

Strengthening national preparedness against arboviruses in Uganda: Advancing health sector resilience to tackle future public health threats

- Substantial gaps in case surveillance, vector surveillance, case detection and case management for arboviruses across Africa underscore the urgent need for Uganda to engage in a robust response strategy.
- Rapid urbanisation and climate change in Uganda elevate the risk of arbovirus transmission, necessitating immediate enhanced surveillance and community engagement.
- Leveraging Uganda's historical arbovirus research legacy is pivotal in developing sustainable preparedness and response mechanisms.

Background

With the rise of arboviruses such as dengue, Zika and chikungunya, Uganda faces a significant public health challenge — one that has been exacerbated by shifting research priorities to other infectious diseases.^[1] This has led to insufficient monitoring, diagnosis and control of arboviruses, placing populations most susceptible to disease, particularly outdoor workers and children, at high risk. Rapid urbanisation and climate variability are creating ideal conditions for vector breeding, further increasing this risk. Despite Uganda's strong foundation in arbovirus research from the 1950s, the country has largely focused on other diseases, leading to a gap in arbovirus preparedness.^[2,3]

The current healthcare approach is centred heavily on malaria, often resulting in febrile illnesses being misdiagnosed or classified as unknown in origin. This diagnostic overshadowing, combined with inadequate surveillance and response systems, means many arbovirus cases remain undetected. The World Health Organization (WHO) and TDR's 2022 report^[2] underscores a significant preparedness gap across African nations, emphasising the need for comprehensive strategies that extend beyond mere outbreak response to enhance health sector resilience.

Our view

Uganda is at a critical juncture in disease response, needing to strengthen its defences against the rising threat of arboviruses. Our advocacy is geared towards improving case surveillance, vector surveillance, case diagnosis and case management, with a view to developing a national arbovirus policy and arbovirus control action plan, and supporting multi-stakeholder information-sharing and coordination platforms.

We are advocating for a combined strategy of vigilant surveillance and proactive community participation, an integrated strategy endorsed by WHO recommendations that reflects successful disease control models from other regions. Integrating community engagement, strengthening health systems, and aligning with global health objectives to achieve sustainable health improvements will position Uganda to establish a robust public health system that is ready to counter arbovirus challenges effectively.

Uganda will be better equipped to respond to arbovirus cases by improving case surveillance through centralised data analysis systems and vector surveillance at key sentinel sites, and by fostering community-led prevention. The latter can be achieved through comprehensive training of health workers to more effectively detect and manage cases, as well as through community mobilisation via awareness programmes on preventive measures (e.g., eliminating vector breeding sites) and educational workshops.

Strengthening Uganda's preparedness against arboviral threats

In partnership with the Uganda Virus Research Institute and supported by funding from Malaria Consortium US, Malaria Consortium is tackling the threat posed by arboviruses through the SUPAAT project — Strengthening Uganda's Preparedness Against Arboviral Threats. The project has a foundation of rigorous research and an in-depth understanding of Uganda's unique challenges, seeking to fill critical gaps in surveillance, diagnosis and response.

Key to this approach is bolstering surveillance systems to swiftly detect and manage outbreaks; improving diagnosis and case management through focused training for healthcare workers; and advocating for strong policy development in concert with the Ministry of Health. Additionally, the project places a strong emphasis on

community engagement and awareness, actively involving the public in prevention and control measures to instil a collective sense of responsibility.

SUPAAT's comprehensive and inclusive approach positions Uganda to transition to a state of readiness and resilience, paving the way for long-term health sector resilience in Uganda and beyond.

Our experience

Malaria Consortium has demonstrable experience in countering malaria and other infectious diseases — including arboviruses such as dengue — with robust, evidence-based initiatives in Africa and Asia. In Uganda, we have bolstered disease surveillance and diagnostic capabilities through the establishment of a sentinel surveillance system, which enhanced the timely collection and analysis of epidemiological data, thereby improving outbreak response.^[4,5]

Through various other projects, we have seen healthcare workers benefit from training programmes in differential diagnosis and case management, enhancing patient care and health service efficiency.^[6-8] Central to our approach has been a holistic strategy that marries surveillance with community engagement, promoting local involvement in health initiatives and yielding measurable behavioural changes in disease prevention and treatment.^[9-11]

Recommendations

Our practical experience underscores the effectiveness of adaptable strategies, community-driven interventions and solid partnerships at the local and international levels. Consequently, our recommendations for arbovirus preparedness are grounded in both global best practices and actionable insights gained from our implementation experience, ensuring that the guidance is as practical as it is authoritative.

While the recommendations below are aimed at Uganda's Ministry of Health to enhance arbovirus preparedness and response, the strategy developed through the project could serve as a potential model for other African countries who are looking to develop a targeted arbovirus plan.

1. **Improve surveillance systems:** Strengthen arbovirus case surveillance in high-risk areas by enhancing data quality and refining existing surveillance platforms.
2. **Enhance diagnostic capacities:** Increase in-country expertise on diagnosis and management of arboviral diseases by conducting targeted, ongoing training for health facility staff.
3. **Vector surveillance and control:** Implement *Aedes* mosquito surveillance and control in targeted regions, integrating arbovirus entomological indicators into the national health reporting platforms. Annual vector surveillance reports should be a condition of the ongoing programme.
4. **Develop a national arbovirus policy and advocacy plan:** Draft and implement a comprehensive arbovirus control action plan, ensuring it aligns with the WHO Global Arbovirus Initiative objectives. An advocacy plan will elevate awareness and drive collective action, helping to establish a scalable model for regional and national resilience against arboviral threats.
5. **Community engagement:** Enhance community awareness of, and engagement with, disease control through education campaigns (including the development of communication materials) and conducting knowledge, attitudes, and practices surveys.
6. **Establish a monitoring and evaluation framework:** Implement an ongoing monitoring, evaluation, accountability and learning process to generate timely data for decision-making and programme adaptation. Baseline and endline evaluations to measure the impact will help guide adaptations over time.
7. **Cross-border collaboration:** Advocate for and establish a cross-border vector-borne disease network for periodic meetings and information sharing, particularly with the Pan African Mosquito Control Association, to coordinate efforts across the East African community.

References

1. Mayanja MN, Mwiine FN, Lutwama JJ, Ssekagiri A, Egesa M, Thomson EC, et al. Mosquito-borne arboviruses in Uganda: History, transmission, and burden. *Journal of General Virology*, 2021; 102(10): 001680.
2. World Health Organization on behalf of the UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR). Surveillance and control of arboviral diseases in the WHO African region: Assessment of country capacities. Geneva, Switzerland: World Health Organization; 2022.
3. Braack L, Gouveia de Almeida AP, Cornel AJ, Swanepoel R, de Jager C. Mosquito-borne arboviruses of African origin: Review of key viruses and vectors. *Parasites & Vectors*, 2018; 11(1): 1–26.
4. Malaria Consortium. Supporting government to control malaria in Uganda. Project brief. London, UK: Malaria Consortium; 2019. Available from: <https://www.malariaconsortium.org/resources/publications/977/supporting-government-to-control-malaria-in-uganda>
5. Malaria Consortium. Strengthening Uganda's response to malaria. Project brief. London, UK: Malaria Consortium; 2018. Available from:
6. Malaria Consortium. Reducing the malaria burden in Nigeria. London, UK: Malaria Consortium; 2021. Available from: <https://www.malariaconsortium.org/resources/publications/1184/reducing-the-malaria-burden-in-nigeria>
7. Malaria Consortium. Training malaria volunteers to deliver integrated community case management. Learning brief. London, UK: Malaria Consortium; 2020. Available from: <https://www.malariaconsortium.org/resources/publications/1320/training-malaria-volunteers-to-deliver-integrated-community-case-management>
8. Malaria Consortium. Building capacity for malaria elimination in southern Cambodia. Project brief. London, UK: Malaria Consortium; 2019. Available from: <https://www.malariaconsortium.org/resources/publications/1271/building-capacity-for-malaria-elimination-in-southern-cambodia>
9. Overgaard HJ, Nay Yi Yi Linn, Aye Mon Mon Kyaw, Braack L, Myo Win Tin, Bastien S, et al. School and community driven dengue vector control and monitoring in Myanmar: Study protocol for a cluster randomized controlled trial. *Wellcome Open Research*, 2023; 7: 206.
10. Bigio J, Braack L, Thy Chea, Srun Set, Sokha Suon, Echaubard P, et al. Entomological outcomes of cluster-randomised, community-driven dengue vector-suppression interventions in Kampong Cham province, Cambodia. *PLoS Neglected Tropical Diseases*, 2022; 16(1): e0010028.
11. Hustedt JC, Doum D, Keo V, Ly S, Sam B, Chan V, et al. Field efficacy of larvivorous fish and pyriproxyfen combined with community engagement on dengue vectors in Cambodia. *The American Journal of Tropical Medicine and Hygiene*, 2021; 105(5): 1265–76.



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