Researchers develop new way to predict heart transplant survival

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(Medical Xpress) -- Johns Hopkins researchers say they have developed a formula to predict which heart transplant patients are at greatest risk of death in the year following their surgeries, information that could help medical teams figure out who would benefit most from the small number of available organs.

“Donor hearts are a limited resource,” says John V. Conte, M.D., a professor of surgery at the Johns Hopkins University School of Medicine and the senior author of the study. “Now, we have a simple-to-use tool that is highly predictive of survival after a heart transplant, and can help guide organ allocation decisions.”

Conte and his colleagues, writing in the September issue of Annals of Thoracic Surgery, pulled together a series of risk factors already associated with poor outcomes, such as age, race, gender, the cause of a patient’s heart failure and whether he or she was on dialysis, and then assigned a number of points to each factor. The sum of those points created a score. The higher the score, the higher the risk of death one year after transplant.

Some factors were weighted more heavily than others, such as female gender (three points); African-American race (three points), and the need for dialysis in the time between being put on the transplant waiting list and getting a transplant (five points).

Patients with the lowest scores — between zero and two — had a 92.5

percent chance of being alive 12 months after surgery.

Patients with so-called IMPACT scores — the acronym the researchers came up with for the Index for Mortality Prediction After Cardiac Transplantation — above 20 points had a less than 50 percent chance of survival one year after surgery. Every point on the scale increased the chance of death within one year by 14 percent.

To develop and test the validity of IMPACT, Conte and his team analyzed data provided by the United Network of Organ Sharing comprising information from all heart transplants — 21,378 of them — conducted in the United States between 1987 and 2010.

More research is needed to learn what role is played by factors other than the recipient's risks, Conte says. Resuslts of their study suggest, for example, that an organ coming from a donor over the age of 50 or one that has been outside the body for more than four hours also increases the risk of death in the recipient, he says.

More than 3,000 people are on the waiting list for a heart transplant in the United States, and many will die before they can get a new heart. Only about 2,000 heart transplants are performed in the U.S. annually. Currently, determining who gets an available heart takes into account how long a patient has been on the list and how sick they are. There is no standardized consideration of other factors that may predict patients' outcomes, as is the case in determining which patients receive available lungs for transplant. Incorporating the IMPACT score would add another dimension to the conversation about who gets a heart transplant, says Conte, surgical director of heart transplantation at Johns Hopkins.

"As clinicians, we make an educated risk of what the risk is going to be," he says. "This tool provides a quantitative way to assess the risk."