HORIZON 2020

Smart ICT-solution to cost-efficiently detect atrial fibrillation to Reduce Europe's burden of Stroke

Results in Brief

Digitising stroke detection – and prevention

Using your smartphone's camera and an app, a new algorithm can detect the potential existence of atrial fibrillation, a key risk factor for stroke.

HEALTH

© Pixelheadphoto digitalskillet, Shutterstock

As the second most common cause of death, strokes kill over 1 million Europeans every year. But considering that nine out of every ten strokes can be prevented, one has to wonder, why are so many people dying from strokes?

One of the main risk factors for stroke is atrial fibrillation, or A-fib, an irregular, usually rapid heart rhythm that causes blood clots to form in the heart.

"We know that A-fib increases the risk of having a stroke by five times," explains Christoph Eisert, director, Programmes and Business Development at Preventicus, a German company specialising in managed care and stroke prevention. "The problem is that because the condition is often very sporadic, it is very difficult to diagnose."

In fact, the chances of detecting A-fib using standard procedures such as in-office or 24-hour electrocardiogram (ECG) are only around 20 %, or about one out of every four patients.

“Although ECGs that last longer, such as for 14 days, increase the chances of detecting A-fib, such procedures are very expensive,” adds Marc Kreiser, head of Marketing and Product Management at Preventicus. “As a result, the vast majority of people do not get the screening needed to detect A-fib.”

But this could soon change – and it all starts with your mobile phone and an app.

Revolutionising stroke prevention

With the support of the EU-funded RedStroke project, the team at Preventicus has developed a digital solution set to revolutionise stroke prevention. “You simply take your smartphone and hold your finger on the camera lens for one minute,” says Kreiser. “The app takes care of the rest.”

As Eisert explains, the app uses the camera as a light source to illuminate the surface of the skin, allowing optical sensors that use photoplethysmography (PPG) to measure your pulse.

“This data is then fed to an algorithm that analyses it and looks for irregular heart rhythm and especially A-fib,” remarks Eisert. “In this manner, it acts as a convenient, cost-effective tool to screen for A-fib and prevent stroke.”

More than just convenient, the RedStroke system is also extremely accurate. According to Eisert, the app has an overall accuracy rate of 96 %. More so, if there are signs of A-fib, studies have shown that the positive predictive value goes up to 99 %.

Reducing the risk of stroke

Not surprisingly, this level of accuracy, along with its convenience, has caught the attention of physicians. In Germany, Preventicus has partnered with cardiologists, who receive patient data from RedStroke and, based on the analysis, can take the necessary steps to make a diagnosis.

“RedStroke is meant to serve as an initial screening, making patients and physicians aware of the potential existence of A-fib,” notes Kreiser. “The physician can then conduct a comprehensive 14-day telemedical ECG to diagnose the condition and begin the necessary treatment to reduce the risk of stroke.”

“For the first time, A-fib screening can be available to everyone, regardless of risk factors, insurance or access to cardiological care,” adds Eisert. “If you have a smartphone, you can take a proactive role in monitoring your risk of stroke.”

The Preventicus team has successfully launched A-fib screening in Germany and is currently working with regulators, physicians, telehealth providers, insurance companies and other stakeholders to bring the RedStroke system onto European and global markets.

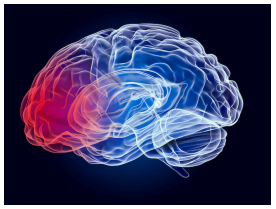
They are also looking into how the underlying technology could be used for other cardiovascular screenings and tests.

Keywords

RedStroke, stroke, stroke detection, stroke prevention, algorithm, atrial fibrillation, A-fib, ECG, cardiologist, telehealth

Discover other articles in the same domain of application

Night-time seizure detector improves quality of life for epileptic patients and carers



Improving the control of patient symptoms in Parkinson’s disease

3D printed devices set to revolutionise the study of cardiovascular diseases

Killing two poultry bugs with one therapy without risk of resistance

Project Information

RedStroke

Grant agreement ID: 829639

Project website

DOI
10.3030/829639

Project closed

EC signature date
10 October 2018

Start date
1 November 2018

End date
31 December 2021

Funded under
INDUSTRIAL LEADERSHIP - Innovation In SMEs

Total cost
€ 3 555 382,00

EU contribution
€ 2 488 767,40

Coordinated by
PREVENTICUS GMBH
Germany

Related articles

SCIENTIFIC ADVANCES

The path to better care of atrial fibrillation patients

28 June 2023

SCIENTIFIC ADVANCES

Advances in detection of erratic heart rhythm

30 November 2022

Last update: 20 May 2022

Permalink: https://cordis.europa.eu/article/id/436382-digitising-stroke-detection-and-prevention