**Regional collaboration and transdisciplinary research could end malaria in SADC***By Prof Tiaan de Jaager, - Director: UP ISMC, Dean: Faculty of Health Sciences and Professor: Environmental Health and Dr Taneshka Kruger - Senior Project Coordinator: UP ISMC*

Malaria is a disease of poverty that disproportionally affects the poor and remains a formidable challenge for communities with limited access to healthcare, socio-economic inequalities and environmental challenges.

Today, 25 April, is World Malaria Day (WMD). It is a crucial day for raising awareness about the ongoing fight against malaria and it highlights global efforts to combat the disease, mobilise resources and support for malaria control and prevention initiatives. It serves as a reminder of the significant impact of malaria on public health, particularly in vulnerable communities, and underscores the importance of collective action in achieving the goal of malaria elimination.

This year’s theme for World Malaria Day is: "Accelerate the fight against malaria for a more equitable world". It aims to increase awareness of the battle against malaria among those who are impacted and shed light on the numerous obstacles encountered by communities in areas where malaria is prevalent.

According to the World Health Organization, the global burden of malaria remains significant, with an estimated 249 million cases reported in 2022 – approximately 94% of these are concentrated in Africa. About 608,000 malaria-related deaths were reported in 2022, with Africa accounting for 95% of these fatalities. Children under the age of five bore the greatest burden of mortality.

These figures underscore the urgent need for sustained efforts to combat malaria, particularly in vulnerable populations, and emphasise the critical importance of equitable access to healthcare services and preventive interventions.

 **What is sustainable malaria control?**

Sustainable malaria control refers to efforts aimed at reducing the incidence and impact of malaria in a manner that is environmentally, socially, and economically viable over the long term. It involves implementing strategies that not only effectively prevent and treat malaria but also address underlying factors contributing to its transmission and persistence.

Sustainable malaria control prioritises the use of interventions that are cost-effective, culturally appropriate, safe and accessible to all populations at risk. This includes measures such as vector control, prompt diagnosis and treatment of cases, community engagement and empowerment, surveillance and monitoring systems, as well as investments in research and innovation.

Additionally, sustainable malaria control emphasises collaboration among stakeholders including governments, organisations, communities, and others to ensure coordinated and integrated approaches that can withstand changes in funding, political priorities and environmental conditions

**Why is sustainable malaria control important**

Sustainable malaria control is essential for achieving and maintaining malaria elimination by ensuring long-term impact, resilience to change, cost-effectiveness, community engagement and health equity. By investing in sustainable control measures, countries can move closer to the goal of a malaria-free world.

In the pursuit of malaria elimination, sustainable control efforts must be maintained while the focus on reducing malaria-related fatalities through integrated approaches is sustained. This approach, [termed transdisciplinarity](https://malariajournal.biomedcentral.com/articles/10.1186/1475-2875-11-431), combines biomedical sciences, public health, education, and policy-making to form a unified discipline aimed at malaria management. It emphasises translating research findings into practical applications and leveraging health-focused knowledge to inform scientific research.

Combating malaria goes beyond addressing its immediate health impacts. It requires a holistic approach that acknowledges and confronts the systemic barriers to healthcare access faced by marginalised communities.

In many malaria-endemic areas, factors such as poverty, lack of infrastructure, and cultural beliefs contribute to disparities in healthcare delivery. Women often face additional hurdles in accessing essential services.

**The role of transdisciplinary research in sustainable malaria control**

Transdisciplinary research is essential for advancing efforts towards malaria elimination because it proves an all-inclusive understanding of the disease. This allows for the development of integrated strategies that address multiple dimensions of malaria control simultaneously.

These strategies include tailoring interventions to local contexts, emphasising the importance of context-specific approaches to malaria control, fostering innovation and collaboration by bringing together diverse perspectives and expertise, and promoting sustainability and resilience in malaria control efforts by considering long-term implications and addressing underlying drivers of transmission.

The University of Pretoria Institute for Sustainable Malaria Control (UP ISMC) is a transdisciplinary research entity where researchers from various disciplines use their expertise to explore impactful, innovative and safer malaria control methods.

Some of our researchers’ work includes using [semiochemistry](https://theconversation.com/were-a-step-closer-to-figuring-out-why-mosquitoes-bite-some-people-and-not-others-160038) to determine what attracts or repels mosquitoes; the development of new [nets to use against insecticide-resistant](https://www.up.ac.za/media/shared/236/ZP_Resources/issue-5-killing-by-design-page-24-and-25.zp243305.pdf) mosquitoes; and conducting mosquito vector surveillance to better understand changes in [mosquito behaviour](https://www.up.ac.za/media/shared/236/ZP_Resources/issue-5-bounty-of-info-for-the-mosquito-hunter-page-22-and-23.zp243306.pdf).

Researchers have discovered that natural compounds from the [indigenous succulent](https://www.up.ac.za/up-institute-for-sustainable-malaria-control/news/post_3126442-up-led-study-finds-aloe-plant-could-impede-life-cycle-of-malaria-carrying-parasite)*Aloe malothii,* can disrupt the parasite’s lifecycle, and they have identified [powerful chemical compounds](https://www.up.ac.za/up-institute-for-sustainable-malaria-control/news/post_2945911-up-researchers-team-discovers-new-compounds-with-the-potential-to-eliminate-malaria), clinical candidates against TB and cancer, that could be developed into multistage and transmission-blocking drugs.

Researchers have also looked at the impact of [environmental toxins](https://www.up.ac.za/up-institute-for-sustainable-malaria-control/news/post_3208720-up-researchers-find-environmental-toxins-poison-epigenetic-inheritance) used for malaria vector control on human health, highlighting the need for safer alternatives, and explored how [bio-art](https://www.up.ac.za/media/shared/236/ZP_Resources/issue-4-can-art-prevent-malaria-page-14-and-15.zp243304.pdf) can be used for public awareness and education.

In the flagship Remote Sensing for Malaria Control in Africa (ReSMaCA) programme, researchers use [satellite technologies](https://www.up.ac.za/research-matters/news/post_2995701-satellites-to-aid-in-the-fight-against-malaria) to investigate some of the driving factors of malaria within hotspot areas, and examine the impact of climate change on the disease. They train [citizen-scientists](https://www.up.ac.za/media/shared/236/ZP_Resources/re.search-issue-6_pages-16_17.zp245411.pdf) who play a role in the research, which enhances research outcomes and community engagement. The Institute also builds [leadership and management capacity](https://www.up.ac.za/up-institute-for-sustainable-malaria-control/news/post_3029960-up-institute-for-sustainable-malaria-control-secures-major-funding-grant-to-build-capacity-in-africa) in control programmes, enabling managers to make data-driven, informed decisions.

Transdisciplinary research, with its holistic approach that integrates insights and methodologies from diverse fields, fosters inclusive strategies to address the complex intersections of health disparities, gender dynamics, and human rights issues in the fight against malaria.

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