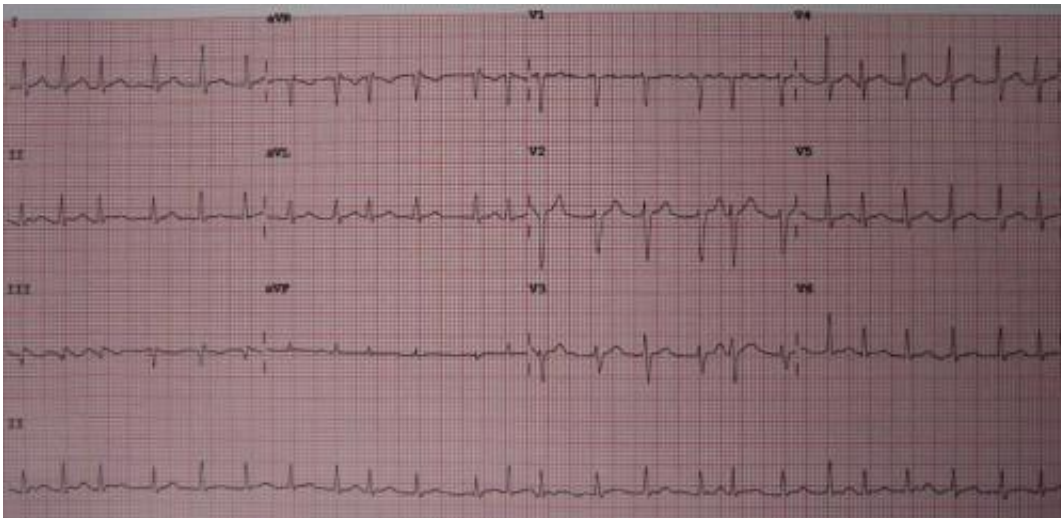# How AI helps people with atrial fibrillation

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A 12 lead ECG showing atrial fibrillation at approximately 150 beats per minute. Credit: James Heilman, MD/Wikipedia/CC BY-SA 3.0

Atrial fibrillation is an irregular and often rapid heart rate that can increase your risk of stroke and other heart-related complications. Up to 6.1 million people in the U.S. have the condition, according to the Centers for Disease Control and Prevention.

Dr. Paul Friedman, a Mayo Clinic cardiologist, uses artificial intelligence (AI) to identify people with atrial fibrillation in hopes of getting them on lifesaving treatment before adverse events happen.

A small device may change how health care providers identify and manage patients with atrial fibrillation—an irregular heart rhythm that

increases risk of stroke.

"It's looking into the future," says Dr. Friedman.

And it's looking into the past. The device uses AI to not only determine if a person is in the midst of an episode of atrial fibrillation, but also it can reveal if they've had the irregular rhythm before or will have it in the future.

"It gets very good at seeing very subtle patterns, at times hidden in plain sight, and things that a human can't see," says Dr. Friedman.

Dr. Friedman and his team trained the device to detect subtle changes in the heart's electrical signals. Then in a study, they found it can identify patients with episodic atrial fibrillation. Even when they record the heart while the rhythm is normal—something no current wearable heart monitor can do.

"If you're recording an EKG at the time of an abnormal heart rhythm like atrial fibrillation, then either a human or a machine can read the EKG and say, "Atrial fibrillation is here." And when we know it's here, then we know there are a number of specific treatments like blood thinners that prevent stroke. And the real trick has been that in people in whom it's intermittent, you may not detect it easily," says Dr. Friedman.

That's because a heart monitor won't detect atrial fibrillation unless you have an episode while wearing it. But in a matter of moments, the AI device can identify people with atrial fibrillation, even if their heart is in normal rhythm. Then they can get on the right treatment to help prevent life-threatening strokes.

"As with most medical tests and tools, we start in the highest risk groups because that's where we can more clearly see the benefit and how well

it's working. And then once we're comfortable that it's working, then we start to adopt it in other populations," says Dr. Friedman.

Iwona Srienc has atrial fibrillation. Before treatment, symptoms ? a racing heart, weakness, lightheadedness and shortness of breath ? disrupted her life.

"My blood pressure was dropping and I would have to shake my head to get out of it. And I was always praying that I wouldn't faint. I just couldn't function," says Srienc.

Scrienc was lucky. She started treatment for atrial fibrillation and has not had a stroke. She believes that had the new AI technology been available sooner, it could have possibly saved her mom.

"My mother had AFib and she finally ended up with a stroke. And, you know, and another five years later she died because ... we didn't have this technology to discover what is going on inside us that we ... do now," says Srienc.

A device, trained by experts, to see into a patient's past and future heart health.

"Just think about the complexity of that task. That's as if I asked you to look at the ocean today on a calm day and tell me were there big waves yesterday. It is amazing. It's absolutely stunning," says Dr. Friedman.

Dr. Friedman and his team completed a study that confirms the device works. Before it can be widely available more study is needed. They're planning a study to test it.

"Because like any tool in medicine, we have to be very rigorous and thoughtful in making sure that it works in a true clinical environment,"

says Dr. Friedman.

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