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## Doctors, the WHO and the CARDIS

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**European doctors and scientists have developed a handheld scanner called the CARDIS that can detect the early signs of heart disease.**

According to the World Health Organisation (WHO), cardiovascular disease (CVD) is the leading cause of death today, responsible for around 30 per cent of the total global figure. Using a technique known as laser Doppler vibrometry, the CARDIS (CARDiovascular disease Detection with Integrated Silicon photonics) picks up some of the signs associated with common CVD conditions such as heart attacks, strokes and coronary heart disease.

The device measures the Doppler shift of a reflected laser, building up a vibration map of the chest and heart area. According to the team behind the CARDIS, this map can highlight the warning signs of CVD, such as plaque build-up, arterial stiffness, arterial stenosis and heart dyssynchrony.

"Our device employs the latest photonics technology, allowing a user to make measurements of the vibration characteristics of the heart without even touching it," said project coordinator Dr Mirko de Melis

"A stiff artery creates a faster pulse pressure from the patient's beating heart. By measuring the 'pulse wave velocity', we can assess the stiffness of the arteries using light and make informed judgements, long before the onset of cardiovascular disease."

Costing around €1,500, the CARDIS will be relatively inexpensive in comparison to other heart diagnostic tools such as echocardiographers (around €100k) and arterial tonometers (around €5,000). The project, which is part of the EU Horizon 2020 programme, aims to make the device available at the GP-patient level, where it will have the greatest potential for impact.

"The screening of potential sufferers, who are in their early 40s, would delay the onset of the condition by 5-10 years," said de Melis. "It is the potential savings on our health services caused by the early diagnosis and prevention of CVD that will be the most rewarding."

So far, only a demonstration model of the CARDIS has been developed, but a more advanced prototype is expected by the summer of 2018.

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