COVI-GAPP
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Liechtenstein study aims to help combat coronavirus pandemic

Testing a promising way of detecting infection early

A consortium led by Liechtenstein scientists and entrepreneurs Professor Dr. Lorenz Risch and Dr. Martin Risch has just launched a scientific study aimed at combating the coronavirus: the COVI-GAPP study. Around 2,000 individuals in Liechtenstein are taking part. The aim is to see whether a sensory bracelet, which is already successfully being used to monitor women's fertility cycles, can detect Covid-19 infection early. If the virus is detected early on, patients can be isolated quickly and given targeted support. Early detection also makes it easier to protect healthcare professionals and manage the limited resources of healthcare systems more efficiently. Because the study uses the existing GAPP research infrastructure, it can be started immediately. The necessary permits, including one from Zurich's Cantonal Ethics Committee, have been obtained. Most of the funding for the study comes from the Princely House of Liechtenstein and the Liechtenstein government. Initial results are expected in the autumn. The aim is to have the results of the research available before the start of a potential second wave of infection in the second half of 2020, so that effective measures can then be taken against the further spread of Covid-19.

This innovative COVI-GAPP study was initiated to help fight the coronavirus by Professor Dr. Lorenz Risch, who together with his brother Dr. Martin Risch, runs one of the leading medical laboratory centers in Switzerland and Liechtenstein, the Dr Risch Group. The institute is in charge of the "GAPP study" that was launched in Liechtenstein over ten years ago in collaboration with Prof. Dr. med. David Conen of the University of Basel. This long-term study investigates genetic and non-genetic factors that influence blood pressure and other cardiovascular risk factors in around 2,200 Liechtenstein men and women aged between 33 and 51 years. Sensory bracelets made by Ava are now being given on a voluntary basis to the same cohort – which represents more than five percent of Liechtenstein's population – in order to collect data that will hopefully allow early detection of Covid-19.

Early detection by tracking vital signs

Ava is a digital healthcare company that focuses on women's reproductive health. Based on a combination of artificial intelligence and clinical research, Ava bracelets allow women to identify the best time in their monthly cycle to conceive. The sensory bracelet is a licensed medical product that monitors five parameters during sleep: Skin Temperature, Resting Pulse Rate, Perfusion, Breathing Rate and Heart Rate Variability. The physiological data recorded through the bracelet will be used by the new study and linked to data on Covid-19 patients. The underlying hypothesis is that this will allow the creation of a new algorithm that enables identification of Covid-19 at an early stage even when no typical disease symptoms are present.

The Ava bracelet would function as an early warning system that allowed hospitals and doctor's surgeries to work efficiently and effectively when examining and treating patients. The bracelet would give healthcare professionals information about the condition of individuals infected with Covid-19 without them having to come into direct contact with these individuals or exposing

themselves to possible infection. As well as protecting health professionals, this could also relieve the strain on health infrastructure.

The research vision: not just early detection

Studies of Covid-19, including research done by the Joint Mission of the World Health Organization (WHO) with China, show that the most common symptoms are fever (88 percent of cases), a dry cough (68 percent) and shortness of breath (19 percent). In almost half of infected Chinese patients (44 percent), fever was the first symptom. A medical device like the Ava bracelet could allow early detection of illness, helping professionals to set the right priorities based on knowledge rather than intuition. But the research vision extends beyond just triage support: What if, for example, health professionals could access data on patients' vital parameters for the past few weeks and months? Alternatively, the study could probe the utility of the Ava bracelet as a remote continuous measuring device for high-risk groups that have to stay in self-isolation at home or in a care setting.

As the coronavirus crisis puts additional pressure on health systems, the digitalization of the health sector is accelerating; but while data-driven measurement and early detection methods are certainly used, they are still lagging behind traditional methods. In response to the pandemic, Ava has already begun to extend the use of its wearable medical measuring devices to other areas of the healthcare sector.

Ava hopes that as well as providing concrete health benefits for Liechtensteiners, the study will also produce valuable insights for the global deployment of its health services. The COVI-GAPP study gives the Principality of Liechtenstein an opportunity to be at the forefront of research on a subject of great importance to the international community.

Extension of the study to the whole population of Liechtenstein in second phase

Over the next few days, the cohort of subjects in the existing GAPP study will be invited to take part in COVI-GAPP. As with the GAPP study, participation is voluntary, but the study team hopes that a large number will get involved. The greater the number of participants, the more informative the results will be. The plan is to open up the study in a second phase, extending it beyond the GAPP cohort to the entire population of Liechtenstein. Information about the expansion of the study will be provided at the appropriate time.

First tangible results are expected in autumn 2020. The aim is for these results to be available in good time before the start of a potential second wave of infection, so the bracelet can be used effectively to help fight a further spread of Covid-19.

Mauro Pedrazzini, Liechtenstein's Minister for Social Affairs: "One of the primary tasks of any country is to ensure the health of its inhabitants, so it goes without saying that the government is supporting the Princely House's commitment and helping to fund this research project. As well as being in the national interest, this is also a matter of international solidarity. Just as Liechtenstein can benefit from research done abroad, other countries should be able to benefit from the results of the Covid-19 research program."

Understanding the new coronavirus better

Professor Dr. Lorenz Risch, who initiated and heads the study: "From a scientific point of view, it is vital that we get a better understanding of the new coronavirus as quickly as possible. Only then will we be in a position to identify and implement the right clinical and health policy action to improve

the health of those affected by Covid-19 and effectively contain the international health emergency. Reliable early detection of Covid-19 will help contain a further outbreak. The COVI-GAPP study we are running with our partner Ava contributes to this effort."

Lea von Bidder, co-founder of Ava: "It is important for us to understand whether simple but continuous monitoring of temperature, breathing and pulse can indicate whether or not to investigate a suspected case of Covid-19 infection further, or even seek medical treatment. This is why we are encouraging researchers from all over the world to use our fertility bracelets to collect data about Covid-19 at an early stage of the illness. We are very happy to be participating in this promising research study and to be contributing our expertise and experience."

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Photographs of the sensory bracelet can be downloaded with the following link:
https://www.avawomen.com/media/