PHARMALINK

2020

CAPACITY BUILDING IN HEALTH SYSTEMS

EPN
Ecumenical Pharmaceutical Network
Réseau Pharmaceutique Œcuménique

CONTENTS

LIST OF ACRONYMS

CBCA	CBCA Communauté Baptiste au Centre de l'Afrique
CBCA	Communauté Baptiste au Centre de l'Afrique
CHAL	Christian Health Association of Liberia
CHAZ	Churches Health Association of Zambia
COVID-19	Corona Virus Diseases 2019
DHIS	District Health Reporting System
DIFAEM	German Institute for Medical Mission
DRC	Democratic Republic of Congo
DRF	Drug Revolving Fund
DRFS	Drug Revolving Fund Scheme
DSO	Drug Supply Organizations
DSU	Drugs Supply Unit
EAC	East African Community
EPP	Essentials of Pharmacy Practice
ESP	Ecumenical Scholarship Program
EZICS	Enhanced Zambian Inventory Control Systems)
HAS	Health Advisory Services
HRD	Human Resources Development
HRH	Human Resource for Health
HRM	Human Resources Management
HSCM	Health Supply Chain Management
HSS	Health Systems Strengthening
HSSCS	Health System Supply Chain Strategy
ICT	Information and Communications Technology
IPC	Infection Prevention and Control
IRS	Indoor Residual Spaying
JMS	Joint Medical Store
LLINS	Long Lasting Insecticidal Nets
LMIS	Learning Management Information System
MEDS	Mission for Essential Drugs and Supplies
MOH	Ministry of Health
MSL	Medical Stores Limited
NAFDAC	National Agency for Food and Drug Control
NDS	National Drugs Service
NGO	Non-Government Organization
NHSP	National Health Strategic Plan
NMEP	National Malaria Elimination Centre
NMSP	National malaria strategic plan
PHC	Primary Health Care
PLHIV	People Living with HIV
PSA	Pharmaceutical Systems Africa
PSM	Supply Chain Management
RCE-VIHSCM	Regional Centre of Excellence for Vaccines, Immunization and Health Supply Chain Management
SDP	Service Delivery Points.
TAFED	Tenofovir disoproxil fumarate, Emitricitabine, and Dolutegravir
TLD	Tenofovir, Lamivudine, and Dolutegravir
TLE	Tenofovir, Lamivudine, and Efavirenz
WHO	World Health Organization

EDITORIAL

As the COVID-19 global pandemic rapidly evolves, numerous organizations around the world continue their pursuit for a sustainable future. Amidst these are our members and partners who are keen to ensure that essential services are still running and available to the populations served. Infectious diseases, such as COVID-19, are reminders that health and medical research is very important. It is a cue that the only one way to achieve global goals and universal health coverage is to leave no one behind.

The coronavirus virus disease (COVID-19) has made it apparent that countries have different capacities to detect, effectively respond to, and manage highly infectious diseases. Concomitantly, the resources necessary to support robust health systems are distributed inequitably, which inevitably places greater stress on societies with the most vulnerable health infrastructure where overall support is needed in both strategic and technical areas.

> "Delivering good pharmaceutical services requires high level of skills and a strong commitment of the management."

Along the way, the learning curve in doing so has been steep and, under the pressure of current restrictions, innovative solutions have often been developed. As a Network we have embarked on ensuring that despite the travel restrictions, building the capacity among our members remains an ongoing process. The aim is to seek and positively ensure efficient service delivery, with a view of increasing satisfaction to the people we serve and to better answer the Members' fast changing needs.

With this, we are customizing the Essentials of Pharmaceutical Practices (EPP) training into an online content to continue strengthening the capacity of hospital pharmacy practitioners. We have physically conducted 12-weeks EPP courses in more than 10 countries across Africa.

EPN is also developing 12 online courses on hospital management, as it is clear that strengthening pharmaceutical practice in isolation cannot be effective. These courses under development will address the challenges of health governance, health care leadership, pharmacovigilance, resource mobilization in primary health care, counselling and psychological support for health care workers, financial management and healthcare sustainability, rational drug use, hospital acquired infection and IPC, Covid-19 clinical management and laboratory techniques and surveillance in partnership with MEDS. We would like to support church health institutions to mitigate the impact of the pandemic on the sustainability of the church health system in LMICs.

In addition, to ensure that capacity building has an impact on the viability of the church health system, training participation will be collective for each health facility in 5 pilot countries. This will include a top manager and

administrator, a finance manager, the pharmacy attendant as well as a clinical officer. At the end of the training, they will develop short and medium term action plan for the health facility to support implementation of the training in a complete and successful manner. A plan with the Christian Health Association of affiliation will be strengthened for the monitoring and evaluation of the implemented action plan. We intend to learn from this approach for a sustainable development of our system in capacity development of pharmaceutical services.

In our Ecumenical Scholarship Program (ESP) we have awarded scholarships to 21 pharmacy staff from 21 church hospitals in 8 countries: 14 are enrolled in diploma programs and 7 in degree (Bachelor of Pharmacy) with one of the degree students having graduated in July 2020.

Delivering good pharmaceutical services requires high level of skills and a strong commitment of the management. Medicines need to be handled with care; the selection, the procurement, the storage and the distribution, each entail complex steps that cannot be performed without special training and studying and good planning at different levels of health system. EPN seeks to improve the situation through two strategic objectives, firstly to promote and enhance professionalism and good governance through training and education, and secondly, to support the delivery of holistic pharmaceutical services among faith-based health systems. This includes partnership with other health and pharmaceutical capacity building stakeholders, evidence-based advocacy at the local, country and regional levels and experience sharing to leverage and transfer knowledge among members.

I take this opportunity to thank you for your continued interest and for sending us articles about your in-field experiences. We would like to assure all our Members, Partners and Friends that we will remain committed to our mission to support churches and church health systems to provide just and compassionate quality pharmaceutical services for all, as a means to achieving global goals and targets on health and access to medicines.

Enjoy our newsletter and feel free to contact us any time for additional information.

Best Regards,

Richard Neci,
Executive Director, EPN.

PHARMACEUTICAL CAPACITY BUILDING IN HEALTH SYSTEMS – DIFAEM'S APPROACH AND EXPERIENCE IN LIBERIA

Christine Haefele-Abah, Pharmacist / MScIH, German Institute for Medical Mission (DIFAEM) and Patricia S. Kamara, Executive Director, Christian Health Association of Liberia (CHAL)

Summary

During the Ebola epidemic (2014/15), the medicine supply structure of the Christian Health Association (CHAL) in Liberia, which had broken down during the civil war, was reactivated as an emergency response. In order to improve the access to medicines and medical supplies for faith-based health facilities in a comprehensive way, the German Institute for Medical Mission (DIFAEM) then agreed to support CHAL in setting up a central pharmacy and to accompany this with training and supervision at various levels of the health system. A new warehouse for the "Drug Supply Unit" was built in the inner of the country (Gbarnga, Bong County) to supply especially many rural faith-based health facilities. Several containers of medicines from international wholesalers were imported and partly used to establish Drug Revolving Funds with 26 health facilities. Availability of essential

medicines has increased significantly from 36% to 75% (in a selection of 8 health facilities) and already 40 of 66 CHAL health facilities receive their medicines regularly from the new CHAL DSU. However, challenges mainly linked to the economic and financial situation remain.

Introduction – DIFAEM´s approach

For many years, DIFAEM has been supporting its partners, mainly in Africa, in supply of affordable and good-quality medicines. The current DIFAEM strategy (2018 – 2023) emphasizes the need for continuous and expanded efforts in the pharmaceutical field. The Objective is that the partners supported by DIFAEM in the pharmaceutical sector have efficiently managed supply structures for quality-assured medicines. Current pharmaceutical services and projects focus on the following sub-areas:

Pharmaceutical training and supervision

To address the shortage of qualified personnel in faith-based health facilities, DIFAEM supports training on pharmaceutical management and regular pharmaceutical supervision of the facilities.

Establishing and strengthening procurement structures

DIFAEM strengthens its church partners to set up feasible joint procurement structures (like pooled procurement) or even establish full Drug Supply Organizations.

Improving quality assurance for medicines

The DIFAEM EPN "Minilab network" with 15 partners in 12 countries regularly test more than 1000 medicine samples per year. Between 2016 and 2018, 126 suspicious cases were reported to DIFAEM, of these 22 were confirmed as falsified, containing no or almost no active ingredient. A new focus for the coming years is to strengthen the quality assurance systems of Drug Supply Organizations through improved procedures like prequalification of suppliers, exchange of information in a joint supplier database and joint audits and training for key personnel.

Background - Liberia

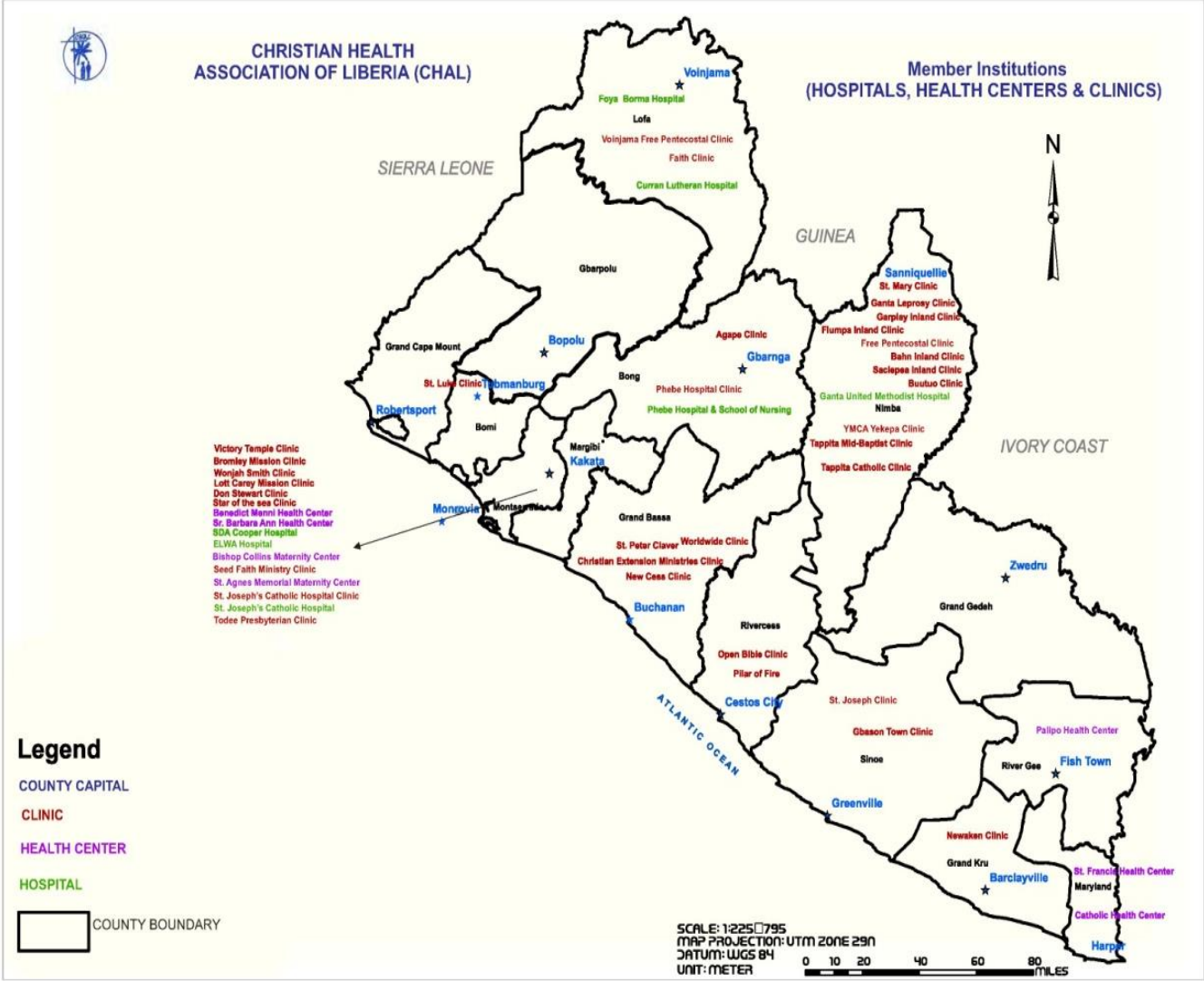
In Liberia, DIFAEM has become active since the Ebola crisis in 2014. The Ebola epidemic 2014/2015 hit Liberia hard. In total, more than 8000 people fell ill with Ebola and about 50% died. A total of 375 health workers fell ill, 189 of whom died of Ebola [2]. Many church institutions were also affected. Apart from strengthening economic development, the reconstruction of a functioning health system has been one of the most urgent tasks in the country.

The DIFAEM partner Christian Health Association Liberia (CHAL) had one of the most important drug supply structures in the country until the Liberian civil war (1989-2003), but it was destroyed in the war. During the Ebola crisis, these structures were partially reactivated to distribute medicines and medical goods. This offer was well received by CHAL member institutions, as the supply of medicines to hospitals and health centres in Liberia is very problematic. The majority of CHAL member facilities have to buy most of their medicines from commercial suppliers or on the local markets at increased prices and in unsecured quality. Especially the smaller facilities cannot raise enough funds to buy sufficiently large quantities from reliable wholesalers.

The National Drugs Service (NDS) of the Ministry of Health, despite having county depots, does not have sufficient capacity to ensure the supply of medicines to all governmental and non-governmental health facilities. CHAL members receive from NDS such medicines that are distributed free of charge to all health facilities in the country within the framework of vertical programmes, such as for HIV/AIDS, malaria and tuberculosis. All other medicines needed must be obtained from other sources.

Most of the 66 CHAL health facilities are located in rural areas, especially in Bong, Nimba and Lofa counties. There are also some CHAL health centres in the southeast, the least developed region. (See picture below.) The roads in many counties are very bad and in the rainy season often only passable by four-wheel drive vehicles or in the south-west only on foot or by motorcycle. Nationwide, CHAL's membership represents about 19 % of all health facilities and provides care for about 30 % of the rural population. Due to a shortage of pharmaceutically qualified staff, knowledge of pharmaceutical management was insufficient both at CHAL headquarters and in the member facilities.

The pharmacies of the health facilities are often run by trained nurses or even by auxiliary staff. There were no guidelines for procurement, storage, rational use of medicines etc. These deficits were to be addressed in parallel with the development of a better supply of medicines.



Health facilities of CHAL in Liberia

Findings

CHAL in cooperation with DIFAEM has started and implemented a number of projects and activities to build the capacity of CHAL and its member health facilities in the supply of medicines and in pharmaceutical management.

1. Set-up of CHAL Drug Supply Unit

A new medicine depot was set up in Gbarnga (Bong County), in the inner of the country, where most CHAL health facilities are located. CHAL thus operates a central pharmacy with 2 warehouses: One in Monrovia, where many small facilities in and around the capital are located, and the new warehouse in Gbarnga, central Liberia, where all rural facilities have access.

The construction of the new depot in Melekie, Gbarnga began in February 2018, it was finally inaugurated in April 2019. The depot has been equipped with a suitable shelving system, an air conditioning system to keep the prescribed temperature for medicine storage, a solar refrigerator for keep-cool items and with modest office furniture. The project was financially supported through German government funds (BENGO). As the expansion of the public power grid has come to a standstill, DIFAEM also financed a generator and a solar system to ensure the power supply for the warehouse.

The new depot in Gbarnga is staffed with an experienced pharmaceutical technician and a dispenser to serve customers, a cashier and 2 further support staff. From Monrovia, the DSU manager and a supervising pharmacist oversee the activities of both warehouses. After starting operations in July 2019, the medicine warehouse in Gbarnga increased its number of customers from four to 23 within two months. 40 out of 66 CHAL health facilities now procure their medicines cost-effectively and with assured quality from the CHAL DSU.

To support the commissioning of the new medicine warehouse and the coordination of processes between the outlet in Monrovia and the new warehouse in Gbarnga, a pharmacist sent by DIFAEM trained the key personnel on site. All processes - from ordering and storage to selling and distributing the medicines - were discussed and established. Special attention was paid to aspects of quality assurance. Further training of the DSU staff in supply chain management and exchange with other Drug Supply Organizations in the African region is planned.

CHAL drug depot in Gbarnga under construction

Filling the shelves in the new warehouse

2. Drug Revolving Fund for faith-based health facilities

DIFAEM provided several shipments of medicines and basic medical equipment from international prequalified wholesalers as a seed stock of medicines for the new CHAL DSU. This seed stock was partly used by CHAL to establish a Drug Revolving Fund (DRF) for 26 targeted health facilities to improve the quality of health services by providing quality essential medicines to the Liberian population at prices lower than prevailing prices at alternative sources. It aims to increase affordability of medicines for the population and improve the utilization of Primary Health Care (PHC) services. Since then, the health facilities participating in the DRF have used their own medicine sales revenues for the purchase of further medicine supplies from CHAL DSU and to pay for operating expenses.

Prior to CHAL´s DSU activities and the introduction of the Drugs Revolving Fund, CHAL members' facility medicines were financed solely by the individual churches while government distributed medicines for free to users of public health facilities. This became unsustainable and was associated with lengthy stock-outs which forced many patients to purchase their prescribed medicines at exorbitant prices in private pharmacies. This led to a crisis of confidence; people frequently by-passed those less credible local health facilities to spend additional time and money in going to big hospitals or private clinics and pharmacies. The poor suffered most because they lacked protected access to free services at public health facilities and the situation also overburdened services at referral hospitals and increased cost.

After the introduction of the CHAL Drugs Revolving Fund in 26 health facilities, the following results have been observed:

- The availability of quality-assured medicines and medical supplies in those DRF health facilities has improved. A survey in 8 selected facilities observed an improvement of availability of essential medicines from 36 to 75% on average.
- The number of patients attending those faith-based health facilities have increased.
- The medicine supply management of health facilities which procure medicines from CHAL and participated in CHAL trainings has improved.
- The turnover of the CHAL DSU has increased.
- The medicine supply management of the CHAL DSU has improved.
- Customers are satisfied with the services of the CHAL DSU and as a result of the quality service, health facilities that are not member of CHAL are coming to buy from both depots.
- With improvement in the supply of quality medicines through CHAL, the poorer people have benefited since availability of quality health services is closer to them which represents an effective decrease in the overall cost of quality health care.

3. Trainings for pharmaceutical dispensers and supervision of health facilities

In order to improve pharmaceutical management at CHAL´s health facilities, basic pharmaceutical training for dispensers was planned. A training needs assessment conducted by CHAL´s lead pharmacist revealed the following results and main gaps:

- Six out of nine facilities assessed had no qualified pharmacist or dispenser, instead used nurse aid, nurse, or personnel without any health or pharmacy training.
- The three hospitals involved in the assessment had cold-chain facilities but did not have fridge thermometers for temperature monitoring. The rest of the health facilities did not have cold-chain storage facilities.

- There were established record keeping systems in place at every facility but data on receiving products was largely not accurate.
- Medicines information references to aid in dispensing were not found in the pharmacies.

Following the gaps identified in the needs assessment survey, a six-week training course was conducted in 3 phases (two weeks each) for untrained dispensers with the aim of building their knowledge and capacity in basic health commodities management.

Training of dispensers at CHAL

A significant part of the course content was derived from Ecumenical Pharmaceutical Network's (EPN) "Essentials of Pharmacy Practice" (EPP) curriculum [2]. The curriculum has six modules namely, pharmacy and healthcare, fundamentals of pharmaceutics, medicines supply management, basic therapeutics, rational medicines use and dispensing and hospital pharmacy practice. The Liberian Health Policies and Guidelines as well as the logistics Management Information system content was developed by the Ministry of Health, Liberia. These entire training packages were covered during the six weeks. (The regular full EPP course is intended for a 12-weeks duration, each module for 2 weeks, but due to a limited budget, the duration and the course content were adapted.) Apart from CHAL´s and MOH´s pharmacists, a trainer from EPN was involved as well.

The training methodology involved lectures using power-point slides, buzz sessions, group work activities and plenary sessions. In a pre- and post-test, the knowledge of participants was assessed. After the three two-weeks training phases, the score increased by 12%, 24% and 26% respectively, e.g. in the last training from 54% to 80%

In the first training cycle (2018/19), 18 participants

from 8 health facilities benefitted from the training course. The next training cycle started in January 2020 and covers another 10 selected facilities. These facilities will be regularly supervised through CHAL pharmaceutical staff.

Discussion

The involvement and support of DIFAEM in Liberia has been quite comprehensive in recent years, covering projects for the set-up of the DSU, for medicines shipments to serve as seed stock for Drug Revolving Funds at health facility level, for training of medicine dispensers and supervision of the respective health facilities. This was only possible with third-party funding (especially from Bread for the World and German government).

There has been strong commitment by the leadership of CHAL and of the DSU team to set up the DSU and improve access to quality-assured medicines and pharmaceutical management for CHAL health facilities. However, a number of challenges exist and pose a risk for sustainable operations of the DSU and access to medicines for health facilities and patients:

Economic situation: Unfortunately, Liberia is in one of the worst economic crises in many years. The Liberian dollar is subject to constant devaluation and therefore it has become problematic to run the DSU profitably. The medicines are procured internationally in USD or Euros, but patients pay for them in Liberian dollars, which leads to difficulties in refinancing in the case of inflation. Due to serious financial problems in the public health system, government facilities were closed and patients turned to faith-based facilities, which risk to be overwhelmed with poor patients who cannot afford treatment.

Cost structure of the DSU: CHAL has started the DSU also with the hope to generate additional income for general CHAL services. However, it has become clear that the running of the DSU itself in a sustainable way is already ambitious. The cost structure with two DSU warehouses is a challenge. So far, donors like DIFAEM and Bread for the World still provide support. But in the near future, all running costs of the DSU need to be covered through income of the sales of medicines. There is need of a clear financial separation between the CHAL DSU and other CHAL services. Any additional income from medicines sales needs to be reinvested to assure development, growth and sustainability of the Drug Supply Unit.

Procurement: Importation of quality-assured medicines from international wholesalers needs advance payment which binds a big amount of capital for a number of months. This affects liquidity of the DSU. The long lead time and shipment delays affect availability at the DSU. Forecasting for 6 months or more is challenging, especially in the starting phase. Local sources need to be further explored, to complement the stock and reduce stock-outs even though quality assurance remains a challenge. In 2020, CHAL DSU will get a Minilab which can at least protect customers from very substandard and falsified medicines.

Shortage of qualified personnel: As in many other Low-Income Countries, the shortage of qualified health and pharmaceutical personnel poses a risk to the CHAL DSU and CHAL health facilities. DIFAEM and Bread for the World have been looking for an expat pharmacist to support CHAL DSU in the start-up phase on site. Finally, a German pharmacist is currently in the preparatory phase and will assist CHAL DSU in Liberia from end of 2020 onwards.

CHAL established the pharmaceutical services to ensure that patients have access to essential medicines and medical supplies which are affordable and of assured quality. The DSU serves health facilities, particularly the faith-based institutions. Annually, more than 100,000 patients receive health care services through faith-based facilities. Over the years, CHAL has trained several dispensers of member health facilities to adequately manage the pharmaceuticals of the facilities.

The most important method of sustaining availability of essential medicines from CHAL perspective is the medicine supply program - with a seed stock as DRF for health facilities - that is effective in maintaining a regular, self-sustaining system of supply of safe and effective medicines of good quality and affordable prices to the Liberian population. The improved accessibility of medicines was clearly reflected in the steady increase in the utilization of the health facilities by different socioeconomic groups, particularly the poor population and other vulnerable groups (such as mothers and children) in both urban and rural areas in the country.

The program supports institutional capacity building and contributes to the enhancement of quality health

care in Liberia by ensuring the sustainability, accessibility and affordability of essential medicines. Therefore, the program has a positive impact on the health status of the population seeking care in faith-based health facilities. As a result of this positive impact, the Ministry of Health has piloted the DRF in three counties (Grand Kru, Sinoe and Grand Gedeh) in the southeast of the country.

A range of factors contribute to or hinder the success of capacity building measures in the health and pharmaceutical sector in a low-income setting like Liberia. The greatest challenge for DIFAEM's and CHAL's activities as displayed in this article, is the sustainable financing of health care. This clearly directs to the Agenda 2030 with Universal Health Coverage and health financing being the pillar of any health system.

References

1. *WHO, 2015: The Ebola outbreak in Liberia is over, https://www.who.int/mediacentre/news/statements/2015/liberia-ends-ebola/en*
2. EPN, 2015: Essentials of Pharmacy Practice, EPP Handbook, *https://www.epnetwork.org/epp-handbook*

ACTION MEDEOR AT THE UNIVERSITY OF RWANDA

The EAC Regional Centre of Excellence for Vaccines, Immunization and Health Supply Chain Management (RCE-VIHSCM) located at the University of Rwanda was established to address shortages of health and humanitarian supply chain specialists in the region. The RCE's focus is to support the apprenticeship and adult/further education in the health sector for the East African Community (EAC) and thus improve the supply chain management for vaccines, medicines and other health commodities in the region. The centre conducts basic and advanced trainings in Health Supply Chain Management with an overall aim of improving the supply chain infrastructure and access to essential medicines.

The cooperation of Action Medeor with the University of Rwanda started in April 2019, where Action Medeor's pharmacists became part of an international teaching team for the Master course in Health Supply Chain Management (HSCM). The new master programme was developed by the RCE in cooperation with senior experts and targets health professionals in Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. Action Medeor brought its international expertise and experience of every day pharmaceutical logistics and humanitarian activities.

The program uses a blended learning method, where students go through a classroom teaching, an online teaching, field attachments and an operational research over 24 months' period. A total of fifteen (15) modules are covered, of which four modules will be taught in each semester. Each module consists of face-to-face presentations and 4 weeks of online teaching. The face-to-face is a great opportunity for students to share their experiences from their respective countries and to get the theoretical input needed for the online teaching.

The online teaching phase helps students to deepen their knowledge with the help of intensive reading of online resources and to analyse complex supply chain problems and assignments independently. The combination of different learning approaches ensures that students use their theoretical knowledge into practice to solve the root causes of underperformance of medicines supply chains in developing countries.

Together with other lecturers, Shushan Tedla, from Action Medeor, was responsible for facilitating two modules, namely "*Introduction to health Supply Chain Management Systems* "and "*Storage and distribution*". She delivered the face-to-face part of the modules in May and June in Kigali, while the whole team of Medeor's pharmacists supervised all 39 students during the online learning phases, as well as reviewed the exams. With this arrangement, a constant support of all students could be assured in the intensive phases of online learning.

Another contribution of Action Medeor to the RCE-VISCM was the planning and conducting of a short course on Humanitarian Health Supply Chain Management. Such a course was requested by partners in the region as a key priority issue to address the shortcomings in health & humanitarian supply chain management affecting most East Africa countries in terms of influx of refugees, conflict, potential consequences of climate change, epidemics etc. At the same time, training on humanitarian supply chain in the EAC region is not readily available and people working in this area across the region and beyond usually have to attend this course in other continents, mainly Europe and United States of America – which makes it inaccessible to many.

The aim of the course was to enable stakeholders and practitioners in the EAC countries to prepare, respond and recover from natural and man-made disasters and on-going humanitarian crises in the region and to ensure availability of health supply to the affected people. A team of tutors ranging from experts on Humanitarian Aid and SPHERE, the logistic sector and Drug Supply Organisations active in humanitarian supply offered an interesting one-week training with lectures, practical sessions and offered a platform for international and regional exchange for practitioners in the field. Participants were from public institutions such as the MOH, Disaster Preparedness, District Pharmacies and Central Medical Stores and international NGOs namely AMREF, UNHCR and WFP took part.

ESSENTIAL MEDICINES; HEALTH SYSTEMS STRENGTHENING

Pharm. Michael Heavens, Managing Director / CEO, CHAN Medi-Pharm Ltd/Gte

Essential medicines are those that satisfy the priority health care needs of the population. They are selected with due regard to public health relevance, evidence on efficacy and safety, and comparative cost-effectiveness. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price, the individual and the community can afford.

Facts on essential medicines

According to the WHO, the availability of medicines in developing countries is undermined by several factors: poor medicine supply and distribution systems; insufficient health facilities and staff; and low investment in health and the high cost of medicines. Pharmaceuticals account for 15% to 30% of health spending in transitional economies and 25% to 66% in developing countries. In some developing countries, medicines are the largest health expense for poor household.

A 2004 survey in Uganda showed that among 28 nationally listed essential medicines, only 55% could be found in free health facilities. "Out-of-pocket' prices were 13.6 times higher for branded products and 2.6 higher for generics than the international pricing reference [1]. Only about a dozen countries had an essential medicines list or programme in 1977. Today, four out of five countries have adopted national lists. To be selected, medicines must be available through health systems, in suitable amounts and dosage forms. The list is a cornerstone of national medicine policies and the entire pharmaceutical

system. By 2015, over 10 million deaths per year could have been avoided by scaling up certain health interventions, the majority of which depend on essential medicines. The Declaration of Alma-Ata in 1978 - a milestone in international public health - was the first official document to underline the importance of primary care and the role of essential medicines at a global level.

Thirty years ago, the concept of a national medicine policy was unknown in most countries. Today, over 100 countries have policies in place or under development. They can act as frameworks to advance pharmaceutical sector reform. Early pioneers in essential medicines include Mozambique, Peru and Sri Lanka. Objective information on rational use of medicines was extremely limited, especially in developing countries. Today at least 135 countries have their own therapeutic manuals and formularies with current, accurate and unbiased information. Growing from an international effort started in 1977, a global network of 83 countries now monitors for adverse medicine reactions and potential safety problems. Thirty years ago, there was virtually no publicly available price information for medicines and few countries actively encouraged generic substitution. Today, 33 countries collect and make pricing information public. The use of generic medicines has brought down prices through increased demand and competition.

Essential medicines save lives, reduce suffering and improve health, but only if they are of good quality and safe, available, affordable, and properly used. However, in many countries today not all these conditions are being met. If access to essential medicines is to be expanded, each of the problems outlined below must be tackled [2].

- Unaffordable medicine prices
- Irrational use of medicines
- Unfair health financing mechanisms
- Unreliable medicines supply systems
- The quality and safety of medicines varies greatly - especially in low- and middle-income countries.
- New medicines are needed for diseases that disproportionately affect the poor, especially 'neglected' diseases.

Health Systems Strengthening (HSS) is a term used in global health that roughly means to improve the healthcare system of a country. For the past 20 years, CHAN Medi-Pharm has been providing support to CHAN's 400 Member Institutions (MIs) and affiliate 4000 primary healthcare facilities with a capacity building wide scope of healthcare services from Primary to Tertiary to the vulnerable members of the communities in Nigeria and these accounts for about 46% of the Nigerian population. The principal objectives of CHAN Medi-Pharm are the provision of reliable supply of good quality and affordable essential medicines, ensuring equity of access, improving the quality of patient care through sustained capacity building on rational use of medicines. These also include public health commodity supply chain, Essential Drugs formulary, accounting, patient care, data collection and collation, inventory management, forecasting/quantification to ensure sustainability of the Drug Revolving Fund Scheme (DRFS). The following are the avenues through which CHAN Medi-Pharm have been able to improve healthcare in our mission institutions

- CHAN Medi Pharm-EPN training and capacity building program on basic pharmaceutical services
- CHAN Medi-Pharm logistics training on essential medicines
- Direct detailing of drugs and clinical meetings to improve product knowledge
- Essential medicines and cash donations to struggling institutions.

Challenges

Our major challenge has been funding. Due to obstructive exchange rates, it has been a bit challenging accessing funds in forms of loans or even support from partners.

- Government Policies; delay in product registration with National Agency for Food and Drug Control (NAFDAC), high charges in product importation and clearing.
- Lack of full participation by some mission institutions.
- Insecurity, especially in North East and North Central Nigeria. We have members of staff that have been kidnapped by the terrorist group Boko Haram.
- Another major challenge is procuring these essential medicines from WHO-approved manufacturing outfit.
- Drug adulteration; though we have the GPHF-minilab to check this.

Success stories

- We are still trying our best to reach seemingly hard-to-reach areas with our products backed by our robust distribution system.
- We employ the services of the GPHF-minilab that checks for adulteration in any of our drug products before distribution and to ensure that manufacturer's claims on drugs are true.
- We have not received any complain or issues as regards drugs distributed to member institutions.

Lessons learnt

- The procurement and distribution of essential medicines is capital intensive, therefore service providers will need all the funds that can be accessed for such project.
- We must be ready to go the extra-mile to deliver products, and expect little or no gratitude from humans because we believe that we function only for, and through God.

Reference

1. https://www.who.int/features/factfiles/essential_medicines/essential_medicines_facts/en/index3.html
2. http://archives.who.int/tbs/intro/s5571e.pdf

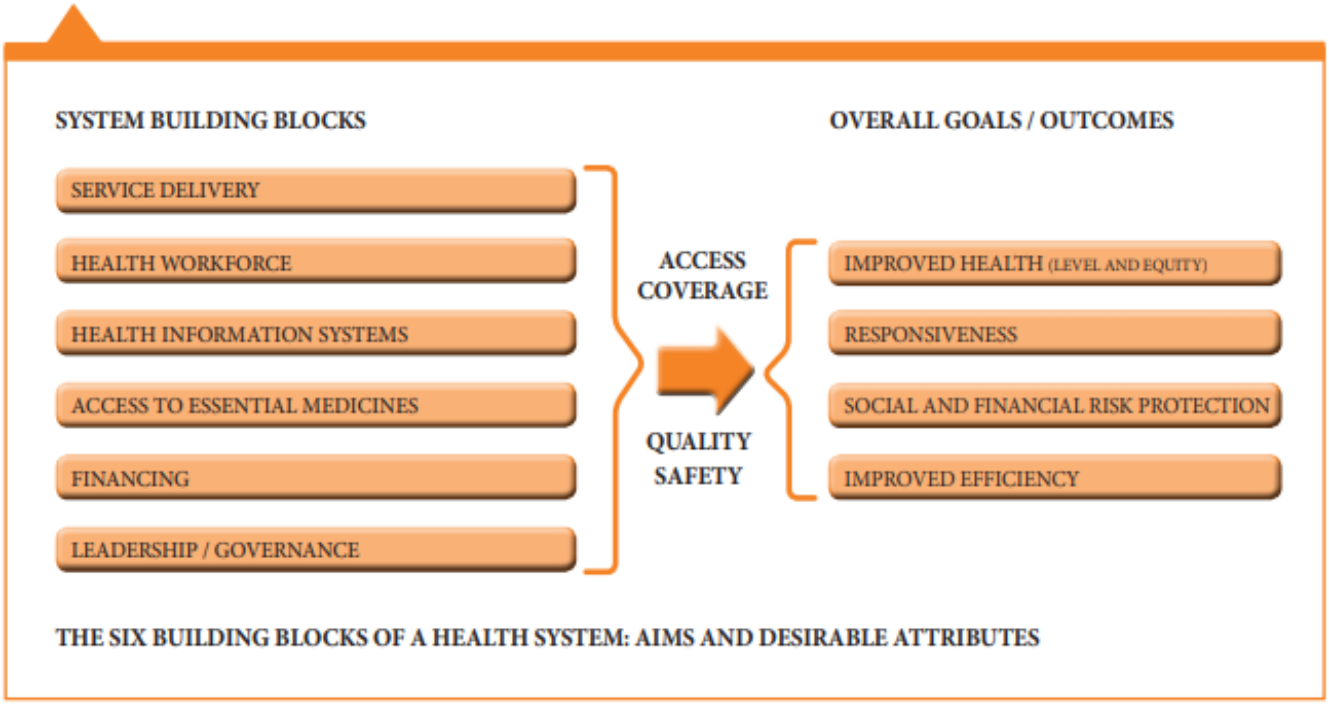
CAPACITY BUILDING FOR HEALTH SYSTEMS STRENGTHENING: MEDS STORY

Kenneth Nyenjeri, Capacity Building Officer, Mission for Essential Drug Supplies (MEDS)

Global perspective

Global evidence points to a direct correlation between the size of a country's health workforce and its health outcomes. Human Resource for Health (HRH) is one of the core building blocks of a health system in any country, (HRH, Kenya Mechanism 2016-2021). Delivery of health interventions requires skilled and adequately supported health personnel. According to the World Health Organization (WHO 2010), HRH refers to all people engaged in actions whose primary intent is to enhance health. These people include care-givers (doctors, nurses, clinical officers, pharmacists, etc.) to laboratory technicians, managerial personnel and other staff (cleaners, medical records officers, health economists) who do not deliver any services to patients directly but are vital to health system functioning.

The importance of HRH is based on the fact that delivering health services is what health workers do, supported by evidence of a strong correlation between the density and quality of HRH in a country and population health outcomes. HRH is one of the core building blocks of a health system and has two essential components; Human Resources Development (HRD) and Human Resources Management (HRM). These two components manage the life of a health professional from training to employment and exit from the health workforce.



WHO Six building blocks of Health Systems

Capacity building is a key element of Human resource for Health. It is the process by which organisations change and improve, and how individuals within an organisation develop and retain the competencies (knowledge, skills and attitudes) needed to carry out their duties at least competently and ideally beyond the minimum standard. (WHO 2010).

Kenyan context

Over the last decade, Kenya's progress in improving the overall health status of its population has had mixed results. Kenya's health sector recognizes that HRH for health constraints are a critical ingredient hampering health sector planning, service delivery and ultimately national health outcomes. Despite the multiple sectors and stakeholders involved in building, deploying and maintaining a health workforce to offering performance, the HRH unit in the ministry of health is considered to be key to moving forward the HRH agenda. In Kenya, Capacity building in health systems has been operated by multiple stakeholders, including the Ministry of Health, Faith based, Private, NGO sector and development partners. MEDS has strategically placed itself to address HRH challenges identified within the Kenyan context. This is in relations to the other WHO pillars of the health systems strengthening which include Leadership and governance, Health information systems, Access to health products and health financing.

MEDS capacity building in health systems

Since 1987, MEDS has been at the forefront in supporting Faith-based health facilities in offering need-based capacity building interventions for health systems strengthening. This has been achieved through offering tailored short courses. Facility-based trainings are done in-house at the facility level and Consultancies are conducted in collaboration with strategic partners such as Government, multinational companies, and development partners. MEDS has also continuously engaged with Kenya's Ministry of Health through implementing clinical management consultancies through health programs such as HIV, Non Communicable Diseases and Malaria.

In 2018, MEDS capacity building services evolved to the Health Advisory Services (HAS) to broaden scope and diversify services to Government, private and not-for-profit (NGO) not just the faith-based clients. These services include; Health Sector Policy Formulation, Industrial Management and Regulation, Public Health Management, Partnership in Implementation for Capacity Building.

MEDS offers holistic programs and competency-based courses that cover all the departments/ sections of a health facility. Among the key broad areas covered include trainings focusing on health care components such as: Health care governance, strategic management, rational medicine use, pharmacovigilance, health commodity management, resource mobilization and finance management, Performance management, Non Communicable Diseases management such as Diabetes, Hypertension.

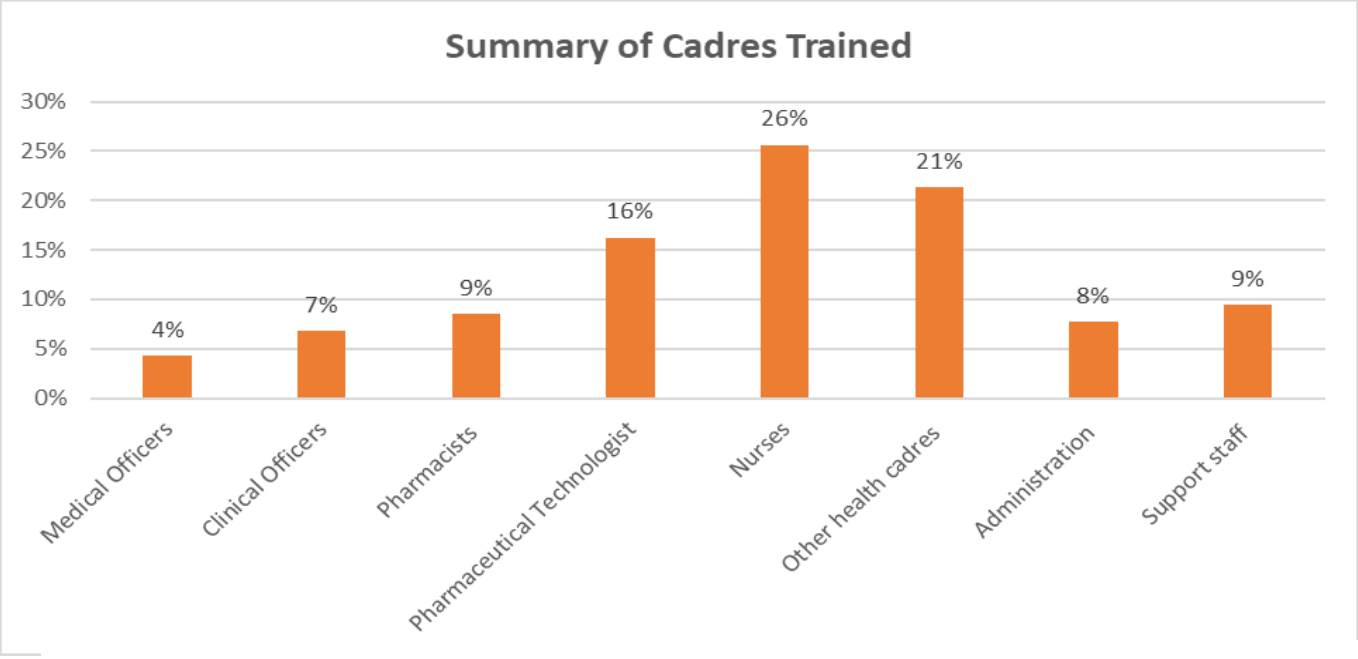
EAC students discussing during the Short Course on Humanitarian Health Supply Chain

Gaps within capacity building

A major challenge across the health sector and in particularly to the faith-based as well as private institutions, is the high workforce turnover associated with health professionals who shift across diverse type of facility; mission, private and public. Another challenge faced by mission facilities is operating with limited resources; this include human resource and financial limitations. Staff shortage within health units has played a major role in limiting the number of opportunities for continuous professional development for health workers.

Cadre	Number	percentage
Medical Officers	1,770	4%
Clinical Officers	2,831	7%
Pharmacists	3,539	9%
Pharmaceutical Technologist	6,724	16%
Nurses	10,617	26%
Other health cadres	8,831	21%
Administration	3,185	8%
Support staff	3,893	9%
Total	41,390	

Summary of cadres trained since inception



Bar graph of cadres trained

Lessons learnt

- To mitigate the challenges, MEDS has been continuing providing the in-house model for conducting need-based trainings at the facility level.
- Facility based training are more cost effective as more staffs are trained within the confines of the facility.
- MEDS is also investing in ICT to provide an E-learning platform for as a sustainable model. Though successful in enhancing the capacity of staff through face-to-face model, the future of mass training is digital learning. Capacity building activities through donor funded programs and consultancies have been decreasing in the last three years since Kenya transitioned to a lower middle-income country.
- MEDS E-learning will be explored as a new method of capacity building. Its goal will be to grow both academic and non-academic (i.e., professional development and training) programs.

Success stories

- ❖ Since inception, MEDS capacity building services has made positive impact to the Kenyan health sector having trained over 40,000 professionals. This include health care workers (health systems managers, administrators and auxiliary staffs in health units across FBOs, Government, NGO's and private institutions. The impact of MEDS services has also been felt internationally in other African countries through Consultancies.
- ❖ MEDS capacity building has also been partnering with the Medical Industry Regulatory institutions and Professional Associations to provide guidelines and offer support in training activities for health professionals.
- ❖ Through implementation of three strategic pillars of diversification, process improvement and partnerships, as articulated in the current MEDS Strategic plan (2018-2022), the organization has made deliberate efforts of strategic partnerships geared addressing gaps to strengthen health systems for efficiency delivery of health services. This will go along away towards accomplishing MEDS strategic objectives and also achieving MEDS vision of being "A faith-based organization leading in promoting healthy lives and Mission of providing quality and affordable Health Products and Technologies, Quality Assurance and Health Advisory Services".

In conclusion, MEDS has continued re-inventing capacity building in health systems to address the challenges faced by faith-based facilities. However, due to a shift and reduction in donor funding, mission health facilities have been necessitated to fully meet the total cost of trainings. MEDS is open to collaborate with strategic and develop partners to continue supporting health institutions through capacity building in health systems strengthening.

Reference

- https://www.who.int/health-cluster/capacity-building/en/
- Monitoring the building blocks of Health System – Handbook: *https://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf*
- Mission for Essential Drugs and Supplies (MEDS) Strategic Plan 2018- 2022
- Human Resource for Health - Kenya Mechanism 2016-2021

Team activities in a leadership in healthcare

MEDS conducting practical skills in basic life support trainings

CAPACITY BUILDING FOR PHARMACEUTICAL SUPPLY CHAIN MANAGEMENT: THE PSA AND EPN APPROACH

Blessing Nyakutsikwa, Chukwudike Alozie, Ladi Sunday, and Lloyd Matowe, Pharmaceutical Systems Africa (PSA)

Introduction

Africa has made great strides in improving healthcare in the last few decades. Conditions such as Polio and Leprosy are close to eradication [1] [2]. Most countries are making substantial progress in tackling preventable childhood illnesses. Measles immunization has greatly improved[3][4], and an estimated 37 countries are reaching more than 60% of their children with vaccination.

Despite these successes, there are still considerable public health challenges. Despite a decrease in AIDS-related deaths, more than 70% of the global burden of HIV is concentrated in Sub-Saharan Africa [5]. An estimated 90% of all malaria cases occur in Africa, with 93% of all deaths occurring in the continent [6]. Nineteen of the 20 countries with the highest maternal ratios are in Africa, and the region has the highest neonatal death rate in the world.

Life-threatening infectious diseases such as Ebola and neglected tropical diseases are always a threat. The emerging Cov-19 pandemic also presents a potential crisis to Africa's fragile health system. Changes in lifestyles and urbanization have also resulted in increased rates of non-communicable diseases such as hypertension, coronary heart disease and diabetes [7]. More work, therefore, needs to be done in improving these public health challenges.

Health systems strengthening

Good health is an essential component of the wellbeing of citizens on the continent. Health also plays a crucial role in economic growth. A healthy population is better able to contribute to a country's development as they live longer, can save more and become more productive. Studies done on the continent have shown a correlation between positive health outcomes, such as malaria eradication and economic growth [8]. Healthcare systems in Africa have been unable to address public health challenges in Africa due to a variety of reasons. There is an inadequate amount of health personnel working in the continent. Migration of health workers from Africa to Europe, North America and the Middle-East has resulted in shortages in critical positions [10] [11].

Most health sectors also face inadequate financial allocation from governments, and this does not benefit the most deprived societies with high rates of out of pocket expenditure being reported in the continent [12]. Poor leadership and administration, lack of political will from governments and poor maintenance of healthcare structure have also harmed Africa's healthcare system. Health systems strengthening is, therefore, essential in addressing these issues. More persuasive advocacy for political support and financial commitment and higher budgetary allocation will go a long way in improving Africa's health system structure. Training and capacity building for health workers is also essential in improving healthcare systems in Africa.

Supply chain management in challenging settings

A well-functioning supply chain that ensures the delivery of medicines, vaccines and other health products is a critical component of healthcare systems strengthening [13]. Any sound health system requires supply chains that can ensure consistent availability of low cost, high-quality medicines, vaccines and health products at all service delivery points. In addition to the assurance of medicine and healthcare delivery, supply chains also provide crucial information on the needs, demands and consumption of these goods to health systems planners. Supply chains play a critical role in essential health systems strengthening categories such as payment, organization, regulation and behavioral aspects of the health system [14].

In the past few decades, a considerable amount of money has been put into improving the health and wellbeing of the African population through initiatives, such as the Global Health Initiative [16]. Increased contributions have resulted in higher amounts of drugs, vaccines, bed nets and diagnostic and laboratory products distributed through country supply chains. Due to inadequate capacity and training, these changes are putting more pressure on poorly resourced supply chains. Supply chains, therefore, represent a critical bottleneck in health systems strengthening and limit access to effective treatments in developing countries. Other factors, such as poor product quality and counterfeiting of medicines, also pose a risk to the strengthening of supply chains. Innovation by the private sector also presents opportunities to learn for those involved in pharmaceutical supply chains [16]. Training and capacity building in supply chain management is, therefore, crucial in health systems strengthening in Africa.

Capacity building for pharmaceutical supply chain management

Pharmaceutical Systems Africa (PSA) is playing a leading role in capacity building in pharmaceutical Supply Chain Management (PSM) within the continent. Together with the Ecumenical Pharmaceutical Network (EPN), we offer a one-week, hands-on training course on the skills needed to manage in-country supply chains. The course is tailored for pharmaceutical supply chain consultants and program staff. We believe our training programme is strategic and being delivered at a critical and opportune time in Africa to build required, but not readily accessible, skills. The course content is designed and delivered to develop global best practice PSM skills, but contextualized to address needs within the immediate environment. Participants gain a deeper understanding of PSM challenges and learn to develop cost-effective solutions targeted to their specific needs.

Orientation and training of technical assistance providers and management staff on standardized approaches to identifying and addressing challenges is key to strengthening PSM systems. We believe training should be based on global needs, priorities, and in-country PSM gaps. Currently, there are several agencies and individual consultants who provide capacity building support in the PSM area. However, most of these agencies are not located near the need. The demand for these agencies also continually outstrips supply. The small pool of experts and lack of capacity among staff managing PSM programs also hinders progress in the strengthening of PSM systems. Also, PSM program personnel who rely on consultants' technical assistance often have limited capacity to assess and evaluate the performance of the consultants. There is thus a need to develop more experts with appropriate skills to assist developing countries in addressing program, national, and regional challenges.

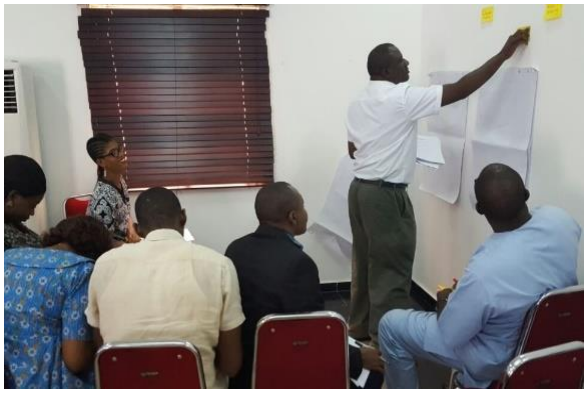
Most African countries have complex supply chain systems. Working in these contexts requires specialised skills gained from bespoke training. Even though the course is not country-specific, training materials focus on complex African supply chain systems. Previously, training programs addressing PSM training gaps have been developed and offered, predominantly in North Africa. The PSA/EPN approach brings training to the people and works with participants within their settings and contexts. To date, we have successfully held courses in Nigeria, Uganda and Zambia. The training programme has brought together supply chain practitioners in the health sector from countries such as Zambia, Liberia, Nigeria, Malawi, Somalia, Burundi, Ivory Coast, Botswana, Zimbabwe, Kenya and Uganda.

Each course attracts 25 to 30 supply chain practitioners. The mixture of senior technical advisors, program managers, logisticians, researchers, senior lecturers and students has allowed for knowledge and experience sharing as well as mutual support throughout the duration of the course. The diversity of participants has helped establish networks that have proven to be critical in the field of consultancy.

Participants and course faculty, PSA Consultants

Facilitators for our program, who have a wealth of knowledge and experience, are drawn from the best PSM consultants on the continent, Ministries of Health, and Central Medical Stores. The majority of our former participants have gone on to become consultants in their own right, and a number now holds senior positions in PSM programs.

Through comprehensive research and consultations with experts within the field, we have identified challenges that impact access, availability and affordability of medicines. Supply chains face significant stock disruptions which lead to a failure in delivering critical health products to the last mile where they are needed. Health product wastages also occur due to persistent expiration and sub-optimized processes. High input/resource involvement with minimal value for investment and low sustainability potential is also another challenge faced by supply chains within the continent. The course content we offer in our program focuses on core PSM skills, including the following:



A breakout session during a PSM training

- Developing, reading, and understanding a Scope of Work
- Reading and understanding a technical document
- Assessing a PSM system, including basic analytical skills
- Coordinating technical meetings, including managing difficult participants
- Writing a technical document
- Developing and understanding concept notes
- Developing and implementing strategic plans
- Developing and implementing work plans

In addition to this course content, we also aim to incorporate practical approaches in our training, such as site visits. During one course, participants visited Medical Stores Limited (MSL) Zambia, where they received a guided tour of the MSL warehouse. There they learned about the software application EZICS (enhanced Zambian inventory control systems) and how it provides real-time visibility of stock status at both the central medical stores and health facilities. They also saw first-hand how orders from facilities are routed through the open-source electronic logistics management information system, Open LMIS, linked to the warehouse inventory and accounting system: MACS and SAGE System integration and interoperability have gone a long way in improving the management of supply chain logistics in Zambia, and participants experienced how these tools could provide possible solutions to supply chain challenges in their own countries.

References

1. World Health Organization Regional office for Africa. *Polio 2020* [Available from: https://www.afro.who.int/health-topics/polio.
2. World Health Organization Regional office for Africa. WHO | *Leprosy: World Health Organization*; 2020 [updated 2020-01-24 16:30:07. Available from:https://www.who.int/lep/en/
3. Kamadjeu R. *The future of routine immunization in Africa*, Pan Afr Med J. 2017; 27(Suppl 3):1.
4. Kharsany ABM, Karim QA. *HIV Infection and AIDS in Sub-Saharan Africa: Current Status, Challenges and Opportunities*. Open AIDS J. 2016;10:34-48.
5. World Health Organization Regional office for Africa, *The health of the people: what works – the African Regional Health Report*, WHO, 2014.
6. World Health Organization. *World malaria report 2018 Geneva: World Health Organization*; 2019 [updated 2019-07-10 16:22:06. Available from: https://www.who.int/malaria/publications/world-malaria-report-2018/en/.
7. Gouda HN, Charlson F, Sorsdahl K, Ahmadzada S, Ferrari AJ, Erskine H, et al. *burden of non-communicable diseases in sub-Saharan Africa*, 1990–2017: results from the Global Burden of Disease Study 2017. The Lancet Global Health. 2019;7(10):e1375-e87.
8. Institute of Medicine (US) Committee on the Economics of Antimalarial Drugs, Kenneth J. Arrow, Claire Panosian, Hellen Gelband. *The Human and Economic Burden of Malaria. Saving Lives, Buying Time: Economics of Malaria Drugs in an Age of Resistance*. 7. Washington (DC): National Academies Press (US); 2004.
9. Oleribe OO, Momoh J, Uzochukwu BSC, Mbofana F, Adebiyi A, Barbera T, et al. *Identifying key challenges facing healthcare systems in Africa and potential solutions*. International Journal of General Medicine. 2019;12:395-403.
10. Adua E, Frimpong K, Li X, Wang W. *Emerging issues in public health: a perspective on Ghana's healthcare expenditure, policies and outcomes*. EPMA Journal. 2017; 8(3):197-206.
11. Oleribe OO, Ezieme IP, Oladipo O, Akinola EP, Udofia D, Taylor-Robinson SD. *Industrial action by healthcare workers in Nigeria in 2013-2015: an inquiry into causes, consequences and control-a cross-sectional descriptive study*. Human resources for health. 2016;14(1):46.
12. Castro-Leal F, Dayton J, Demery L, Mehra K. *Public spending on health care in Africa: do the poor benefit?* Bulletin of the World Health Organization. 2000; 78(1):66.
13. Yadav P. *Health Product Supply Chains in Developing Countries: Diagnosis of the Root Causes of Underperformance and an Agenda for Reform.* Health Systems & Reform. 2015;1(2):142-54.
14. World Health Organization. *Everybody's Business: Strengthening Health Systems to Improve Health Outcomes.*
15. WHO's Framework for Action Geneva: World Health Organization; 2007 [updated 2011-06-08 11:06:04. Available from: http://www.who.int/healthsystems/strategy/everybodys_business.pdf.
16. Anonymous. *An assessment of interactions between global health initiatives and country health systems.* The Lancet. 2009;373(9681):2137-69.

EFFECTS OF PHARMACEUTICAL HUMAN RESOURCES ON THE QUALITY OF PHARMACY SERVICES IN THE CBCA HEALTH FACILITIES IN KIVU

Isaac Muyonga, Communauté Baptiste au Centre de l'Afrique (CBCA), DRC

The Democratic Republic of Congo (DRC) is among the African countries facing a crisis in human resources for health. In fact, due to the political instability since the 1990s and chronic insecurity in rural areas, all categories of human resources for health are concentrated in urban areas. The National Health Development Program for the period 2014 to 2020 recognizes that there is a problem of imbalance in the organization of training programs and inequitable distribution of health workers, both between rural and urban areas, and between health facilities.

This situation had been already predicted in 2015 by the World Health Organization (WHO) that developing countries will experience a shortage of around 18 million health workers (WHO, 2015). This shortage of pharmaceutical personnel in the DRC is also due to the persistence of high proportion of human resources training in the nursing sector, which has led to an overproduction of this last category to the detriment of others, such as midwives, Laboratory Technicians, Pharmacists and Pharmacy Technicians, etc.

Reports from the Baptist Church in Central Africa (CBCA) prior to becoming a member of the Ecumenical Pharmaceutical Network in 2006 indicate that only one pharmacist and two pharmacy technicians were available for 121 health facilities. Currently, 150 out of 156 functioning health facilities do not have human resources in the field of pharmacy. Reports received from health facilities point at the low availability of drugs and essential medical supplies in health facilities as result of weak capacity to ensure a good management of drugs, and insufficient use of management tools in pharmacy service in hospitals. In this situation, it is hard to achieve the desired quality of care. The Institute of Medicine in the United States defines this quality of care as ''the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge'' (Institute of Medicine, 2001).

Having realized the need for human resources to improve the quality of care, the Health Department of CBCA has decided to set up human resources in the field of pharmacy since 2017. Indeed, the human resource remains at the center of the system health, and the provision of quality healthcare cannot be achieved without pharmaceutical human resources. This article provides information on the performance of health facilities whose pharmacy services are run by pharmacists or a pharmacy technicians and those run by nurses.

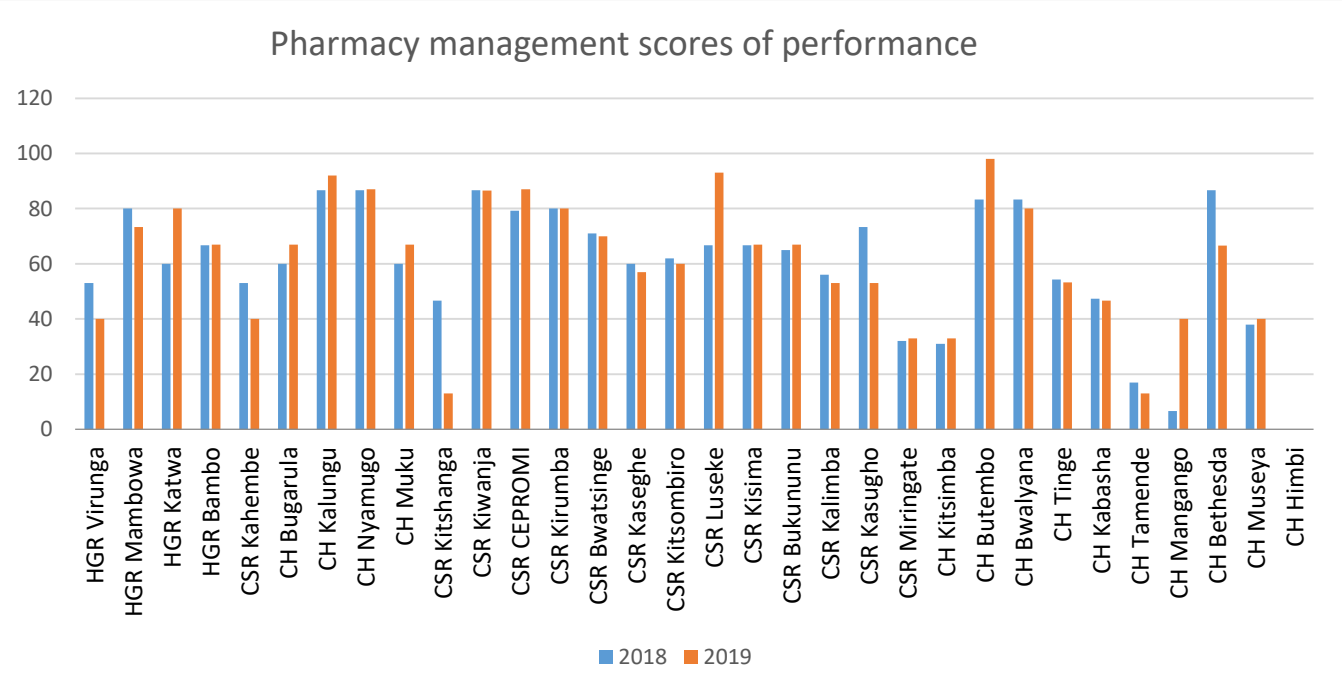
Methodology

The study assesses the quality of care in pharmacy services of 32 health facilities, among them 4 district hospitals (HGR), 11 other hospitals centers (CH) and 17 referral health centers (CSR). It compares the 2018 and 2019 performances in the same health facilities. In the DRC health system, health facilities in these categories are headed by doctors. Data collection was carried out in pharmacy services and focused on indicators put in place to monitor service functioning and management of drugs and other products. Data

was collected from daily management tools of the pharmacy service.

In regards to the stock management of Generic Essential Medicines, data were related to; the definition and compliance with the alert threshold, the definition and compliance with the safety stock, the monitoring of the consistency between the actual stock and the theoretical stock. It was also related to; the ordering system in the event of an alert and the appropriate conservation system for products requiring special conservation.

Regarding the management of stock of the pharmacy sale, the follow-up focused on stock cards or registers with entry (in) and exit (out), the absence of stock-outs, the concordance between actual stock and theoretical stock and the absence of stock-outs of tracer medicines. Evaluators are the permanent supervisors of the Health Department. Data for two years are represented by health facility on a histogram.



This histogram presents pharmacy management data in 32 CBCA health facilities headed by doctors in North Kivu and South Kivu Provinces.

Legend: HGR = District Hospital; CH= Hospital center; CSR= Referral health center

Results

- Health facilities with pharmacy services headed by pharmacists or pharmacy technicians:
- Among the 32 health facilities assessed, two have pharmacy services headed by a pharmacist and four by a pharmacy technician. Katwa District Hospital (60% in 2018 and 80% in 2019) and Bethesda Hospital Center (86.7% in 2018 and 66.6% in 2019) have each a pharmacy department headed by a pharmacist. In the category of health facilities using pharmacy technician as the pharmacy manager, we have Mambowa District Hospital (80% in 2018 and 73.3% in 2019), Butembo Hospital Center (83.3% % in 2018 and 98% in 2019), Virunga District Hospital (53% in 208 and 40% in 2019) and Bugarula Hospital Center (60% in 2018 and 67% in 2019).
- In regards to health facilities whose pharmacy services are run by nurses, among the 27 health facilities, 16 have a score above 50% and nine a score below 50%. Those with an average score above 50% are;
- Bambo District Hospital (66.6% in 2018 and 67% in 2019)
- Muku Hospital Center (60% in 2018 and 67% in 2019) Nyamugo Hospital Center (86.6% in 2018 and 87% in 2019)
- Kalungu Hospital Center (86.6% in 208 and 92% in 2019)
- Kiwanja Referral Health Center (86.6% in 2018 and 2019)
- CEPROMI Referral Health Center in Kanyabayonga (79.2% in 2018 and 87% in 2019)
- Kirumba Referral Health Center (80% in 2018 and 2019)
- Bwatsinge Referral Health Center (71% in 2018 and 70% in 2019
- Kaseghe Referral Health Center (60% in 2018 and 57% in 2019)
- Luseke Referral Health Center (66 , 6% in 2018 and 93% in 2019)
- Kitsombiro Referral Health Center (62% in 2018 and 60% in 2019)
- Kisima Referral Health Center (66.6% in 2018 and 77% in 2019)
- Bukununu Referral Health Center (65% in 2018 and 67% in 2019)
- Kalimba Referral Health Center (56% in 2018 and 53% in 2019)
- Kasugho Referral Health Center (73% in 2018 and 53% in 2019)
- Bwalyana Hospital Center (83.3% in 2018 and 80% in 2019) and
- Tinge Hospital Center (54.3% in 2018 and 53.3% in 2019).
- The category of health facilities with a score of less than 50% consists of;
- Kitshanga Referral Health Center (46.6% in 2018 and 13% in 2019)
- Himbi Hospital Center (0% in 2018 and 2019%) Kahembe Referral Health Center (53% in 2018 and 40% in 2019)
- Kitsimba Hospital Center (31% in 2018 and 33% in 2019)
- Miringate Referral Health Center (32% in 2018 and 33% in 2019)
- Museya Hospital Center (38% in 2018 and 40% in 2019)
- Tamende Hospital Center (0% in 2018 and 13% in 2019)
- Mangango Hospital Center (6, 6% in 2018 and 40% in 2019)
- Kabasha Referral Health Center (47.3% in 2018 and 46.6% in 2019).

Discussions

Health facilities with pharmacy service headed by pharmacists or pharmacy technicians

Human resources are the backbone in the implementation of quality of care. Indeed, tools used in the pharmacy department require a human resource who masters the profession. Managers must recruit qualified staff for such a demanding service. Unfortunately, this is not yet the case in most of the CBCA health facilities. Of the 32 facilities involved in the assessment, only 6 or 18.7% have qualified pharmaceutical human resources. The presence of this qualified workforce is an important step to which other components must be added to improve the service.

In fact, the good achievements of Katwa District Hospital are linked to the presence of a pharmacist whose team is made of 5 pharmacy technicians. Bethesda Hospital Center uses a pharmacist with a single pharmacy technician assigned in 2019. Butembo Hospital Center and Mambowa District Hospital each use a pharmacy technician with the support from the hospital management. The Virunga General Hospital has two pharmacy technicians but lacks administrative, financial and information management supports. This situation greatly affects its performance. It is obvious that the drug management process, which involves significant logistics in order to bring the drug from the supplier to the one who ultimately delivers it to the patient, requires perfect collaboration between all stakeholders (Pharmaciens Sans Frontières, 2004).

Moreover, the medicine management cycle as planned by the WHO (https://www.who.int/medicines/areas/access/supply), i.e. selection, quantification, procurement, storage, distribution, until the use can only work with an active management at each stage held by a quality human resource.

Health facilities with pharmacy services run by nurses

In North Kivu and South Kivu provinces, most of pharmacy services in health facilities are run by nurses. In fact, nurses take pharmacology courses, but this training does not provide sufficient capacity to manage a pharmacy service. They are therefore, used by default.

However, looking at the results of the assessment, it is questionable whether there is a big difference between the performance of services run by nurses and those run by pharmacists or pharmacy technicians. These data present two images. The first image is of services with average performance greater than 50%. In fact, this performance is mainly due to the on-the-job training of nurses by the different health district offices with the support of projects funded by the World Bank and the European Union. Trained nurses normally take care of the clinical circuit of medicines within the hospital, i.e. prescribing, dispensing and administration phases; and the logistics circuit in regard to drug as a product, i.e. from purchase to delivery in the healthcare unit (Hanitra M., 2017).

However, despite the presence of international partners, there is an isolated case of Kasugho whose underperformance from 73% in 2018 to 53% in 2019 is the result of management insufficiency and the instability of the trained staff. On the other hand, Bwalyana and Nyamugo Hospital Centers comply with established standards and reorganize their management, despite the fact that they do not have financial support from partners.

The second image is that of health facilities with performance less than 50%. Some of them do not have trained nurses (Kitsimba, Mangango), others blame administrative loopholes (Kitshanga, Kahembe, kabasha, Museya) and still others have only recently been created (Tamende and Himbi).

Although nurses are not the right people to manage pharmacy services according to standards, on-the-job monitoring and training are eloquent approaches to the improvement of human resource performance, if the management plays its role accordingly. To prevent human resources from falling into routine, capacity building must be permanent. Indeed, scientific literature is constantly evolving and the amount of information available is growing exponentially. Faced with the rapid development of knowledge, maintaining good practices is essential (Virginie Gardette, 2010, P.15.).

Conclusion

Improving quality of pharmacy services in CBCA health facilities depends on two components that flap in harmony like the wings of a bird: trained staff and supportive management. If one of its wings breaks down, the service offered to the population is of poor quality.

In regards to human resources, CBCA is training three students as Pharmacy Technicians with the support of the Ecumenical Pharmaceutical Network, to serve in three Referral Health Centers (Kalungu, Kitshanga and Kirumba). For the management, close monitoring is to be maintained for the performance acquired and to raise the level of health facilities which are below average.

References

1. Hanitra Myriam Ratsimbazafimahefa, *Proposition d'un modèle de circuit du médicament dans les hôpitaux publics de Madagascar*, Médecine humaine et pathologie, Université Grenoble Alpes; Université de Genève, 2017.
2. Institute of Medicine, *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC; National Academy Press; 2001.
3. Ministère de Santé Publique (2014), *Le Programme National de Développement Sanitaire pour la période allant de 2014 à 2020*, Kinshasa.
4. Organisation Mondiale de la Santé, *Médicaments essentiels et produits sanitaires, Approvisionnement en médicaments*. https://www.who.int/medicines/areas/access/supply/
5. Organisation mondiale de la santé (2015), *Health in 2015: from MDGs, Millennium Development Goals to SDGs*, Sustainable Development Goals. Geneva.
6. Pharmaciens Sans Frontières Comité - International Unité Pharmaceutique Avril 2004, *GESTION DES MEDICAMENTS Modulle III*, http://psfci.acted.org/images/PSF_dossiers_pdf/guides_techniques/module3-gestion-medoc.pdf
7. Virginie Gardette (2010), *Principes d'une démarche d'assurance qualité, évaluation des pratiques professionnelles*, Paris.

WHY DRUG SUPPLY ORGANISATIONS SHOULD INVEST IN CAPACITY BUILDING OF HEALTH FACILITIES: A JMS PERSPECTIVE

Emmanuel Higenyi, Director Technical Services, Joint Medical store, Uganda

Joint Medical Store (JMS) has a broad mandate to procure, warehouse storage, distribute and supply healthcare commodities to the faith-based health facilities and other healthcare providers. This mandate requires appreciation of the ecosystem perspective that looks at the supply chain as a living and continuous exchange of information, products, finances and value occurring among organizations and people. This involves application and deployment of technologies and processing of information to provide outputs necessary to move products from their production sites to the point of use or consumption at the appropriate, acceptable and sustainable levels of effectiveness, efficiency, and cost.

Achieving the optimal levels of effectiveness, efficiency, and cost across the supply chain requires functioning and responsive systems, competent human resources, strong governance, and agile management systems. With this understanding JMS has incorporated capacity building for health facilities into its mission as a high-level deliverable that is provided in corporate social responsibility and business sustainability strategy. The ultimate objective of the capacity building is to improve the National Health System in general with particular focus on the faith-based health facilities in Uganda which contribute close to 40% of the healthcare outputs and a significant portion of the gross domestic product in form of services.

Regional training for member health units in Western region of Uganda. The trainings aspects included health facility governance, Customer service in health care settings, and financial management.

JMS therefore provides system strengthening services to health facilities to build an enabling and facilitating environment for effective and efficient management of the different types of resources including medical supplies. The JMS health facility capacity building for health facilities is multifaceted in domain with a dual delivery process. In categorical terms, the domains target critical health facility process such as health facility governance, human resource development, logistics management, financial resource management, customer service, production and delivery of services, and quality improvement. These processes are necessary to maintain viable health facilities to fulfil their mission, return value to their owners and meet society expectations. In terms of delivery, JMS uses the direct to facility mode and the Bureau-led mode, wherein the former, the JMS capacity building unit delivers training directly to health facilities using didactic, mentorship and coaching approaches while in the latter, JMS works through the Medical Bureaus.

With regard to the Direct to Facility capacity building the process starts with an initial assessment to identify gaps, synthesize need and develop intervention plan. In this regard, JMS assesses competences at the health facilities and based on the assessment, capacity building interventions are coined and delivered. These interventions include general training, provision of tools, and design of a follow-on programme.

Health facility governance is key in assuring oversight and accountability including appropriation of finances and prioritization of expenditure and investment. Human resource development enables the health facilities to focus on acquiring and maintaining the right personnel for logistics management that is necessary to ensure adequate planning, communication, and stock management. Financial management is important for management of cash flow and avoidance of unauthorized expenditure. Production and delivery of services enables the health facilities to adequately develop strategic and operational plans.

Over time JMS has learnt that investing in building capacity of health facilities improves performance of the health facilities with positive knock on effects on the JMS operations and overall performance of the health sector. Leveraging the JMS capacity building programme, Medical Bureau initiatives and other sector improvement strategies, the faith-based health facilities have been able to remarkably improve their governance practices, resource management and optimization, information management, and quality of services. This has in turn improved JMS's planning, commodity procurement, and logistics. The improved health facility performance has also contributed positively to the sector goals and objectives around access to essential medicines, cost reduction and waste minimization, quality of care, and appropriate use of medicines.

ASPECT OF HEALTH COMMODITIES MANAGEMENT

Timothy Nyamache, Pharmaceutical Technologist, Jumuia hospital, Kaimosi, Kenya.

Purpose

This article reflects on various aspects of commodity management including major challenges experienced by health care givers. The top management can also work on the issues to be highlighted in order to improve the quality of health services at the facility level. This is a personal finding from my previous and current work stations.

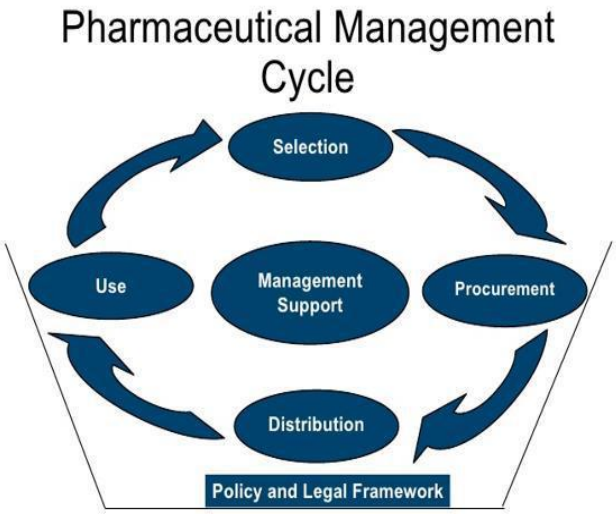
Introduction

Health commodity management is at the core of providing health care to the population and encompasses proper controlling of all health products including drugs, non-pharmaceuticals and all records involved in handling these products. Lack of proper commodity management may lead to improper commodity usage, wastage of resources, donor withdrawal and death. This article looks into

health commodity management processes, successes, challenges and opportunities.

Commodity management cycle

A working process flow on all the steps of commodity management has to be put in place starting from commodity selection to usage all backed up with the national policy and legal framework where all these are taking place [1][2]. Expertise input is required in each of the following steps in order to minimize wastage, avoid duplication, ensure good quality and most importantly satisfy clients' needs.



Challenges

- Lack of policies to guide commodity selection and ordering at facility level. This may lead to duplication (stocking same items), revenue wastage through expiries and mismanagement of clients services.
- Lack of or insufficient management support especially in availing equipment which ensure good conditions of these products e.g. Air conditioners, thermometers, ladders and many more. This affects the quality of these commodities as their storage conditions are not met thus reducing their shelf life.
- Lack of Standard operating procedures (SOPs) guiding each step of commodity management cycle and help new members cope with the system. Each step of commodity management should be guided with well-stipulated guidelines to avoid mistakes and deviations.
- Lack of proper educations in providing reports and reporting tools to relevant institutions including donors e.g. on usage, poor quality, adverse reactions etc.
- Untimely payment of suppliers thus interfering with continuous commodity availability at the facilities.
- Uninformed decision making on health and health commodities by those with non-medical background especially at the management level. This in most cases leads to poor decision making especially in aspects which needs expertise inputs.
- Biased interests in specific companies in distribution or supply of commodities. This puts a lot of pressure to those in selection and procurement, thus affecting their decision-making.

Opportunities

A number of the health service providers don't appreciate the importance of proper commodity management processes due to ignorance and insufficient education. It will be of great benefit to such facilities if an institution specializes in providing detailed training to those in need.

Success

Proper commodity management has led to the following benefits:

- Documentation of simplified processes and standard operating procedure has ensured efficiency and trust to facility operations.
- Improved accountability and transparency especially in the procurement of health commodity products.
- Pre-qualifying suppliers based on capability, sustainability, quality and affordability has helped ensure steady supply of these commodities.
- Computerized operations have ensured easy stock management, easy report retrieval and reduced the cost of working operations.
- Well-documented SOPs have reduced medication errors and other mistakes as the new staff cope easily to the institution's daily operations.

Summary

What will ever go wrong in commodity management when we come together and do the right thing? The right thing in this case means understanding the commodity management cycle, empowering our staff especially those in selection and procurement.

To influence decision-making, it is important to consider managerial positions for persons with medical background as they better understand the dynamics of the commodity management cycle and appreciate each one of the steps involved. It is also vital to provide occasional training to staff on different aspects commodity management so as to continuously build their capacity.

References

1. WHO: Medicines supplies; https://www.who.int/medicines/areas/access/supply/en
2. WHO: Supply and management of commodities; https://www.who.int/hiv/topics/vct/toolkit/components/supply/en

CHALLENGES EXPERIENCED DUE TO CHANGES IN ANTI-RETROVIRAL TREATMENT PROTOCOLS IN ZAMBIA

Marlon Banda, Saona Phiri-Ndhlovu, Macford Chandalala Morgan Phiri, Karen Sichinga, Churches Health Association of Zambia, Lusaka, Zambia

Abstract

In Zambia, more than 1,070,000 People Living with HIV (PLHIV) are on antiretroviral therapy [1]. Over 70% of these patients take Tenofovir, Lamivudine, and Efavirenz (TLE), Zambia's most commonly used ARV regimen for adults and adolescents. Lately, the Zambian Health system has gone through a number of changes in terms of treatment protocols for HIV with the introduction Dolutegravir based regimens as preferred first line treatment. In June 2018, with guidance from the World Health Organization (WHO) and other global health partners, Zambian Ministry of Health (MOH) introduced Tenofovir, Lamivudine, and Dolutegravir (TLD) and Tenofovir disoproxil fumarate, Emitricitabine, and Dolutegravir (TAFED) management of HIV patients replacing TLE. This is coupled with the formulation of treatment protocols that would ensure that patients are well managed and in line with the most effective treatment options in an effort to attain epidemic control.

Little is known or documented on the challenges that come with changing treatment protocols on large national programs. This study was conducted in collaboration with health care providers to understand their experiences. This paper reports results for qualitative interviews with 9 health care providers in Church Health Institutions, and supply chain managers at central level. Overall, they reported challenges in communication, patient response and supply chain management.

Introduction

The MOH has been mandated to provide universal health coverage through strengthening the health care systems using an integrated community and primary health care approach. Among the key pillars in attaining universal coverage an efficient and effective management of the supply chain of health commodities. The National Health Strategic Plan (NHSP) 2017-2021 provides guidance in attaining universal health coverage and as part of the NHSP, the government is implementing the Health System Supply Chain Strategy (HSSCS) to strengthen quantification, procurement, coordination and distribution of medicines [2]. National Treatment guidelines for HIV further provides guidance on what should be stocked in the country in terms of medicines and medical supplies. Changes to the treatment guidelines need to be timely communicated to the supply chain managers to respond to the changes accordingly. Effective communication between supply chain players, clinicians and patients is key to successful attainment of goals in the management of HIV. Change of treatment regimens demands high level coordination, effective communication and education to all stakeholders in the spectrum of health care.

Materials and Methods

Data from health care providers were collected as a way of eliciting the challenges that come with changes in treatment protocols. Interviews were conducted with 9 health care providers between February and March of 2020 to understand their experiences.

Setting and Participants

The study took place at Church Health Institutions (CHIs) supported by CHAZ. These were Mpashya Mission Hospital, Chikankata Mission Hospital, St Theresa Mission Hospital, Lubwe Mission Hospital, St Margrates Mission Hospital, Katondwe Mission Hospital, St Francis Mission Hospital, Macha Mission Hospital and Chikuni Mission Hospital.

Procedures

A convenience sample of study participants were recruited through a phone call from the 89 CHIs supported by CHAZ. Potential participants were informed of the purpose of the study, and those who agreed to participate proceeded with the interview.

Collection of data and analysis

An interview guide was used that focused on eliciting information on challenges that come with changing treatment protocols. The information collected was then coded to summarise the data and then analyse it.

Results

Sixty-Seven (67%) of the CHI participants were pharmacy personnel while 33% were clinical officers. At central level, 2 individuals were interviewed, a stores officer and a supplies officer. Analysis of the interview scripts showed that a number of challenges were experienced due to changes in treatment protocols. Among them were communication, resistance from the patients and supply related challenges

67% of the study participants indicated that communicating changes to the patients was a challenge. 78% said that this was largely due to a knowledge gap as they didn't really know the reasons for changing and they did not fully understand the science of the newly introduced medicines. They also highlighted that frequent changes and/or introduction of new medicines also posed a challenge on them, as they were expected to grasp the new protocols before they even fully appreciated the reasons for the previous changes. Citing the change of TLE to TLD, and TafED, most healthcare providers did not understand the eligibility criteria following a number of changes to the initial guidance and this caused some confusion in the healthcare workers and the patients they managed.

Patient response to the changes varied - some accepted the change while others did not. All study participants indicated that patients that had read or researched on the new medicines were keen to change because they understood the benefits, while negative inertia was exhibited by most patients' population who believed their current regimen was best. 67% of the participants said that language barrier played a huge role in the response from patients. The ability or inability of the patient to understand the reasons for changing their medicines caused them to either willingly accept or exhibit resistance. Other participants stressed that a push-back was seen from patients who had been on a particular regimen for a long time and were stable. While the health care provider may give all the necessary information pertaining to the change, to convince a patient whose treatment was not failing was difficult. Such patients expressed displeasure as they did not fully understand why something that was working well was being fixed. The participants mentioned that, psychologically such patients remained 'over-sensitive' to any adverse drug effect that they might experience due to the new regimen,

and that any ill feeling they had was attributed to or blamed on the new drug.

The supply challenges were reported at both central level and at service delivery points (SDPs). These challenges were to do estimation of demand (quantification), storage, inventory management and distribution. When a new medicine was introduced, a push system is usually employed. Estimation of quantities to be supplied was done centrally and this did not take into account capability of the facilities to store the additional quantities. Quarantining of medicines whose use has been discontinued also impacted on the available storage space. Wastage through expiries of medicines that had been discontinued was high in some facilities. An example of this was Nevirapine tablets. This was piling up in certain facilities as the expiry date drew near. Inertia of health practitioners to start implementation of new protocols may also contribute to wastage as the shelf life of the new medicines diminishes. Estimating quantities for resupply was also a challenge for most facilities and this resulted in overstocks and understocks. In the case of TLD & TLE, where both regimens were still in use, striking a balance of how much of a particular medicine to store was a particular challenge as consumption of both was affected by the rate of implementation. Provider or prescriber preference came into play, when introducing new protocols. Owing to issues of capacity development, sensitization or awareness, prescribers tended to stick to the safer lane of what they had used before and knew as compared to quickly switching to a new protocol. Stock records were in most cases not updated on time, and while implementation of the new protocols was started, the reporting tools lagged behind. There were instances where new medicines or pack sizes were introduced and pushed to the facilities, but the stock record tools were not updated. This made it difficult for the facilities to report on the particular medicines and valuable information was lost.

At central level, experience has shown that there is always wastage of some formulations in the supply chain as there were no guarantees that the different drugs will all be used up at the same time. In most cases, the new medicines are stuck in the warehouse for a long period of time before there was clear guidance in the implementation strategy. In the case of TafED, guidance was still not clear as to which facilities would be supplied before they were enough stocks in the country.

Discussion

It is always a delicate balance managing the supply and demand side of the supply chain as there is need to ensure that the scale of phasing out one commodity line matches the scale-up of the other without interruption to commodity availability. And this goes for both procurement and ordering. The issues on the downstream will hover around supply chain managers understanding the changes in the protocol ensuring that they are ordering enough quantities of the new regimens while ensuring that they are phasing out the old regimen on a balanced sliding scale. Referring to the scale up in the use of TLD, there is a threat to expire TLE while a stock out of TLD is anticipated as the consumption of TLE reduces and that of TLD increases drastically.

Limitations

These findings should be viewed in the light of a number of study limitations. The sample size was small due to time constraints for implementation. The collection tools used are highly subjective and feedback is dependent on the respondent, and how they understood the questions.

Conclusion

The Zambia consolidated guidelines have come with a view to reduce the cost of implementation by improving patient outcomes in a timely manner as well as cutting down cost of medicines. These gains can only be realized if the benefits are understood in a timely and cost-effective manner across the healthcare continuum. Education of both service providers and patients is key to achieving positive change in the implementation of new strategies of HIV Management. Supply chain players and clinicians need more interaction especially when it comes to schedule and scale of implementation. This will reduce uncertainties in the entire process and will lead to attainment of the intended goals, while avoiding wastage.

References:

1. Health Sector Supply Chain Strategy and Implementation Plan 2019-2021
2. 2018 Zambia Consolidated Guidelines for Treatment and Prevention of HIV infection
3. 2020 Zambia Consolidated Guidelines for Treatment and Prevention of HIV infection
4. World Health Organization, *Transition to New HIV Treatment Regimens- Procurement and Supply Chain Management Issues*, March 2014.
5. TLD Transition Steering Committee meeting minutes-June 2018
6. MOHs TLD Transition Process and Orientation -Feb 2019

IMPACT ASSESSMENT OF LONG LASTING INSECTICIDE MOSQUITO NET DISTRIBUTION AND USAGE ON MALARIA CASES IN EASTERN PROVINCE OF ZAMBIA

Marlon Banda, Macford Chandalala, Saona Phiri Karen Sichinga, Mapeesho Kamayani, Doris. Y. siyanga, Jim Mwandia, Churches Health Association of Zambia, Lusaka, Zambia

Background

Zambia adopted the net use strategy in the late 1990s. Since its adoption, there has been a deliberate effort to scale up the intervention. This has been done through the formulation of the mass distribution policy between 2001-2005 [1]. The policy was passed in the beginning of year 2001.

The long lasting insecticidal nets (LLINs) intervention became one of the key vector control strategies implemented within an integrated package with indoor residual spraying (IRS) in the National Malaria Strategic Plan (NMSP) 2001-2005 with operational targets of three (3) nets per household and usage targets of 80% among pregnant women and children under the age of 5 [2].

When LLINs are used on a large scale, they have proved to be a cost-effective public health intervention tool for malaria control and prevention in most malaria endemic countries. A review of literature indicates that universal LLIN coverage and adequate usage may reduce the incidence of clinical malaria by up-to 50% in malaria endemic areas. Amongst children below 5 years of age, LLINs provide up-to 55% protective efficacy in preventing malaria associated mortality [3]. Total community protection is possible when universal coverage is achieved and at least 80% of bed nets are used by the households.

In 2017, Zambia revised the national malaria strategy to foster the elimination agenda with the target to eliminate malaria in 2021 [4]. The elimination plan has emphasized LLIN distribution and Indoor Residual Spaying (IRS) as key interventions towards attainment of malaria elimination. In the same year, LLINs were distributed to all households in Zambia. Prior to LLIN distribution, a household registration exercise was conducted. Based on this census, household lists with total family members were generated and the number of nets a household would receive was determined. District and health facility staff including community based volunteers were trained in LLIN distribution processes and health education.

In most communities, nets were distributed at designated fixed points with the help of local community leaders who were engaged for crowd control and ensuring community ownership of the campaign.

By the end of the mass distribution during January-March 2018, a total 1,061,209 nets were distributed resulting in an overall coverage of 82%. This translated into a 1,910,177 people protected. Distribution of LLINs was done according to the national guidelines which stipulated that 1 bed net be issued to 1.8 persons [5].

Method

The study was conducted in Eastern Province, one of Zambia's ten Provinces. This Province lies between the Luangwa River and borders with Malawi to the east and Mozambique to the south, from Isoka in the north-east to the north of Luangwa in the south. The provincial capital is Chipata. Eastern province has an area of 51,476km^2 and shares provincial borders with three other provinces of the country. The province is divided into fourteen districts namely; Chadiza,

Chasefu, Chipata, Chipangali, Katete, Kasenengwa, Lundazi, Lusangazi, Lumezi, Mambwe, Nyimba, Petauke, Sinda and Vubwi districts. Eastern province has a total of 322 health facilities, classified according to levels of care comprising of 1 second level hospital, 11 urban health centres, 163 rural health centres and 137 health posts.

According to the 2010 census report, the province recorded the highest rural population of 1,392,338 people among all the ten provinces in the country. The average household size was 5.2, with families headed by women being 4.3 and 5.5 for families headed by men [6]. The main objective of the study was to assess the Impact of Long Lasting Insecticide Mosquito Net Distribution and Usage on Malaria Cases in Eastern Province of Zambia.

Study design & data collection

A retrospective desk study was conducted on the malaria cases reported using the national district health reporting system (DHIS 2). The data collected was cumulative malaria cases and was combined for under 5 and over 5. The 2017 data was used as baseline information before the mass distribution of LLINs with the view to comparing with the subsequent 2 years after deployment of the LLINs as a vector control measure.

Since the data was not normally distributed, the Wilcoxon signed- rank test was used to test if there was no difference in the number of cases of malaria between in 2017 (baseline before intervention) and 2019 a year after the mass distribution of LLINs. The hypothesis was that there was no difference in the malaria cases at the two intervals. Ho: X2019=X2017, HA: X2019≠X2017

Findings

The desk study established a remarkable reduction in malaria cases across all ages as illustrated in figure 1. These observations strengthen the fact that bed net use has positive impacts through malaria case reduction.

Figure 1

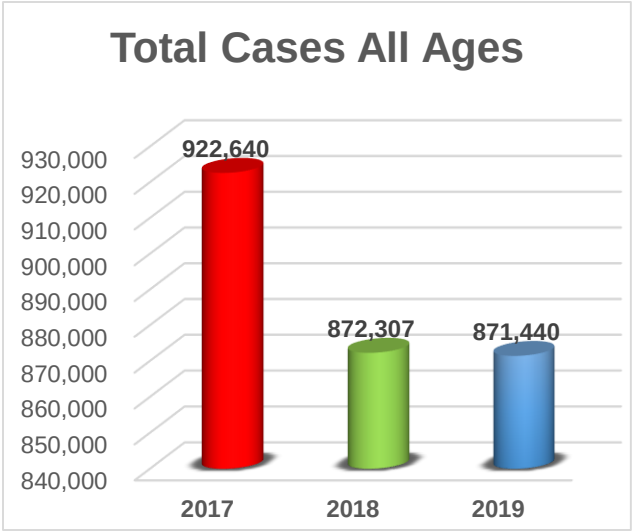
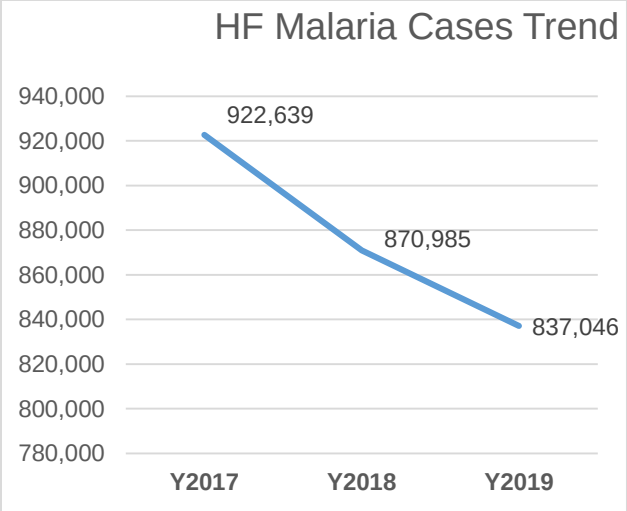


Figure 2



Further, the study notes that there was a downward trend in malaria cases beginning in 2018 soon after mass LLIN distribution through to 2019. The baseline for this study was 2017 were the mass LLIN campaign was not conducted. The percentage reduction of total malaria cases in 2019 compared to 2017 was 9% as noted in the figure 2.

```
. signrank Y2019= Y2017

Wilcoxon signed-rank test

        sign |      obs    sum ranks    expected
-------------+---------------------------------
    positive |      126        17491     21097.5
    negative |      164        24704     21097.5
        zero |        0            0           0
-------------+---------------------------------
         all |      290        42195       42195

unadjusted variance  2042941.25
adjustment for ties       -2.00
adjustment for zeros       0.00
                     ----------
adjusted variance    2042939.25

Ho: Y2019 = Y2017
            z =  -2.523
    Prob > |z| =   0.0116
```

A Wilcoxon signed- rank test was used to test if there was no difference in the number of cases of malaria between in 2017 (baseline before intervention) and 2019 a year after the mass distribution of LLINs. The output showed a p-value of 0.0116 which was statistically significant at 95% confidence with a negative z-score of 2.523. The results meant we rejected the null hypothesis of no difference and concluded that the CHAZ LLIN mass distribution contributed to the reduction in malaria cases between 2017 and 2019.

Output

The reduction in the number of malaria cases post-distribution of LLINs suggests that the use of LLINs is one of the effective strategies to prevent malaria and may be attributed to have significantly contributed to the reduction of malaria cases.

Limitations of the study

This study cannot only point the reduction in malaria cases to the mass distribution of LLINs that were distributed in early 2018 because of other interventions such as intermittent preventive treatment for pregnant women and indoor residual spraying which may have also contributed to the reduction of malaria morbidity in Eastern Province. The study design employed did not capture the contribution of each intervention independently.

Conclusion

In order to sustain these gains, regular awareness and maintenance of universal coverage is required to sustain the optimal LLIN coverage and use in the population especially the at-risk groups such as the under 5 children and pregnant women.

References

1. Masaninga, Freddie & Mukumbuta, Nawa & Ndhlovu, Ketty & Hamainza, Busiku & Wamulume, Pauline & Chanda, Emmanuel & Banda, John & Mwanza-Ingwe, Mercy & Miller, John & Ameneshewa, Birkinesh & Mnzava, Abraham & Kawesha-Chizema, Elizabeth. (2018). *Insecticide-treated nets mass distribution campaign: Benefits and lessons in Zambia***.** Malaria Journal. 17. 10.1186/s12936-018-2314-5.
2. Raghavendra, K., Chourasia, M.K., Swain, D.K. et al. *Monitoring of long-lasting insecticidal nets (LLINs) coverage versus utilization: a community-based survey in malaria endemic villages of Central India*. Malar J 16, 467 (2017). https://doi.org/10.1186/s12936-017-2117-0
3. National Malaria Elimination Centre (NMEC): (2018) '*National Malaria Indicator Survey*', NMEC, Lusaka, Zambia.
4. Ministry of Health (2019) '*The 2018 List of Health Facilities in Zambia, Ministry of Health Zambia*,' MOH: Lusaka, Zambia.
5. National Malaria Elimination Centre (NMEC): *Mid-Term Review of the National Malaria Elimination Strategic Plan (2017–2021)* Draft Report (2019)
6. Zambia Statistics Agency (2020) '*Population and Demographic Projections 2011 – 2035*,' Zambia Statics Agency, Lusaka, Zambia.

Acknowledgements

1. Ministry of Health-Zambia
2. Churches Health Association of Zambia (CHAZ)
3. The Global Fund to Fight HIV/TB and Malaria
4. Against Malaria Foundation
5. National Malaria Elimination Centre (NMEP)
6. Ministry of Health Zambia, Eastern Provincial Health Office (EPHO)

P.O. Box 749-00606,

Nine Planets Apartments, Saturn Block, 4th Floor, Suite #9,

Kabarnet Road | Nairobi | Kenya.

Tel: +254 724 301 755 | Email: info@epnetwork.org

www.epnetwork.org