

A S'pore way to watch your blood pressure

Wristwatch device gives more accurate readings than arm cuff: Study

By JUDITH TAN

A HOME-GROWN wristwatch that records blood pressure and heart rate changes has been proven to stop a ticking time bomb in its track.

Singapore researchers, together with those at Britain's University of Leicester, found that the A-Pulse Central Aortic Systolic Pressure (Casp), a non-invasive system of calculating blood pressure from a person's aorta, gives a more accurate reading than the conventional arm cuff. The aorta is the largest artery in the body.

Results of the study, published in this month's issue of the prestigious Journal of the American College of Cardiology, also showed a 99 per cent accuracy rate when compared to the traditional way of getting aortic pressure - inserting a catheter near the heart.

Professor of medicine Bryan Williams of the University of Leicester said doctors have always known that pressure in the aorta "is a bit lower than in the arm".

"Unless we measure the pressure in



Dr Ting Choon Meng and Professor Bryan Williams with the watch-like BPro gadget and A-Pulse Casp software. ST FILE PHOTO

the aorta, we are not getting an appreciation of the risks or benefits of treatment," he said.

The A-Pulse Casp software works with a watch-like device called BPro that records waveforms from the arteries, allowing non-invasive reading of blood pressure from the aorta.

Cardiologists and neurologists The Straits Times spoke to said the findings could change the way blood pressure is

measured.

The A-Pulse Casp is the brainchild of Singapore general practitioner Ting Choon Meng. The patented made-in-Singapore watch won the approval of the United States Food and Drug Administration not too long ago.

Dr Ting, who is also chairman of medical devices company HealthSTATS, said: "The study has resulted in a very significant translational impact worldwide as it will empower doctors and their patients to monitor their central aortic systolic pressure easily, even at home, and modify the course of treatment for blood pressure-related conditions."

Prof Williams also led the development of the guidelines by the National Institute for Health and Clinical Excellence - Britain's health watchdog - to plan a huge overhaul of how its health-care system copes with cases of high blood pressure.

Changes in the guidelines would see patients suspected of having high blood pressure sent home with a monitor for 24 hours, rather than being prescribed medication based on clinical readings that might have been influenced by waiting room nerves.

Associate Professor Lee Kim En, who heads the department of neurology at the National Neuroscience Institute, said such "white coat" effect is not a new observation. "I routinely urge my patients

Potential uses for the new device

How does A-Pulse Casp work?

The technology offers a non-invasive way to calculate Central Aortic Systolic Pressure (Casp) - the pressure exerted as blood is pumped out of the heart into the aorta. This artery is the largest in the body.

The device is designed with a wrist strap and a sensor that sits on the skin overlying the wrist. The sensor records a pulse wave at the wrist at the same time that blood pressure is measured in the arm.

The data is then used to mathematically compute the Casp. The process takes only a few minutes more than conventional measurements.

to monitor their BP at home - recorded once daily - for review at their next visit to the clinic," he said.

The proposed changes could also see a cut in the number of people under the age of 40 diagnosed with high blood pressure.

Prof Williams said doctors currently have to get people back to the clinic twice or more to get an accurate reading.

He said as many as one in four young people is recorded as having high blood pressure when they go to the doctor, when they actually do not have it.

In Singapore, 15 people die from cardiovascular disease every day. In 2008, one out of every three deaths was due to heart disease or stroke.

Associate Professor Tan Huay Cheem, who heads the National University Heart Centre Singapore, said that while he felt proud a technological innovation devel-

Will doctors use the new technology to routinely measure blood pressure?

The technology has found its way into hospitals and clinics here for research, health checks and treatment.

At KK Women's and Children's Hospital, for example, the A-Pulse Casp is being used in a study of 1,200 pregnant women. The aim is to track the health of both the mothers and their babies - studying the offspring while they are in the womb and later as they develop and grow.

It is hoped that the study will uncover better ways to prevent and treat metabolic diseases such as obesity and Type 2 diabetes.

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oped by a Singaporean doctor-entrepreneur was studied and published in a reputable peer-reviewed journal, there were several limitations to this study.

"Firstly, the comparative cohort in the second validation study is not matched in terms of age, gender and ethnic group baseline risk factors such as diabetes mellitus.

"The study sample size in the invasive group is small and the correlation needs to be corroborated by larger studies and by other investigators," he said.

Responding, Dr Ting said the same validation data using invasive methods has been done and reported in China, Mexico and Germany, reaffirming the accuracy independently.

Drug companies, such as Novartis, have also used the device in major clinical trials around the world, he added.

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