French controlled donation after circulatory arrest (cDCD) program: First results

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National protocol for the cDCD

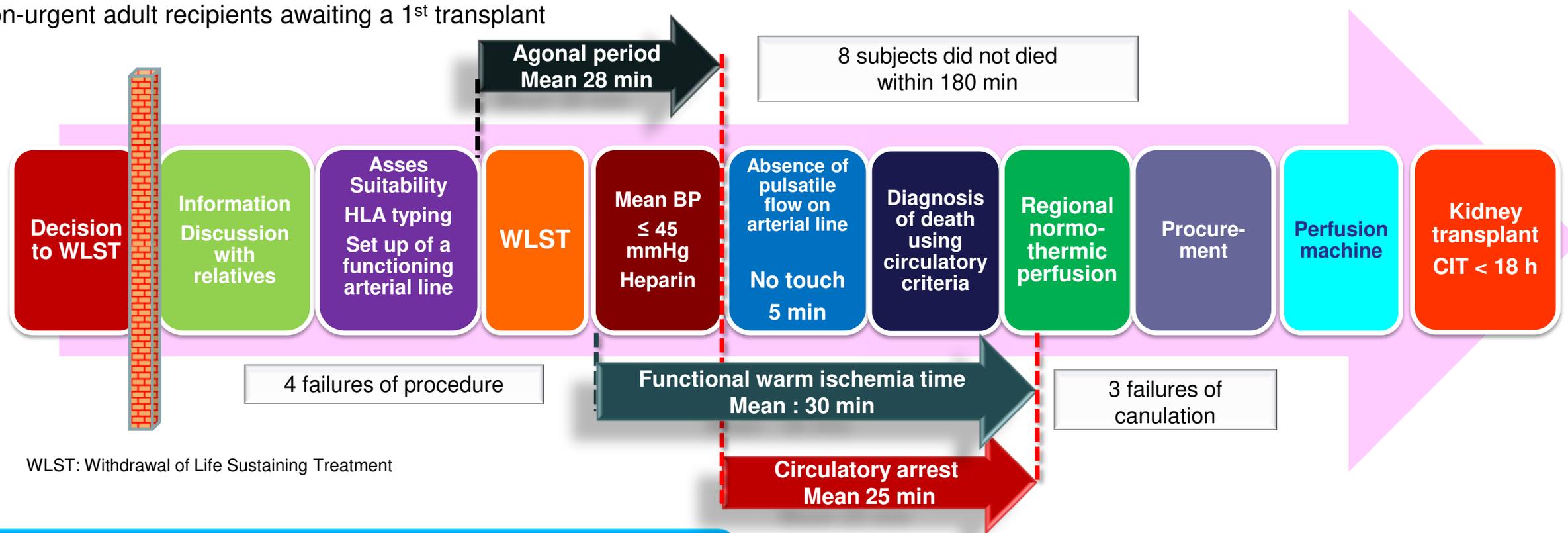
Program authorised since 2014 (*How France launched its donation after cardiac death program, Antoine C, et al. AnnFrAn 2014*):

- **Donor age ≤65 years,**
- Functional Warm Ischemia Time (fWIT) <120 min for kidney,
- In situ kidney perfusion performed by normothermia regional perfusion (nRP),
- **Machine perfusion** use
- Short cold ischemia times (CIT) <18h,
- Non-urgent adult recipients awaiting a 1st transplant

Protocol objective : Results similar to grafts from DBD

Similar if some conditions

- Exclusion of fWIT injury factors
- nRP for recovery of cellular damage induced by warm ischemia
  - ➢ Implementation after declaration of death
  - ➢ Recommended for kidney and mandatory for liver
- Ex vivo perfusion after sampling
  - ➢ Organ rehabilitation and viability criteria
  - ➢ Mandatory for kidney and lung transplants



WLST: Withdrawal of Life Sustaining Treatment

First Kidney graft results : cDCD vs. DBD

Inclusion

- cDCD and DBD (≤65 years)
- Adult recipients awaiting a 1st transplant
- cDCD inclusion between jan 2015 and oct 2016 → 92 grafts
- DBD inclusion between jan 2013 and oct 2015 →3934 grafts

Second cohort – Matching cohort criteria:

- Donor / Recipient Age +/- 10 years
- Time spent on dialysis :None, < 36 months, ≥ 36 months
- Cause of ESRD : Diabetes, other
- cPRA : 0%, 1-84%, 85-100%

Result of the matching process

- Between 2 and 10 DBD for one cDCD
- 79% of cDCD have 10 DBD controls
- 92 cDCD grafts for 846 DBD controls

Matching cohort - First results:

- PNF: 1% for cDCD vs. 4% for DBD, NS
- DGF: 9% for cDCD vs. 18% for DBD, p=0.033
- eGFR at discharge: 48ml/min for cDCD vs. 44ml/min for DBD, NS

Table 1. First Kidney graft results : cDCD vs. DBD

		DBD (N=3,934)		cDCD (N=84)		
		N	%	N	%	p-value
Donor Age		48,1		49,1		0,21
Recipient Age		49,2		56,8		<0,001
Cause of ESRD	Diabetes	352	9%	10	11%	0,005
	PKD	706	18%	19	21%	
cPRA (%)	0%	2393	61%	49	53%	0,003
	1-84%	1192	30%	41	45%	
	85-100%	349	9%	2	2%	
Time spent on dialysis	Preemptive	405	10%	20	22%	0,002
	≥ 36 months	1607	41%	27	29%	
Waiting time (month), mean		26,8		25,5		0,58
CIT (h), mean		16,6		10,3		<0,001
Outcomes results						
PNF		106	3%	1	1%	0,33
DGF		735	20%	8	9%	0,008
DGF	preemptive excluded	697	21%	8	11%	0,037

Matching cohort	DBD (N=846)		cDCD (N=84)		
CIT (h)	16,5		10,3		<0,001
PNF	29	4%	1	1%	0,21
DGF	138	18%	8	9%	0,033
Initial hospitalization (day) , mean	15		14		0,7
eGFR at discharge (MDRD, ml/min)	44		48		0,07
% of DGF with only one dialysis	20	19%	2	29%	0,53

PNF: primary non function, **DGF**: delayed graft function

P-value: chi-square test or two-sided Fisher's exact test for qualitative variables and Student's t-test or Wilcoxon's rank sum test for quantitative variables

- **National consensual protocol limiting accumulation risk factors including respect of fWIT and CIT and use of the CRN for all donors**
- **Optimal transplant results :**
  - ➢ **Kidney graft : 1 case of PNF and less than 10% of DGF**
  - ➢ **28 liver grafts and 3 pulmonary grafts without early allograft dysfunction and with excellent transplant outcomes**

These good results ensue from a consensual national protocol, which aims were to limit warm ischemia times and injuries, thanks to the use of nRP, optimal graft preservation and recipient selection

Thanks to all members of the National Steering Committee of Non Heart Beating donors : Mobile out-of-hospital care units, firemen units, Organ procurement networks, Intensive care Units and kidney transplant Units

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