AKTiiA

CASE STUDY

Revolutionizing blood pressure understanding

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A case study on the power of combining longitudinal BP data from a novel BP wearable sensor with real world clinical data

CHALLENGE

24/7 patient tracking and uncover data patterns

Though the causes and development of high blood pressure and other cardiovascular risk factors remain unclear for the general population, they are particularly ambiguous for young and healthy adults. Despite being in their 20s or 30s, long-term studies demonstrate that having high blood pressure substantially raises the risk of these individuals developing major health problems later in life.

In 2010, Professors David Conen at McMaster University and Lorenz Risch at the Private University of Liechtenstein initiated the GAPP study. This large, prospective cohort study aims to follow over 2,000 participants for several decades. The goal is to uncover longitudinal associations of blood pressure patterns with genetic, biomarker, and healthcare data. Potential discoveries could provide major new insights into the causes and progression of hypertension and other cardiovascular risk factors. The University of Liechtenstein sought a collaboration to help determine phenotypic and genetic factors related to blood pressure and cardiovascular disease in the Principality of Liechtenstein.

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SOLUTION

Validated technology to collect longitudinal blood pressure data

The University of Liechtenstein chose Aktiia's innovative 24/7 blood pressure technology to play a key role in its ongoing research and groundbreaking study. Aktiia's clinically validated device was the first in the world to passively collect longitudinal blood pressure data, making Aktiia the ideal partner for the university's collaboration to gain a deep understanding of the phenotypic and genetic factors related to cardiovascular health.

As a pioneer in cuffless technology, Aktiia will provide valuable insights and data to the GAPP study with little added burden on participants. By utilizing their innovative technology, Aktiia captures an average of 27 blood pressure readings per participant daily. This extensive dataset will revolutionize the analysis of blood pressure during the study and allow for a far greater understanding of the role blood pressure plays across a myriad of health outcomes.

The Genetic and Phenotypic Determinants of Blood Pressure (GAPP) study is an ongoing, prospective investigation of the genetic and phenotypic factors that influence blood pressure and other cardiovascular disease risk factors. The study cohort consists of a general population sample of initially healthy adults aged 25-41 years at study entry and living in Liechtenstein. Participants were excluded if they have existing cardiovascular disease, diabetes, sleep apnea, daily NSAID use, or severe obesity (BMI over 35 kg/m2). Comprehensive medical, lifestyle, and nutritional assessments are completed for each participant on a regular basis. Standardized measurements are taken for weight, height, waist circumference, clinic and 24-hour ambulatory blood pressure, 12-lead and 24-hour Holter ECG, bioimpedance analysis, blood and urine sampling, spirometry, and sleep pulse oximetry with nasal flow. These comprehensive health examinations occurred at baseline, with follow-up exams occurring every 3-5 years. Aktiia's technology will now provide continuous ambulatory blood pressure data, enabling more robust data analysis than previously possible.

This ability to collect and analyze exponentially more blood pressure data over time holds immense promise for gaining new insights into the phenotypic determinants of cardiovascular disease risk and improving risk prediction models.

//III UFL Private Universität im Fürstentum Liechtenstein   McMaster University   GAPP studie www.blutdruck.li

Impact from the collaboration

With 250 Aktiia devices deployed in the study since Autumn 2023, each collecting an average of 27 measurements per day, the researchers have and will continue to benefit from over 6,000 BP data points per day.

This volume of BP measurements is unprecedented when compared with traditional BP technologies, and by leveraging the power of modern data science, Machine Learning & Artificial Intelligence, the collaboration is expected to improve the cardiovascular health of the Liechtensteiners recruited to the study, while uncovering previously undiscovered associations between blood pressure and health outcomes that arise during the course of the research.

2000 Patients

27 BP readings daily

24/7 Participant Engagement

Reducing future cardiovascular risk in young and health people

The GAPP study offers an exceptional opportunity to assess genetic and phenotypic markers that predict cardiovascular risk factors and track their progression over time in a young, healthy general population sample. The GAPP study investigators aim to explore the added value of Aktiia's 24/7 blood pressure monitoring technology for identifying cardiovascular risk factors and enhancing risk prediction. This continuous blood pressure data collection holds great promise for advancing blood pressure research. In the long term, this collaboration seeks to uncover new signals for optimizing blood pressure sustainably. By leveraging the robust GAPP study database and Aktiia's innovative technology, we can enable more personalized, proactive, patient-centered healthcare, and gain a deeper understanding of the role blood pressure plays across a range of health outcomes. The long-term vision for this collaboration is to uncover novel signals for blood pressure optimization. By drawing on the extensive GAPP study database and Aktiia's innovative technology, the goal is to pave the way for more personalized, proactive, and patient-driven healthcare.

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Aktiia's partnerships with renowned institutions and experts highlight the demand for adopting novel technologies in scientific research. As a pioneer in blood pressure technology, Aktiia continues to strengthen its position through these key collaborations.

If you would like to consider adding Aktiia to your research programs, **contact sales@aktiia.com**

" We are excited to be able to expand our activities to next level research to better understand blood pressure variations using long term recordings. **"**

PROFESSOR LORENZ RISCH

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" Combining population research with cutting edge technology has a great potential to improve health in the society **"**

PROFESSOR DAVID CONEN