

Reusing pacemakers from deceased patients is safe and effective, study finds

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Many heart patients in India are too poor to afford pacemakers. But a study has found that removing pacemakers from deceased Americans, resterilizing the devices and implanting them in Indian patients "is very safe and effective."

Dr. Gaurav Kulkarni of Loyola University Medical Center is a co-author of the study, published online ahead of print in the [American Journal of Cardiology](#). Kulkarni helped conduct the research before coming to Loyola while he was a medical student in India.

Fifty-three poor [patients](#) in Mumbai received pacemakers that had been donated by the families of deceased Americans. Following operations to reimplant the devices, all Indian patients were alive and doing well, researchers reported.

The Indian patients had severe [heart rhythm disorders](#) called complete heart block and [sick sinus syndrome](#). Typically, the slightest [physical exertion](#) would leave them gasping for breath and exhausted. Without pacemakers, they likely would have died within weeks or months. But in India, a pacemaker costs \$2,200 to \$6,600, which is well beyond the means of many patients.

The pacemaker donations began as a philanthropic project. Physicians later decided to make a formal study of the safety and effectiveness of the donated devices. At every step of the study, patients gave informed consent. After receiving the reused pacemakers, they were followed for

an average of nearly two years. There were no infections or other significant complications and no device failures. All but two patients reported marked improvement in their symptoms.

Of four patients who were previously employed, all were able to return to their manual jobs. Twenty-seven women said their symptoms had improved enough so they could resume household chores.

"Implantation of donated permanent pacemakers can not only save lives, but also improve quality of life of needy poor patients," researchers wrote.

Kulkarni added: "Without pacemakers, these patients would pretty much be forced to remain on confined rest, due to cardiac fatigue."

Kulkarni was born and raised in Mumbai, and at the time of the study, was a medical student at King Edward Memorial Hospital in Mumbai. He interviewed patients before and after they received pacemakers and collected data for the study. "There was a dramatic change in patients after they received their pacemakers," he said.

The Food and Drug Administration prohibits reusing pacemakers in the United States. But there is no prohibition against donating and reusing pacemakers in other countries.

Researchers reported that between January 2004 and January 2010, 121 pacemakers were removed and donated. (The devices were made by Medtronic, St. Jude Medical and Boston Scientific.) Sixty pacemakers were selected because they had a battery life greater than three years, but seven were discarded due to further decay in battery life. The remaining 53 pacemakers were rigorously cleaned and sterilized. They were sent to Holy Family Hospital in Mumbai, which serves all patients, regardless of income.

There have been previous studies of reused pacemakers. But only one previous study involved the reuse of pacemakers donated by families in the United States. That study included 12 patients in the Philippines.

The authors conclude that reusing [pacemakers](#) could "alleviate the burden of symptomatic bradyarrhythmia (abnormally slow heart rate) in impoverished nations around the world."

Provided by Loyola University Health System

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