

Hospitals given latitude to select transplant candidates don't prioritize sickest patients

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Analysis of more than 29,000 adults listed on the national heart transplant registry from 2006 to 2015 shows how rules that give hospitals discretion in determining who gets a transplant result in large discrepancies in how sick patients are when they receive heart transplants at hospitals across the United States.

The study, published on November 12 in the *Journal of the American Medical Association (JAMA)*, focuses on a metric called [survival benefit](#), which is the difference between a patient's expected chance of survival after five years with a [heart transplant](#) versus without a transplant. Survival benefit is scored as the percentage increase in their chance of survival. Over the study period, the average survival benefit for [heart transplants](#) ranged from 30% at so-called low survival benefit hospitals to 55% at high survival benefit centers. Roughly one quarter of the 113 transplant centers studied were low benefit centers, and one quarter were high benefit centers.

Of the patients who received a heart transplant, the overall survival rate after transplant was similar across all centers, about 77%. The findings suggest that the high survival benefit hospitals are prioritizing sicker patients first, giving organs to those with lower chances of survival without a transplant, and thus boosting their survival benefit to a greater degree. Meanwhile the low survival benefit hospitals are playing it safe, giving organs to less critical patients who receive a smaller benefit from the transplant.

"These are all patients with end stage heart failure who have exhausted most of their options. They all need transplants, but there aren't enough donor hearts to go around," said William Parker, MD, MS, a pulmonologist and intensive care unit physician at the University of Chicago who led the study. "But the system is set up such that transplant centers have a lot of control over determining which patients receive top priority for transplant, which makes it a very nuanced problem."

Until 2018, federal regulations required that hospitals rank heart transplant candidates on a three-tier scale from least to most medically urgent. However, there is no lab test or physical measurement that can accurately rank patients in need of transplant. Instead, patients are assessed based on the intensity of treatment they receive. Patients on high-dose inotropic medications that increase the strength of muscular contractions to improve blood flow, or those who have received mechanical heart support devices like intra-aortic balloon pumps, are deemed the highest priority.

In a 2018 study published in the *Journal of the American College of Cardiology*, Parker and his colleagues showed how these rules incentivized hospitals to overtreat patients with more intensive therapies to boost their status for transplant.

"When I started to dig more into the data, it turned out that most patients on the list, over time, had become the top priority tier," Parker said. "Centers that had lots of nearby competitors were much more likely to overtreat their candidates to get them into the top priority tier."

The new study shows the downstream effects as [transplant centers](#) changed their practices to accommodate these rules. Transplant centers are scored by various state and federal agencies on their survival rates for patients one year after an organ transplant. While some hospitals would seem to be using the system as intended by prioritizing the sickest

patients, this may encourage others to cherry pick candidates who the transplant program thinks will have an easy post-transplant recovery and overtreat them to boost their place on the waiting list.

"I don't think anybody's acting in bad faith. They're doing what they have to do to get their patients taken care of," Parker said. "But we found that centers that take risks on sicker candidates still manage to achieve good post-transplant outcomes, which leads to more lives saved."

In 2016, the Organ Procurement and Transplant Network (OPTN), the federal agency that manages the donor organ allocation system, recognized these issues and recommended a new six-tier model for assessing patients in need of a heart transplant. The new rules were implemented in October 2018.

In the new study, Parker re-coded [transplant](#) candidates according to the new six-tier system, and found that, while it did introduce more balance in [survival benefit](#) across centers, it doesn't account for ways that hospitals will likely change their practices to adapt to the new system. Its effects are yet to be seen.

Parker said that the only reason hospitals have so much control over which heart patients get transplanted is because the system relies on them to match treatments with the patients' severity of illness. In other organ allocation systems such as the liver, which uses an objective measure based on lab test values called the MELD score, hospitals don't have nearly as much discretion.

"If the system was working perfectly, the variation among centers would be very small," he said. "But there are good reasons to believe that the new system won't actually allocate hearts to the sickest patients either because centers still would have a lot of influence on deciding the priority status of patients at their center and who actually gets

transplanted."

More information: "Association of Transplant Center With Survival Benefit Among Adults Undergoing Heart Transplant in the United States," *Journal of the American Medical Association* (2019). [DOI: 10.1001/jama.2019.15686](https://doi.org/10.1001/jama.2019.15686)

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