

Strengths, Challenges and Needs in Public Health Laboratories

Insights from APHL Programmatic Data and US Qualitative Interviews

THEME	 APHL GLOBAL PROGRAMMATIC DATA	 US QUALITATIVE INTERVIEW DATA
 CHALLENGES	Operational: staffing shortages; training gaps; deployment delays; resource constraints; reliance on external funding Emergency preparedness/response: budget constraints; gaps in policy frameworks	Operational: funding instability; limited workforce capacity; weak interagency coordination Emergency preparedness/response: political pressures and conflicting directives; inconsistent or unclear communication from national authorities
 SYSTEM STRUCTURE AND GOVERNANCE	Operational: decentralized or multi-tiered laboratory networks Emergency preparedness/response: Regional testing capacity supports outbreak response Need: stronger integrated systems for outbreak surveillance and response	Operational: ranges from coordinated networks to decentralized, independent laboratories Emergency preparedness/response: supports collaboration, information sharing, diagnostics and surveillance Limitations: redundancy, limited regulation and connectivity issues hinder emergency response
 POLICIES AND STRATEGIES	Operational: data modernization; national networks to strengthen laboratory capacity Emergency preparedness/response: repurposed HIV, malaria and tuberculosis (TB) equipment during COVID-19	Operational: laboratory leaders included in plans for construction of new laboratories Emergency preparedness/response: developed testing systems
 PARTNERSHIPS AND FUNDING SUPPORT	Operational: CDC and WHO support infrastructure, training and workforce development; World Bank supports infrastructure; Africa CDC supports bioinformatics, metagenomics and water surveillance; IGAD supports migration, data and training policy initiatives. Emergency preparedness/response: Academic institutions and international collaborators provide technical and financial assistance during outbreaks; countries establish in-country CDC chapters; Right to Care supports infectious disease prevention and treatment, health systems strengthening and community-based interventions.	Operational: CDC and WHO provide funding and best-practice guidance; FDA, EPA and USDA provide regulatory support; laboratories maintain close relationships with epidemiologists and state health departments. Emergency preparedness/response: Public health scientists are included in policy decision-making; laboratories collaborate with other state agencies and sentinel clinical laboratories; the Laboratory Response Forum supports collaboration among laboratory directors.
 KEY TAKEAWAYS	1 Shared capacity gaps: Both data sources identify workforce capacity, sustainable funding and coordination as core constraints affecting routine operations and emergency response. 2 Governance shapes readiness: Integrated laboratory networks, clear policies and reliable communication channels strengthen surveillance and outbreak response, while fragmented systems create redundancy and delays. 3 Partnerships are essential but create dependency risks: External, technical and financial support expand laboratory capacity, but long-term resilience depends on institutionalizing those gains within national and state public health systems.	

Abbreviations: APHL, Association of Public Health Laboratories; CDC, US Centers for Disease Control and Prevention; WHO, World Health Organization; FDA, Food and Drug Administration; EPA, Environmental Protection Agency; USDA, US Department of Agriculture