

## Donor organ recovery at standalone facility increases suitable organs for transplant

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An organ transplant team performs an operation at the nation's first standalone organ recovery facility, located in St. Louis and owned and operated by Mid-America Transplant. Credit: Mid-America Transplant.

Transplant surgeons report that obtaining organs from deceased organ

donors costs much less and leads to a higher number of transplantable organs recovered when brain-dead donors are moved from the hospital to an independent, freestanding facility dedicated to organ recovery. Their study is published online as an "article in press" on the *Journal of the American College of Surgeons* website in advance of print publication later this year.

"These findings suggest the potential to save more lives through [organ donation](#)," said the study's lead author, Majella Doyle, MD, FACS, a transplant surgeon and associate professor of surgery at Washington University School of Medicine, St. Louis.

Traditionally, when the family of a person declared brain-dead consents to organ donation, the process of checking and maintaining the health of the eligible donor's vital organs until transplant surgeons are able to remove them occurs in the donor's hospital.

Brain death occurs due to irreversible loss of all brain function, which results from devastating conditions such as a traumatic brain injury or catastrophic stroke. When the brain stops functioning, life support is necessary to provide oxygen to the vital organs to keep them transplantable, or "viable," until organ removal can occur.

"This new process of moving donor management out of the hospital whenever possible is innovative and more efficient," Dr. Doyle said. "It takes pressure off busy hospitals, where long waits for operating rooms are common. There is no chance at this dedicated facility that an emergency trauma patient will come in and delay the [organ recovery](#) team."

The study evaluated six years of data from the nation's first standalone organ recovery facility, located in St. Louis and owned and operated by Mid-America Transplant (formerly Mid America Transplant Services).<sup>1</sup>

One of 58 federally designated organ procurement organizations, or OPOs, in the U.S., Mid-America Transplant is a nonprofit organization that recovers donor organs in eastern Missouri, southern Illinois, and northeast Arkansas.

In the U.S., after obtaining consent for organ donation, all OPOs assume all hospital costs related to the donor, including support in the intensive care unit (ICU), imaging and testing of the organs to determine their health, and operating room (OR) charges during organ recovery.

Mid-America Transplant's freestanding dedicated organ recovery facility, completed in 2008, has an ICU, two ORs, lab services, and a cardiac catheterization lab to look at donor heart vessels, according to the study authors, who include employees of the St. Louis-based OPO. Specially trained critical care nurses are responsible for donor management, and have access to a critical care physician/medical director and local physician specialists for consultation as needed. Digitally transmitted imaging tests and pathology slides of liver and kidney biopsies facilitate evaluation of the organs by consultants and organ recipients' transplant surgeons.

The study involved 963 organ donors from 2009 to 2014. Of these, 766 donors were transferred by air or ground transportation to Mid-America Transplant's facility within hours after declaration of brain death.

Most (113) of the other 197 donors died when their heart stopped, called donation after cardiac death. Because these donors were not brain-dead, they were not eligible for transfer, so their organ recovery occurred at their hospitals of origin, Dr. Doyle explained. In the study analysis, the investigators compared these donors and 84 nontransferred brain-dead donors with transferred donors.

Donor management and organ recovery performed at the independent

facility reportedly cost the OPO half as much as what it paid the hospitals in recovery costs for donors kept at the hospital. Average per-donor cost for organ recovery, as reported by the researchers, was \$33,161 at the hospital. The cost for recovery at the OPO-owned facility, including transportation, supplies, and personnel, was \$16,153 per donor.

"The use of nurse specialists, which reduces the need for onsite physicians, helps to lower costs," said Dr. Doyle, who has no affiliation with Mid-America Transplant.

The substantial cost savings that can be achieved with the new approach is important at a time when proposed national redistricting of organ allocation may raise costs of organ acquisition, according to Dr. Doyle.

She said the OPO was able to pass along savings to the organ recipients. According to Mid-America Transplant, its median organ acquisition charge (what it charges the recipient) in 2014 was 16 percent less than the average (median) and 7 percent lower than the next lowest acquisition charge among the other OPOs in the Midwest.

Another improvement that occurred by using the new approach was the average number of transplantable solid organs (excluding tissues) recovered per donor, called organ yield. For recovery performed at the OPO facility, the overall organ yield was 3.4 versus 2.7 organs from hospital-recovered donors. Dr. Doyle attributed this improvement largely to the facility's unlimited 24-hour access to imaging technologies and staff needed to maximize the performance of the heart and lungs.

For standard criteria donors—those with the healthiest organs—the organ yield for transferred donors exceeded the national average organ yield: 3.9 versus 3.7, the investigators reported. They calculated national organ yield based on data from the Scientific Registry of Transplant

Recipients, a national database of transplant statistics.

A higher organ yield could save more lives, Dr. Doyle explained. In the U.S., 22 people die each day waiting for transplants because of the shortage of donated organs.<sup>2</sup>

Although enhanced efficiency and reduced costs were the main goals of creating the organ recovery center, Dr. Doyle said, "It also happens to be a faster process,<sup>3</sup> which enables quicker return of the donor's body to the family."

On satisfaction surveys, Mid-America Transplant receives high satisfaction from [donor](#) families according to the article.

"We believe we have demonstrated through our research that this new process is really the way organs should be recovered," Dr. Doyle said. "It should be considered on a wide-scale basis."

Mid-America Transplant originated the concept of an organ recovery center with an in-house OR in 2001.<sup>1,3</sup> Its purpose-built center has served as a model for similar facilities; there now are standalone organ recovery facilities in Colorado, Pennsylvania, and Michigan, Dr. Doyle stated.

**More information:** Majella Doyle et al. Organ Donor Recovery Performed at an Organ Procurement Organization-Based Facility Is an Effective Way to Minimize Organ Recovery Costs and Increase Organ Yield, *Journal of the American College of Surgeons* (2016). [DOI: 10.1016/j.jamcollsurg.2015.12.032](https://doi.org/10.1016/j.jamcollsurg.2015.12.032)

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