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## Heart Pump Creates Life-Death Ethical Dilemmas

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After bypass surgery and two heart attacks, the 62-year-old's heart was failing. Desperate, he grasped at his last hope: a surgically implanted heart pump. But following infections, kidney failure and other complications, along with months in the hospital, he returned home weaker than ever.

"He now sleeps a great deal, eats poorly, walks little and needs help to go to the bathroom. He also complains of significant pain," Jeremy R. Simon, a bioethicist at [Columbia University](#), wrote recently in a medical ethics journal. "He understands that he will likely die within hours after the device is turned off, but he no longer wishes to live in his current state."

The man's request to shut off the pump, however, made Simon, who serves on the ethics committee at New York-Presbyterian Hospital, uncomfortable. Turning it off would be "tantamount to removing the patient's heart," he wrote, changing some details to protect the patient's privacy. "Medicine has no role in such cases."

Such cases, while unusual, are occurring more frequently as the rapidly rising number of elderly Americans is making heart failure more common and fueling demand for partial artificial hearts. Although most requests to discontinue the devices are honored, some patients have been found dead alone at home with their pumps powered off, raising fears that they may have taken matters into their own hands.

The debate illustrates how new medical technologies often proliferate before society has resolved the issues they raise, such as what to do when a patient has had enough. Similar clashes have arisen over pacemakers and implanted defibrillators, and experts say such predicaments will multiply as researchers rush to develop a host of other replacement organs.

"Anytime you create new forms of life support, you create the possibility for new ethical dilemmas," said Katrina A. Bramstedt, a bioethicist at the California Pacific Medical Center in San Francisco.

The latest quandary centers on left ventricular assist devices (LVADs), which are implanted near the heart and attached to one of the main pumping chambers and the aorta, the main artery supplying blood to the body.

After decades of disappointing attempts to create fully implantable artificial hearts, LVADs emerged as an intermediate crutch to keep transplant candidates alive long enough to get a donated organ. But after researchers discovered that the devices could significantly improve a patient's quality of life, doctors began using them as "destination" therapy, meaning patients would live with them for years with no expectation of a transplant.

"It's a new field," said Soon J. Park, director of the LVAD program at the [Mayo Clinic](#) in Rochester, Minn. "There are plenty of people who are sick out there who would benefit from this."

Surgeons at more than 60 centers in the United States are now implanting at least 1,000 LVADs each year. Smaller, more durable and more easily implanted versions are being developed, including one that was approved just this week. With at least 5 million Americans suffering from heart failure, 550,000 new cases being diagnosed each year, only about 2,000 hearts available for transplant each year, and [Medicare](#) willing to pay for LVADs (at a typical cost of \$200,000), experts predict the number will soar.

"We are at the cusp of a rapid expansion of this type of therapy," said Park, who estimates that within the next five years, 10,000 Americans annually may get the pumps.

The devices are lifesavers for many. They keep some patients alive long enough to get a transplant; maintain others until their hearts heal from surgery, infections or other complications; and sustain a growing pool of people hoping to have a few more decent years.

"I was in pretty bad shape before this," said Clarence Horton, 64, of Edgewater Park, N.J., who recently received an LVAD. "I was very short of breath. I couldn't move around. I was on my way out. Now I feel 200 percent better."

Recipients, however, are prone to complications, including infections from the power line that protrudes from the skin, as well as strokes caused by clots that can form in the pumps. As more patients receive the devices, inevitably the risks outweigh the benefits for some, or the benefits are overtaken by complications.

"The hardest thing to grapple with is these patients often are not asking for relief from any acute distress, per se, but are asking for relief from the burdens of a life dependent on an artificial technology," said Scott D. Halpern, a bioethicist at the [University of Pennsylvania](#). In some cases, patients wake up to discover that an LVAD has been implanted in an emergency.

Said Mary Lou O'Hara, who coordinates LVAD care for the University of Pennsylvania Health System: "Some patients go into this with their eyes wide open and others have an acute event and wake up with the device. It can be very challenging for individuals who don't have the coping skills to deal with it."

Most doctors and bioethicists equate the devices to ventilators, feeding tubes and other forms of life support that patients or their families have the right to discontinue if they believe they are fruitless or if their quality of life deteriorates.

"We need to respect the free will and autonomy of patients," said Timothy W. Kirk, a bioethicist at [Villanova University](#). "It is not assisted suicide or euthanasia, because what's killing them is the underlying disease."

The devices are discontinued only after patients are evaluated emotionally and physically, all alternatives have been explored, and ethicists and family members are consulted, experts say.

"You want to rule out the idea that they are acutely depressed or there is an acute event that right now makes life look pretty grim but that they may get past," said Michael Petty, a nurse who works with LVAD patients at the University of Minnesota Medical Center, Fairview.

While agreeing that patients can decide to discontinue their LVADs, some say that the devices raise unique issues.

"This is unlike anything else we deactivate," said James Kirkpatrick, a cardiologist and ethicist at the University of Pennsylvania. "When you turn off an LVAD, it can make the person worse. You can basically worsen the heart function. So you're not just stopping something and letting nature take its course. You're actually doing harm, potentially."

But Simon and others go further, arguing that the technology represents something entirely different from other forms of life support.

"Once a patient leaves the hospital, the LVAD ceases to be a medical treatment and becomes effectively part of the patient himself, much like a transplanted organ or even a native one," Simon wrote in [the January-February issue of the Hastings Center Report](#), which is published by the Hastings Center, a bioethics think tank. "We would not remove a patient's biological heart, transplanted or native, simply because the patient was suffering greatly from heart failure and did not

want to go on; nor should we disable his LVAD."

Simon declined to reveal additional details about the patient he dubbed "Mr. P," but he said Mr. P could turn off the device himself or let the batteries run out.

"Mr. P is presumably uncomfortable with the options because they seem to him like suicide," Simon wrote. "The fact that the patient does not want to take action on his own, however, does not authorize others to hasten his death for him."

Others are also uneasy.

"Our normal intuition is that it's illegal and probably immoral to actively kill someone," said Robert M. Veatch, a [Georgetown University](#) bioethicist. "If you think about stopping the left ventricular assist device as something like stopping the heart, then you have to deal with the possibility that this is an active killing."

One partial solution would be for doctors to avoid implanting the devices in those who are too old or too sick.

"There's definitely some patients who have LVADs who should not have received them," said Bramstedt, the bioethicist at the California Pacific Medical Center. "Sometimes when you put these in, the patient actually gets worse. And now they are in limbo, hooked up to this machinery."

Surgeons who implant the devices argue that doctors are getting better at choosing recipients.

"Our first mission as physicians is to do no harm," said Robert L. Kormos, director of the Artificial Heart Program at the University of Pittsburgh Medical Center.

In the meantime, more doctors are discussing the possibility of turning off the devices so patients know that palliative care is available, and doctors and family know what the patient would want if they become incapacitated and further care is futile.

Still, patients have been found with the devices detached from the power source, raising the possibility that they disconnected them without thinking that doctors could help them die.

Said Rodney Tucker, medical director of the palliative care center at the [University of Alabama at Birmingham](#): "I don't think we've seen the full spectrum of how we'll deal with these devices in the long-term. The technology is still in its infancy. Whenever you have technology in its infancy, that technology will inevitably have some falls."

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