

# Simple blood test matches cancer patients to personalised treatment

Chris Smyth Health Editor

Cancer patients who have exhausted all other options can be matched to trials of personalised medicines by a "liquid biopsy" blood test, a study shows.

A third of patients given experimental treatments in this way saw their tumours shrink in "very promising" early results that add to mounting evidence of the potential of real-time genetic analysis to guide cancer care.

Researchers hope the findings will give NHS patients a better chance of successfully trying new medicines and could help to pave the way for routine use of liquid biopsies to decide on cancer treatment.

Blood tests that look for fragments of DNA shed by tumours are one of the most exciting areas of cancer research. They are increasingly used to diagnose the disease, decide on treatment and check if it is working. Unlike painful tissue biopsies, liquid biopsies are simple enough to be repeated during treatment, tracking how a tumour

changes and allowing for treatment to be adapted.

In patients for whom standard therapies have failed, the results of original biopsies, which can be years old, may be out of date. Tumours evolve in response to treatment, making it harder to match patients to trials of new medicines targeting particular genetic faults.

In the latest trial, researchers at the Cancer Research UK Manchester Institute showed it was possible to use a liquid biopsy looking at 641 genes to see if patients' tumours currently had a DNA mutation that could be targeted by an experimental drug.

In a study of 100 patients with a range of tumours, including breast, bowel, prostate, lung and skin, 70 were found to have at least one mutation, with 41 potentially targetable by personalised drugs. Of these, 11 patients were able to be matched quickly to a clinical trial, researchers report in *Nature Medicine*.

Matthew Krebs, of the Christie hospital, lead clinician on the study, said: "Historically, patients who have ex-

hausted other options but are still reasonably well might access a clinical trial based on their cancer type, but without that new therapy being targeted to their tumour's particular genetic profile.

"Now, that paradigm is shifting toward personalised medicine. By understanding the genetic faults underpinning a patient's cancer from a blood test, as demonstrated in this study, this raises the hope of matching more patients to a specific targeted clinical trial treatment."

The study found that four of 11 patients on targeted trials experienced a shrinking of their tumour, compared with none of those given non-targeted therapy. "For people who have exhausted other treatment options that's a very promising finding," Dr Krebs said.

A second-stage trial will now assess whether those matched to trials in this way live longer than through traditional methods.

The £1,600 blood test took a month to analyse but Dr Krebs hopes to cut this to two weeks, saying it could be of-

fered to cancer patients at any NHS hospital which could then refer people on if they were suitable for a trial.

"Short to medium term I would hope this is something we could roll out across experimental cancer centres," he said. This network of 18 centres recruits 5,000 patients a year into trials. Dr Krebs cautioned that many patients would not be matched with trials, either because they did not have a mutation that a drug might target or because they were too frail. Longer-term, he said it was "only a matter of time" before liquid biopsies become routine for many cases before treatment begins.

Caroline Dive, lead author of the study, said the team was looking at doing several liquid biopsies to see if treatment was working. "This would allow us to stop a failing treatment and consider new options," she said.

Kotryna Temcinaite, of the charity Breast Cancer Now, said the approach was "extremely promising", adding: "It's really exciting that the study showed these tests could be done quickly."

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