

'Liquid biopsy' can identify deadliest cancers at an early stage

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Up to three quarters of cases of some of the deadliest cancers can be detected in their early stages with a blood test that identifies tiny fragments of DNA shed by the tumours.

It raises the prospect that people who appear healthy can be screened at regular NHS check-ups, giving doctors the chance to treat their diseases long before serious symptoms appear. The majority of cancers are only discovered

once they have begun to spread around the body, making the tumours far harder to eliminate. The problem is particularly acute in slower-growing cancers, such as those of the lung, pancreas, bowel and ovaries, which together kill 65,000 people a year in the UK.

Scientists are working on "pan-cancer" blood tests that can give patients and their doctors an early warning while survival chances are still good. Until now most of these DNA technologies have only been tried on

people with advanced cancer. Researchers at Johns Hopkins University, Baltimore, have shown for the first time that the "liquid biopsy" approach can accurately identify four of the most common cancers — breast, bowel, lung and ovarian — while they are still small and local enough to be vulnerable.

Their findings, published in the journal *Science Translational Medicine*, are an important step towards being able to remove many cancers before they do any obvious damage to the body. At

present the test costs about £1,500 but should get cheaper as the cost of sequencing people's genomes falls.

"These are all very common cancer types. All of them suffer from the fact that if you detect the cancer too late then patients do very poorly," said Victor Velculescu, professor of oncology at Johns Hopkins and one of the study's authors. "The thought is that if you can detect these early, you can surgically resect them or treat them with other therapies while they are still going to be

effective." The researchers drew up a set of 58 genes known to be markers of cancer and repeatedly sequenced DNA in the blood of 200 recently diagnosed patients.

The test identified between 59 and 71 per cent of the cancers and had a small false positive rate, meaning that it would be highly unlikely to misinform healthy people they have the disease.

Professor Velculescu said larger trials were needed before the tests were could find their way into GP surgeries.