Research Output Journal of Engineering and Scientific Research 5(1): 14-20, 2026

ROJESR Publications Online ISSN: 1115-9790

https://rojournals.org/roj-engineering-and-scientific-research/ Print ISSN: 1115-6155

https://doi.org/10.59298/ROJESR/2026/5.11420

Rapid Diagnostic Test Performance and Treatment Algorithms in Community-Based Malaria Case Management

Kato Jumba K.

Faculty of Science and Technology Kampala International University Uganda

ABSTRACT

Malaria remained a leading cause of morbidity and mortality in endemic regions, with prompt and accurate diagnosis critical for effective case management. Rapid diagnostic tests have emerged as point-of-care tools that enable community health workers to diagnose malaria in resource-limited settings where microscopy is unavailable. This review examined the diagnostic performance characteristics of rapid diagnostic tests for malaria and evaluated the effectiveness of treatment algorithms incorporating these tests in community-based case management programs. A comprehensive synthesis of published literature on rapid diagnostic test sensitivity, specificity, operational challenges, and integration into community treatment protocols was conducted. Rapid diagnostic tests demonstrated high sensitivity (greater than 95%) for Plasmodium falciparum at parasite densities above 100 parasites per microliter, though performance declined substantially for non-falciparum species and low-density infections. Test performance is significantly affected by storage conditions, operator training, and product quality variation. Treatment algorithms incorporating rapid diagnostic tests have reduced inappropriate antimalarial use by 60 to 80% in community settings, improved targeting of artemisinin-based combination therapies, and enhanced detection of non-malarial febrile illnesses. However, adherence to negative test results remained inconsistent, with overtreatment rates of 10 to 40% reported across programs. Cost-effectiveness analyses demonstrated favorable outcomes when tests are combined with strengthened clinical algorithms and quality assurance systems. Rapid diagnostic tests represented valuable tools for community malaria case management when implemented within robust training, supervision, and quality control frameworks that address both technical and behavioral determinants of appropriate test use and treatment decisions.

Keywords: Rapid diagnostic tests, Malaria, Community health workers, Treatment algorithms, Point-of-care diagnostics.

INTRODUCTION

Malaria diagnosis has evolved substantially from reliance on clinical syndrome recognition to incorporation of parasitological confirmation through microscopy and, more recently, immunochromatographic rapid diagnostic tests [1, 2]. These tests detect parasite-specific antigens, primarily histidine-rich protein 2 for Plasmodium falciparum and parasite lactate dehydrogenase for other species, through lateral flow technology requiring minimal equipment and technical expertise. The biochemical basis of rapid diagnostic tests relies on monoclonal or polyclonal antibodies immobilized on nitrocellulose membranes that capture target antigens from lysed erythrocytes in whole blood samples [3, 4]. Antigen concentration thresholds, antibody affinity characteristics, and specimen matrix effects determine analytical sensitivity and specificity. Manufacturing quality variations, storage temperature excursions, and humidity exposure alter antibody stability and test performance, creating challenges for deployment in tropical field conditions where cold chain maintenance is inconsistent.

The transition from presumptive treatment of fever to parasitologically confirmed diagnosis addresses the dual imperatives of targeting antimalarial drugs to true malaria cases and identifying alternative causes of febrile illness requiring different therapeutic interventions [5]. Overdiagnosis and overtreatment of malaria contribute to antimalarial drug resistance, waste limited pharmaceutical resources, delay appropriate management of bacterial infections and other life-threatening conditions, and undermine health system efficiency. Conversely, missed malaria diagnoses result in progression to severe disease, preventable mortality, and continued transmission [6]. Community-based case management extends diagnostic and treatment services beyond facility-based care to reach populations with limited geographic or financial access to formal health system. Community health workers serving as front-line providers require diagnostic tools that are sufficiently accurate, operationally feasible, and interpretable with basic training to enable appropriate triage and treatment decisions [7]. The objective of this review is to critically evaluate the diagnostic performance of rapid diagnostic tests for malaria across diverse epidemiological and operational contexts and to assess the effectiveness of treatment algorithms that incorporate these tests in community-based case management programs.

Biochemical Principles and Antigen Targets of Rapid Diagnostic Tests

Rapid diagnostic tests exploit the immunological detection of parasite antigens released during erythrocytic schizogony, the asexual replication phase responsible for clinical malaria manifestations. Histidine-rich protein 2, a water-soluble protein abundant in Plasmodium falciparum, constitutes the primary target antigen for most commercially available tests [8]. This protein is expressed at high copy numbers, persists in circulation for several weeks following parasite clearance, and demonstrates conserved epitopes amenable to broad antibody recognition. However, genetic deletions of the histidine-rich protein 2 gene and its homolog, histidine-rich protein 3, have emerged in multiple geographic regions, rendering histidine-rich protein 2-based tests falsely negative despite active infections. Alternative antigen targets include parasite lactate dehydrogenase, a glycolytic enzyme expressed by all Plasmodium species, and aldolase, a pan-malarial antigen. Parasite lactate dehydrogenase exists as species-specific isoforms, enabling tests designed to differentiate Plasmodium falciparum from Plasmodium vivax and other species through distinct antibody panels and test line configurations.

The analytical sensitivity of rapid diagnostic tests depends on antigen density thresholds, typically detecting parasitemias above 100 parasites per microliter for Plasmodium falciparum and 500 to 1,000 parasites per microliter for non-falciparum species [9]. This detection limit corresponds to clinical disease thresholds in non-immune populations but may miss low-density asymptomatic infections common in high-transmission settings where partial immunity develops. Antibody-antigen binding kinetics, specimen volume, and migration efficiency through the nitrocellulose membrane influence signal intensity and test line visibility. Prozone effects, wherein extremely high antigen concentrations paradoxically yield weak or absent test lines due to antibody saturation, occur rarely but complicate interpretation in severe malaria cases. Post-treatment antigen persistence, particularly for histidine-rich protein 2, confounds distinction between treatment failure and slowly clearing antigenemia, limiting utility for therapeutic response monitoring. These biochemical characteristics define the operational envelope within which rapid diagnostic tests perform optimally and identify clinical scenarios where test limitations require recognition.

Diagnostic Accuracy and Performance Characteristics in Field Settings

Systematic evaluations of rapid diagnostic test performance demonstrate high sensitivity (90 to 99%) and specificity (85 to 98%) for Plasmodium falciparum detection at parasitemias exceeding 200 parasites per microliter under controlled conditions [10]. However, field performance shows greater variability attributable to operational factors including storage conditions, lot-to-lot manufacturing variations, operator technique, and reader interpretation. Heat exposure above 30 degrees Celsius and humidity exceeding 60% accelerate antibody degradation and compromise test integrity, common occurrences in tropical community settings lacking climate-controlled storage [11]. Prequalification programs by international agencies establish minimum performance standards, yet post-market surveillance reveals concerning failure rates of 5 to 15% for some products deployed in endemic countries.

Sensitivity for non-falciparum species remains substantially lower than for Plasmodium falciparum, with detection thresholds often exceeding 500 to 1,000 parasites per microliter for Plasmodium vivax and higher still for Plasmodium ovale and Plasmodium malariae [12]. This differential sensitivity poses challenges in regions where multiple species co-circulate or where Plasmodium vivax predominates. False-negative results due to histidine-rich protein 2 deletions have been documented at prevalences reaching 40 to 80% in specific geographic foci, particularly in South America and the Horn of Africa, threatening test utility in affected areas [13]. Conversely, false-positive results arise from histidine-rich protein 2 antigen persistence following successful treatment, rheumatoid factor interference, and nonspecific binding in some autoimmune conditions.

Low-density infections below the limit of detection present a diagnostic dilemma, as they contribute to ongoing transmission yet remain undetected by rapid diagnostic tests and conventional microscopy. Molecular methods reveal that 20 to 60% of infections in high-transmission areas occur at subpatent densities, raising questions about the population-level impact of case management strategies based on imperfect diagnostics [14, 15]. Predictive values

of rapid diagnostic tests vary substantially with malaria prevalence, with positive predictive value declining sharply in low-transmission settings where pre-test probability is reduced. This epidemiological dynamic necessitates context-specific interpretation of test performance metrics rather than universal application of manufacturer-reported accuracy estimates.

Treatment Algorithms and Clinical Decision Frameworks

Treatment algorithms incorporating rapid diagnostic tests restructure clinical decision pathways from presumptive fever treatment to diagnostic-guided therapy [16]. Standard algorithms direct community health workers to perform testing on all febrile patients, administer artemisinin-based combination therapy for positive results, and withhold antimalarials for negative results while providing symptomatic management or referral for persistent severe symptoms. This paradigm shift addresses antimalarial overuse but introduces implementation challenges related to provider adherence, patient acceptance, and management of test-negative febrile illness.

Adherence to test results represents a critical determinant of algorithm effectiveness, with substantial variability observed across programs. Rates of inappropriate antimalarial treatment following negative rapid diagnostic tests range from 10 to 40% in community settings, driven by provider distrust of test accuracy, patient demand for antimalarial drugs, and inadequate training in alternative diagnoses [17, 18]. Conversely, some programs report adherence rates exceeding 90% when comprehensive training, clear clinical guidelines for test-negative management, and regular supervisory support are provided. Behavioral determinants include provider confidence in test reliability, experience with test performance, perceived consequences of missed diagnoses, and community perceptions of malaria likelihood. Social marketing emphasizing the importance of diagnostic confirmation and education regarding non-malarial fever causes improve both provider and patient acceptance of negative results.

Algorithm complexity influences implementation fidelity, with simpler decision trees showing superior adherence compared to multi-step protocols requiring integrated assessment of danger signs, alternative diagnoses, and referral criteria. Integrated community case management frameworks that address malaria alongside pneumonia, diarrhea, and malnutrition demonstrate feasibility but increase cognitive load on community health workers and risk of diagnostic confusion [19, 20]. Supplementary job aids, pictorial algorithms, and mobile health decision support tools enhance protocol adherence, though technology-dependent interventions face sustainability challenges in resource-limited settings. The incorporation of rational antibiotic use criteria for suspected bacterial infections in test-negative patients remains underdeveloped in most algorithms, representing a critical gap given that bacterial illness accounts for 15 to 40% of non-malarial fevers in malaria-endemic regions.

Operational Implementation and Health System Integration

Successful integration of rapid diagnostic tests into community case management programs requires coordinated interventions spanning supply chain management, human resource development, quality assurance systems, and health information infrastructure [21, 22]. Supply chain reliability determines test availability at community level, with stockouts reported in 20 to 50% of community health worker catchment areas in some programs due to forecasting inaccuracies, distribution inefficiencies, and inadequate buffer stocks [23]. Cold chain requirements, though less stringent than for vaccines, necessitate attention to storage conditions during transport and at community depot points to prevent heat damage. Test procurement costs ranging from 0.50 to 2.00 US dollars per unit represent significant recurrent expenditures, influencing program sustainability and necessitating cost effectiveness evaluation against alternative strategies.

Community health worker training programs typically provide 3 to 5 days of instruction covering test performance technique, result interpretation, clinical assessment, treatment protocols, and referral criteria [24, 25]. Competency assessments demonstrate that basic technical proficiency in test performance is achieved by most trainees, though clinical reasoning and complex decision making require extended mentorship and practical experience. Refresher training at 6 to 12 month intervals maintains skill levels and updates providers on protocol modifications. Supervisory visits incorporating direct observation, case review, and corrective feedback improve adherence to algorithms and diagnostic quality, with optimal supervision frequency estimated at monthly to bimonthly visits depending on provider experience and program maturity.

Quality assurance mechanisms include external quality control through rechecking of positive and negative results by microscopy or expert rapid diagnostic test readers, panel testing with standardized specimens, and monitoring of test failure rates. Implementation of quality control programs reveals error rates of 5 to 20% in test performance and interpretation, predominantly due to insufficient blood volume, prolonged reading times, and misinterpretation of weak test lines [26]. Health information systems capturing diagnostic test results, treatment decisions, and patient outcomes enable program monitoring, identification of performance outliers, and adaptive management. Mobile health platforms facilitate real-time data transmission, clinical decision support, and automated stock management, though implementation challenges include device costs, network connectivity limitations, and data quality concerns [27].

Impact on Clinical Outcomes and Antimalarial Stewardship

Evaluation of community-based case management programs incorporating rapid diagnostic tests demonstrates measurable impacts on antimalarial drug consumption, targeting accuracy, and clinical outcomes. Antimalarial use decreases by 60 to 80% in most programs following rapid diagnostic test introduction compared to presumptive treatment approaches, translating to substantial cost savings and reduced drug pressure, favoring resistance emergence [28, 29]. Appropriate targeting of artemisinin-based combination therapies to parasitologically confirmed cases preserves drug efficacy, extends useful therapeutic life, and reduces exposure of human and parasite populations to subtherapeutic drug concentrations that select for resistant strains.

Clinical outcomes, including treatment failure rates, progression to severe malaria, and mortality, show variable results across studies, with most demonstrating non-inferiority of diagnostic-guided management compared to presumptive treatment when algorithms are implemented with high fidelity [30]. Several trials report reduced all-cause under-five mortality in communities with integrated case management programs, though attributing mortality reduction specifically to improved malaria diagnosis versus broader health system strengthening proves methodologically challenging. Concerns that delayed treatment due to diagnostic testing might increase severe malaria risk have not materialized in most settings, likely because rapid diagnostic tests enable testing and treatment within the critical 24-hour window and because test-positive patients receive more consistent antimalarial therapy than under presumptive systems where drug availability and provider behavior are unreliable.

Detection of non-malarial febrile illness improves when algorithms incorporate assessment protocols for bacterial infections, though management remains suboptimal where community health workers lack diagnostic tools for pneumonia, urinary infections, and other bacterial syndromes [31]. Introduction of rapid diagnostic tests increases referral rates for test-negative severe illness, improving identification of meningitis, typhoid, and other life-threatening conditions requiring facility-based care. However, referral completion rates remain below 50% in many settings due to financial barriers, distance to facilities, and caregiver perception that non-malarial illness is less serious. The net population health impact of rapid diagnostic test programs thus depends not only on improved malaria diagnosis but also on strengthening of alternative diagnostic and treatment pathways for the substantial burden of non-malarial illness previously obscured by presumptive malaria treatment.

Evidence Gaps, Methodological Challenges, and Future Research Directions

Current evidence on rapid diagnostic test performance and algorithm effectiveness shows important gaps that limit generalizability and optimal program design. Most studies evaluate diagnostic accuracy under controlled research conditions rather than routine programmatic settings, potentially overestimating real-world performance where quality assurance is less rigorous [32]. Long-term durability of training effects, sustainability of supervision systems after external support withdrawal, and program performance beyond pilot phases remain inadequately characterized. Comparative effectiveness research directly contrasting different algorithm designs, training approaches, and supervision models would inform evidence-based program optimization but remains scarce.

The emergence of histidine-rich protein 2 deletions threatens the utility of current rapid diagnostic test portfolios in affected regions, necessitating accelerated development and deployment of alternative antigen targets or multiplex tests combining histidine-rich protein 2 and parasite lactate dehydrogenase detection [33]. Surveillance systems to monitor deletion prevalence and guide test selection policy require strengthening in most endemic countries. Cost-effectiveness analyses often employ narrow health sector perspectives and short time horizons, potentially undervaluing broader societal benefits and long-term impacts on drug resistance and transmission reduction. Methodological heterogeneity across trials, including varied definitions of algorithm adherence, treatment failure, and appropriate care, complicates evidence synthesis and meta-analysis.

The intersection of community case management programs with broader malaria elimination strategies requires further investigation, particularly regarding the contribution of improved diagnosis to transmission reduction versus its primary role in individual case management [34]. Whether enhanced detection and treatment of symptomatic cases meaningfully reduces transmission in moderate to high endemicity settings where asymptomatic reservoir predominates remains uncertain. Integration of rapid diagnostic tests with other community health interventions, optimal scope of diagnostic tools for comprehensive fever management, and strategies to ensure equitable access for remote and marginalized populations represent priority areas for implementation research. Advances in diagnostic technology, including ultrasensitive tests for low-density infections and multiplex platforms for syndromic fever evaluation, offer potential to address current test limitations if operationalized for community deployment with acceptable cost and complexity profiles [35, 36].

CONCLUSION

Rapid diagnostic tests represent a transformative innovation enabling parasitological confirmation of malaria diagnosis at the community level where microscopy infrastructure is absent. These immunochromatographic assays demonstrate acceptable diagnostic accuracy for Plasmodium falciparum under field conditions, though performance limitations for non-falciparum species, low-density infections, and settings affected by histidine-rich protein 2

deletions constrain universal applicability. Integration of rapid diagnostic tests into community case management programs through structured treatment algorithms achieves substantial reductions in inappropriate antimalarial use, improves targeting of artemisinin-based combination therapies, and demonstrates clinical safety compared to presumptive treatment approaches. However, realizing the full potential of diagnostic-guided management requires comprehensive programmatic attention to storage conditions, provider training, supervisory systems, quality assurance mechanisms, and algorithm adherence both for positive results requiring antimalarial treatment and negative results necessitating alternative diagnosis and management. The operational challenges of maintaining supply chains, sustaining competent community health worker cadres, and ensuring diagnostic quality in resource-limited settings should not be underestimated, as program effectiveness depends critically on health system strengthening across multiple domains. Cost-effectiveness evidence generally supports rapid diagnostic test deployment when implementation quality is adequate, though economic analyses require expansion to capture broader societal impacts and long-term sustainability considerations. Future programmatic evolution must address diagnostic gaps in non-malarial fever management, adapt to changing epidemiology, including emerging drug and diagnostic resistance, and integrate community case management within comprehensive primary health care platforms rather than disease-specific vertical programs. National malaria control programs should prioritize establishment of robust quality assurance systems incorporating lot testing, supervision with competency assessment, and external validation of community-level rapid diagnostic test results to maintain diagnostic accuracy and algorithm adherence in scaled programs.

REFERENCES

1. Krampa, F.D., Aniweh, Y., Awandare, G.A., Kanyong, P.: Recent Progress in the Development of Diagnostic Tests for Malaria. Diagnostics. 7, 54 (2017). https://doi.org/10.3390/diagnostics7030054
2. Cnops, L., van Esbroeck, M., Jacobs, J.: Rapid Point-of-Care Diagnosis of Malaria and Dengue Infection. In: Molecular Microbiology. pp. 589–609. John Wiley & Sons, Ltd (2016)
3. Borkakoty, B., Jakharia, A., Singh, P., Khan, S.A., Borkakoty, B., Jakharia, A., Singh, P., Khan, S.A.: Trends of Diagnostic Methods for Human Viral Diseases. In: Viral Infectious Diseases Annual Volume 2024. IntechOpen (2024)
4. Pham, N.M.: A Rapid Point-of-Care Test for Malaria Diagnostics in Elimination Settings, http://hdl.handle.net/20.500.11850/324976, (2018)
5. D'Acremont, V., Lengeler, C., Mshinda, H., Mtasiwa, D., Tanner, M., Genton, B.: Time To Move from Presumptive Malaria Treatment to Laboratory-Confirmed Diagnosis and Treatment in African Children with Fever. PLoS Med. 6, e252 (2009). https://doi.org/10.1371/journal.pmed.0050252
6. Alum, E.U.: Phytochemicals in malaria treatment: Mechanisms of action and clinical efficacy. KJHS. 4, 71–84 (2024). https://doi.org/10.59568/KJHS-2024-4-2-06
7. Ugwu, O.P.-C., Egba, S.I., Alum, E.U., Uti, D.E., Alum, B.N.: Climate Variability and Malaria Transmission: Unraveling the Complex Relationship. INOSR SR. 11, 16–22 (2024). https://doi.org/10.59298/INOSRSR/2024/1.1.21622
8. Kang, K., Dzakah, E.E., Huang, Y., Xie, M., Luo, X., Li, W., Wang, J.: Development and performance evaluation of a novel immunofluorescence chromatographic assay for histidine-rich protein 2 of Plasmodium falciparum. Malar J. 14, 228 (2015). https://doi.org/10.1186/s12936-015-0740-1
9. Adera, A.W.: Quantitative Buffy Coat Malaria Test, QBC F.A.S.T.™ Test And SD Bioline™ Malaria Rapid Test in Malaria Diagnosis at Ahero Sub-County Hospital, Kisumu County, http://localhost/xmlui/handle/123456789/4525, (2018)
10. Mbanefo, A., Kumar, N.: Evaluation of Malaria Diagnostic Methods as a Key for Successful Control and Elimination Programs. Tropical Medicine and Infectious Disease. 5, 102 (2020). https://doi.org/10.3390/tropicalmed5020102
11. Tufail, T., Agu, P.C., Akinloye, D.I., Obaroh, I.O.: Malaria pervasiveness in Sub-Saharan Africa: Overcoming the scuffle. Medicine. 103, e40241 (2024). https://doi.org/10.1097/MD.0000000000040241
12. Kho, S., Anstey, N.M., Barber, B.E., Piera, K., William, T., Kenangalem, E., McCarthy, J.S., Jang, I.K., Domingo, G.J., Britton, S., Grigg, M.J.: Diagnostic performance of a 5-plex malaria immunoassay in regions co-endemic for Plasmodium falciparum, P. vivax, P. knowlesi, P. malariae and P. ovale. Sci Rep. 12, 7286 (2022). https://doi.org/10.1038/s41598-022-11042-w
13. Watson, O.J., Tran, T.N.-A., Zupko, R.J., Symons, T., Thomson, R., Visser, T., Rumisha, S., Dzianach, P.A., Hathaway, N., Kim, I., Juliano, J.J., Bailey, J.A., Slater, H., Okell, L., Gething, P., Ghani, A., Boni, M.F., Parr, J.B., Cunningham, J.: Global risk of selection and spread of Plasmodium falciparum histidine-rich protein 2 and 3 gene deletions. Nat Med. 31, 3372–3379 (2025). https://doi.org/10.1038/s41591-025-03974-3

14. Golumbeanu, M., Edi, C.A.V., Hetzel, M.W., Koepfli, C., Nsanzabana, C.: Bridging the Gap from Molecular Surveillance to Programmatic Decisions for Malaria Control and Elimination. Am J Trop Med Hyg. 112, 35–47 (2025). https://doi.org/10.4269/ajtmh.22-0749
15. Seth, M.D., Popkin-Hall, Z.R., Madebe, R.A., Budodo, R., Bakari, C., Lyimo, B.M., Giesbrecht, D., Moshi, R., Mbwambo, R.B., Francis, F., Pereus, D., Mbata, D., Challe, D.P., Mandai, S.S., Chacha, G.A., Kisambale, A.J., Mbwambo, D., Aaron, S., Lusasi, A., Lazaro, S., Mandara, C.I., Bailey, J.A., Juliano, J.J., Gutman, J.R., Ishengoma, D.S.: Prevalence of subpatent Plasmodium falciparum infections in regions with varying transmission intensities and implications for malaria elimination in Mainland Tanzania. Malaria Journal. 24, 101 (2025). https://doi.org/10.1186/s12936-025-05341-6
16. Odaga, J., Sinclair, D., Lokong, J.A., Donegan, S., Hopkins, H., Garner, P.: Rapid diagnostic tests versus clinical diagnosis for managing people with fever in malaria endemic settings. Cochrane Database Syst Rev. 2014, CD008998 (2014). https://doi.org/10.1002/14651858.CD008998.pub2
17. Akinyode, A.O., Ajayi, I.O., Ibrahim, M.S., Akinyemi, J.O., Ajumobi, O.O.: Practice of antimalarial prescription to patients with negative rapid test results and associated factors among health workers in Oyo State, Nigeria. Pan Afr Med J. 30, 229 (2018). https://doi.org/10.11604/pamj.2018.30.229.13231
18. Ishengoma, D.S., Francis, F., Mmbando, B.P., Lusingu, J.P., Magistrado, P., Alifrangis, M., Theander, T.G., Bygbjerg, I.C., Lemnge, M.M.: Accuracy of malaria rapid diagnostic tests in community studies and their impact on treatment of malaria in an area with declining malaria burden in north-eastern Tanzania. Malaria Journal. 10, 176 (2011). https://doi.org/10.1186/1475-2875-10-176
19. Strachan, C., Wharton–Smith, A., Sinyangwe, C., Mubiru, D., Ssekitooleko, J., Meier, J., Gbanya, M., Tibenderana, J.K., Counihan, H.: Integrated community case management of malaria, pneumonia and diarrhoea across three African countries: A qualitative study exploring lessons learnt and implications for further scale up. J Glob Health. 4, 020404 (2014). https://doi.org/10.7189/jogh.04.020404
20. Lal, S.D.S.: Community case management and referral of children with fever within the primary health care system in Uganda., https://researchonline.lshtm.ac.uk/id/eprint/4655571/, (2019)
21. Maluleke, K., Musekiwa, A., Kgarosi, K., Gregor, E.M., Dlangalala, T., Nkambule, S., Mashamba-Thompson, T.: A Scoping Review of Supply Chain Management Systems for Point of Care Diagnostic Services: Optimising COVID-19 Testing Capacity in Resource-Limited Settings. Diagnostics. 11, 2299 (2021). https://doi.org/10.3390/diagnostics11122299
22. Mezieobi, K.C., Ugwu, O.P.-C., Uti, D.E., Egba, S.I., Ewah, C.M.: Economic burden of malaria on developing countries: A mini review. Parasite Epidemiology and Control. 30, e00435 (2025). https://doi.org/10.1016/j.parepi.2025.e00435
23. Hasselback, L., Crawford, J., Chaluco, T., Rajagopal, S., Prosser, W., Watson, N.: Rapid diagnostic test supply chain and consumption study in Cabo Delgado, Mozambique: estimating stock shortages and identifying drivers of stock-outs. Malaria Journal. 13, 295 (2014). https://doi.org/10.1186/1475-2875-13-295
24. Hamer, D.H., Brooks, E.T., Semrau, K., Pilingana, P., MacLeod, W.B., Siazeele, K., Sabin, L.L., Thea, D.M., Yeboah-Antwi, K.: Quality and safety of integrated community case management of malaria using rapid diagnostic tests and pneumonia by community health workers. Pathogens and Global Health. 106, 32–39 (2012). https://doi.org/10.1179/1364859411Y.0000000042
25. Aitken, I.: Training Community Health Workers for Large-Scale Community-Based Health Care Programs.
26. Newman, A.W., Behling-Kelly, E.: Quality Assurance and Quality Control in Point-of-Care Testing. Topics in Companion Animal Medicine. 31, 2–10 (2016). https://doi.org/10.1053/j.tcam.2016.05.003
27. Ezenwaji, C.O., Alum, E.U., Ugwu, O.P.-C.: Bridging the gap: telemedicine as a solution for HIV care inequities in rural and vulnerable communities. International Journal for Equity in Health. 24, 205 (2025). https://doi.org/10.1186/s12939-025-02584-2
28. Lubell, Y., Chandna, A., Smithuis, F., White, L., Wertheim, H.F.L., Redard-Jacot, M., Katz, Z., Dondorp, A., Day, N., White, N., Dittrich, S.: Economic considerations support C-reactive protein testing alongside malaria rapid diagnostic tests to guide antimicrobial therapy for patients with febrile illness in settings with low malaria endemicity. Malar J. 18, 442 (2019). https://doi.org/10.1186/s12936-019-3059-5
29. Yukich, J., D'Acremont, V., Kahama, J., Swai, N., Lengeler, C.: Cost Savings with Rapid Diagnostic Tests for Malaria in Low-Transmission Areas: Evidence from Dar es Salaam, Tanzania. Am J Trop Med Hyg. 83, 61–68 (2010). https://doi.org/10.4269/ajtmh.2010.09-0632
30. Achan, J., Barry, A., Leroy, D., Kamara, G., Duparc, S., Kaszubska, W., Gandhi, P., Buffet, B., Tshilab, P., Ogutu, B., Taylor, T., Krishna, S., Richardson, N., Ramachandruni, H., Rietveld, H.: Defining the next generation of severe malaria treatment: a target product profile. Malaria Journal. 23, 174 (2024). https://doi.org/10.1186/s12936-024-04986-z

31. Elven, J., Dahal, P., Ashley, E.A., Thomas, N.V., Shrestha, P., Stepniewska, K., Crump, J.A., Newton, P.N., Bell, D., Reyburn, H., Hopkins, H., Guérin, P.J.: Non-malarial febrile illness: a systematic review of published aetiological studies and case reports from Africa, 1980–2015. BMC Med. 18, 279 (2020). https://doi.org/10.1186/s12916-020-01744-1
32. Jayakumar, S., Sounderajah, V., Normahani, P., Harling, L., Markar, S.R., Ashrafian, H., Darzi, A.: Quality assessment standards in artificial intelligence diagnostic accuracy systematic reviews: a meta-research study. npj Digit. Med. 5, 11 (2022). https://doi.org/10.1038/s41746-021-00544-y
33. Adamu, A., Alemu, G., Yimer, M., Tegegne, B., Mekasha, S.: Deletion of target gene (histidine-rich protein 2/3) for Plasmodium falciparum rapid diagnostic tests in Amhara region, Ethiopia: a cross-sectional study. Malaria Journal. 24, 250 (2025). https://doi.org/10.1186/s12936-025-05485-5
34. Ashton, R.A., Hamainza, B., Lungu, C., Rutagwera, M.-R.I., Porter, T., Bennett, A., Hainsworth, M., Burnett, S., Silumbe, K., Slater, H., Eisele, T.P., Miller, J.M.: Effectiveness of community case management of malaria on severe malaria and inpatient malaria deaths in Zambia: a dose–response study using routine health information system data. Malar J. 22, 96 (2023). https://doi.org/10.1186/s12936-023-04525-2
35. Markandan, K., Tiong, Y.W., Sankaran, R., Subramanian, S., Markandan, U.D., Chaudhary, V., Numan, A., Khalid, M., Walvekar, R.: Emergence of infectious diseases and role of advanced nanomaterials in point-of-care diagnostics: a review. Biotechnology and Genetic Engineering Reviews. 40, 3438–3526 (2024). https://doi.org/10.1080/02648725.2022.2127070
36. Yansouni, C.P., Bottieau, E., Chappuis, F., Phoba, M.-F., Lunguya, O., Ifeka, B.B., Jacobs, J.: Rapid Diagnostic Tests for a Coordinated Approach to Fever Syndromes in Low-Resource Settings. Clinical Infectious Diseases. 55, 610–611 (2012). https://doi.org/10.1093/cid/cis466

CITE AS: Kato Jumba K. (2026). Rapid Diagnostic Test Performance and Treatment Algorithms in Community-Based Malaria Case Management. Research Output Journal of Engineering and Scientific Research 5(1): 14-20. https://doi.org/10.59298/ROJESR/2026/5.11420