HSI Health Sciences Investigations Journal

share

Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

ISSN Online 2704-4890 | ISSN Print 2720-7609

Online first publication

Commentary

HSI Journal (2025) Volume 7 (Issue 2): 1245-1246. https://doi.org/10.46829/hsijournal.2025.12.7.2.1245-1246

Open Access

Strengthening diagnostic stewardship for antimicrobial resistance in Africa

Noah OBENG-NKRUMAH

Department of Medical Laboratory Sciences, University of Ghana School of Biomedical and Allied Health Sciences, College of Health Sciences, University of Ghana, Accra, Ghana.

Received October 2025; Revised October 2025; Accepted November 2025

Keywords: Antimicrobial resistance, diagnostic, stewardship, Africa

Cite the publication as Obeng-Nkrumah N (2025). Strengthening diagnostic stewardship for antimicrobial resistance in Africa. HSI Journal 7(2):1245-1246. https://doi.org/10.46829/hsijournal.2025.12.7.2.1245-1246

Antimicrobial resistance (AMR) has emerged as one of the defining public health challenges of our time, threatening progress in modern medicine and undermining decades of gains in infectious-disease control [1]. Often described as a "silent pandemic," AMR now inflicts the highest mortality burden globally on the African continent — eclipsing the combined toll of HIV and malaria in several regions [2,3]. Despite this immense burden, Africa's response to AMR has largely focused on antimicrobial stewardship and surveillance, while a critical but underdeveloped pillar — diagnostic stewardship — has received far less attention [4].

Diagnostic stewardship refers to the coordinated effort to promote the appropriate use of microbiological tests to guide patient management, antimicrobial therapy, and infection-prevention decisions [5]. It is the essential bridge that allows clinicians to move away from guesswork and toward targeted, pathogen-specific antibiotic therapy, enabling the critical practice of de-escalation to narrow antibiotic coverage once a diagnosis is confirmed. In many African settings, empirical treatment remains the default approach because of limited laboratory infrastructure, delayed test results, and lack of clinician confidence in diagnostic services [6]. This practice perpetuates inappropriate antibiotic use, masks true resistance patterns, and erodes the very data needed for evidence-based policies [7]. The absence of routine diagnostic testing for resistant pathogens in many health facilities further compounds the AMR crisis. Although diagnostic capability remains robust in high-income countries, the challenge is formidable in low- and middle-income settings where microbiological services are accessible only in a few clinical laboratories [8]. Laboratory services are often concentrated in tertiary centres, leaving most district and community hospitals without reliable microbiology support. Many laboratories are under-resourced, lack trained personnel, or are not fully integrated into clinical decision-making processes. Consequently, infections caused by resistant organisms frequently go undetected or are reported inaccurately, contributing to inappropriate antibiotic use and incomplete surveillance data to inform policy and practice [9].

Strengthening diagnostic stewardship requires investment beyond technology acquisition. It entails integrating laboratories into clinical care pathways, ensuring timely communication between microbiologists and prescribers, and embedding diagnostics within national AMR action plans [10]. Equally important is workforce development, including training clinicians, pharmacists, and laboratory personnel in the interpretation and application of test results. Routine audits, feedback systems, and digital connectivity between laboratories and wards can further optimize test utilization and reporting [5].

African governments and local stakeholders must commit to tangible investments in infrastructure, supply chains, and workforce development. African health systems should endeavour to transform laboratories from passive test providers into active partners in antimicrobial governance. This shift will not only improve patient outcomes and rational antibiotic use but also generate reliable surveillance data to guide regional and global AMR control strategies. Diagnostic stewardship is not a luxury, it is an essential component of resilient, evidence-driven healthcare [3,10].

* *Corresponding author*
Email: nobeng-nkrumah@ug.edu.gh

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

At the facility level, hospitals should take concrete measures to operationalize diagnostic stewardship. Among the most practical steps are those that strengthen the interface between the laboratory and the clinical team. Facilities should provide and actively promote the use of microbiological services to guide antibiotic therapy [11,12]. Clinicians should be encouraged to request culture and susceptibility testing, and antibiotic choices should routinely be reviewed in light of laboratory results [13].

Regular case reviews, joint ward rounds, and antimicrobial stewardship committee meetings that bring together laboratory scientists, pharmacists, infection-prevention nurses, and clinicians are essential. Such multidisciplinary forums foster communication between diagnostic and clinical teams and promote appropriate diagnostic utilization. Importantly, these committees should ensure that quality microbiological data are systematically used for local antibiotic treatment [13]. The training and deployment of infectious-disease specialists to bridge the gap between laboratory diagnostics and clinical prescribing are also critical to fostering collaboration and strengthening evidence-based care. These specialists play a pivotal role in translating laboratory findings into optimized treatment decisions to guide antimicrobial stewardship interventions. Their involvement ensures that diagnostic data are effectively integrated into patient management to improve therapeutic outcomes and reduce inappropriate antibiotic use. Facilities should invest in internal quality control and external quality assessment schemes to ensure reliable results, adopt data AMR management tools such as WHONET® to track resistance trends, and work to shorten turnaround times and improve communication with prescribers [14]. Together, these measures foster a culture of diagnostic excellence in which laboratories and clinicians work as partners in patient care to drive improved outcomes, strengthen surveillance, and ensure the rational use of antibiotics across the healthcare system.

REFERENCES

1. Murray CJL, Ikuta KS, Sharara F, Swetschinski L, Aguilar GR, Gray A, Han C, Bisignano C, Rao P, Wool E, Johnson SC, et al. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet*. 2022;399(10325):629–55.
2. Sartorius B, Browne AJ, Hackett S, Haines-Woodhouse G, Han C, Rao P, Wool E, Johnson SC, Chipeta MG, Feasey N, et al. Global burden of bacterial antimicrobial resistance in 2019: regional estimates and drivers. *Lancet Glob Health*. 2023;11(4):e520–e533.
3. Africa Centres for Disease Control and Prevention (Africa CDC). Antimicrobial resistance is a greater threat than HIV/AIDS, TB and malaria, says new report. Addis Ababa: Africa CDC; 2023. Available from: https://africacdc.org/news-item/antimicrobial-resistance-is-a-greater-threat-than-hiv-aids-tb-and-malaria-says-new-report/
4. Molina A, Gulumbe BH, Haruna UA, Almazan JU. Combating the menace of antimicrobial resistance in Africa: a review on stewardship, surveillance and diagnostic strategies. *Biol Proced Online*. 2022;24(1):19.
5. Boyd SE, Patel M, Ndebele A, Mpofu C, Asiedu-Gyekye IJ, Akpaka PE, Abimiku A, Chikowe I, Kajumbula H, Chitsulo P, Moyo S, Nwakanma D, Opintan JA. Diagnostic stewardship and antimicrobial resistance: current practices and future directions in low- and middle-income countries. *Antibiotics* (Basel). 2023;12(11):1693.
6. World Health Organization Regional Office for Africa. Antimicrobial resistance in the WHO African Region: a systematic literature review. Brazzaville: WHO Regional Office for Africa; 2021. Licence: CC BY-NC-SA 3.0 IGO.
7. Yamba K, Mwansa J, Munkombwe D, Chisha Z, Simunyama M, Chirwa M, Nambule J, Mbewe A, Chabala C, Banda R, Musuku J, Siwila J, Mwenda J. Assessment of antimicrobial resistance laboratory-based surveillance capacity of hospitals in Zambia: findings and implications for system strengthening. *J Hosp Infect*. 2024;139:123–131.
8. Okeke IN. Laboratory systems in resistance containment: antimicrobial susceptibility testing and surveillance are central to antibacterial resistance management. *Afr J Lab Med*. 2016;5(2):306.
9. Moirongo RM, Kirenga BJ, Were F, Migwi DK, Ogaro T, Njuguna J, Gitau N, Oludhe E, Sifuna P, Otieno C, Muriithi J. Laboratory-based surveillance of antimicrobial resistance: evidence from health facilities in Kenya. *Front Public Health*. 2022;10:1003178.
10. World Health Organization. Global antimicrobial resistance and use surveillance system (GLASS) report 2024. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO.
11. Chetty S, van der Riet M, Salmon J, Nkwanyana N, Naidoo N, Perovic O. Antimicrobial stewardship in public-sector hospitals in South Africa: a qualitative study of organisational drivers and barriers. *S Afr Med J*. 2022;112(10):697–704.
12. Dakorah MP, Agyare E, Acolatse JE, Appiah T, Osei-Tutu L, Ameyaw E, Opintan JA. Utilising cumulative antibiogram data to enhance antibiotic stewardship capacity in the Cape Coast Teaching Hospital, Ghana. *Antimicrob Resist Infect Control*. 2022;11:122.
13. Pauwels I, Versporten A, Ashiru-Oredope D, Abdu-Aguye SN, Thompson E, Matsitse T, Mansour W, Singh SK, Fadare J, Labi A-K, Nwakanma D, Musicha P, Vandenberg O, Dyar OJ, Lammens C, Goossens H. Implementation of hospital antimicrobial stewardship programmes in low- and middle-income countries: a qualitative study from a multi-professional perspective in the Global-PPS network. *Antimicrob Resist Infect Control*. 2025;14:15.
14. Okeke IN. Laboratory systems in resistance containment: antimicrobial susceptibility testing and surveillance are central to antibacterial resistance management. *Afr J Lab Med*. 2016;5(2):306. doi:10.4102/ajlm.v5i2.306.