Executive summary

This study was conducted to assess and document the state of vaccine-preventable disease (VPD) surveillance systems across member states in the WHO African Region (AFRO). The primary goal was to provide a comprehensive understanding of how countries are transitioning from aggregate to case-based surveillance, while examining the technological and organizational environments that shape VPD data systems. By identifying gaps, needs, and opportunities, the study aims to support more effective VPD surveillance data collection, integration, and use. It also seeks to highlight promising practices and lessons learned that can inform regional collaboration and strategic planning.

The methodology combined a broad landscape analysis completed by 23 country respondents with in-depth case studies in four select countries—Mali, Senegal, Uganda, and Zambia. The landscape analysis included desk research, an electronic survey, and key informant interviews to gather information on several domains. In parallel, the case studies provide a closer look at how VPD data is managed in real time, including data flow, storage, and use in decision-making. Country selection was based on criteria such as system maturity, integration with national health information platforms, and regional representation, enabling a balanced view of overall trends and local implementation challenges.

The data from the landscape survey was analyzed using a maturity model specifically developed for this study, which calculates a relative maturity score based on responses across eight key domains. These domains include governance, technical capacity, data use, data quality, infrastructure, and others critical to the effectiveness of VPD surveillance systems. Importantly, the maturity model is not designed for ranking or direct comparison between countries, but rather as a diagnostic tool to highlight strengths, identify gaps, and inform targeted improvements. While the model offers a useful framework for generating insights and comparing general trends, it has limitations. It simplifies complex system realities and may not fully capture regional variations, country-specific contexts, or the interactions between paper-based and digital tools. Therefore, results should be interpreted in conjunction with qualitative field data and stakeholder perspectives to provide a more nuanced understanding.

The primary purpose of the maturity model is to guide decision-makers in identifying areas for additional investment, technical support, or policy development. It does not intend to judge country performance or implementation quality but rather serve as a strategic tool to support continuous system strengthening and informed planning.

The outputs of this study include a landscape report, detailed country case studies, and synthesized findings with actionable recommendations. The findings will inform strategic plans to strengthen VPD surveillance and encourage better data sharing among African countries. Ultimately, the initiative aims to enhance VPD data management and response capabilities across Africa, contributing to improved health outcomes and outbreak preparedness.

The findings across all 23 countries revealed strikingly consistent patterns, highlighting shared strengths and common gaps. Most notably, all countries face significant challenges related to infrastructure—such as limited connectivity, power supply, and hardware availability—as well as persistent issues with interoperability, which hinder effective data

sharing and system integration across health programs. Other common challenges that limit the effectiveness and sustainability of VPD surveillance systems across countries include:

- Difficulties in establishing strong governance and strategic alignment, with digital health strategies that are sometimes outdated, underfunded, or not fully aligned with surveillance goals.
- Fragmented coordination across ministries, partners, and agencies and weak stakeholder engagement.
- Workforce and technical capacity remain areas for growth, particularly at subnational levels, highlighting a need for targeted investment and training. There is often limited availability of staff with specialized training in digital health, system integration, or data management, and many frontline workers have had minimal exposure to digital tools. Technical teams are often under-resourced and lack opportunities for training.
- Insufficient system lifecycle planning and localization limit the adaptability of digital tools to local needs, languages, and workflows. Gaps in interoperability and the absence of common data exchange standards contribute to system fragmentation and duplication.
- Weak data quality assurance mechanisms include unclear standards, inconsistent data entry practices, and lack of routine quality checks undermine the accuracy and reliability of surveillance data.
- Limited data use culture constrains the impact of surveillance efforts. Without adequate capacity building, user-friendly dashboards, and regular feedback mechanisms, data often fails to drive timely and effective public health responses.

The recommendations outline actionable short-term measures and strategic medium- to long-term priorities across the eight key areas to support countries in building more resilient, efficient, and responsive VPD surveillance systems.

Immediate actions include strengthening governance through revitalized national digital health bodies, conducting rapid reviews of digital strategies, and initiating targeted training and infrastructure support, particularly through mobile and offline tools. Countries are also encouraged to assess existing systems, localize tools, standardize data protocols, and promote the use of actionable dashboards and simplified reporting to enhance data-driven decision-making.

Over the longer term, sustained progress will require embedding digital governance within public health structures, developing costed national strategies, and fostering regional collaboration. Institutionalizing digital health training, investing in local development and cybersecurity capacity, and expanding infrastructure with renewable energy solutions are also critical. Additionally, countries should prioritize full lifecycle planning for digital systems, strengthen interoperability and national data governance, and integrate data use into workforce development. Together, these measures will significantly enhance the impact and sustainability of VPD surveillance, contributing to improved health security and population well-being.