Nisonic demonstrates for the first-time automatic measurements of optic nerve sheath diameter as a marker for increased intracranial pressure using transorbital ultrasound at the world's largest medical trade fair in Düsseldorf, Germany.

Düsseldorf, Germany, November 18th, 2019. Nisonic AS, a startup co-founded by SINTEF and Cofounder in Norway, aims to make intracranial pressure (ICP) assessment as simple and easy as measuring body temperature. Nisonic is developing a novel method using properties of the optic nerve sheath to determine the patient's ICP. The method has been developed through a collaboration between neurosurgeon Dr. Llewellyn Padayachy, at that time working at the Red Cross War Memorial Children’s Hospital in Cape Town, scientists Reidar Brekken (Sr. Scientist, SINTEF) and Tormod Selbekk (SINTEF, now CTO, Nisonic).

Brain pressure is currently measured invasively by inserting a sensor through a cranial burr hole. This is done in a neurosurgical operating room by highly specialized personnel, with high cost and a non-negligible risk of infection and bleeding. By the time a patient reaches the operating room, severe brain damage may already have occurred. There is therefore a strong unmet need for a safer, easier and more cost-effective way of measuring the pressure in the brain. Nisonic’s method is based on using information about the optic nerve sheath obtained by placing ultrasound transducer on the eyelid. When brain pressure increases, the optic nerve sheath widens and becomes stiffer, and Nisonic combines the optic nerve sheath diameter (ONSD) with additional information gathered from the nerve sheath to estimate the pressure.

“Many neurosurgeons are already using ONSD as a marker for raised pressure, and this is becoming a common practice”, says Dr Llewellyn Padayachy, currently Professor and Head Department of Neurosurgery, University of Pretoria, Steve Biko Academic Hospital. “What we truly need in medicine is a quantitative non-invasive tool for measuring intracranial pressure. By including these dynamic properties of the nerve sheath in the acquisition, we can enable this”, he says. Dr. Llewellyn Padayachy is working together with Reidar Brekken and Tormod Selbekk developing the method and software algorithms processing the ultrasound images. To enable easy and fast measurements, Nisonic is using
Machine Learning methods and has designed a probe optimized for transorbital ultrasound”, says Tormod Selbekk (CTO). “The measurements are done automatically and will contribute in reducing operator variability”, he continues.

“We are delighted and proud to be able to demonstrate our product here at Medica in Düsseldorf”, says Cornelia Mender, CEO. “We are in the process of CE marking the product to be able to provide clinicians with a dedicated ultrasound scanner for automatic measurements of the optic nerve sheath diameter as a step towards non-invasive ICP assessment. By engaging clinicians throughout the world to test and use our product we will gather valuable feedback and patient data to improve and further develop our product for non-invasive ICP measurement”.

About Nisonic AS:
Nisonic AS, headquartered in Trondheim, Norway, is a medtech company that develops ultrasound technology focusing on neurological conditions. Nisonic is a spin-out from SINTEF, one of Europe’s largest independent research organizations, and is leveraging leading expertise in ultrasound and machine learning for image analysis. The company is supported by Innovation Norway and the Norwegian Research Council, and owned by SINTEF Venture V, CoFounder, Hadean Ventures, Investinor, Sarsia Seed, University of Cape Town and employees.

About MEDICA
MEDICA is the world's largest medical trade fair for medical technology, electromedical equipment, laboratory equipment, diagnostics and pharmaceuticals. MEDICA features around 5,000 exhibitors from around the world displaying their OEM products and services and close to 123,000 visitors.

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