

AI Can Detect Abnormal Heart Rhythms



Researchers at the Smidt Heart Institute at Cedars-Sinai have uncovered the potential of an artificial intelligence (AI) algorithm to detect abnormal heart rhythms in individuals who are not yet displaying symptoms. This innovative algorithm, capable of identifying concealed signals within common medical diagnostic tests, holds promise for aiding physicians in preventing strokes and other cardiovascular complications in individuals with atrial fibrillation, the most prevalent type of heart rhythm disorder.

In contrast to previous algorithms, which were primarily tailored for white populations, this new algorithm demonstrates its effectiveness across diverse settings and patient demographics, encompassing U.S. veterans and underserved communities. The results of this research were recently published in *JAMA Cardiology*.

Dr David Ouyang, a cardiologist at the Smidt Heart Institute at Cedars-Sinai and a researcher in the Division of Artificial Intelligence in Medicine, is the senior author of the study. He emphasised the significance of this research, stating, "This research allows for better identification of a hidden heart condition and informs the best way to develop algorithms that are equitable and generalisable to all patients'.

Findings reveal that approximately one in three individuals with atrial fibrillation are unaware of their condition. In atrial fibrillation, the heart's electrical signals governing blood pumping between its chambers become chaotic. This irregularity can lead to blood pooling in the upper chambers, forming blood clots that may potentially travel to the brain and trigger an ischaemic stroke.

The development of this algorithm involved programming an artificial intelligence tool to analyse patterns present in electrocardiogram (ECG) readings. An ECG test monitors the heart's electrical activity by employing electrodes placed on the patient's body. The algorithm was trained using ECG readings from January 1, 1987, to December 31, 2022, collected from patients in two Veterans Affairs health networks, encompassing nearly one million ECGs. Impressively, it accurately predicted cases of atrial fibrillation within a 31-day timeframe.

The AI model was also applied to medical records from Cedars-Sinai patients, demonstrating similar and accurate predictions of atrial fibrillation within 31 days. Dr Sumeet Chugh, the director of the Division of Artificial Intelligence in Medicine in the Department of Medicine and medical director of the Heart Rhythm Center in the Department of Cardiology, highlighted the study's diversity and relevance, stating, "This study of veterans was geographically and ethnically diverse, indicating that the application of this algorithm could benefit the general population in the U.S".

The research team will continue studying the algorithm in prospective clinical trials to determine its effectiveness in identifying individuals at risk for heart attacks and strokes. They also plan to develop additional AI algorithms to further enhance cardiac condition management.

Source: [Cedars-Sinai Medical Center](#)

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