

The doctor will see you now (from the other side of the world)



Women queue for their echo exam in Sirsa, India

Sirsa, India and Waimea, HI – On a Monday in late January, New York cardiologist **Dr Partho Sengupta** (Mount Sinai School of Medicine) rose early, joined his colleagues for a light breakfast of vegetable-stuffed *paratha*, then set out into a cool and hazy morning for what the **American Society of Echocardiography** (ASE) is hailing as its first major international medical mission. Just a few miles away, upward of 12 million men, women, and children were converging on the "sociospiritual" Dera Sacha Sauda meditation camp in Sirsa, India, many of them having preregistered to undergo cardiovascular screening. In other countries, in different time zones around the world, cardiologists were logging on to their computers, ready to receive and review cardiac images from patients they themselves would never lay eyes on.

By all accounts, the ambitious **ASE Global: Focus on India** project, was a roaring success. Over the course of two days, a team of US sonographers and cardiologists who traveled to this remote corner of India, 250 km northeast of Delhi performed [handheld echocardiograms](#) on just over 1000 people. The scans were uploaded from Sirsa to a secure "cloud," then downloaded and read by volunteers around the globe.

Several of those volunteers were echocardiographers attending the annual ASE **Echo Hawaii** meeting, which also acted as the coordinating center for the project. But a call to members worldwide led to 75 physicians in countries as far afield as Greece, Bulgaria, Georgia, and Saudi Arabia, as well as in the US and Canada, volunteering their time to read the incoming images.

"We thought it would be sort of the ultimate technological achievement if we could have echos performed in northwest India being interpreted at Echo Hawaii and elsewhere and, in fact, interpreted before they were even performed, given the time differences," ASE president **Dr James Thomas** (Cleveland Clinic, OH) told [heartwire](#).

Smaller-scale project expanded

Sengupta, who was born in the more central Indian city of Nagpur, told **heartwire** that the idea of scanning the hearts of rural, underserved Indians came to him when he first saw the new handheld **Vscan** echo machines developed by GE and realized the potential for remote echocardiographic consultation. Sengupta, who knew of medical "camps" offered at Sirsa, organized a smaller-scale remote echo project last year. When he described to his colleagues what he'd accomplished in 2011, other ASE members perked up their ears.

"[Sengupta] came back with such enthusiasm and excitement about doing something on a bigger scale that we set about maybe six months or so ago trying to get the logistics in place to do something like this on a scale that would let us screen over a 1000 people in a matter of days," Thomas told **heartwire**. Physicians at

Medanta Medicity in Delhi were putting the project in motion, Sengupta said, from obtaining approval from the Indian government to coordinating local health workers in the Indian state of Haryana. January 23 and 24 were chosen for this year's echo project to coincide with an annual event commemorating the birth of the meditation camp's founding guru, January 25, which typically draws millions of followers (figures provided to **heartwire** ranged from 12 to 15 million people attending this year's *Bhandara*).

In all, the nine volunteer sonographers, accompanied by two cardiologists from the US, performed Vscan echos on 1030 men, women, and children over a two-day period. All of those who ultimately underwent a handheld echo had either symptoms of undiagnosed heart disease or had previously been diagnosed with a cardiovascular problem but were still symptomatic, and all were first screened by local paramedical volunteers. In the end, "very few" of those screened had normal echos, while others had serious long-term problems.

Originally, Sengupta said, the plan was to restrict screening to adult patients, but in the end, "we saw the full range, from children to elderly. We ended up having some small babies as well, and it was tough to turn them down."

All of the echocardiographers interviewed by **heartwire** spoke of some of the unusual diagnoses they made, marveling that some of these patients were just going about their lives, oblivious to the underlying cause of their symptoms.

"We came across some fascinating cases that we very rarely see in the United States," Thomas said. "First of all, they have rheumatic heart disease like we haven't seen in this country for 50 years or more. So, severe mitral stenosis with massive left atrial enlargement and severe pulmonary hypertension from that, and there were several cases like that."

Volunteers also diagnosed countless cases of adult congenital heart disease. "Here [in the US] most of that would be picked up in infancy and corrected, but there you'd have a 40-year-old man walk into the tent and you can look at him and tell that he's got clubbing in his fingers and he's clearly got cyanotic heart disease, and you have no idea what you're going to pick up when you put the probe down," Thomas said. Equally apparent were signs of ischemic disease, Thomas added, "which is becoming endemic in India as diets become more westernized. There's also an increase in cigarette smoking and diabetes."



Drs Tom Porter (L) and James Thomas (R) read echos at Echo Hawaii

Sengupta, working alongside the sonographers in Sirsa, said that a handful of very ill patients were admitted to a nearby hospital directly from the camp for urgent care. "There were some people roaming around with all kinds of diseases, it was unbelievable. Some of the sonographers from [the US], they just couldn't believe what they were seeing and how much these people really needed the help."

Everyone scanned was given a provisional report on the spot by Indian cardiologists and other local healthcare workers who spoke the languages of the people attending the camp—mostly Hindi and Punjabi, as well as some local dialects. Echocardiographers waiting at the computers around the world provided a full report, according to an agreed-upon format, that they sent by email back to the cardiologists on-site in India. But Sengupta believes the ability to provide some information on the spot to patients will have an impact.



Dr Partho Sengupta performing a handheld echo in Sirsa

"It will make a difference to their lives, I think, educating them, letting them know what's wrong. Ultimately you can't force a patient [to get treatment], but you can motivate them, make them understand their choices. If they don't know what they have, what they are walking around with, then they don't realize that these are all potentially lethal diseases. . . . Rheumatic disease with very tight valves, large septal defects, many congenital anomalies, biventricular dysfunction—just an amazing array of diseases we were uncovering."

As such, the project was educational not only for the Indian physicians and other healthcare workers who volunteered and worked alongside the ASE delegation in Sirsa, but also for cardiologists internationally, who had a chance to consult on such unusual cases, albeit from a starkly different setting. Sirsa is small city sustained by light industry in an arid corner of India. Echo Hawaii was held this year at the four-star Hapuna Beach Prince Hotel.

What was "strange," Thomas conceded, was "consulting" on patients—many of them very ill—without actually meeting and talking with them face-to-face. "We got essentially no history on these patients at all; we were lucky if we had an age and a sex, but that was about it. So, you know, this was not at all the way we would normally be operating at the Cleveland Clinic, [but] still, I think we were by and large able to make diagnoses very accurately even from 8000 miles away."



Dr Patricia Pellikka

ASE president-elect **Dr Patricia Pellikka** (Mayo Clinic, Rochester, MN), who also read echos from Hawaii, agreed. "It would have been interesting to be able to interact with the patients—that's one of the nice things about the practice of medicine—but this was the only way to do this, with limited resources: we couldn't bring a large number of cardiologists over to India; the project just becomes too complicated. So we work with what we can do. . . . It's just fantastic that we have the technology that supports this."

Pellikka said she hopes to be able to go to India as part of the project next year and see the camp firsthand.

What next for the newly diagnosed?

Organizers say they have also put in place processes to help the newly diagnosed patients, many of them poor and living in remote areas, get medical attention.

"We are trying to make sure that every single patient who had a problem detected that merits immediate intervention gets it, and we are making sure that our volunteers pursue them to make sure they follow up," Sengupta said. When they signed up for prescreening, all registrants were required to provide cell-phone numbers and other ways they could be contacted.

But will the use of this technology, and the diagnoses made, actually lead to appropriate, timely care? "Obviously that's the \$64 000 question," Thomas admitted. "What now? I know that Partho has been in touch with a lot of these very prominent cardiologists in India, and there are charity hospitals throughout India that have agreed to perform procedures essentially free of charge. So I think the care is available, but it is obviously a challenge to make sure people are taken care of."

Sengupta told **heartwire** that he hopes to get follow-up information over the next few months as to how successful physicians and volunteers in India have been at making sure the men, women, and children screened in Sirsa received follow-up care.

In the meantime, ASE is looking into doing similar projects in rural China, South America, and the Middle East and making the most of the accuracy and portability of handheld echo. For the Indian project, GE Healthcare provided the Vscan devices used at the camp, as well as a \$40 000 educational grant for the project to help support travel and accommodations for sonographers. Pellikka noted that other ultrasound vendors are developing handheld devices and "may be involved in the future."

There are few other portable technologies in medicine, besides the so-called "pocket echo," that offer so much diagnostic information, coupled with the capacity for fast, remote transmission and consultation, she stressed. "Just the idea of being able to apply that to help people who otherwise would likely never have access to any kind of echo technology seems like such a fabulous idea," Pellikka said.

Vscan echocardiograms, from patients screened in Sirsa, were provided by the ASE. Pellikka, Sengupta, and Thomas all had no financial conflicts of interest.

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