

OPINION PIECE

World Malaria Day 2023:

How leadership, innovation, investments can contribute to eliminating malaria

By Prof Tiaan de Jager, Director of the University of Pretoria Institute for Sustainable Malaria Control (UP ISMC) and Dr Taneshka Kruger, a researcher at the University of Pretoria and UP ISMC project manager

Malaria remains a major public health concern with 3.2 billion people at risk worldwide despite the mosquito-borne infectious disease being both preventable and treatable. According to the World Health Organization (WHO) World Malaria Report 2022, the global tally of malaria cases reached 247 million cases in 2021, with an estimated 619 000 deaths.

The theme for this year's World Malaria Day, celebrated annually on 25 April, is: "time to deliver zero malaria: invest, innovate, implement." It comes at the time where the African continent continues to carry a disproportionately high share of the global malaria burden due to environmental conditions being perfect for malaria – high temperature and humidity, and high levels of rainfall.

Approximately 95% of all cases globally and 96% of deaths in 2021 occurred in Africa, with children under five years accounting for about 80% of all malaria deaths in the continent. In South Africa, at least 10% of the country's population is affected, and the disease is still endemic in the Limpopo, Mpumalanga and KwaZulu-Natal provinces, especially in the areas close to the Zimbabwe and Mozambique borders.

Malaria is transmitted between humans by the bite of *Plasmodium*-infected female *Anopheles* mosquitoes. Symptoms range from uncomplicated malaria consisting of bouts of mild fever accompanied by flu-like symptoms such as headaches, malaise, fatigue, nausea, minimal vomiting, muscular pains, mild diarrhoea and a slight increase of body temperature. Untreated symptoms can lead to severe malaria and result in impaired consciousness, respiratory distress, anaemia, jaundice, renal failure, and circulatory shock, eventually leading to persistent coma and death.

The saying "prevention is better than cure" is very true for malaria. Early diagnosis and rapid treatment prevent deaths. Therefore, people from both malaria-endemic and non-endemic regions must be informed about the disease, be aware of the symptoms and know how to protect themselves from getting infected. It is also of vital importance that these messages are communicated appropriately for the relevant target audience.

The best way for people to stay safe from malaria is to be aware of the disease risks and symptoms. They must know how to prevent being bitten by mosquitoes between dusk and dawn and know how to use chemo-prophylaxis when in a malaria-endemic area.

Eliminating malaria

“Zero malaria”, the goal aimed at eliminating local transmission of the disease within a country, is challenging to achieve locally in South Africa, across the continent and globally. This is because there is drug and insecticide resistance, changes in mosquito biting behaviour due to the targeted indoor control focus, cross-border movement of asymptomatic carriers from high to low-risk regions and residual malaria.

Climate and climate change also play a part. Weather conditions can create the perfect environment for new vectors to enter an area. Previous vectors can also return to an area that was declared malaria free. The parasites and vectors are also highly adaptable and this hinders elimination.

This is not to say that there is no hope. With collaboration, investment, innovation, and the implementation of a variety of methods and strategies, malaria can be eliminated. There are “tools” in the zero-malaria toolkit that can be used to achieve this goal. These tools include conducting research, developing new antimalarial drugs, finding new and safer insecticides or alternative methods to kill or repel mosquitoes, targeting the sexual reproductive stage of the parasite (avoiding transmission), raising awareness and ensuring that people know how to stay safe from malaria.

Leadership, research innovation and implementation

The University of Pretoria Institute for Sustainable Malaria Control (UP ISMC) coordinates and promotes collaborative research. This enables transdisciplinary approaches and translational applications which have a real impact on communities. The Institute has researchers from various departments across all nine UP faculties. This transdisciplinary approach transcends disciplines and allows for the identification and development of novel, innovative, safer and sustainable control mechanisms to contribute towards malaria elimination targets.

Over the years, since before its inception in May 2011, the UP ISMC has been doing and continues doing relevant research and making important training contributions to aid in the ongoing battle against malaria. Some of the work includes but not limited to a recent UP-led study which found that the indigenous succulent *Aloe marlothii* could impede the life cycle of the malaria-causing parasite; the collaborative discovery of two potent chemical compounds to potentially be developed into multistage and transmission-blocking antimalarials; the use of satellites to aid in the fight against malaria and building leadership and management capacity to enable control programme managers to make data-driven, informed decisions when running malaria control programmes.

Investing in malaria

The WHO World Malaria Report 2022 indicates that the funding gap between the amount invested in the global malaria response (\$3.5 billion) and the resources needed (\$7.3 billion) has widened, particularly over the past three years. Not only is additional funding needed for effective malaria control programmes and interventions, but there is a drastic need for sustainable funding for malaria research.

By bringing researchers together and encouraging transdisciplinary collaboration, the challenges associated with malaria control and elimination can be approached holistically. The funding that is available needs to be prioritised and better utilised.

Media enquiries

Please email Liesel Swart at liesel.swart@up.ac.za or liesel@roundtree.co.za , Cell: 082 672 0067

ABOUT THE UNIVERSITY OF PRETORIA

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on the Hatfield Campus, Pretoria. This 115-year-old institution is also the largest producer of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the Gordon Institute of Business Science (GIBS). It is the only University in the country with a Faculty of Veterinary Science, ranked top in Africa. Overall has 120 academic departments and 92 centres and institutes, accommodating more than 55 000 students and offering about 1 100 study programmes.

UP is one of the top five universities in South Africa, according to the 2019-2020 rankings by the Centre for World University Rankings. It is ranked among the top 100 universities worldwide in three fields of study (veterinary science, theology, and law) and the top 1% in eight fields of study (agricultural sciences, clinical medicine, engineering, environment/ecology, immunology, microbiology, plant and animal sciences and social sciences).

In May 2020, the annual UK Financial Times Executive Education Rankings again ranked GIBS as the top South African and African business school. The University also has an extensive community engagement programme with approximately 33 000 students involved in community upliftment. Furthermore, UP is building considerable capacities and strengths for the Fourth Industrial Revolution by preparing students for the world beyond University and offering work-readiness and entrepreneurship training.

For more information, go to www.up.ac.za