



Malaria Data Repositories

CONTEXT

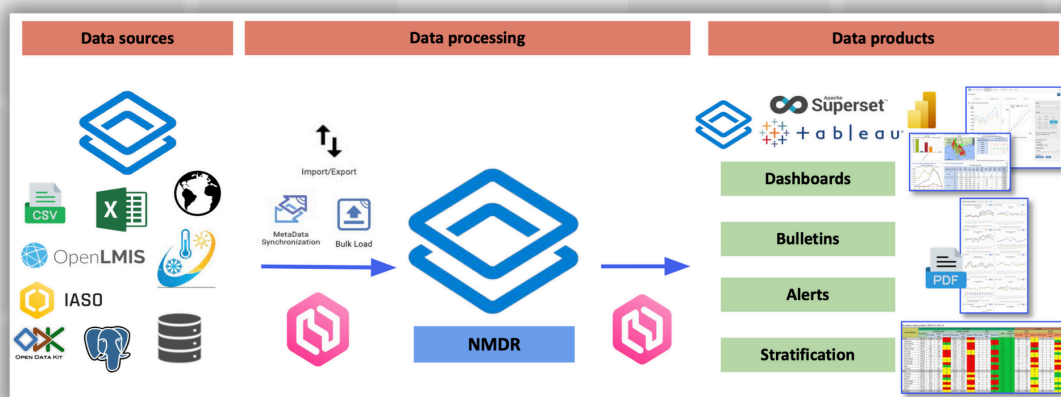
In order to design tailored, high-impact interventions, malaria elimination efforts are increasingly reliant on a diverse and complex range of information sources. However, malaria surveillance, intervention, and research data are scattered across multiple platforms, databases, tables, and other sources, making them difficult to access, process, and analyze. Given the growing complexity of malaria control and the need for a multifactorial response, WHO recommends the establishment of **National Malaria Data Repositories (NMDRs)**, as operational tools for pooling all relevant malaria data.

OBJECTIVES

Malaria data repositories provide program managers, malaria control officers,, and technical and financial partners with a **single portal for accessing malaria data** within a country. They bring together key indicators and relevant information from multiple and disparate data sources into a single database connected to existing information systems and databases. As such, they provide a powerful **tool for supporting strategic, operational, and logistical decision-making** at all levels of the health pyramid and facilitate data access and exchange.

CONCEPTUAL MODEL

A **dedicated DHIS2 instance** typically acts as a central hub for hosting the various datasets that feed into the repository and providing users with comprehensive dashboards. The **MetaData Sync application** allows for connecting to other DHIS2 instances, while the **OpenHEXA data integration platform** allows for establishing pipelines with other data sources and to perform advanced data processing and analysis tasks.



The national health information system is a key NMDR data source, in that malaria surveillance data are typically managed in DHIS2-based routine health information systems. Other data sources include dedicated eLMIS and campaign platforms, weather (ERA5), Excel spreadsheets, and other systems and formats.

A PHASED APPROACH AND STANDARDISED IMPLEMENTATION

Bluesquare proposes the deployment of these NMDRs in **four distinct phases**, always in close collaboration with the national program and the various partners and stakeholders, under the supervision of a steering committee. These phases allow for the structuring of support, the measurement of the tool's maturity, and alignment with the objectives to be achieved:

Phase 1: Prerequisites

- Governance
- Technical stack & hosting
- Roadmap
- Stakeholder coalition
- Funding

Phase 2: Infrastructure

- DHIS2 setup & hosting
- Data sets creation
- Data integration
- DHIS2 dashboards

Phase 3: augmented NMDR

- Effective data use
- Data products
- Data modeling
- Innovations

Phase 4: Sustainability

- Phase out of Bluesquare
- Capacity building

NMDRs are configured in a phase manner using a modular approach, based on a **standardized list of typical modules** to be included. Initial assessments serve to inform design and implementation, establishing governance mechanisms, and defining technical specifications from the onset.

PROMOTING DATA-DRIVEN DECISION-MAKING

These national malaria data repositories address the challenges of accessing and analyzing diverse and complex malaria data, thereby promoting evidence-based decision-making for national programs to design and monitor tailored interventions.

NMDRs are at the heart of numerous data products such as dashboards (in DHIS2 but also on other platforms such as Superset), automated surveillance bulletins, and malaria incidence and risk stratification maps. Applications include, for example, triangulation of surveillance data with data on consumption and availability of commodities, predictive modeling, outbreak alerts, reporting to the WHO and the Global Fund, etc.

In addition to technical support, Bluesquare facilitates an active community of practice, promoting the cross-border sharing of lessons learned and experiences in the implementation and use of NMDRs.

Module 1 - Epidemiology (routine data)

Module 2 - Integrated surveillance

Module 3 - Stock management

Module 4 - Demographics

Module 5 - Climate

Module 6 - Studies/Surveys/Research

Module 7 - Entomology

Module 8 - Vector control

Module 9 - ITN campaigns

Module 10 - SMC campaigns

Module 11 - Vaccination campaigns

Module 12 - Communications

Module 13 - Finances/Budget

Module 14 - Human resources

Module 15 - Activity planning

Module 16 - Data quality

Module 17 - Community services