Preventice Solutions Presents Real-World Performance of Wearable ECG Monitoring Technology using Deep Learning Algorithms for Detecting Atrial Fibrillation

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Minneapolis - May 8, 2019 – At Heart Rhythm 2019, the Heart Rhythm Society's 40th Annual Scientific Sessions, Preventice Solutions will present clinical data validating its BodyGuardian® Remote Monitoring System with the BeatLogic™ deep learning platform. This technology leverages machine learning and artificial intelligence (AI) for detection of atrial fibrillation (AF) and was validated using clinician adjudicated data. The BodyGuardian® Remote Monitoring System is designed to create a constant connection to monitor cardiovascular data in patients outside the clinic while they go about their daily activities. The data was presented by Hamid Ghanbari, MD, MPH, FACC from University of Michigan in Ann Arbor and Ben Teplitzky, PhD, and Mike McRoberts, from the Preventice data science team.

"One of the exciting advances in the diagnosis of AF is the use of machine learning techniques and deep learning technology because it can allow physicians to manage the massive amount of data that is collected," said Dr. Hamid Ghanbari, MD, MPH, a cardiovascular electrophysiologist at the University of Michigan, where he treats patients who have arrhythmias. "Sensor technologies are creating so much data it's not feasible for physicians to be able to manage and review all of it. With accurate artificial intelligence to identify AF episodes, physicians can focus more on how their patients are feeling and the treatment approach they should take in each case. Artificial intelligence is freeing up the human potential with remote monitoring technologies."

Results from the study demonstrate how the BeatLogic™ deep learning platform is used to accurately detect the beginning and end

of arrhythmias ensuring accurate burden calculations and maximizing clinical value. The platform leverages multiple deep neural networks to detect AF episodes at rates that meet or exceed the best reported values within the literature. Perfect detection performance was achieved for AF episodes lasting more than one minute.

The study evaluated the AF detection performance of the Preventice BeatLogic™ platform using real-world clinician adjudicated data. The BeatLogic™ platform consists of multiple deep neural networks, which were trained using data from 10,946 BodyGuardian® Heart patients. Performance was measured using real-world BodyGuardian® Heart data from 512 patients that was annotated and then adjudicated by three board certified electrophysiologists. Specific results showed:

- AF duration sensitivity (Se) and a positive predictive value (PPV) were 95.9 percent and 99.2 percent, respectively

- Episode detection Se and PPV were 96.7 percent

- Episode detection Se and PPV increased to 100 percent for AF episodes with duration >1 minute.

Wearable patch ECG monitoring quantifies AF burden using a combination of algorithms and trained technicians. New deep learning algorithms have improved the performance with respect to accurately detecting the presence of AF using algorithms. By leveraging multiple deep learning networks, the Preventice system is capable of accurately capturing the beginning and end of AF episodes, providing physicians with important clinical context for determining the appropriate treatment approach.

"Our focus in advancing Preventice remote monitoring technologies is on how to make these technologies most meaningful to the physician and the patient," said Jon Otterstatter, Chief Executive Officer, Preventice Solutions. "Given the large amount of data available through remote monitoring, we're investing heavily in machine learning, designing and validating algorithms. The precise detection of cardiovascular events, like AF, is critical to reaching an accurate diagnosis and treatment."

Dr. Ghanbari has received consultation fees from Preventice for advising on remote monitoring technology and services.

About the BodyGuardian® Remote Monitoring System

BodyGuardian Heart is a small, lightweight, wireless monitor in the BodyGuardian family of monitors. It records important physiological data such as heart rate, ECG, respiratory rate and related activity. Through Bluetooth®, the smartphone can also capture additional physiological measurements such as blood-oxygen, glucose levels, blood pressure and weight, anytime, anywhere. The system creates a virtual connection between patients and their care teams, allowing physicians to monitor vital signs outside the clinical setting.

The BodyGuardian® Remote Monitoring System includes integration of the BodyGuardian family of monitors and additional third-party sensors, the BodyGuardian Connect smartphone patient application and the PatientCare Platform. The system utilizes machine learning to remotely recognize AF and integrate data into the electronic health record. Patients wear cardiac monitors, which feed real-time data into the cloud-based health platform that physicians can access. Growing clinical use resulting from increased incidence of cardiac disease and a rising aging population forces a greater reliance on algorithms in order to provide high-quality reporting in a timely manner. These factors are amplified in the case of mobile cardiac telemetry (MCT), where ECG is streamed directly to data processing centers, annotated, and may be used to quickly alert clinicians of potentially critical cardiac events.

About Preventice Solutions

Preventice Solutions is a leading developer of mobile health solutions and remote monitoring services that connect patients threatened by cardiac arrhythmias with their care teams. Using insights to create revolutionary monitoring technologies, this tech-enabled, service-based approach can ultimately reduce the cost of care and improve health outcomes. The Preventice wearable portfolio includes the PatientCare Platform and BodyGuardian family of monitors. For more information please visit www.preventicesolutions.com