

Media Release



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Heartening news for transplant patients as groundbreaking Australian research set to double the time a donor heart can exist outside the recipient

A world-first technique has been developed by Australian scientists at the [Victor Chang Cardiac Research Institute](#) (VCCRI) and [St. Vincent's Hospital](#) (SVH) that will almost double the life of donor hearts being transported for transplant surgery.

Medical scientists from the Sydney-based Institute and Hospital successfully trialed a new combination of drugs extending the time a donor heart can spend in transit, from the current four- to five-hour limit, up to 14 hours.

"The longer a donor heart lives outside the recipient, the more it will deteriorate, increasing the risk of injury or even death during transplantation, due to restricted blood flow," said Professor Bob Graham, Executive Director of the Victor Chang Cardiac Research Institute.

"If we can successfully preserve the donor heart for a longer period, we will reduce deterioration and therefore allow the heart to function more quickly and effectively after surgery," added Professor Graham. "This is a major issue given the vast size of countries like Australia and the time it can take to transport a heart from a donor to a recipient."

Researchers say the technique will give greater scope to accept a variety of donors, including those from interstate or overseas.

"In time, we will be able to draw from a bigger pool of donors- those hearts we used to strike off the list because they were perhaps too far away, a little older or less than perfect, and therefore more prone to deterioration, could now be suitable," explained Professor Graham.

"At the moment, it's uncommon for a heart from Perth or New Zealand to be used for a recipient in Sydney, because the organ has to be absolutely perfect for the transplant to be successful," added Professor Graham. "Using this technique will give us more time and far superior post-transplant heart function, making this scenario far more commonplace."

The research, which has attracted the attention of the prestigious [American Journal of Transplantation](#), found the optimal preservation technique combines Celsior, the existing commercial preservation solution, with the two drugs cariporide and Glyceryl Trinitrate (GTN).

Following successful trials in [rodents](#), scientists carried out trials on pigs with a similar weight range and consistency to an average human, to mimic clinical heart transplantation.

Head of the Cardiac Physiology and Transplantation Laboratory at the VCCRI, Director of the Heart Failure Clinic at St Vincent's Hospital and senior author of the research paper, Professor Peter Macdonald, said the benefits for human transplant patients will be substantial.

"While it's unlikely we would see the extreme 14-hour limit translate to clinical trials, we know this technique has the potential to double preservation time, meaning significantly improved

heart function, less time spent recovering in hospital and a reduced risk of post-operative mortality for patients.

“These results are extremely encouraging for us. We hope to begin clinical trials as soon as possible to confirm our predictions, hopefully within the next year,” added Professor Macdonald.

Scientists at the VCCRI will continue working with other specialists to create a uniform approach that can be used to preserve all organs, including the heart, lung, liver, kidney and pancreas.

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About the Victor Chang Cardiac Research Institute

Established in 1994, the Victor Chang Cardiac Research Institute (VCCRI) is committed to excellence into heart disease and cardiovascular biology, cardiovascular research training and facilitating the rapid application of research discoveries to patient care. In Australia alone, heart muscle diseases - the cause of heart failure - are responsible for the death of over 130,000 people annually with 400 new cases being added each week. For more information visit www.victorchang.edu.au

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