012, Crown Agents was contracted to undertake a project to set up and manage the National Pharmaceutical Procurement Unit project and build local capacity over a 3 year period. The project team consists of international supply chain professionals and their Sierra Leonean counterparts to whom they are tasked with building capacity.

The project team implemented a detailed capacity development plan, designed specifically to meet the individual development needs of the local Sierra Leonean counterpart executives. Each development plan was tailored to ensure that the counterparts' capacities were built through mentoring, on the job training, attendance on accredited external professional training courses, regular monitoring and evaluating. Additionally, capacity development to strengthen the existing non-executive workforce in other department was also delivered.

The counterparts received specific "on the job" training and learning which they were able to confidently apply to everyday situations in order to make significant improvements to the medical supply chain. Additionally counterparts attended external supply chain specific accredited courses in procurement and supply chain management. The mentoring was useful as it taught the counterparts how to meet challenging workloads and effectively liaise with people at all levels from teams that they may manage to development partners and officials in various government ministries.

During the project's implementation the counterpart management team received effective capacity development to allow them to undertake their specific supply chain roles with confidence and provide effective support to their management team. The mentoring programme meant that learning and development was always available and the counterparts were able to gain first-hand experience of planning approaches, meeting deadlines and effective management in supply chain on a daily basis. Additionally the counterparts gained exposure to other areas of supply chain management including stakeholder relations.

It is important to undertake an initial comprehensive assessment of the development requirements of the counterparts in order to plan the development plan to be implemented. It is important to review this plan regularly with the counterpart to see if any changes may need to be made to address any new development areas.

### **Sierra Leone: Analytical summary - Medical products, vaccines, infrastructures and equipment**

WHO. Accessed 1.4.16

[http://www.who.int/profiles\\_information/index.php/Sierra\\_Leone:Analytical\\_summary\\_-\\_Medical\\_products,\\_vaccines,\\_infrastructures\\_and\\_equipment](http://www.who.int/profiles_information/index.php/Sierra_Leone:Analytical_summary_-_Medical_products,_vaccines,_infrastructures_and_equipment)

With regard to access to affordable medical products and health technologies, there has been a huge investment in drug and medical products procurement with over US\$ 13 million spent by donors on procuring drugs and medical products for the Free Health Care Initiative. The Government of Sierra Leone has spent billions of leones more on the procurement of cost recovery drugs.

Despite this large investment, the recent service availability and assessment report shows that, on average, facilities had only about 35% of the required essential drugs in stock. Some progress was made in reviewing the essential drugs and consumables lists for 2010, which ensured the availability of quality and medical consumables and equipment in health facilities.

Logistics Management Information System and CHANNEL software have been developed to track drug distribution. In addition, the Ministry of Health and Sanitation is soon to establish a National Pharmaceutical Procurement Unit, which will function as a central body to procure drugs, medical consumables and health equipment.

Up to 70% of medicines and related supplies are provided by the private sector because the Central Medical Stores face a number of challenges. These include:

- shortage of qualified staff and logistics
- inadequate funding
- lack of a national medicines' management information system
- inadequate storage facilities
- the existence of parallel supply systems

Added to these issues, the medical products that reach health facilities are inefficiently utilised owing to a lack of operational guidelines, tools and appropriate training.

There is a National Medicines Policy, which stipulates guidelines for procurement of pharmaceutical and related products. Through the National Medicines Policy, the Ministry of Health and Sanitation is trying to ensure that medicines are prescribed, dispensed and used rationally to optimise the therapeutic benefit to the patient, reduce loss or wastage and hazards arising from irrational practices.

Funding for vaccines is provided by the Government, GAVI Alliance and other partners, while vaccine procurement is supported by the United Nations Children's Fund and WHO. There is a viable cold chain, supervised and maintained by the Department of Child Health and the Expanded Programme on Immunization. However, there is a need for improved management capacity as well as storage space to accommodate the increasing quantity of cold chain equipment; for example, the number of refrigerators has increased from 750 in 2009 to 1120 in 2010.

#### **NPPU Board Interacts Health Minister**

Ministry of Health and Sanitation, The Republic of Sierra Leone. Webpage accessed: 8.4.16 <http://health.gov.sl/?p=1427>

Ministry news item:

Board Members of the National Pharmaceutical Procurement Unit (NPPU) headed by the Chairman, Mr. Alie Fornah has paid a courtesy call on the Minister of Health and Sanitation at his Youyi Building Office to brief him about development of the Board's operations.

Mr. Alie Fornah described the Board's membership as a multi-disciplinary team, and the NPPU as an autonomous body that has the clear mandate of procuring, storage, transportation and distribution of Pharmaceutical products. He maintained that the NPPU can only function properly with the support of the ministry to successfully carry out their task, and appealed for the timely accessing of funds to effectively execute their operations.

Mr. Fornah reiterated that the NPPU's Act made provision for accessing of funds but it has always been a challenge. He advocated for the intervention of the Minister's Leadership to help provide assistance for the recruitment of core staff, and the flow of resources that would make the NPPU and its Board a more viable institution.

Health and Sanitation Minister, Dr. Abu Bakarr Fofanah said the enactment of the NPPU's ACT is a vision shared not only by the Presidency but also by Parliament and the People of Sierra Leone.

He observed that the Board should be the governing instrument of the unit as clearly spelt out by the ACT but noted that most of the problems encountered are challenges that are not naturally structured.

The minister expressed concern over the current situation of the operations of the Board and the NPPU, and promised to look into the challenges and other pertinent issues raised during the discussion.

## 7. Tanzania

### **In-depth assessment of the medicines supply system in Tanzania**

The Ministry of Health and Social Welfare, Tanzania. (2008) Ministry of Health and Social Welfare, Dar es salaam, Tanzania.

<http://apps.who.int/medicinedocs/documents/s16503e/s16503e.pdf>

The Medical Store Department which is the structure responsible for procurement and distribution at the national level is a semi- autonomous, public, non-for-profit organisation created in 1993. It operates a self-sustaining revolving drug fund with 8 zonal stores. Data from the study found that stock availability of twenty tracer medicines was at an average of 79% at the dates of evaluation in the Zonal Stores. The stock out situation measured by the number of days the item has been out of stock in a year ranged between 1-183 days. Lead times for delivery by sea on the average were long taking up to 8 months. In addition the time used to clear products from the port to the central warehouse was also long. Stock management techniques also were found to be weak except for traceability of batches (though this had been rated poor by the TFDA in previous quality inspections) and the definition of minimum stock levels. This could have contributed highly on the number of expired medicines and supplies which was found to be 3.7% of sales for the year for 2006 at the central store.

The assessment also found that, most facilities studied had a functioning Pharmacy system (88.9%) and kept Essential Medicines (92.9%). However, in most of the Pharmacies, a general inadequacy of storage space, storage equipment and facilities for controlling temperatures were found. For example only 33% of Pharmacies reported to have adequate storage capacity, only 52% had facilities for cold storage and only 22% had adequate storage equipment. Important parameters in stock management such as maximum and minimum levels of stock were not determined in almost all facilities. The assessment showed the level of stock management in almost all of the Pharmacies needed to be improved. Although availability of tracer medicines was high at health facilities, the same facilities also presented a considerable number of stock-out days. Some medicines were out of stock for 4 months.

Tanzania has about 640 registered Pharmacists, 352 Pharmacy Technicians (PT) and 312 Pharmacy Assistants. With more than 5400 health facilities in the country, it is evident that there are inadequate pharmaceutical human resources at health facilities, districts and regions.

The assessment also found that there were more areas in the health facilities management systems that required improvement. This was in comparison with how the supply chain management was managed in the regional, central and national levels. The assessment showed that there were challenges with regards to the quantification processes and staff interviewed did not have a unified system for determining what to order from the Central Store. The forecasting ability was still low, and Health facility staff (78%) affirmed that very minimal initiatives were in place to provide continuous training. Only 11% of facilities used data on donation supplied by partners. Results showed that only 33% facilities procured exclusively from MSD, the national procurement agent while 45% procured from other sources.

At the Medical Stores Department (MSD), procurement was done predominantly through a competitive tender system, and the medicine price survey conducted in 2004 indicated that the medicines procurement prices were below the international reference prices with an overall medicines availability of 72%.

### **The United Republic of Tanzania Drug Tracking Study**

Euro Health Group and MSH Tanzania. (2007) Euro Health Group.

<http://apps.who.int/medicinedocs/documents/s19982en/s19982en.pdf>

The National Drug Policy (1991) and Pharmaceutical Master Plan (1992-2002) are critical in guiding developments in the sub-sector. Both of these documents were fairly comprehensive at the time of development, but are now well out of date and no longer address current policy issues (shift from push to pull system, cost-sharing, insurance schemes). Although various developments have taken place since 2004 to review and update both the National Drug Policy (NDP) and Pharmaceutical Master Plan, the outcome remains that the sector is still without a policy and overall plan. Implementation of the NDP Pharmaceutical Master plan is coordinated by the Pharmaceutical Support Unit (PSU) at Ministry of Health (MOH&SW).

Some of the key roles of the PSU are to:

- Ensure that MSD performs according to the MSD Act of 1993
- Ensure that adequate funds to procure drugs and medical supplies are provided to MSD
- Assist health facilities with capacity to quantify drugs requirements
- Establish effective strategies for improving rational drugs use
- Through TFDA ensure the quality of medicines
- Establish effective drug management and monitoring systems at health facility level and reduce drug waste and pilferage
- Ensure an appropriate allocation of resources to health facilities for drugs that takes into account equity, patient load, morbidity and drug needs

In Tanzania the financing of drugs supply is centralised and managed from the MOH&SW department on drugs and supplies (Pharmaceutical Supplies Unit). However, this is only as far as the disbursements for drugs outside the vertical programmes are concerned. The vertical programmes, for example EPI (vaccines), NACP, TB and recently malaria drugs (artemisinin combination therapy - ACT), are excluded for the formulas being used for drug allocations within the MOH department on drugs and supplies. The vertical programmes represent an increasing part of total resource allocation for drugs in Tanzania and constitute by 2005/06 approx. 47% of total cost for drugs. Vertical programmes will in the future (from FY 2006/07) constitute the far biggest part of total cost for drugs. This is mainly due to the substantial amount of resources for ARV drugs and the introduction of ACT for malaria, initiated from November 2006.

The supply of drugs in Tanzania passes through four different supply chains. Three of these are administrated by MSD:

- Essential drugs distributed by private wholesalers
- Essential drugs distributed in bulk by MSD
- Kit's and indent packs distributed by MSD
- Vertical programme (VP) items distributed by MSD

MSD is also a wholesaler, but owned by the Government and governed by a board of directors selected by the MOH&SW. It is the main supplier of essential drugs for the public sector and primary supplier to faith-based and other non-government, non-commercial groups providing health services in Tanzania. MSD procures essential drugs in bulk from

national and international wholesalers. These essential drugs are stored centrally at MSD in Dar es Salaam.

### **Medical Stores Department**

<http://www.msd.or.tz/>

The official MSD website for reference.

## **8. Ethiopia**

### **Ethiopia: Analytical summary - Medical products, vaccines, infrastructures and equipment**

WHO. Webpage accessed 1.4.16

[http://www.aho.afro.who.int/profiles\\_information/index.php/Ethiopia:Analytical\\_summary\\_-\\_Medical\\_products,\\_vaccines,\\_infrastructures\\_and\\_equipment](http://www.aho.afro.who.int/profiles_information/index.php/Ethiopia:Analytical_summary_-_Medical_products,_vaccines,_infrastructures_and_equipment)

The pharmaceuticals supply core process started in Ethiopia in 2009 with the transformation of the profit-making Pharmaceutical and Medical Supplies Import and Distribution Agency into the service-providing Pharmaceutical Fund and Supply Agency.

The Pharmaceutical Fund and Supply Agency initiated capacity-building activities in terms of:

- revolving drug funds
- construction of hubs and transportation systems
- deployment of human resources
- designing a logistics management information system.

The Agency's health and health-related services, product regulation and policy documents have been refined, and a new proclamation is being prepared.

### **A master's thesis on "Evaluation and Improving Pharmaceutical Supply Chain Distribution Network" The Case of Pharmaceutical Fund and Supply Agency (PFSA) In Ethiopia**

Lissanwork E. (2013) Addis Ababa Institute of Technology, Addis Ababa University.

<http://etd.aau.edu.et/bitstream/123456789/4513/3/Eyob%20Lissanwork.pdf>

The main objective of the study is to analyse the existing supply chain distribution network at PFSA and identify problems in order to redesign and improve the distribution chain. Given the complex nature of issues that are of interest, in this study both qualitative and quantitative research methodologies in the form of a case study are employed. The data for the study is gathered in four distinct forms: interviews, questioners and review of documents from the Agency and direct observation. Findings indicated that there is a huge gap on the pharmaceutical availability and the distribution capabilities of the pharmaceutical supply chains in PFSA, especially at the Public Health Facilities. Finally this research mitigates the distributions problems, by proposing effective and efficient distributions of the pharmaceutical products at PFSA in Ethiopia after conducting a critical analysis to redesigning the existing distribution network using a mathematical model that increases the availability of pharmaceutical products at the right time and right place.

### **National strategy and plan of action for pharmaceutical manufacturing development in Ethiopia (2015–2025) Developing the pharmaceutical industry and improving access**

Federal Democratic Republic of Ethiopia Ministry of Health and Ministry of Industry (2015)  
Government of Ethiopia

[http://www.who.int/phi/publications/Ethiopia\\_strategy\\_local\\_production.pdf](http://www.who.int/phi/publications/Ethiopia_strategy_local_production.pdf)

This document does not give details of the governance of PFSA but provides some information that may be useful for reference.

### **Ethiopia Pharmaceuticals Fund and Supply Agency**

The Federal Democratic Republic of Ethiopia. Web page accessed 1.4.16.

<http://www.pfsa.gov.et/home.php>

For reference

### **In Ethiopia, knowledge is power: improving pharmaceutical tracking for better forecasting, procurement and distribution**

Tadesse D. (2013) SCMS In Brief

[http://scms.pfscm.org/portal/pls/portal/!PORTAL.wwpob\\_page.show?\\_docname=2809464.PDF](http://scms.pfscm.org/portal/pls/portal/!PORTAL.wwpob_page.show?_docname=2809464.PDF)

Information on Pharmaceutical Logistics Information Tracking System (PLITS) developed by PFSA and the Supply Chain Management System for reference.

## **9. Resources on other low-income countries**

### **Applying Market Mechanisms to Central Medical Stores. Experiences from Burkina Faso, Cameroon, and Senegal**

Govindaraj R and Herbst CH. (2010) Health, Nutrition and Population (HNP) Discussion Paper, World Bank.

<http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/ApplyingMarketMechanisms.pdf>

This study summarised the findings of three assessments of Central Medical Supplies reform and performance in Francophone Africa, and the findings should be treated with caution. It referred to the difficulties in accessing data—particularly quantitative data—for assessing the reforms in the three study countries. It is hoped that studies undertaken in other countries using a similar methodology will enable more precise conclusions to be reached and will strengthen our evidence base on the relationships among specific marketising reform variables and the ultimate impact of the reform on the intended efficiency and equity related outcomes.

This study has indicated that the achievement of the desired efficiency and equity outcomes is premised not on increased autonomy alone, but on a whole variety of drivers both internal and external to a CMS. A strong regulatory framework—the conventions, laws, regulations, and administrative acts that increase the flexibility of some decision making rights, whilst constraining others, with an emphasis on social obligations, accountability, and transparency—are all key to the success of CMSs. In addition, external factors, including technical assistance, government subsidies, and relevant external policies, institutions, and regulations, are also key drivers of the success of a CMS. Future assessments or reform initiatives can learn from this and take these lessons into account.

### **Congo: Analytical summary - Medical products, vaccines, infrastructures and equipment**

WHO. Webpage accessed 1.4.16.

[http://www.who.afro.who.int/profiles\\_information/index.php/Congo:Analytical\\_summary\\_-\\_Medical\\_products,\\_vaccines,\\_infrastructures\\_and\\_equipment](http://www.who.afro.who.int/profiles_information/index.php/Congo:Analytical_summary_-_Medical_products,_vaccines,_infrastructures_and_equipment)

Due to the very low local production limited to the production of fluids and medical gases, supply of Congo drugs is mainly based on imports. Two networks of drug importation serve the market, the public network and private network. The private network is the most important, it is controlled by six importers: LABOREX, September, COOPHARCO, SAÏPHARMA, BETA PHARMA, ZENUPHA. It also includes supply structures belonging to religious orders and NGOs (CARITAS, RED CROSS and SALVATION ARMY).

The public network consists of the central buying office for essential and generic drugs (COMEG) which is a public institution with an independent management. This is a procurement centre set up in partnership with the European Union and other institutions in the Project for the Development of Health of Congo Brazzaville (PASCOB). With regard to logistics, only five departmental directorates of twelve have suitable premises. The infrastructure is old, dilapidated and lack of furniture, office equipment base, nautical facilities and telecommunications.

### **Malawi: Analytical summary - Medical products, vaccines, infrastructures and equipment**

WHO African Health Observatory. Webpage accessed: 1.4.2016.

[http://www.who.int/profiles\\_information/index.php/Malawi:Analytical\\_summary\\_-\\_Medical\\_products,\\_vaccines,\\_infrastructures\\_and\\_equipment](http://www.who.int/profiles_information/index.php/Malawi:Analytical_summary_-_Medical_products,_vaccines,_infrastructures_and_equipment)

The Pharmaceutical Section within the Ministry of Health is the central point for the organisation, management and administration of pharmaceutical services in Malawi. It plays an advisory role to the Ministry of Health on pharmaceutical issues. The National Medicine Policy ensures the efficient and effective management and administration of pharmaceutical services in both the public and private sectors.

The Central Medical Stores is one of the key players in the medicine supply chain management. It facilitates procurement, storage and distribution of medicines and medical supplies to the Government of Malawi, the Christian Health Association of Malawi, hospitals and other approved institutions. Following the Public Procurement Act, all procurement is carried out according to the National Medicine List, using generic names. However, a number of challenges are faced in procurement, including the lengthy procurement procedures and inaccurate data on consumption in public health facilities, making it difficult to make accurate forecasts.

The National Medicine Policy highlights strategies to be implemented to strengthen and maintain a reliable and sustainable supply chain at levels of the health care delivery system, including:

- the establishment and maintenance of a reliable medicine management information system
- development of capacity for data collection processing and quantification needs
- coordination and harmonisation of all forms of medicine procurement for the public sector with all stakeholders

*For more see:*

### **Malawi Government – About Pharmaceutical Services**

Malawi Government. Accessed: 29.3.16

[http://www.malawi.gov.mw/index.php?option=com\\_content&view=article&id=55&Itemid=85](http://www.malawi.gov.mw/index.php?option=com_content&view=article&id=55&Itemid=85)

### **Liberia: Analytical summary - Medical products, vaccines, infrastructures and equipment**

WHO. Accessed 1.4.16

[http://www.aho.afro.who.int/profiles\\_information/index.php/Liberia:Analytical\\_summary\\_-\\_Medical\\_products,\\_vaccines,\\_infrastructures\\_and\\_equipment](http://www.aho.afro.who.int/profiles_information/index.php/Liberia:Analytical_summary_-_Medical_products,_vaccines,_infrastructures_and_equipment)

As is usual for postconflict countries, Liberia is affected by a multitude of problems related to the management and use of medicines at all levels of the health care delivery system. Since good health, by extension, is crucial to the quality, availability, good management and rational use of medicines, it becomes imperative to design appropriate strategies that can address these issues.

The National Drug Policy of Liberia provides a comprehensive framework for the development of all components of the national pharmaceutical sector with a perspective for the coming 10 years, but with monitoring and periodic reviews. It is designed to address the problems relating to accessibility, affordability, availability, supply chain management, rational use of medicines and others and is an integral part of the National Health Policy, which is part of the national comprehensive socioeconomic development plan.

The Ministry of Health and Social Welfare is committed to the provision of accessible health services of good quality and to the fair distribution of these services to all citizens.

Critical to the National Drug Policy are three important policy documents: the Essential Medicine List, the National Formulary and the National Therapeutic Guidelines. The Ministry has made significant progress in updating these three policy documents.

The existing Essential Medicine List was revised in 2007 to correspond with the Basic Package of Health Services; however, some medicines listed on the list are obsolete and the revision is incomplete. Standard treatment guidelines have been revised for those services provided by mid-level health professionals, but a complete revision for all services associated with the Basic Package of Health Services has not been completed.

The 2010 Liberian Medicines and Health Products Regulatory Authority Act established the legal framework for pharmaceuticals in Liberia; however, the Act did not establish pharmaceutical regulations to accompany the authority.

A 10-year Supply Chain Master Plan has been developed to improve drug supply and reporting. The Government of Liberia provides drugs for facilities that it supports exclusively, while bilateral donors pay for drugs at facilities supported through nongovernmental organisations and some faith-based hospitals manage their own drugs importation.

Also, vertical programme donors (GAVI Alliance; Global Fund to fight AIDS, Tuberculosis and Malaria; President's Malaria Initiative) pay for drugs that are provided free to all facilities. Although the Supply Chain Master Plan envisages that eventually the National Drug Service will be the predominant drug procurement mechanism, currently each source of funds uses its own procurement channel.

#### **Pharmaceutical Sector Profile: Zimbabwe**

Chitemerere C. (2011) UNIDO

[https://www.unido.org/fileadmin/user\\_media/Services/PSD/BEP/Zimbabwe\\_Pharma%20Sector%20Profile\\_032011\\_Ebook.pdf](https://www.unido.org/fileadmin/user_media/Services/PSD/BEP/Zimbabwe_Pharma%20Sector%20Profile_032011_Ebook.pdf)

This report analyses the pharmaceutical manufacturing sector in Zimbabwe with a strong emphasis on generic essential medicines used in the management of Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS), Malaria and Tuberculosis. Four companies namely, CAPS Private Limited, Datlabs, Plus Five Pharmaceuticals and Varichem Pharmaceuticals are profiled.



The National Pharmaceutical Company of Zimbabwe (NatPharm) is the national drug and medical commodities and equipment procurement and distribution body for all government hospitals and clinics. Private procurement and distribution is carried out through private wholesalers/agents/distributors and retail pharmacies.

The Government Medical Stores was privatised and renamed the National Pharmaceutical Company of Zimbabwe (NatPharm) in 2002. NatPharm sources medicines and health commodities through open and closed tenders. Open tenders normally call for international competitive bidding to ensure price competitiveness. All pharmaceutical products procured by NatPharm should be registered with the MCAZ prior to actual procurement. Bidders of unregistered products are given a chance to submit their registration dossiers at the time of submission of tenders and such applications are given priority for evaluation by the MCAZ.

NatPharm is funded by the Government of Zimbabwe through budgetary allocations. However, the current economic difficulties have made this type of funding non-functional. Consequently, over the past two decades, NatPharm procurement of pharmaceuticals has been funded by external bodies, including the World Bank, the European Union, the UK's Department for International Development (DFID) and many others. This lack of funding at NatPharm has had a substantial negative impact on the sustainability and viability of the local pharmaceutical manufacturing industry since the public sector is by far the largest consumer of pharmaceuticals. In addition, donor organisations have been channelling finished pharmaceutical products into the country through NatPharm and this has further worsened the precarious position of local industry.

Moreover, although NatPharm was set up largely to serve the public sector, in some disturbing developments some years ago, the organisation started selling excess tender stock to retail pharmacies. In this way, local pharmaceutical manufacturers found themselves competing with the same products on the private market, as NatPharm prices were much lower than theirs because of economies of scale due to the large volumes in which it purchases. This underlines once more the tension between health and industrial policies. This dubious practice was carried out under the guise of providing private market patients access to medicines for chronic diseases at subsidised levels. Such ad hoc practices are detrimental to the local pharmaceutical manufacturing industry.

In the private sector distribution system, manufacturers give discounts to wholesalers and pharmacies based on de facto industry levels. Wholesalers are awarded discounts of 10 to 15 per cent on gross sales and retail pharmacies a level of 5 to 10 per cent. Within the retail pharmacy sector, there has long been an unwritten agreement that mark-ups be set at 50 per cent while the level of mark-ups at wholesale level varies. As pointed out earlier, during the medicines prices survey carried out in 2004 and published in 2005, it was concluded that there was no transparency in the pricing of pharmaceuticals with the problem being more acute in the private and dispensing doctors sectors.

With the current lack of funding for NatPharm, the viability of the country's generic pharmaceutical manufacturing industry is at stake. Local industry depends on access to public sector business through NatPharm in order to maintain its volume of activity and economic survival. Without this business, plant utilisation will remain low and threatens the continuing existence of local manufacturers. Donated pharmaceutical products are flowing into the country, further exacerbating this situation.

Without such large volume domestic business, exports would seem to be the next business option for local companies. However, the export market, both public and private, is extremely competitive. Whilst the product portfolios of some local companies contain essential medicines utilised in regional markets, competition in public sector tenders is fierce and subject to questionable business practices. As mentioned earlier, the product portfolios of

local companies are heavily commoditised for meaningful business in the export private market.

## 10. General research on pharmaceutical supply chains

### **Alternative Public Health Supply Chains: Reconsidering the Role of the Central Medical Store**

Watson N, and McCord J. (2013) Arlington, Va.: USAID | DELIVER PROJECT, Task Order 4. [http://deliver.jsi.com/dlvr\\_content/resources/allpubs/policypapers/Alte\\_Publ\\_Heal\\_Supp.pdf](http://deliver.jsi.com/dlvr_content/resources/allpubs/policypapers/Alte_Publ_Heal_Supp.pdf)

Central Medical Stores (CMS) in low-income countries are usually the backbone of public health procurement and distribution models. However, in practice, CMSs have had inadequate performance in areas that include procurement, financial and logistical management, security, and storage. This report identifies a set of approaches that either de-emphasise the CMS, or enact a radical shift in its management. The authors examined the existing logistics systems that incorporate one or more of these approaches in developing countries. These approaches potentially offer a superior solution to improving supply chain performance benefits compared to approaches that continue to emphasise the CMS.

The multiple approaches that are described raise the question of how to choose the approach that most appropriately fits a particular country's setting. A framework for selecting an approach highlights the technical criteria for judging the suitability of an approach, and considers how to address the inevitable situation when multiple approaches do not meet all the technical criteria. These perspectives make it clear that the choice of one of these alternative models is not the final or entire solution to the CMS dysfunction.

This report presents a case study of de-emphasising the CMS in **Botswana** which looks at using alternative management of the CMS to provide general health commodities. In 2009, to transition to a semi-autonomously managed CMS, the Supply Chain Management System (SCMS) project assumed senior management positions in the CMS.

Prior to 2009, the CMS approach in Botswana was a traditional one, with the CMS included as a government department. The new model, with SCMS as senior management, was that of Alternative Management of CMS. SCMS handled all the management functions and decisions at the CMS, except human resources (HR), finance, and services and primarily focused on such areas as quality management, performance measurement, skill building and infrastructure improvements. The purpose of the new model was ultimately to serve as a transition to a semi-autonomous CMS model within 2 years. However, due to changes in the government and a new minister, plus unsuccessful parastatal transitions—like Air Botswana, the national airline—the timeline was extended and the strategy adjusted so that SCMS continued to manage and build capacity of a local team before returning management to the government. The handover is planned for mid-2012, with SCMS continuing to provide support until late 2013.

This case study of de-emphasising the CMS in **Chile** looks at the general health commodity provision. Despite a functioning CMS, the Chilean government wanted to take advantage of growing technical capability and technology in general public procurement to support the procurement of medical commodities. The result in Chile was two systems that complement each other—sharing procurement and distribution of medical commodities across Chile.

In Chile, the government thought that a parastatal entity could support supply chain management functions, including procurement; and that the MOH should specialise in providing health services. As a result, in the early 1970s, the government created a semi-autonomous Center for Supplies (CENABAST). The Ministry of Health (MOH) managed it independently and operated it according to commercial-sector principles, with clearly defined performance goals and incentives.

While CENABAST worked to optimise its performance and better serve the health sector during the 2000s, a parallel e-government and procurement reform process was taking place outside the health sector. As part of a Public Management Modernization plan, public procurement was substantially overhauled, leading to a Government Procurement Act in October 1999 and a subsequent new procurement law in 2003. These reforms helped launch the eprocurement department, ChileCompra, which is under the Department of Treasury. This eplatform services all government agencies. Throughout this reform process, the Department of Treasury reformed the regulatory environment and ChileCompra developed its capacity to set up and manage framework agreements. By signing these agreements with suppliers of frequently demanded products—computers, vehicles, and insurance policies—ChileCompra gradually expanded into an electronic catalog from which government agencies could make purchases without the expense and delays of inviting bids (Bradley 2006). Using the e-catalog, more than one supplier is pre-approved for any given product, for an extended period of time, after competing in a competitive bidding process. After the agreement is set up, the supplier's goods are listed in the catalog; the customer then selects products from this catalog.

The MOH aims to transition more and more procurement to ChileCompra in the coming years, except for strategic commodities that are not appropriate for procuring through framework agreements; for example, oncologicals that are often in short supply or are small quantity procurements. While CENABAST still exists, it will continue to procure and distribute many commodities on behalf of health regions; but, it no longer serves all regions for all health commodities. This is expected to be a long-term solution for procuring many commodities. As a result of this transition, in the case of many essential health commodities, the government is establishing a permanent complementary CMS mechanism.

Theft has seriously impeded the provision of malaria commodities to clients in **Angola**. Four known thefts of donor-financed artemisinin-based combination therapy (ACTs) occurred at the country's CMS Angomedica between mid-2008 and May 2009, and involved half a million treatments worth almost U.S.\$650,000. The CMS management model in operation was a traditional one, but the root cause for the CMS dysfunction appeared to be a lack of governance and accountability. The largest theft of ACTs—including Global Fund and MOH commodities—from Angomedica in December 2008 resulted, at least partly, from the lack of clear responsibilities for National Essential Drug Program (EDP), which had oversight for the ACT distribution program and Angomedica personnel. However, a second theft occurred even after tighter security and internal controls were established, including limiting access to the warehouse to EDP personnel.

The alternative model that was introduced falls under the Bypass CMS category. To stop further commodity losses, the donor instructed its implementing partner to stop handing over commodities at the central-level Angomedica warehouse and to begin transporting ACTs to the provincial level. At this point, commodities could enter the public supply chain for distribution to the facility level. By July 2012, this approach had been used four times, with two shipments in 2010 and two in February and June 2011. No further thefts have occurred before the commodities were delivered to the provinces. This structure will remain in place until further notice from the donor.

In the 1970s, **Uganda** could be described as having a traditional CMS-supported supply system. The CMS was directly under the Ministry of Health management. The CMS was responsible for procurement, storage, and distribution of all health commodities in the public health system in the country. In 1993, by an act of parliament, the government granted the CMS semi-autonomous status and renamed the National Medical Stores (NMS); however, its mandate did not change. Symptoms of CMS dysfunction included frequent and prolonged stockouts of essential medicines at the national level. Most medicines had to be procured from international manufacturers because local manufacturers could not supply the needed

commodities; and the CMS team lacked international procurement skills. In addition, there were delays in distributing medicines to SDPs.

The main impetus for change was the NMS' unreliable service. Also, following the Uganda-Tanzania war in 1978–1979, the country had a general infrastructure breakdown. Instead of depending on the NMS as the sole source of medicines for the non-profit sector, two faith-based organisations— Uganda Catholic Medical Bureau (UCMB) and Uganda Protestant Medical Bureau (UPMB)— formed the Joint Medical Store (JMS ) in 1979 to procure and distribute health commodities to their SDPs. Although, initially, the JMS was only intended to supply health units belonging to the two bureaus, it evolved into an institution that supplies all SDPs in the country because of the unreliable service from the NMS. The JMS, over the years, gradually developed into a not-for-profit wholesale enterprise that procures, stores, and sells more than 2,000 products; including pharmaceuticals, medical and surgical sundries, equipment, and instruments, as well as laboratory supplies.

The new model can be categorised as a Parallel CMS with Competition. The competing CMS, JMS, has evolved to offer the following services:

- sells medicines and related healthcare supplies
- sells medical equipment, equipment spares, instruments, and accessories
- provides training to healthcare workers
- repairs and installs medical equipment
- provides advisory services for medicine and medical equipment use and handling
- shares information through an info-bulletin and monthly newsletter.

### **Healthcare Supply Chains in Developing Countries Situational Analysis**

Dowling P. (2011) Arlington, Va.: USAID | DELIVER PROJECT, Task Order 4.

<http://peoplethatdeliver.org/sites/peoplethatdeliver.org/files/dominique/files/Healthcare%20Supply%20Chains%20-%20Situation%20Analysis%20EN.pdf>

The main public sector supply model in LMICs includes a public or parastatal entity responsible for procurement and distribution of health supplies to public sector outlets. This entity is often called a central medical stores (CMS) in Anglophone countries or Pharmacie D'Approvisionnement (or similar) in francophone countries; for simplicity, they will be referred to here as CMS. In some Pacific countries, pharmacy departments of ministries may play this role. CMS vary in the level of autonomy they have. Some CMS (e.g., Ghana, Malawi) are almost completely public sector entities run as a division of the Ministry of Health (MOH) while others have a large degree of operational and financial autonomy, for example the Centrale a'Achats des Médicaments Essentiels Génériques et des Consommables Médicaux in Burkina Faso has independent management structures, although the government has representatives that sit on its board. Regardless of any commercial goals, CMS are expected to play a role in increasing access to medicines.

The role and responsibilities of CMS also vary. Traditionally, the function of the CMS is to store and distribute medicines from a central store location to the next level of distribution, usually at regional or district level, though some CMS' also operate regional medical stores (RMS), which store and distribute products to the health facility level. Malawi has three RMS, while Senegal operates eight such RMS. In some countries, RMS carry out procurement, in others there is a separate procurement entity often under the auspices of the MOH, while in others procurement is partly or wholly decentralised to lower levels (e.g., in Ghana it is partly decentralised; in the Philippines it is almost completely decentralised).

In the Philippines, there is no CMS; local governments procure medicines directly from local suppliers except for a limited quantity of —priorityll medicines including for programs like Expanded Programme on Immunisation (EPI) and tuberculosis (TB), which are supplied by the Federal Department of Health. The Philippines has a well-developed network of

commercial distributors; while local procurement has advantages in reduced lead times, and consequently lower inventory levels, this fragmentation of procurement often leads to high procurement costs.

Vaccines in LMICs typically flow through a predominantly vertical supply chain, managed by national EPI programs, often with technical support from the U.N. Children's Fund (UNICEF) and WHO. This is mainly due to their unique product characteristics—in this case, cold chain requirements—although the campaign nature of much of vaccine distribution is also a factor.

While in most countries there is a CMS responsible for distribution of essential medicines and other supplies, there may also be a number of vertical supply chains, particularly for certain programs that may or may not be managed by CMS. For example, in many countries, antiretrovirals (ARVs) and other HIV supplies may be distributed through a vertical supply chain. In many cases, the motivations for establishing these —vertical supply chains are driven by concerns about the weaknesses of the existing supply chain and a desire for improved performance and accountability for program priorities, which are often prioritised and funded by direct donor support. The additional attention and resources these supply chains receive often means better performance than that for essential medicines.

There are often a number of autonomous private not-for-profit medicine supply chains operating in LMICs. These include systems operated by faith-based organisations (FBOs) and international or local development and humanitarian nongovernmental organisations (NGOs) such as Médecins sans Frontières (MSF), International Planned Parenthood affiliates, Save the Children, etc. In addition, social marketing entities (SMEs) may operate supply chains or utilise commercial supply chains to distribute a limited range of medicines. In many countries, FBOs have come together to operate cooperative supply chains, for example the Churches Health Associations of Malawi, Ghana, and Zambia. In Ghana, the Churches Health Association provides about 30 percent of healthcare in Ghana through a network of 152 institutions and operates a central warehouse sourcing products locally from private distributors or from the CMS.

The structure and importance of commercial supply chains for medicines varies from country to country. However, purchasing power of the public limits their significance in all LMICs.

### **Health Product Supply Chains in Developing Countries: Diagnosis of the Root Causes of Underperformance and an Agenda for Reform**

Yadav P. (2015). *Health Systems & Reform*, 1(2), 142-154.

<http://www.tandfonline.com/doi/full/10.4161/23288604.2014.968005>

Well-functioning supply chains to deliver medicines, vaccines, and other health products form the backbone of the health system. Health product supply chains in developing countries are fraught with many problems. Ineffective supply chains weaken the overall health system's ability to respond to the healthcare needs of the population and put treatment programs at risk. This article provides an overview of the structure of health product supply chains in developing countries and outlines the main challenges and their root causes. It aims to identify key areas of reform to ensure that supply chains enable—or at least do not impede—achieving the targeted health outcomes from the increased investments in global health.

This paper makes the following recommendations for supply chain reform:

- Reducing tiers in the system
- Increasing the frequency of replenishment at each tier
- Streamlining information flows
- Measurement of supply chain costs and other performance metrics
- Market competition for central medical stores
- Outsourced transport

- Facilitating consolidation and disintermediation in the private sector supply chain
- Segmented supply chains, not a one-size-fits-all
- Attracting and retaining supply chain leadership and technical talent
- Fostering transparency and strong governance in the supply chain

## 11. Additional information

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