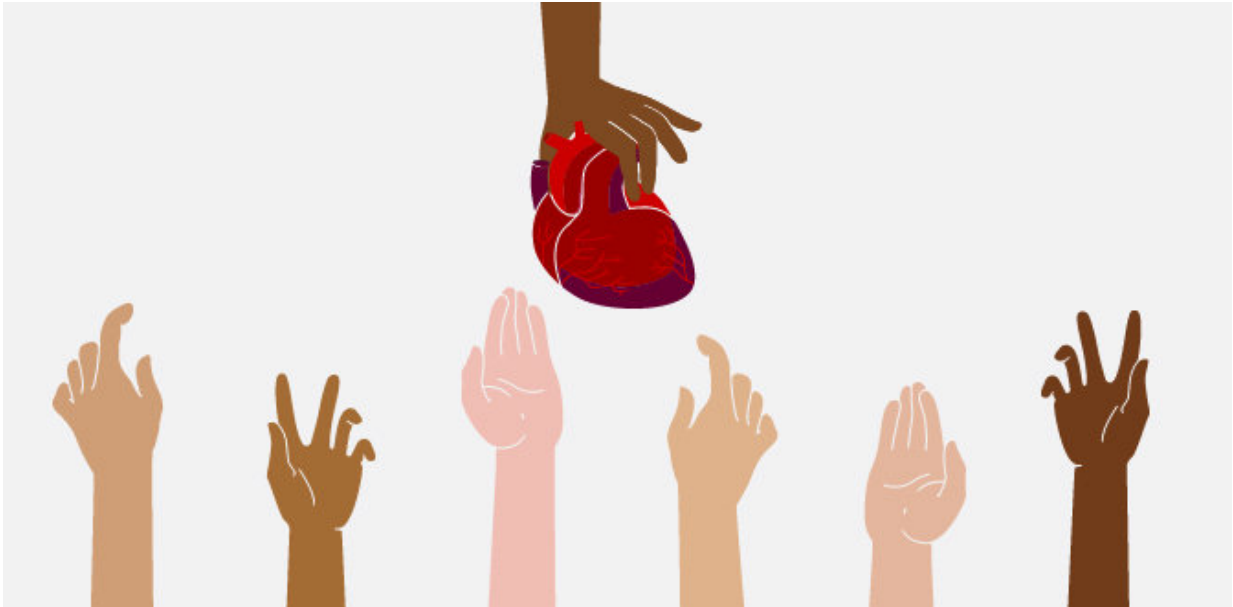


Solving the dilemma of not enough hearts

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Credit: American Heart Association

In the not-too-distant future, Dr. Jennifer Cowger envisions a cardiac transplant landscape where more donations are encouraged and utilized, genetically engineered organs can be created in a laboratory, and improved mechanical devices eliminate the need for an actual human heart.

But in the meantime, there's a shortage.

"We've come a long way, but there is still a definite mismatch between

supply and demand," said Cowger, a cardiologist and transplant specialist who directs the Mechanical Circulatory Support Program at Henry Ford Health System in Detroit. "If you have a patient listed today for transplant, the average wait is going to be 1½ to two years. It's nothing like on Grey's Anatomy, where a [heart](#) somehow shows up right away."

In 2017, there were 3,244 heart transplants in the United States, according to the federal Organ Procurement and Transplantation Network.

"That's an all-time record, but there continue to be close to 4,000 people on the waiting list," said Dr. Matthias Peltz, surgical director of cardiac transplantation at UT Southwestern in Dallas.

In a *Journal of the American College of Cardiology* article last year, Cowger summarized the transplant dilemma and the possible means of addressing it. Among her points:

- The gap between supply and demand is growing partly because [mechanical circulatory support](#) (MCS for short) – devices to help the heart pump blood through the body – is improving, helping potential heart recipients survive longer.
- Improvement is needed in MCS technology that will enable people with heart failure to live longer, so they won't require transplants.
- The pool of potential donors must be expanded by persuading more people and families of the deceased to donate organs, and by utilizing hearts now considered not to meet transplant standards.

Those are all significant challenges, Cowger said.

Some countries, such as Spain and France, have an opt-out donation

system, she said, whereby people are considered potential donors unless they request otherwise. The United States generally follows an opt-in format, asking people to declare their willingness to donate organs through such avenues as online registries, legal documents or a notation on their driver's license.



John Godwin with his daughters, from left, Ashley, Morgan and Courtney.
Credit: courtesy of John Godwin

Cowger said she doubts this country would ever adopt an opt-out system because of ethical, societal and religious factors. Various campaigns to encourage [organ donation](#) have improved the situation in recent years, but there is still much to do: Federal data show 95 percent of Americans favor organ donation, but nearly half have not acted to have their wishes carried out.

"It's a shame to think people are going to die when they could be saved," said John Godwin, who received a new heart in 2013 after suffering a near-fatal heart attack. "In the Army they give you medals for saving somebody's life. Here all you have to do is check a box or click a

button."

Godwin, the city manager of Paris, Texas, became a crusader for organ donation, writing a book about his experience and speaking frequently around the state. When he meets families of donors, he said, "All of them say they're so glad they did this. This is the one single positive thing that came out of their [family member's] death. If everybody could hear that, a lot more people would sign up."

But even with increased donation, there are medical obstacles. Because donor hearts need to meet a higher standard than other organs, Peltz said, only about 30 percent of hearts offered for transplant are accepted.

"If a kidney [transplant](#) doesn't work, the patient goes back on dialysis," he said. "If the heart does not work as we hope it will, no matter what we do, [some] of those patients will die."

Cowger said researchers are working in several areas to utilize more hearts, including studying whether hearts from older donors can still be viable. New devices being developed to transport donor hearts perform a process called perfusion preservation, allowing them to remain outside a body longer, transported much farther – and not wasted because no suitable recipient is nearby.

"The way we preserve hearts hasn't really changed much in decades," said Peltz, whose research focuses on improving that. "We flush it with solutions and put it in an ice cooler. We can recover more organs if we just improve the way they are stored."

Some heart problems are unavoidable. Godwin had no risk factors – "I wasn't smoking cigarettes and eating donuts all day long," he joked – before an undiagnosed disease caused his heart attack.

But both doctors said prevention is a key element in the supply-and-demand equation as well.

"Maybe in a few decades they can be engineering organs in a laboratory to reduce the shortage, and better [mechanical devices](#) might make the need for transplants obsolete," Cowger said. "In the interim, the best solution is preventative medicine: reducing risk factors for coronary disease so fewer people will develop heart failure."

Provided by American Heart Association

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