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New type of HIV test on USB stick

LONDON — Scientists in Britain have developed a type of HIV test using a USB stick which can give a fast and highly accurate reading of how much virus is in a patient's blood.

The device, created by scientists at Imperial College London and the privately-held US firm DNA Electronics, uses a drop of blood to detect HIV, then creates an electrical signal which can be read by a computer, laptop or handheld device.

The researchers say the technology, although still in the early stages, could allow patients to regularly monitor their virus levels in a similar way to diabetes patients checking their blood sugar levels.

It could be particularly useful in remote settings to help HIV patients manage their treatment more effectively, since current tests to detect virus levels take at least three days and involve sending a blood sample to a laboratory.

"Monitoring viral load is crucial to the success of HIV treatment. At the moment, testing often requires costly and complex equipment which can take a couple of days to produce a result," said Graham Cooke, who co-led the research from the Imperial's department of medicine.

"We have taken the job done by this

equipment, which is the size of a large photocopier, and shrunk it down to a USB chip."

The test, which uses a mobile phone chip, requires a drop of blood to be placed onto a spot on the USB stick. Any HIV in the sample triggers an acidity change, which the chip transforms into an electrical signal. This is sent to the USB stick, which shows the result on a computer or electronic device.

Published in the journal *Scientific Reports*, results showed the stick test was 95 per cent accurate over 991 blood samples, and the average time to produce a reading was 20.8 minutes.

Some 36 million people worldwide are infected with HIV which causes AIDS, and most of them live in sub-Saharan Africa.

Current AIDS drugs, called anti-retrovirals, reduce virus levels in a patients blood to near zero.

But in some cases the drugs stop working — sometimes because virus has developed resistance to them — and the first sign of that would be a rise in a patient's so-called "viral load".

Virus levels can't be detected by routine HIV tests, which can only show whether or not a person has the virus. — Reuters