

Supporting information - Content

Figure S1a,b. Immunosuppressive regime and time schedule for donation after circulatory death Maastricht category III, and details of organ procedure in the Netherlands.

Figure S2. Histogram cold ischemia time and donor type, whole cohort.

Figure S3. Cumulative incidence of the first event to occur: 1) loss of graft, or 2) patient death.

Figure S4. Histogram of cold ischemia time and donor type in the Eurotransplant Senior Program, and baseline characteristics of donor type in the Eurotransplant Senior Program.

Table S1. Paired DCD kidney analyses.

Figure S1a,b.

Immunosuppression

Initial immunosuppressive therapy in DCD Maastricht category III consisted of steroids combined with mycophenolate mofetil or mycophenolic acid and a calcineurin inhibitor, mostly tacrolimus but also cyclosporine. Alternatively, a combination of steroids, Tacrolimus, and Sirolimus was used. Other than the fact that this combination was used more frequently in DCD versus DBD (32.9% vs 5.9%, respectively), the immunosuppressive regimen in the two groups was identical. Some recipients of grafts from both DBD and DCD were also treated with induction therapy consisting of anti-thymocyte globulin (ALG) or Basiliximab.

Multi organ donation procedure: donation after controlled circulatory-death

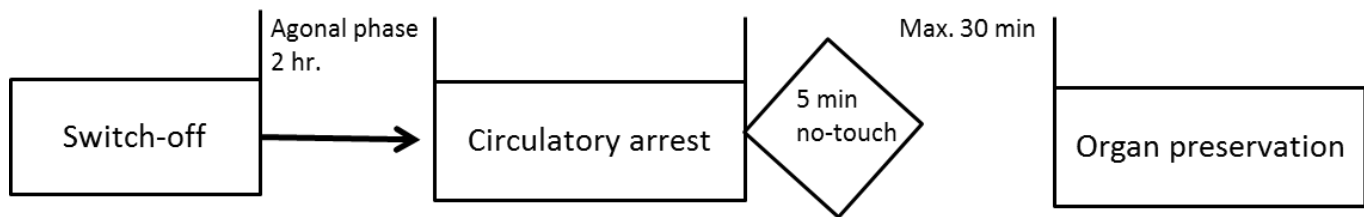


Figure S1a: Time schedule for donation after circulatory death Maastricht category III.

Multi organ donation procedure: donation after circulatory-death

The age limit for controlled circulatory-death donor is <75 years. Contra indications for transplantation are: unknown cause of death, unknown identity, untreated sepsis, malignancies except from primary non-metastasized brain tumours, active viral infections, active TBC, anencephaly, and donor with primary kidney disease of donor.

In Maastricht category III DCD donors, the kidneys, liver, lungs and pancreas can be donated. In case of kidney donation, time between switch-off and cardiac arrest is restricted to 120 minutes. The patient is placed on its back, and a median sterno-laparotomy is performed, with open cannulation of the aorta (distal abdominal aorta and common iliac artery), and the lung arteries in case of lung donation. The organs are cooled with cold perfusion through these cannula's and by external cooling with sterile ice and Ringer's lactate that is placed in the abdominal cavity. The kidneys are taken out last. All organs that will be donated are preserved for transportation.

Kidney donation procedure: donation after circulatory-death

In case only the kidneys are being donated, in-situ perfusion can be initiated earlier on the emergency ward, intensive care unit or operating room, by using a double-balloon triple-lumen catheter. During the donation operation the patient is placed on its back, and a median laparotomy is performed, afterwards the kidneys are preserved for transportation. This procedure takes 2 to 3 hours.

Double balloon triple lumen catheter

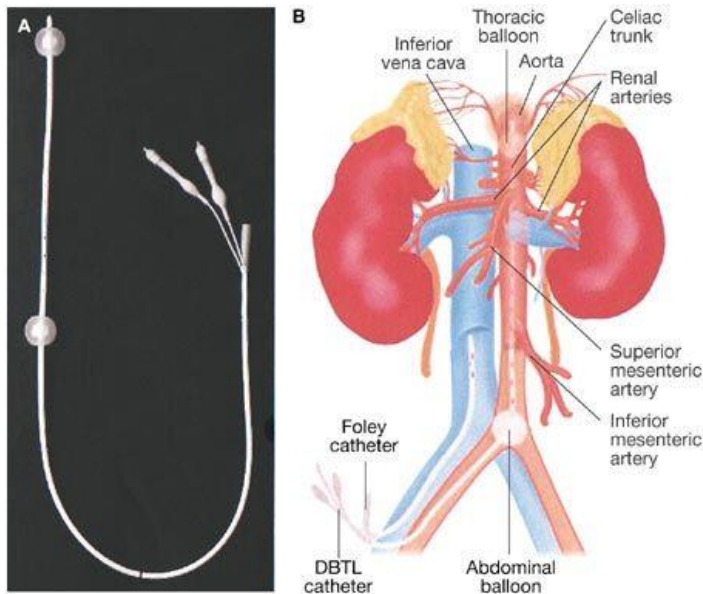


Figure S1b: Cold ischemia time is initiated with in-situ perfusion with ice-cold preservation solution; histidine-tryptophan-ketoglutarate (Custodiol®). In-situ perfusion is performed with a double-balloon-triple-lumen (DBTL) catheter, which is inserted in the femoral artery and the two balloons are placed in the aorta. The two balloons are inflated and occlude the aorta between the diaphragm and the aortic bifurcation, thereby creating a regional circuit in which the cold preservation fluid is flushed. This in-situ perfusion is intended to decrease the temperature in order to impair cellular damage and to flush out the entire donor's blood to prevent coagulation. Effusion of the perfusion fluid from the kidneys is flushed to a urinary catheter which is inserted into the femoral vein. In accordance with the relatives of the donor patient and the transplantation coordinator, the cold in-situ perfusion can be initiated in the donor patient at the emergency ward, intensive care unit or the operating room. In DCD donors, a 5 minute no-touch period is initiated between circulatory arrest and placement of the DBTL-catheter, which guarantees brain-death. The donation procedure is preferred to take place within one hour after initiation of the cold in-situ perfusion.

Reference:

- Hoogland ER, Snoeijs MG, van Heurn LW. DCD kidney transplantation: results and measures to improve outcome. *Current opinion in organ transplantation*. 2010;15(2):177-182.
- Dutch Transplant Foundation (In Dutch: Nederlandse Transplantatie Stichting). Protocol for deceased organ and tissue donation (In Dutch: Modelprotocol postmortale orgaan- en weefseldonatie). Version 2006/2007. Retrieved from Dutch Transplant Foundation.

Figure S2.

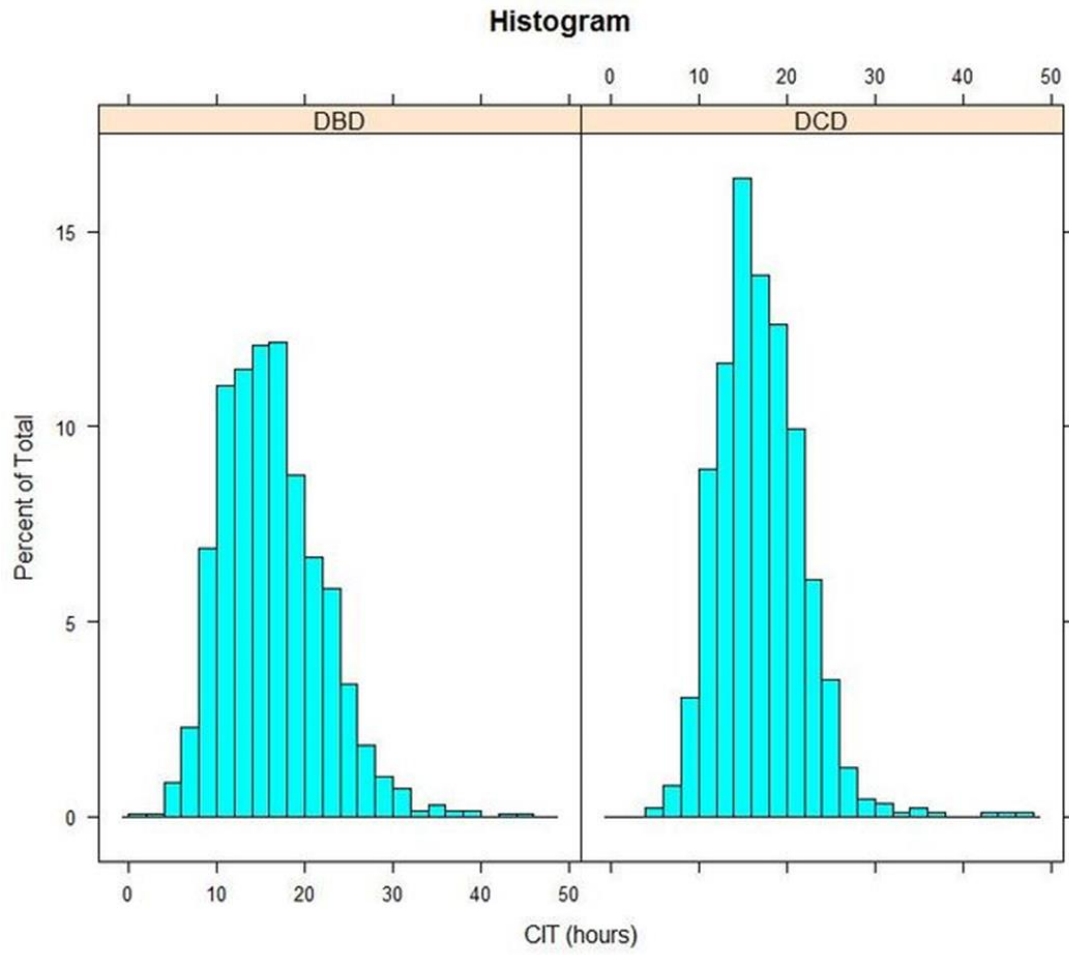


Figure S2: Histogram of cold ischemia time according to donor type for the whole cohort.

Figure S3.

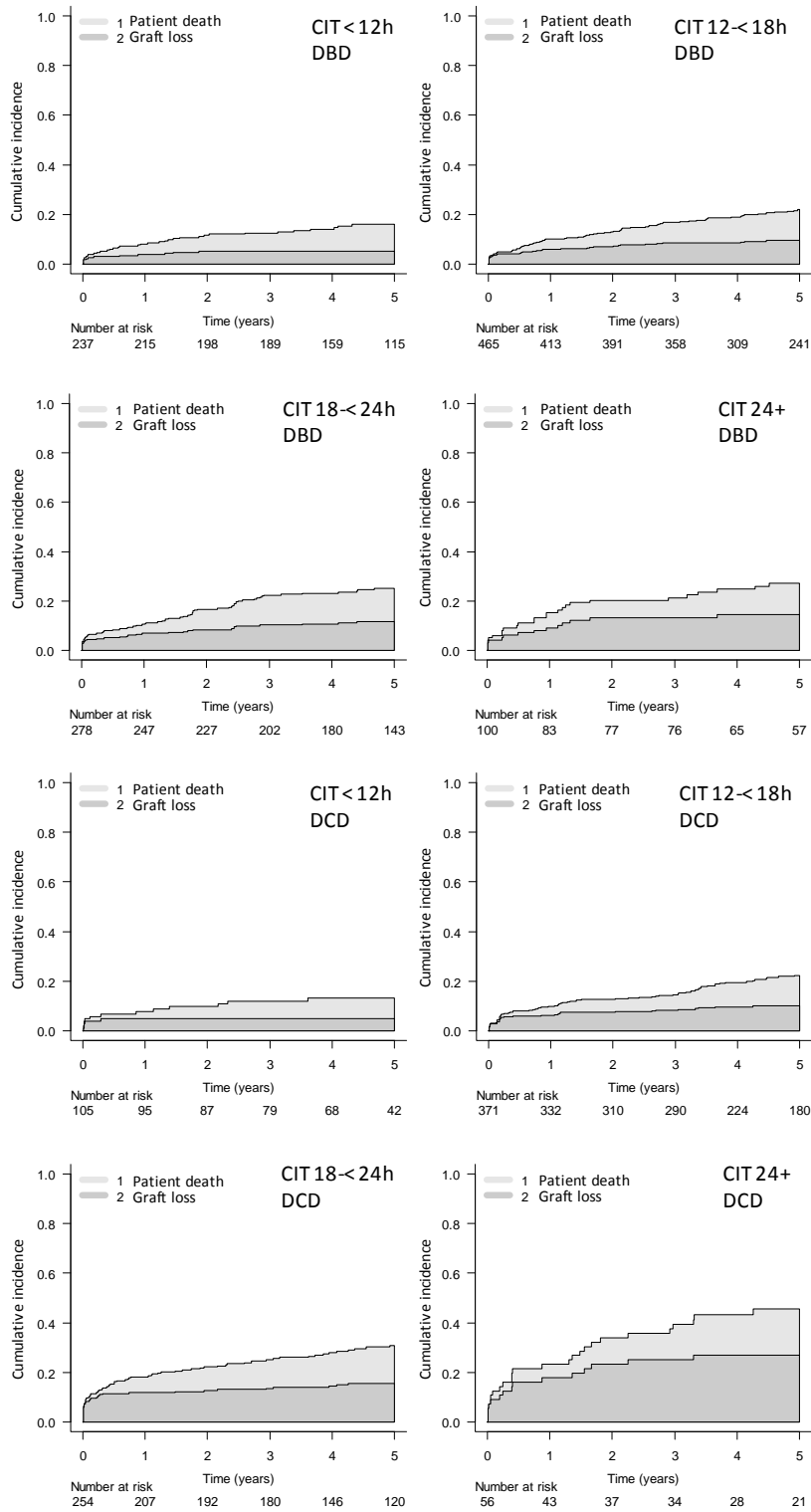
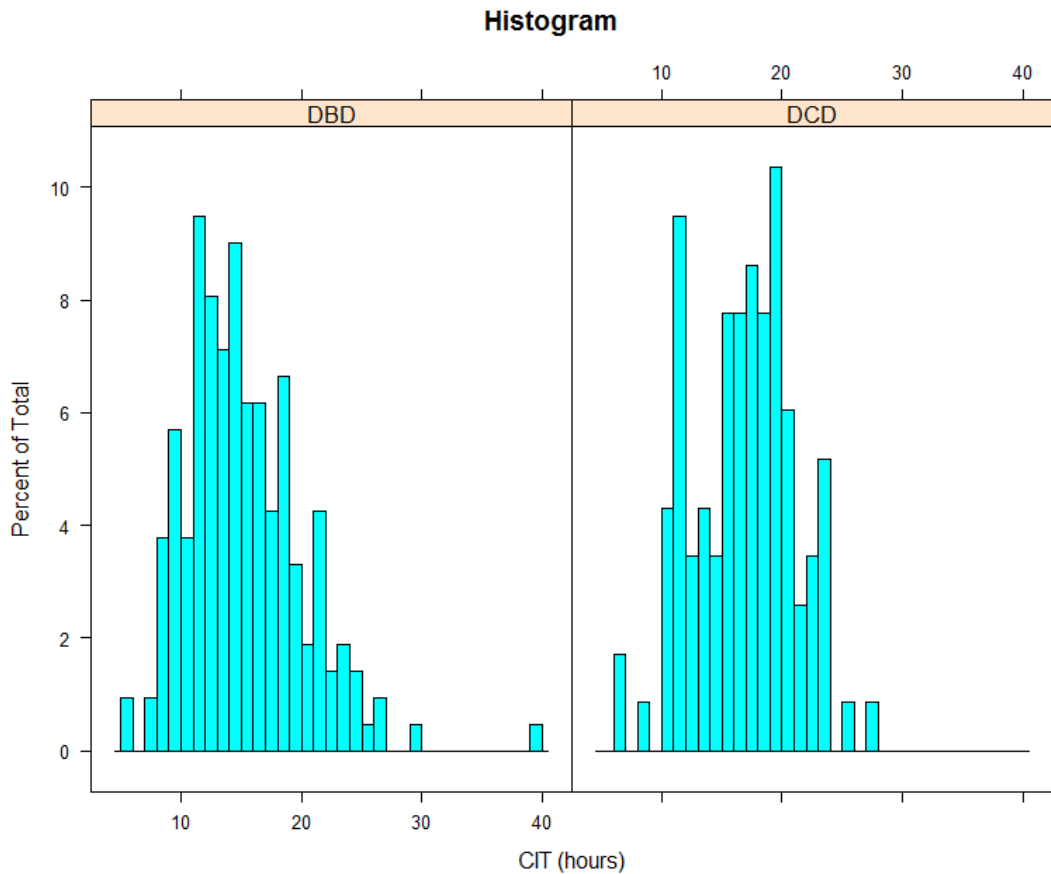


Figure S3. Stacked cumulative incidence (%) as the first event to occur for loss of a graft (event 2) or patient death (event 1). Percentages of both events are presented in Figure 1 in the article. CIT = Cold Ischemic Time; DBD = Donation after Brain-Death; DCD = Donation after Circulatory-Death.

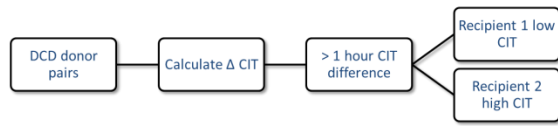
Figure S4.



	DBD N=211 Median / N	DCD N=116 Median / N	P value
Donor parameters			
Age (yr)	68	67	.048
KDRI	1.94 (1.76-2.23)	2.03 (1.90-2.39)	.037
Transplant parameters			
Total HLA mismatches	4	4	.769
Cold ischemia time (hrs)	14.6 (12.0-18.2)	17.5 (13.3-19.7)	<.001
Anastomosis time (min)	34	33	.683
Recipient parameters			
Age (yr)	69	68	.462
Sex (Male)	140	78	.230
Dialysis vintage (years)	3.3	3.2	.417
BMI	25.7	25.9	.905
Diabetes at transplantation	48 (24%)	33 (30%)	.220

Figure S4: Histogram of cold ischemia time according to donor type for the transplants within the Eurotransplant Senior Program (ESP). Table underneath shows distribution of characteristics between DBD and DCD in the ESP. Only cold ischemia time was significantly higher in the DCD cohort. KDRI was significantly higher in the DCD, because of the DCD parameter in the KDRI itself.

Table S1.



DCD Δ 1hrs CIT	Pair 1 Low (n=283)	Pair 2 High (n=283)	p
	Median / N	Median / N	
CIT	14.6	19.5	<.001
WIT2	32	33	.933
ESP (yes)	46	46	.999
PRA	0	0	.880
HLA mismatches	3	3	.622
Recipient			
Age (years)	57	58	.614
Sex (male)	168	181	.261
BMI	25.9	25.6	.401
Diabetes (yes)	44	60	.082
Dialyses vintage (years)	3.8	3.9	.933