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At-Home Device Would Check Blood Thinning

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PHILADELPHIA (AP) -- Three university scientists are developing a prototype device that they say will allow patients on blood thinning medication to take their own blood-clotting readings at home.

The cell phone-sized device would work like the machines that diabetics use to check their blood glucose levels, according to the Drexel University researchers, who recently founded a firm called BioSensus to develop and market the NanoAcoustic Blood Analyzer.

"Patients become more confident and in control of their own fate by taking their own readings," said J. Yasha Kresh, a professor at Drexel's College of Medicine.

The researchers said that their device is different from other blood analyzers on the market because it can be targeted to read the amounts of specific kinds of proteins in the blood that are involved in clotting and bleeding.

Other blood-testing machines on the market use a system of capillary-sized tubes to determine blood's thickness by measuring how quickly it works its way through the tiny mazelike structure. The Drexel scientists say their nearly submicroscopic technology - analyzing particles 1/75th the width of a human hair - would more easily adapt to a wide variety of uses other than blood thickness and to adjust for as-yet undiscovered medicines.

"We're very excited about this technology and the improvement of quality of life than it can ring," said professor Ryszard M. Lec of Drexel's School of Biomedical Engineering.

Such technology, if and when it happens, could empower patients by giving them a bigger role and could help doctors provide better care, said Dr. Richard C. Becker, an American Heart Association spokesman and a professor at the Duke University School of Medicine. Though he stresses that it's too soon to say whether the Drexel project's promise, or any nanotechnology experiments in the works, will make the leap from trial to reality.

"This technology hasn't reached that point, but there certainly is a great deal of interest in the scientific, medical and technology communities for it," Becker said.

Blood thinners like warfarin, also known as Coumadin, can be time-consuming for doctors to prescribe, since they cannot easily figure out how much to give. Two people the same size, sex and age may require vastly different doses to achieve the same result. Doctors set the dose by regularly testing the drug's effect on patients' blood clotting.

Warfarin is widely prescribed after strokes, heart valve replacement surgery, heart attacks and orthopedic surgery. It is also given to prevent recurring clots in the legs or lungs. However, dosing can be touchy: Too little, and there's risk of clots; too much, and there's risk of internal bleeding.

The prototype being worked on at Drexel, like blood glucose machines that diabetics use, works like this: A patient pricks their finger and puts a drop of blood on a testing strip. The strip is then placed inside the monitor and gives a reading.

The technology used in the NanoAcoustic machine also could be adapted to "ask blood almost any type of question," Lec said. That means it also could potentially read blood in a way to test clotting levels of people with hemophilia, for example, or be developed to screen for specific proteins in +urine+ or saliva for markers that indicate other kinds of ailments, Lec said.

The researchers estimate that the machine will cost about \$150 to \$200 and the testing strips around \$3 a piece.

BioSensus received a \$500,000 startup grant from BioAdvance, the biotechnology greenhouse of Southeastern Pennsylvania, to produce the laboratory prototype. The researchers expect a commercial prototype to be completed within the next 18 months and ready for use and feedback from doctors' offices and emergency rooms.

On the Net:

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