



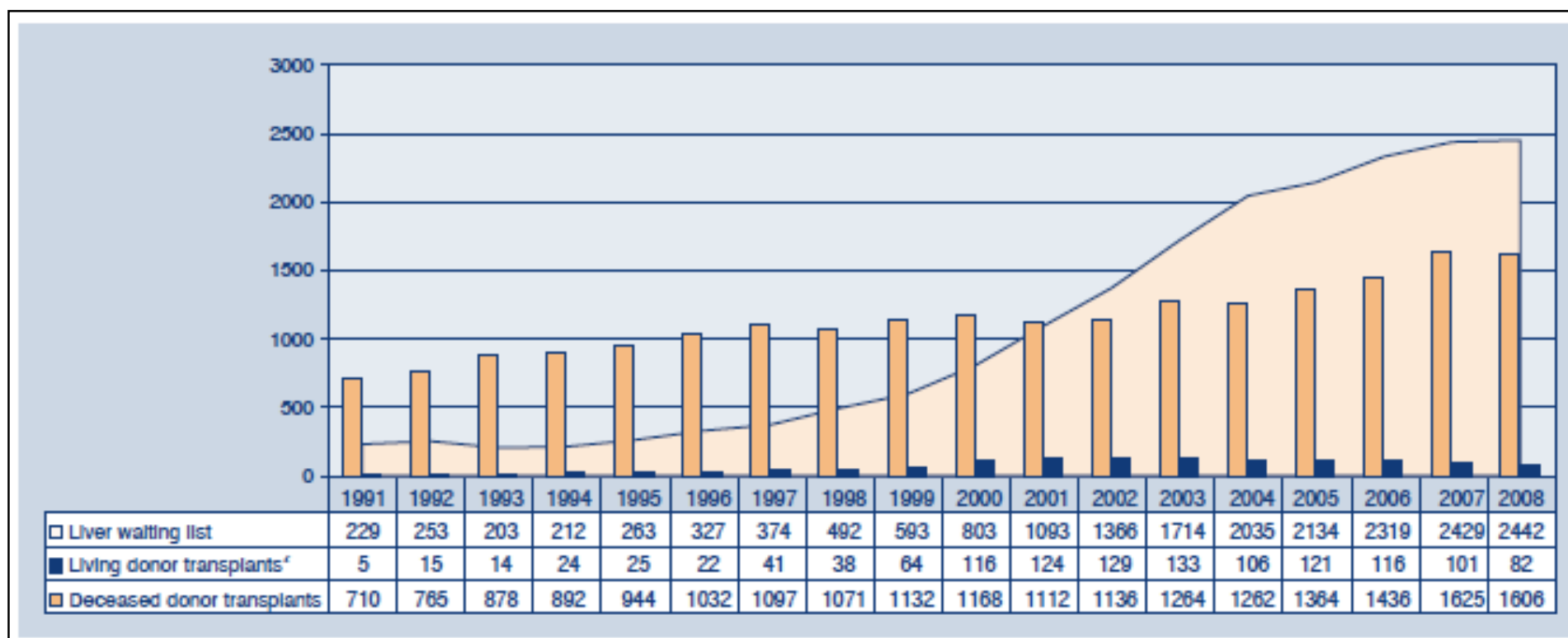
DCD in Liver Transplantation

Pr Olivier Detry

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Liver transplantation in ET





DCD in liver transplantation

- Increased risk of PNF
- Increased risk of ischemic bile duct lesions (IBDL)



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- Decreased graft and patient survival
- Increase risk of retransplantation
- Interest?
- Net gain of liver grafts?

Maastricht DCD categories

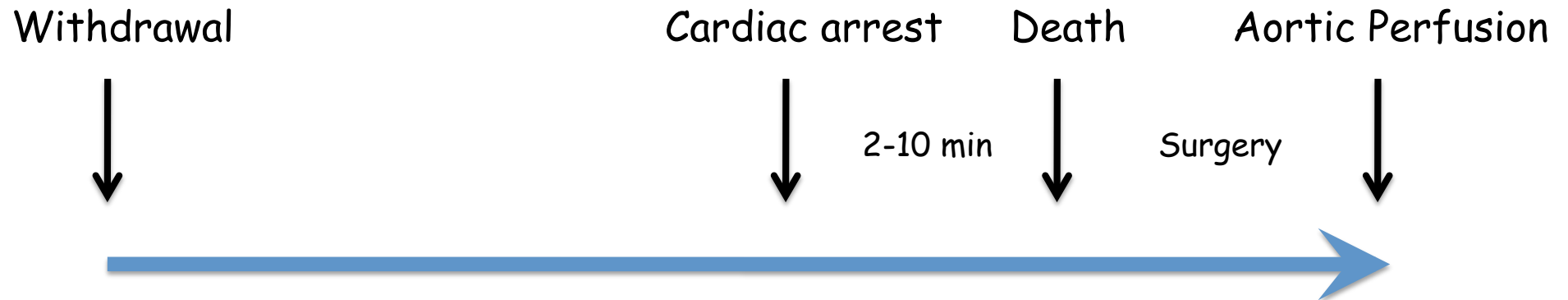
- 1: Death outside hospital
- 2: Failed resuscitation in hospital

“uncontrolled”

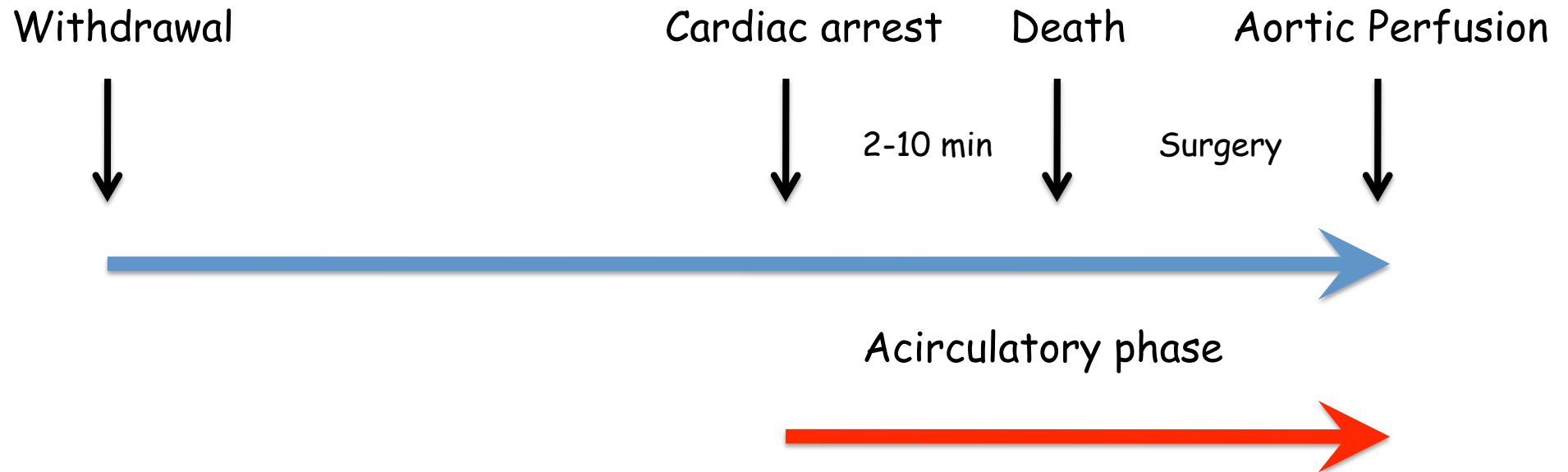
- 3: Planned therapy withdrawal
- 4: Cardiac arrest in a DBD

“controlled”

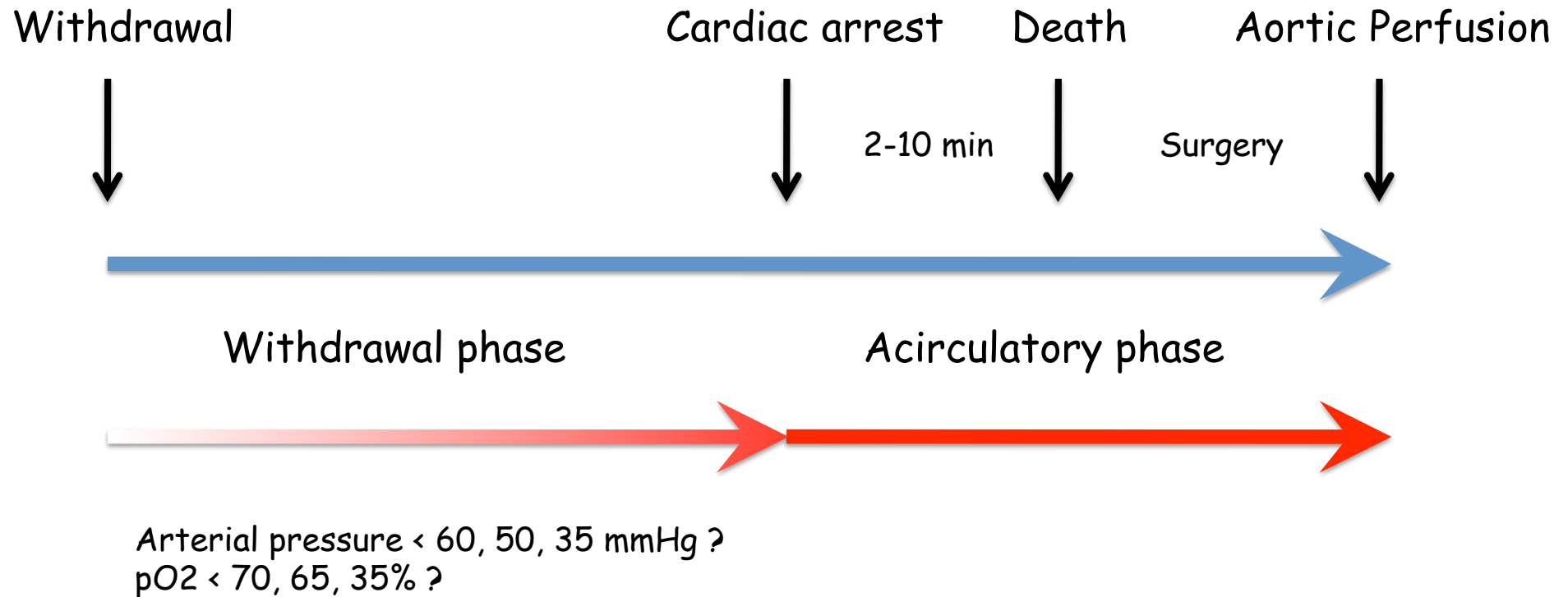
Controlled DCD: WI

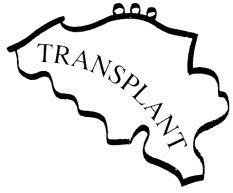


Controlled DCD: WI



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ORIGINAL ARTICLE

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

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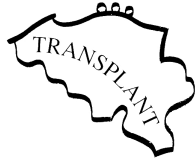
2 Department of Abdominal Surgery and Transplantation, Erasme Hospital, Free University of Brussels, Brussels, Belgium

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

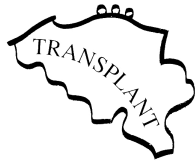
5 Department of Abdominal Transplant Surgery, University Hospitals Leuven, Leuven, Belgium

6 Department of General & Hepatobiliary Surgery, Liver Transplantation Service, Ghent University Hospital & Medical School, Ghent, Belgium



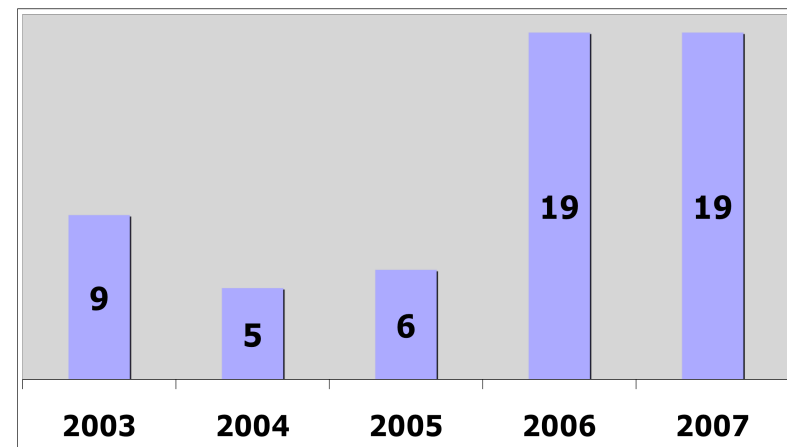
Patients and Methods

- Retrospective review of the whole Belgian experience in DCD-LT up to 12/2007
- 58 controlled DCD liver transplantation
(56 Maastricht category III et 2 category IV)
- All withdrawals in operative rooms
- Center oriented allocation
- No patient lost at follow-up
- Mean follow-up: 22 months



Patients and Methods

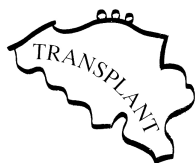
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Donors' characteristics

	Data (mean \pm SEM)	Range
Age (years)	44.6 \pm 1.9	13 - 71
Female (%)	32.7	
CPR (%)	25.8	
Causes of death (<i>n</i>)		
Anoxia	14	
Trauma	23	
Cerebrovascular Accident	17	
Other (euthanasia)	4	
BMI (kg/m ²)	24.5 \pm 0.5	18 - 38
ICU stay (days)	4.8 \pm 0.5	0 - 19
Urinary output (mL/day)	3,002 \pm 266	980 - 8,450
Pressors (%)	44.8	
Na (mmol/L)	142.3 \pm 0.8	129 - 164
Total bilirubin (mg/dL)	0.53 \pm 0.04	0.11 - 1.3
AST (U/L)	50.5 \pm 5.7	10 - 300
GGT (U/L)	59.8 \pm 12.1	3 - 606



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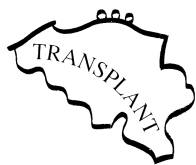
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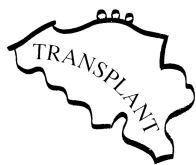
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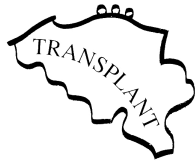
Procurements - Transplantations

	Data (mean \pm SEM)	Range
Heparin (%)	82.7	
HTK / UW (n)	38 / 20	
Graft allocation Local /National/ International (n)	38 / 15 / 5	
Procurement warm ischemia (min)	25.18 \pm 2.2	10 - 109
Extubation – cardiac arrest (min)	14.75 \pm 2.09	4 - 98
Cardiac arrest– aortic perfusion (min)	10.6 \pm 0.84	4 - 38
Cold ischemia (min)	451 \pm 18	148 - 770



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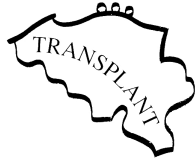
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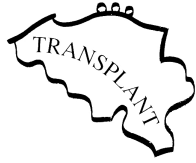
Recipients

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Age (years)	54.9 \pm 1.5	10 - 70
MELD score	15.4 \pm 1	6 - 37
Indications:		
cirrhosis	26	
hepatocarcinoma	22	
Status HU	5	
Others	5	



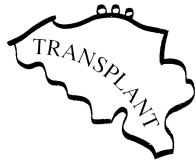
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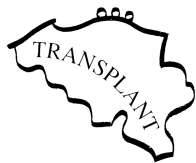
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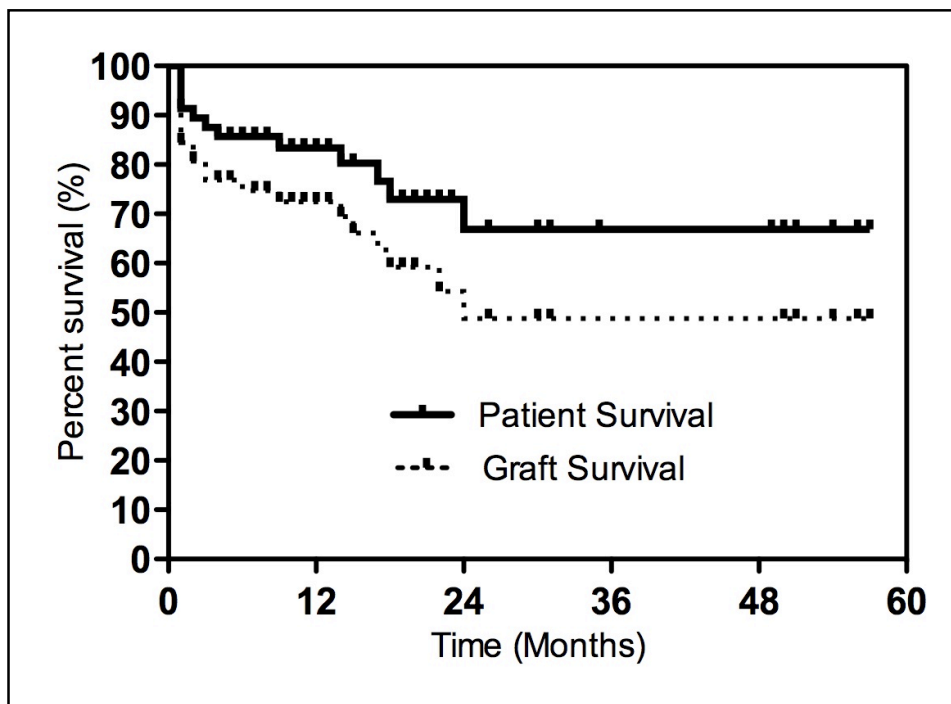


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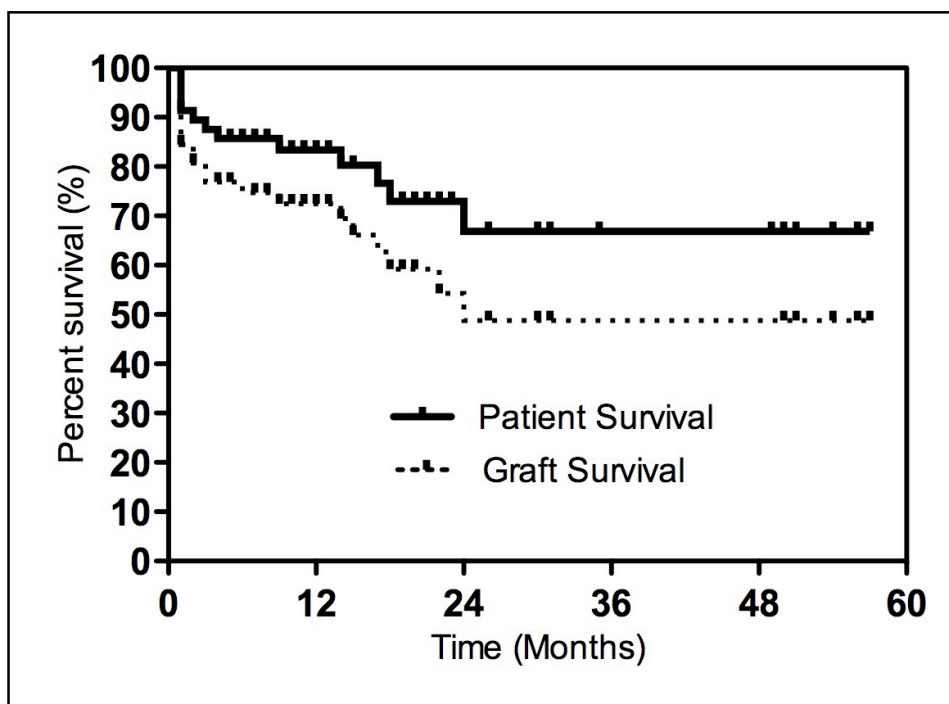


Survivals





Survivals



	Univariate analysis	<i>p</i>
CIT > 6h	Graft	0.04
Withdrawal > 15 min	Death	0.02
Donor WI > 20 min	Graft	0.06

Causes of graft loss and patient's death

Causes of graft loss	n	Outcome	Link to DCD donation
PNF	2 (3.4%)	1 death, 1 reTx	probable
Operative death	2	2 deaths	possible
Hepatic artery thrombosis	2	1 death, 1 reTx	possible
ARDS, MOF	2	2 deaths	possible
Diffuses intrahepatic stenoses	7 (12%)	1 death, 6 reTx ^o	highly probable
Unrelated death	7	7 deaths	none



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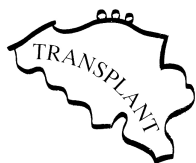
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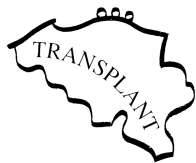
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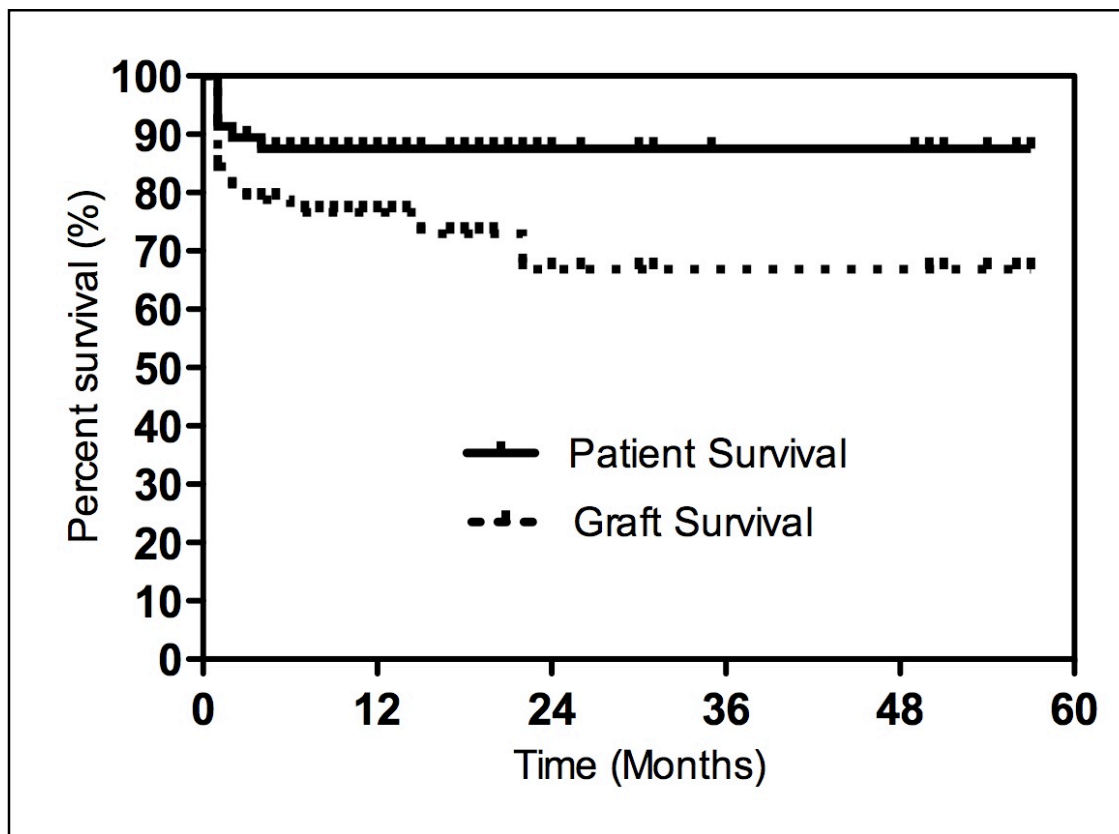
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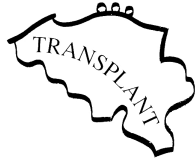
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Censored survivals





Biliary complications

- 7 (12%) graft losses (1 death, 6 reTx)
- 12 (20%) symptomatic bile duct lesions treated by endoscopy or surgery
- Symptomatic biliary lesions in liver grafts that survived 3 months: 19/50 (39%)



Conclusions

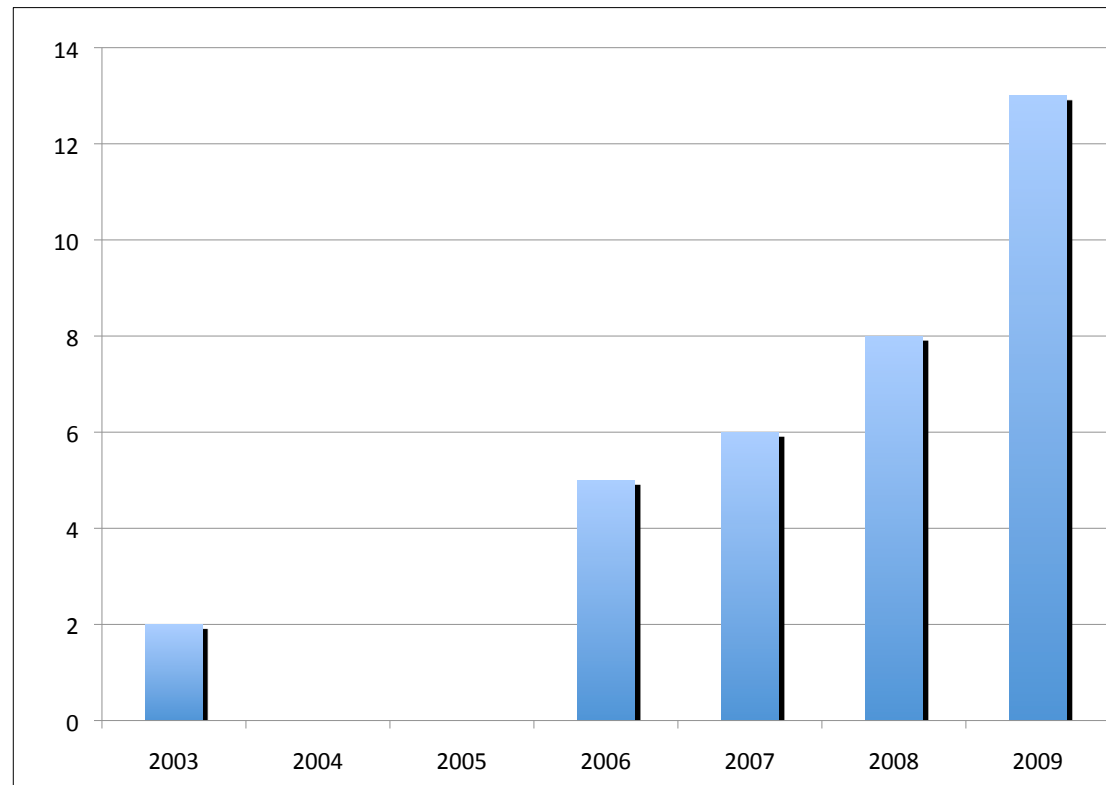
- Controlled DCD liver transplantation:
 - increased risk of ischemic cholangiopathy
 - increased risk of reTx and death
- Warm ischemia < 30 min
- Cold ischemia < 6 hr



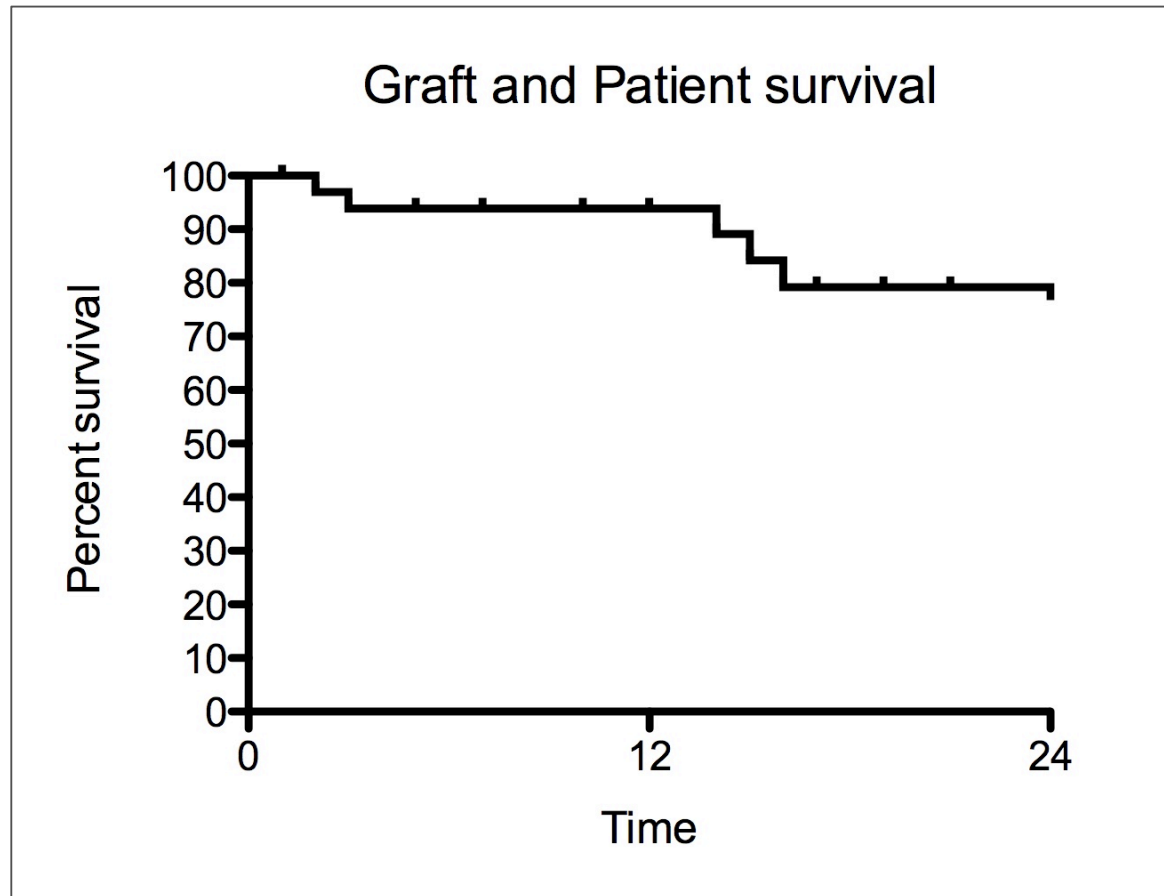
RESULTS OF LIVER TRANSPLANTATION (LT) FROM CONTROLLED DONATION AFTER CARDIAC DEATH (DCD) DONORS: UNIVERSITY OF LIEGE EXPERIENCE

35 DCD liver transplantations (including one combined LKTx)
from 2003 to 1/2010

DCD-LT at the University of Liège



Post transplant survival



Procurements - Transplantations

	Data (extremes)
Heparin pre withdrawal (%)	92%
HTK/UW (%)	83%
DWIT (min)	20.5 (13 - 39)
Withdrawal phase (min)	11.5 (3 - 30)
Acirculatory phase (min)	8.9 (4 - 15)
Procurement time (min)	24.4 (17 - 75)
CIT (min)	273.5 (105 - 576)
Suture time (min)	39.3 (25 - 53)

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Recipients

	Mean (extremes)
Age (years)	55.5 (25-70)
Female (%)	14.2
Liver disease (<i>n</i>)	
HCC	18
Cirrhosis	16
Other	1
MELD	16.3 (6-40)

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Post transplant data

	Data or mean (extremes)
Peak bilirubin (mg/dL)	53 (3.6 - 154.1)
Peak AST (UI/mL)	2,453 (285 - 21,928)
PNF (n)	0
Retransplantation (n)	0
Biliary complications	
endoscopy	4
hepatico-jejunostomy	3
Recipient's death	7
Sarcoma	2 (1 transmitted, 1 de novo)
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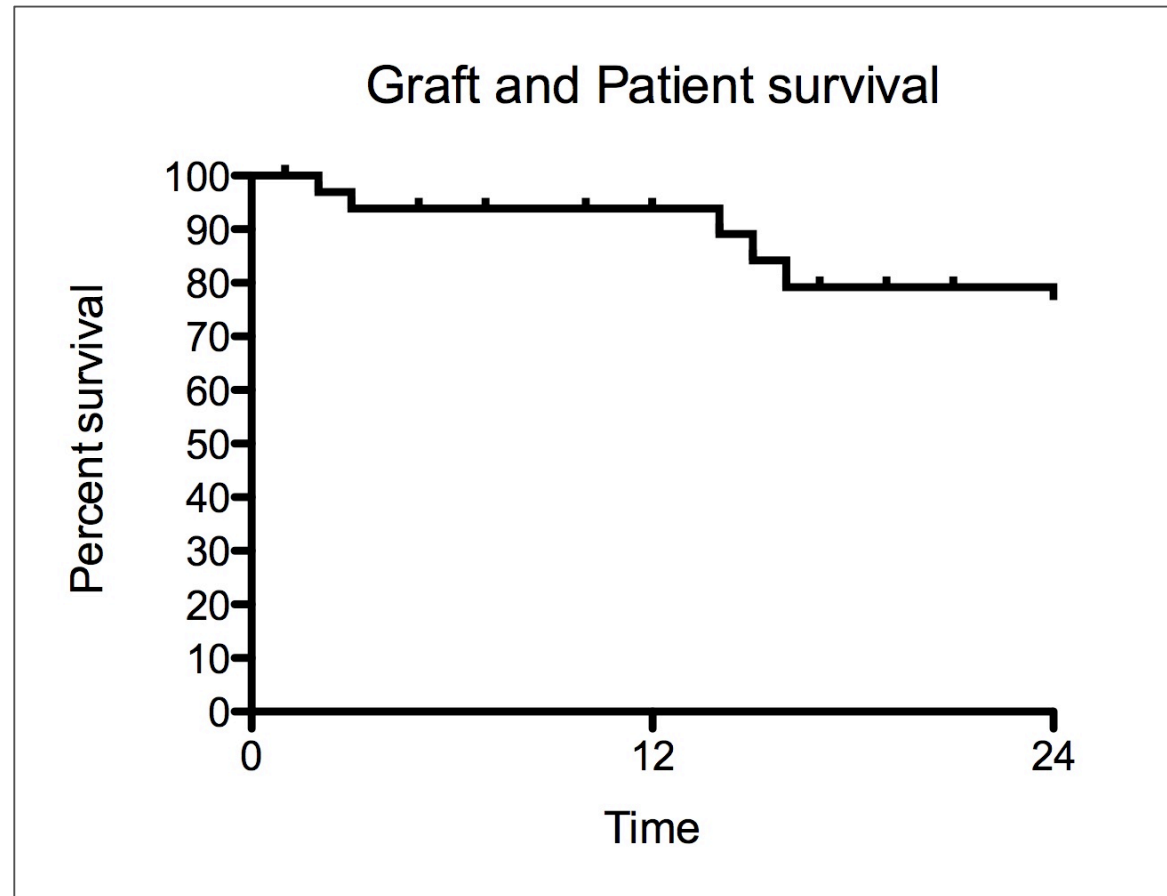
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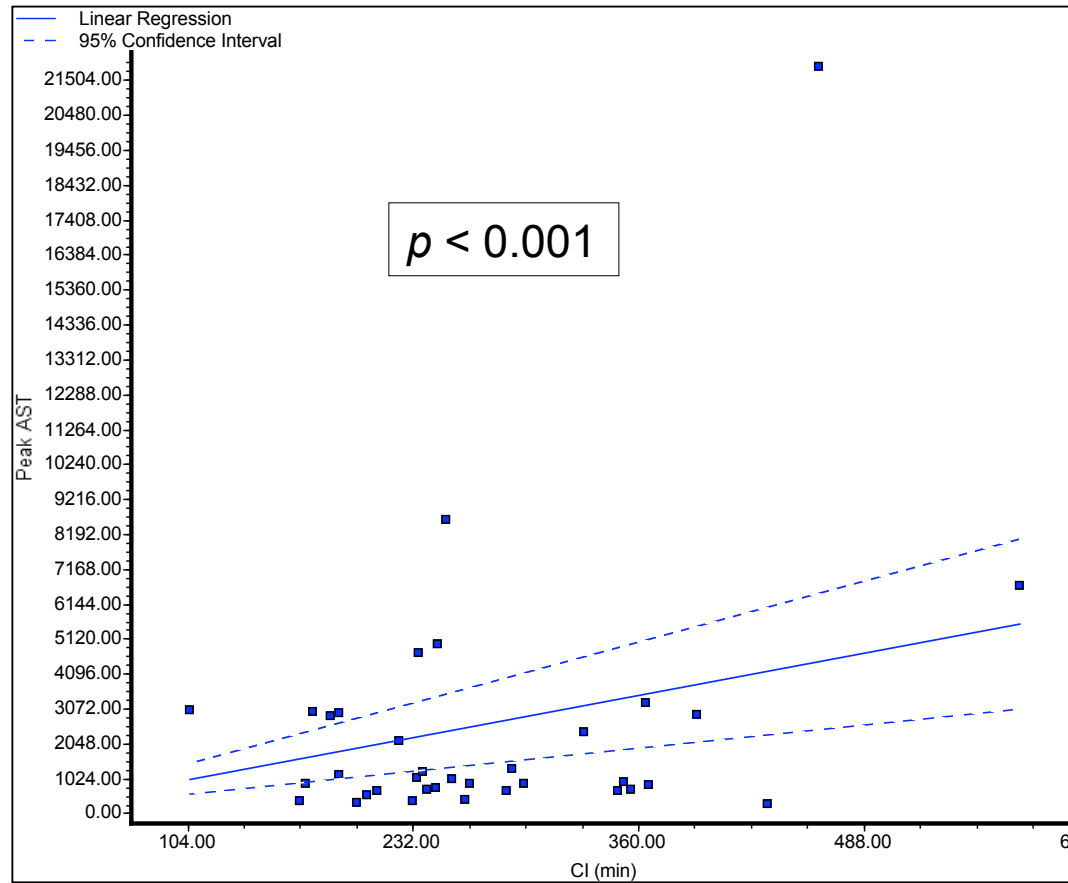
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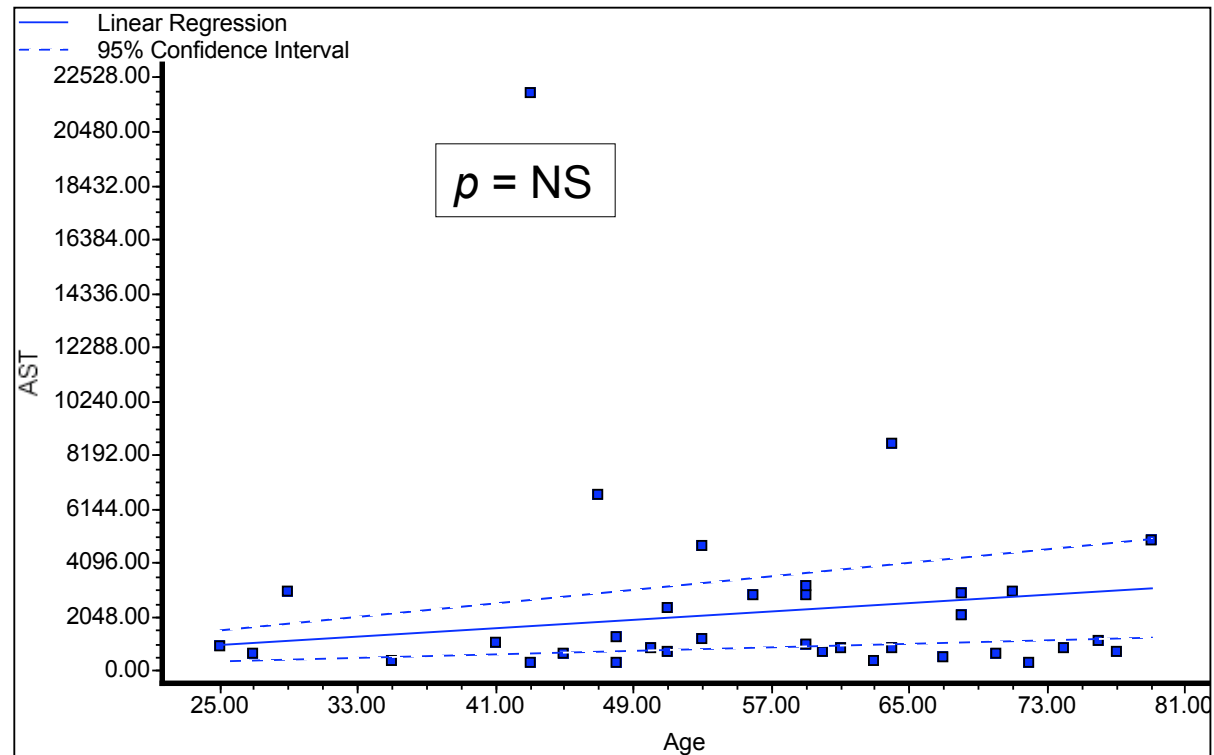
Post transplant survival



Correlations: AST - CI

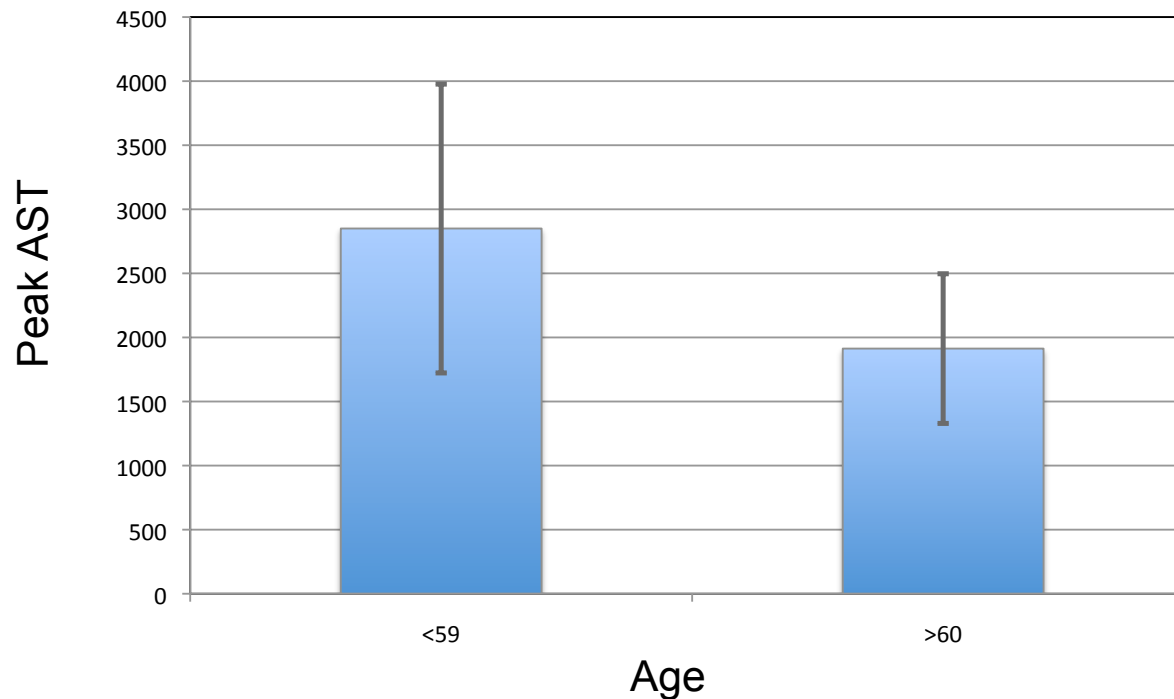


Correlations: AST - Donor's age



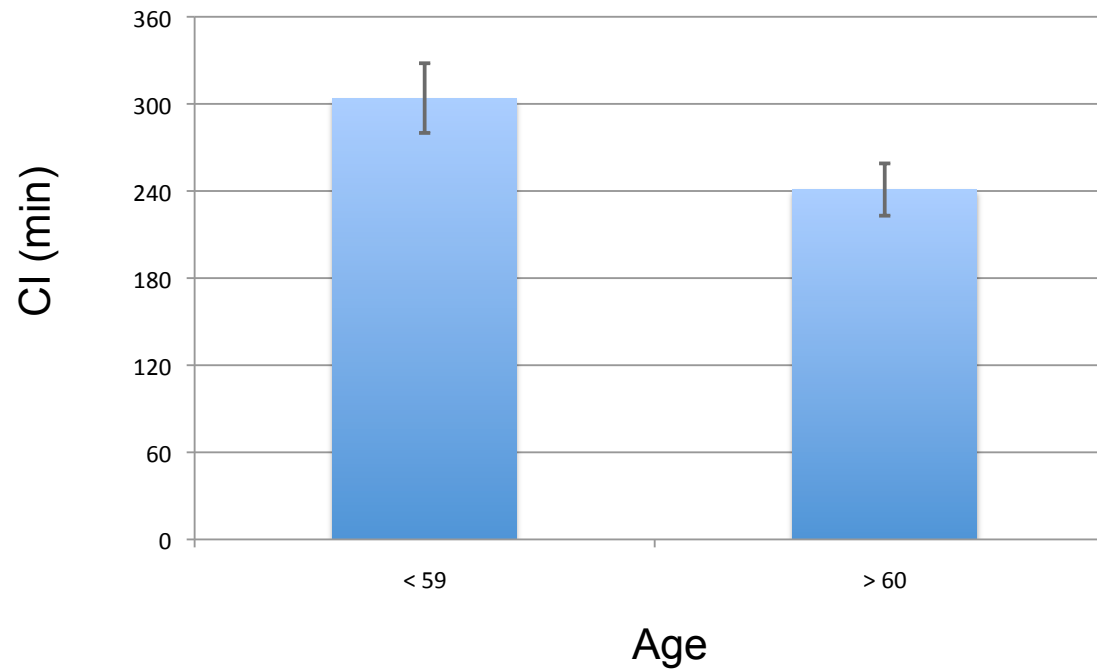
Age – peak AST

Mean donor age: 56.6 years (27 – 79)



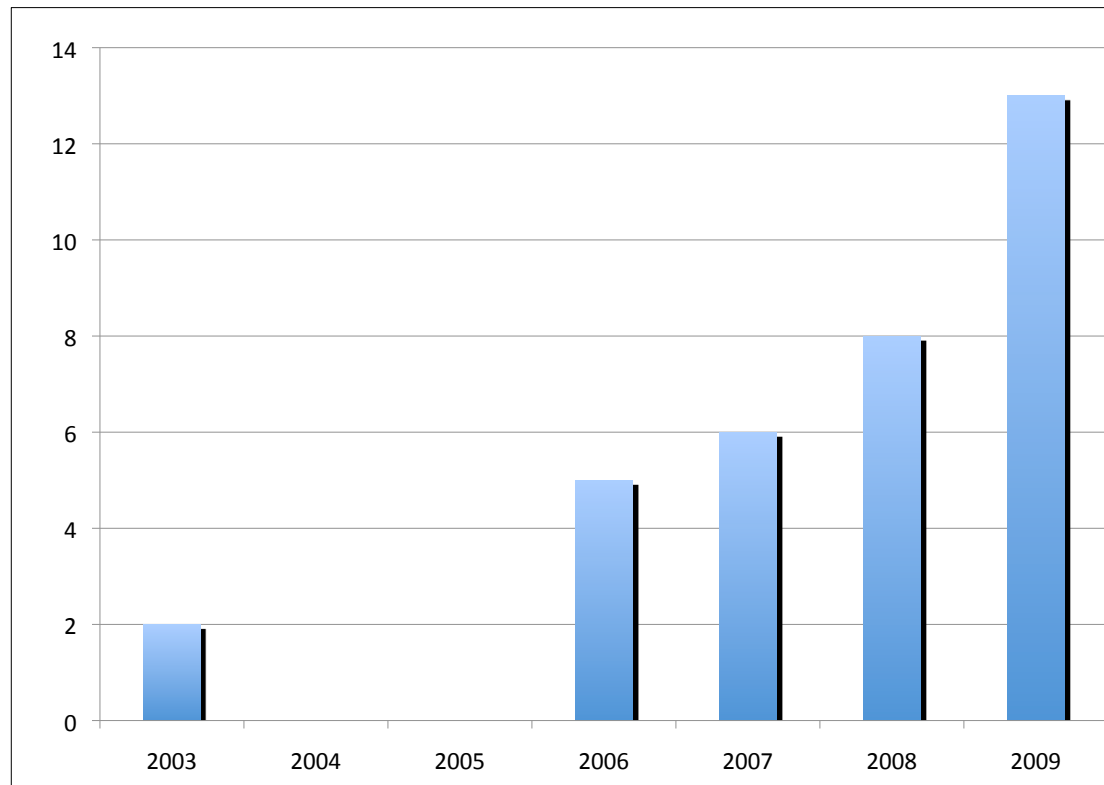
$p = \text{NS}$

Age – peak AST

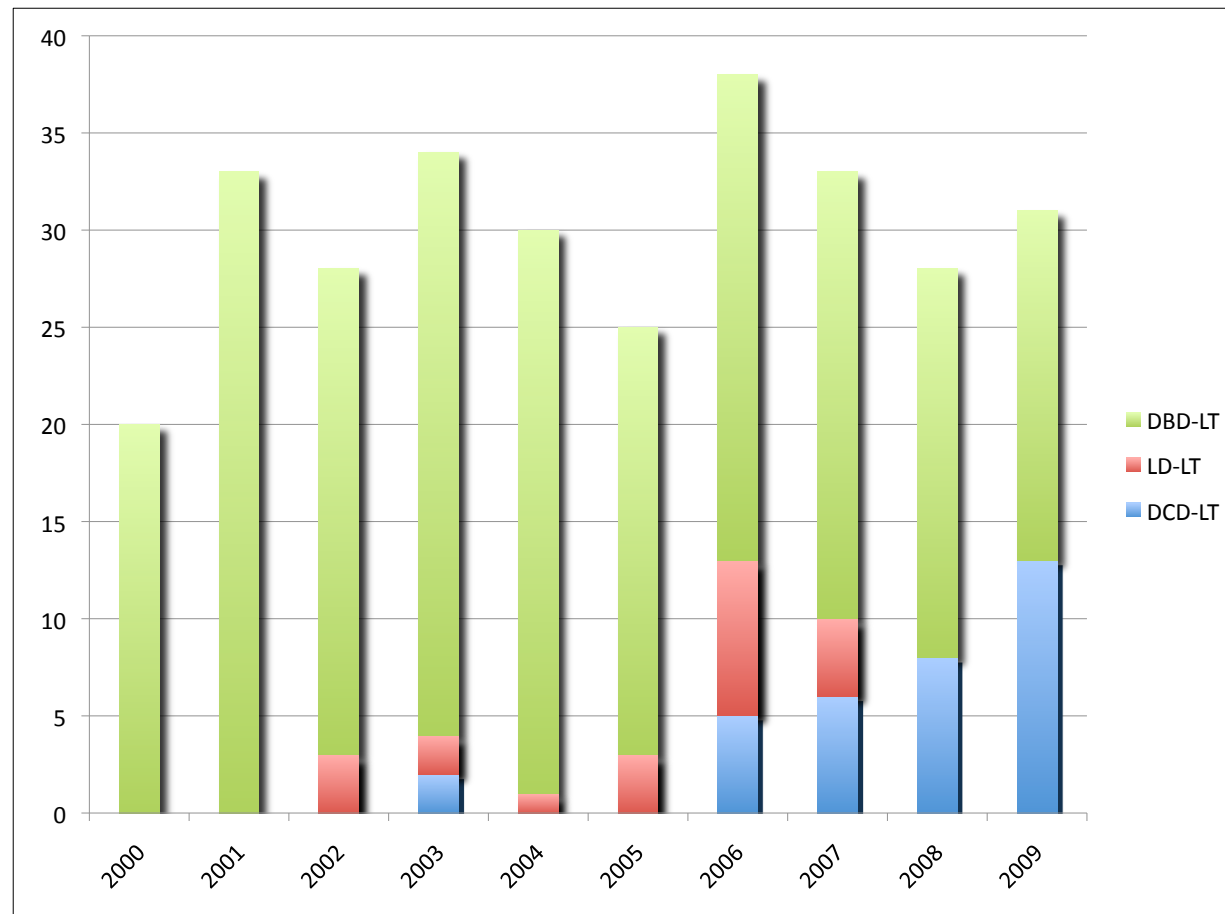


$p = 0.056$

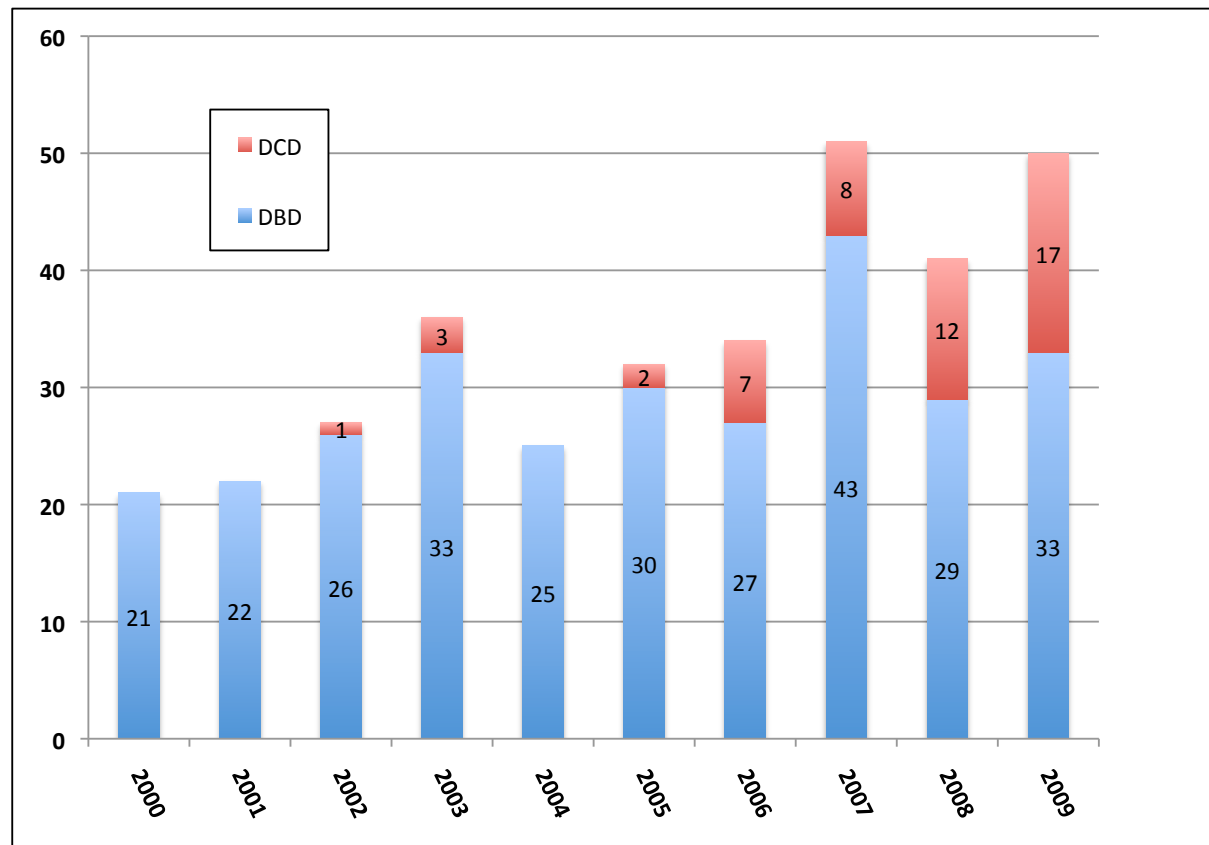
DCD-LT at the University of Liège



LT at the University of Liège



Organ donation at the University of Liège





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- DCD donors > 60 y of age should be considered with a very short CI (4 hours)