

# Handheld ultrasound technology can help medical students improve their physical diagnosis

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A new study by researchers from Icahn School of Medicine at Mount Sinai found that training medical students to use a handheld ultrasound device can enhance the accuracy of their physical diagnosis. The study was presented November 18 at the American Heart Association's Scientific Sessions 2014.

The study by Icahn School of Medicine at Mount Sinai included a 90-minute, personalized lesson for 64 second-year [medical students](#) in how to use handheld echocardiography technology, with a review of a 3D cardiac anatomy model, video images of normal echocardiograms, and the opportunity to test the handheld device on classmates.

The study's goal was to evaluate an entire medical student class and observe if a group of novice medical students given this training could employ the technology successfully to achieve more accurate diagnosis of [valvular heart disease](#) than 72 of their classmates who received only traditional instruction in how to review medical histories and analyze [heart](#) murmur sounds using a stethoscope.

Valvular heart disease is when one or more of the four valves inside the heart are not functioning properly leading to improper blood flow throughout the heart. The condition can be caused by an infection, heart disease, or a heart attack. Heart valve disease is traditionally first suspected when a doctor hears a [heart murmur](#) while listening to a

patient's heart using a stethoscope. An echocardiogram machine, or a handheld echocardiography device, is a tool which uses sound waves to create images of the heart for doctors to visually identify any irregular heartbeat or valve abnormalities.

After all 136 students in the Cardiac Pathophysiology course took the identical final examination test, results showed that those with the enhanced training in handheld technology were more likely than the students with standard training to correctly diagnose valvular [heart disease](#), 58 percent versus 40 percent, when the students were additionally provided with video of echocardiograms.

"As the field of medicine grows more complex, our study findings show that the addition of handheld echocardiography as a component of students' diagnostic skill set can substantially enhance the accuracy of physical diagnosis, even when introduced at the earliest stages of the students' training," says the study's lead author David Vorchheimer, MD, Associate Professor of Medicine, Cardiology at Icahn School of Medicine at Mount Sinai. "We have shown that even a limited 90-minute training session with the small, portable handheld ultrasound device can give medical students and other healthcare professionals in the hospital or the community the ability to more quickly and more accurately diagnose certain heart conditions," added Dr. Vorchheimer, also the new Director of Clinical Cardiology at the Montefiore Einstein Center for Heart and Vascular Care.

The Vscan device used in the study, made by GE Healthcare, is an echocardiography handheld device that permits rapid assessment of cardiac size, structure, function, and hemodynamics or blood flow. The device can fit in the hand of the physician and its screen is the size of a smart phone.

"Imaging is going to become an essential component of medical

education. Icahn School of Medicine at Mount Sinai's education project 'Seeing is Believing,' is currently evaluating the role of this strategy," says the study's principal investigator Jagat Narula, MD, PhD, Professor of Medicine, Philip J. and Harriet L. Goodhart Chair in Cardiology, and the Director of Cardiovascular Imaging Program at Icahn School of Medicine at Mount Sinai. "Mount Sinai is at the forefront of equipping future doctors with the most advanced tools possible to help them in their learning today, and with the patient care of tomorrow."

Provided by The Mount Sinai Hospital

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