



The Apple Watch has already saved lives (<http://www.macworld.com/article/3099664/ios/how-my-apple-watches-heart-rate-monitoring-saved-my-life.html>) with its heart rate-monitoring, but it's often unintentional. A person might feel symptoms like dizziness or shortness of breath, then check their heart rate to confirm something weird is going on. A team of researchers just proved that the watch's heart rate sensor can actually detect an early sign of heart disease without any symptoms at all, a development that could change how people use their Apple Watches.

The Apple Watch's heart rate sensor can accurately pick up atrial fibrillation, an abnormal heart rate that can lead to stroke or heart disease. Atrial fibrillation can be caused by a variety of factors, including high blood pressure, so the Apple Watch isn't a diagnostic device. But its accurate heart rate sensor shows there is potential for the watch as a health and fitness tool (<http://www.macworld.com/article/3056689/hardware/apple-watches-second-year-health-apps-will-make-it-a-must-have.html>) beyond its basic fitness-tracking features.

Developers of the Apple Watch app Cardiogram (<https://itunes.apple.com/us/app/cardiogram/id1000017994?ls=1&mt=8>) worked with researchers leading the University of California San Francisco's Health eHeart study (<https://www.health-eheartstudy.org/>) to develop a ResearchKit-based study of their own called mRhythm (<http://cardiogr.am/research/>). On Thursday, Cardiogram and UCSF's cardiology division are presenting the results of that 14-month study, which collected more than 100 million heart rate data points from more than 6,000 Apple Watch users. Cardiogram developed a machine learning-powered algorithm that can detect atrial fibrillation, which is often asymptomatic.

Cardiogram's algorithm was tested against an in-hospital test called cardioversion. Patients experiencing atrial fibrillation, which affects one in four people in their lifetime and causes 25 percent of all strokes, wore an Apple Watch while undergoing cardioversion to compare outcomes. Both segments, the cardioversion test and the Apple Watch's heart rate data, were blinded against whether the patients' heart rates were normal or abnormal, then sent to Cardiogram's algorithm. The results: the Apple Watch data detected atrial fibrillation 97 percent of the time.

Cardiogram developer Brandon Ballinger said the results were surprising.

