

# Growing number of donor hearts rejected, need for transplants rises, study finds

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Surgeons and transplant centers nationwide increasingly have rejected hearts donated for transplantation despite a growing need for them, according to a new study by researchers at the Stanford University School of Medicine.

The study also found that the rejection of "marginal" donor hearts - those with undesirable qualities, such as being small or coming from an older donor - varied significantly across geographical regions. In other words, some hearts rejected in one region would be accepted in another.

"We've become more conservative over the past 15-20 years in terms of acceptance, which is particularly troubling because of the national shortage of donor hearts and the growing number of critically ill patients awaiting heart transplantation," said Kiran Khush, MD, assistant professor of cardiovascular medicine. Khush, who treats heart transplant patients, is lead author of the study, which will be published online Feb. 10 in the *American Journal of Transplantation*.

Estimates show that more than 20,000 patients in the United States could benefit from heart transplant surgery each year. Yet only 1,949 patients received transplants in 2011, according to the study.

The findings point to a pressing need for a set of consistent, scientifically based guidelines to provide surgeons and transplant centers with a standardized method of determining whether a marginal donor heart should be used for transplantation.

## National trends

"There is likely a significant number of suitable donor hearts that are not getting used," said John Nguyen, a co-author of the study who is trained as a nurse and works as part of a clinical team at the Oakland-based California Transplant Donor Network, a federally designated organ procurement organization that helps facilitate organ donation to transplant centers across the nation. "Creating a more systematic way of evaluating these hearts based on scientific evidence could increase the number of heart transplants."

"Invariably, we receive donor heart offers that we're not sure if we should accept," Khush said. "Different surgeons vary as to which hearts they will accept. As patients wait longer, they often get sicker, and we often lose patients. Increasing the supply of donor hearts is, of course, a great concern of mine."

To look at national trends in donor-heart use for transplant, researchers examined data from the federal government's Organ Procurement and Transplantation Network on all potential adult cardiac donors from 1995-2010.

Of 82,053 potential donor hearts, 34 percent were accepted and 48 percent were declined. (Eighteen percent were used for other purposes, such as research.)

"Only one in three available donor hearts is currently accepted for transplantation, which greatly limits heart transplant rates nationwide," the study said.

There was a significant decrease in donor heart acceptance, from 44 percent in 1995 to 29 percent in 2006, which rebounded slightly to 32 percent in 2010, according to the study.

## Reasons for rejecting hearts

Many reasons exist for discarding donor hearts: small size, advanced age and donor co-morbidities, such as hypertension and diabetes, are a few. In general, if a donor is older than 60 and has HIV, hepatitis C or heart disease, the donation is ruled out.

"Beyond that, there are a lot of criteria that vary from surgeon to surgeon and center to center," Khush said. "With factors like mild thickening of the heart muscle, as can be seen in donors with high blood pressure or drug abuse, it is really up to the transplant center or the surgeon." Echocardiograms and electrocardiograms from donors are also provided to the centers, but Khush said there is no good scientific data available to say which echo or ECG findings really matter.

Little evidence is available to support the expectation that the use of higher-quality donor hearts either increases life expectancy in [heart transplant patients](#) or decreases adverse effects, the study said. Any slight improvement noted must be weighed against the risk of a patient dying while waiting for a heart, it said.

One factor that may help to explain why donor heart acceptance rates have dropped significantly is the growing use of mechanical circulatory support devices that improve the health of patients waiting for a [heart transplant](#).

"A lot of people think we have this as an option now so we can afford to wait longer and decline hearts that may not be perfect," Khush said.

Also, there has been increased scrutiny by regulatory agencies of the 140 or so transplant centers across the country, which may have had the unintended consequences of making transplant surgeons more risk averse, Khush said. As a result, they may reject more marginal hearts.

The study also showed a higher use of donor hearts in the northeast portion of the country, where more transplant centers exist. In regions with few transplant centers, such as the Pacific Northwest, more marginal hearts were rejected.

"There are a lot of centers that only do a handful of heart transplants each year," Khush said. "They are still in early stages for developing criteria for accepting donor hearts. Hopefully, there will be more evidence-based research to help guide these centers."

**More information:** "National decline in donor heart utilization with regional variability: 1995-2010." Kiran K. Khush, Jonathan G. Zaroff, John Nguyen, Rebecca Menza, and Benjamin A. Goldstein. *American Journal of Transplantation*; Published Online: February 10, 2015. DOI: 10.1111/ajt.13055

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