

Advanced Analytics to Improve Availability and Management of Health Products

Eliachim Ishimwe
International Project Manager
Rwanda

ZENYSIS

HHL 2019



Section I Introduction

Overview



PROBLEM

- Data-driven decision-making is an essential pillar of effective healthcare systems.
- Around the world, the rate at which health systems are generating fragmented data is increasing exponentially faster than national capacity to analyze that data.
- Managing this expanding and fragmenting data landscape is now one of the most significant barriers that decision-makers face in delivering efficient, equitable and cost-effective healthcare to their citizens and managing their ever-evolving supply chains.

Overview



ZENYSIS

Zenysis integrates programmatic, financial, geospatial, survey and other data into a single platform and makes these data interoperable for advanced analysis

SOLUTION

- The Zenysis platform rapidly integrates any type of structured data from health information systems into a single analytical workspace.
- This provides decision-makers and analysts with an integrated, system-wide view of the health sector.
- Helping decision makers combine previously fragmented data sources for analysis and uncover insights they can use to improve quantification and forecasting, reduce waste and eliminate stockouts.

Harness your entire data ecosystem to transform program monitoring and performance

ADVANCED ANALYTICS

HMIS

FINANCE
DATA

SUPPLY
CHAIN

EXCEL
REPORTS

SURVEY
DATA

HR DATA

OTHER HIS

INTEROPERABILITY

MAVED
ZENYSIS

Zenysis integrates programmatic, financial, geospatial, survey and other data into a single platform and makes these data interoperable for advanced analysis.



Enhanced Decision Making with Big Data and AI



Data Integration & Interoperability

The Zenysis platform quickly integrates data from all siloed information systems into a single analytical view, giving decision-makers an integrated, system-wide view of the health sector for the first time.



Advanced Analytics

Our platform analyzes millions of data points at sub-second speed. It enables users to combine their fragmented data sets for advanced analysis and quickly uncover insights they can use to transform health system performance.



Artificial Intelligence

Our software uses Artificial Intelligence to generate facility-level forecasts with single-digit accuracy, uncover relationships between interventions and outcomes, and scan millions of data points in seconds for data quality issues.



Reporting and analysis on-demand

Zenysis works with decision-makers to automate their most important analytics to ensure they always have to up-to-date information and analysis on-demand.



Alerts

Zenysis users can create customized alerts that notify decision-makers of potential infectious disease outbreaks, shortages of essential health commodities and other critical risks in near-real time.



Data Quality

The Data Quality Lab, mapped to WHO standards, can evaluate timeliness, accuracy and completeness of data for every indicator and health facility in the country.

Global Footprint



Zenysis has helped a number of countries begin to leverage the full power of their data to improve decision-making, health system performance and health outcomes.



Section II

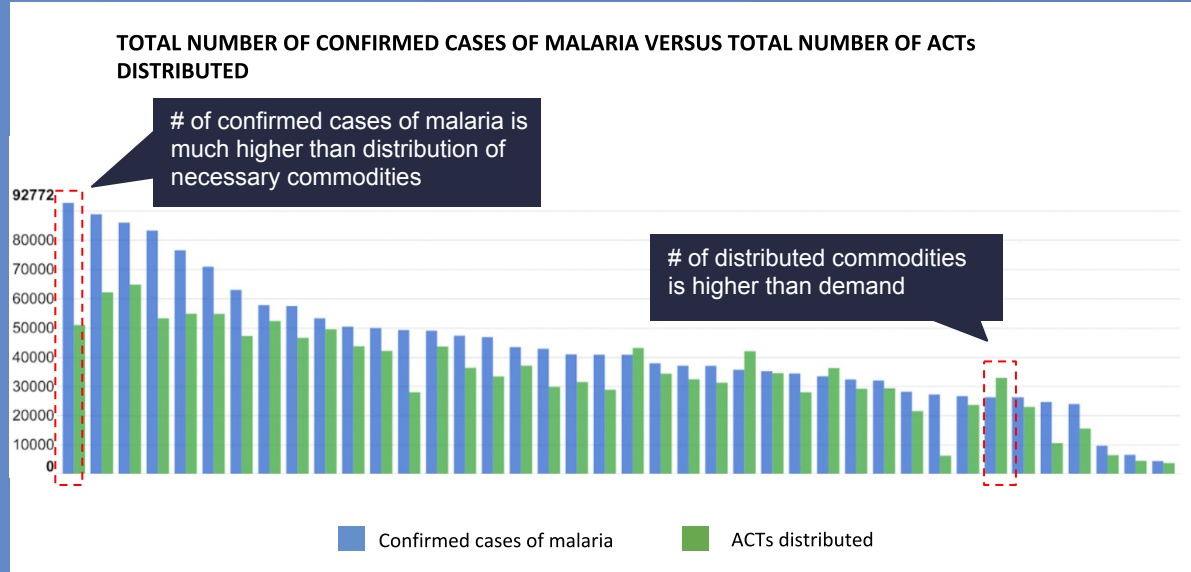
Data-driven impact in supply chain

**ALL DATA AND
VISUALIZATIONS ARE
ANONYMIZED**

Triangulating supply chain and health data

Using the Zenysis platform, a National Malaria Control Program (NMCP) triangulated routine health data and supply chain data from the country's central medical store for the first time.

The platform enabled the country to compare artemisinin-based combination therapy (ACT) distribution data with the number of confirmed malaria cases in each district for the first time. The NMCP discovered that surplus distribution in many districts, including in a single district (shown), where 33% more ACTs were distributed than needed.

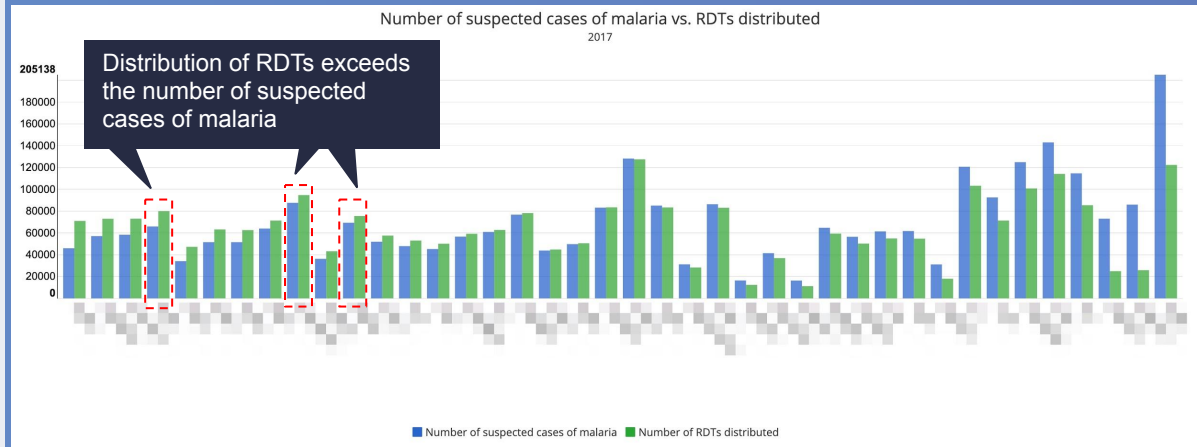


Triangulating supply chain and health data (cont.)

The National Malaria Control Program also discovered that certain districts were overstocked with malaria rapid diagnostic tests (RDTs), whereas other districts were lacking resources necessary to test for malaria.

In a single district, for example, NMCP found that 71,050 RDTs were distributed to test just 22,550 suspected cases of malaria.

Increased visibility into health product distribution supported by data-driven forecasting and quantification allows malaria control programs to address these inefficiencies head-on.



Triangulating supply chain and health data (cont.)

Malaria programs typically aim for ~70% RDT positivity rate as a benchmark for efficient case testing.

With the Zenysis platform, the NMCP pinpointed underperforming facilities where RDT efficiency did not meet this target.

With focused supervision and training at the sites identified by Zenysis, the NMCP can reduce erroneous or inefficient RDT usage in facilities and progressively increase the efficiency of testing towards the target goal.

The National Malaria Control Program used Zenysis to create a new synthetic indicator combining multiple datasets to quickly identify those facilities using tests inefficiently.

Région	District	Formation Sanitaire	Nombre de TDR effectués - Total (PNLP: DIAGNOSTIC Données Agrégées)	Nombre de TDR positifs - Total (PNLP: DIAGNOSTIC Données Agrégées)	Taux de positivité TDR (PNLP: Données Agrégées) ▲
			1423	675	47.43%
			488	232	47.54%
			1466	698	47.61%
			159	76	47.8%
			6854	3283	47.9%
			671	322	47.99%
			904	434	48.01%
			8513	4119	48.38%
			1040	504	48.46%
			1158	562	48.53%
			375	183	48.8%
			3888	1916	49.28%

Triangulating supply chain and health data (cont.)

The NMCP and the national medical store can now use Zenysis to identify when inventory levels at the central store are near the minimum threshold and proactively take steps to prevent stockouts.

On the right, the inventory of ACTs in the central medical supply store (blue) is compared to the number of months until a stockout at current consumption levels, based on commodity consumption (green). Using this analysis, program managers can identify potential stockouts events well ahead of time and take action before medicines run out.

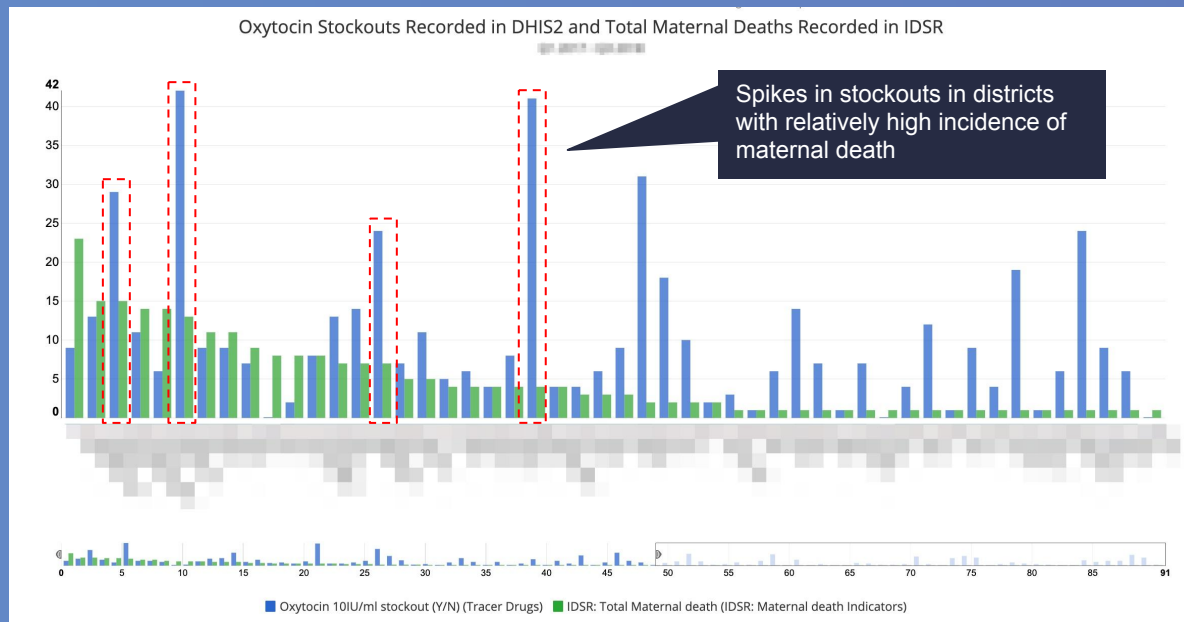


The months of August and September show clear stock insecurity

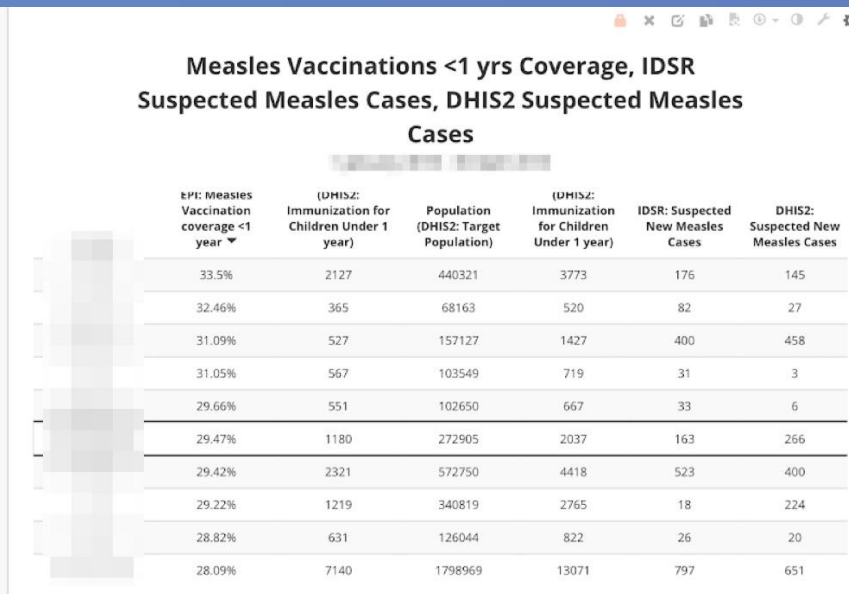
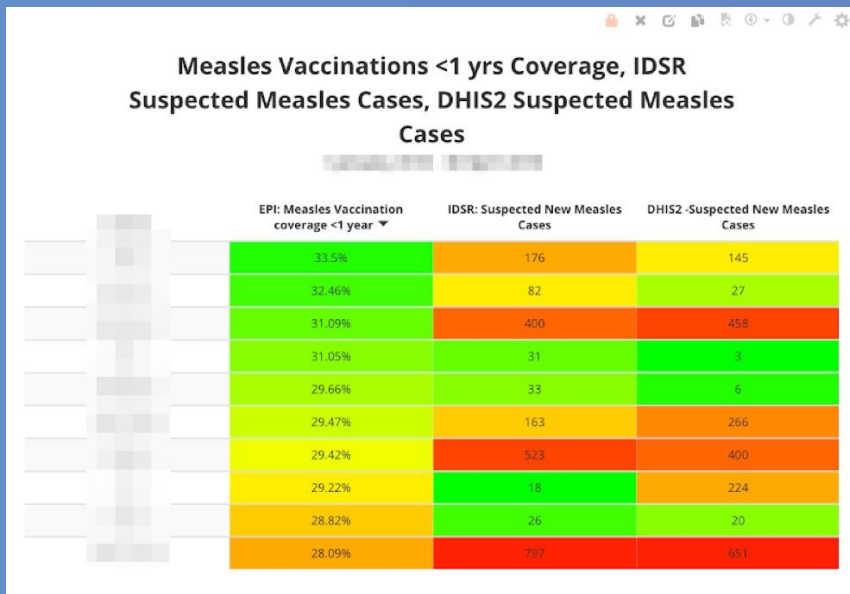
Triangulating supply chain and health data (cont.)

In another country, the Ministry division responsible for maternal health was able to use Zenysis to compare data from DHIS2 and the Integrated Disease and Surveillance Response (IDSR) system for the first time, identifying districts with the highest rates of maternal mortality that also experienced stockouts of oxytocin.

These insights enabled the Ministry division to prioritize the delivery of incoming donor shipments of oxytocin to the facilities that had the highest rates of maternal mortality and frequent stockout events.



Triangulating supply chain and health data (cont.)



Left: Since July 2018, the immunization directorate in one country has used Zenysis to compare incidence of priority diseases from the disease surveillance database with vaccination coverage rates reported in DHIS 2.

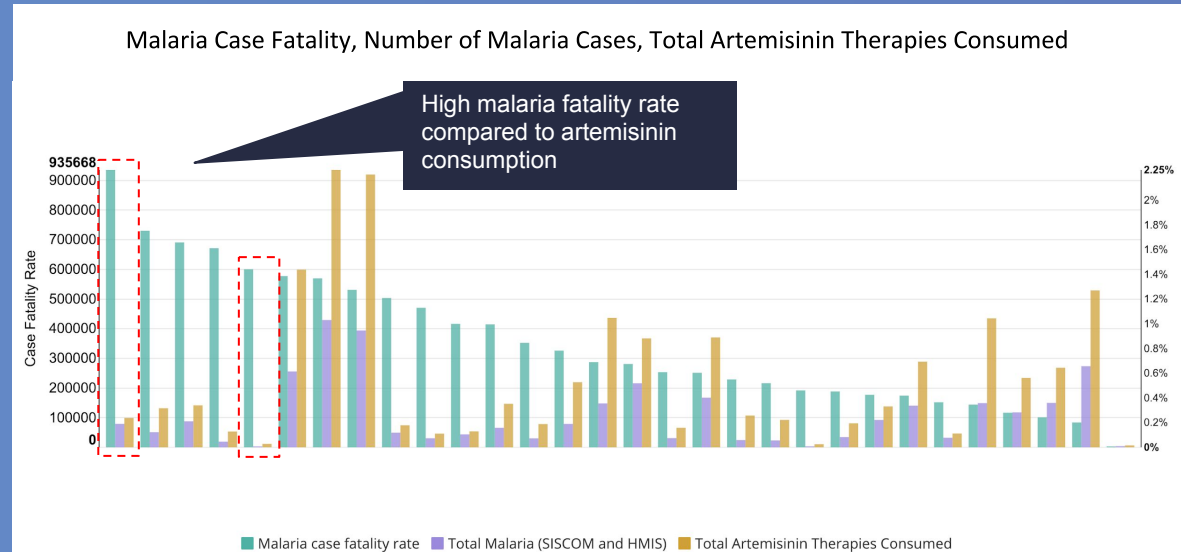
Right: The immunization directorate and the directorate managing infectious disease and epidemiology can now monitor areas of under-vaccination, outbreaks, or suspected outbreaks, and make evidence-driven decisions to target their interventions.

Comparing disease incidence with essential commodity consumption

In another country, Zenysis integrated data from the facility level health information system, the community health information system, the DHS, the Integrated Supervision Survey and data from an electronic LMIS.

The government can now combine these data for analysis for the first time to compare disease incidence and disease specific mortality rates with essential commodity consumption.

In a subsequent phase of the project, the technical working group plans on prioritizing a live integration with a cloud-based electronic LMIS, unlocking novel insights that will be used to drive supply chain performance.



Challenges and Next Steps

CHALLENGES

- Inability to totally capture and store all supply chain events for further analysis
- Fragmented multiple data systems
- Use of multiple standards

NEXT STEPS

- Collaboration between different actors
- define sector level standards
- Full connectivity of the entire supply chain
- Promote data driven decision making culture among stakeholders.

Conclusion



ZENYSIS

Zenysis integrates programmatic, financial, geospatial, survey and other data into a single platform and makes these data interoperable for advanced analysis

- As supply chains mature and evolve, the Zenysis platform can expand with them, easily integrating new systems and datasets as they are introduced and removing outdated systems no longer in use.
- Zenysis provides an unprecedented level of visibility into the performance of public health supply chains, enabling program managers, Ministries, and donor agencies to triangulate supply chain data against other data sources such as patient data from an HMIS or disease surveillance data from an integrated surveillance platform
- Triangulated analysis facilitates data-driven decision-making which can increase efficiencies, create cost savings, and improve supply chain performance across health verticals

Thank You

ZENYSIS

zenysis.com