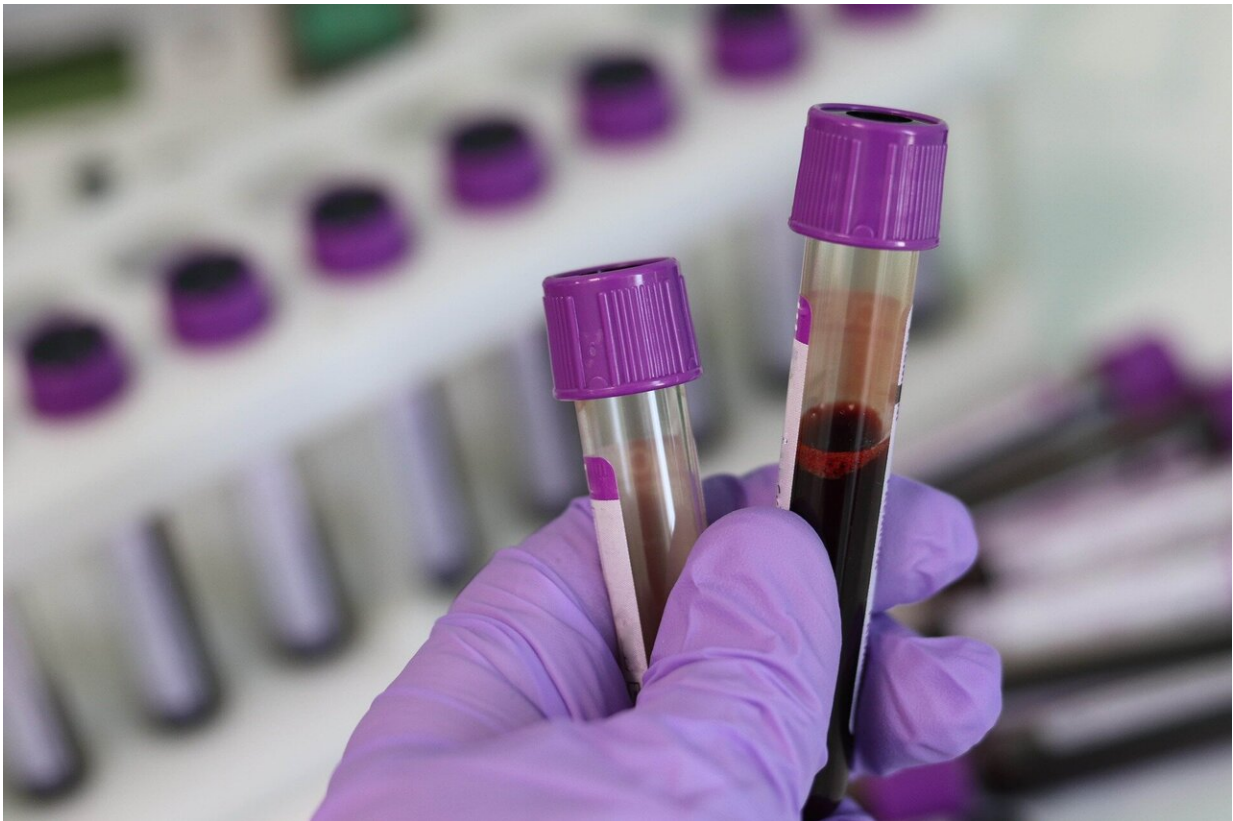


Revolutionary simple blood tests for diabetic complications, cancer

October 1 2019



Credit: CC0 Public Domain

With a revolutionary new approach that analyzed just a few drops of blood, Northwestern Medicine scientists and international collaborators detected earlier and more accurately if diabetic patients had developed

life-threatening vascular complications such as heart disease, atherosclerosis and kidney failure.

It is the latest discovery in a new blood-testing technology that Northwestern scientists used most recently to detect liver [cancer](#) in patients and is now being tested in other major cancers.

"We're very excited to apply our earlier findings in [cancer patients](#) to [diabetic patients](#)," said co-corresponding author Wei Zhang, associate professor of cancer epidemiology and prevention at Northwestern University Feinberg School of Medicine. "This discovery is going to revolutionize how quickly and non-invasively we can identify potentially fatal complications in the hundreds of millions of diabetic patients worldwide."

The prototype of this novel technology was developed by Dr. Chuan He, the John T. Wilson Distinguished Service Professor at the University of Chicago. Zhang and He worked together to create the [blood test](#).

About two-thirds of the 424 million diabetic patients worldwide die from vascular (i.e. blood vessel) complications. Detecting these complications early could spur treatments to control the development of severe disease or death.

Current methods of diagnosing [vascular complications](#) in diabetic patients—analyzing a patient's body mass index (BMI), the length of time they've had diabetes or a blood test analyzing how much waste product is present—are prone to error and don't identify complications early enough to intervene with treatment.

This blood test is different. With just three to five milliliters of blood, the non-invasive, clinically convenient test analyzes a patient's DNA by using highly sensitive blood biomarkers.

If the diabetic patient has developed a vascular complication, the damaged [blood vessels](#) release new DNA into the bloodstream, which appears in the blood test and signals the problem to doctors.

The findings will be published Oct. 1 in *Clinical Chemistry*, the leading international journal of clinical laboratory science.

The study examined 62 diabetic patients (12 patients without vascular complications, 34 patients with a singular vascular [complication](#) and 16 with multiple vascular complications). Zhang's highly sensitive blood test was able to identify if a patient had vascular complications much more accurately than current diagnostic methods.

Prior to this study, the scientists used the blood test to analyze more than 3,000 people's blood samples to accurately identify liver cancer in patients without mistakenly flagging those merely at risk.

Tissue biopsy is currently the gold standard for diagnosing liver cancer, but it is comparatively expensive, difficult, invasive and time-consuming. Although blood-based tests currently exist, they perform poorly in detecting early-stage cancers, which is a particular problem in [liver cancer](#). Zhang's blood test vastly outperformed current blood tests by detecting about 88% of tumors, the previous study found.

Zhang, a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, is currently testing this blood-analysis technology on other major cancers, including lymphoma, multiple myeloma and colon cancer. He is comprehensively comparing the technology with tissue biopsy in every cancer he and his collaborators study.

The goal is to test the technology on patients in a clinical trial, Zhang said, and eventually bring it into a real clinical setting.

"Ideally in the future, a patient could get their [blood](#) tested with this technology and check for a suite of different cancers," Zhang said.

Chang Zeng, a [graduate student](#) in the Northwestern University Driskill Graduate Program in Life Sciences and a member of Zhang's group, is a co-first author on the *Clinical Chemistry* paper.

Provided by Northwestern University

Citation: Revolutionary simple blood tests for diabetic complications, cancer (2019, October 1) retrieved 20 April 2024 from

<https://medicalxpress.com/news/2019-10-revolutionary-simple-blood-diabetic-complications.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--