

Metzingen start-up Nocubi develops lying system to prevent bedsores

Patients and carers can finally sleep through the night

(Stuttgart/Metzingen) – Nocubi GmbH in Metzingen has developed an innovative lying system to prevent pressure sores from forming. A clinical trial has already provided proof of its efficacy. In Germany alone, around 1.5 million people – especially dementia and myopathy sufferers, paraplegics and coma patients – run the risk of developing pressure ulcers due to a lack of movement. People who are unable to move independently need to be repositioned at regular intervals. That represents a huge burden for nurses and carers – and also for the healthcare system, hospitals and care facilities, which are having to contend with a nursing crisis. The declaration of conformity for the Nocubi lying system has just been submitted. This innovation is now at the market launch stage and has the potential to make life much easier for patients, nurses and carers.

As a dentist, Dr. Markus Spalek doesn't actually come across decubitus ulcers, that is to say bedsores, in his profession. It's a different story away from the workplace, though. When he witnessed the suffering of his grandmother a number of years ago, he found it hard to believe there wasn't some technical solution. "In the middle of the night, I sketched out the idea of laying patients on moving rollers. However, I then put the piece of paper in the drawer of my bedside table and, being a self-employed practitioner, I didn't have time to develop the idea any further," he recalls. Several years later, following a career change, he decided to dig out the sketch and started to do some research. "Pressure sores can be avoided in almost 100 percent of cases if sufficient staff are available, and that's exactly where the big problem lies at present," he says. Repositioning a patient takes between seven and fifteen minutes, and this needs to be done every one to four hours – an interval that differs on a case-by-case basis. Depending on the patient's weight, several staff may be required for this process. To relieve the pressure on the skin, the sufferer can also be placed on soft positioning or alternating pressure mattresses – solutions that Dr. Spalek definitely regards as being worthwhile and improving the situation. "But they do quickly reach their limits and can't solve the problem to the extent I

feel is necessary. The Nocubi lying system I've developed is an electronically controlled active underlay that works in a fundamentally different way to all established anti-decubitus systems," he explains.

Bedsore develop where the blood is no longer circulating properly. Long periods of pressure resulting from permanently lying down lead to blood vessels being pinched off. Besides a lack of oxygen in the tissue, this causes an accumulation of toxic metabolites that do further damage. Blood clots subsequently develop, and the tissue ultimately dies. Pressure sores can damage the tissue right down to the bones, which is extremely painful for patients and means additional work for staff, who have to treat the wounds. The inventor of Nocubi wasn't prepared to accept this situation. "By continuously changing the points of contact, our system creates a special form of alternating pressure – the Nocubi effect. Pressure is applied and relieved on an ongoing, alternating basis," says Dr. Spalek. This peristaltic effect in the vessels is achieved using spring-loaded aluminium rollers that move underneath patients at a barely discernible speed, thereby ensuring the pressure distribution is continuously changing, moving from their feet to their head. The subsequent clinical trial proved the rationale behind the development. "In a study that Nocubi conducted with the BruderhausDiakonie charitable foundation, we were able to show that the intervals between repositioning nursing home patients could be increased from one and a half to four hours without any risk. That means these residents only need to be moved twice each night rather than six times – a huge reduction in the staff's workload," he emphasises.

Dr. Spalek had a local tradesman make the prototype, but he quickly realised that he needed to think bigger with this project. His search for a production partner took him to a manufacturer of medtech products based in the STERN BioRegion. BEMOTEC GmbH in Reutlingen has 25 years of experience making wheeled walkers and various systems for people with disabilities, and Dr. Spalek found he was preaching to the converted. "This is something very close to our heart given our own family's experience of bedsores, and Nocubi immediately won us over," reveals Managing Director Peter Hermann.

Dr. Spalek established his company in June 2021, together with his son Timo Spalek, who is currently still studying business administration. The fledgling family start-up is actually still something of a cottage industry but is now really taking off. “The declaration of conformity is now in place, meaning we can start trading,” says Dr. Spalek with a sense of satisfaction. And the market is huge – research by the German Institute for Medical Documentation and Information shows that at least 30 percent of care home residents are at risk of developing bedsores. However, Nocubi can also make life a whole lot easier for many other people. “I made the solution available to a friend of mine, and he and the family members looking after him are impressed. Thanks to Nocubi, they can sleep through the night again. That’s infinitely valuable,” he emphasises.

About BioRegio STERN Management GmbH:

BioRegio STERN Management GmbH promotes economic development in the life sciences industry, helping to strengthen the region as a business location by supporting innovations and start-up companies in the public interest. It is the main point of contact for company founders and entrepreneurs in the Stuttgart and Neckar-Alb regions, including the cities of Tübingen and Reutlingen.

The STERN BioRegion is one of the largest and most successful bioregions in Germany. Its unique selling points include a mix of biotech and medtech companies that is outstanding in Germany and regional clusters in the fields of automation technology and mechanical engineering.

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