

Nanomal smartphone-like malaria detection device to be field tested one year earlier than scheduled

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A pioneering mobile device using cutting-edge nanotechnology to rapidly detect malaria infection and drug resistance will be ready for field testing this year, one year ahead of schedule.

The €5.2million (£4million) Nanomal project was launched last year to provide an affordable hand-held [diagnostic device](#) to detect [malaria infection](#) and parasites' drug resistance in 15 minutes. It will allow

[healthcare workers](#) in remote rural areas to deliver effective drug treatments to counter resistance more quickly, potentially saving lives.

The news that the project is a year ahead of schedule comes on World Malaria Day today (25 April), as the [World Health Organization](#) warns of the alarming growth of resistance to drug treatments.

Nanomal lead Professor Sanjeev Krishna, from St George's, said: "Recent research suggests there's a real danger that current artemisinin combination therapies could eventually become obsolete, in the same way as other anti-malarials. This risk is worsened when patients presenting with a fever are given anti-malarial drugs without an analysis of the malaria parasites' drug resistance status, or even without a diagnostic test at all, thereby reducing the treatments' effectiveness."

The Nanomal device is being developed by St George's, University of London and Newcastle-based QuantuMDx Group. It will use a range of novel nanotechnologies to rapidly analyse the malarial DNA from a finger-prick of blood. The sample will be processed and a nanowire [biosensor](#) will detect [DNA sequences](#) of interest. This will provide a malaria diagnosis, speciation and drug resistance information in 15 minutes, allowing an effective personalised drug combination to be given immediately. The smartphone-like device will be easy to use; a healthcare worker simply puts the sample into the device, presses a few buttons and waits for the result, making it ideal for use in the field.

QuantuMDx's CEO Elaine Warburton said: "Placing a full malaria screen with drug resistance status in the palm of a health professional's hand will allow instant prescribing of the most effective anti-malaria medication for that patient. Nanomal's rapid, low-cost test will further support the global health challenge to eradicate malaria."

The device aims to provide the same quality of result as a referral

laboratory, at a fraction of the time and cost. Each device could cost about the price of a smartphone initially, but may be distributed free in developing countries. A single-test cartridge will be around \$13 (£10) initially, but the goal is to reduce this cost to ensure affordability in resource-limited settings.

In addition to improving immediate patient outcomes, the project will allow the researchers to build a better picture of levels of [drug resistance](#) in stricken areas. It will also give them information on population impacts of anti-malarial interventions. The technology could also be adapted afterwards for use with other infectious diseases.

Provided by St. George's University of London

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