



DR. LOUISE SEE HOE

DR LOUISE SEE HOE IS SETTING DONOR HEARTS AT REST



Warm bodies, warm hearted, warm blooded. Warmth is a word often associated with life. From a heart transplant perspective, it seems natural then, to warm donor hearts before surgery as a way of preserving their function. The latest clinical technology uses a machine developed by TransMedics to pump warm, oxygenated blood and other nutrients through a beating donor heart. This method preserves donor hearts for up to six hours. But, what if there was a different way to keep donor hearts viable for even longer?

Dr Louise See Hoe has been granted a Research Fellowship by The Prince Charles Hospital Foundation to find an answer to that very question. Finding an answer is important given that the number of people needing a heart transplant in Australia significantly outweighs the number of donor hearts that become available.

Suitable donor hearts are incredibly precious. Less than 2% of people die in the specific circumstances where

organ donation is possible. Of the cases where donation is possible, 80% of donor hearts are considered unsuitable for transplant due to organ damage caused by travel time and stringent donor criteria. “I didn’t realise before working here, but it’s amazing how many hearts are actually suitable for transplant. It’s not that many,” Dr See Hoe says. “My goal is to improve the number and quality of donor hearts available for transplant”.

Part of Dr See Hoe’s work is to investigate exactly what happens to hearts after brain death has occurred. We know that the heart goes through a traumatic process after brain death where it is flooded with molecules causing it to shut down. What we do not have is an in-depth understanding of this process. Without this information, it can be difficult to design methods to improve the quantity and quality of donor hearts.

One method showing early promise in animal studies is the use of hypothermic ex vivo perfusion on donor hearts. Essentially, this method

delivers oxygenated blood and nutrients to the heart at a lower flow rate, pressure and temperature compared to the TransMedics machine. The heart doesn’t beat, instead it rests. It is hoped that in using this method, cardiac energy can be preserved and less damage will occur to the cells lining the walls of the arteries. It offers the potential to preserve donor hearts for up to 24 hours and to improve the heart function post-transplant.

The potential of Dr See Hoe’s research is huge, given that The Prince Charles Hospital is a leading institute in cardiac surgery and heart transplantation. With the support of The Prince Charles Hospital Foundation and the Critical Care Research Group, Dr See Hoe is focused on translating her research findings into clinical practice. “My short-term goal is to have enough pre-clinical data to do a clinical trial,” Dr See Hoe says. In the near future, a cool, well-rested heart could be the key to unlocking more donor hearts available for transplant.