GHAIN SUPPORT TO LOGISTICS MANAGEMENT SERVICES IN NIGERIA

END OF PROJECT MONOGRAPH

GHAIN
Global HIV/AIDS Initiative Nigeria

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FOREWORD

Dr. Otto Chabikuli
Chief of Party, GHAIN

The Global HIV/AIDS Initiative Nigeria (GHAIN) comes to an end, it is an opportune time to reflect on its achievements and draw lessons from challenges encountered in order to inform future HIV programming in Nigeria and similar context. The GHAIN program was designed to support the Government of Nigeria's response to HIV/AIDS, particularly in scaling up proven HIV prevention, treatment and care and related interventions. The comprehensive nature of GHAIN's scope and ability to leverage different sources of funding for greater impact made it a very complex program. However, a genuine partnership made GHAIN implementation successful.

Working in close collaboration with stakeholders at the federal, state, local government and community level, GHAIN managed in a relatively short period of time to contribute to increased access to ART and related services in Nigeria. The project's support was channeled mainly through public health facilities and communities in a manner that empowered staff in these facilities and communities to deliver HIV and related services by themselves. The purpose of this monograph is to share the experience of GHAIN implementation with policy makers, program managers, public health practitioners and health care workers.

The achievements and lessons described stand in testimony of the invaluable work of staff in government ministries, GHAIN-supported public health facilities, communities and support groups of people living with HIV (PLHIV) who worked tirelessly to overcome numerous challenges to make HIV services more accessible. None of these achievements would be possible without the United States's PEPFAR funding of the project through the United States Agency for International Development (USAID).

The manuscript benefited tremendously from reviews by experts from the WHO Nigeria office, for which we are grateful.

It is hoped that GHAIN has contributed to lay a solid foundation for a future evidence-based, efficient, sustainable and government owned HIV response in Nigeria.

Otto Nzapfurundi Chabikuli
Chief of Party, GHAIN

LIST OF ACRONYMS

3TC	Lamivudine
AFN	Axios Foundation Nigeria
AIDS	Acquired immune deficiency syndrome
ANC	Antenatal care
ART	Antiretroviral therapy
ARV	Antiretroviral
ATM	AIDS, tuberculosis and malaria
AZT	Zidovudine
CD	FHI 360 Country Director
COP	Country Operating Plan
CoP	Chief of Party
CPD	Central program depot
DCT	Data collection tools
DHIS	District Health Information System
EMR	Electronic medical records
FCT	Federal Capital Territory
FDA	Food and Drug Agency
FHI	Family Health International (now FHI 360)
FMOH	Federal Ministry of Health
GF	Global Fund
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHAIN	Global HIV/AIDS Initiative Nigeria
GON	Government of Nigeria
HAD-FMOH	HIV/AIDS Division of the Federal Ministry of Health
HIV	Human immunodeficiency virus
HMIS	Health Management Information System
HTC	HIV testing and counseling
IA	Implementing agency
IP	Implementing partner
JSI/MMIS	John Snow Inc./Making Medical Injections Safer
LGA	Local Government Area
LMIS	Logistics management information system
M&E	Monitoring and evaluation
NACA	National Agency for the Control of AIDS
NAFDAC	National Agency for Food and Drug Administration and Control
NASCP	National AIDS and STDs Control Program (now HIV/AIDS Division of the FMOH)
NHMIS	National Health Management Information System

NVP	Nevirapine
NYSC	National Youth Service Corps
OI	Opportunistic infection
OP	Other Prevention
OVC	Orphans and vulnerable children
PHC	Primary health care
PLHIV	People living with HIV
PMTCT	Prevention of Mother-to-Child Transmission
QA/QI	Quality assurance/quality improvement
RH	Reproductive health
RTK	Rapid test kit
RUTF	Ready-to-use therapeutic food
SDP	Service delivery point
SLO	State Logistics Officer
SMOH	State Ministry of Health
SOPs	Standard operating procedures
SPD	State Program Depot
TA	Technical assistance
TWG	Technical working group
USAID	United States Agency for International Development
USG	United States Government

TABLE OF CONTENTS

INTRODUCTION

Prior to the inception of The Global HIV/AIDS Initiative Nigeria (GHAIN) project in Nigeria, Antiretroviral Treatment (ART) services were only offered in the Federal Government owned tertiary facilities and private facilities in urban areas such as Lagos and Abuja. Treatment and care was very expensive and remained out of reach for the majority of the population. In January 2002, the Government of Nigerian (GON) started a program to provide antiretroviral (ARV) drugs at a subsidized rate to ten thousand people living with HIV/AIDS.

The Government led initiative began in 2002 in 25 tertiary health facilities distributed throughout the country. Medical personnel from each of the sites were trained to manage and monitor ARV treatment. The Federal Government obtained a negotiated price of $350 for the triple therapy of Stavudine, Lamivudine and Nevirapine from Cipla, an Indian Pharmaceutical company, to treat 10,000 adults and 5,000 children yearly.

In November 2003, a situation analysis of ARV drug use in Nigeria was carried out by the Federal Ministry of Health (FMOH) in collaboration with the World Health Organization (WHO)2003. The study revealed that a total of 11,435 persons were enrolled in the government program and 2,249 on other initiatives. Eighty percent of the facilities assessed had three drugs in stock i.e. Nevirapine, Stavudine and Lamivudine, while 44% of the facilities did not have adequate stock balance of the drugs. Eight facilities had experienced stock outs for periods ranging from one to three months. Expired drugs were found in 64% of the facilities with total loss due to expiry estimated at $146,717.

Only three centers provided drugs free of charge to patients. The cost of a month's supply of an adult dose of the recommended triple combination of ARVs from the government program was found to range from $7.8 to $11.7 while an equivalent regimen from other initiatives ranged from $54.70 to $109.40.The assessment showed that the main barrier to access of ARVs was financial constraints.

The study also revealed that the goal of the ART program, which was to provide uninterrupted drug supply to treatment centers and to patients in a timely manner, was not achieved. It was recommended that an efficient procurement and supply management system be set up to improve access and affordability of ARVs. This would support the timely

procurement of quality assured pharmaceutical and other health products in sufficient quantities, reduce cost inefficiencies, ensure the reliability and security of the distribution system and continuously monitor all procurement and supply management activities hence avoiding stock-outs and treatment disruption.

It is against this background that the GHAIN program was designed: to provide care to 1.75 million people living with HIV/AIDS, and to prevent over 1 million new infections in Nigeria.

With significant experience in supply chain management, Axios Foundation Nigeria became the drug logistics partner within the GHAIN consortium. Axios was responsible for forecasting, procuring, warehousing and distribution of ARVs, laboratory reagents and supplies and drugs for opportunistic infections (OIs). Axios was also responsible for establishing efficient systems and processes for forecasting and inventory management at all supported facilities.

GHAIN'S LOGISTICS MANAGEMENT STRATEGIES

The major objective of the GHAIN program was to increase access to ART treatment and to ensure an uninterrupted supply of HIV/AIDS prevention and treatment commodities to health facilities and treatment centers. To achieve this goal several main strategies were used.

Improving human capacity in logistics and inventory management:

Faced with the challenge of few, ill trained and unmotivated health workers, the GHAIN program focused on human capacity development to improve the ability of health workers to deliver high quality ARV services to clients. Pharmacists, medical laboratory scientists and nurses were trained in drug and health commodity logistics management and were provided with skills needed to improve the internal efficiency and functionality of state ware houses and facility stores.

Decentralization of the distribution system:

In order to create an efficient supply chain, GHAIN required warehouses to store and manage health commodities. It was necessary for the warehouses to be close to the health facilities to reduce distribution costs as well as to improve efficiency. To ensure program acceptability and sustainability, GHAIN signed memoranda of understanding with several state governments allowing them to use their state central medical stores as program depots. In return GHAIN provided the states with capacity building and technical assistance in warehouse and inventory management.

GHAIN presently supports a network of nine program depots (see Figure 1).

Figure 1: Map showing location of GHAIN supported State Depots

They include: two Central Program Depots (CPDs) in Jos and Abuja and seven decentralized State Program Depots (SPDs) located in state central medical stores in Kano, Cross River, Anambra, Edo, Sokoto, Minna and Lagos. The GHAIN health commodities were stored and managed at these seven warehouses. Storage at the state level took the commodities closer to the health facilities and reduced delivery time and distribution costs. These warehouses supplied health commodities to different states as seen in Table 1.

Table 1: States Served by State Depots

STATE DEPOT	STATES SERVED BY DEPOT	CAPACITY IN CUBIC METER
FCT ABUJA	FCT, Nasarawa, Kaduna, Benue	946
NIGER	Niger, Kogi, Kwara	356
PLATEAU	Plateau, Benue, Bauchi, Taraba, Adamawa	1,403
CRS	Cross River, Akwalbom, Ebonyi	1,254
KANO	Kano, Kaduna, Katsina, Jigawa, Gombe	450
LAGOS	Lagos, Ogun, Oyo, Ondo, Ekiti	2,128
ANAMBRA	Anambra, Abia, Imo, Enugu	1,288
SOKOTO	Sokoto, Kebbi, Zamfara	745
EDO	Edo, Delta, Rivers, Bayelsa	2,710

Infrastructural Improvement of Government health system:

To ensure an efficient supply chain, GHAIN strengthened and built on existing government health systems. Renovations were carried out in nine State warehouses turning dilapidated warehouses into clean modern facilities. Storage space in all warehouses was increased by racking and shelving. Equipment installed includes air conditioners, racks, lighting, generators, fire extinguishers, ladders, and hand pallets. Two state central medical stores – Benin and Lagos are now considered model warehouses for health commodity management. All GHAIN supported warehouses have temperature and humidity controls and have the capacity to store health commodities with varying temperature requirements.

System integration for efficient service delivery:

In order to improve service delivery capacity and to ensure long-term supply chain sustainability and country ownership, GHAIN focused on integration of all programs into existing national health systems. Electronic warehousing software, M-Supply was installed in all the nine warehouses to increase efficiency and improve inventory control and management at the state medical stores.

Left - Dilapidated Edo State warehouse before renovations. ***Right -*** Lagos Ware house before renovation

Left - Industrial raking installed in all GHAIN supported ware houses ***Right*** - Lagos State warehouse after GHAIN renovation and refurbishment

Creation of state logistics officer:

In spite of the workshop training carried out at the facilities, it was necessary for GHAIN to provide continuous onsite mentoring and supportive supervision to health facilities on the use of the newly introduced logistics tools and procedures. The position of State Logistics Officers (SLOs) based at the facilities were created to provide technical support on health commodities management and good storage practices.

Change from push to pull commodity supply:

To ensure accurate forecasting and an uninterrupted flow of GHAIN health commodities, GHAIN engaged end users and stakeholders in the logistics system design. The PULL system meant that drug order quantities were determined by the health facilities after analysis of their consumption data. Supply requisition was hence based on actual needs of the facilities and projected growth. By empowering the end users to determine their needs the process has also enhanced the transition process towards long-term supply chain sustainability and country ownership.

Design of logistics management information systems (LMIS):

GHAIN also developed a set of logistics management tools for use in the supported warehouses. These tools were later standardized and harmonized with the support of the National Agency for the Control of AIDS (NACA) and developed into the national LMIS tools now used in health facilities. The tools are regarded as a benchmark for accurate and efficient drug supply management as they:

- Improved reporting, by producing complete and accurate data resulting in improved an uninterrupted commodity supply to health facilities
- Led to reduction in lead time for stock replenishment and decline in stock out incidence
- Empowered health personnel to better manage health commodities
- Improved ownership and sustainability as it fostered staff participation
- Are detailed and easy to use at all levels (health facility, state, and central).

Implementation of transportation strategy:

Due to the geographical spread of the GHAIN project across all states in Nigeria, the distribution of health commodities could not be covered by the project fleet of vehicles alone. Transportation vendors were outsourced to leverage the projects' distribution capabilities. These were contracted from within the states to improve distribution for efficiency and cost effectiveness, saving the project resources. An inter-facility stock movement and tracking system was introduced enabling GHAIN health facilities that were overstocked with one item to quickly identify a nearby facility that could be low on this item and have it donated or swapped in the end minimizing wastage and reducing stock outs.

Use of multi-tenant warehousing:

To reduce operational costs, GHAIN health commodities were stored in Axios managed multi client ware houses which offered flexibility and allowed GHAIN to take advantage of shared labour resources, strong inventory management systems and cost-effective transportation schedules thus reducing operational costs.

Cost savings through purchase of generics drugs:

At the initial stages of the GHAIN program, Axios was responsible for procurement of drugs. Antiretroviral drugs, laboratory reagents, consumables and laboratory equipment were procured directly from the manufacturers thus keeping costs down. US Food and Drug Administration approved/generic drugs were procured for treatment leading to cost saving and a reduction in the cost of treatment for GHAIN clients.

The percentage of procured generic drugs increased from 34.2% in 2004 to and 89.3% in 2006.At the same time the annual cost of treatment on AZT/3TC/NVP regiment fell from $692.88 to $303.96 reaching a low of $154.8 in 2008. This savings allowed GHAIN to make more funds available to enroll and treat patients. Custom clearance of imported commodities was done via the US Embassy, as diplomatic cargo, to minimize customs duty and avoid delays at the port of entry.

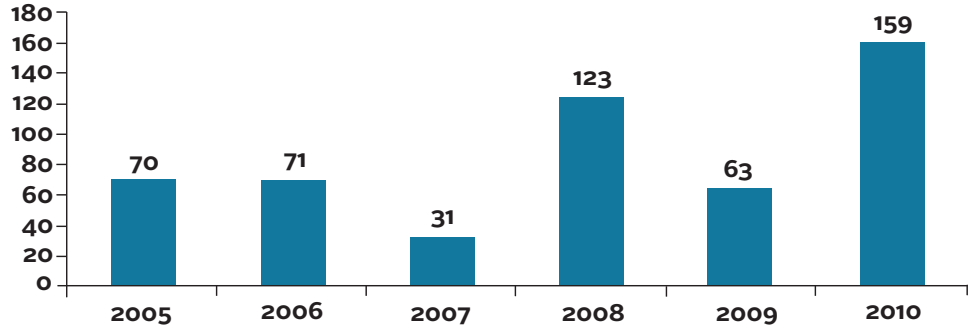
Improved resource mobilization in logistics:

At the start of the program one of the problems of HIV/AIDS care and treatment was the lack of funds available to adequately support drugs procurement. GHAIN in collaboration with NACA-GF provided technical assistance to the government of Nigeria to start-procuring HIV/AIDS commodities. The provision of drugs to health facilities by NACA and the Federal Ministry of Health (FMOH) allowed the GHAIN project to achieve more with the resources it had.

PROGRAM ACHIEVEMENTS

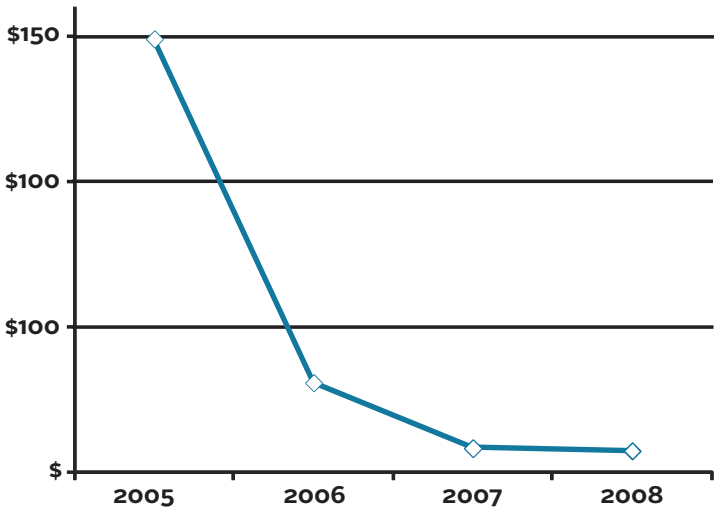
As a result of GHAIN, the project had a pool of master trainers who could train other health personnel hence reducing the over dependence and cost of short term technical assistance. A total of 517 health personnel were trained over the project life cycle (see Graph 1). For quality assurance, monitoring and evaluation, policies and protocols were also developed for efficient management of the warehouses.

Graph 1: Number of people trained on logistics by GHAIN



At the beginning of the GHAIN project there was a high distribution cost averaging $ 150 per patient. As the program scaled up, GHAIN devised new measures to increase efficiency and by 2006 the distribution cost per patient and per facility had been reduced significantly. The figure below shows the average cost of distribution per patient between 2005 and 2008 .

Graph 2: Distribution cost per patient



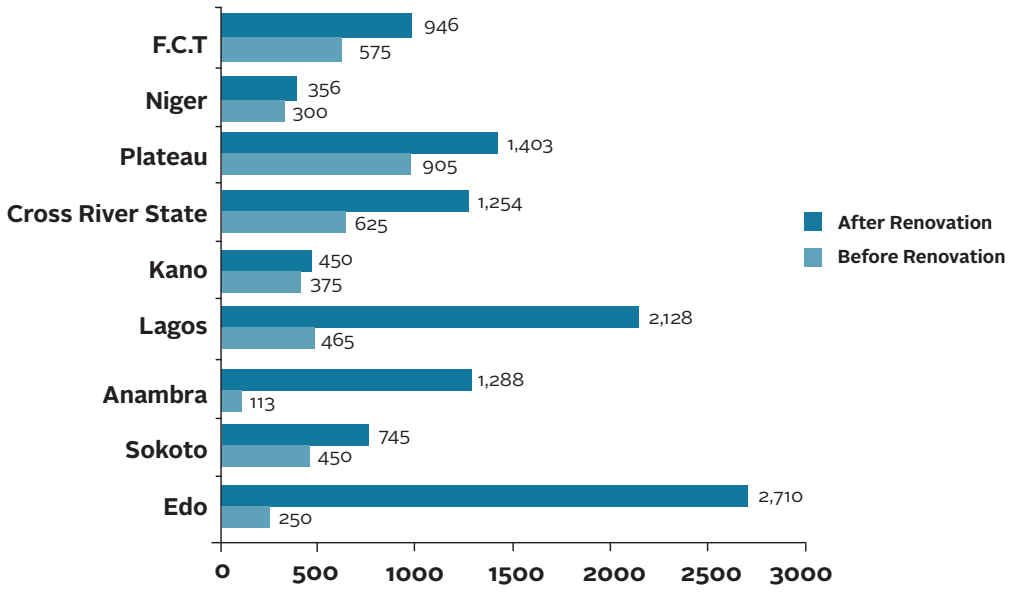
GHAIN emphasized the importance of LMIS data for decision making. The District Health Information System (DHIS) was used for analysis and processing of data and provided information on stock status at country, zonal and health facility level which facilitated the effective monitoring of the supply chain pipeline and hence prevention of potential stock outs.

In coordination with SCMS and AIDSTAR-ONE, USAID created a waste disposal system for all PEPFAR IPs. Expired ARVS, OIs, RTKs and Lab reagents from GHAIN storage facilities were transported to Port Harcourt where they were destroyed by Boskel, a licensed waste disposal organization. This waste disposal helped in freeing space in the warehouses and improving warehouse management.

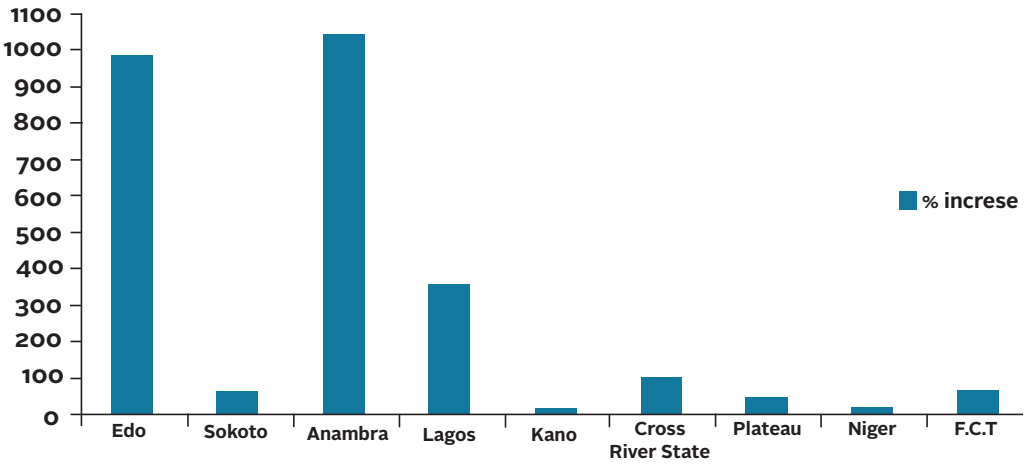
GHAIN developed a distribution framework to effectively move and store commodities for the project. By decentralizing the distribution system and by creating distribution cycles, commodities were moved and stored efficiently. This distribution framework attracted other implementing partners who leveraged on its efficiency to move and store their own commodities

GHAIN supported considerable renovations of nine state warehouses. Renovations resulted in a significant improvement of storage capacity (see Graph 2 and Graph 3). In Anambra, for example the storage capacity increased from 113 Cubic Metres (M^3) to 1288 M^3, a 1040% increase. Total storage capacity in the warehouses ranged from 356 M^3 in Niger to 2,710 M^3 in Edo.

Graph 3: The storage capacity of government warehouses before and after GHAIN-supported renovations



Graph 4: Warehouse storage space increase after GHAIN-supported renovations



DISCUSSION

The strength and efficiency of the GHAIN commodity supply chain greatly supported and increased access to treatment and care to over 120,000 patients. The integration of program depots into state warehouse and infrastructural upgrade of the warehouses strengthened warehousing infrastructure in key states hence improving the storage and delivery of the health commodities.

The transition from branded to good quality generic medicines also contributed to the reduction in cost of treatment which made it possible for the program to provide treatment to more clients. A cost savings of over $17M was made between 2005 and 2008 by procuring FDA approved generic ARVs instead of branded products.

With 517 facility personnel trained on the Health Commodity Logistics Course between 2005 and 2010, the GHAIN program built the capacity of a critical mass of heath facility staff to handle ARV logistics. This has resulted into quicker and more accurate data collection and hence quicker decision making.

To solve the problem of ill trained and unmotivated staff a pool of trainers were created and equipped with skills and tools to further build the capacity of fellow health workers.

Lastly, although State Logistics Officers will not be funded by government following GHAIN, their creation contributed to the success of the project as they greatly improved the moral, confidence and efficiency of the health facility personnel and improved the reporting system ensuring that commodities were made available at all times with minimal stock interruptions.

CONCLUSION

The efficiency of the GHAIN commodity supply chain made significant contributions to the success of the project by providing an uninterrupted supply of health commodities to patients and health facilities all over Nigeria, thus improving health outcomes and saving lives.

However gaps still exist which need to be filled as we build on the achievements made. These include the need to further strengthen the supply chain management system through the upgrade of existing state systems and to build and strengthen local capacity in good inventory management practices. There is also need to work in close collaboration and coordination with partners, funding agencies and the government of Nigeria in identifying and filling gaps and in the integration and harmonization of procurement and supply chain systems to avoid unnecessary and wasteful duplications.

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