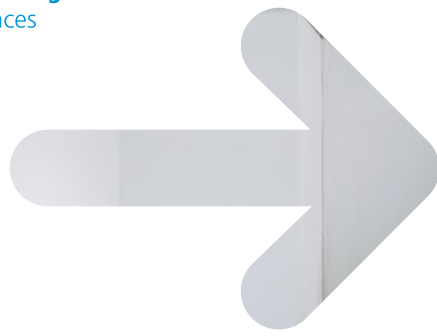


R&D Funding
Life Sciences



Nominated for the CTI Swiss Medtech Award 2014

Measuring venous pressure quickly and without causing pain



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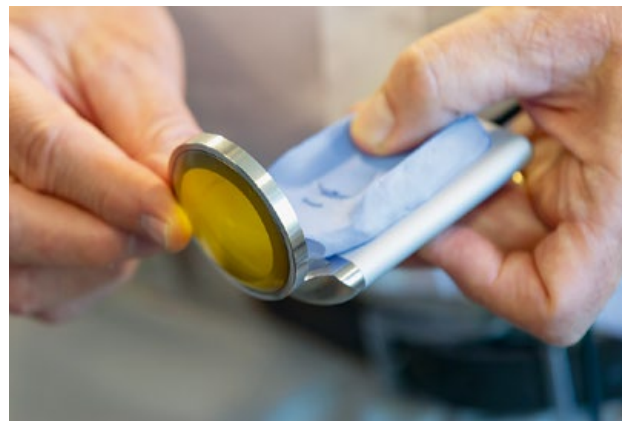
The current technique for measuring central venous pressure is invasive and costly requiring insertion of a catheter with potential complications. The cooperation between the ETH Zurich and Veinpress GmbH led to an innovative central venous pressure measuring technique, which would avoid having to resort to painful catheter examinations in the future.

Central venous pressure (CVP) is an important medical parameter. It is measured every hour for specific medical conditions in intensive care units. CVP allows doctors to draw conclusions regarding the volume of blood in the vascular system. This is relevant in the case of haemorrhage, for example.

CVP measurements currently require the insertion of a catheter. This procedure is laborious, painful for the patient and can lead to serious complications, such as trauma to the lungs (pneumothorax). Dr Ulrich Baumann was chief physician for internal medicine for 15 years and has worked intensively on ultrasound diagnostics. "With many years of experience in the field, I have for quite some time harboured the idea of measuring venous pressure quickly and painlessly without complications," says Baumann.

Even NASA is interested

Together with a mechanical engineer, Baumann succeeded in developing a prototype: peripheral venous pressure (PVP) is measured using an elastic membrane, olive oil as a sound-conducting agent, an ultrasound probe and a measuring device. PVP correlates exactly with CVP. The principle works well, as demonstrated in scientific studies, including those conducted by Prof. Kurt Jäger, who is chief physician emeritus of angiology at Basel University Hospital. "Compared with catheter measurements, the accuracy is 95 per cent, which is nearly perfect," says Baumann. In



Elastic membrane, olive oil as a coupling fluid: Veinpress pressure gauge for measuring central venous pressure.

in addition to four university centres, NASA is also conducting research on the Veinpress pressure gauge.

With the help of the Canton of Bern's Economic Development Agency and the Medical Cluster, a CTI project was set up with the ETH Zurich's Computer Vision Laboratory. The ETH developed a software application for ultrasound measurement, which allows the measurement of CVP in real time independently of the patient. "In addition, the device must be compatible with as many marketable ultrasound devices as possible, and must transmit images that are displayed on an already existing device," explains Professor Orçun Göksel of the ETH Zurich. Each measurement takes less than four minutes and does not require specialised personnel.

Market launch planned for 2015

Vincent Baumann, son of Ulrich Baumann and co-owner of Veinpress GmbH, is confident: "Once the product is approved, we hope to put the first commercial version on the market at the beginning of 2015." The pressure gauge is manufactured by Meridian AG, a manufacturer of medical devices in Thun.



Keeping venous pressure under control: Orçun Göksel, project manager, ETH Zurich (left), Vincent Baumann, co-owner of Veinpress GmbH

The product should allow for significant savings in healthcare. Veinpress expects to replace around 10 per cent of catheter measurements performed worldwide. In the United States, 5 million catheters are inserted every year. In addition to being much cheaper than a disposable catheter, the reusable Veinpress system does not cause complications. This would amount to savings of USD 220 million per year in the American market alone.

"Once the product is approved, we hope to put the first commercial version on the market at the beginning of 2015."

Vincent Baumann, co-owner of Veinpress GmbH

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