

Zambia

Exchanging data via GDSN as a foundation for traceability

Challenge

To increase the safety and efficiency of medicine supply chains, healthcare leaders in Zambia are keen to implement greater traceability of products. An important first step is to embrace the use of global GS1 standards, but this is only possible with appropriate infrastructure which allows for information to be shared reliably and consistently.

Approach

With support from the USAID (United States Agency for International Development) Global Health Supply Chain Program-Procurement and Supply Management and from GS1 South Africa, work to implement a national product catalogue began in 2022. This product catalogue contains standardised master data about products. The data is kept up to date through the use of the Global Data Synchronisation Network (GDSN), which is kept up to date by the product manufacturers.



Ensuring it was possible for standard product and location information to be reliably shared



Standardising product master data within a national product catalogue



Integrating with the Global Data Synchronisation Network (GDSN) to automatically and systematically keep master data up to date.

Introduction

Following the publication of guidance on identifying medicines, and on sharing key data about such products, the Ministry of Health and stakeholders in Zambia have worked to set up product master data. This is an important component in ultimately implementing end-to-end traceability. It has involved implementing product identification protocols, ensuring the same information is collected in the same format about products and location, and collecting it into a national product catalogue. The catalogue receives information via the Global Data Synchronisation Network (GDSN), which allows the exchange of standardised data about products provided by the suppliers of those products. A pilot in two product groups - HIV/AIDS medication and antimalarials - is underway and there are now plans to scale to other categories and use cases.

For the past few years, the Zambian government - with funding and support from the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) - has been working to improve the visibility of data in the healthcare supply chain.

Increasing visibility of this information will make it easier to trace products through the system, ensuring the right healthcare products - including medicines - get to the right places. This increases efficiency by, for example, allowing better management of warehouse storage. Traceability also improves patient safety, including by reducing the risk of counterfeit medication entering the supply chain. Finally, it provides high quality data to support decision-making.

The Zambian government decided to create its product traceability framework using global GS1 standards. "We were cognisant that it's the only global standard that exists when it comes to the supply chain," explains Sam Phiri, ICT Officer at the country's Ministry of Health.

"After the decision was made to use GS1 standards to enable product traceability, we had to look at the infrastructure side of it to actually implement the standard."

In the first instance, this has meant establishing an online national product catalogue. This supports the collection of standardised master data about products in a standardised format - information like a unique identifier (GTIN - Global Trade Item Number), name, description, and expiry date.

This sort of information is often collected and stored in many different formats, which makes it difficult to achieve visibility throughout a supply chain.

The information has initially been collated for two product groups - antimalarials and HIV/AIDS medication. With support from GS1 South Africa, the catalogue receives the master data via the Global Data Synchronisation Network (GDSN). This is an interconnected network of data pools based on GS1 standards. Through the GDSN, companies can share standardised product master data with trading partners and keep it up to date.

"It makes master data management very easy and simple once the supplier sends the data through the GDSN," says Walid Irshad, Track and Trace Solution Architect for Global Standards and Traceability under the GHSC-PSM program. "The country can pull that data and use it rather than reaching out supplier to supplier and you ask for something and they provide something slightly different, in a different kind of language. With GS1 and GDSN, everyone is speaking the same language."

Understanding the use cases

The data from the national product catalogue has now been connected to the warehouse management system used at the central medical stores in which products are stored. Space in the warehouse had previously been managed using a specific tool. But the national product catalogue, updated via GDSN, includes information on the physical dimensions of specific products. This means staff can simply use those details to make decisions on the most efficient use of space, rather than needing to use a separate program, and as a result save time.

Violet Ketani, Global Standards and Traceability Lead under the GHSC-PSM program, says connecting the warehouse software to this information has bolstered efficiency in the warehouse. "Zambia has had a good level of automation already in the warehouse, but that was using proprietary barcodes. However, with the availability of master data and the 2D GS1 DataMatrix and GTIN, they've moved now to scanning the barcode that comes on the product. The GTIN is used as a reference key now to pull up all that information."

Crucial, Ms Ketani says, was that these use cases had been identified before the project started. "What was done right from the outset was to identify the downstream systems that would benefit from product master data. And how do we make sure that the data models that are in GDSN are supportive of those use cases. Otherwise, it just becomes another tool in which you have to maintain data."

Strong leadership is said to have been important in the success of the project to date. There has been clear support for the work from the government, as well as advice and assistance from GS1 South Africa (which does not charge anything to governments and regulators for integration to GDSN - a fee is instead paid by the providers of the data, so suppliers and distributors of products).

"Our responsibility was focused on onboarding suppliers and the Ministry of Health to the GDSN network, and on facilitation of the project," explains Martin Kairu, Automatic Information and Data Capture (AIDC) Program Manager and Digital Marketing at GS1 South Africa.

To enable data exchange via GDSN, data senders and recipients need to have a unique Global Location Number (GLN) for their organisations. "We were responsible for confirmation of the GLNs of the Marketing Authorisation Holders (MAH)," adds Mr Kairu, "and for identifying the list of companies that needed to provide the data. We also assisted the Zambian team to have their own global location numbers so that we can connect them to our data pool. In addition, we worked to define the product attribute list, supported successful publication of information to GDSN, and created a data recipient user guide for the Zambian team."

"For any country that wants to implement a traceability system, it's always best not to reinvent the wheel," he says. "There are solutions that have been in operation for 10 plus years. So, it's important to look around at the GS1 Member Organisations who are closest to you and who have worked on this before."

Next steps

Those involved in the project are now looking to expand the approach to other product categories, and to further advance the traceability system. "Right now we're at the very first stage, where we're supporting the national product catalogue, which is at the very beginning," says Mr Irshad. "Then hopefully in the next year or two we can move forward to that track and trace and verification and visibility of movement in the supply chain."

Work has now begun on finding a traceability system. "We are looking for the technology to run on top of the existing transactional systems," says Mr Phiri. "Once you standardise, you know that systems can share data in a standardised format. So now we're looking at how do we ensure that the system that looks at the market authorisation is connected to this data, and the systems under the Ministry of Health that are dealing with a supply chain, from the medical stores to the health facilities? Now we are able to do that and looking at trying to evaluate different systems."

Conclusion

Once leaders in Zambia concluded they wanted to implement GS1 standards in the healthcare supply chain, the question was how to build the infrastructure to make it a reality. A national product catalogue, that is kept up to date by its connection to GDSN, is providing this foundation. The hope now is to populate the catalogue with more data, and optimise other systems to increase visibility across the Zambian healthcare supply chain.

“The signing and publication of the pharmaceutical traceability guideline by Zambia Medicines Regulatory Authority (ZAMRA) is a clear demonstration of the government’s commitment to the provision of quality, safe, and effective medicines and medical supplies which are affordable and rationally used by all Zambian citizens.”

Peter Lukonde,
Pharmacist – Commodity Security, Zambia Ministry of Health



About the authors



Peter Lukonde,
Pharmacist – Commodity Security, Zambia Ministry of Health

Peter Lukonde has served as a Pharmacist – Commodity Security at Zambia’s Ministry of Health for the past eight years. His primary responsibility is to manage security of medicines and medical supplies across Zambia. He serves on multiple committees and technical working groups that focus on health supply chain enhancements and improved product availability both from the planning aspects (supply planning and quantification) and implementation (use, accountability). One of his many current responsibilities is providing stewardship for Zambia’s pharmaceutical traceability implementation. Prior to joining the Ministry of Health, he held roles in departments including the Ministry of Community Development Mother and Child Health Headquarters, Lufwanyama District Medical Office Pharmacy, and St Johns Medical Hospital. Mr Lukonde has a bachelor’s degree and diploma in pharmacy.



Sam Phiri,
ICT Officer, Zambia Ministry of Health

Sam Phiri joined the health sector in 2011 and has been working on different aspects of digital health for 11 years. He worked to implement Zambia’s electronic logistics management system (eLMIS) and Smartcare in over 1,000 facilities. He served as chair of the supply chain technical working group subcommittee on technology, which had traceability implementation using global GS1 standards and related topics like interoperability and integrations as a central focus. He has been involved in the initiative to incorporate GS1 standards in the interoperability framework for the Ministry of Health.



Violet Ketani,
Global Standards and Traceability Lead, USAID GHSC-PSM program

Violet Ketani is a Senior Managing Consultant in IBM’s Artificial Intelligence and Analytics (AI&A) division within the public sector practice. She is currently the Global Standards and Traceability Lead under the USAID GHSC-PSM program. In this role, she leads a full range of programmatic and technical processes that support the adoption and implementation of GS1 standards for pharmaceutical traceability in USAID-supported countries including Botswana, Ghana, Nigeria, Zimbabwe, Malawi and Zambia.

About the authors



Walid Irshad,
Track and Trace Solution Architect for Global Standards and Traceability, USAID GHSC-PSM program

Walid Irshad is a Senior Managing Consultant at IBM and a certified cloud solution architect. He has more than 18 years of information technology experience, including in analysis, design, development and production support of business applications. Mr Irshad’s areas of expertise include data architecture, database design, data integration, data visibility, master data management, business intelligence, and multi cloud (IBM, Azure, AWS, and GCP) implementations. He is currently working as a Track and Trace Solution Architect for Global Standards and Traceability under the USAID GHSC-PSM program.



Martin Kairu,
Automatic Information and Data Capture (AIDC) Program Manager and Digital Marketing, GS1 South Africa

Martin Kairu is a seasoned professional with over nine years of dedicated experience in the successful implementation of GS1 standards, both nationally and across the region. His expertise lies in facilitating seamless adoption of GS1 standards within the healthcare industry while driving organisations towards digital transformation. With a passion for innovation and a deep understanding of industry needs, Martin plays a pivotal role in ensuring that GS1 South Africa continues to lead the way in enabling businesses to optimise processes, enhance visibility and achieve operational excellence. Martin has also demonstrated impressive marketing and digital marketing skills during his tenure at GS1 South Africa. He has played an important role in developing and executing marketing strategies that promote GS1 standards and solutions within the industry. His ability to leverage digital marketing channels and tools has been instrumental in reaching a wider audience and increasing awareness about the benefits of GS1 standards.

About the organisation



Zambia Ministry of Health, ICT Department

Zambia’s Ministry of Health aims to provide effective, high quality healthcare services as close to the family as possible. This ensures equity of access to health services and contributes to human and socioeconomic development. The Ministry also focuses on attaining the Sustainable Development Goals on health and on other national health priorities.

The Ministry recognises that digital technologies are going to be essential in enabling universal health coverage in the country.

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