Vaccine-Preventable Disease Surveillance System Assessment - Analysis Report Executive Summary

Vaccine-preventable diseases (VPDs) continue to pose a significant threat to health security across the WHO African Region. Effective surveillance systems are critical for detecting outbreaks early, responding rapidly, and sustaining immunization gains. Yet many countries face persistent challenges as they transition from paper-based, aggregate reporting to more integrated, case-based digital systems—often in the context of limited infrastructure, workforce capacity, and interoperability.

Scope and Purpose

This study assessed the state of vaccine-preventable disease (VPD) surveillance systems across 23 countries in the WHO African Region (AFRO), with in-depth case studies in Mali, Senegal, Uganda, and Zambia. The primary goal was to understand how countries are transitioning from aggregate to case-based surveillance, identify gaps, needs, and opportunities, and highlight promising practices and lessons learned to inform regional collaboration and strategic planning.

Methodology

A mixed-methods approach was used to support a robust and comprehensive analysis.

Landscape analysis: Desk research, electronic survey, and key informant interviews on several domains with 23 country respondents.

Case studies: In-depth examination of VPD data management, flow, system integration, and real-time decision-making in four countries.

Maturity model: A diagnostic tool developed specifically for this study, assessing eight domains (listed below) to identify strengths and areas for improvement.

Limitations: The maturity model provides a simplified view of complex VPD surveillance systems, and its scores should be interpreted alongside qualitative insights. Additionally, the study reflects the experiences of 23 of 47 WHO-AFRO member states, so findings represent observed trends rather than the full regional picture and should be considered in context.

Key Findings: Common Strengths and Challenges Across Countries

The findings across all 23 countries revealed strikingly consistent patterns, highlighting shared strengths and common gaps.

Governance and alignment: Identified as one of the most advanced domains across countries, many countries across West, East, and Southern Africa show strong leadership and alignment with national health priorities, backed by formal governing bodies and national digital strategies, and with a dedicated role for VPD surveillance systems. Nonetheless, challenges persist in coordination and in translating these strategies into practice. In some countries, digital health strategies are often outdated or underfunded or have not yet been operationalized. Lack of sustainable funding is a common challenge.

Workforce capacity: Shortages of trained digital health, integration, and data management professionals, especially at subnational levels.

End user readiness: Many countries report medium to high levels of user satisfaction with their systems, reflecting growing familiarity and acceptance of digital tools. Building on this progress,

further investment in training, stronger change management, and streamlined reporting processes can enhance effectiveness, reduce errors, and reinforce digital systems as valued enablers of care and decision-making.

System adaptability: Limited localization to match language, workflow, and context; lack of technical capabilities across the digital system lifecycle.

Infrastructure: Limited connectivity, unstable power supply, and insufficient hardware hinder data flow and integration.

Interoperability: Fragmented systems and a lack of common data standards impede information sharing.

Data standards and data quality: While challenges with data quality and timeliness persist, many countries have introduced measures to address them, such as designating dedicated personnel to oversee data quality management, establishing standardized processes, and providing regular feedback.

Data use and reporting: Another area of strength across most countries, with only one country reporting a foundational level of maturity. In many settings, VPD surveillance data informs decision-making and supports program planning. Still, the full potential of data use is not yet realized, as limited dashboards, weak feedback loops, and the absence of user-friendly tools constrain wider uptake in decision-making.

Recommendations

Immediate Actions (Short-term)

- Revitalize national digital health governance bodies and align strategies with surveillance needs.
- Provide targeted workforce training, especially for subnational and frontline staff.
- Strengthen infrastructure through mobile and offline tools.
- Localize digital tools and standardize data protocols.
- Promote data using actionable dashboards and simplified reporting formats.

Strategic Priorities (Medium- to Long-term)

- Embed digital governance within public health structures and develop costed national strategies.
- Foster regional collaboration for data sharing and standard setting.
- Institutionalize digital health and data use training.
- Expand infrastructure with renewable energy solutions.
- Plan for the full lifecycle of digital systems, including maintenance and upgrades.
- Invest in interoperability, cybersecurity, and local development capacity.

Targeted improvements in governance, infrastructure, interoperability, and workforce capacity can substantially enhance VPD surveillance systems across the African Region, bolstering outbreak preparedness, sustaining immunization gains, and safeguarding public health. These findings and recommendations offer a strategic roadmap for system strengthening, and readers are encouraged to consult the full report for in-depth analyses, including country-specific case studies that illustrate local challenges, best practices, and actionable lessons for implementation.