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PHARMANET

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William Musubire (NMS), Dr. Ajulong Martha (AC DPNM), Dr. Driwale Alfred (PM UNEPI), Dr. Daniel Kyabayinze (Director Public Health), Dr. Eric Lugada (CoP USAID/SSCS), Dr. Christine Mugasha (USAID) at the handover of COVID-19 Vaccination tools at the Ministry of Health Headquarters.

EDITORIAL

Message from the Assistant Commissioner Pharmaceutical Supply Chain and Logistics

Digitization to improve efficiency and transparency of the supply chain system

Welcome to the second edition of the Pharma Net newsletter. As we continue to navigate through the challenges and growing commodities demands on the health supply chain system, we stay up to date on the latest developments in Uganda. The government of Uganda through the Ministry of health recognized e-health in the Health Sector Development Plan 2015/16 – 2019/20 as a key enabler for supporting the health system to deliver good health to all Ugandans. In this issue, we bring to you insights that shed light on issues in the digitization of the health supply chain system in Uganda.

We examine the interventions during the COVID-19 pandemic and its contribution to the digitization of the health supply chain system, and how it highlights the importance of resilience and flexibility in ensuring that critical medicines and health supplies reach user units promptly. Relatedly, we discuss interventions aimed at improving data visibility in private-sector health facilities through the Medical Records and Reporting System (MRRS). These contribute to building a robust and agile supply chain system by enhancing digital capabilities.

In addition, we explore reporting of HMIS-105 section 6 data by regional referral hospitals across the country. We showcase some of the innovative strategies that are driving these changes from strengthening leadership and governance, data analytics and visualization, and institutionalization of data use to greater collaborations between



key stakeholders. We provide perspectives on the overall digitization of the supply chain system in Uganda with examples of interventions and systems that are being implemented in the country. These digital equipment and systems could be key to improving universal access to essential medicines and health supplies in the country. We also delve into the 10-Year National Supply Chain Roadmap. Specifically, we discuss ongoing interventions to institutionalize the implementation of the roadmap by the government and its partners through the one-government approach. We provide insights on how the implementation of the roadmap can be used to strengthen leadership and governance for a stronger supply chain system. The issue also includes findings of the 12th Malaria End User Survey in Uganda highlighting the availability of commodities and supplies in health facilities in Uganda.

We hope that this edition of the newsletter provides valuable insights and inspiration for your work in the health supply chain system as we all strive to achieve universal access to essential medicines and health supplies in Uganda. We welcome your feedback and suggestions for topics for future editions and we look forward to continuing the conversation with you.

Dr Martha Grace Ajulong

Assistant Commissioner Pharmaceutical Supply Chain and Logistics, Department of Pharmaceuticals and Natural Medicines - Ministry of Health.



Message from the Chief of Party, USAID/ Uganda Strengthening Supply Chain Systems Activity

Welcome to the Third edition of the Pharmanet newsletter. Thank you for your continued interest in the supply chain system and for appreciating the critical role it plays in ensuring essential medicines and health supplies reach those who need them the most. The USAID/Strengthening Supply Chain Systems Activity, the Ministry of Health, and partners are committed to improving the efficiency, transparency, and sustainability of the supply chain system in Uganda. This has been possible with the generous support from the American people through the United States Agency for International Development (USAID) and the Global Fund. By strengthening the supply chain system, we can help ensure that people have access to medicines and health supplies they need to live healthy productive lives.

The digitization of the health supply chain system is an important step in transforming health service delivery and ensuring universal access to quality-assured essential medicines in Uganda. By leveraging digital technologies

such as enhanced internet connectivity, data analytics, and visualization, the MoH and its key stakeholders will be able to improve the efficiency, and transparency of key supply chain processes and operations. The digitization of the health supply chain system has several benefits including enhanced traceability of essential medicines and health supplies as they move through the supply chain system, improved inventory management hence minimizing stock-outs and wastage, increased efficiency due to automation, greater transparency as all stakeholders have access to real-time data and improved data analytics.

This issue of the newsletter highlights some key interventions and perspectives on the digitization of the health supply chain system among other topical issues. These include interventions and improvements in reporting by hospitals, scaling up utilization of the electronic logistics management information system, improving data visibility in private health facilities, COVID-19 vaccines supply chain digitization, and institutionalizing the 10-Year National Supply Chain Roadmap. These articles show that the digitization of the health supply chain system has the potential to transform the health system, making it more efficient and transparent. However, several challenges that need to be addressed such as lack of connection to the national electricity grid, poor internet connectivity, data security, and the need for a skilled workforce to manage and maintain the digital infrastructure and systems.

Dr Eric Lugada

Chief of Party, USAID/Uganda Strengthening Supply Chain Systems Activity, Management Sciences for Health – Uganda



Digitalization of the health supply chain system: an opportunity to increase access to essential medicines in Uganda

Henry Komakech, Research Specialist

USAID/Uganda Strengthening Supply Chain Systems Activity

To achieve universal health coverage and ensure the healthy lives of its citizens, Uganda strives to make essential medicines and health supplies (EMHS) available to all. But despite making considerable strides in the last 20 years in strengthening the EMHS supply chain, [EMHS stock outs at health facilities still average around 50%].

Factors enabling adoption of digital systems and access to medicines

Uganda's Ministry of Health recognizes the potential of digital health technologies to improve the availability of EMHS and has outlined its goals in its National eHealth Strategy 2017-2021. Coupled with supportive policies and regulations, other factors are helping Uganda adopt digital health supply chain systems:

- Mobile phones are widely accessible, which provide efficient solutions to track medication distribution.
- Increased internet connectivity facilitates seamless communication and data sharing between health care facilities and EMHS suppliers and supports real-time inventory management that reduces stockouts of essential medicines.
- Partnerships between government agencies and non-profit and private sector entities related to eHealth result in shared resources and knowledge and building capacity.

These factors have fostered investment in digital infrastructure and encouraged stakeholders to embrace technology-driven solutions to improve access to quality EMHS.

Digital health technologies and access to medicines

With digital supply chain systems, users can consolidate data from multiple locations, thereby providing real-time supply chain visibility from end-to-end. Access to such immediate data has improved planning and the quality and speed of decision-making related to making EMHS available.

The public and private sectors are now using a range of digital health systems and tools, described in the table below, which strengthen the health supply chain and therefore the delivery of quality health services.

Application	Description
ART Access	Provides patient information that guides a community pharmacy's delivery of antiretroviral therapy refills, which saves patients a trip to the health facility.
CommCare	Supports EMHS warehousing, inventory management, service delivery utilization, and distribution, allowing health to manage commodities.
Health Entrepreneurs	Supports health workers to conduct online patient triaging, risk assessments, and referrals to ease the load on district health care systems.
mHero	Allows the Ministry of Health to communicate important information to health workers via popular communication platforms.
mTrac	Enables village health technicians and community health workers to electronically submit information about supplies, send stockout alerts, and conduct disease surveillance.
NestGenCo-viaAI	Helps manage resource allocation, planning, quantification, and forecasting for EMHS.
SMAPP	Allows the health worker to transmit the result of a rapid diagnostic test, such as for malaria, as well as track details about the test including its expiry date.
DHIS2	Is the country's primary health management information system, which supports the collection, analysis, visualization, and sharing of all health-related data.
Laboratory Management Information Systems	Improves laboratory supply chain performance through inventory, order, and transportation management, demand forecasting, and remote temperature monitoring for cold chains.
Parasyl	Provides real-time visibility of the entire vaccine supply chain including environmental conditions during shipment and storage.
Quantimed	Improves the accuracy of EMHS order planning and budgeting by calculating commodity needs using standard methods.
Stre@mline	Helps manage health facilities' clinical, administrative, and financial data.

Conclusion

The convergence of affordable mobile technology and other enabling factors has accelerated Uganda's adoption of digital health systems, including for the supply chain. Digital health solutions can help increase the number of people who can obtain the medicines they need and use them appropriately. In addition, digital health solutions can help improve the quality of care and reduce costs in both public and private settings. While the road ahead is long and challenging, continued investments in digital health supply chain systems will further improve the availability of EMHS in health facilities, producing better health outcomes.



Health supply chain reporting by referral hospitals Uganda: case study HMIS 105 section 6

By Anthony Kirunda, Subnational Level Activity Manager
USAID/Uganda Strengthening Supply Chain Activity
Management Sciences for Health – Uganda

Background

The collection, processing, storage, retrieval, and dissemination of health information make health management information systems (HMIS) critical to planning, management, and decision-making in health facilities and organizations. In Uganda, HMIS reports contain monthly data for outpatient department visits, diagnoses, maternal and child health clinic participation, HIV/AIDS service, laboratory service, stock status of essential drugs and supplies, and finances, among others. All health facilities across all levels of care in Uganda must submit monthly reports to the national Health Management Information System. HMIS.

The monthly HMIS 105 Section 6 (HMIS 105-6) report is an essential tool that the Ministry of Health (MoH) Department of Pharmaceuticals and Natural Medicines and partners use to track the amount of stock available for 41 essential commodities, so they can plan the supply and quantity needed for Uganda's health services. Health facilities report the quantity of medicines they use during the month, days out of stock, and stock on hand. For the system to produce timely and accurate reports, facilities need to submit complete information on those three indicators on time.

Despite its importance, HMIS 105-6 reporting was low—49% as of May 2021 with just 9 of 136 districts achieving 100% facility reporting. Incomplete and inaccurate reporting, due in part to transcription errors, are obviously detrimental to commodity stock planning, which results in stockouts and expiries at the health facilities.

Methodology

To address this challenge, the MoH Department of Pharmaceutical and Natural Medicines, USAID/Strengthening Supply Chain Systems Activity (SSCS), and other implementing partners launched a multisectoral strategy addressing several supply chain operations:

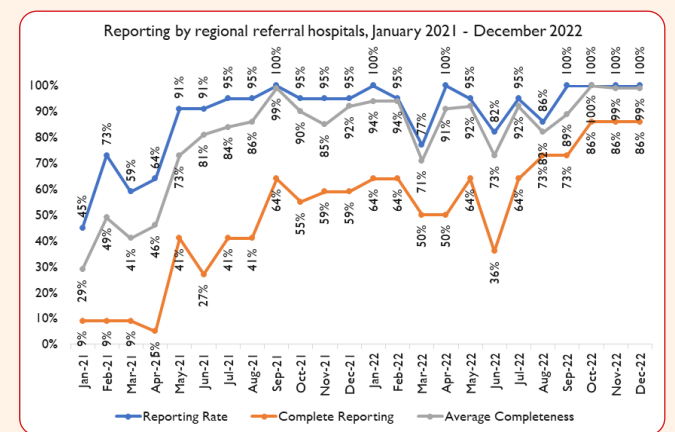
- In July 2021, the MoH circulated a letter to all District Health Officers to inform personnel responsible for monitoring and evaluation and data entry to rectify transcription errors and to provide pharmacists and supply chain staff access to the HMIS to input this data in the online electronic logistics management information system.
- Reporting rates of HMIS 105-6 by health facilities has been low. This has an effect on the availability of data to support informed decision making. The SSCS Activity regional coordinators in collaboration with district health

managers identified change agents in health facilities who would support and encourage stakeholders to improve HMIS 105-6 reporting.

- Leaders of districts and hospitals held meetings to reinforce their roles and responsibilities in improving supply chain reporting.
- The SSCS Activity and implementing partners followed up with the 22 referral hospitals on a monthly for 6 months. In addition, pharmacists, HMIS focal persons, and implementing partners participated in activities to build capacity in data entry for HMIS 105-6.
- The commodity security group met weekly to share data and discuss the referral hospitals' supply chain reporting performance.

Results

Complete reporting on the HMIS 105-6 Referral hospitals for medicines and health commodities increased from 86% (17/22) at the end of December 2022 up from only 9% in July 2021. Overall, reporting rates have improved for all hospitals in the country, which has led to greater visibility of commodities data. In several cases, hospital staff used this data to redistribute commodities between facilities to prevent stock outs or overstocks. Because of the usefulness of the data, hospital managers and staff have been more interested in tracking how well their facilities are reporting.



Reporting by 22 regional referral hospitals: January 2021 - December 2022

Next steps

- Distribute computers and provide internet connectivity to health facilities so they can include report their supply chain data to the HMIS.
- Increase health workers' knowledge and skills in data management and reporting.
- Scale up the same activities to lower-level facilities to improve supply chain reporting.
- Harness the advances in HMIS 105-6 reporting to improve the evidence-based decision-making that helps ensure the availability of essential medicines and supplies across all levels of care in Uganda.

Conclusion

Good supply chain data can increase the availability and quality of health products by making it easier for stakeholders to jointly solve supply chain problems in hospitals. Hospitals' consistent reporting of performance data identifies areas that need improvement and promotes transparency and accountability in the health supply chain. Accurate and timely regional referral hospital reporting benefits not only the hospitals but also the patients they serve and the health care system overall. Broadening these improvements to cover more hospitals needs more of their supply chain processes to be digitalized and data formats developed that are standardized and interoperable.



Data entrant (rightmost) and DCCT (leftmost) of Kumi district conducting support supervision on vaccine logistics management at one of their health facilities

private not-for-profit health facilities. As part of the effort to meet the 70% vaccination target, the USAID/SSCS Activity is helping to improve reporting rates and hence stock status visibility of COVID-19 vaccine data. In the long run, these efforts will help strengthen other vaccine program challenges.

The USAID/SSCS Activity conducted a problem analysis and identified several gaps affecting reporting including a lack of computers, internet connection, and trained human resources in the health facilities, which required a multi-pronged approach; for example, 136 computers were purchased and deployed to the district vaccine stores, and short-term personnel were recruited to support data entry under the direct supervision of district biostatisticians.

They entered COVID-19 logistics data into the EPIVAC system at the health facility and district vaccine stores every week. Additionally, district cold chain technicians and biostatisticians received airtime and internet access to follow up with facilities and attend performance review meetings. Finally, data was analyzed daily to track reporting, and biostatisticians, cold chain technicians, district data entrants, and regional implementing partners held weekly review meetings to make sure data was being used to manage vaccine and supply stock.

Outcome

As a result of these actions, COVID-19 vaccine-related reporting improved at both district and health facility vaccine stores as shown below.

How digitalizing the COVID-19 supply chain improved data visibility in Uganda

Anthony Kirunda, and John Wilberforce Mayoka. USAID/Uganda Strengthening Supply Chain Systems Activity Management Sciences for Health, Uganda
Contact: akirunda@ug-sscs.org

Background

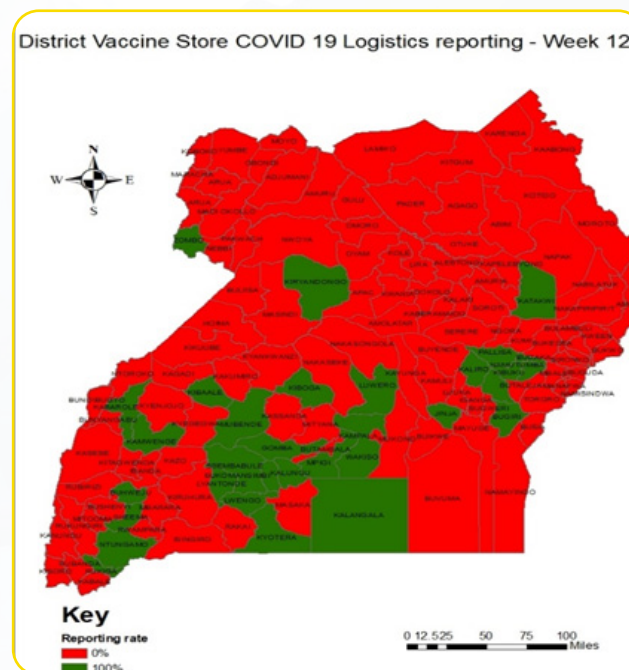
The COVID-19 pandemic disrupted health care services and exposed weaknesses in health care system—including the supply chain—across the globe. In Uganda, the health supply chain system was stretched with routine service delivery interrupted due to inadequate access to medicines, vaccines, and supplies. Uganda recorded 3,500 deaths from COVID-19, and without improvements to these systems, the country will be vulnerable to future pandemics, putting even more lives at risk.

When the first COVID-19 vaccines became available in 2021, the Ministry of Health (MoH) in Uganda set a target to immunize at least 70% of a defined population that included health workers, teachers, the elderly, and those with other health conditions to control the spread of the infection and minimize hospitalizations and mortality. This target required uninterrupted access to vaccines.

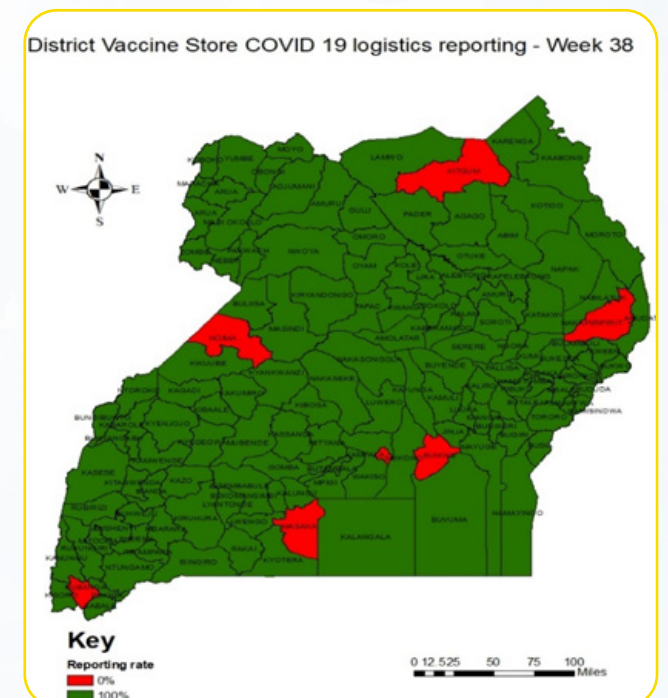
At the start of the vaccination program, the MoH relied on a manual tracking system, which had limitations resulting in sporadic stock outs and expiry. The MoH, with support from partners, transformed its vaccine management and reporting systems to a digital system that was incorporated into the country's national health management information system. The new EPIVAC vaccine system allowed users to track the distribution, utilization, availability, and wastage of COVID-19 vaccines and related supplies. Although EPIVAC enabled real-time access to stock data on vaccines and other supplies, the MoH still noted limited visibility of COVID-19 vaccines, especially sub-nationally. This was attributed to poor reporting by the district vaccine stores and vaccination sites, with an average of 5% and 1%, respectively, of the number of sites reporting in March 2022.

Program Intervention

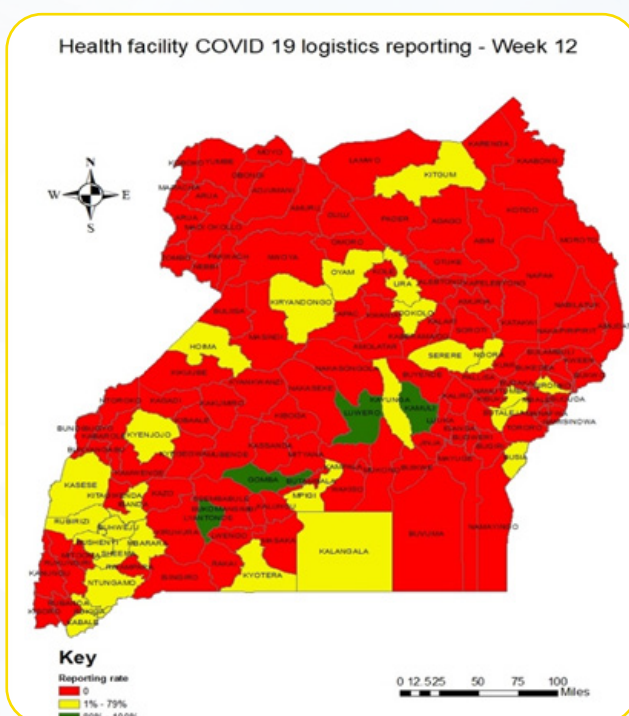
The Uganda Strengthening Supply Chain Systems (SSCS) Activity funded by the US Agency for International Development (USAID), has been supporting the Uganda government's efforts to increase availability and access to safe, quality-assured medicines and health supplies in public and



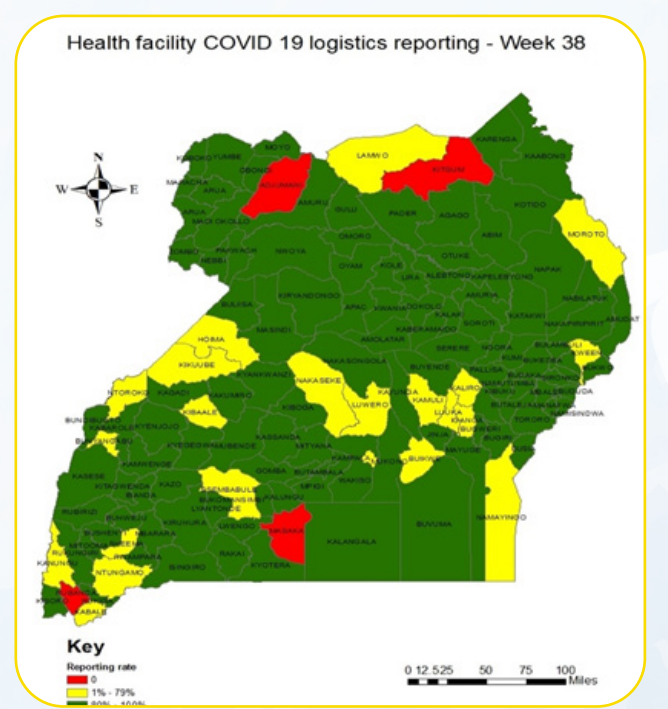
Map showing COVID 19 logistics reporting by District Vaccine Stores as of week 12-2022



Map showing COVID 19 logistics reporting by District Vaccine Stores as of week 38-2022



Map showing COVID 19 logistics reporting by Health facilities as of week 12-2022



Map showing COVID 19 logistics reporting by Health facilities as of week 38-2022

“Through using the available data, we were able to move vaccines from facilities which could not utilize them before their use-by dates to facilities that had high consumption. This led to zero wastage in my district. Special thanks to the partners and the district health teams for making this happen.” -Dr. Buyinza Godfrey, DHO Kibuku District

By the end of September 2022, the percentage of district vaccine stores and health facilities had increased their national COVID-19 logistics reporting to 94% and 87%, respectively. By improving the visibility of these COVID-19 logistics data, district vaccine stores and health facilities had the information they needed to make sound decisions about how to manage vaccine stock, including sharing it between districts, which made vaccines more accessible and minimized wastage from expiries.

Next steps

The SSCS Activity will continue to offer technical support in managing COVID-19 logistics by:

- Working with MoH, Uganda National Expanded Program on immunization, and vaccine partners to put the regional and district supply chain structures in place to manage COVID-19 vaccines and related logistics.
- Scaling up electronic logistics management information systems.
- Building the capacity of regional implementing partners and district teams to store and manage COVID-19 vaccines better.
- Increasing regional implementing partners' skills in how to analyze supply chain data and conduct routine data reviews to promote their use of data for good decision-making.
- Helping district cold chain technicians and biostatisticians to coordinate collection and submission of COVID-19 logistics into the national vaccine database, EPIVAC.



Data entrant (right) and DCCT (left) of Mayuge district submitting COVID 19 logistics data into EPIVAC using USAID SSCS deployed computer.

Conclusion

In conclusion, the COVID-19 pandemic highlighted the importance of supply chain visibility and the role that digitalization plays in achieving it. Electronic systems allow users to capture and analyze real-time data, enhance collaboration among sites to transfer stock intelligently, and automate processes, which improve health supply chain responsiveness and resilience.

Infection prevention and control in the agriculture sector in Uganda, as a key aspect for a sustainable supply chain

Hassan Kasujja* and Grace Kwikiriza**

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**Research Officer, USAID Medicines, Technologies and Pharmaceutical Services Program Management Sciences for Health, Uganda

Background

Overuse and misuse of antimicrobials to treat infections drives antimicrobial resistance. This, significantly affects the future effectiveness of these medicines. To decrease antimicrobial use, preventing infections is an important first step that is all too often overlooked. Improve infection prevention and control (IPC) requires a multisectoral, One Health approach is necessary including not only the human health sector but also animal health and agriculture. However, the human health sector surpasses the other in capacity and has a stronger record of addressing IPC challenges than the others.

Method

In response to this challenge, the US Agency for International Development-funded Medicines Technologies and Pharmaceutical Services (MTaPS) program supported Uganda's Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) to establish strong IPC systems and enhance the rational use of antibiotics within the agriculture sector. For example, the MTAps program supported MAAIF to formulate IPC guidelines for five major livestock groups and draft the country's first essential veterinary medicines list to help guide infection treatment. In addition, an assessment was conducted to understand the current situation in the sector.

Findings

The findings from the assessment show that the estimated losses due to pests and diseases in plants to be between 20%-30% of expected output. Major losses for priority crops were estimated at USD 35-200M (banana wilt); USD 60-80M (cassava brown streak disease); USD 10M (cotton); and USD 80M (coffee wilt). In the animal sector, ticks and tick-borne diseases produced losses of over USD 1.1B, contributing to more than 60% of what was spent on cattle. Mastitis was another major contributor to cattle losses. In poultry, mortality rates due to infections have been reported at 40-80% annually.

Farmers manage disease through the irrational use of pesticides, herbicides, and antibiotics. The first option to treat diseases and pests is often the application of chemicals including antibiotics. About 35% of households reported using antibiotics to treat their livestock without supervision from qualified personnel. Sharing antibiotics and the spread of resistant pathogens between human and animals are also threats.

The animal sub-sector is better organized than the crop and fisheries sectors to address problems with practices. Districts routinely identify and report livestock disease outbreaks, so as to inform farmers to take appropriate actions. However, there is often a lag between reporting and response due to inadequate staffing and lack of other resources. Staff shortage, especially at MAAIF affects pests and diseases surveillance and management. In addition, influential traders and politicians can interfere to promote their self-interest, especially where quarantines are imposed, which often affects response.

A single MAAIF inspector manages each port of entry instead of the required three. A single inspector cannot work for 24 hours, yet points are continuously open. Additionally, there are many ungazetted border entry points where cross-border activities, including smugglings takes place, which pose a substantial risk for disease and pest outbreaks.



Mr. Asimwe Ronald, a senior agricultural inspector, in the crop inspection laboratory at Uganda-Rwanda Katuna border on 25th July 2022. The under-equipped laboratory is used to assess all produce leaving and entering the country. Photo credit: Hassan Kasujja USAID-MTaPS Uganda.

The laboratories needed to test agricultural products coming into the country have limited services and lack basic equipment. For diagnosis, a few research and central laboratories exist in cities and larger towns; however, these are often too expensive for smallholder farmers to use. A study reported that laboratories in Uganda were unable to provide most of the common diagnostic tests requested by clients, which has led to reliance on visual assessment.

On a positive note, the increasing cases of ineffective treatment and great concern about antimicrobial resistance have stimulated research into alternatives to antimicrobial and pesticide applications. Research is focusing on alternatives such as probiotics and medicinal plants with antimicrobial or pesticidal action; for example, several plant extracts have shown more efficacy than modern tick treatments, and among other advances, the fungus *Beauveria bassiana* is a potential candidate for controlling banana weevil. In addition to research, advocacy for using these biological control agents is ongoing, though many are still at beginning stages.

The national, regional, and international policy frameworks that relate to disease management and national and international trade are generally sufficient to support IPC in Uganda. The frameworks address key issues on best IPC practices to safely transport healthy animals and plants, cross-border movement of agricultural products, quality seed supply services, and chemical regulation, among others. However, as the above examples show, effective implementation is lacking in the country.

Conclusion

Uganda has made good progress in building IPC systems in the agricultural sector, mainly by developing a foundational plan and guidelines but carrying out the plan still faces bottlenecks for implementation in this sector. The sector needs to unblock these IPC bottlenecks and contribute to the country's goal of controlling antimicrobial resistance.

Institutionalizing Uganda's 10-Year Health Supply Chain Roadmap among Government Entities

Moses Mukundane

Director Strategy and Program Innovation/ Technical Lead of Leadership and Governance USAID/ SSCS Activity

The Government of Uganda (GoU) developed and launched the 10-year National Health Supply Chain Roadmap 2021/2022-2031/2032 in January 2022. The roadmap is aligned with the Ministry of Health National Pharmaceutical Services Strategic Plan (2020/2021 – 2024/2025) and the National Development Plan III 2020/21 – 2024/25. Its aim is to ensure the sustainability of the health supply chain, enable access to timely data, and increase accountability, visibility, and transparency in the health supply chain. The roadmap describes the short-, medium-, and long-term investment needs of Uganda's health supply chain system over the next 10 years.



20th IMTF meeting at Lake Victoria Serena Hotel-Kigo on November 9, 2022

Taking a “one government approach” to roadmap development

A “one government approach” brought together ministries, departments, and agencies (MDAs) with a vital role in the health supply chain as a single entity to achieve a common goal. It seeks to maximize Uganda's resources, competencies, and capacities to implement Uganda's health supply chain priorities over the next decade and requires relevant MDAs and local governments to include health chain system priorities in their strategic, development, and annual plans and budgets.

The Office of the Prime Minister's vibrant coordination role in the roadmap

By virtue of its mandate to coordinate GoU entities in policy and programme implementation, the Office of the Prime Minister is coordinating MDAs' roadmap implementation; for example, it convenes the Inter-Ministerial Task Force (IMTF) to advise on health sector supply chain governance, budgeting, and policy issues. The IMTF is a government-led working group that comprises MDAs and representatives from civil society, private sector, and health development partners.

The Office of the Prime Minister convened five IMTF meetings on the national health supply chain between September 2022 and May 2023 to discuss the process for MDAs and local governments to institutionalize roadmap activities with an emphasis on integrating the planning and budgeting framework for health supply chain priorities, particularly for FY 2023/2024. The Ministry of Finance, Planning and Economic Development co-chairs the IMTF meetings with the Office of the Prime Minister, while the Ministry of Health, supported by the US Agency for International Development/ Uganda Strengthening Supply Chain Systems Activity, is the Secretariat.



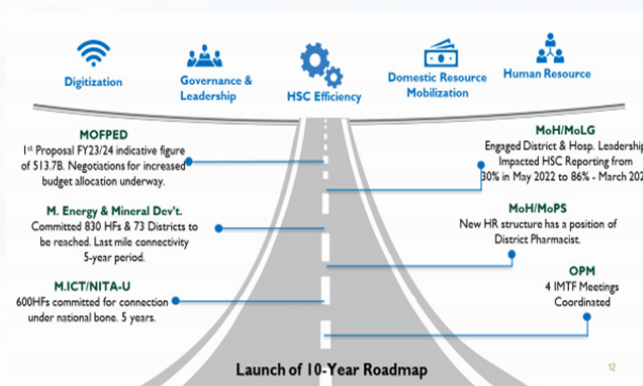
19th IMTF meeting held at the Office of the Prime Minister on September 2, 2022



20th IMTF meeting held in the Office of the Prime Minister on January 31, 2023

The MDAs and Office of the Prime Minister have developed plans to include health supply chain priorities in the FY 2023/24 annual plans and budgets. In addition, a monitoring and evaluation framework has been developed to track the progress of implementation of the roadmap with technical assistance from SSCS Activity partners Advocates Coalition for Development and Environment (ACODE) and Management Sciences for Health. The Office of the Prime Minister and National Planning Authority oversee the framework.

Progress of 1/10 Years Roadmap Implementation



- The MoFPED allocated an additional UGX 25 billion for NMS for the procurement of essential medicines and health supplies. In addition, the MoFPED committed to co-financing agreement with PEPFAR towards HIV care and treatment in Uganda. The MoFPED allocated an additional UGX 50 billion for the procurement of ARVs in FY 2023/2024.

- The Ministry of Public Service reviewed and approved structure for health management service, health facilities (general hospitals, and health centers II, III, IV). Two positions including senior pharmacists and assistant medical officers are to be filled with this endorsement.

- In a follow up of its commitments to the implementation of the 10-Year Roadmap, The Ministry of Local Government instructed District Local Governments to incorporate health commodities supply chain in the district annual workplans and budgets for FY 2023/2024. This is to ensure effective implementation of 10-Year Roadmap.

- The Ministry of Energy and Mineral Development submitted the first batch of 400 health facilities without access to electricity to be connected to solar photovoltaic off-grid electrification under the electricity access scale-up project. This will improve connectivity which is key for improving supply chain processes in the health facilities.



District teams work in break-out sessions to plan for health supply chain activities in line with the priorities of the 10-year health supply chain roadmap

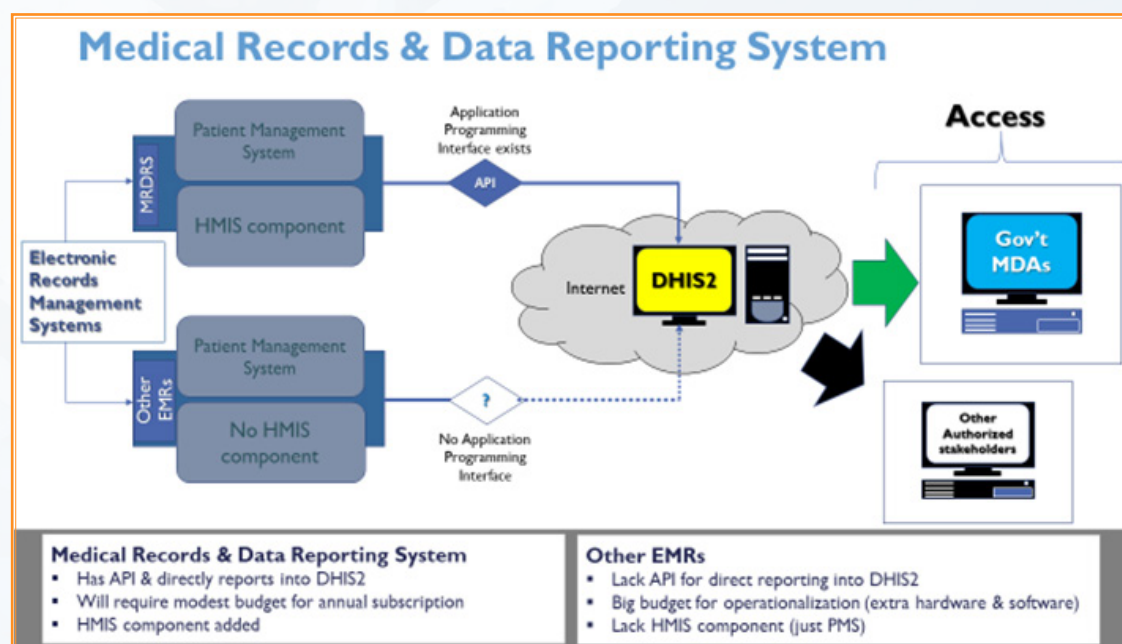
Conclusion

In conclusion, Uganda's 10-Year National Supply Chain Roadmap provides an opportunity for the country to improve the performance and efficiency of its health supply chain system. Significant progress has already been made in the first year, there is still a long way to go in the next nine years to achieve all the objectives needed to ensure universal access to essential medicines and health supplies in Uganda.

- The 10-year HSC roadmap has been integrated by the Ministry of Finance Economic Planning and Development through a National Budget Call Circular # 2 FY 2023/24. Through this circular, the Ministry advises relevant Ministries, Departments and Agencies to allocate resources to the 10-year HSC road map priorities committed to by the government in FY 2023/24.

Improving Data visibility in the private health facilities through the medical records and data reporting system (MRDRS)

Denis Mugabi and Ivan Onyutta, IT Systems Administrator, Uganda Healthcare Federation



Data capture and reporting in the private health sector is a challenge that multiple countries across the continent have grappled with for decades. In Uganda, reporting by private health facilities was at 47% in 2021. The low reporting rates were due to several reasons including the high costs of production and distribution of HMIS tools, lack of technical support in reporting, limited human-resource to complete, and high costs to deliver the tools to the biostatisticians at the local government offices. Additionally, these staffs face several challenges that affect the timeliness of entering data into the DHIS2 system to complete the reporting cycle.



Complete reporting rate of Essential Medicines and Health Supplies (EMHS) by health facilities has been low at 14%. Majority of private health facilities do not comply with the requirements to complete HMIS form 105 section 6 which is dedicated reporting EMHS. Private health facilities provide approximately 60% of health services in Uganda. However, reporting rates remain low DHIS2. Against this background, Uganda Healthcare Federation with support from USAID Strengthening Supply Chain Systems Activity in 2021, worked with the Uganda Ministry of Health (MOH) to develop a digital platform to link the national reporting system to private facilities to report directly into DHIS2. This was seen as a way of easing the reporting process for the various reporting HMIS forms and sections.

The Medical Records and Data Reporting System (MRDRS) is a patient management data system with several functionalities including diagnosis, laboratory, and prescriptions. The system analyses the data and provides reports for facilities to support informed

decision-making. At the required time for DHIS2 by MoH, the facility synchronizes data to enable the submission of complete reports on time. The MRDRS is customized for use on smartphones, tablets, and computers for easy access. The application can function offline.

This year, the USAID Strengthening Supply Chain Systems Activity will support the digitization of HMIS form 105 (6) in the MRDRS to enable private health facilities to record EMHS data and report it timely into the national database. It is envisioned that the MRDRS will transform the perception of private health providers toward data reporting for their health facilities. The system will improve the quality of data and reporting rates of the private health facilities thereby supporting a more accurate representation of the private health sector's contribution to the national health indicators outcomes.



Currently UHF is working with the MoH to cascade the use of the system by private health facilities which will transform electronic medical records for the private health sector in Uganda's health system. For more information on training and onboarding private health facilities, please contact Uganda Healthcare Federation on Email: info@uhfug.com or +256754 667 022

***Denis Mugabi**, IT Systems Administrator - Uganda Healthcare Federation

***Ivan Onyutta**, Advocacy and Communications Officer USAID SSCS Activity - Uganda Healthcare Federation

Scaling up the utilization of electronic logistics management information system to enhance end-to-end visibility of supply chain data: Lessons from public health facilities East-Central Uganda

Peter Niwagaba, M Isabirye, P Bakerethi, D Mukisa, Martha G. Ajulong, Moses Wamoka, Derrik Sebungo

Introduction

An efficient supply chain system is the pillar of a well-functioning health system. To ensure an uninterrupted supply of essential medicines and health supplies (EMHS), decision-makers need visibility into the medicine and health product inventory along every step of the supply chain. Digital health systems help address these and other needs, including increasing access to EMHS, and electronic logistics management information systems (eLMIS) replace tedious and time-consuming paper-based systems. Health systems in most countries take advantage of these kinds digital solutions to monitor and report on health service delivery.

In 2019, the Ministry of Health (MoH) Uganda with support from the US Agency for International Development (USAID), launched an electronic system at the National Medical Stores (NMS) dubbed NMS+. The purpose of NMS+ is to increase accountability and transparency in the EMHS supply chain system in health facilities across the country. The NMS+ system aims to improve day-to-day operations—and therefore service delivery—including procuring, accounting, and health facilities' timely ordering of EMHS from NMS.

Staff at public health facilities now place orders through the Client Self-Service Portal (CSSP), which is part of NMS+. CSSP is an online portal that allows health facilities to order medicines and medical supplies. Prior to rolling out the NMS+ CSSP, districts compiled and submitted into Uganda's health management information system paper-based orders from multiple facilities, which was slow and tedious and produced transcription errors, which delayed the supply of medicines to health facilities. The NMS+ CSSP authorizes facilities to submit EMHS orders directly to NMS, which saves time, reduces errors, and allows order traceability. Health facilities are now expected to order EMHS through the NMS+ CSSP once installed.

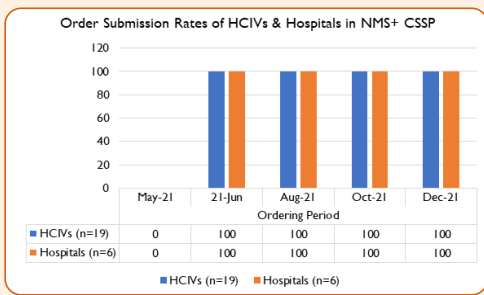
Methods

In a bid to scale up the use of NMS+ CSSP, delayed in the East Central region due to the SARS-CoV-2 pandemic, the NMS regional support team and the USAID Regional Health Integration to Enhance Services in East Central Uganda Activity project rolled out Phase 1 in May 2021. This process involved training 124 health care workers from 19 health centre (HC) IVs and six hospitals in 12 districts on how to submit, review, and approve orders. During the June 2021 ordering period, the project team visited 25 facilities to provide mentoring to answer NMS+ CSSP users' questions and help them address any challenges. The NMS regional customer care and the USAID Strengthening Supply Chain Systems Activity teams helped resolve technical issues such as resetting passwords, activating user accounts, and updating the facilities' order submission status daily, which showed targets for added support.

Results:

Collaboration among NMS, USAID Strengthening Supply Chain Systems Activity, and district health teams, coupled with health workers' positive attitudes about this change contributed to the East Central region's 100% migration to the NMS+ CSSP.

The NMS+ CSSP gives planners the critical real-time data they need to procure EMHS. As shown in the chart, the 6 hospitals and 19 HCIVs in the East Central region were not using the system at all at the beginning of May 2021, but once introduced, the 25 facilities began placing 100% of their orders through the NMS+ CSSP.



Conclusion and lessons learned

The rollout of the NMS+ CSSP has led to improvements in end-to-end visibility of supply chain data from health facilities in the country. Capacity building was provided through Trainings at district level during inception followed by onsite mentorships ensuring that the eLMIS was utilized to

support the supply chain system. Regular tracking of order submission rates in the system guided where to provide targeted support, and enabled the identification of technical issues and relay them for real-time interventions.



Taking stock of drugs is a key element in the utilization of the NMS+ system

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Malaria End Use Verification (EUV) Survey: Availability of Commodities in Health Facilities

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Introduction

Malaria is a major public health problem associated with low socioeconomic development and poverty and is the most frequently reported disease at both public and private health facilities in Uganda. Malaria is also a leading cause of morbidity and mortality, accounting for 30-50% of outpatient department (OPD) visits at health facilities, 15-20% of all hospital admissions, and up to 20% of all hospital deaths. Malaria further accounts for 27.2% of inpatient deaths among children <5 years of age.

Despite the challenges, Uganda has made progress to reduce the national malaria burden. The most recent UMS 2018/2019, for example, found that there has been a consistent reduction in malaria prevalence among children <5 years from 42% in 2009, to 19% in 2014-15, and to 9% in 2018-19. This progress is attributed to various national programs to control malaria morbidity and mortality such as proper case management of non-complicated cases using artemisinin-based combination therapy (ACT), integrated community case management, distribution of long-lasting insecticide-treated nets (LLINs), among others.

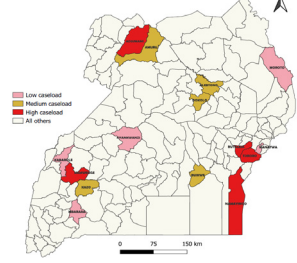
The objective of the EUV survey is to monitor the availability of malaria, family planning, and maternal, newborn, and child health commodities. The survey is used to:

- Verify the availability of key malaria medicines and commodities
- Establish the availability and utilization of malaria medicines and commodities
- Monitor supply chain management of malaria medicines and commodities to promptly identify problems and take corrective action.
- Contribute to the establishment of an effective supply chain monitoring system.
- Provide regular information concerning malaria case management.

Methods

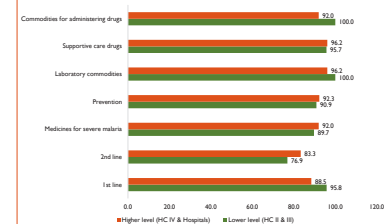
The 12th EUV survey was carried out in 75 health facilities in 15 districts in Uganda. These include 60 public and 15 private-not-for-profit facilities randomly selected from a list of DHS2-functional districts with HMIS 105-EPO 1b as per the PMI EUV guidance. The survey methodology also followed the PMI EUV guidance. All DHS2 data from the current sites were assigned to the respective original administrative district. The 15 survey districts were: Adjumani, Alebtong, Amuru, Bukwe, Butaleja, Dokolo, Kabarole, Kamwenge, Kato, Kyankwani, Manafwa, Mbarara, Moroto, Namayingo, and Tororo.

Malaria caseload level of 15 survey districts

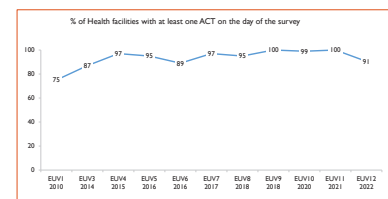


Results

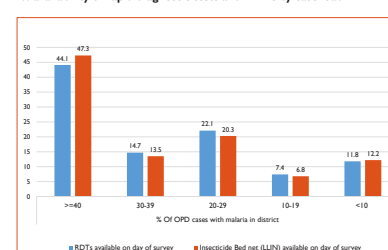
% availability of malaria products and commodities by level of care in 3 months



% health facilities with at least one ACT available: 2010-2022

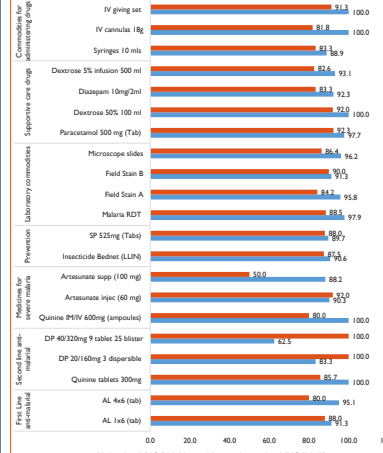


% availability of rapid diagnostic tests and LLINs by case load



Results

% availability of commodities by public health facility level of care in 3 months



% health facilities completely stocked out of commodities by categories

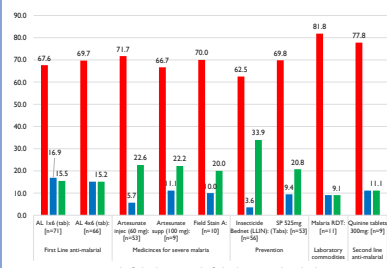
Category	Commodity	% completely stocked out (from store & pharmacy)
First line antimalarial	AL 1x6 (tab)	19.2 (14/73)
	AL 4x6 (tab)	16.2 (11/68)
Second line antimalarial	DP 20/160mg 3 dispersible	54.6 (61/111)
	Quinine tablets 300mg	13.6 (12/21)
	DP 40/320mg 9 tablet 25 blister	7.7 (7/13)
Medicines for severe malaria	Quinine IM/IV 600mg (ampoules)	26.3 (5/19)
	Injectable Artesunate (60 mg)	21.1 (12/57)
	Artesunate supp (100 mg)	12.0 (3/25)
Prevention	SP 525mg (Tabs)	19.7 (13/66)
	Insecticide bed net (LLIN)	4.7 (3/64)
	Malaria RDT	11.0 (8/72)
Laboratory commodities	Microscope slides	9.1 (5/55)
	Field Stain A	2.0 (1/49)
	Field Stain B	2.0 (1/49)
	Dextrose 5% infusion 500 ml	14.6 (8/55)
Supportive care drugs	Paracetamol 500 mg (Tab)	12.5 (9/72)
	Diazepam 10mg/2ml	10.0 (4/40)
	Dextrose 50% 100 ml	5.0 (3/54)
	Syringes 10 ml	27.3 (15/55)
Commodities for administering drugs	IV cannulas 18g	12.3 (7/57)
	IV giving set	17.9 (10/56)

Results

% health facilities (store and pharmacy stocked out of malaria commodities

Category	Commodity	% completely stocked out (store and pharmacy)
First line antimalarial	AL 1x6 (tab)	5.5 (4/73)
	AL 4x6 (tab)	1.5 (1/68)
Second line antimalarial	DP 20/160mg 3 dispersible	0.0 (0/11)
	DP 40/320mg 9 tablet 25 blister	0.0 (0/13)
	Quinine tablets 300mg	0.0 (0/22)
Medicines for severe malaria	Quinine IM/IV 600mg (ampoules)	5.3 (1/19)
	Injectable Artesunate (60 mg)	0.0 (0/57)
	Artesunate supp (100 mg)	0.0 (0/25)
Prevention	Insecticide bed net (LLIN)	1.6 (1/64)
	SP 525mg (Tabs)	0.0 (0/64)
Laboratory commodities	Field Stain A	8.2 (4/49)
	Field Stain B	8.2 (4/49)
	Malaria RDT	0.0 (0/73)
Supportive care drugs	Microscope slides	0.0 (0/55)
	Dextrose 50% 100 ml	3.7 (2/54)
	Paracetamol 500 mg (Tab)	0.0 (0/72)
	Diazepam 10mg/2ml	0.0 (0/40)
	Dextrose 5% infusion 500 ml	0.0 (0/55)
Commodities for administering drugs	Syringes 10mls	0.0 (0/55)
	IV cannulas 18g	0.0 (0/57)
	IV giving set	0.0 (0/56)

Quantity of commodities ordered versus received



Conclusions

- Malaria commodities were available in most health facilities. This is higher than previous EUV findings.
- Antimalarial commodities and products were lower in HC II and HC III compared to HC IVs and hospitals.
- Overall, the availability of commodities had increased at lower-level (HC II and HC III) compared to higher levels (HC IV and hospitals).
- Rapid diagnostic test kits and microscopy field stain A and B were available in most health facilities.
- Overall, expiries of malaria commodities were few in health facilities across all levels of care in the country.
- Artesunate injections, a preferred treatment for severe malaria in both children and adults were available in 80% of the 57 facilities.
- LLINs and sulfadoxine-pyrimethamine (SP) prophylaxis for pregnant women were available in over half of the health facilities surveyed.
- Just over half of health facilities experienced stock outs of LLINs in the six months preceding the survey.

Recommendations

1. National Medical Stores (NMS) and National Malaria Control Program (NMCP) should:
 - increase the supply of quinine IM/IV 600mg as these were stocked out for more than three months of the survey.
 - increase the supply of malaria commodities to districts with high malaria caseloads (30 – 39% of all OPD cases).
 - increase the supply of first-line antimalarials to high caseload districts, especially in HC IIIs.
 - regulate the supply of rapid diagnostic tests and quinine tablets (300mg) to government health facilities to prevent oversupply
 - strengthen communication with health facilities on changes in delivery schedules and quantities of commodities being supplies to prevent disparities and access.
2. National Malaria Control Program should provide refresher trainings to staff in IMMCM, IPTi, rapid diagnostic testing, microscopy, and stock management.
3. National Malaria Control Program should sensitize and train health facility staff on the need to adhere to delivery schedules to ensure availability of malaria commodities.

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