

New research: Testing HIV by USB

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Scientists in the UK have invented a **USB stick** that can accurately and quickly **measure HIV virus** levels in patients' blood.

Medical equipment by scientists at Imperial College London combined with DNA Electronics, and all it takes is simply **to use a drop of blood to detect HIV** . Then, the USB device that generates the electrical signal can be read by computer, laptop or handheld device.



Photo source: Imperial College London / DNA Electronics

This disposable device is used for HIV-infected patients to monitor their own treatment and the medical team can check patients taking their medications. Moreover, this technology is especially effective for patients in remote areas of the world, where access to testing facilities is not easy.

The new study is published in **Scientific Reports** , which shows that this USB device is not only very accurate, but can also produce results in less than 30 minutes. Current tests to detect levels of HIV in the blood usually take at least three days or longer and need to send blood samples to the laboratory. In many parts of the world, especially those with the highest number of people with HIV, there are no such tests. In the most recent study, the USB stick was tested 991 blood samples with an accuracy of 95 percent, with the average time taken to produce results in only 21 minutes.



Image: Imperial College London / DNA Electronics

Just drop a drop of blood into this USB device, it will automatically analyze the HIV-1 virus concentration through changes in acidity. This USB device uses a mobile phone chip to convert information into electrical signals and then the electrical signal is sent to the USB device, **which outputs the results into the program on the computer or device. electronic .**

Although the technology is still in its early stages, it may allow patients to regularly monitor their viral levels in the same way as people with diabetes check their blood sugar levels.

Currently, **antiretroviral drugs** - known as **antiviral drugs** , reduce viral levels to near zero. However, in some cases the drug may stop working, perhaps because the HIV virus has developed resistance to the drug. New USB devices can detect an increase in HIV virus levels and have potential in treatment drug problems and treatments for patients.

" *Monitoring viral levels is very important for success in HIV treatment. At this point, testing often requires expensive and complex equipment that can take a few days to get. We did the work with this device, about the size of a large copier and scaled it down to a USB chip ,* "said Dr. **Graham Cooke** - lead author of the study. .

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