

Greffe cardiaque à partir de donneurs DCD: De la théorie à la pratique expérience du CHU de Liège

Vincent Tchana-sato

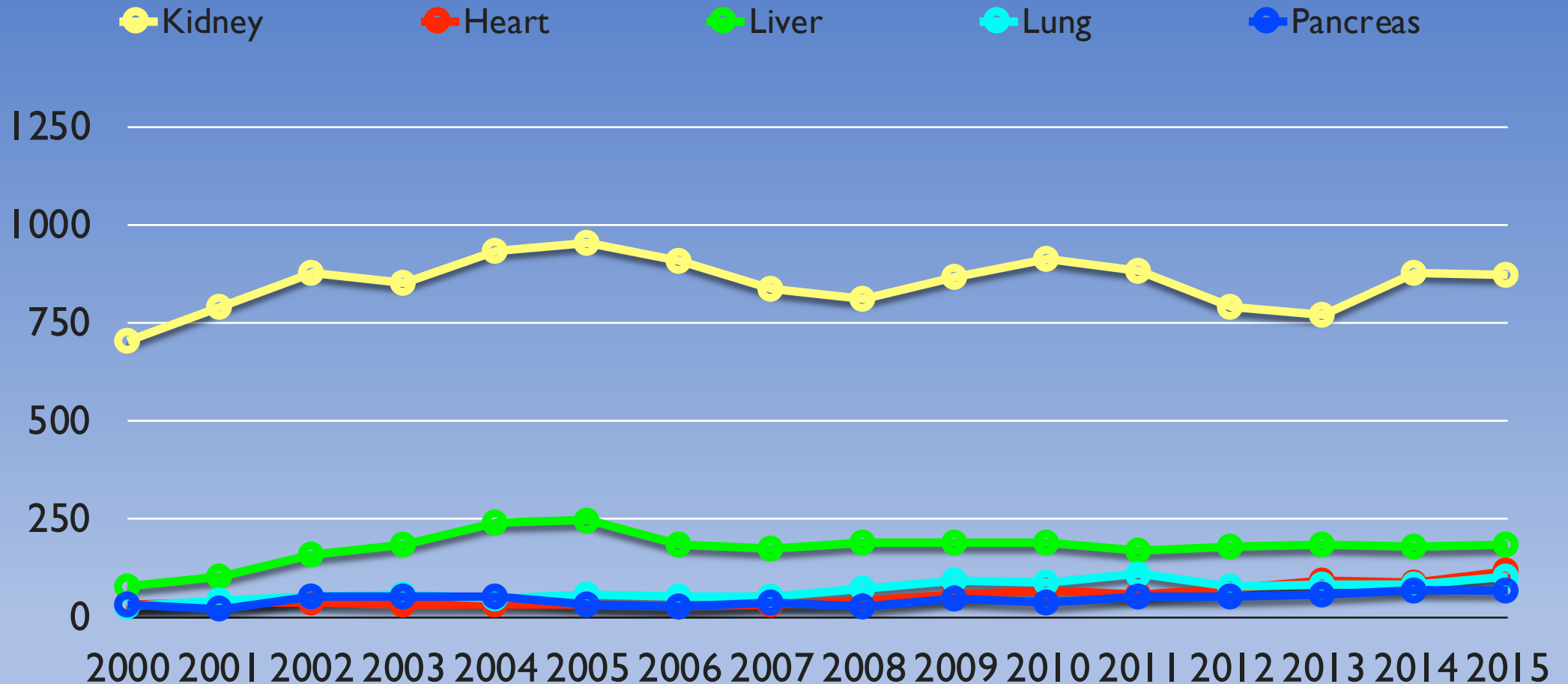
**Departement de chirurgie cardiovasculaire et thoracique
CHU de Liège
Belgique**

- Je n'ai pas de conflits d'intérêts à déclarer

- Notre protocole a reçu l'approbation du comité d'éthique de l'hôpital

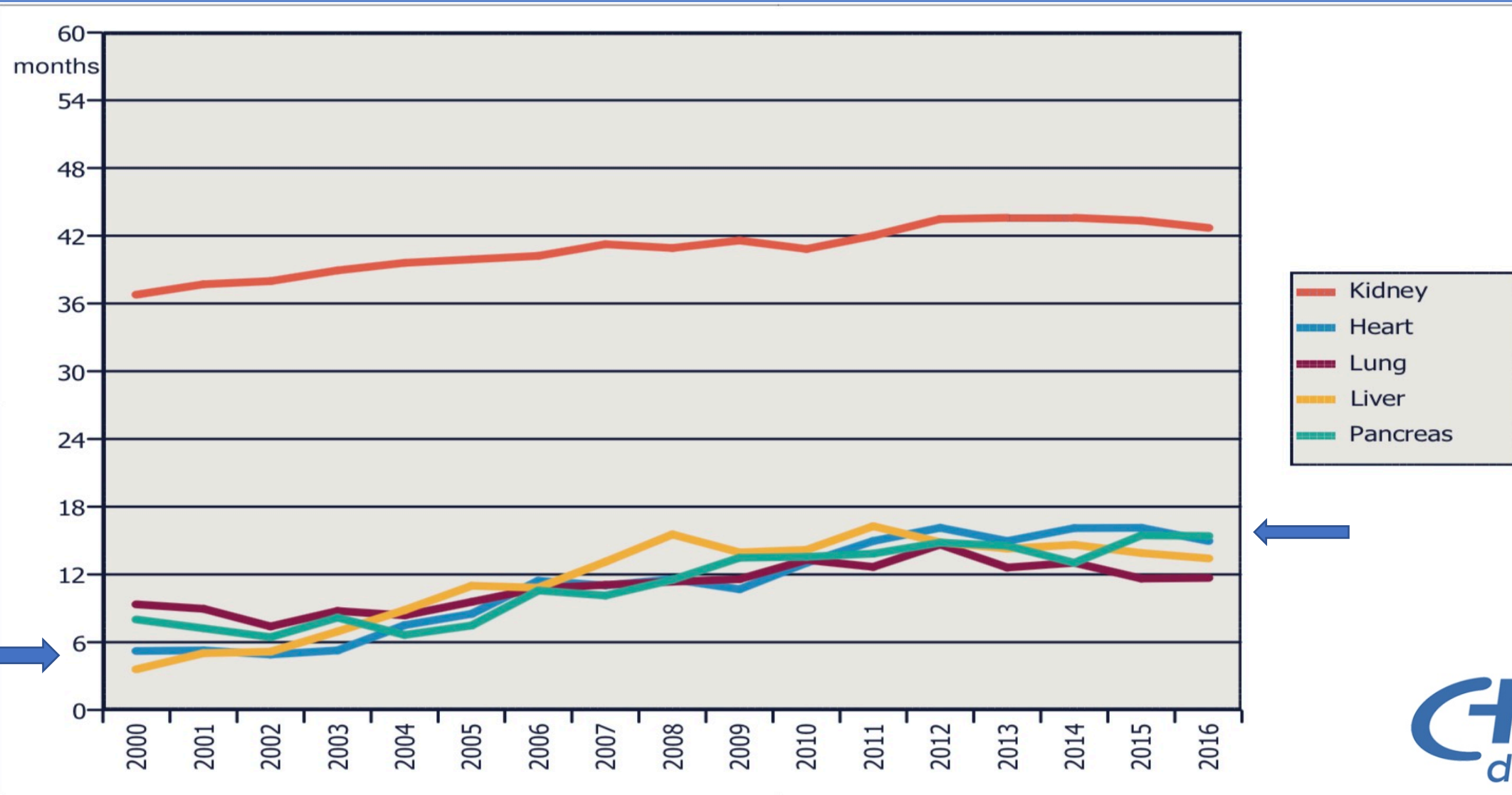
Why a DCD heart transplantation program?

Patients on waiting list in Belgium



~ 1300 patients on waiting list

Median time on waiting list



Mortality on waiting list

Table 4.7b(ii) Mortality on the Eurotransplant waiting lists in 2016

Waiting list	A	B	D	H	HR	NL	SLO	Total
Kidney	25	34	434	40	4	66	1	604
Heart	8	20	113	10	9	3	6	169
Lungs	17	7	61	0	0	18	0	103
Liver	15	45	369	18	24	28	3	502
Pancreas	1	2	22	1	1	3	0	30
Total	66	108	999	69	38	118	10	1408
Total patients	63	100	937	68	37	116	10	1331

± 20 % of heart recipient candidates die on waiting list

How to start ?

Experience with DCD donors organs transplantation since 2002

Transplant International

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ORIGINAL ARTICLE

Liver transplantation from donation after cardiac death donors: initial Belgian experience 2003–2007

Olivier Detry,¹ Vincent Donckier,² Valerio Lucidi,² Dirk Ysebaert,³ Thiery Chapelle,³ Jan Lerut,⁴ Olga Ciccarelli,⁴ Jacques Pirenne,⁵ Diethard Monbaliu,⁵ Arnaud De Roover,¹ Pierre Honoré,¹ Xavier Rogiers,⁶ Bernard De Hemptinne⁶ and Roberto Troisi⁶

- 1 Department of Abdominal Surgery and Transplantation, CHU de Liège, University of Liège, Liège, Belgium
- 2 Department of Abdominal Surgery and Transplantation, Erasme Hospital, Free University of Brussels, Brussels, Belgium
- 3 Department of Abdominal Surgery and Transplantation, Antwerp University Hospital, University of Antwerp, Antwerp, Belgium
- 4 Department of Abdominal Transplantation, Cliniques Universitaires St Luc, Université Catholique de Louvain, Brussels, Belgium
- 5 Department of Abdominal Transplant Surgery, University Hospitals Leuven, Leuven, Belgium
- 6 Department of General & Hepatobiliary Surgery, Liver Transplantation Service, Ghent University Hospital & Medical School, Ghent, Belgium

Donor age as a risk factor in donation after circulatory death liver transplantation in a controlled withdrawal protocol programme

O. Detry¹, A. Deroover¹, N. Meurisse¹, M. F. Hans¹, J. Delwaide², S. Lauwick³, A. Kaba³, J. Joris³, M. Meurisse¹ and P. Honoré¹

Departments of ¹Abdominal Surgery and Transplantation, ²Hepato-Gastroenterology and ³Anaesthesiology and Intensive Care, Centre Hospitalier Universitaire de Liège, University of Liège, Liège, Belgium

Correspondence to: Professor O. Detry, Department of Abdominal Surgery and Transplantation, CHU Liège, Sart Tilman B35, B4000 Liège, Belgium (e-mail: olivier.detry@transplantation.be)

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GUIDELINES FOR CLINICAL PRACTICE

Donation after cardio-circulatory death liver transplantation

Hieu Le Dinh, Arnaud de Roover, Abdour Kaba, Séverine Lauwick, Jean Joris, Jean Delwaide, Pierre Honoré, Michel Meurisse, Olivier Detry

Hieu Le Dinh, Arnaud de Roover, Pierre Honoré, Michel Meurisse, Olivier Detry, Department of Abdominal Surgery and Transplantation, University Hospital of Liège, University of Liège, 4000 Liège, Belgium
Abdour Kaba, Séverine Lauwick, Jean Joris, Department of Anesthesia and Intensive Care Medicine, University Hospital of Liège, University of Liège, 4000 Liège, Belgium
Jean Delwaide, Department of Hepatology and Gastroenterology, University Hospital of Liège, University of Liège, 4000 Liège, Belgium

Author contributions: Le Dinh H performed the literature review and wrote the manuscript; de Roover A, Kaba A, Lauwick S, Joris J, Delwaide J, Honoré P and Meurisse M constitute the team involved in the care of the liver transplant patients and they reviewed and commented the manuscript; Detry O supervised the review.

Correspondence to: Olivier Detry, Professor, Department of Abdominal Surgery and Transplantation, University Hospital of Liège, University of Liège, Sart Tilman B35, 4000 Liège, Belgium. oli.detry@chu.ulg.ac.be

Telephone: +32-4-3667645 Fax: +32-4-3667069
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inevitable warm ischemia occurring during the declaration of death and organ retrieval process. Experimental strategies intervening in both donors and recipients at different phases of the transplantation process have focused on the attenuation of ischemia-reperfusion injury and already gained encouraging results, and some of them have found their way from pre-clinical success into clinical reality. The future of DCD-LT is promising. Concerted efforts should concentrate on the identification of suitable donors (probably Maastricht category III DCD donors), better donor and recipient matching (high risk donors to low risk recipients), use of advanced organ preservation techniques (oxygenated hypothermic machine perfusion, normothermic machine perfusion, venous systemic oxygen persufflation), and pharmacological modulation (probably a multi-factorial biologic modulation strategy) so that DCD liver allografts could be safely utilized and attain equivalent results as DBD-LT.

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Key words: Non-heart-beating donation; Complication; Bile duct; Allocation; Ischemia; Ischemia-reperfusion injury; Liver disease

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CHU
de Liège

A dedicated multidisciplinary team

- Anesthetists
- Surgeons
- Intensivists
- Cardiologists
- Nurses
- Psychologist



Donor selection

	CHU LIEGE
Maastricht Criteria	III
Age	≤ 50 (?)
PMH	No known cardiac diagnosis
Inotropic support	< 0.3 mcg/Kg/min of noradrenaline
LVEF	$> 50\%$
WIT	≤ 30 Minutes

Donor and recipient selection

- **Local donor and recipient at the beginning**
 - NRP
 - Short cold ischemic time
 - No need to use OCS

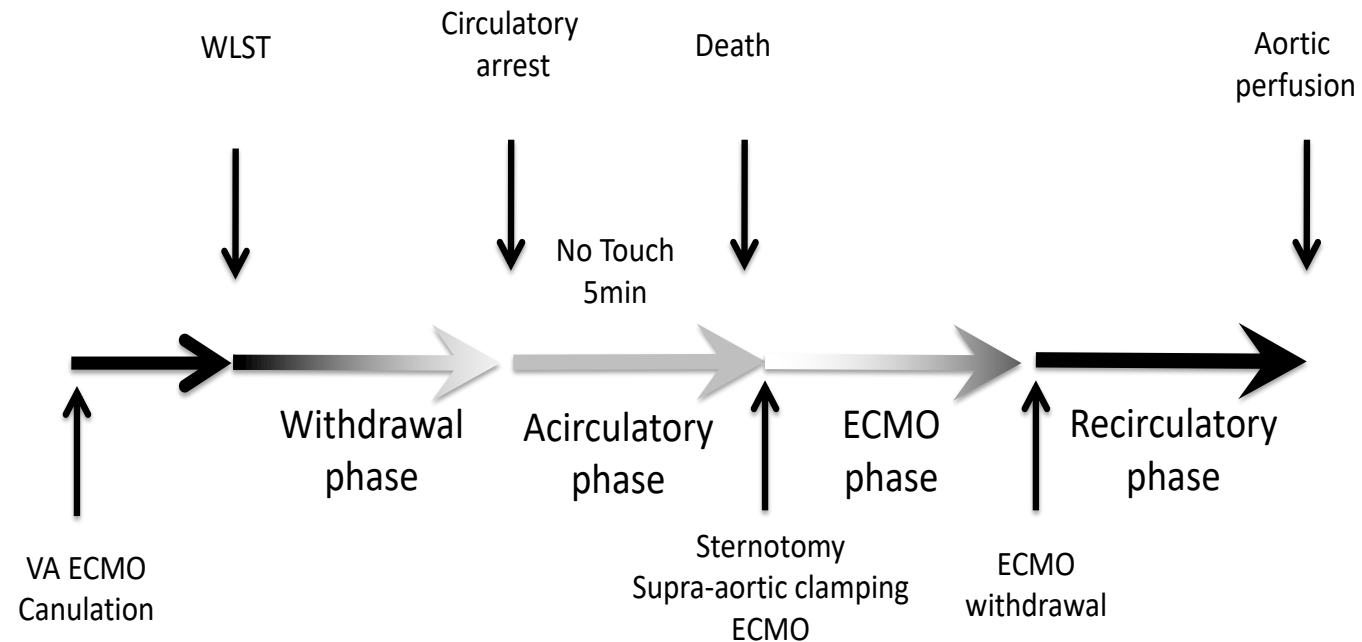
- **Extend to distal recipient with time and experience**
 - 3rd recipient located in another center
 - NRP + cold storage

Elaboration of a Protocol

	CHU LIEGE	Papworth
Localization of withdrawal of life support therapy	Operating Room	ICU or anesthesia Room
Analgesia and sedation	ICU: at the discretion of the physicians OR: volatile anesthetic (sevoflurane)	
Normothermic regional perfusion	Premortem peripheral ECMO cannulas	Central NRP after the sternotomy
Heparin	IV 25000 UI bolus in the OR	30000 UI in the right atrium after the sternotomy
Circulatory arrest	Loss of arterial pulsatility and Mean arterial pressure < 30 mmHg	Mechanical asystole
Death	Circulatory arrest + 5 minutes	Circulatory arrest + 5 minutes
« Knife to skin »	Circulatory arrest + 5 minutes	Circulatory arrest + 5 minutes + OR transfer

protocol

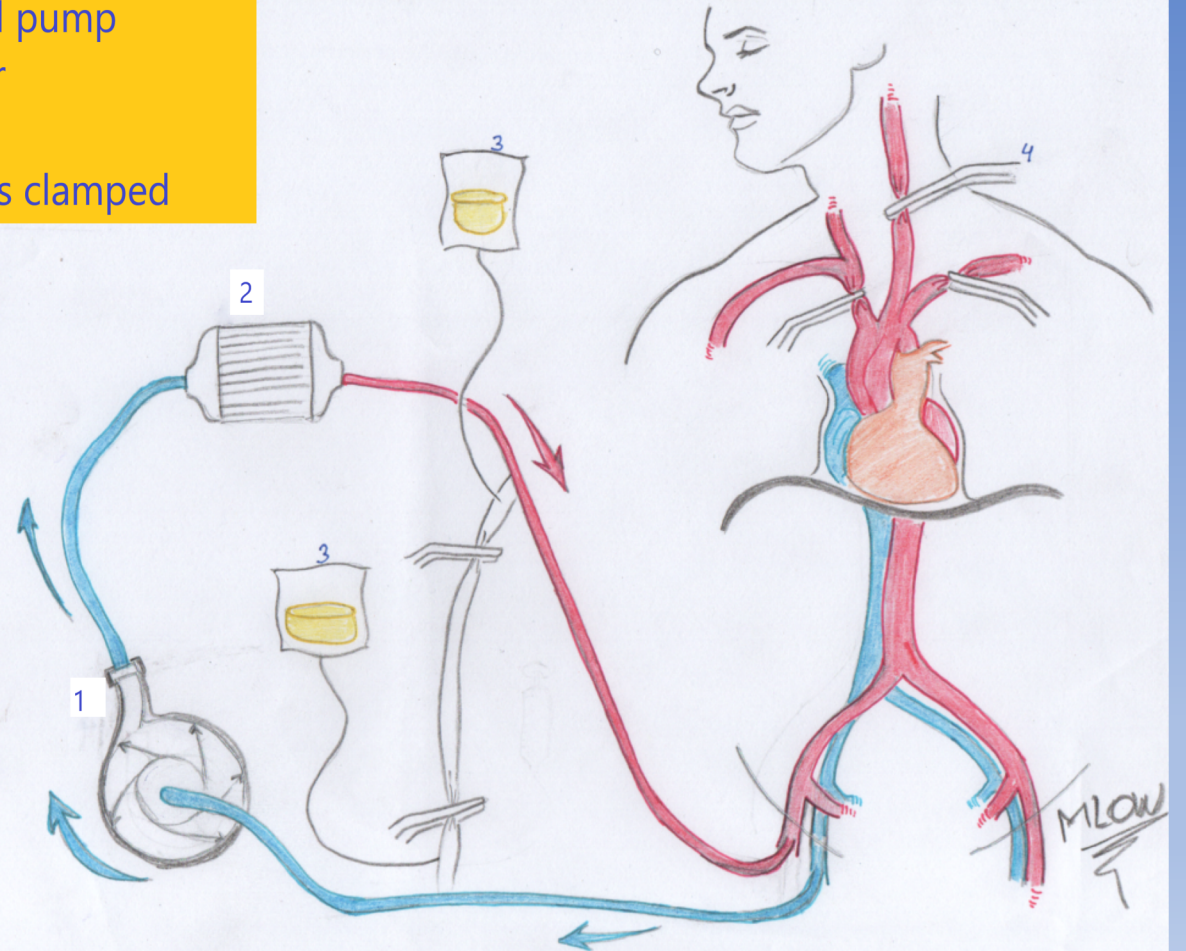
- Transfer ICU → OR
- Premortem ECMO cannulas insertion
- WLST
- Circulatory arrest + 5 minutes
- Sternotomy and clamping of arch vessels
- Start of NRP

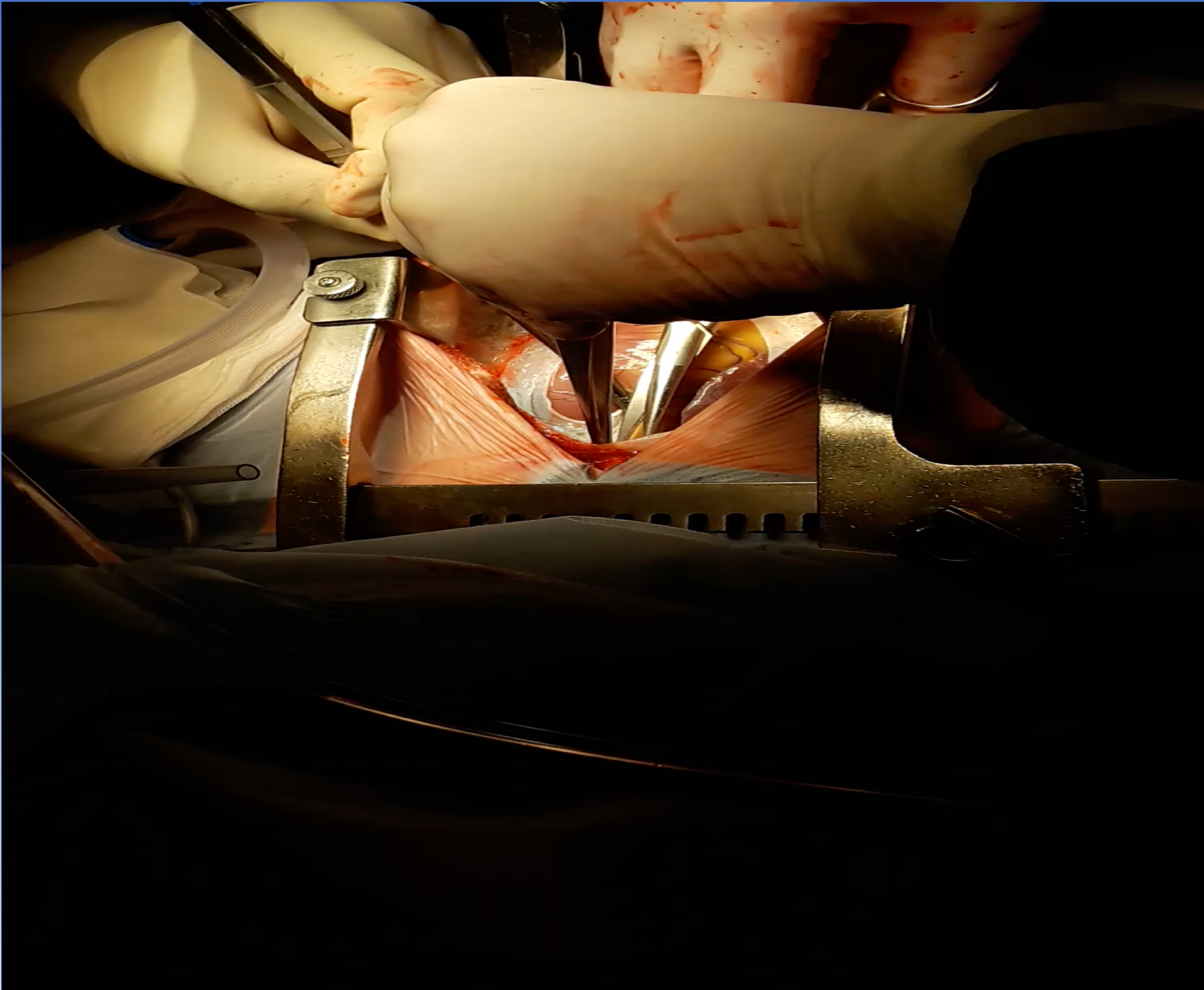


Premortem Insertion of VA ECMO cannulas

- Minimize WIT
- Discussion with the ethics committee

1/ Centrifugal pump
2/Oxygenator
3/Heparin
4/Arch vessels clamped





Our experience

	Donor 1	Donor 2	Donor 3
Age	24	48	12
Gender	Male	Male	Male
Height (cm)	183	177	162
Weight (kg)	59	94	42
Cause of WLST	Intracerebral hemorrhage	Intracerebral hemorrhage	Hypoxic cerebral damage
WLST to circulatory arrest (min)	18	15	11
Knife to skin to onset of NRP (min)	2	6	2
WIT (min)	25	26	18
NRP duration (min)	20	20	16
Restoration of spontaneous sinus rhythm after NRP (min)	1	1	1

Conclusion

- DCD donor heart transplantation is a clinical reality > expand the organ donor pool
- Dedicated team
- Good donor and recipient selection
- Simple Protocol
- Ethical issues.....

Thank You



Criteria for transplantation

- MAP >60 mmHg and maximum of 5ug/kg/min of dopamine
- Sinus rhythm
- CI >2.5 l/min/m²
- CVP>12 mmHg
- CWP<15 mmHg
- LVEF>50%
- TEE (no valvulopathy, no segmental cinetic anomaly)

	RECIPIENT 1	RECIPIENT 2
age	64	59
gender	M	M
height	181	177
weight	64	90
Etiology of Heart failure	Ischemic cardiopathy	Ischemic cardiopathy
Pulmonary vascular resistance	1.8	1.49
Cold ischemic time	16	17
Warm ischemic time	30	53
Post-transplant support	Dobutamine 5u/kg/min	Dobutamine 5u/kg/min Noradrenalin Isuprel
ICU lenght of stay	14	32
Hopital stay	31	54