

STS/EACTS Latin America Cardiovascular Surgery Conference

November 15-17, 2018

Hilton Cartagena | Cartagena, Colombia



Donation After Circulatory Death (DCD) Heart Transplantation in Australia: *a solution to the donor shortage?*

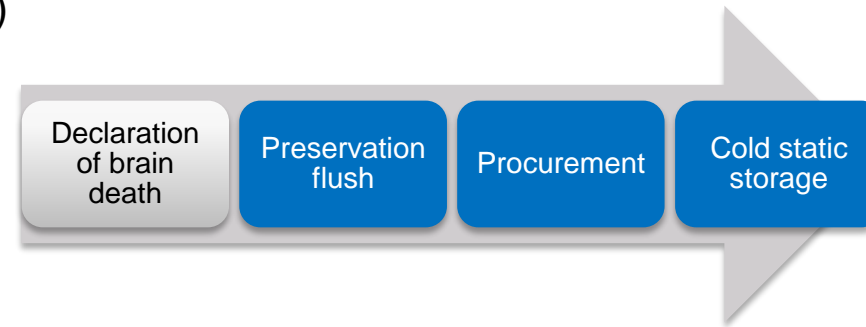
Dr Sarah Scheuer, Dr Hong Chee Chew, Professor Peter Macdonald, Assoc Prof Kumud Dhital
On Behalf of St Vincent's Hospital DCD Heart Transplant Group



Transplantation pathways

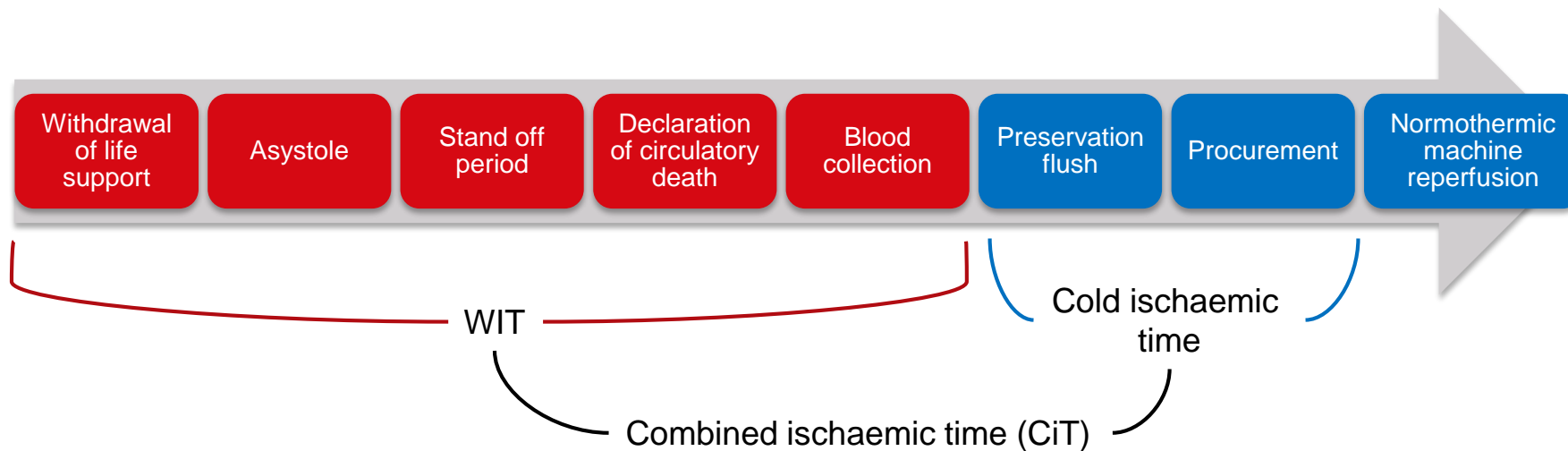
Donation after brain death (DBD)

Controlled death - minimal to no warm ischaemic time (WIT)



Donation after circulatory death (DCD)

Uncontrolled progression to asystole - variable WIT



Overcoming the DCD heart barriers

Enhancing tolerance to warm ischemia with supplementation

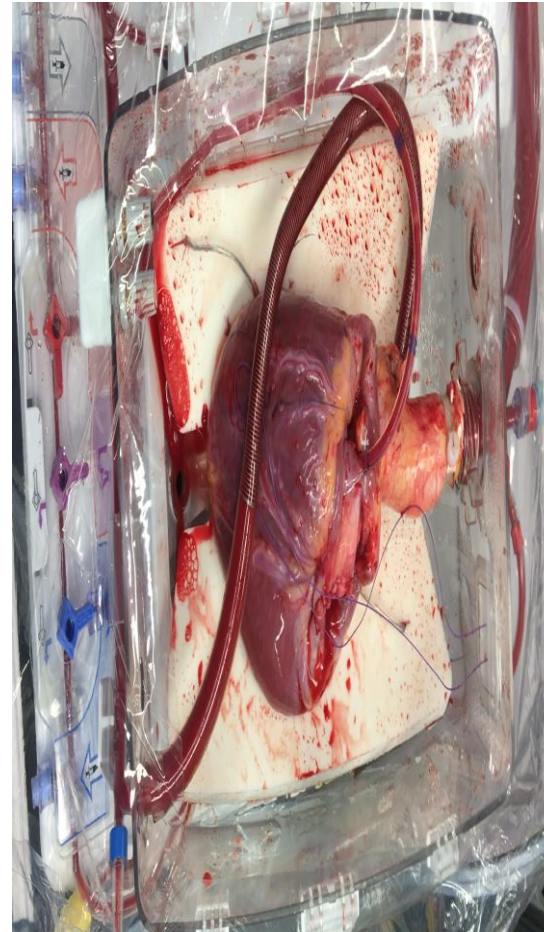
GTN – nitric oxide donor

- Hing A J, et al. Combining Cariporide with Glyceryl Trinitrate Optimizes Cardiac Preservation During Porcine Heart Transplantation. *American Journal of Transplantation*. 2009; 9: 2048–2056

EPO – glycoprotein hormone, active in SAFE cardioprotective pathway

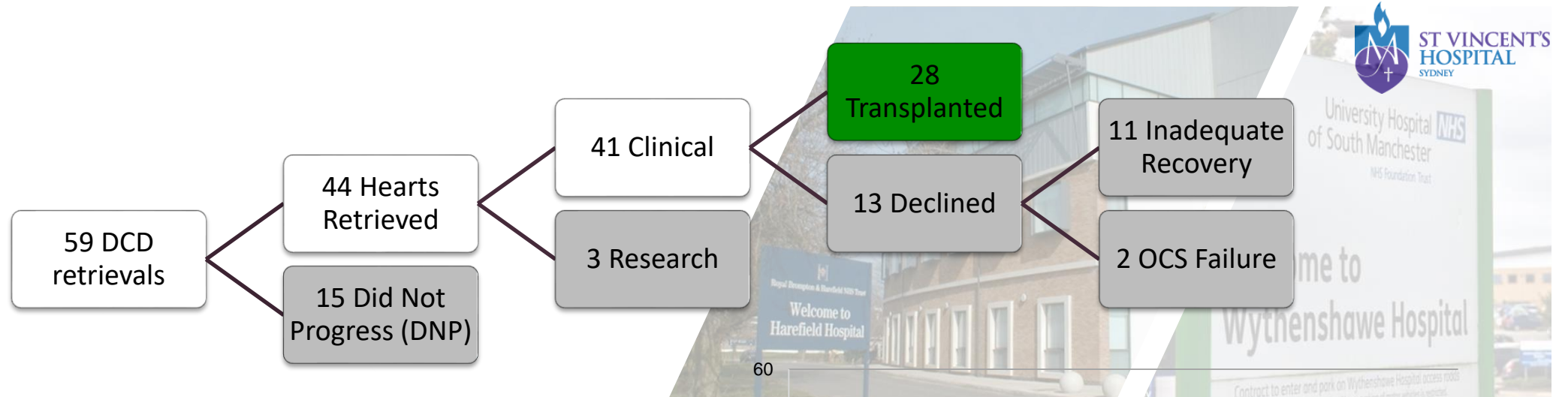
- Watson AJ, et al. Enhanced preservation of the rat heart following prolonged hypothermic ischemia with erythropoietin supplemented Celsior solution. *J Heart Lung Transplant*. 2013; 32: 633–640

Normothermic perfusion device

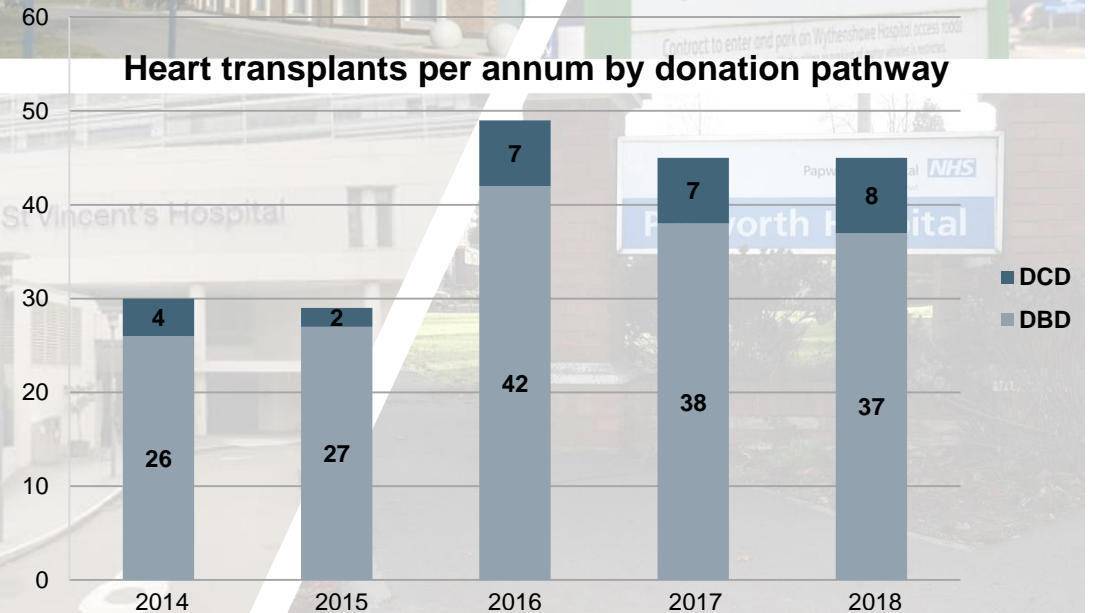


- DCD hearts are exposed to an unavoidable warm ischaemic injury
- Ideal preservation modality
 - Minimizes ischaemic injury
 - Allow for organ resuscitation
 - Facilitate viability assessment prior to transplantation

Current outcomes of the clinical DCD program



Heart transplants per annum by donation pathway



Protocol modifications

- Commencement of WIT at systolic BP < 90 mmHg
- Extension of donor age to <55
- Addition of increased dose of methylprednisolone and regular albumin to combat oedema whilst on the TransMedics

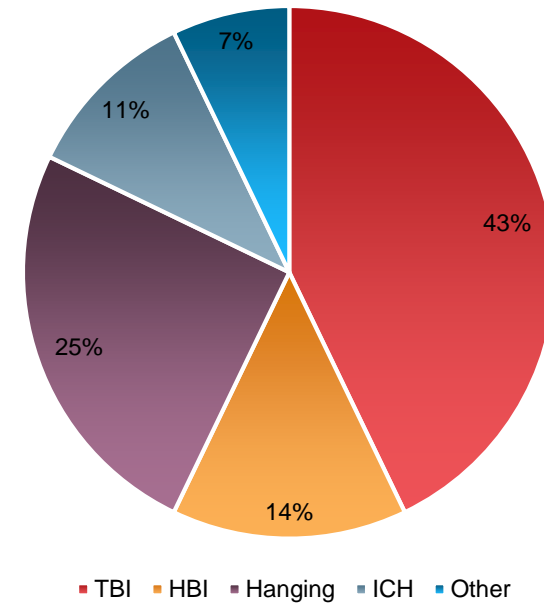
Current outcomes of the clinical DCD program

St Vincent's Experience

Donor demographics

Male : Female	24 : 4
Average age	30 ± 8 (range 20 – 54)
Average weight	82 ± 15 kg
Vasopressor support	12 / 28 (43%)
Lungs used	19 / 28 (68%)

Donor C.O.D for All Transplanted



Current outcomes of the clinical DCD program

	No-ECMO	ECMO	P-value
Warm Ischaemic Time	23 ± 6 mins	23 ± 3 mins	0.32
Time to Asystole	11 ± 5 mins	9 ± 3 mins	0.08
Asystole – Cardioplegia	12 ± 2 mins	15 ± 3 mins	0.003
Cold Ischaemic Time	29 ± 5 mins	27 ± 6 mins	0.20
OCS	277 ± 70 mins	306 ± 60 mins	0.14



Conclusion

- DCD heart procurement is a **feasible alternative** to the traditional DBD pathway, with excellent results in patient cohort to date
- Combined approach, to both further improve ischaemic tolerance and minimise asystole-plegia time required to reduce **high early ECMO rates**
- **High staff requirements** and **cost** may be prohibitive in some centres



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Clinical studies

Heart and Lung Clinic

- Dr Mark Connellan
- Dr Alasdair Watson
- Dr Emily Granger
- Prof Chris Hayward
- A/Prof Andrew Jabbour
- Dr Paul Jansz
- Prof Anne Keogh
- A/Prof Eugene Kotlyar
- Dr Phillip Spratt

Perfusionists

- Mr Claudio Soto
- Mr Adam Roshan

Transplant Coordinators

ICU

- Dr Priya Nair

Pre-clinical studies

Victor Chang Cardiac Research Institute – Transplant laboratory

- Dr Ling Gao
- Dr Hong Chee Chew
- Dr Arjun Iyer
- Dr Jeanette Villaneuva
- Aoife Doyle
- Dr Mark Hicks

