Pressemitteilung

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Cooperation between TU Munich and cosinuss°

Vital signs monitoring: Study to reduce severe COVID-19 courses and relieve the healthcare system

Munich - After a patient's infection with the novel coronavirus SARS-CoV-2, the disease COVID-19 usually progresses in two phases. In the first phase, patients often experience only mild symptoms. In case of a severe course of the disease, the second phase comes in, leading to a significant deterioration in the patient's health status, which can even be life-threatening. In some cases, intensive medical treatment with mechanical ventilation is then necessary. These measures do not only require considerable hospital resources, but also cause a high level of physical and psychological burden for the patient.

Timely treatment to prevent severe courses of the disease

A clinical research team from the Klinikum rechts der Isar - Technical University of Munich (TUM) will investigate in a clinical study whether these severe COVID-19 courses can be prevented by timely treatment, initiated by early detection of deterioration based on the patient's vital parameters. With the technological support of the Munich-based high-tech company cosinuss°, the researchers led by Prof. Georg Schmidt, head of the Biosignal Processing group, want to monitor relevant vital parameters of COVID-19 patients staying in home isolation.

Continuous measurement with cosinuss° high-tech biosensor

For the continuous measurement of the vital parameters relevant to COVID-19 - core body temperature, heart rate, blood oxygen saturation and respiration rate - cosinuss° provides the technical solution, based on its long-established experience in vital signs monitoring.

With the help of the cosinuss° Two, a small high-tech device that the patient wears in the ear, the relevant vital data is recorded around the clock, using high-resolution optical methods, and transmitted to a terminal device via Bluetooth.
The collected data are then sent to the TUM for evaluation, in accordance with the data protection regulations.

With this monitoring system, cosinuss° aims to create a very cost-effective, easy-to-use and quickly configurable extended workbench for healthcare facilities. It consists of the sensor (cosinuss° Two), which can be worn in the ear, a data gateway (cosinuss° LabApp or cosinuss° LabGateway) and a server database (cosinuss° LabServer).

Clear advantage over conventional procedures

Until now, COVID-19 patients in domestic isolation were supposed to measure their own values, observe themselves and contact their doctor independently if symptoms worsened. However, this manual, subjective procedure causes certain risks and delays in the process. In the worst case, timely treatment cannot take place. Thanks to the continuous automatic monitoring of vital parameters and a special early warning system, it is possible to react quickly to a deterioration in the patient's state of health. Thus the prognosis of the patient can be significantly improved. The wearable sensor cosinuss° Two records, analyzes and transmits information about the physiological, vital body signals and ambient conditions. Core body temperature, heart rate, blood oxygen saturation and respiration rate are measured around the clock, with high accuracy. This data is acquired using a red / infrared photoplethysmography (PPG) sensor, a resistance temperature sensor, and an accelerometer. In addition, a so-called PolyScore is calculated several times a day, which provides information about how well the body copes with the disease.

Close multidisciplinary cooperation

Close cooperation between the various players is important for the implementation of the study. Thus, in addition to TUM and cosinuss°, the City of Munich Health Department, the emergency services, and the Ministry of Science play a decisive role. The selection of the study participants – Munich based COVID-19 patients, aged 60 years or older, in domestic isolation - is made by the Department of Health and Environment of the City of Munich. In a special "operation center" of the TUM, medical students trained under the supervision of a senior medical doctor, continuously evaluate the measured data. When a patient's condition deteriorates, the emergency services are directly informed according to predefined rules. This enables a fast

transfer to the hospital, without any delays. The success of the measures will be assessed by comparing the Munich study data to control group data collected in a similar city, in which such monitoring is not used.

Financing through successful fundraising

Due to the delays in research funding caused by the pandemic, Prof. Georg Schmidt and his team contacted the fundraising department of TUM. Thanks to the successful fundraising, almost 500,000 EUR were collected from donors within a very short time.

About cosinuss°

With cosinuss° the ear becomes a central interface in a world of connected, mobile health. Cosinuss GmbH is a Munich-based high-tech company specializing in mobile real-time monitoring of vital parameters. For this purpose, the highly innovative team develops wearable in-ear sensors, gateways, and algorithms. More than 11 years of research and development work lays a solid foundation for the company. Numerous patents and various products make cosinuss° a pioneer in the field of mobile vital parameter measurement. www.cosinuss.com/about-us/