

## SEASONAL DISEASES

## Malaria treatment: first detection of the *Plasmodium falciparum kelch 13 Q613E* mutation in South Africa

Artemisinin-based combination therapies (ACTs), the currently used antimalarial drugs in South Africa, are highly effective for treating malaria. Unfortunately, parasites resistant to artemisinins have emerged and spread across South East Asia, the historic epicentre for antimalarial drug resistance. Given the threat that artemisinin-resistant parasites would pose to curing patients and South Africa's malaria elimination aspirations, the NICD's Laboratory for Antimalarial Resistance Monitoring and Malaria Operational Research (ARMMOR,) in collaboration with the University of Cape Town and the National and Provincial Malaria Control programmes, implemented a surveillance programme to facilitate the prompt detection of, and rapid response to, any decrease in antimalarial drug efficacy. Used malaria rapid diagnostic test kits, routinely collected from healthcare facilities in malaria-endemic districts, serve as the source of parasite DNA. Any validated mutations in the parasite's *kelch 13* gene associated with artemisinin resistance are used as a proxy measure of parasite susceptibility to artemisinins. It was through this surveillance that a parasite isolate with the *kelch*

13 Q613E mutation was recently detected by ARMMOR, a first in South Africa. A unique patient/sample barcode facilitated the identification of the patient as an individual from KwaZulu-Natal Province, who most likely contracted malaria while visiting Mozambique. Similar mutations have been found in parasites in several west and central African countries. While this mutation alone is not suspected to confer parasite resistance, it serves as an early warning of the potential for emergence of artemisinin resistance in southern Africa. Therefore, patients must be compliant with malaria treatment; every dose of artemether-lumefantrine must be taken with some fat (e.g. a glass of full-cream milk), and patients followed up (ideally with a blood smear check) at days 3 and 28, to ensure they are cured. This finding highlights the importance of sustaining the surveillance programme in South Africa and the need to expand it across southern Africa. (Guidelines for malaria treatment and prevention are available at [www.nicd.ac.za/diseases-a-z-index/malaria/](http://www.nicd.ac.za/diseases-a-z-index/malaria/) and [www.health.gov.za/communicable-diseases/](http://www.health.gov.za/communicable-diseases/)).