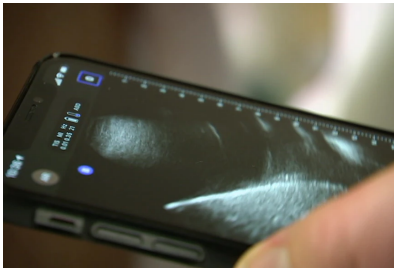


Portable ultrasound devices could see doctors throw away their stethoscope!

By Maddison Cunningham

Professor Royce believes that this new handheld ultrasound technology connected to mobile phones will inevitably make stethoscopes obsolete. Royal Melbourne Hospital and the University of Melbourne have begun using the Butterfly tool. This small hand held device is an ultrasound technology that connects live to any mobile phone. It is instantaneous and allows diagnosis and treatment to be more accessible and efficient. This small device reduces all the extra time that was once necessary to get the machine to and from patients and to get the results back. These Butterfly tools are also cheaper, only costing \$3,000 whereas the next cheapest portable item costs approximately \$20,000. Ultrasound also makes it more accurate, faster and safer as there is no radiation involved. When interviewed by the ABC, Professor Royce said, *"This is dramatically going to change the way medical practise is done. I genuinely think this is the opportunity to throw away your stethoscope."*



Mobile phone app that sees doctors put away their stethoscopes Professor Royce performing an ultrasound test

Ultrasound imaging uses sound waves to produce photographs of the inside of the human or animal body. Ultrasound can diagnose the cause of several medical symptoms such as swelling, pain and infection in the body's internal organs. It is also used to examine babies in the womb. Furthermore, ultrasound is also used to examine the brain and hips of infants. Ultrasound also assists with guiding biopsies, diagnosing heart conditions and assessing damage after a heart attack has occurred. Ultrasound is noninvasive and safe as no ionizing radiation is present. Ionizing radiation is the energy produced from natural or artificial sources. This type of radiation has enough energy to cause chemical changes by breaking chemical bonds; which can cause damage to living tissue. Therefore the use of an ultrasound device without ionizing radiation is much safer for all patients. Ultrasounds are very intricate sound waves. When a sound wave comes into contact with an object, it echoes. The wave bounces back and by measuring the time it took the waves to travel; it is then possible to determine how far away the object is. The length of the echo waves can also show the object's shape, consistency, size and whether the object is solid or filled with a fluid. An ultrasound transducer sends the sound waves and records the echoing waves. When the transducer is against skin, it sends small pulses of high frequency sound waves into the patient's body. As the waves echo off of the internal tissues, fluids and organs, the receiver in the transducer records the miniscule changes in the sound's direction and pitch. The waves are measured and displayed on the mobile phone instantly and creates a real-time experience. Some of the frames of the moving pictures are captured as still images for later research or required data. Short video loops of the images can be created and saved for later use.

It is apparent that this new ultrasound technology will be efficient and life-changing for doctors and patients alike. The sound waves that bounce off the patient's internal organs are completely safe, therefore putting worrying patients at ease. This type of technology is very advanced and is quite revolutionary. With no ionizing radiation, these Butterfly tools are going to be necessary all over the world. As Professor Royce said, *"This is dramatically going to change the way medical practise is done. I genuinely think this is the opportunity to throw away doctors' stethoscopes."*

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