NHS
Blood and Transplant

Maximising the Potential for DCD in the UK

NHS Blood and Transplants Perspectives

Anthony Clarkson

Director of Organ Donation and Transplantation

Yes I donate
ORGAN DONATION

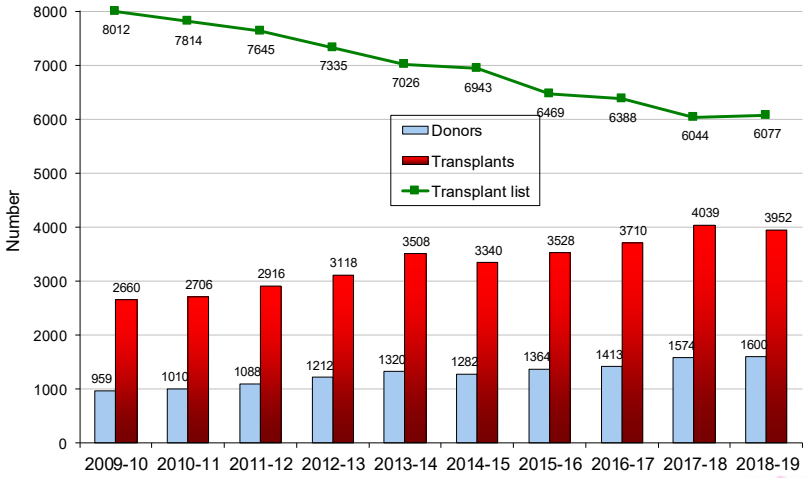
NHS
Blood and Transplant

Introduction

Yes I donate
ORGAN DONATION

NHS Blood and Transplant

UK Organ Donation: The Past Decade



Over the last ten years

24% fall in waiting lists

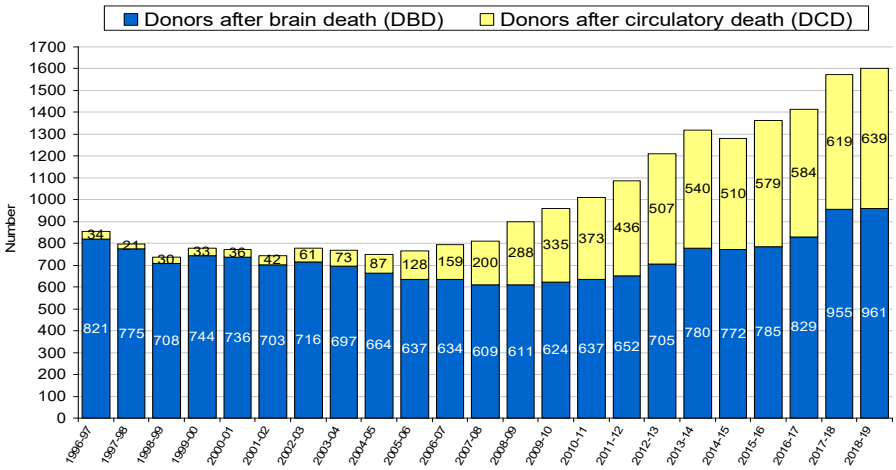
49% increase in transplants (all organs)

67% increase in deceased organ donors

Yes I donate ORGAN DONATION

NHS Blood and Transplant

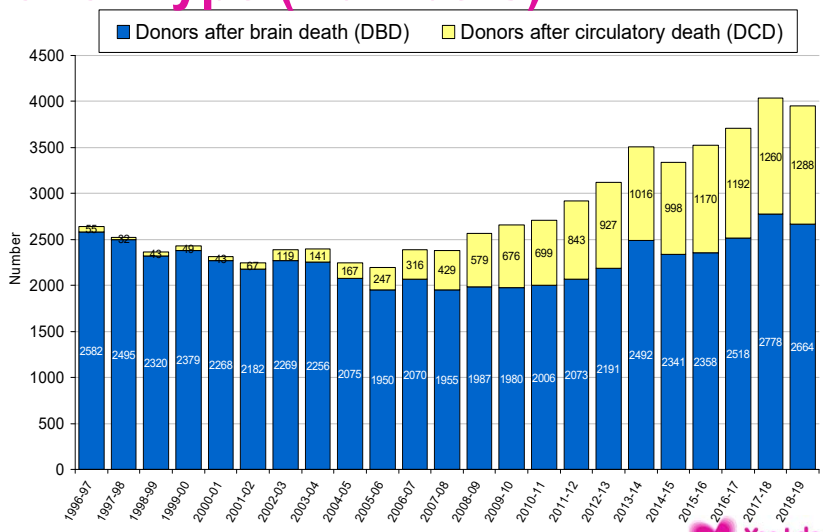
The Increase in DCD Donation



Yes I donate ORGAN DONATION

Solid Organ Transplants By Donor Type (Numbers)

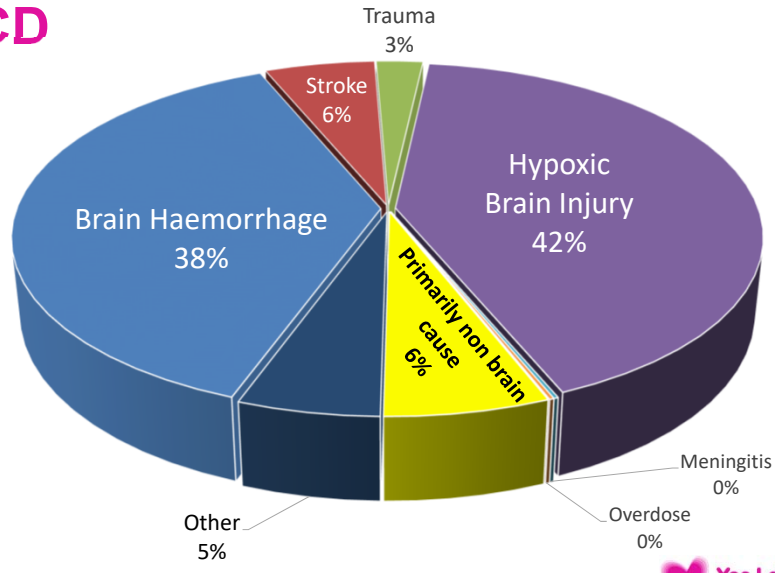
NHS Blood and Transplant



Yes I donate ORGAN DONATION

Primary cause of death in DCD

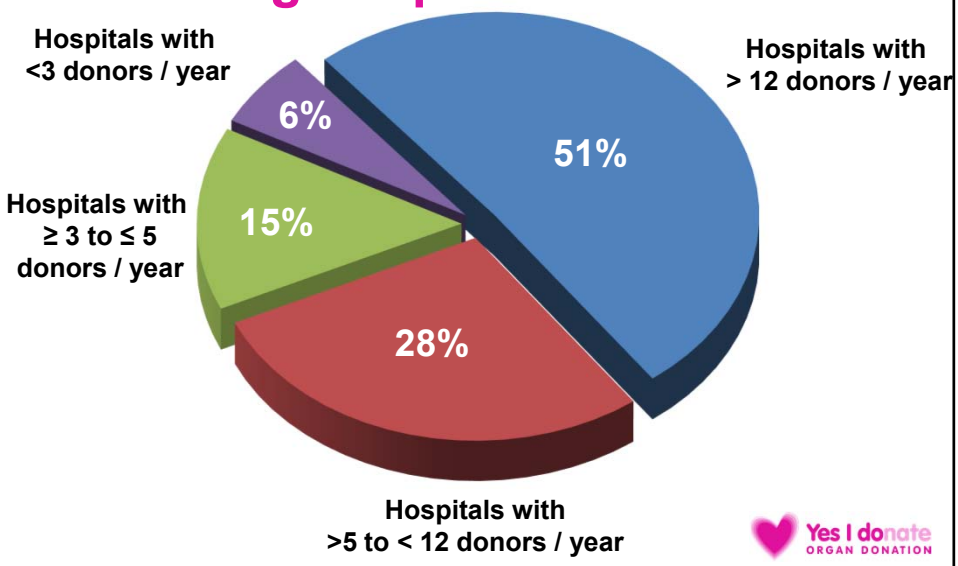
NHS Blood and Transplant



Yes I donate ORGAN DONATION

UK DCD contribution by size of donating hospitals

NHS Blood and Transplant



Yes I donate ORGAN DONATION

NHS Blood and Transplant

Background

Yes I donate ORGAN DONATION

UK Organ Donation Taskforce

NHS Blood and Transplant

2008

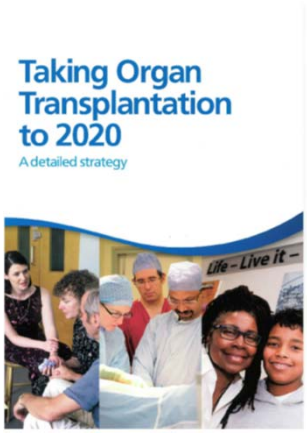
DH Department of Health

"In the context of a catastrophic neurological injury, when no further treatment options are available or appropriate and there is no intention to confirm death by neurological criteria, the DTC should be notified when a decision has been made by a consultant to withdraw active treatment and this has been recorded in a dated, timed and signed entry in the case notes."

Yes I donate ORGAN DONATION

Taking Organ Transplantation to 2020

NHS Blood and Transplant



- Publish hospital data to include variation in donor referral rates. This will include the publication of variation in referral of potential DCD Donors on a hospital, regional and national basis
- Establish a national referral service to improve the support to hospitals and provide rapid triage of potential donors. This may include a service to triage potential Category III DCD donors rapidly
- Develop a system of peer review that is underpinned by a set of agreed standards for retrieval/transplant centres
- Develop training programmes to sustain and increase clinicians' organ donation understanding and expertise

Yes I donate ORGAN DONATION

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Blood and Transplant

Operational Implementation

Yes I donate
ORGAN DONATION

Supporting DCD Organ Donations

NHS
Blood and Transplant

Need to support increasing DCD donation rates while still reducing 24hr working for the Nursing Teams within the context of increasing DCD donation timescales.

Introduction of Specialist Requester role into UK:

- Statistically significant improvement in DCD consent with SR involved
- Ends 24 hr working for SR and SN-OD
- Workforce fit to support increasing % of donations as DCD

Yes I donate
ORGAN DONATION

NHS Blood and Transplant

Advocates for Change

All parts of the National Health Service must embrace organ donation as a usual, not an unusual event.

Local policies, constructed around national guidelines, should be put in place. Discussions about donation should be part of all end-of-life care when appropriate.

Each hospital should have an identified clinical donation champion, an assigned specialist nurse for organ donation and a Trust donation committee to help achieve this.

Specialist Nurse for Organ Donation (SN-OD)

Clinical Lead for Organ Donation (CLOD)

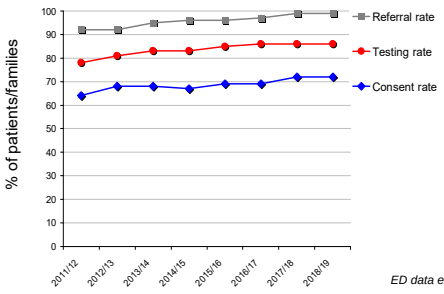
Non-clinical Donation Committee Chair

Yes I donate ORGAN DONATION

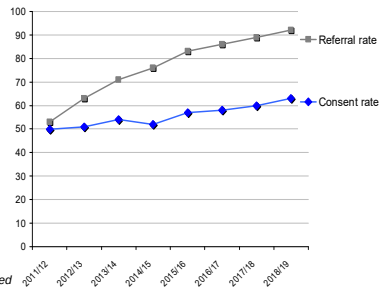
Increasing the DCD Referral Rate

NHS Blood and Transplant

DBD donation



DCD donation



ED data excluded

Referral rate - percentage of neurological death suspected (or imminent death anticipated) patients referred to SN-OD
Testing rate - percentage of neurological death suspected patients tested for brain death
Consent/authorisation rate - percentage of families approached where consent/authorisation for donation was ascertained

Yes I donate ORGAN DONATION

Different Family Behaviours

NHS Blood and Transplant

DBD Donation after Brain Death		DCD Donation after Circulatory Death
69%	**CONSENT**	**59%**
25	ODR Overrule	63
17	Length of the Process = Decline	124
50%	Acceptance Order of St John Award for Organ Donation	75%

Yes I donate ORGAN DONATION

Deceased donation balance sheet

NHS Blood and Transplant

	DBD	DCD
Consents	888	1112
Actual donors	784	566

DCD did not proceed because of prolonged time to asystole = 44%

Yes I donate ORGAN DONATION

Deceased donation balance sheet

NHS Blood and Transplant

	DBD	DCD
Family approaches	1293	1941
Transplants	2632	1267
Transplants / family approach	2.03	0.65

DBD: one family approach → 2 organs
DCD: two family approaches → 1 organ

Yes I donate ORGAN DONATION

Training

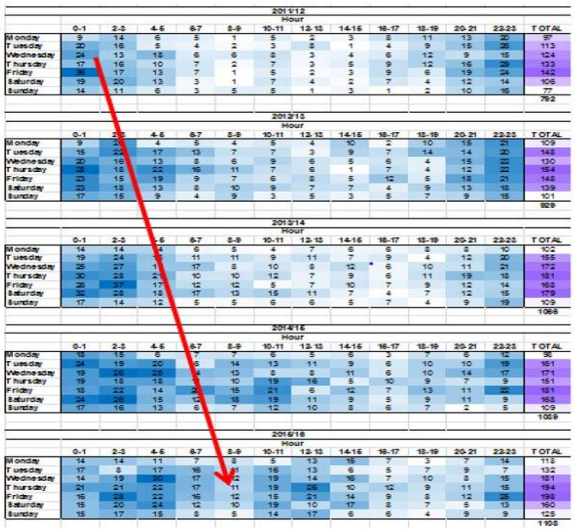
NHS Blood and Transplant

- Professional Development Team
- 6 Month Training Programme for SN-ODs
- Simulation Training for Doctor and Nurses
- Difference in DCD v DBD

Yes I donate ORGAN DONATION

Times of the DCD donation process

NHS Blood and Transplant



2011/12

Hour	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	TOTAL
Monday	9	14	6	5	1	5	2	3	8	11	13	20	97
Tuesday	20	16	5	4	2	3	8	1	4	9	15	26	113
Wednesday	24	13	18	6	6	8	3	4	6	12	9	15	124
Thursday	17	16	10	7	2	7	2	5	9	12	16	29	133
Friday	36	17	13	7	1	5	2	3	9	6	19	24	142
Saturday	19	20	13	3	1	7	4	2	7	4	12	14	106
Sunday	14	11	6	3	5	5	1	3	1	2	10	16	77
													792

2012/13

Hour	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	TOTAL
Monday	9	14	4	5	4	5	4	10	2	10	16	21	109
Tuesday	15	24	17	13	7	7	3	9	7	14	14	20	148
Wednesday	20	16	13	8	6	9	6	5	6	4	15	22	130
Thursday	28	18	22	16	11	7	6	1	7	4	12	21	154
Friday	23	15	19	9	7	6	8	5	12	5	15	21	145
Saturday	23	15	13	8	10	9	7	7	4	9	13	15	139
Sunday	17	15	9	4	9	3	5	3	8	7	9	15	101
													929

2013/14

Hour	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	TOTAL
Monday	14	14	4	6	8	4	7	6	6	8	8	10	102
Tuesday	19	24	10	11	11	9	11	7	9	4	12	20	165
Wednesday	25	27	1	17	8	10	8	12	6	10	11	21	172
Thursday	30	25	21	10	10	12	7	9	6	11	19	18	181
Friday	26	37	17	12	12	5	7	10	7	9	12	14	168
Saturday	32	25	18	17	13	15	11	7	4	7	12	15	179
Sunday	17	14	12	5	5	6	6	5	7	4	9	19	109
													1096

2014/15

Hour	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	TOTAL
Monday	16	15	5	7	7	5	5	5	3	7	6	12	96
Tuesday	24	19	20	6	14	13	11	9	6	10	10	19	161
Wednesday	19	28	28	16	13	8	8	11	6	10	14	17	171
Thursday	19	18	18	11	10	19	16	5	10	9	7	9	161
Friday	18	22	14	20	15	21	6	12	7	13	11	22	181
Saturday	24	28	15	12	15	19	11	9	5	9	11	9	168
Sunday	17	16	13	6	7	12	10	8	6	7	2	5	109
													1009

2015/16

Hour	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	TOTAL
Monday	14	14	11	7	8	5	13	15	7	3	7	14	118
Tuesday	17	8	17	16	11	16	13	6	5	7	9	7	132
Wednesday	14	19	30	17	12	19	14	16	7	10	8	15	181
Thursday	21	21	22	17	11	19	26	10	12	9	11	15	194
Friday	15	28	22	15	12	15	21	14	9	8	12	25	198
Saturday	15	20	24	12	10	19	10	17	8	7	5	13	160
Sunday	15	17	15	8	5	14	17	6	6	4	9	9	125
													1103

Shift in time of day from 10pm -3 am to 4-12 am

Yes I donate ORGAN DONATION

NHS Blood and Transplant

Future Opportunities

Yes I donate ORGAN DONATION

DCD Conversion

NHS Blood and Transplant

potential donor audit (PDA)

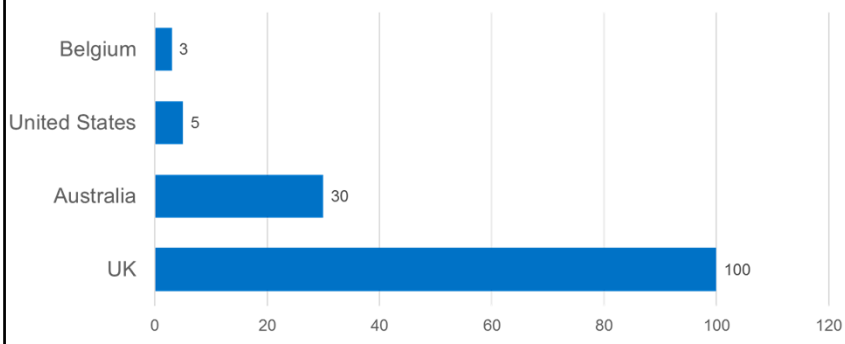
Nation	DBD Consent/Authorisation rate	DCD Consent/Authorisation rate
UK (2012/13)	68%	51%
UK (2018/19)	72.5%	63%

- Donor and Organ Screening
- Technology

Yes I donate ORGAN DONATION

International Data: DCD Heart Transplants

NHS Blood and Transplant



No. of DCD heart transplants

PLUS – UK has also performed the world's first DCD heart & lung transplant

Yes I donate ORGAN DONATION

Consented DCD patients where DCD did not proceed

NHS Blood and Transplant

"I was very impressed with the unit: the medical care given to my husband and the friendly, caring attitude towards myself, my daughter and other visitors was first class."

"We will never forget the support and love you and your team showed to us all. You made the journey a little easier."

"Thank you for showing Mum care, compassion and respect and also being there for us and showing us understanding and empathy."

Yes I donate ORGAN DONATION

NHS Blood and Transplant

Thank You

Yes I donate ORGAN DONATION

NHS Blood and Transplant

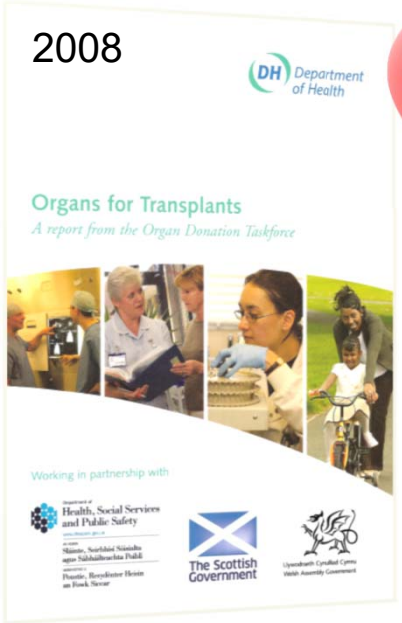
Maximising the potential for DCD in the UK

a clinical (intensive care) perspective

Dr Dale Gardiner
National Clinical Lead for Organ Donation
dale.gardiner@nhsbt.nhs.uk
@dalecgardiner

NHS Blood and Transplant

2008

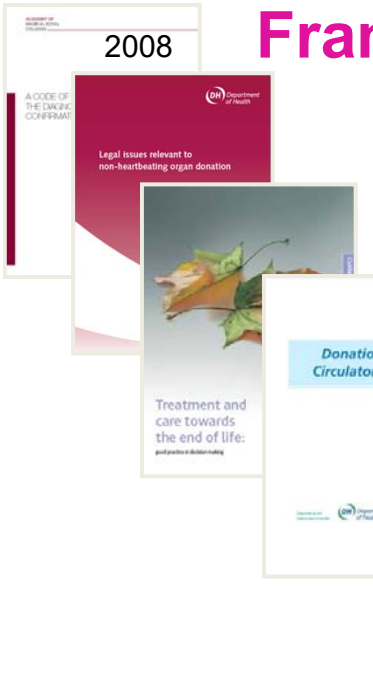


Recommendation 3

Urgent attention is required to resolve outstanding **legal, ethical and professional issues** in order to ensure that all clinicians are supported and are able to work within a clear and unambiguous framework of good practice. Additionally, an independent UK-wide Donation Ethics Group should be established.

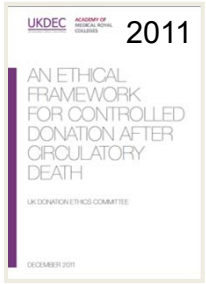
Framework of Practice

NHS Blood and Transplant



The ethical, legal and professional framework that underpins the deceased organ donation programme in the UK is arguably the strongest in the world…

…because none of these documents are the property of NHS Blood and Transplant.

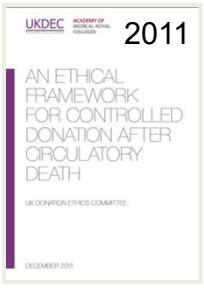


No mention of organ donation – code of practice for all deaths

Criteria for confirming death after cardio-respiratory arrest – 5 minutes

Dr Eugene Bouchut

Adopted the 1846 French Criteria.
Bouchut proposed that if a heartbeat was absent for 2 minutes, a person could be considered dead.
In the face of opposition, he extended the period to 5 minutes.

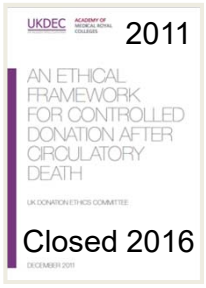


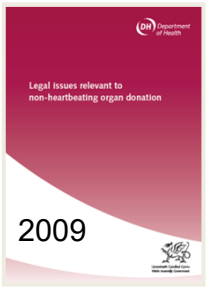
Best interests extend beyond physical care (values, wishes, beliefs)

Desire to donate gives clinicians authority to take reasonable steps to ensure donation occurs.

In the Person's Interest:

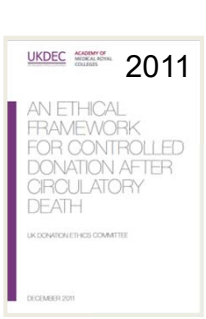
- By maximising the chance of fulfilling the donor's wishes about what happens to them after death.
- By enhancing the donor's chances of performing an altruistic act.
- By promoting the prospects of positive memories of the donor after death.

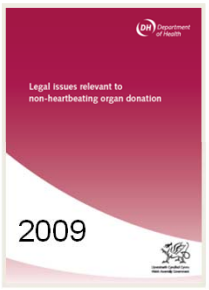


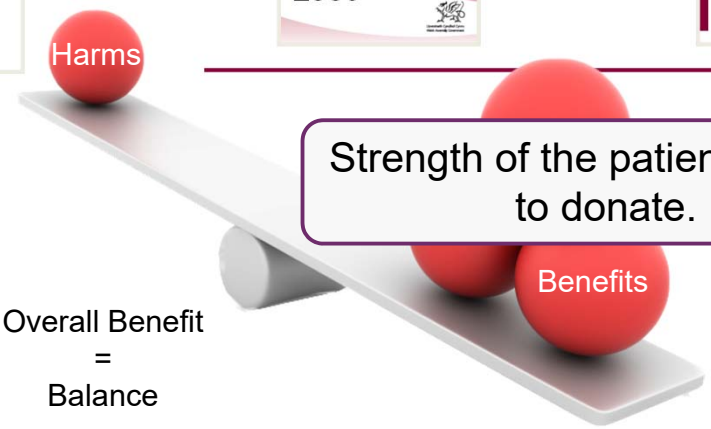


Principle 1: where donation is likely to be a possibility, full consideration should be given to the matter when caring for a dying patient.

Principle 2: if it has been established that further life-sustaining treatment is not of overall benefit to the patient, and it has been further established that donation would be consistent with the patient's wishes, values and beliefs, consideration of donation should become an integral part of that patient's care plan in their last days and hours.







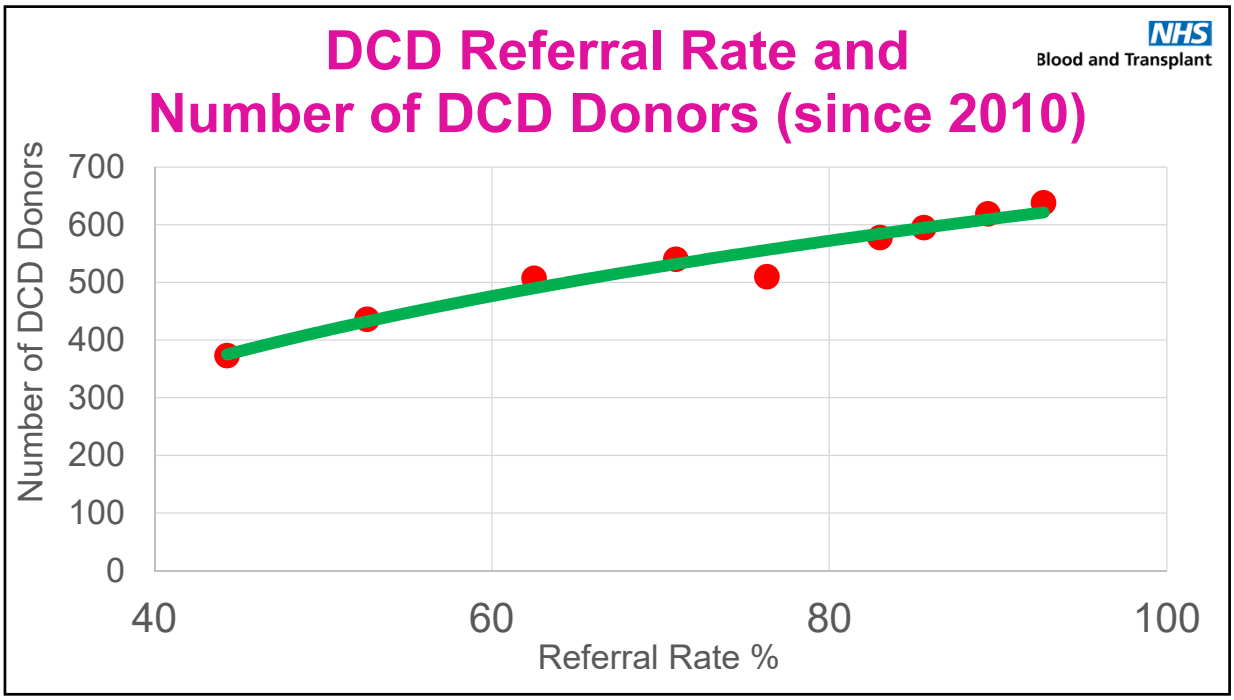
Strength of the patient's desire to donate.

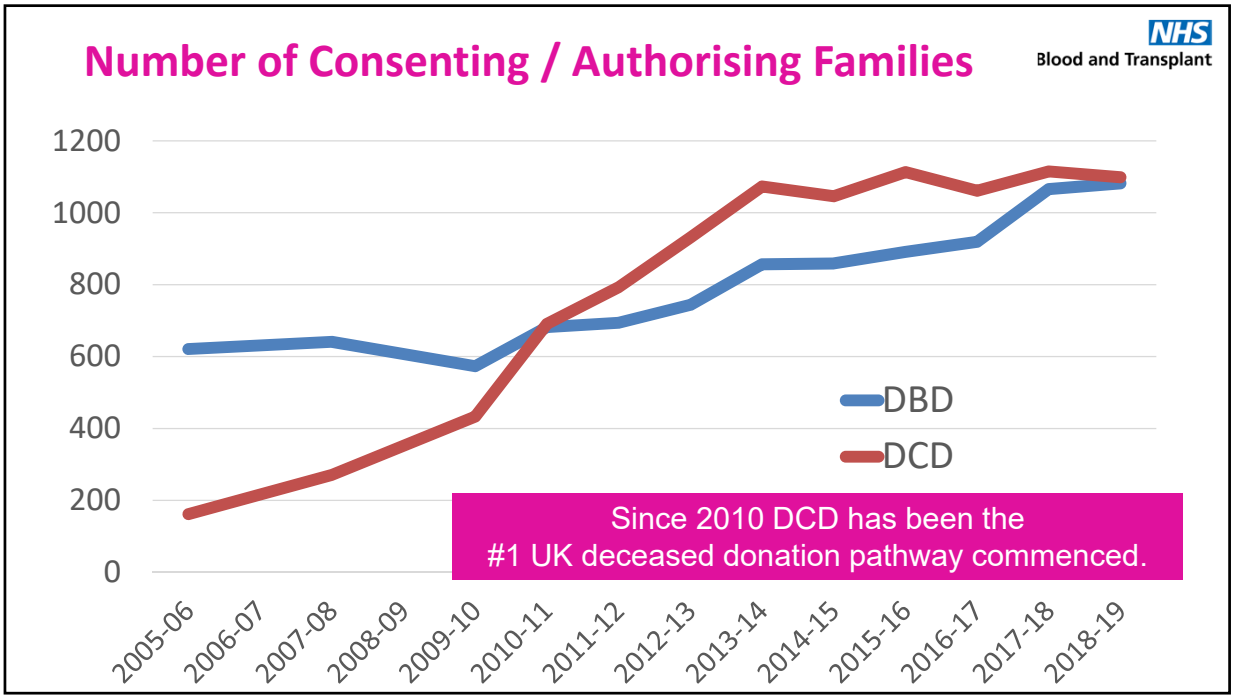
Overall Benefit
=
Balance

Cultural Change

Donation is no longer viewed as something to be inflicted upon patients and families after end of life care for the benefit of someone else.

Rather, the offer and facilitation of donation is considered to be a fundamental component of good end of life care.


DCD Referral Rate and
Number of DCD Donors (since 2010)
NHS
Blood and Transplant
Number of DCD Donors
700
600
500
400
300
200
100
0
40
60
80
100
Referral Rate %


Number of Consenting / Authorising Families
NHS
Blood and Transplant
1200
1000
800
600
400
200
0
DBD
DCD
Since 2010 DCD has been the
#1 UK deceased donation pathway commenced.
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19

A Strong Rebuttal

robbing Peter to pay Paul

DBD → DCD

Donation after Brain Death

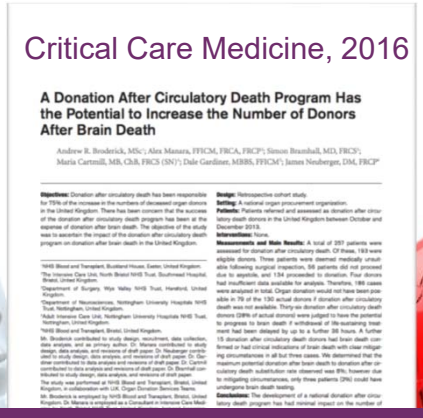
Donation after Circulatory Death

A Strong Rebuttal

Time from hospital admission to family approach
61 hours

Time from hospital admission to family approach
89 hours

DBD → DCD



Critical Care Medicine, 2016

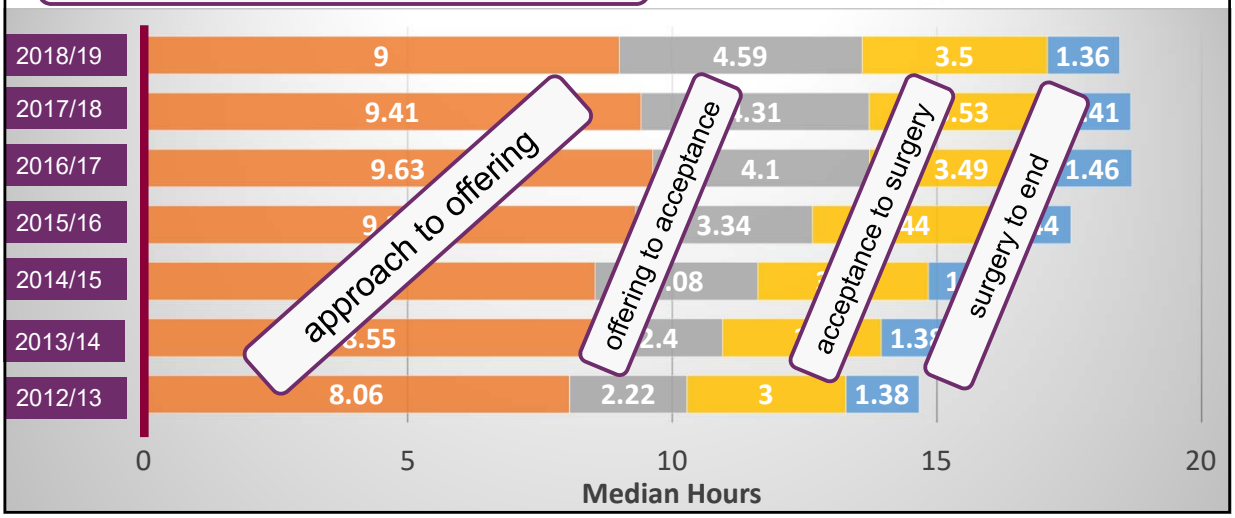
A Donation After Circulatory Death Program Has the Potential to Increase the Number of Donors After Brain Death

"The development of a national donation after circulatory death program has had minimal impact on the number of donation after brain death donors."

Donation after Brain Death

Future Challenges

Length of the DCD Process



Future Challenges

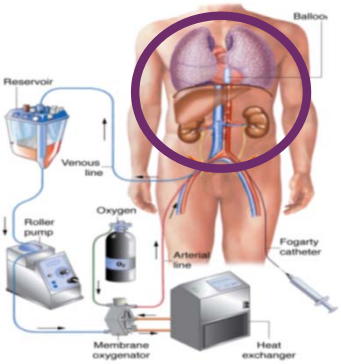
Organ Recovery

ex situ

Future Challenges

Organ Recovery

in situ - NRP

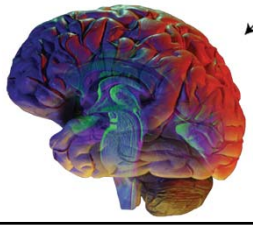



Clinical Topics

1979

Diagnosis of death

All human death is anatomically located to the brain.



NHS Blood and Transplant

Maximising the potential for DCD in the UK

a clinical (intensive care) perspective

The strength of the UK professional framework is that legal and ethical standards are set external to NHS Blood and Transplant.

The intensive care cultural change came from the acceptance that the offer and facilitation of donation is a fundamental component of good end of life care.

Future challenges: length of the DCD pathway; organ recovery

NHS Blood and Transplant

Maximising DCD donor organ potential – a UK surgical perspective

Mr Chris Callaghan PhD, FRCS

National Clinical Lead for Abdominal Organ Utilisation, NHS Blood and Transplant

Consultant Transplant Surgeon, Guy's Hospital, London

Caring Expert Quality

20th European Organ Donation Day, London 2019

Outline

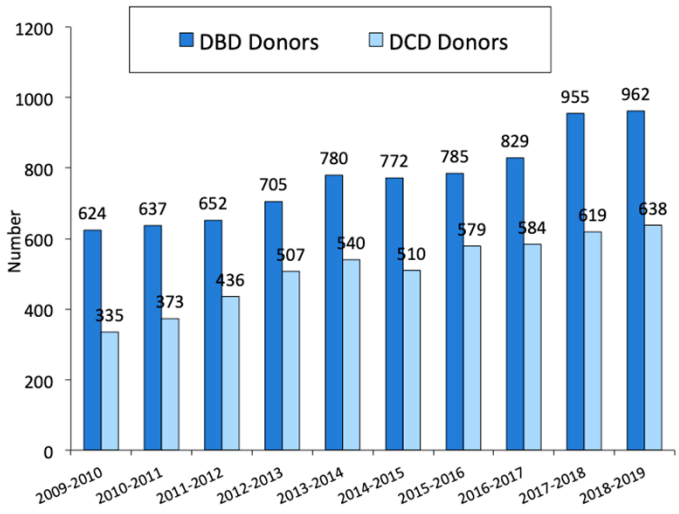
NHS Blood and Transplant

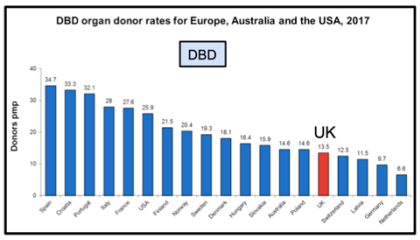
- UK controlled DCD donor practices
- How did we get here?
- Organ utilisation issues
- Selected strategies to improve organ utilisation

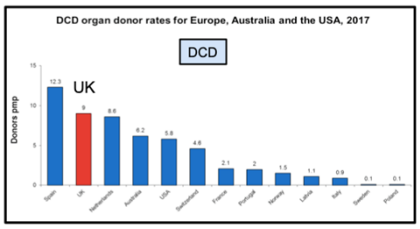
Yes I donate ORGAN DONATION

Current practices

NHS Blood and Transplant



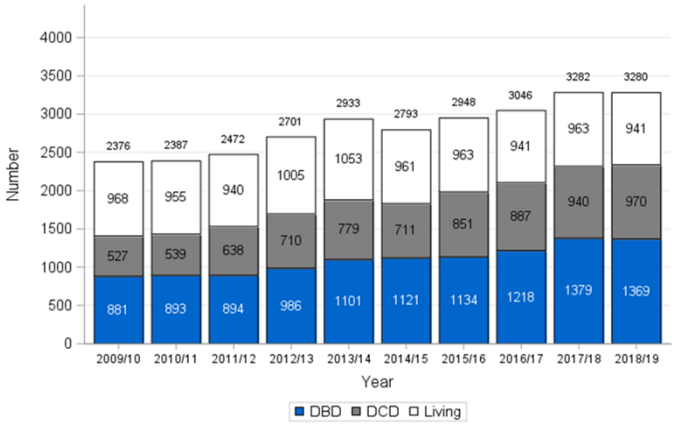




Current practices

NHS Blood and Transplant

Figure 5.1 **Adult kidney only transplants, 1 April 2009 - 31 March 2019**

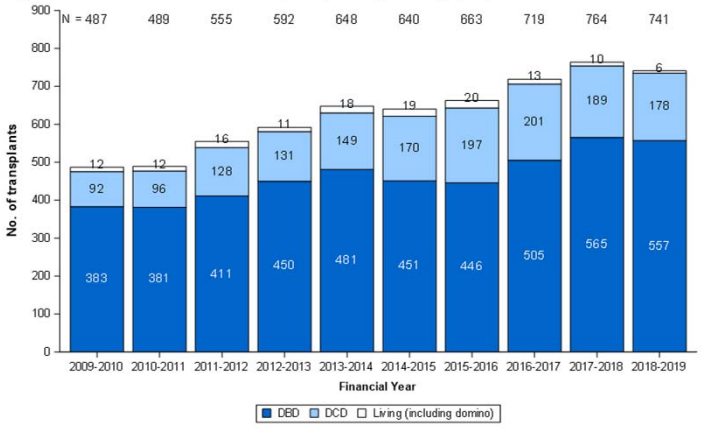


30%

Current practices

NHS Blood and Transplant

Figure 3.13 Adult elective first liver only transplants by donor type, 1 April 2009 - 31 March 2019

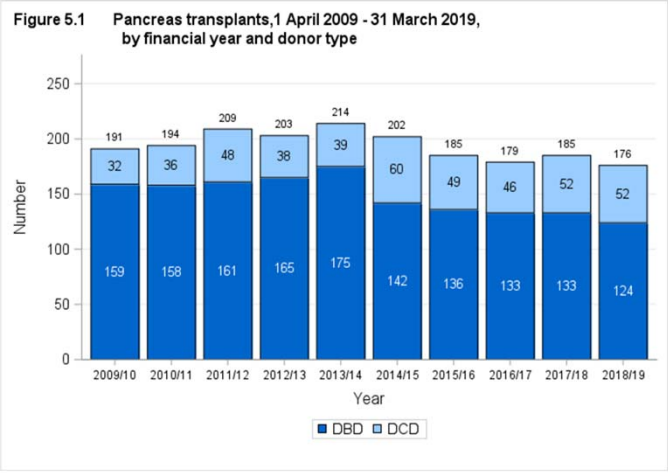


24%

Current practices

NHS Blood and Transplant

Figure 5.1 Pancreas transplants,1 April 2009 - 31 March 2019, by financial year and donor type



30%

Current practices

NHS Blood and Transplant

- **Post-withdrawal donor parameters**
  - Kidney: 3 hours from treatment withdrawal until sys BP <50 mmHg
  - Once sys BP <50 mmHg:
    - 30 mins before abandoning the liver and pancreas
    - 3 hours before abandoning the kidneys

National Standards for Organ Retrieval from Deceased Donors MPD1043/8

Current practices

NHS Blood and Transplant

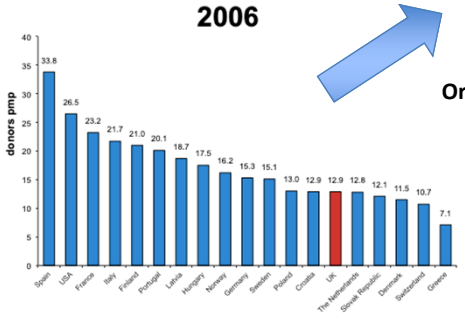
- **Post-withdrawal donor parameters**
  - Kidney: 3 hours from treatment withdrawal until sys BP <50 mmHg
  - Once sys BP <50 mmHg:
    - 30 mins before abandoning the liver and pancreas
    - 3 hours before abandoning the kidneys
- **Organ retrieval**
  - National Organ Retrieval Service (NORS) abdominal teams
  - Super-rapid organ retrieval technique
    - Direct cannulation of proximal right common iliac artery
    - Dual (aortic and portal) perfusion for liver retrieval

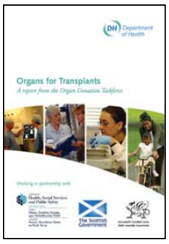
National Standards for Organ Retrieval from Deceased Donors MPD1043/8

How did we get here?

NHS Blood and Transplant

High cDCD transplant rates





Organ Donation Taskforce Report 2008

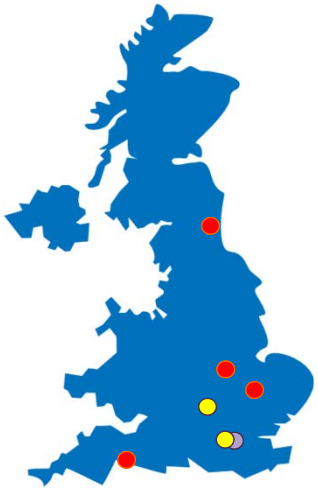
How did we get here?

NHS Blood and Transplant

'Early adopter' transplant units

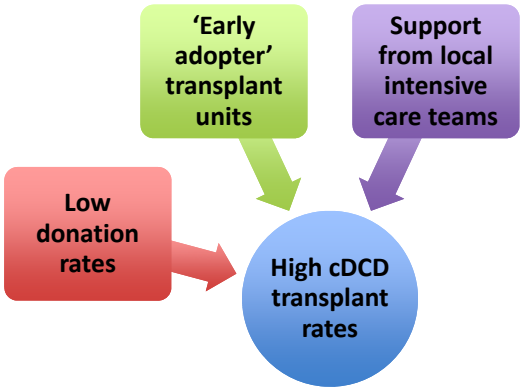
Low donation rates

High cDCD transplant rates



How did we get here?

NHS Blood and Transplant

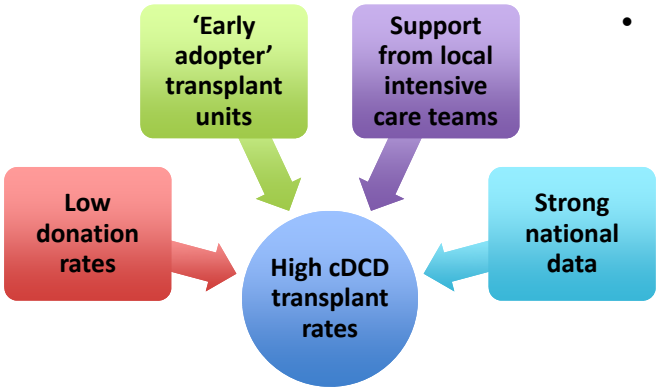


Donation community → Transplant community

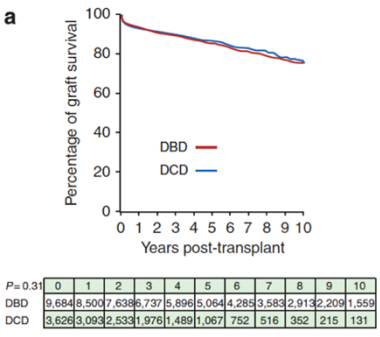
- **Interactions between the two communities**
  - Referral of more 'marginal' DCD donors
    - Age, co-morbidities, BMI
  - Location of treatment withdrawal
    - Unit versus anaesthetic room versus theatre
  - Input into national ITU guidance
  - Acceptance of national DCD donor post-withdrawal time
    - Reid AW, *Am J Transplant* 2011

How did we get here?

NHS Blood and Transplant



- **DCD donor kidney transplantation**

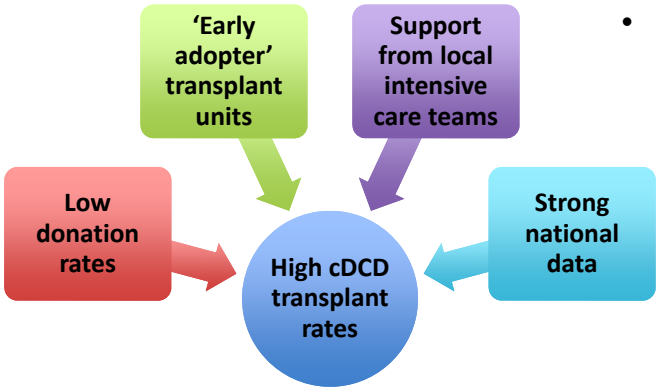


P=0.31	0	1	2	3	4	5	6	7	8	9	10
DBD	9,684	8,500	7,638	6,737	5,896	5,064	4,285	3,583	2,913	2,209	1,559
DCD	3,626	3,093	2,533	1,976	1,489	1,067	752	516	352	215	131

Summers DM, *Kidney Int* 2015

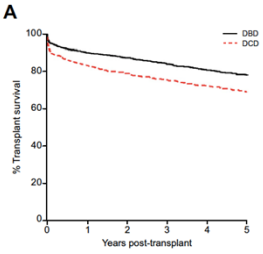
How did we get here?

NHS Blood and Transplant



- DCD donor liver transplantation

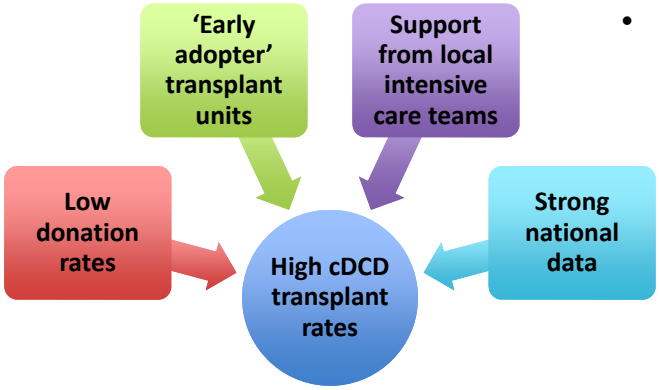
Although outcomes from DCD is inferior to DBD liver transplantation (A), the survival benefit of accepting an early offer of a DCD liver transplant is significant over waiting for a "better" DBD liver (B).



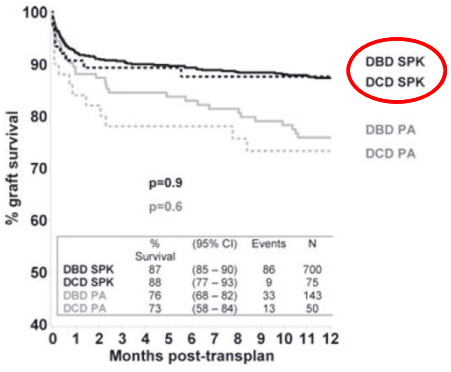
Taylor R, *J Hepatol* 2019

How did we get here?

NHS Blood and Transplant



- DCD donor pancreas transplantation



Muthusamy ASR, *Am J Transplant* 2012

How did we get here?

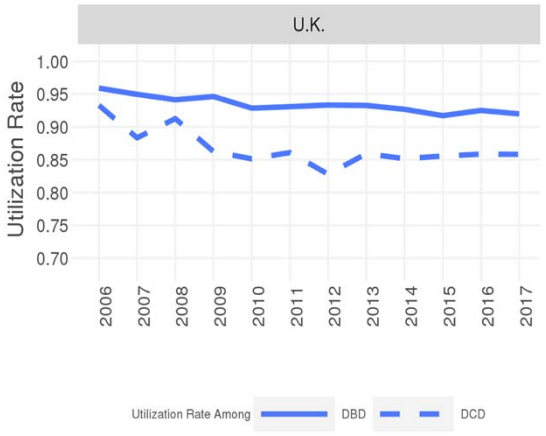
NHS Blood and Transplant

Local surgical innovation and donation community support

Organ utilisation issues

NHS Blood and Transplant

- **Higher rate of discard**
  - Kidneys
    - Higher rate of poor perfusion
    - Higher rate of damage at retrieval
      - Ausania F, *Am J Transplant* 2012



Maria Ibrahim, NHS Blood and Transplant 2019

Organ utilisation issues

NHS Blood and Transplant

- **Higher rate of discard**
  - Livers
    - No difference in damage rates
      - Ausania F, *Br J Surg* 2013

Table 7 Logistic regression model for the odds of not transplanting a liver retrieved for the purpose of transplantation, 1 January 2006 – 31 December 2016

Factor	Level	N	Odds ratio	95% CI	p-value
Donor type					**<0.0001**
	DBD	4989	1.00	-	
	DCD	1393	4.69	(3.88-5.68)	
Donor cause of death					0.0975
	Intracranial	5434	1.00	-	
	Trauma	511	1.18	(0.83-1.67)	
	Other	437	1.40	(1.02-1.93)	
Steatosis					**<0.0001**
	No	3242	1.00	-	
	Yes	3140	2.21	(1.72-2.84)	
Organ appearance					**<0.0001**
	Healthy	4545	1.00	-	
	Suboptimal	1837	4.61	(3.73-5.71)	
Accepting transplant centre					**<0.0001**
	Leeds	867	1.00	-	
	Birmingham	1365	0.98	(0.70-1.39)	
	Cambridge	827	1.55	(1.07-2.23)	
	Edinburgh	725	0.72	(0.46-1.13)	
	King's College	1507	2.64	(1.93-3.63)	
	Newcastle	364	1.57	(0.96-2.56)	
	Royal Free	727	1.87	(1.27-2.74)	
Donor age (years)		6382	1.009	(1.002-1.015)	**0.0110**
Donor BMI (kg/m^2)		6382	1.044	(1.028-1.061)	**<0.0001**
Donor ALT (iu/l)		6382	1.001	(1.000-1.001)	**0.0001**

Elisa Allen, NHS Blood and Transplant 2017

Organ utilisation issues

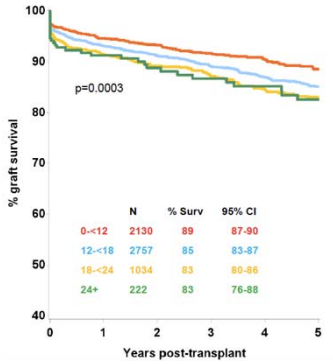
NHS Blood and Transplant

- **Shorter cold ischaemic time thresholds**
  - Kidneys: 12 hours

Table 1 Cox-proportional hazards model

CIT Group	Hazard Ratio	95% CI	p-value
DBD			
0-<12	1.00	-	-
12-<18	1.04	0.88 – 1.18	0.6
18-<24	1.11	0.91 – 1.30	0.3
24+	1.14	0.90 – 1.43	0.3
DCD			
0-<12	1.00	-	-
12-<18	1.28	1.04 – 1.56	0.02
18-<24	1.63	1.24 – 1.99	0.0002
24+	1.73	1.08 – 2.39	0.02

Death-censored graft survival of UK DCD kidney transplants, 2006-17, by CIT



Maria Ibrahim, NHS Blood and Transplant 2018

Organ utilisation issues

NHS Blood and Transplant

- **Shorter cold ischaemic time thresholds**
  - Livers: 6 hours

Variables within the UK DCD Risk Score for liver transplantation

Parameter	Category	Regression coefficient β	p value	Reference value Wi (Midpoint)	β x (W_{ij}-$W_i$reference)	Risk score
Donor age	≤60 yr	0.084	0.001	46 (W_1reference)	0	0
	>60 yr			66	1.688	2
Donor BMI	≤25 kg/m^2	0.519	0.0001	23 (W_2reference)	0	0
	>25 kg/m^2			28	2.598	3
Functional donor warm	≤20 min	0.341	<0.0001	15 (W_3reference)	0	0
ischaemia	>20 to ≤30 min			24	3.069	3
	>30 min			32	5.797	6
Cold ischaemia time	≤6 h	0.791	0.001	5.5 (W_4reference)	0	0
	>6 h			7.7	1.740	2
Recipient age	≤60 yr	0.241	0.0001	52 (W_5reference)	0	0
	>60 yr			64	2.892	3
Recipient lab MELD	≤25 points	0.109	0.0001	14 (W_6reference)	0	0
	>25 points			30	1.744	2
Retransplantation	No	8.571	<0.0001	0 (W_7reference)	0	0
	Yes			1	8.571	9
					Total score points	0–27

Schlegel A, *J Hepatol* 2018

Strategies to improve utilisation

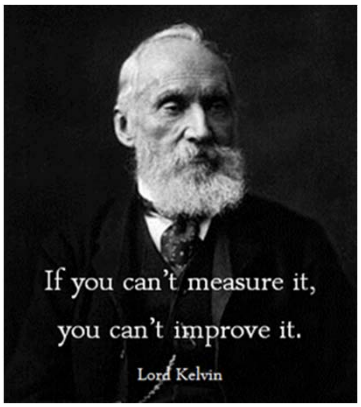
NHS Blood and Transplant

- **Taking Organ Utilisation to 2020 – Themes:**
  - Improved screening and management of potential deceased donors
  - More effective, and efficient, donor-recipient matching
  - More information on organ declines, and greater scrutiny of transplant clinician decision-making
  - Improved organ retrieval services
  - Better recognition of best practice, and of barriers to organ utilisation

Strategies to improve utilisation

NHS Blood and Transplant

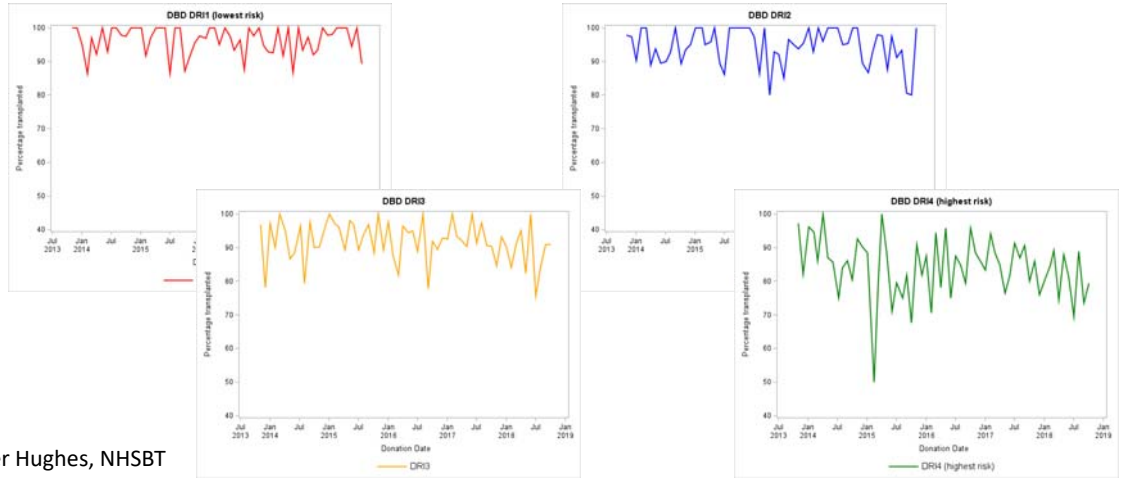
- **Measuring organ utilisation**



Strategies to improve utilisation

NHS Blood and Transplant

UK kidney discard rates by new UKKDRI quartile, 2013-2019



Winter Hughes, NHSBT

Strategies to improve utilisation

NHS Blood and Transplant

- **Reviewing organ utilisation decisions**
  - Case-by-case analysis of declined offers of kidneys and pancreases from higher quality donors
  - Letters to transplant centre directors enquiring about the reasons for offer decline / organ discard
  - Review of centre responses by Offer Review Scheme Oversight Committee

Kidney higher quality donor criteria
Age >10 and <50 years
No malignancy
No virological issues
No chronic hypertension
No diabetes
No UTIs in current admission

Pancreas higher quality donor criteria
Age >15 and <50 years
No malignancy
No virological issues
BMI <27 kg/m^2
No cardiac arrest >60 mins duration
ITU stay <10 days

Strategies to improve utilisation

NHS Blood and Transplant

- **Tailored offering pathways ('fast-track' schemes)**
  - For organs at high risk of discard
  - Entry criteria vary by organ type (kidney, liver, pancreas)
  - Minimise CIT
    - Simultaneous offering via SMS text message / pager
    - Short window period for acceptance (45 mins)
  - Flexibility (implant into patient of centre's choice)

Callaghan CJ, *Transplantation* 2017

Strategies to improve utilisation

NHS Blood and Transplant

- **Providing more and better information and evidence**
  - National pilot of organ imaging at retrieval
    - Kidneys
    - Pancreases
    - Livers to follow...

Strategies to improve utilisation

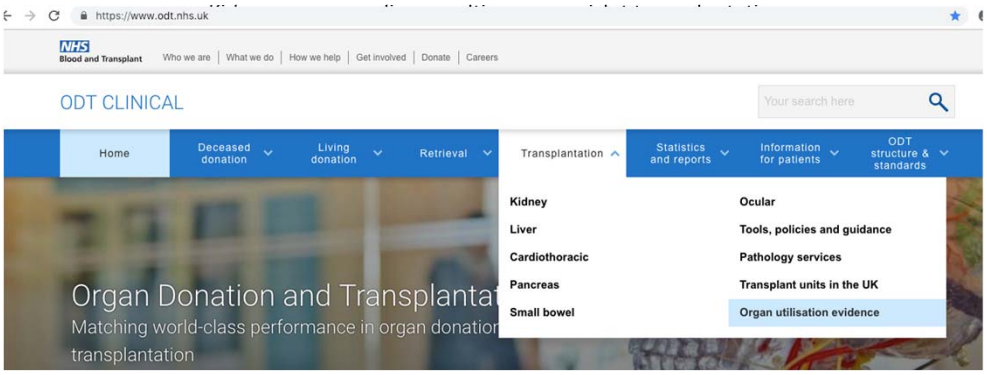
NHS Blood and Transplant

- **Providing more and better information and evidence**
  - Evidence-base

Strategies to improve utilisation

NHS Blood and Transplant

- **Providing more and better information and evidence**
  - Evidence-base (www.odt.nhs.uk)



116 references

Maria Ibrahim, NHSBT Clinical Research Fellow

Strategies to improve utilisation

NHS Blood and Transplant

- **Perfusion technology**

Conclusions

NHS Blood and Transplant

- High rates of usage of organs from controlled DCD donor organs in the UK
- Complex historical and organisational reasons for this
- Despite these successes, there are ongoing challenges in DCD organ utilisation in the UK
- Development of tools to measure organ utilisation and determine if various strategies are effective
- Closer collaboration between countries likely to be beneficial

Acknowledgements

NHS Blood and Transplant

John Forsythe, John Dark, James Neuberger, John Casey, Chris Watson, Doug Thorburn
Jenny Mehew, Sally Rushton, Lisa Mumford, Rachel Johnson
Maria Ibrahim
Claire Williment, Liz Armstrong
Sarah Belgium, Caroline Willis
Maggie Stevens, Angie Scales, Mick Stokes
All donors and their families

Yes I donate ORGAN DONATION

NHS Blood and Transplant

Transplant registry and PDA and how it changes practice

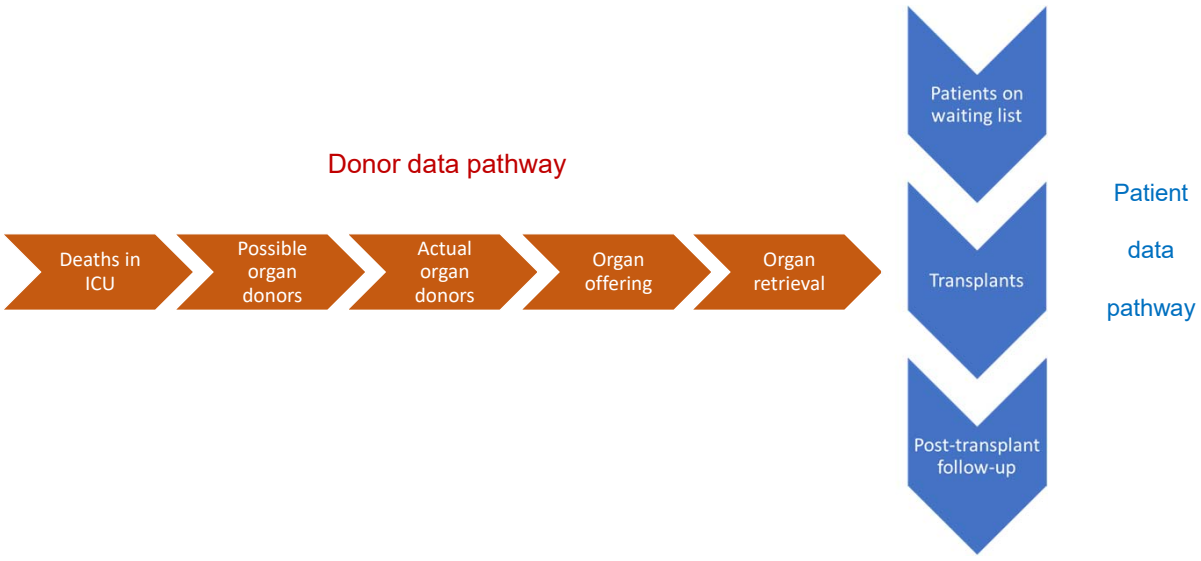
Lisa Mumford

NHS Blood and Transplant

European Day for Organ Donation and Transplantation, October 2019

Organ Donation Pathway

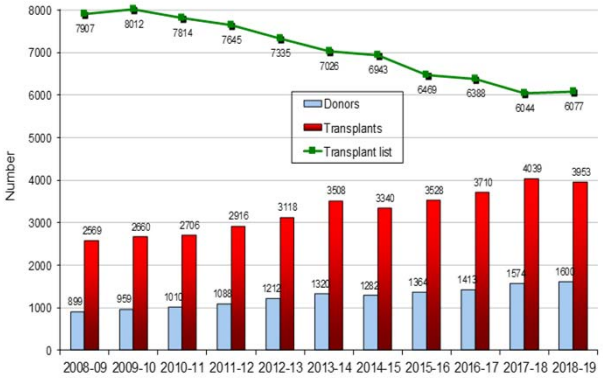
NHS Blood and Transplant



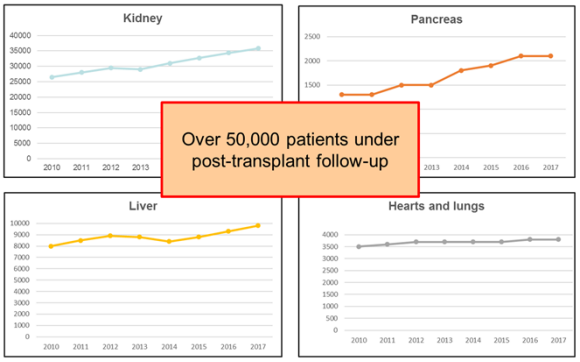
Transplant Registry data available

NHS Blood and Transplant

Deceased donors, transplants and transplant waiting list



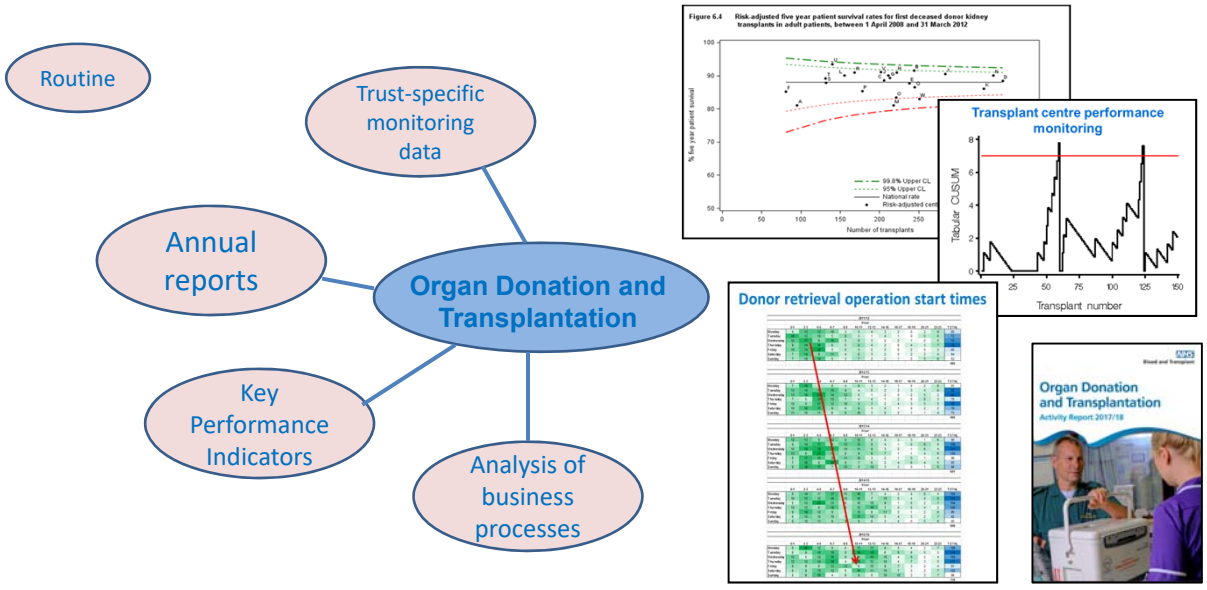
Patients under follow-up



The Registry Database is an incredibly valuable resource –
accuracy and completeness are very high, enabling robust analysis

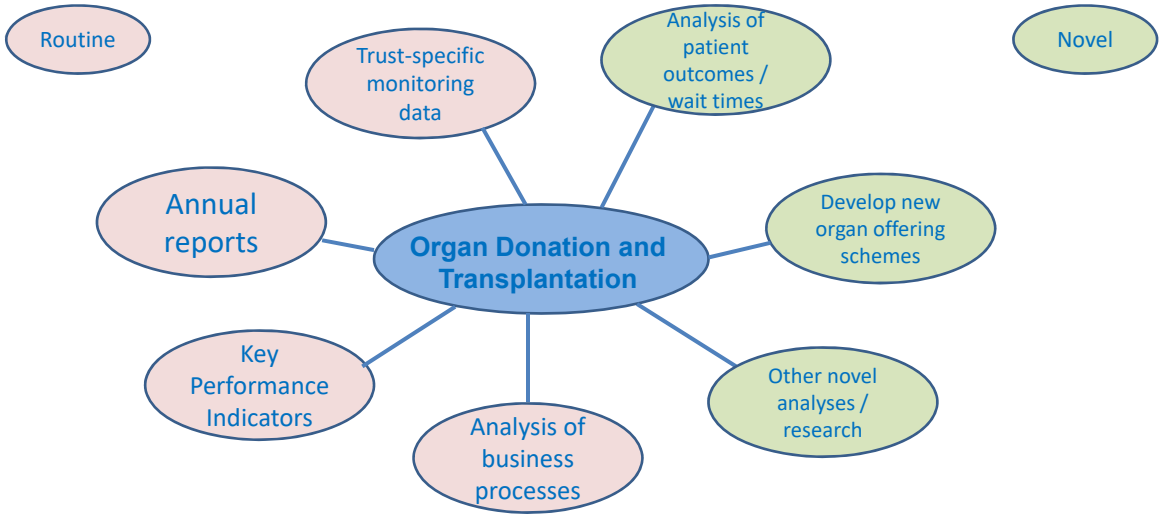
What do we use the registry data for?

NHS Blood and Transplant



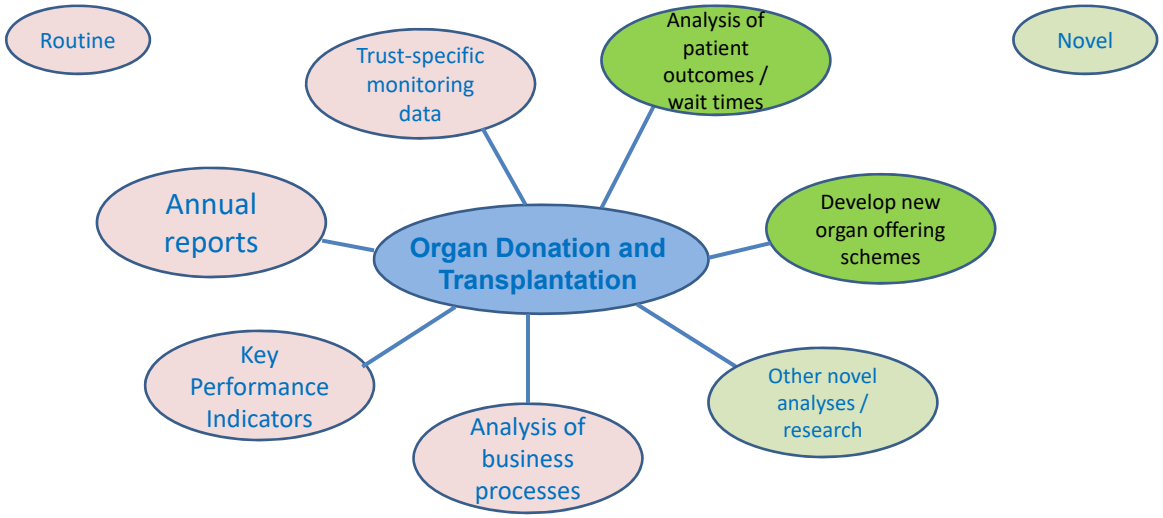
What do we use the registry data for?

NHS Blood and Transplant



What do we use the registry data for?

NHS Blood and Transplant



NHS Blood and Transplant

A New Kidney Offering Scheme

Background

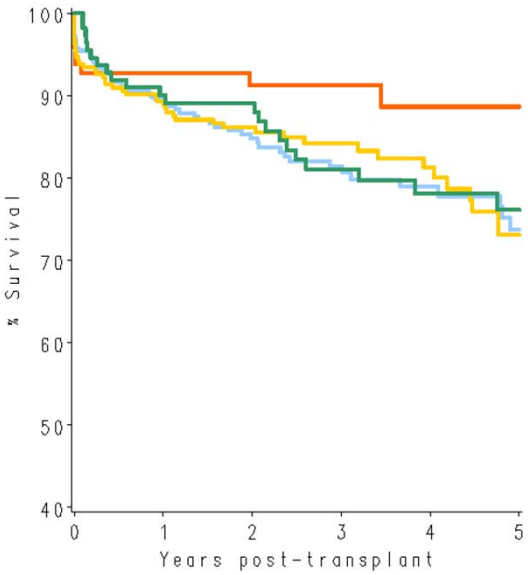
NHS Blood and Transplant

- Kidney Advisory Group (KAG) reviewed current kidney offering scheme
  ➡ some change needed to improve equity of access to transplant due to increased use of DCD kidneys and more challenging donors
- Objectives agreed by KAG
  - Unify DBD and DCD offering
  - Match donor and recipient more effectively

Agreed to develop donor and recipient risk indices examining factors influencing post-transplant outcomes

Cold ischaemia time and DCD Kidneys

NHS Blood and Transplant



<12 hrs

12-18 hrs
18-24 hrs
>24 hrs

Dominic Summers et al concluded:

Reduction in cold ischaemia time for DCD kidneys could improve long-term graft function

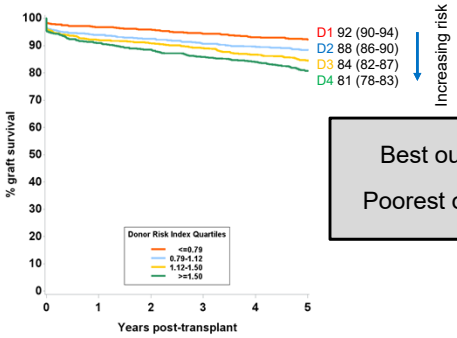
Risk indices

NHS Blood and Transplant

Cox proportional hazards regression models developed to identify statistically significant factors

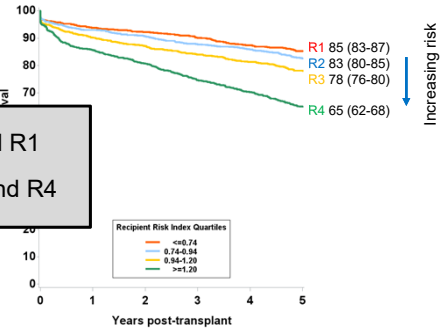
Donor Risk Index (DRI): 5 year graft survival

Donor Factor	Hazard Ratio	p-value
Age (per year)	1.02	<0.0001
Height (per 10cm)	0.86	0.0005
Hospital stay (days)	1.02	0.006
CMV pos	1.2	0.02
eGFR (per unit)	0.98	0.02
Female	0.83	0.04
Hypertension	1.15	0.1



Recipient Risk Index (RRI): 5 year transplant survival

Recipient Factor	Hazard Ratio	p-value
Age (≤25) (per year)	1.00	0.9
Age (>25) (per year)	1.02	<0.001
On dialysis	1.43	<0.001
Diabetic	1.32	0.003
Time on dialysis (years)	1.03	0.004

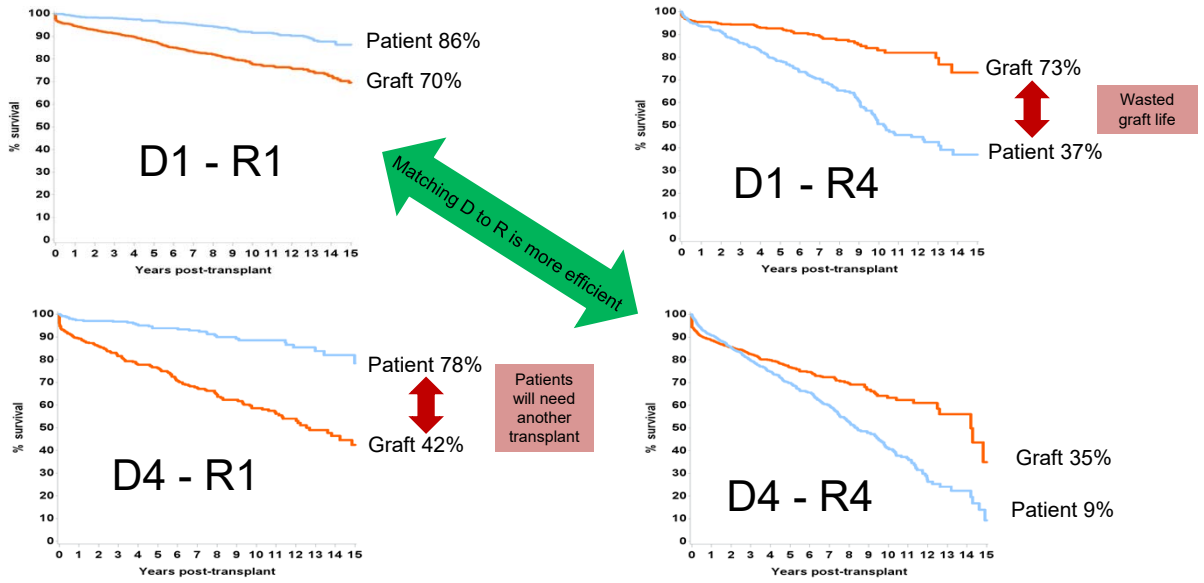


Best outcomes – D1 and R1

Poorest outcomes – D4 and R4

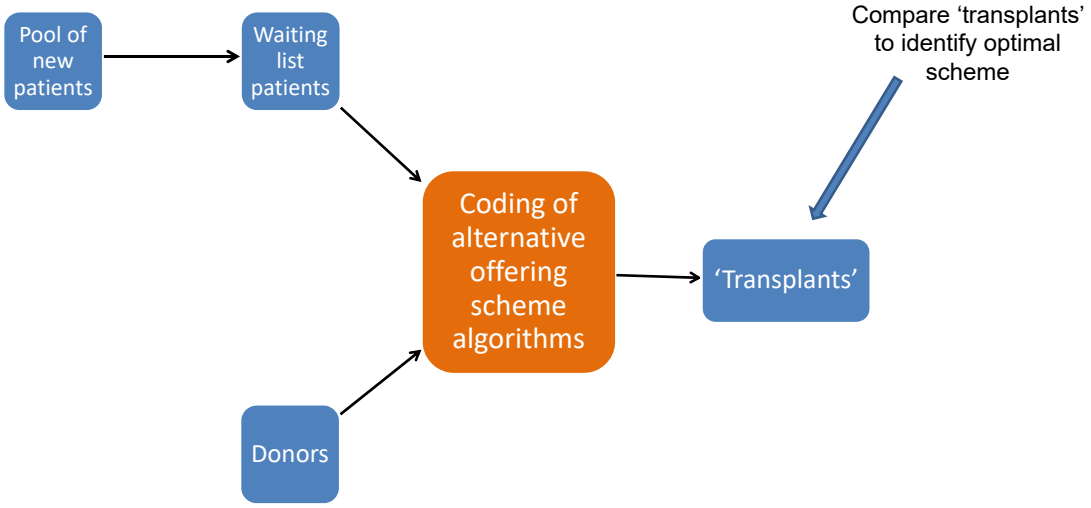
Effective matching? Graft vs patient survival

NHS Blood and Transplant



All evidence assimilated – which organs for which patients?

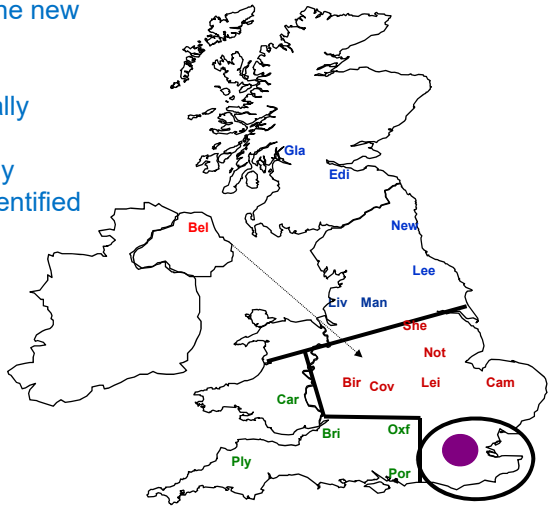
Simulations are key



DCD Kidneys

NHS Blood and Transplant

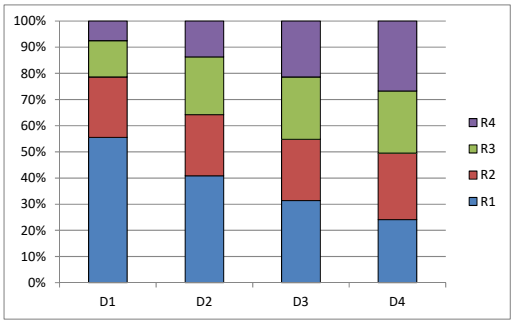
- Both kidneys from each donor to be allocated via the new kidney offering scheme
- No DCD kidneys will automatically be retained locally
- Points score used to keep kidneys within 4 currently defined regions - unless a high priority patient is identified



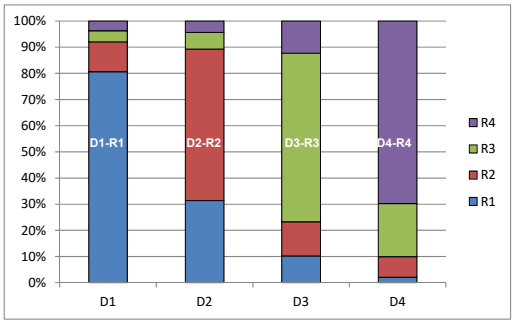
Comparing different algorithms - Donor-recipient match

NHS Blood and Transplant

Current Scheme



New scheme



The new simulated scheme matches donor and recipient more closely

New Kidney Offering Scheme agreed

NHS Blood and Transplant

- Range of factors assessed to compare schemes
- Optimal scheme selected by Kidney Advisory Group and approved by lay/patient groups and Transplant Policy Review Committee of NHSBT
- Implemented in September
- Will benefit difficult to match patients by improving access to transplant and will make more effective use of kidneys available and save time in unnecessary offering

NHS Blood and Transplant

A New Liver Offering Scheme

National Liver Offering Scheme

NHS Blood and Transplant

Historically - centre-based offering to centre nearest to the donor for a patient of their choice

More transparent, patient focused scheme needed

Underpinned by statistical modelling of:

- Survival on the list
- Post-transplant survival

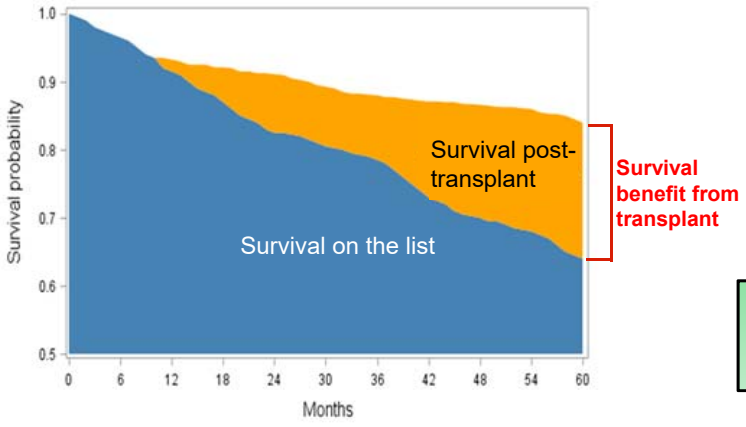
A total of 21 recipient and 7 donor factors are included in models, such as:

- Recipient age
- Gender
- indication for transplantation
- LFTs
- Renal support
- Donor age
- Donor cause of death
- BMI
- Donor history of diabetes
- Whole or split liver
- Blood group compatibility

National Liver Offering Scheme

NHS Blood and Transplant

For each eligible patient on the list and the particular liver graft on offer:

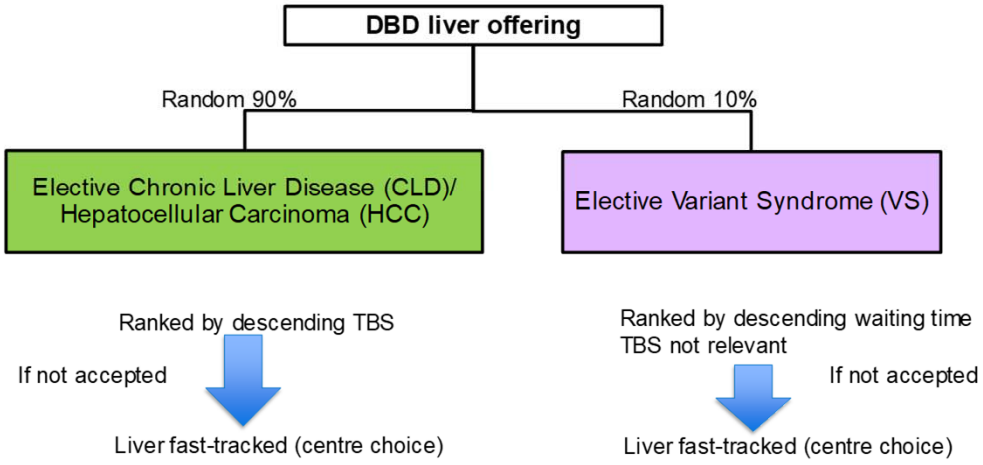


Since 2018 – each liver offered to individual patient with greatest survival benefit from that liver

Approx 20 lives estimated to have been saved in first 6 months

New National Liver Offering Scheme

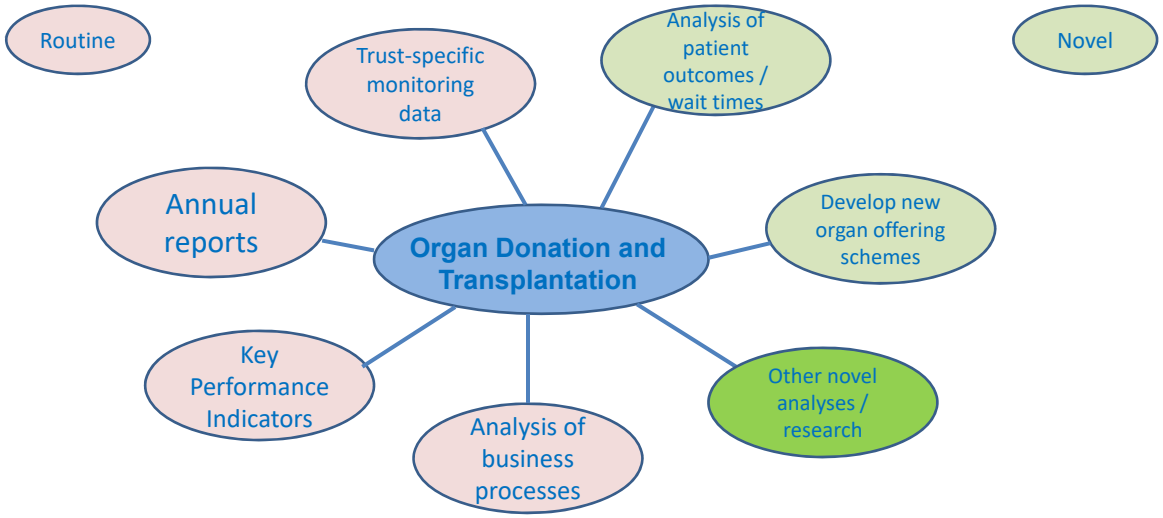
NHS Blood and Transplant



Offering scheme for DCD livers currently remains centre-based

What do we use the registry data for?

NHS Blood and Transplant



NHS Blood and Transplant

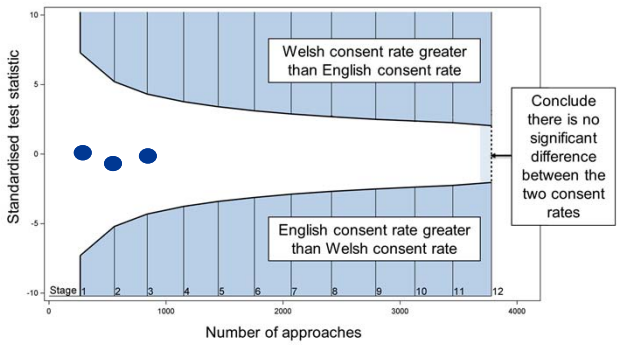
Impact of opt out legislation in Wales

Impact of opt out legislation in Wales

NHS Blood and Transplant

- We developed a formal evaluation method designed to detect absolute difference of 10% in Welsh and English family consent rates
- Sequential study - test procedure accounts for multiple 'looks' at data to avoid premature conclusions

A sequential study plot

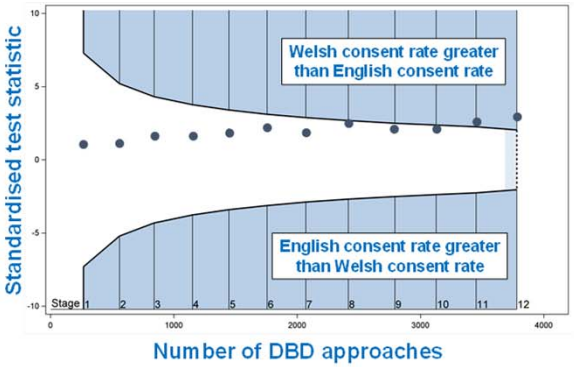


Yes I donate ORGAN DONATION

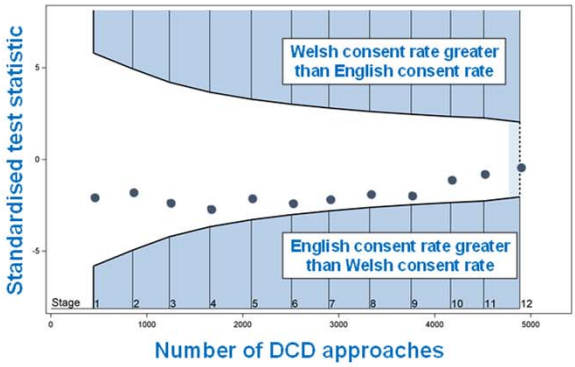
Consent rate for DBD and DCD donors

NHS Blood and Transplant

DBD comparison: Jan 2016 - Dec 2018



DCD comparison: Jan 2016 - Dec 2018



Significant increase in consent rate in Wales for DBD

Impact of opt-out legislation is not immediate

Yes I donate ORGAN DONATION

NHS Blood and Transplant

Length of the donation process

Donors after brain death (DBD)

NHS Blood and Transplant

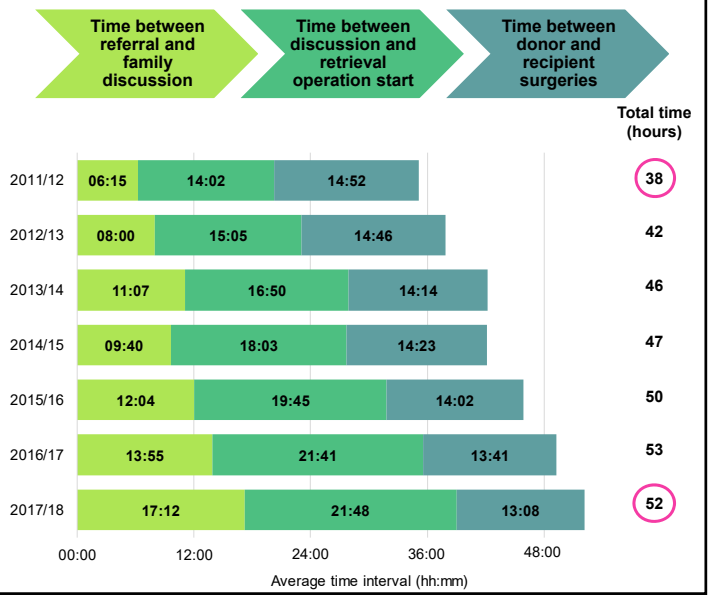
Retrieval operation start times:

2011/12

Weekday	Hour 1-4	5-8	9-12	13-16	17-20	21-24
Monday	18	15	6	7	2	8
Tuesday	23	11	7	5	2	17
Wednesday	24	19	8	1	3	12
Thursday	21	12	8	3	5	10
Friday	26	10	6	4	2	6
Saturday	17	9	6	3	2	9
Sunday	16	13	7	3	1	14

2017/18

Weekday	Hour 1-4	5-8	9-12	13-16	17-20	21-24
Monday	19	28	18	26	13	18
Tuesday	18	23	26	24	13	17
Wednesday	30	27	24	28	15	19
Thursday	22	26	26	21	12	13
Friday	24	14	16	18	12	13
Saturday	19	17	24	23	10	6
Sunday	21	18	21	26	4	10



Donors after circulatory death (DCD)

NHS Blood and Transplant

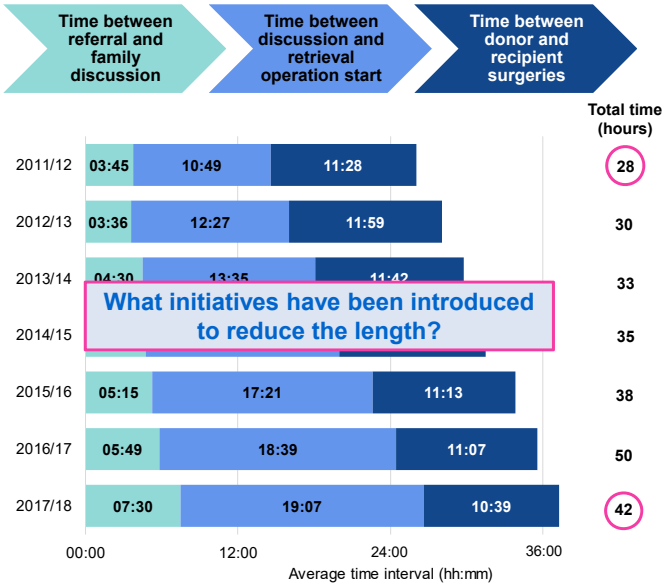
Retrieval operation start times:

2011/12

Weekday	Hour 1-4	5-8	9-12	13-16	17-20	21-24
Monday	9	4	2	1	9	10
Tuesday	17	3	1	0	6	10
Wednesday	6	7	1	3	5	8
Thursday	15	5	3	0	10	8
Friday	18	5	1	0	6	12
Saturday	6	5	4	1	4	12
Sunday	7	2	2	1	0	7

2017/18

Weekday	Hour 1-4	5-8	9-12	13-16	17-20	21-24
Monday	14	11	8	12	3	6
Tuesday	13	10	14	14	7	4
Wednesday	9	10	18	15	13	12
Thursday	15	18	14	21	8	10
Friday	15	12	22	13	7	11
Saturday	17	15	12	14	11	8
Sunday	9	3	13	12	5	8



Initiatives introduced

NHS Blood and Transplant

Since initiatives introduced…

NHS Blood and Transplant

DBD retrieval operation start times:

2017/18

Weekday	1-4	5-8	9-12	13-16	17-20	21-24
Monday	19	28	18	26	13	18
Tuesday	18	23	26	24	13	17
Wednesday	30	27	24	28	15	19
Thursday	22	26	26	21	12	13
Friday	24	14	16	18	12	13
Saturday	19	17	24	23	10	6
Sunday	21	18	21	26	4	10

Hour

2018/19

Weekday	1-4	5-8	9-12	13-16	17-20	21-24
Monday	22	18	23	24	8	11
Tuesday	25	25	17	26	18	10
Wednesday	31	17	20	25	12	9
Thursday	28	18	15	18	11	14
Friday	29	18	23	19	12	11
Saturday	24	21	29	21	17	11
Sunday	22	21	25	22	8	15

Hour

DCD retrieval operation start times:

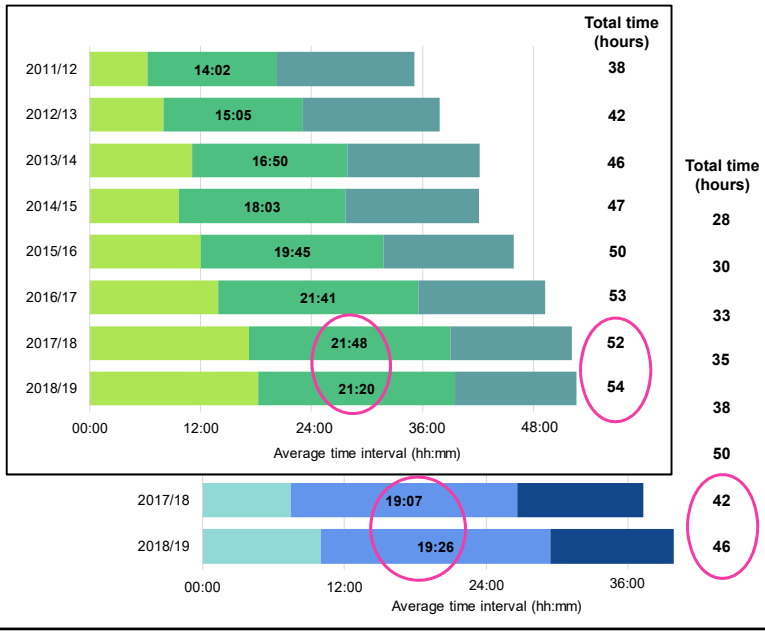
2017/18

Weekday	1-4	5-8	9-12	13-16	17-20	21-24
Monday	14	11	8	12	3	6
Tuesday	13	10	14	14	7	4
Wednesday	9	10	18	15	13	12
Thursday	15	18	14	21	8	10
Friday	15	12	22	13	7	11
Saturday	17	15	12	14	11	8
Sunday	9	3	13	12	5	8

Hour

2018/19

Weekday	1-4	5-8	9-12	13-16	17-20	21-24
Monday	13	6	10	8	2	11
Tuesday	16	14	11	12	4	5
Wednesday	20	20	19	13	9	15
Thursday	11	14	15	11	8	8
Friday	21	16	20	19	9	11
Saturday	16	14	16	25	6	5
Sunday	12	13	9	9	5	6

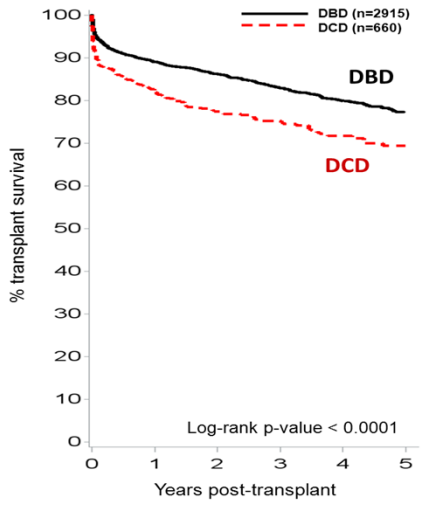


NHS Blood and Transplant

Is it better to accept the offer of a DCD liver or wait for a potential DBD liver

NHS Blood and Transplant

Compare post-transplant survival for DCD livers to DBD livers



Risk of death (HR) for DCD relative to DBD

End point	HR	95% CI
30 days	2.0	1.5 – 2.6
1 year	1.7	1.4 – 2.1
5 years	1.6	1.3 – 1.9

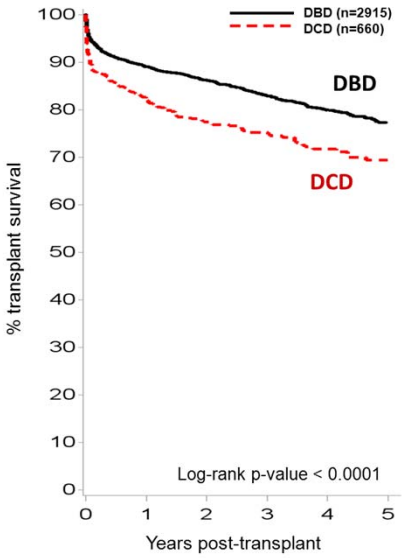
Difference remains after conditioning on short term survival

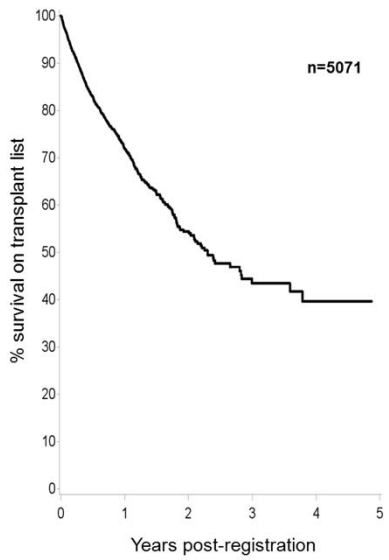
Significantly greater risk of death following DCD transplantation relative to DBD

(5-year adjusted HR: 1.6; 95% CI: 1.4-2.0)

Waiting list mortality

NHS Blood and Transplant



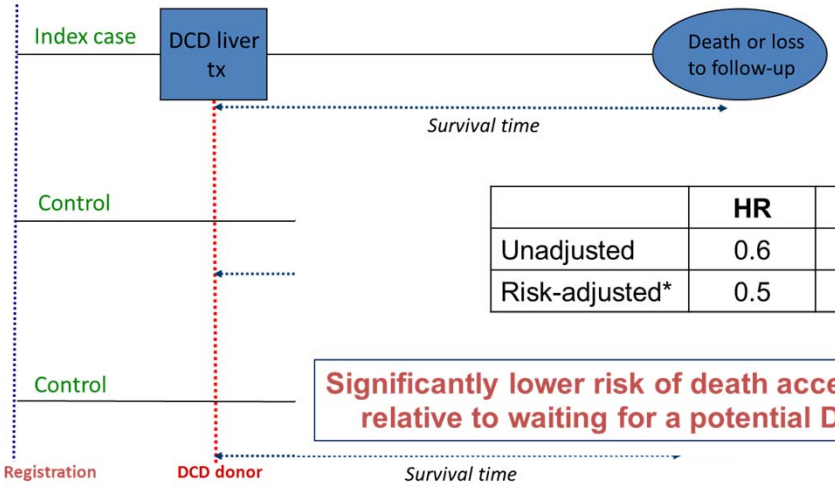


Is it better to accept the offer of a DCD liver or wait for a potential DBD liver?

Sequential stratification

NHS Blood and Transplant

- 5071 first, adult, elective liver only registration in the UK, 2006-2013



	HR	95% CI
Unadjusted	0.6	0.5 – 0.7
Risk-adjusted*	0.5	0.4 – 0.6

Significantly lower risk of death accepting a DCD liver today relative to waiting for a potential DBD liver in the future

Acknowledgements

NHS Blood and Transplant

Transplant units, hospital staff and Specialist Nurses for Organ Donation for provision of data to the UK Transplant Registry & UK Potential Donor Audit

@NHSBT_Stats
@NHSBT_CTU

Yes I donate ORGAN DONATION

www.odt.nhs.uk

DCD today: an updated overview of the European landscape

Beatriz Domínguez-Gil, MD, PhD
Director General
Organización Nacional de Trasplantes, Spain
(on behalf of the CD-P-TO)

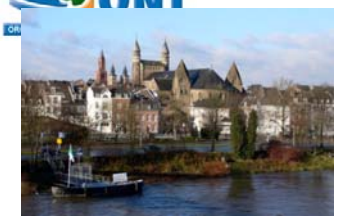
NHS Blood and Transplant

European Day for Organ Donation and Transplantation (EODD) Conference
12 October 2019 – London (UK)

The first heart transplant was a DCD heart

"..Washknasky and Denise Darvall were put in two communicating rooms……2:20 a.m. When there was no longer any cardiac activity on the electrocardiogram, no spontaneous respiration, and absence of any reflex for seven minutes, Denise Darval was declared to be dead, and this was recorded on the anesthetic report by Dr. Ozinsky"

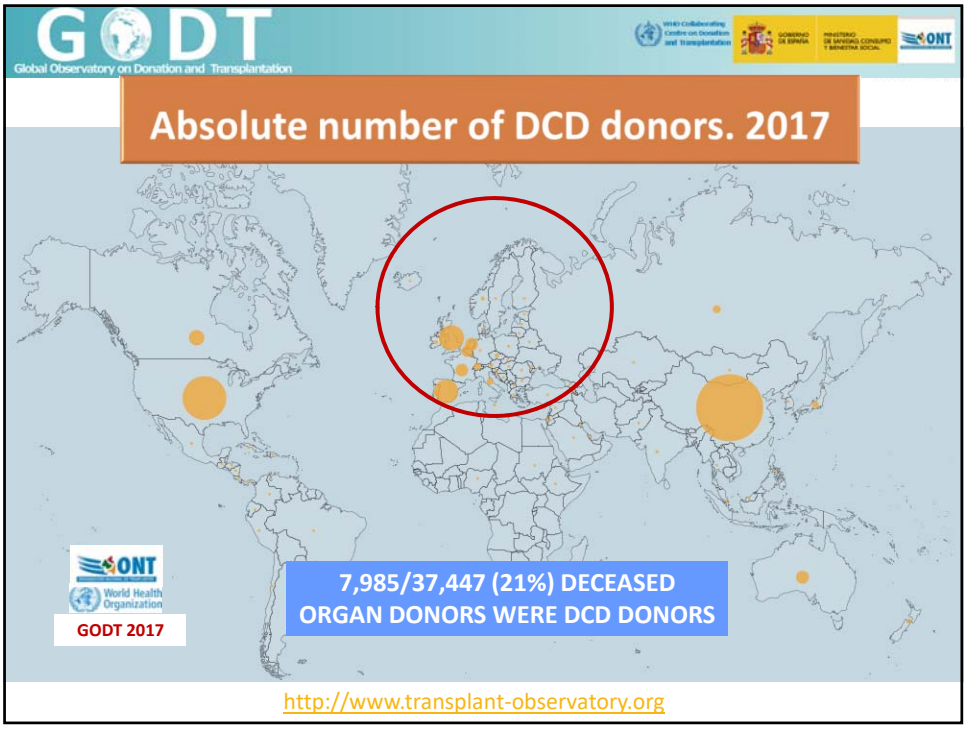
Kuss R, and Bourget P; 1991

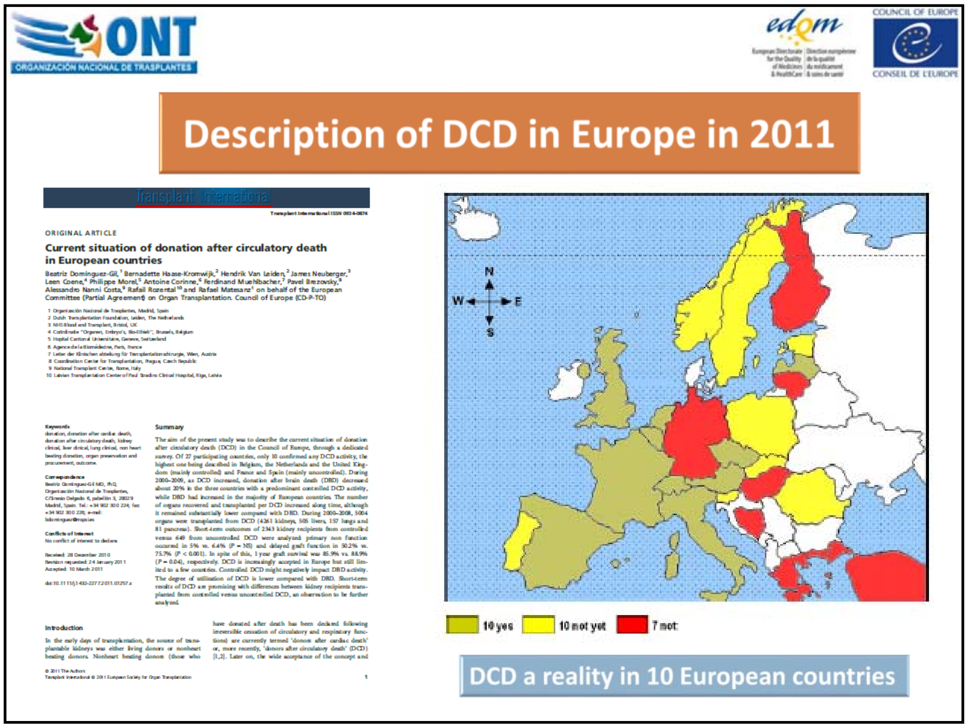


1st International Workshop on *Non Heart Beating Donation* (Maastricht 1995)

UNCONTROLLED	I	*Dead on arrival*
	II	*Unsuccessful resuscitation*
CONTROLLED	III	*Awaiting cardiac arrest*
	IV	*Cardiac arrest while brain death*

Kootstra G. Transplant Proc 1995; 27: 2983




ONT
ORGANIZACIÓN NACIONAL DE TRASPLANTES
edqm
COUNCIL OF EUROPE
CONSEIL DE L'EUROPE
Description of DCD in Europe in 2011
Transplant International
Transplant International ISSN 0934-0874
ORIGINAL ARTICLE
Current situation of donation after circulatory death in European countries
Beatriz Domínguez-Gil,1 Bernadette Haase-Kromwijk,2 Hendrik Van Leiden,2 James Neuberger,3 Leen Coene,4 Philippe Morel,5 Antoine Corinne,6 Ferdinand Muehlbacher,7 Pavel Brezovsky,8 Alessandro Nanni Costa,9 Rafail Rozental10 and Rafael Matesanz1 on behalf of the European Committee (Partial Agreement) on Organ Transplantation. Council of Europe (CD-P-TO)
Keywords
Summary
Introduction
N
W
E
S
10 yes
10 not yet
7 not
DCD a reality in 10 European countries


DCD in Europe is moving fast

Working Group established by the CD-P-TO

Mar Lomero & Marta López Fraga (EDQM)
Andreas Zuckermann (Austria)
Luc Colenbie (Belgium)
Miloš Adamec (Czech Rep)
Corine Antoine (France)
Nessa Lynch (Ireland)
Tamar Ashkenazi (Israel)
Francesco Procaccio (Italy)
Janis Jushinskis (Latvia)
Sonata Karčiauskaitė (Lithuania)
Bernadette Haase (Netherlands)
Stein Foss (Norway)
Jarosław Czerwiński (Poland)
Catarina Bolotinha (Portugal)
Layla Gabbasova (Russia)
Elisabeth Coll & **Beatriz Domínguez-Gil** (Spain)
Helena Ström (Sweden)
Franz Immer (Switzerland)
Dale Gardiner & **John Forsythe** (UK)

(alphabetical order of countries)

Mar Lomero, EDQM
Project coordinator

Aim

To provide an updated description of the situation of DCD in MS of the Council of Europe, with a focus on:

- the regulatory framework of relevance (particularly, cDCD)
- the procedures applied in clinical practice (particularly, cDCD)
- the quantity and type of DCD donation and transplantation activities
- the short-term outcomes of transplants performed with DCD donor organs

To provide MS with guidance to set up a DCD program and to improve existing DCD practices

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Methods

Population of study: Council of Europe MS

Two questionnaires

- Regulatory framework and procedures
- DCD activity and results of DCD transplants (aggregated data)

Source of information:

- Health authority and/or designated agency
- Newsletter Transplant
- National follow-up transplant registries/transplant centers

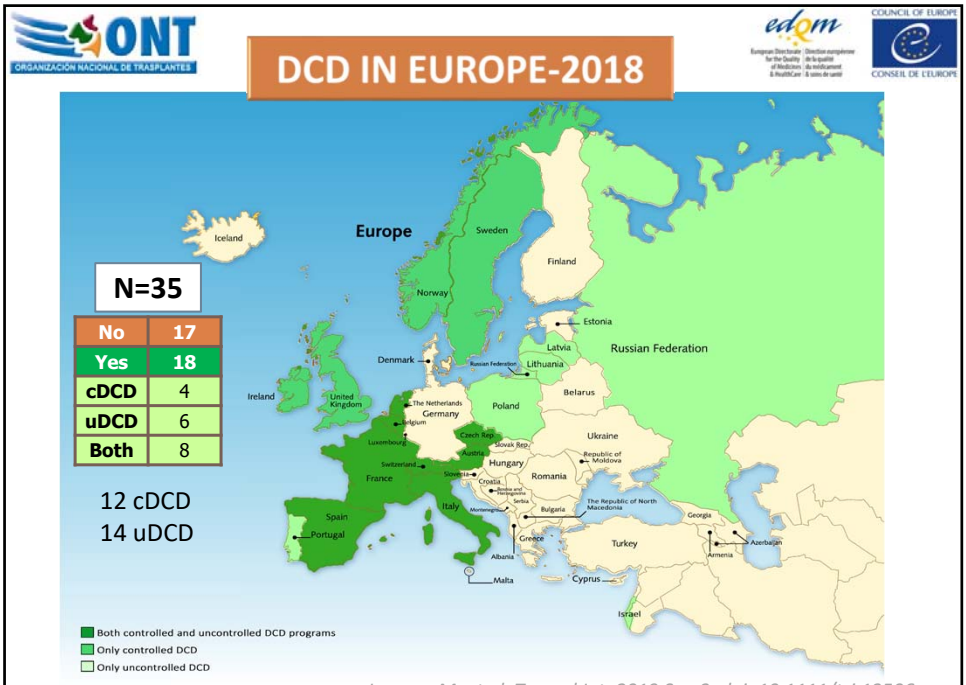
Descriptive statistical analysis

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

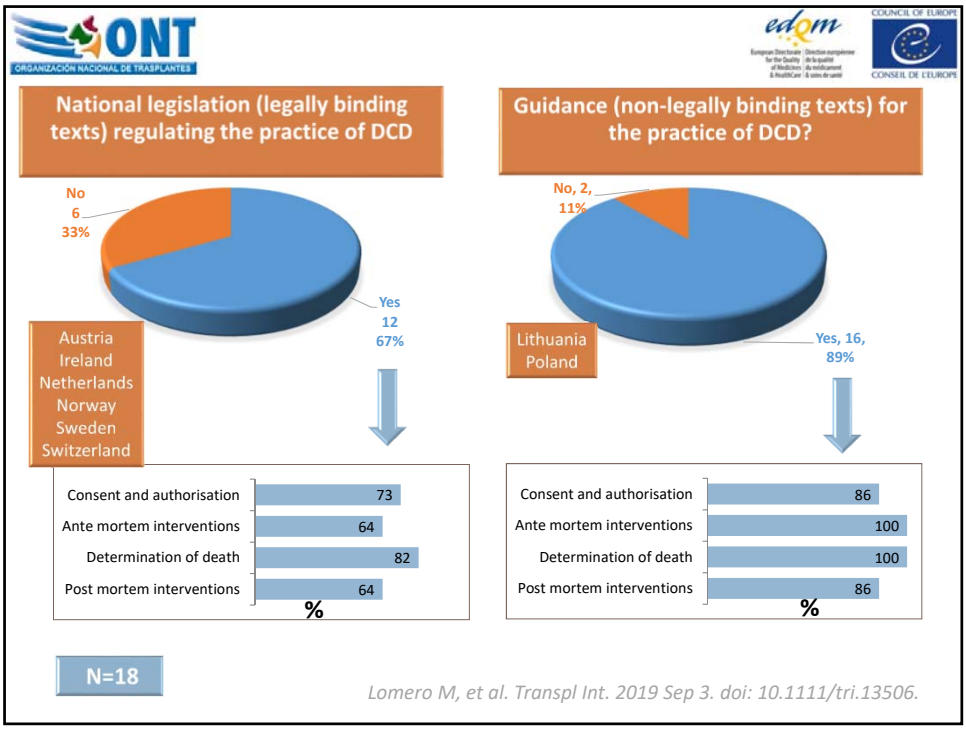
GENERAL ASPECTS OF DCD

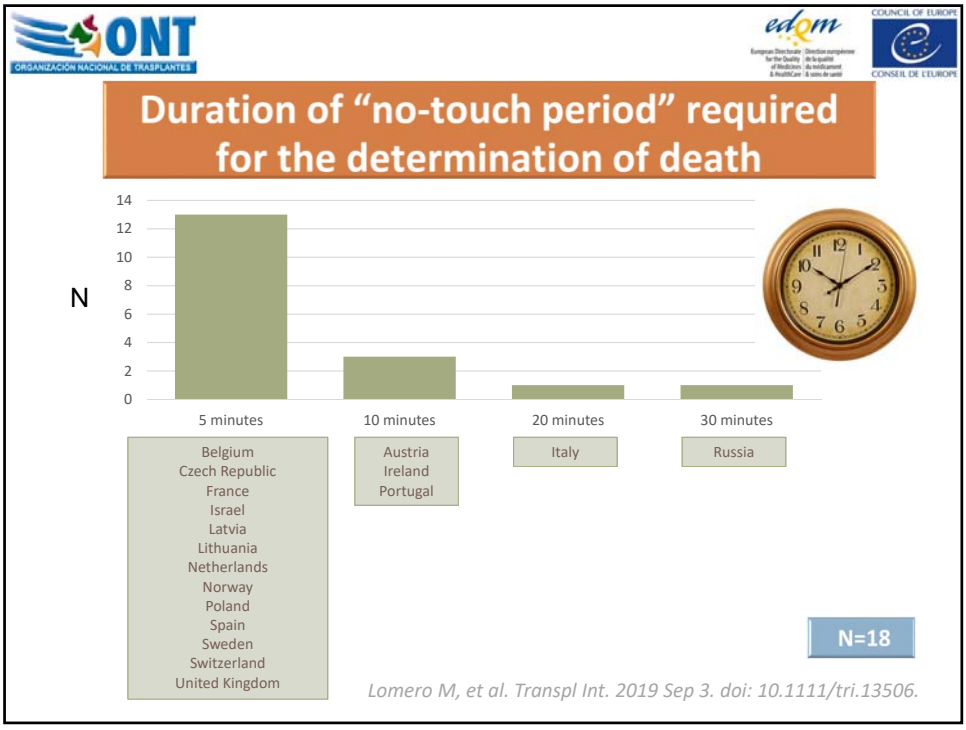
***9 countries planning to start DCD**.*
***8 countries not planning to start DCD** because of no need (3), lack of professional confidence in the program (3), logistical difficulties (2), legal obstacles (1), potential costs (1)*

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.



Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.


National legislation (legally binding texts) regulating the practice of DCD
No 6 33%
Yes 12 67%
Austria
Ireland
Netherlands
Norway
Sweden
Switzerland
Consent and authorisation 73
Ante mortem interventions 64
Determination of death 82
Post mortem interventions 64
%
Guidance (non-legally binding texts) for the practice of DCD?
No, 2, 11%
Yes, 16, 89%
Lithuania
Poland
Consent and authorisation 86
Ante mortem interventions 100
Determination of death 100
Post mortem interventions 86
%
N=18
Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.


Duration of "no-touch period" required for the determination of death
N
14
12
10
8
6
4
2
0
5 minutes
10 minutes
20 minutes
30 minutes
Belgium
Czech Republic
France
Israel
Latvia
Lithuania
Netherlands
Norway
Poland
Spain
Sweden
Switzerland
United Kingdom
Austria
Ireland
Portugal
Italy
Russia
N=18
Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

PRACTICES IN CONTROLLED DCD

Categories of patients considered potential cDCD donors

	Patients with devastating brain injuries	Patients with terminal neurodegenerative disorders	Patients with terminal respiratory diseases	Patients with terminal heart diseases (including those under therapeutic ECMO)
Austria	X	X	X	X
Belgium	X	X		
Czech Rep.	X	X	X	X
France	X*			X
Ireland	X	X	X	X
Italy	X*			X
Netherlands	X	X	X	X
Norway	X*			X
Spain	X*	X	X	X
Sweden	X*			
Switzerland	X*	X	X	X
United Kingdom	X	X	X	X
	12	8	7	10

**In 6 countries recommendations have been issued for professionals to consider delaying the WLST when BD is a likely outcome to enable death be determined by neurological criteria and DBD*

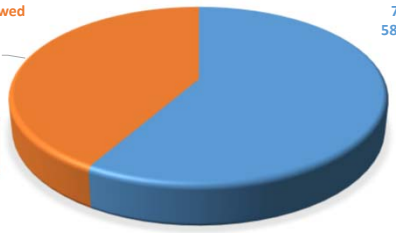
N=12

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Ante mortem administration of substances (e.g. heparin) for organ preservation purposes in cDCD

Czech Republic
Ireland
Netherlands
Sweden
United Kingdom

Not allowed
5
42%



Allowed and practiced
7
58%

Austria
Belgium
France
Italy*
Norway
Spain**
Switzerland**

Ethical concerns
Lack of professional guidance

**Only during the agonal period*
***Specific authorization from legal representatives required*

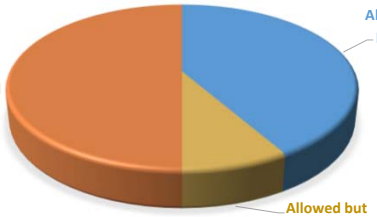
N=12

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Ante mortem cannulation of femoral vessels for organ preservation purposes in cDCD

Czech Republic
Ireland
Netherlands
Sweden
Switzerland
United Kingdom

Not allowed
6
50%



Allowed and practiced
5
42%

Allowed but not practiced
1
8%

Austria

Belgium
France*
Italy*
Norway*
Spain**

Ethical concerns
Lack of professional guidance

Courtesy: Dr. Juan José Rubio, Hospital Puerta de Hierro, Madrid Spain

**Identification of femoral vessels prior to the WLST to facilitate cannulation after the determination of death*

***Specific authorization from legal representatives required*

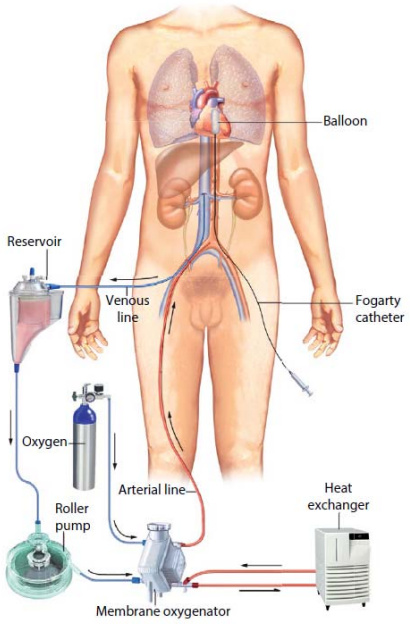
N=12

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Normothermic Regional Perfusion

Fondevila C, et al. Am J Transplant 2012

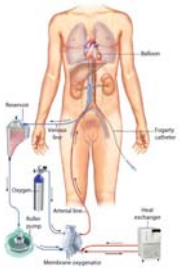
Council of Europe Guide for the Quality and Safety of Organs for Transplantation, 7th Edition (https://register.edqm.eu/freepub)

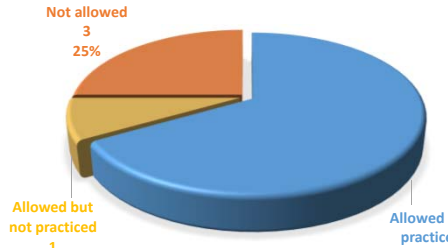


Normothermic regional perfusion as a *post mortem* intervention (*in situ* preservation) in cDCD

Czech Republic
Ireland
Sweden

Ethical concerns
Lack of professional guidance





Austria

Belgium*
France
Italy
Netherlands*
Norway
Spain
Switzerland*
United Kingdom

**Emerging practice*

All countries resort to the occlussion of the aorta before nRP, either by surgical clamping or using an aortic balloon

N=12

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Spanish protocol for the safe isolation of the brain during nRP

1. Insert left radial, ECMO and aortic occlusion catheters before WSLT.

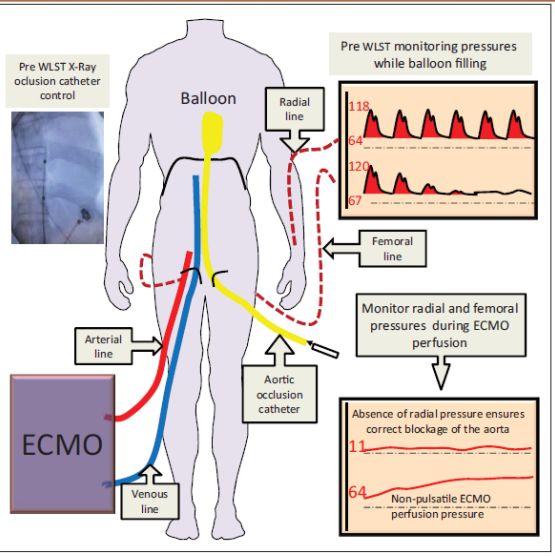
2. Monitor femoral and radial artery pressures while filling the occlusion balloon a few seconds. The femoral pulse should disappear while the radial pulse is maintained. Record the filling volume as the minimum volume to be used to block the aorta during nRP.

3. Check the correct position of the occlusion catheter in the thoracic aorta by X-ray control.

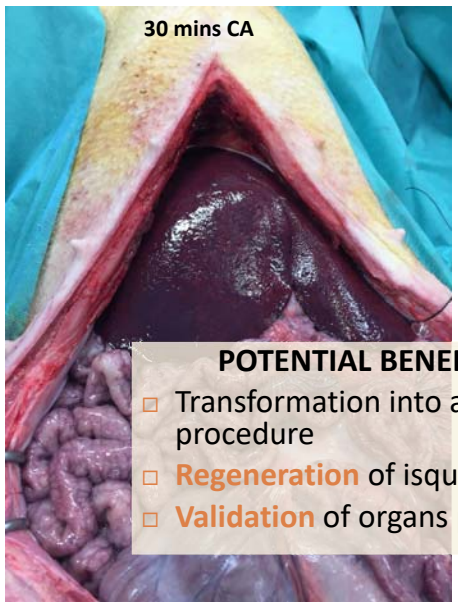
4. After death declaration, fill in the occlusion catheter balloon and start nRP.

5. During nRP, continuous monitoring of both pressures should be maintained. While the radial artery shows baseline post cardiac arrest values, the femoral line shows a non-pulsatile ECMO perfusion pressure.

6. If the radial pressure increases parallel to the increase in femoral pressure, stop nRP and check the correct position of the aortic occlusion catheter or clamp the thoracic aorta after another five minutes of non-touch period, before restoring nRP.



Miñambres E, et al. Curr Opin Transplant 2018; 23:120-129

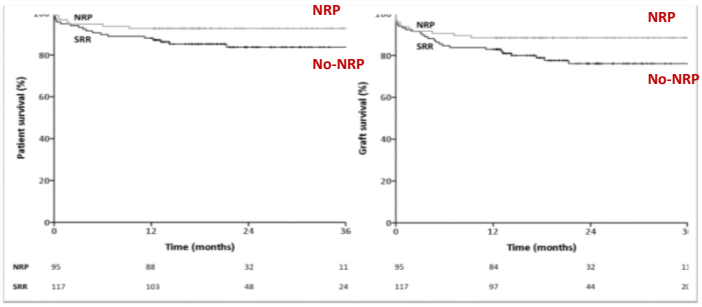


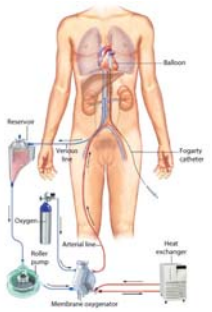
POTENTIAL BENEFITS OF nRP IN cDCD

- Transformation into an **elective recovery** procedure
- **Regeneration** of isquemically-damaged tissue
- **Validation** of organs prior to recovery

Courtesy: Dr. Constantino Fondevila, Hospital Clinic, Barcelona, Spain

cDCD Liver Transplantation. Spain 2012-2016





	NRP (N=95)	SRR (N=117)	Raw Analysis Risk Estimates [95% CI][5]	P	IPTW Analysis Risk Estimates [95% CI][5]	P
Early allograft dysfunction	21 (22%)	32 (27%)	0·75 [0·40-1·42]	0·381	0·97 [0·53-1·80]	0·931
Primary non-function	2 (2%)	3 (3%)	0·82 [0·13-4·99]	0·827	0·24 [0·04-1·56]	0·135
Hepatic artery thrombosis	4 (4%)	3 (3%)	1·67 [0·36-7·65]	0·509	0·79 [0·16-3·85]	0·770
All biliary complications	8 (8%)	36 (31%)	**0·21 [0·09-0·47]**	**<0·001**	**0·14 [0·06-0·35]**	**<0·001**
ITBL	2 (2%)	15 (13%)	**0·15 [0·03-0·66]**	**0·012**	**0·11 [0·02-0·57]**	**0·008**
Retransplantation	5 (5%)	11 (9%)	0·54 [0·18-1·60]	0·263	**0·24 [0·07-0·78]**	**0·018**
Patient death	7 (7%)	20 (17%)	0·44 [0·19-1·05]	0·064	0·53 [0·23-1·22]	0·135
Graft loss	11 (12%)	28 (24%)	**0·49 [0·24-0·98]**	**0·043**	**0·39 [0·20-0·78]**	**0·008**

Hessheimer AJ, et al. J Hepatol 2019;70(4):658-665

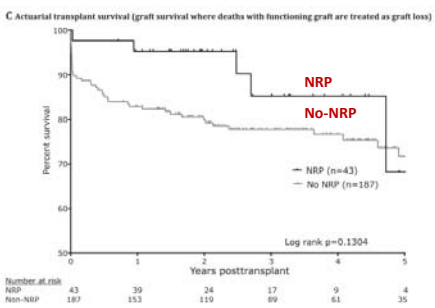
ORIGINAL ARTICLE

AJT

In situ normothermic perfusion of livers in controlled circulatory death donation may prevent ischemic cholangiopathy and improve graft survival

Christopher J. E. Watson[1,2,3] | Fiona Hunt[4] | Simon Messer[5] | Ian Currie[4] | Stephen Large[5] | Andrew Sutherland[4] | Keziah Crick[3] | Stephen J. Wigmore[4,6] | Corrina Fear[3] | Sorina Cornateanu[4] | Lucy V. Randle[7] | John D. Terrace[4] | Sara Upponi[8] | Rhiannon Taylor[9] | Elisa Allen[9] | Andrew J. Butler[1,2,3] | Gabriel C. Oniscu[4,6]

Livers from controlled donation after circulatory death (DCD) donors suffer a higher incidence of nonfunction, poor function, and ischemic cholangiopathy. In situ normothermic regional perfusion (NRP) restores a blood supply to the abdominal organs after death using an extracorporeal circulation for a limited period before organ recovery. We undertook a retrospective analysis to evaluate whether NRP was associated with improved outcomes of livers from DCD donors. NRP was performed on 70 DCD donors from whom 43 livers were transplanted. These were compared with 187 non-NRP DCD donor livers transplanted at the same two UK centers in the same period. The use of NRP was associated with a reduction in early allograft dysfunction (12% for NRP vs. 32% for non-NRP livers, $P = .0076$), 30-day graft loss (2% NRP livers vs. 12% non-NRP livers, $P = .0559$), freedom from ischemic cholangiopathy (0% vs. 27% for non-NRP livers, $P < .0001$), and fewer anastomotic strictures (7% vs. 27% non-NRP, $P = .0041$). After adjusting for other factors in a multivariable analysis, NRP remained significantly associated with freedom from ischemic cholangiopathy ($P < .0001$). These data suggest that NRP during organ recovery from DCD donors leads to superior liver outcomes compared to conventional organ recovery.



Watson C, et al. Am J Transplant 2019

DCD heart transplantation with nRP

FEATURED PAPERS

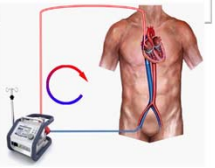
Successful clinical transplantation of hearts donated after circulatory death using normothermic regional perfusion

Vincent Tchana-Sato, MD, PhD,[a] Didier Ledoux, MD, P
Olivier Detry, MD, PhD,[c] Gregory Hans, MD, PhD,[b] Arn
Virginie D'Orio, MD,[d] Paul Bernard Massion, MD, PhD,
Samuel Bruls, MD,[a] Jean Paul Lavigne, MD, PhD,[a] José
Marie-Hélène Delbouille, NP,[c] Natzi Sakalihasan, MD,
Jean Olivier Defraigne, MD, PhD[a]

*From the Departments of [a]Cardiothoracic Surgery, Liege, Belgium; [b]Anesthesiol
[c]Abdominal Surgery and Transplantation, Liege, Belgium; and the [d]Cardiology, C*

Human heart transplantation from donation after circulatory-determined death donors using normothermic regional perfusion and cold storage

Simon Messer, MB, BChr, MRCS, Aravinda Page, MB, BChr, MRCS, Simon Colah, BSc, Richard Axell, PhD, Barbora Parizkova, FFA, Steven Tsui, FRCS, MD and Stephen Large, FRCS, MBA

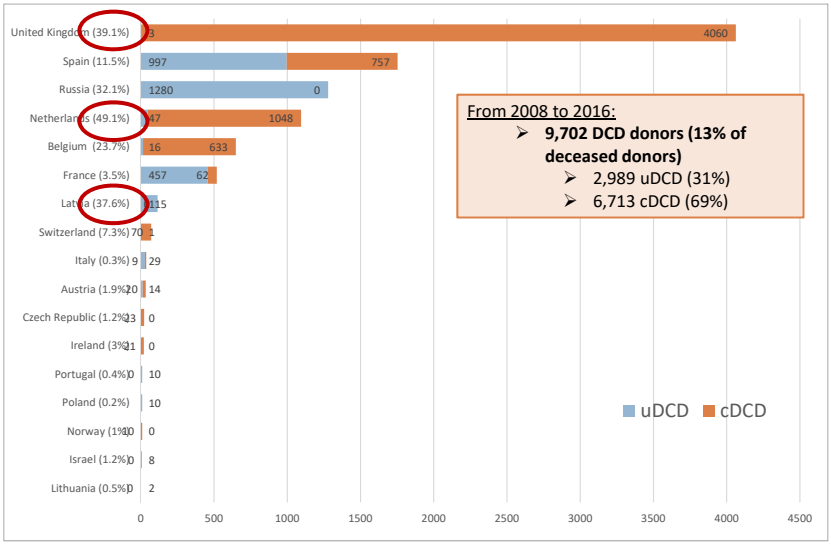


Success of new innovative heart transplant technique celebrated at Papworth Hospital

By CambridgeNews | Posted: December 30, 2015 By Freya Leng

DCD ACTIVITIES AND EFFECTIVENESS

DCD activity 2008-2016



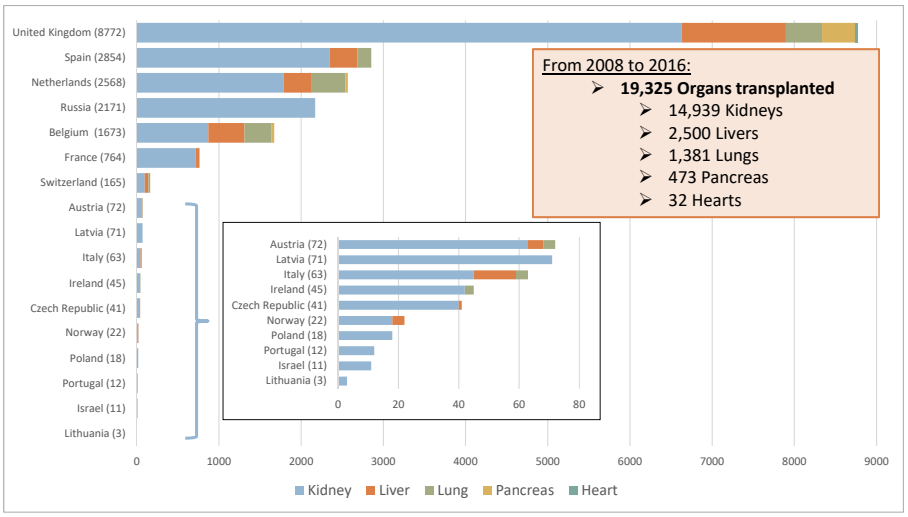
From 2008 to 2016:

- **9,702 DCD donors (13% of deceased donors)**
  - 2,989 uDCD (31%)
  - 6,713 cDCD (69%)

In brackets: % of DCD donors over total deceased donors

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Organs transplanted from DCD donors 2008-2016



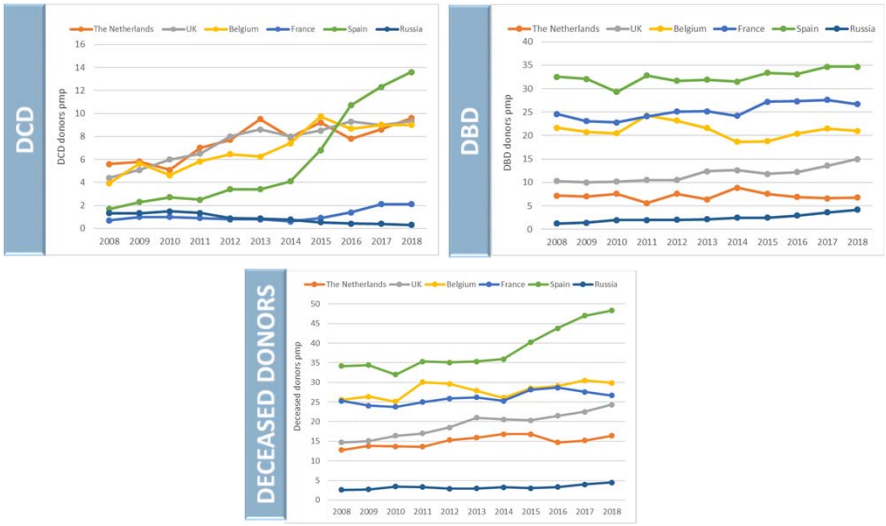
From 2008 to 2016:

- **19,325 Organs transplanted**
  - 14,939 Kidneys
  - 2,500 Livers
  - 1,381 Lungs
  - 473 Pancreas
  - 32 Hearts

In brackets: total number of organs transplanted from DCD donors

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Evolution of DCD and DBD in European countries with the highest DCD activity



Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Effectiveness of DCD and DBD in 2016*

	DBD	cDCD	uDCD
Actual donors	7,268	1,284	262
Utilised donors	6,771	1,165	196
Utilisation Rate (%)	**93%**	**91%**	**75%**
Organs recovered per donor	**3.8**	**2.8**	**2.2**
Organs transplanted per donor	**3.5**	**2.6**	**1.6**
Kidneys recovered	12,628	2,421	472
Kidneys transplanted	11,036	2,017	322
Kidneys transplanted (%)	**87%**	**83%**	**68%**
Livers recovered	6,074	647	35
Livers transplanted	5,411	492	17
Livers transplanted (%)	**89%**	**76%**	**49%**
Lungs recovered	2610	249	17
Lungs transplanted	2316	218	15
Lungs transplanted (%)	**89%**	**88%**	**88%**

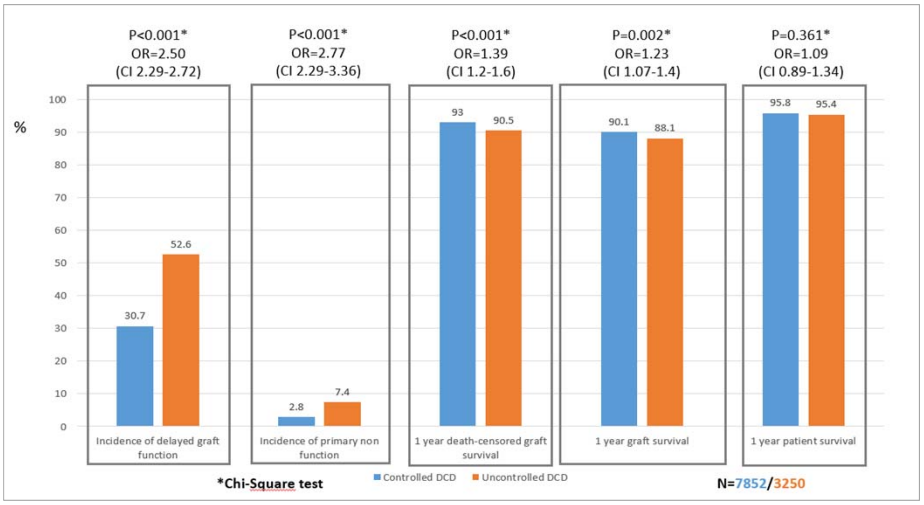
** Data provided by Belgium, Czech Republic, France, Ireland, Israel, Italy, Lithuania, Latvia, Netherlands, Norway, Portugal, Russia, Spain, Switzerland and United Kingdom.*

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

POSTRASPLANT OUTCOMES OF DCD DONOR ORGANS

Post-transplant outcomes 2008-2015

N= 11,102



Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Post-transplant outcomes 2008-2015

N= 1,563

	cDCD (1,497)	uDCD (66)	
1 graft survival	82%	77%	ns
1 year patient survival	90%	85%	

N= 278

	cDCD (226)	uDCD (52)	
1 year graft survival	87%	78%	ns
1 year patient survival	87%	78%	

N= 334

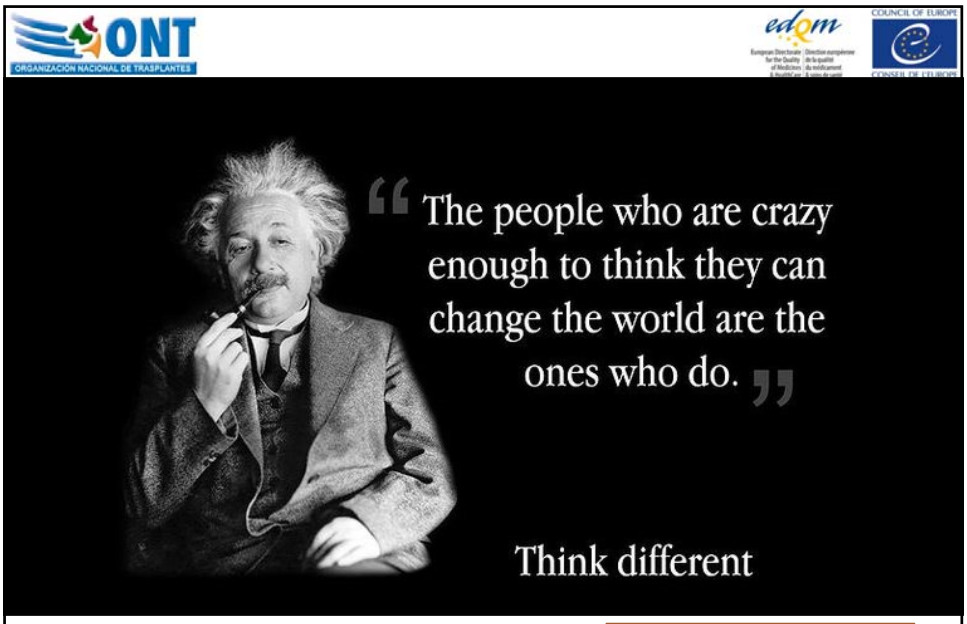
	cDCD (334)	uDCD (0)
1 year graft survival (death censored)	85%	-
1 year patient survival	98%	-

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.

Conclusions

- The practice of **DCD is expanding in Europe**, with more countries having embarked in this type of donation and with increasing activity.
- **Procedures are extremely heterogeneous**. nRP increasingly used in cDCD.
- Although **DCD is less effective than DBD**, the process has yielded an impressive number of transplanted organs in the European setting over the last few years.
- **Results of organs from DCD donors are appropriate**, although improvement is foreseen as knowledge is gained, experience increased and evidence built on the value of *in situ* and *ex situ* preservation strategies.
- **DCD should be considered as an option in all countries**, not only to increase the availability of organs to cover the transplant needs of our population, but also to give more patients the opportunity of donating their organs after their death.

Lomero M, et al. Transpl Int. 2019 Sep 3. doi: 10.1111/tri.13506.



Thank you for your attention
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New technologies in Preservation and Perfusion

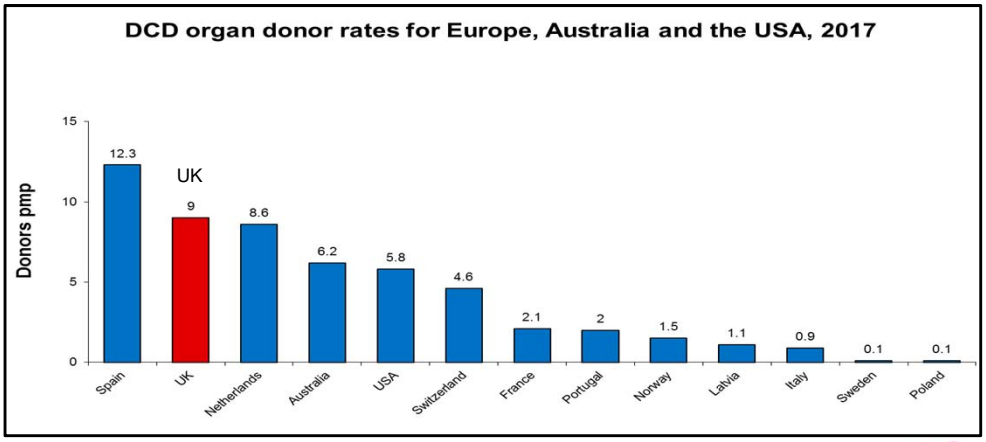
NRP (Normothermic Regional Perfusion)

Gabriel C. Oniscu

Consultant Transplant Surgeon / NRS Clinician / Honorary Reader

Director, Edinburgh Transplant Centre, Royal Infirmary of Edinburgh

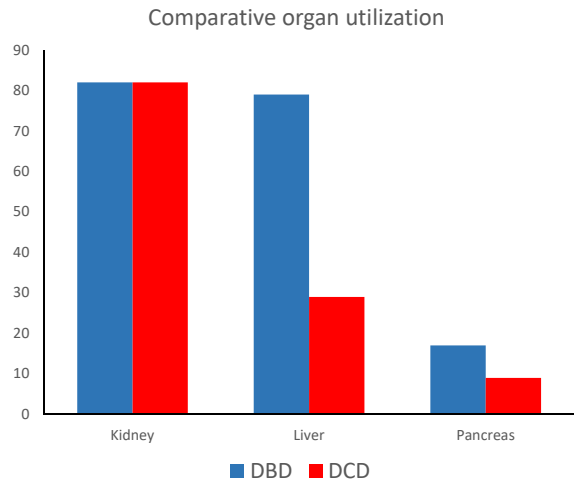
Current status of DCD donation



Yes I donate
ORGAN DONATION

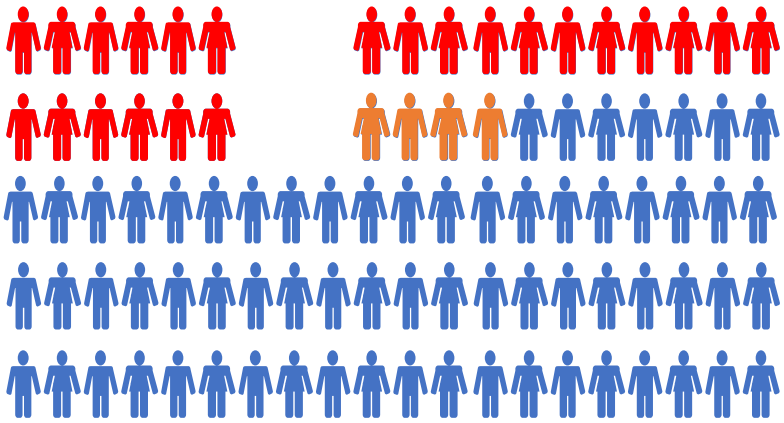
The DCD challenges

- Complex logistics
- Unpredictable cardiac arrest
- Subjective organ assessment
- Higher morbidity
- Longer hospital stay
- Increased costs
- Lower organ utilisation



NHSBT 2019 Annual Report

DCD liver transplant failures



Irreversible bile duct damage

Primary non-function

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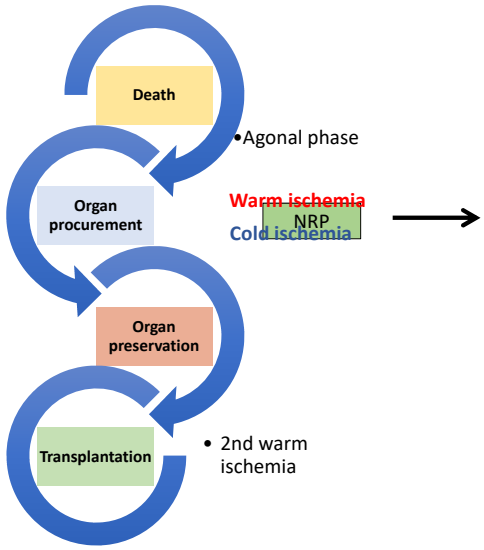
The unique environment of DCD transplantation



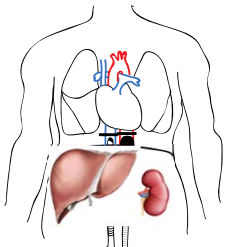
•Agonal phase

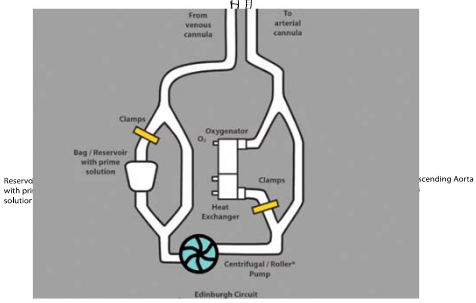
Warm ischemia

NRP

Cold ischemia

• 2nd warm ischemia





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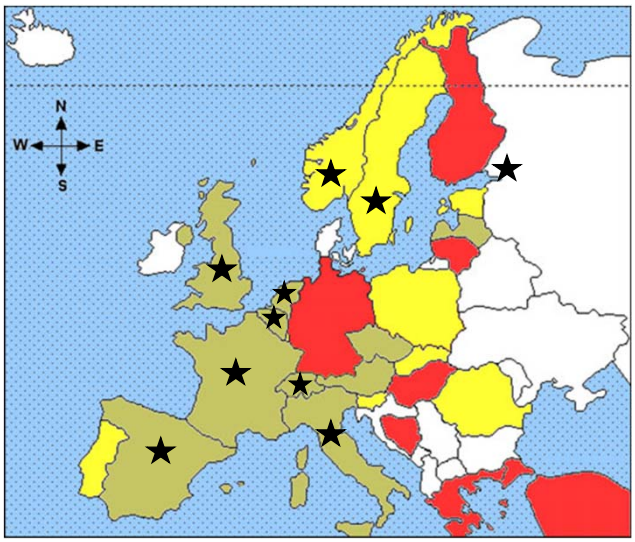
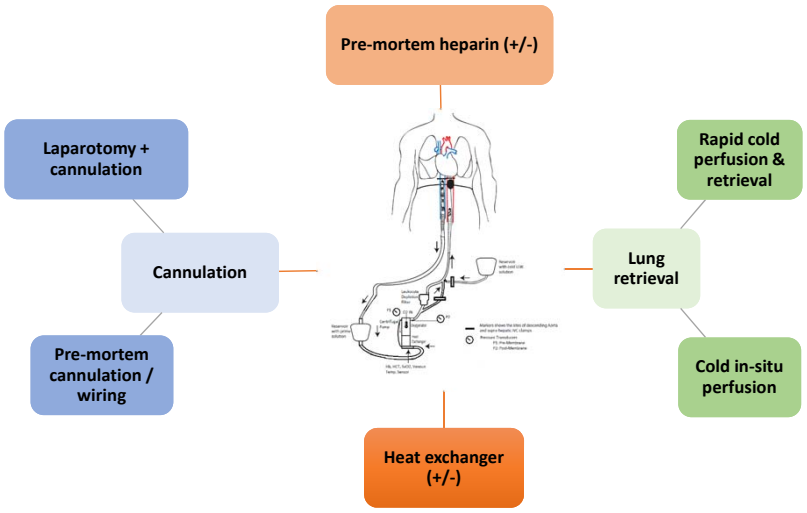
European NRP “hotspots”



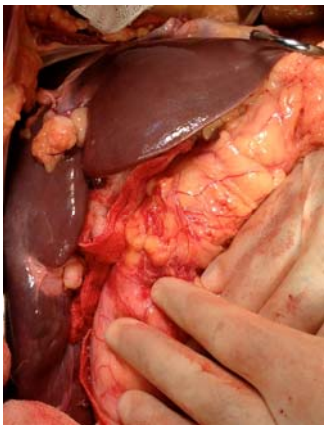
NRP – practice variations

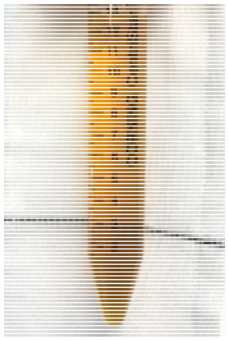


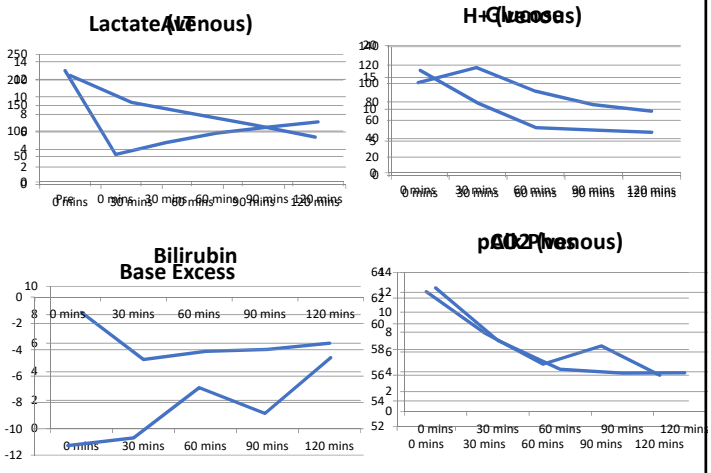
Fondevila C et al. Am J Transplant 2007; 7: 1849-1855
Perez-Villares JM et al. Resuscitation 2017; 117: 46-49

Oniscu GC et al. Am J Transplant 2014; 14(9):2181-6
Savier E et al. Liver Transplantation 2015; 21:631-643

NRP allows for an objective dynamic organ assessment







Oniscu et al, UK DCD NRP national protocol 2015

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What to do with this information?

- Perfusion and oxygenation parameters
  - Modulate parameters of perfusion
- Liver function
  - Hepatocyte function
  - Metabolic function
  - Is the liver going to work?

	Blood Results	Range	0	0.5h	1h	1.5h	2h
Venous/Arterial Gases	PH	7.35-7.45	7.14	7.47	7.52	7.50	7.60
	pCO2	4.5-6.0	6.58	3.96	3.51	3.27	3.23
	pO2	5.0-8.0	8.56	6.52	5.93	4.82	4.94
	HCO3	22-28	15.5	21.4	23.3	24.8	26.7
	BE	-3 - +3	-12.2	-3.7	-1.4	0.6	2.6
	Glucose	3.6-5.8	6.3	6.6	6.8	5.8	7.0
	Lactate	0.4-1.4	8.3	5.9	4.6	4.8	3.2
Biochemistry / FBC	Bili	3-21	<5	<5	<5	<5	<5
	ALT	10-50	51	45	53	68	75
	AST	10-50	42	42	53	68	75
	ALP	50-250	8	14	17	19	20
	Creat	60-120	54	53	55	58	69
	Hb	115-180	35	47	59	58	69

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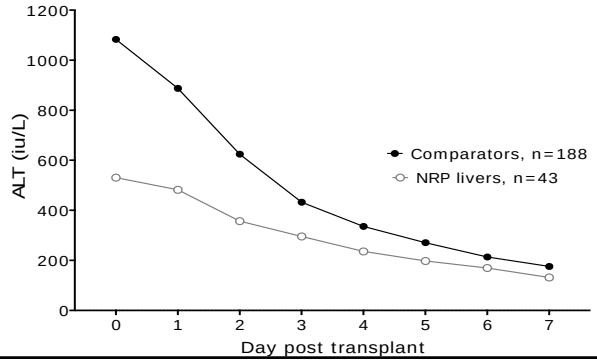
NRP – Variable interpretation of perfusion data

Criteria	Range	Program
ALT	< 4 times upper limit Trend <1000	Spain, France UK Italy
Lactate	Downward trend	all
Macroscopic appearance		all
Liver Bx	<20 % steatosis < 30% steatosis	France Italy
Bile production/quality	pH	UK

De Carlis R et al. Liver Transplantation 2017; 23: 166-173
Oniscu G et al. AM J Transplant 2014; 14: 2846-2854
Fondevila C et al. Am J Transplant 2007; 7: 1849-1855
Watson CJ et al. Transplantation 2017 epub ahead of print
Savier E et al. Liver Transplantation 2015; 21: 631-643

Clinical outcomes

	NRP liver donors (n = 43)	Comparator cohort (n = 188)	P value
Peak ALT in first 7 days (median (IQR))	633 (319-1070)	1142 (669-2089)	<0.0001
Early allograft dysfunction	5 (12%)	56/174 (32%)	0.0075



Liver clinical outcomes

	NRP liver donors (n = 43)	Comparator cohort (n = 188)	P value
Bile duct complications			
Biliary leak	3/43 (7%)	18/175 (10%)	0.7729
Anastomotic stricture	3/42 (7%)	46/171 (27%)	0.0069
Ischaemic cholangiopathy	**0/42 (0%)**	**46/171 (27%)**	**<0.0001**

Watson CJ et al. Am J Transplant 2019; 19(6): 1745-1758

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cDCD NRP liver transplant outcomes

	NRP N=152	No-NRP N=218	P value
Early Allograft Dysfunction	22%	29%	n.s.
Primary non function	2%	4%	n.s.
Biliary complications	9%	24%	0.006
Ischaemic cholangiopathy	**2%**	**12%**	**0.01**
Graft survival at one year	**87%**	**78%**	**0.11**

NRP the only significant factor preventing the development of IC

Hessheimer A et al. ILTS 2018 abstract 0-002

Coll E et al. TTS 2018 abstract 593.8

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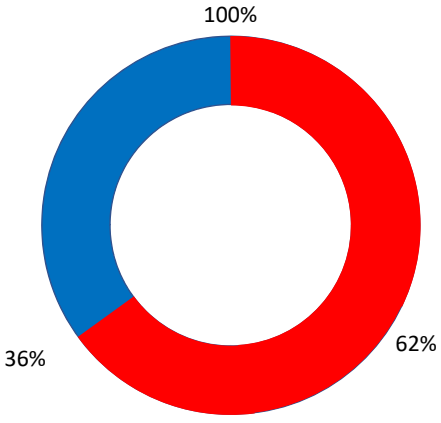
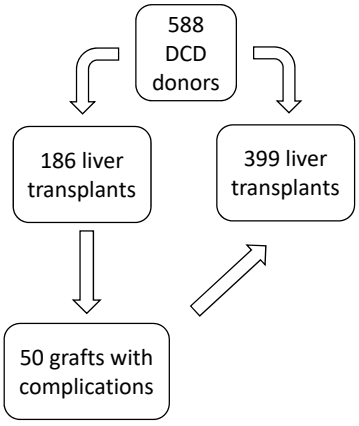
NRP – making the most of the DCD donated organs





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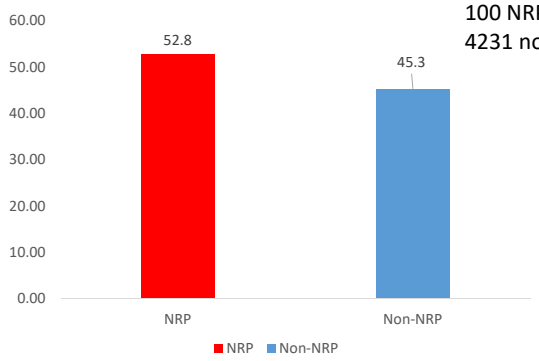
NRP – Better one year kidney function



100 NRP
4231 non NRP

- Donor history hypertension
- Donor history of diabetes
- Donor age
- Donor height
- Recipient sex
- Recipient ethnicity
- Cold ischaemic time
- Recipient waiting time

Expected eGFR increasing by 4 ml/min/1.73m^2

p-value=0.04

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NRP – Better one year kidney function

- 92 NRP cDCD
  - WIT< 120 min
  - Donor <65 years
- 846 matched DBD controls
  - Donor/ recipient age +/- 10 yrs
  - Time on dialysis
  - Cause of ESRD
  - cPRA

	DBD	DCD NRP
PNF	1 (1%)	29 (4%)
DGF	138 (18%)	8 (9%)
eGFR discharge (MDRD, ml/min)	44	48

Antoine C et al. AST Congress 2017

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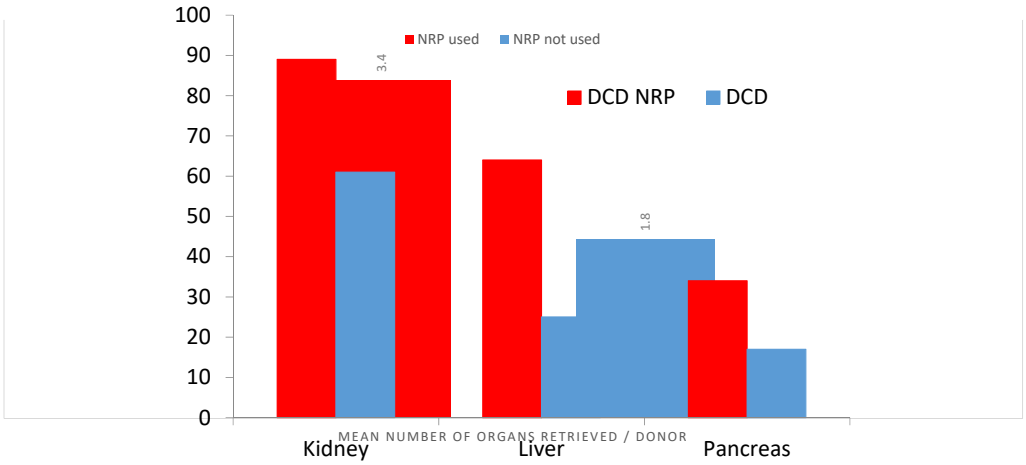
NRP - A game changer for DCD retrieval



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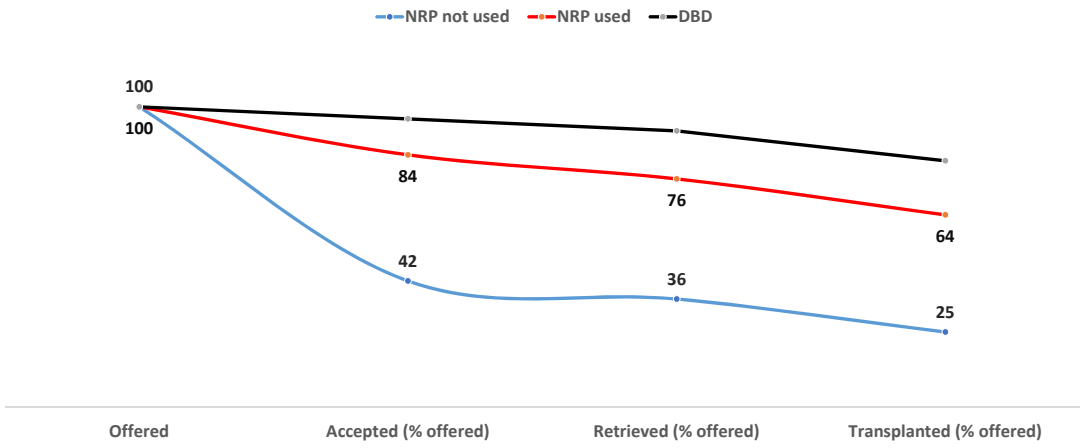
Liver graft utilisation



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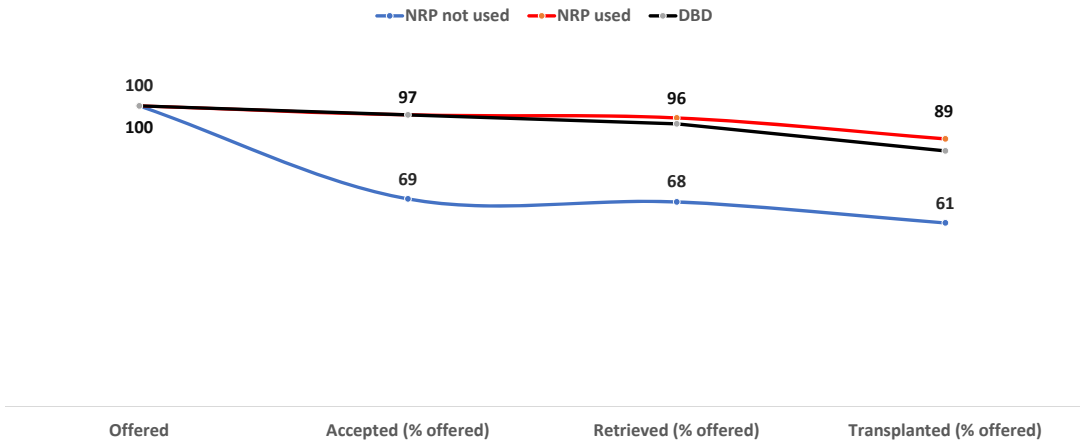
Kidney graft utilisation



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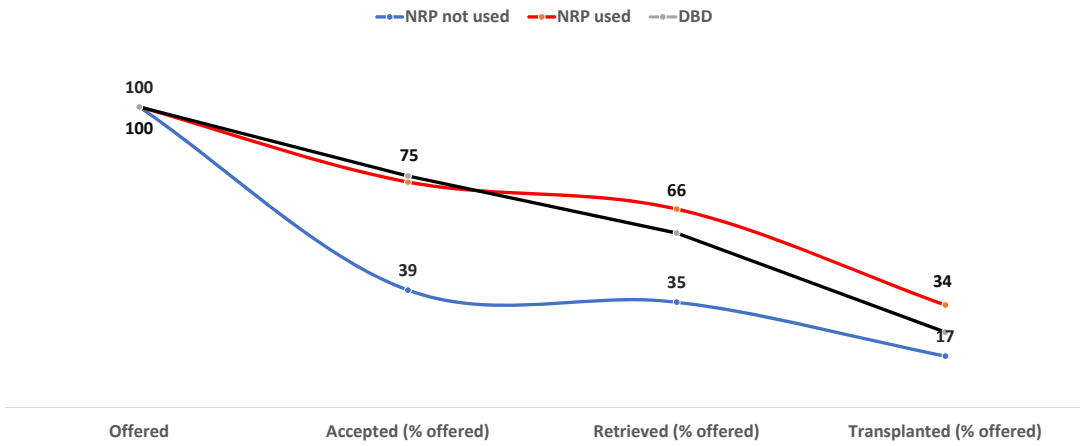
Pancreas graft utilisation



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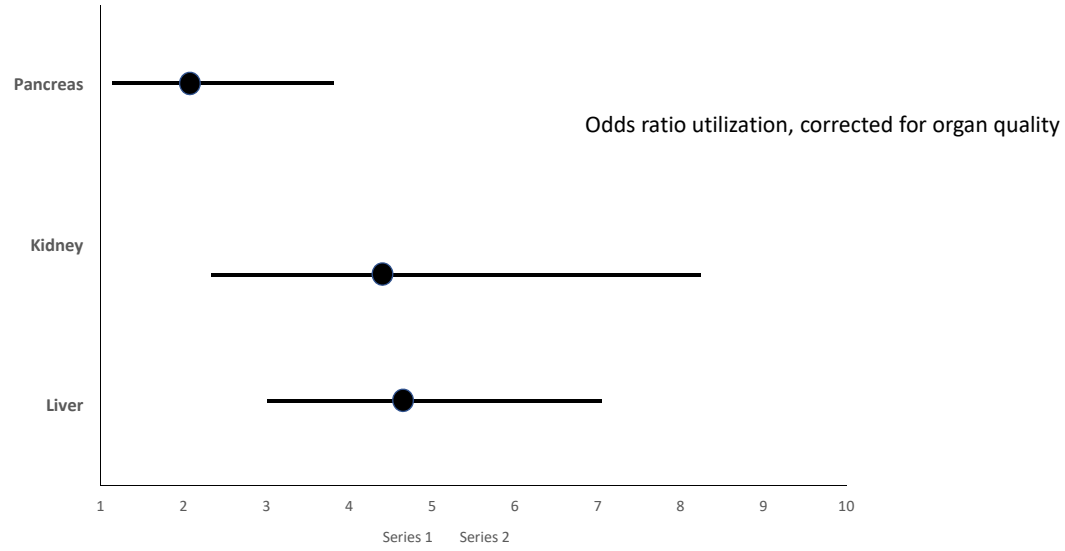
Increased likelihood of transplantation



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NRP - Pushing the boundaries for liver Tx

Donor

- Age < 72 years
- DWIT < 40 min
- Moderate steatosis

Recipient

- Fulminant hepatic failure
- Re-transplants
- Cold ischaemic time < 12 hours

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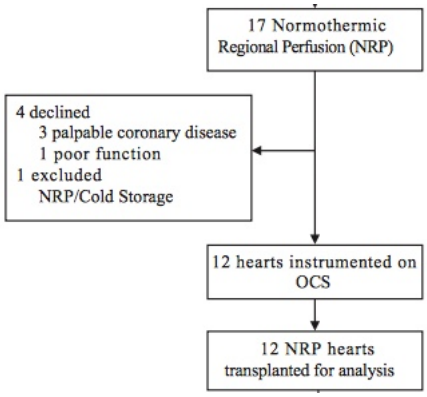
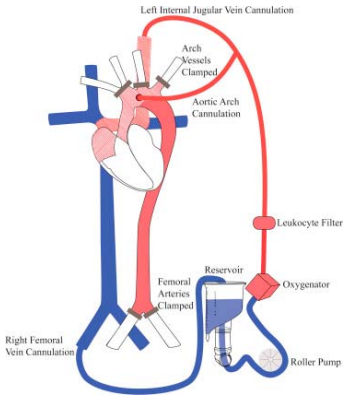
NRP – succesful DCD Heart transplantation





Messer S et al. J Heart Lung Transplant 2017; 36:1311-1318

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NRP – ££ savings

Additional NRP costs - £4,053/patient

	NRP DCD	Standard DCD
Death due to complications (n)	4	6
Graft survival (n)	69	62
Re-Tx (n)	1.91	8.45
Death after re-Tx (n)	0.1	0.67
Model Costs* (£ mil)	2.38	3.55
Cost/surviving patient (£, 000)	33,5	50,5

£17,000 saving

(* model based on a cohort of 100 cases in each arm)

Edinburgh Transplant Centre

NRP – low cost per QALY

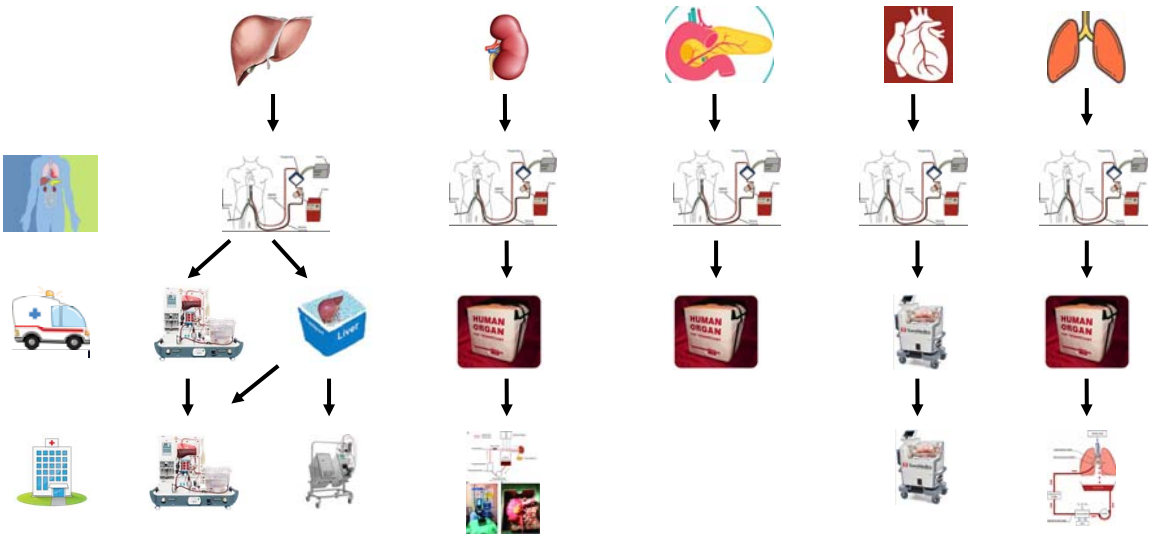
Monetary value / QALY = £60,000

		10 yr Costs	QALYS
Retrieval costs		£219,179	
Equipment costs		£62,074	
Additional NRP Tx	Waiting list costs	-£799,654	85.6
	Tx cost (incl follow-up)	£1,698,458	
Converted Tx		£253,533	21.6
Total		£1,433,589	107.3

£13,360 / QALY

£6,601 / QALY (100 yr horizon)

perfusion - an individualized strategy



Edinburgh Transplant Centre

Conclusion

- NRP is a highly disruptive technology in DCD donation & transplantation
- Increases organ recovery rates
- Increases likelihood of organ utilization
  - 4.5 x livers
  - 4.5x kidney
  - 2x pancreas
- Excellent clinical outcomes
- NRP should become the gold standard for organ procurement in DCD

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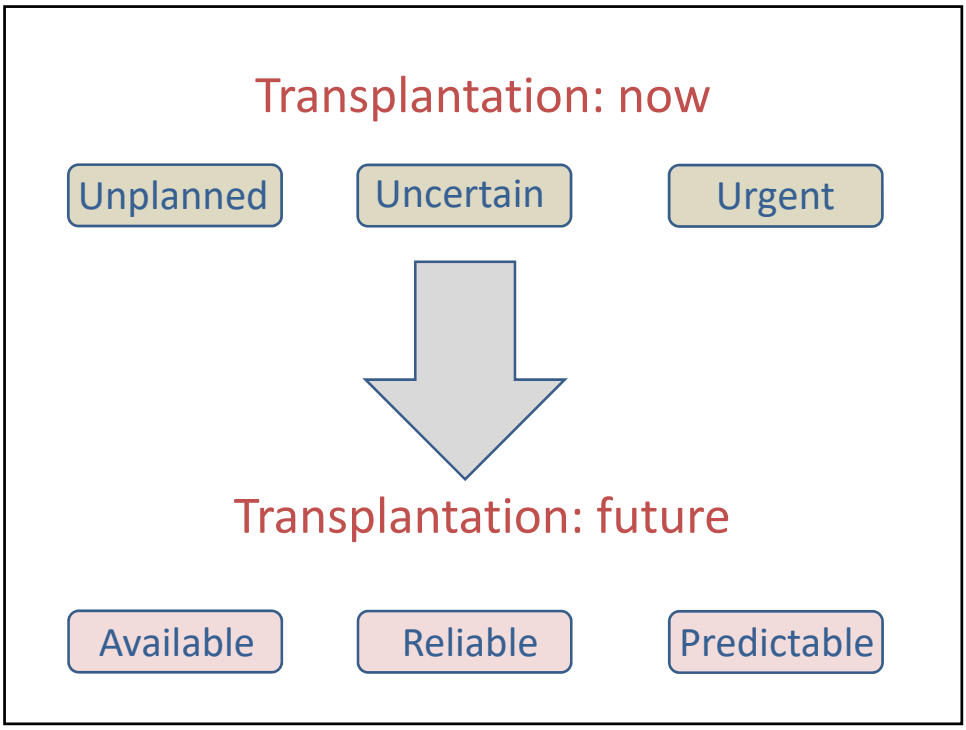
Normothermic machine perfusion

Peter J Friend

University of Oxford, UK

Disclosure

Co-founder and Chief Medical Officer of Oxford University spin-out company, OrganOx Ltd, set up to develop normothermic organ perfusion



What limits transplantation?

- Boundaries defined by the donor organ
  - Age
  - Co-morbidities
  - Pre-retrieval injury
  - Steatosis
  - Inflammation
  - Warm ischaemia
  - Cold ischaemia
- Many potential donor organs are never considered

What limits transplantation?

- Status quo is not 'acceptable'
  - Long waiting lists
  - Restrictive listing criteria
  - Poor organ utilisation (e.g.62%)
  - Waiting list mortality (e.g. 12%)
  - Postoperative morbidity & mortality

Can we use technology to change the limits?

Perfusion: expensive & complex
Why replace technology that works?

What's wrong with the ice-box?

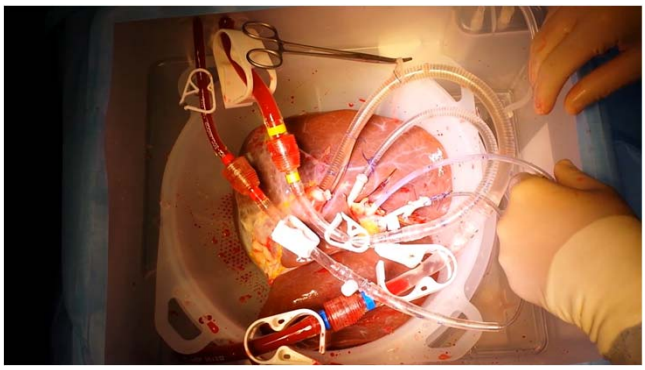
- Reliable
- Cheap
- Transportable
- Easy

Who buys a used car without a test drive?

We've become complacent about donor organ risk

What are they looking at?

‘Test-drive’ liver before transplanting it



Patients need quality assurance too

Normothermic machine perfusion

Recreate physiological environment

Deliver oxygen

Physiological temperature

Provide nutrients

Allow normal metabolic activity

Avoid ischaemia-reperfusion

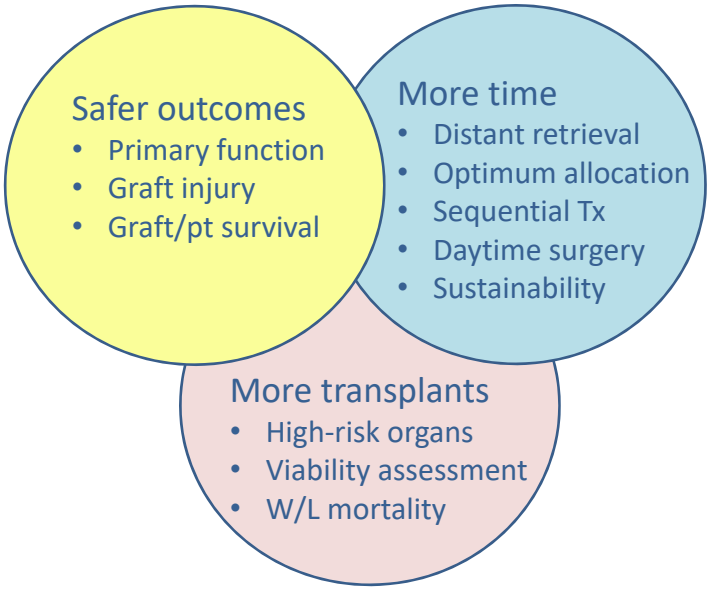
Enable cellular recovery/repair

Viability assessment

Perfusion – what are the claims?

- Preservation
  - Quality; duration
- Repair
  - Hypoxia; steatosis
- Assessment
  - Quantification of risk
- Modification
  - Adapt organ to patient

What are the benefits?



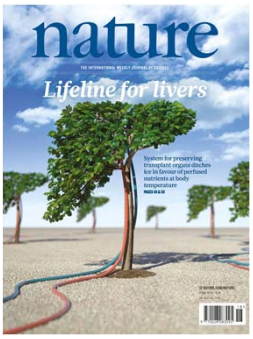
Normothermic liver perfusion

NMP – liver transplant trial

- Phase-3 randomised controlled trial
- 7 European centres
- 220 transplanted livers
- 49% reduction in peak AST (primary endpoint)
- 20% increase in organ utilisation
- 54% increase in preservation time

Vs.

Consortium for Organ Preservation in Europe



Nasralla et al. Nature 2018

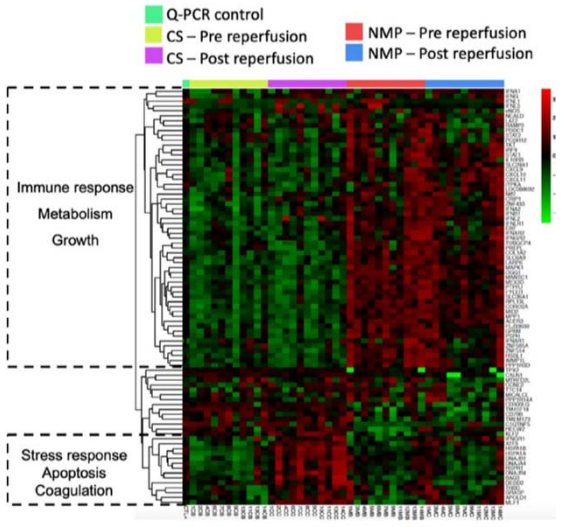
Viability assessment during NMP

- Metabolic
  - Lactate
  - pH
- Synthetic
  - Bile composition (HCO_3^+, pH, glucose)
- Hepatocellular injury
  - Perfusate AST/ALT
- Perfusion
  - Perfusate flow rate
  - Appearance

More research needed to identify predictors of outcome

Proteomics | Metabolomics | Genomics

Inhibition of pro-inflammatory genes
Expression of regeneration genes



Jaseem et al, Hepatology 2019

Liver perfusion improves utilisation

- European randomised trial (COPE)*
  - Discard rate reduced 16/137 (12%) vs. 32/133 (24%)
  - DCD discard reduced 7/40 (18%) vs. 17/38 (45%)
- Birmingham discarded liver trial**
  - 31 nationally-discarded livers perfused
  - 22 transplanted, 100% functioning at 3 months
- Cambridge transplant rate increased***
  - 12 months since introducing NMP for high-risk organs
  - 37 organs perfused; 27 transplanted
  - 23% increase in annual liver transplant number

**Nasralla et al. Nature 2018 **Data courtesy D Mirza ***Data courtesy of C Watson*

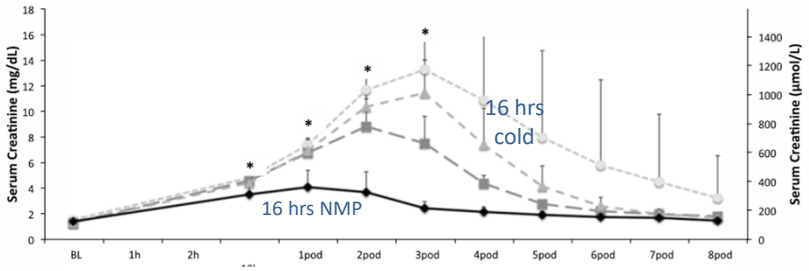
Normothermic kidney perfusion

Evolving kidney preservation

Preservation
Assessment
Repair
Modification

Experimental NMP: avoiding cold is best

Toronto, Canada



- Porcine DCD renal auto-transplant (30 min warm)
- Total preservation 16 hours in all cases
  - Cold ischaemia: 0, 8, 15, 16 hrs
  - NMP: 16, 8, 1, 0 hrs
- Improved function, histology

Kaths, Selzner et al, Am J Trans, 2017

Transplantation of declined organs

Cambridge, UK

- DCD kidneys; poor perfusion; declined by all centres
- 60 minutes NMP; good flow; good appearance
- Both kidneys transplanted; immediate function

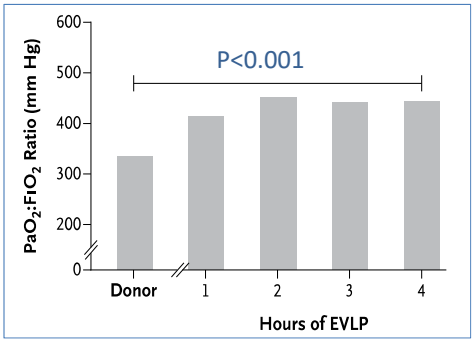
Hosgood & Nicholson, Am J Trans 2016

Normothermic lung perfusion

NMP of the lung

Toronto, Canada

- Functional recovery in 20/23 cases outside criteria
- Primary graft dysfunction (grade 3) at 72 hours
  - 15% vs. 30% controls (P=0.11)
- 12 month survival
  - 80% vs 84% (p=0.54)

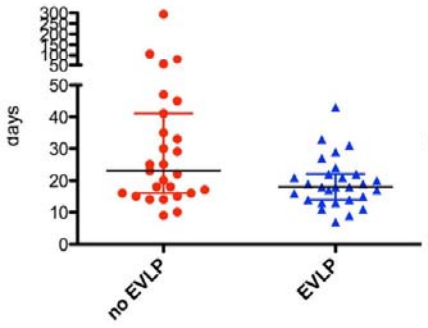


Cypel, Keshavee et al, NEJM, 2011

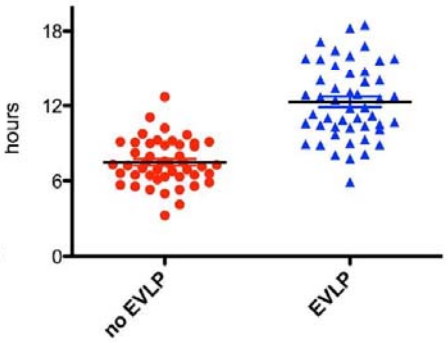
Emerging benefits in DCD lung Tx

Toronto, Canada

Length of hospital stay
P<0.01)



Duration of preservation
P<0.01)



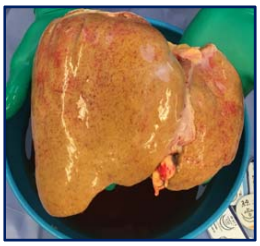
Machuca, Keshavee, Cypel, Am J Trans, 2015

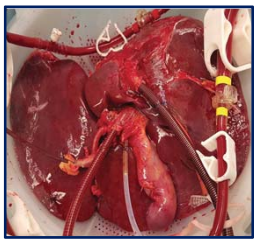
Normothermic perfusion as a platform to treat the donor organ

- Drugs
  - Steatosis
  - Ischaemia-reperfusion
- Nanoparticles
  - Endothelial drug delivery
- Cells
  - Mesenchymal stem cells
  - Regulatory T cells
  - Antigen presenting cells
- Genes
  - Gene silencing (si-RNA)
  - IL-10 gene therapy
  - Immunomodulation (eg CTLA4-Ig)

Individualised organ treatment – the future of organ preservation?

Active removal of fat during perfusion





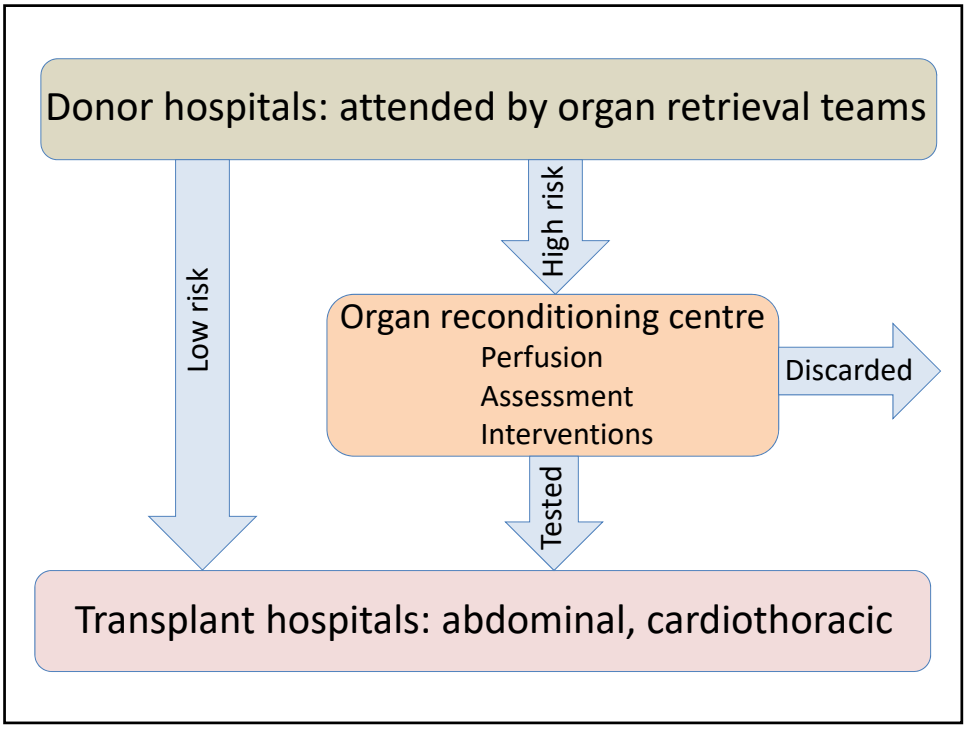
Accurate control of 'physiological' milieu
Normothermic perfusion for 48 hours
Active lipid mobilisation & removal

C Ceresa & L Hodson, unpublished data

The future – specialist reconditioning

Focused expertise & facilities

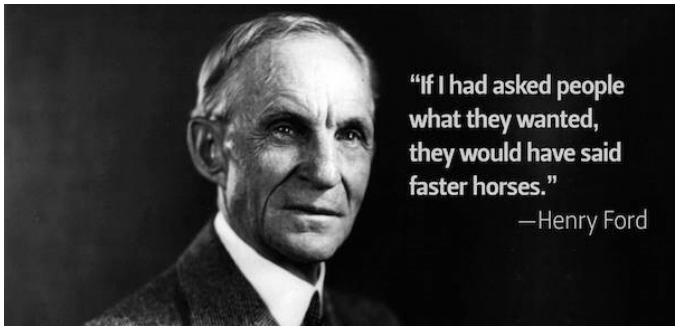
All organs, or just high-risk?



The future is happening

Organ reconditioning: the new specialty?

New technologies test our imagination

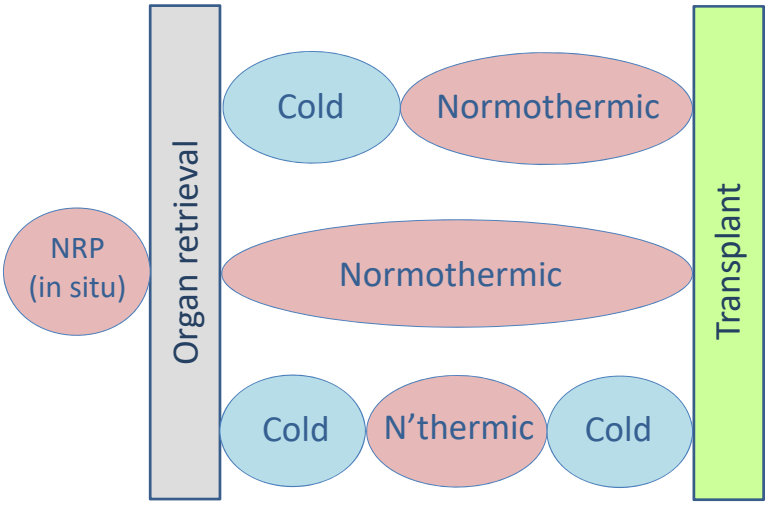


NMP: it's not just a better ice-box

Minimisation of cooling & ischaemia
Functional organ assessment
Pre-transplant repair
Ex-situ therapeutic interventions

- More transplants
- Improved outcomes
- Transformed logistics

Normothermia: how long, where, when?



Must the perfusion device be transportable?

How can we combine the new technologies?

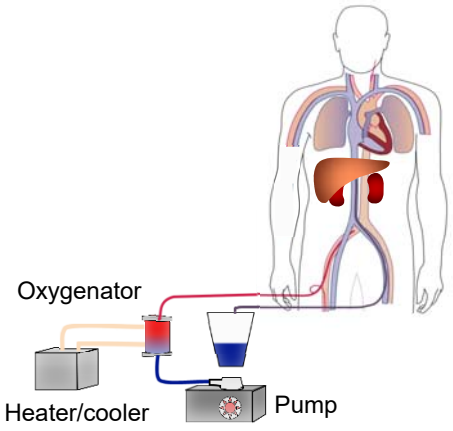
Chris Watson

NHS
Cambridge University Hospitals
NHS Foundation Trust

UNIVERSITY OF CAMBRIDGE

New technologies for liver preservation

Normothermic regional perfusion (NRP) in the donor for DCD organs



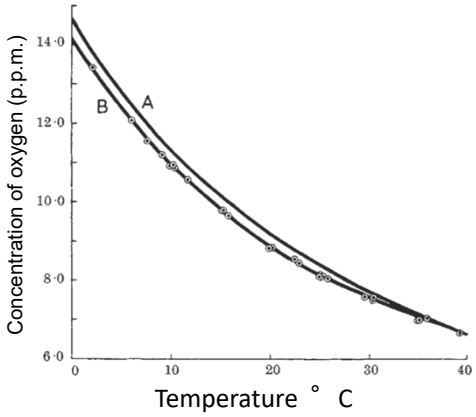
Normothermic machine perfusion *ex situ*

Potential of new technologies

- Extend preservation time
  - Logistical factors
  - Patient factors
- Assess viability
  - Improve utilisation: DCD & DBD
- Improve outcomes
  - Early allograft function
  - Long term function
  - Bile duct viability

Hypothermic oxygenated perfusion

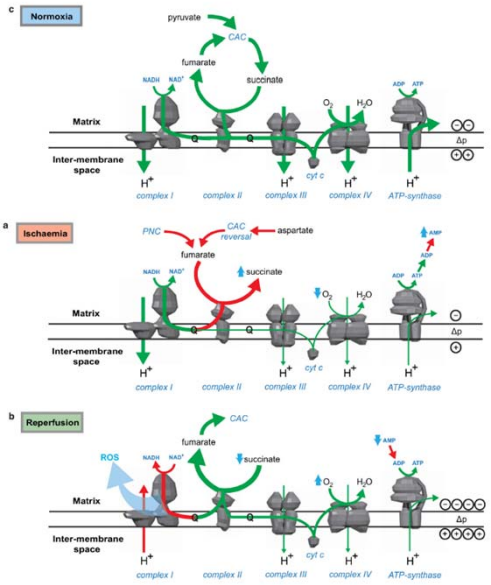
- Cold 4-10° C
- Crystalloid perfusate, not blood
- Oxygenated
  - Replenishes ATP
  - Low metabolic state, low O_2 consumption
- Flushes fibrin plugs/clots out of small peri-biliary arteries and renal arterioles



Truesdale & Downing. Nature 1954;173: 1236

Hypothermic oxygenated perfusion: Theory

- Reperfusion injury is a result of damage mediated by reactive oxygen species
- During ischaemia succinate, accumulates at complex II
- During reperfusion with oxygen, ROS are generated by reverse electron transport through complex 1
- Hypothermic oxygenated perfusion
  - Crystalloid carries little oxygen
  - Generates less ROS
  - ROS are not as harmful in cold, (e.g., immune activation)



Chouchani *et al.* Nature 2014;515: 431-5

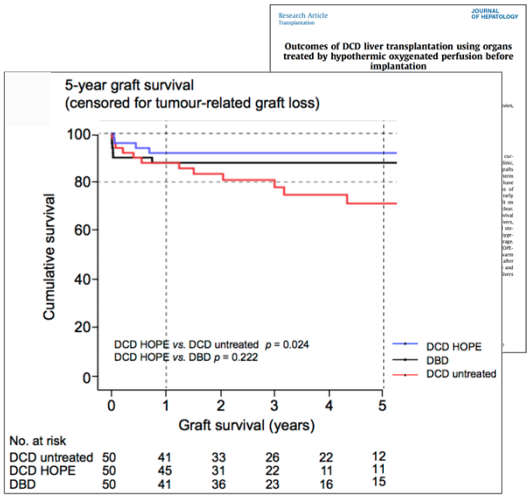
Hypothermic Oxygenated PErfusion: HOPE and D-HOPE

- HOPE: portal vein perfusion alone
  - Dutkowski, Zurich
- DHOPE: PV and HA
  - Porte, Groningen
- Perfusate:
  - MP-UW solution + glutathione
- End ischaemic perfusion
  - 1 - 2 hours

Dutkowski *et al.* Ann Surg 2015; 262:764

Hypothermic Oxygenated Perfusion (HOPE) Early results

- HOPE via portal vein alone
  - 1 to 2 hours, with Belzer MP solution
- 50 DCD liver transplants
  - 50 "matched" comparators from Birmingham
  - 50 DBDs from Zurich & Birmingham
- No cholangiopathy with HOPE
  - 10% in DCD comparators
  - 0% in DBD comparators



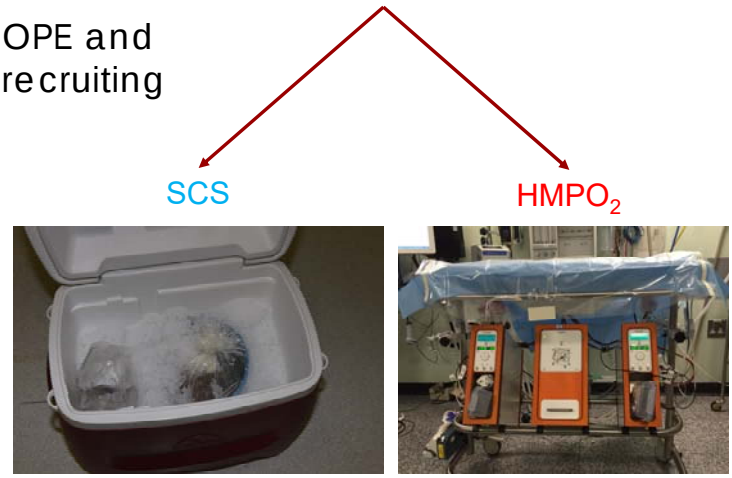
J Hepatol 2019;70:50-57

HOPE – limitations of cohort comparison report

- Different flush solutions:
  - Zurich: 2L N/Saline @20° in aorta
  - Birmingham: UW @4° in aorta and portal circulation
- Different preservation solutions:
  - Zurich: Institute-George-Lopez-1
  - B'ham: UW
- HOPE Perfusion solution: Belzer MP-UW
- Before reperfusion
  - Zurich: 200-250ml blood flush
  - B'ham: 2L N/Saline
- Immunosuppression
  - Zurich: Steroids and basiliximab, adding tacrolimus d3/4
  - Birmingham: steroids, tacrolimus, aza/MMF from d0/1
    - Basiliximab and late tac occasionally

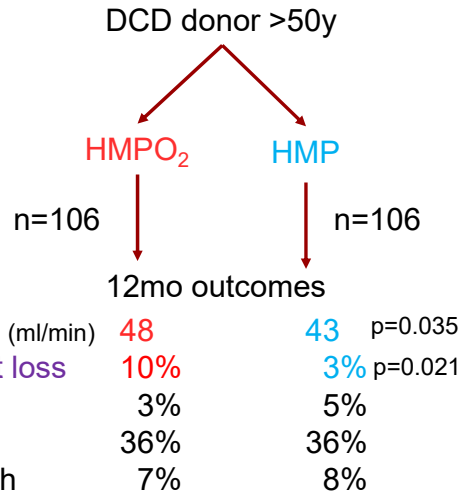
HOPE and D-HOPE Randomised trials

- Randomised trials of HOPE and D-HOPE have finished recruiting



Hypothermic oxygenated perfusion: kidneys

- Randomised European study
- DCD donor kidneys, age >50y
- Mean WIT (asystolic period): 29mins (range 8 to 114 mins)
- Cold ischaemic times
  - $HMPO_2$: 11.0h (range 4.6 to 27.6)
  - HMP: 10.3h (range 3.5 to 27.1)



	$HMPO_2$	HMP	
GFR (ml/min)	48	43	p=0.035
Graft loss	10%	3%	p=0.021
PNF	3%	5%	
DGF	36%	36%	
Death	7%	8%	

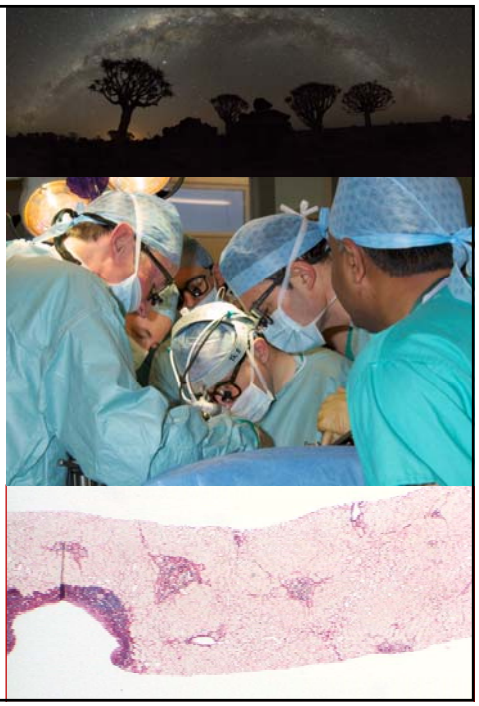
Jochmans *et al*. Am J Transplant 2019;19 (S3):312 (Abstract 2)

How do we choose which technology to use?

What are their strengths?

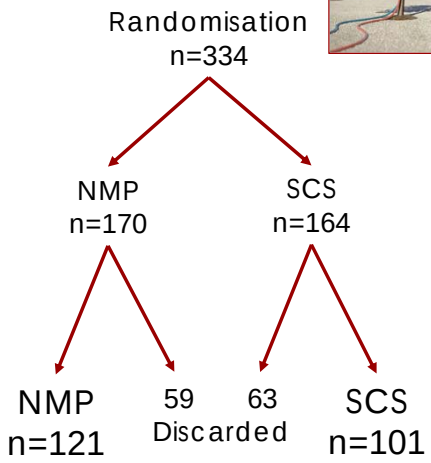
Extend preservation

- Logistics
  - Theatre availability / Multiple transplants
  - Difficult recipient surgery
  - Day time surgery
- Biopsy
  - Special stains, e.g. fibrosis; sarcoid
  - Donor malignancy exclusion



Normothermic preservation vs. static cold storage

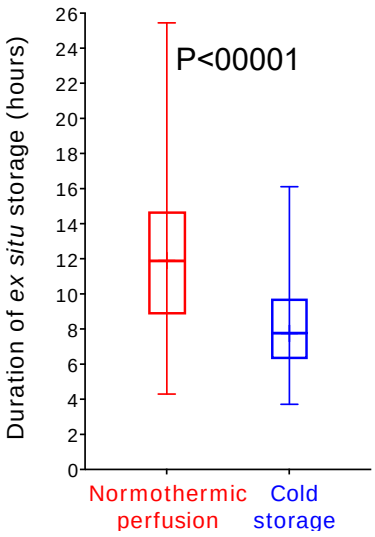
- 7 European centres
  - EU funding (COPE)
- 222 transplanted livers
- Machine perfusion starting at donor hospital

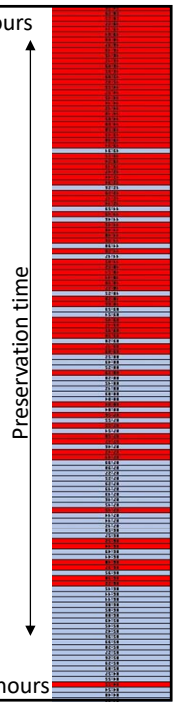


Nasralla et al. Nature 2018;557:50

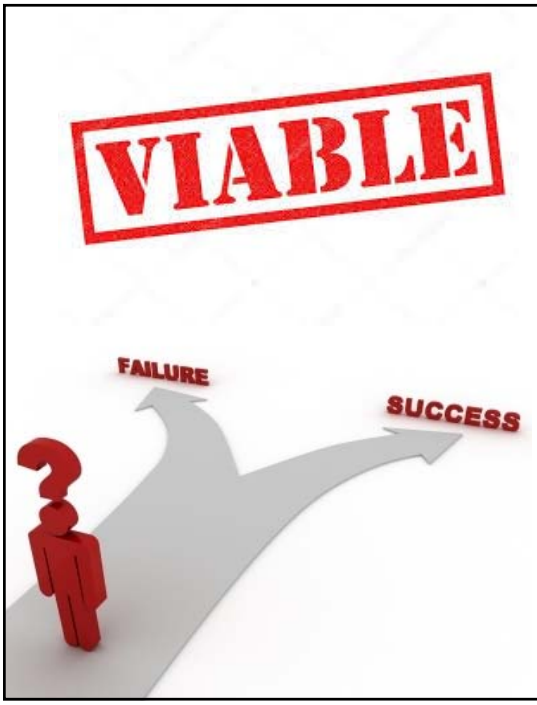
Normothermic perfusion facilitates longer preservation

- Cold storage
  - Median 7h45min (3h 43m – 16h 7m)
- Normothermic preservation
  - Median 11h 54mins (4h18m - 25h 27m)
    - 126 mins to start of perfusion
    - 548 min perfusion time





NMP group had mandatory 4 hours perfusion
Box & whisker plot: Median, IQR, range
"Barcode" courtesy of David Nasralla



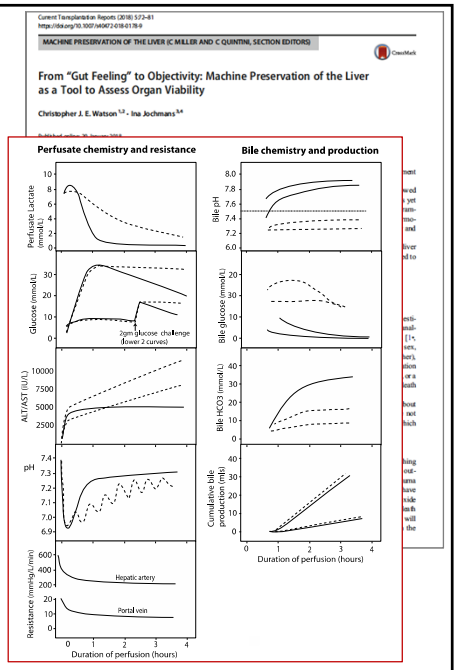
Viability testing

Death and liver transplantation: the surgeon's dilemma

- If I accept the liver and transplant it, but it doesn't work
  - The patient dies
  - It's my fault
- If I don't accept the liver and the patient dies on the waiting list
  - It's fate
  - It's not my fault … is it?

Ex situ normothermic perfusion

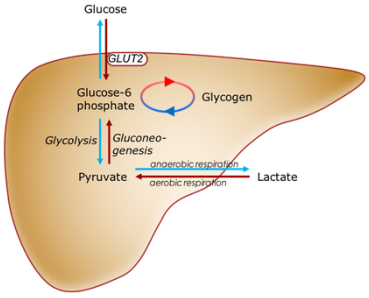
- DCD and DBD livers
- Biochemical markers of function
  - Hepatocyte: lactate, glucose, pH
  - Cholangiocyte: pH, glucose
- Endothelial function
  - Vascular resistance



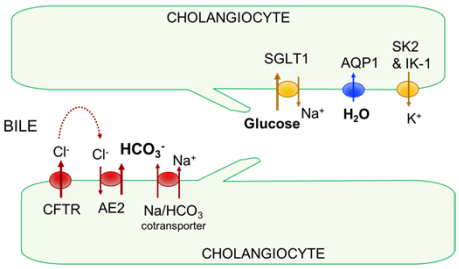
Curr Transplant Reports 2018;572

Liver viability assessment *ex situ*

Hepatocyte function



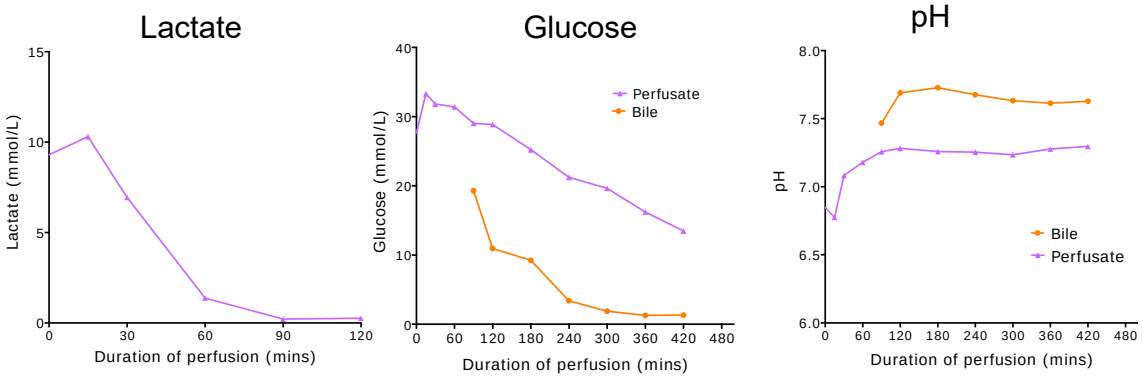
Cholangiocyte



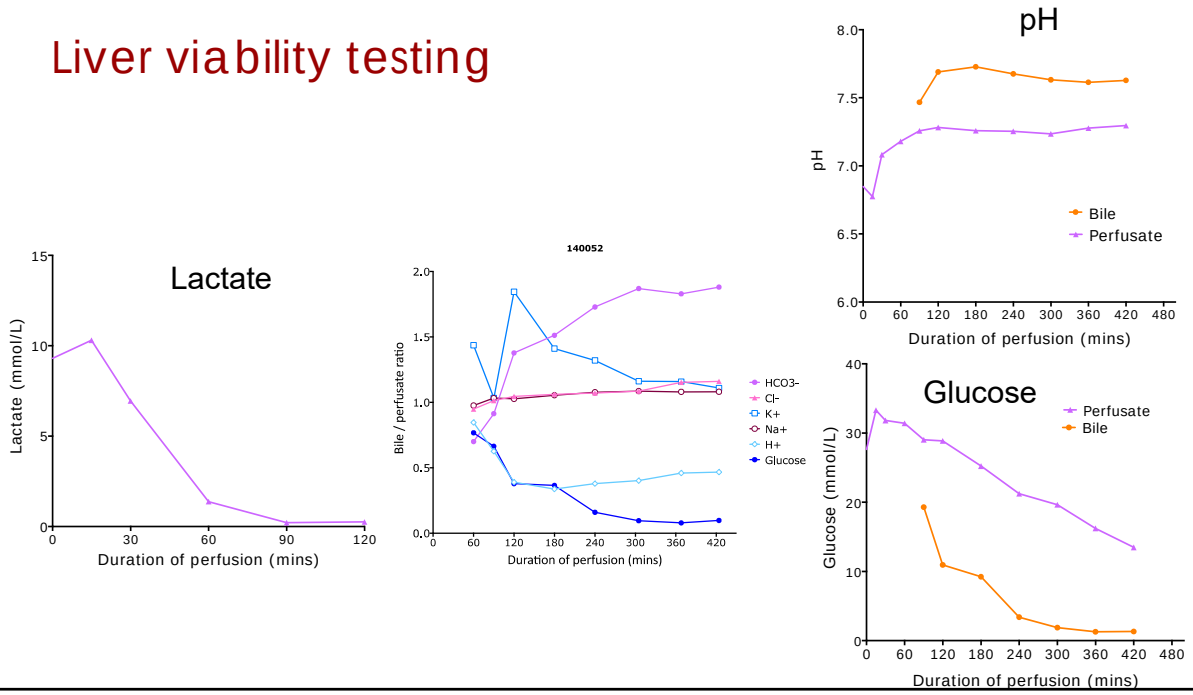
Perfusate: Lactate cleared
Glucose consumed
pH maintained

Bile: pH higher
Glucose lower than perfusate
Volume: irrelevant

Liver viability testing



Liver viability testing



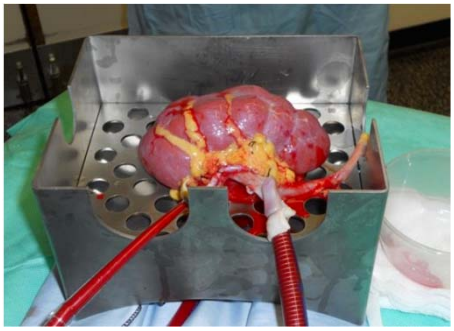
VITTAL study

- 31 livers declined by all UK centres
- 22 transplanted
  - 12 DBD, 10 DCD
- 4 (18%) retransplanted for cholangiopathy
- 1 retransplanted for HAT

Abstract at ILTS, Toronto, 2019

Kidney viability testing

- Macroscopic appearance
  - Globally pink to mottled and purple/black
- Renal blood flow
- Urine output

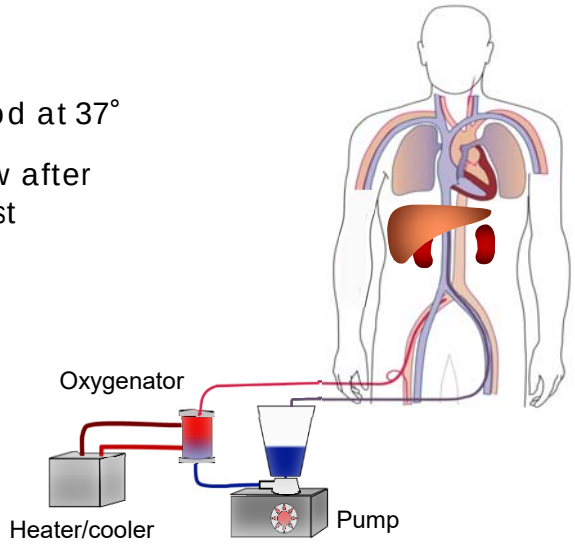


Ex vivo normothermic perfusion for quality assessment of marginal donor kidney transplants

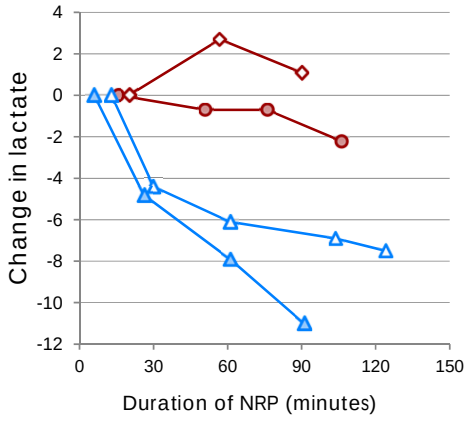
Hosgood et al. Br J Surg 2015; 102: 1433-40

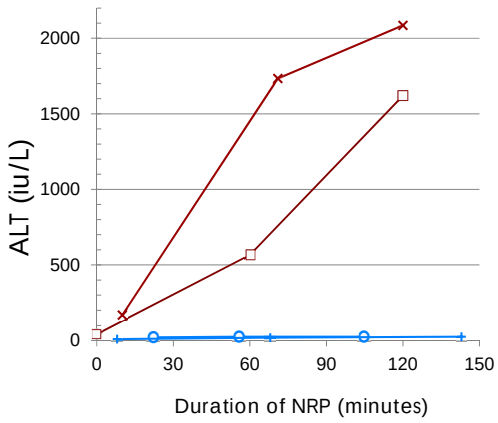
In situ normothermic regional perfusion (NRP)

- DCD Donors only (?)
- Extracorporeal circulation with blood at 37°
- Immediate restoration of blood flow after asystolic period; no cold storage first



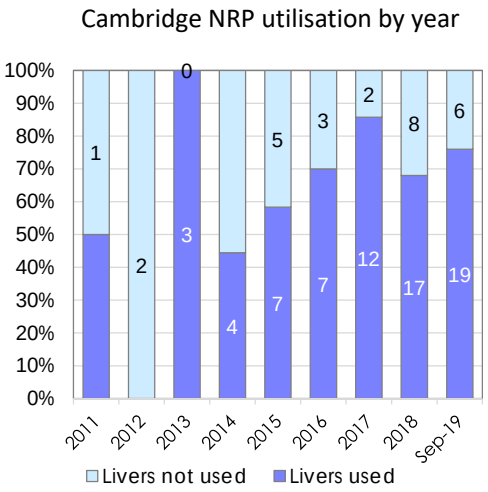
Viability testing during *in situ* normothermic perfusion (NRP)





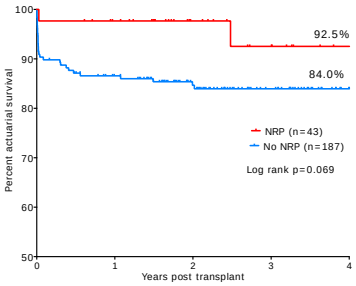
NRP & utilisation of DCD livers

- National DCD liver utilisation: 29%
- Cambridge NRP utilisation: 65%
- Withdrawal to perfusion
  - Median 30 mins (range 12 to 153min)
- Asystolic time
  - Median 15min (range 5 to 27)
- Cold ischaemic time
  - Median 6h 22m (3h19m – 11h26m)



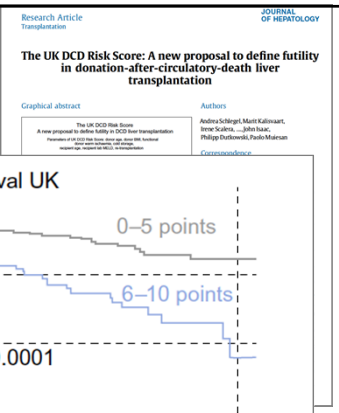
Improving outcomes

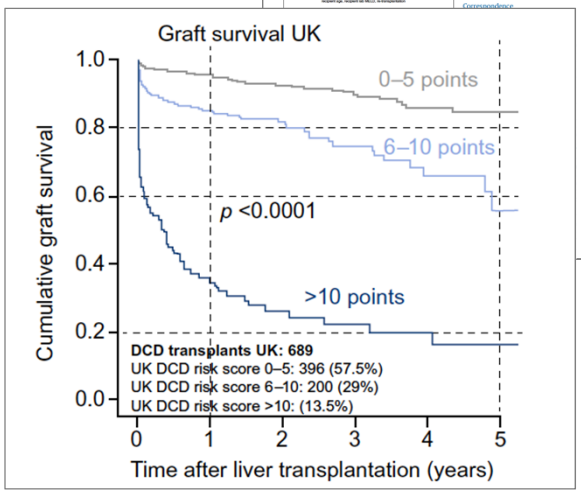
- Early allograft function
  - NRP
  - NMP
- Long term graft survival
  - NRP
  - ?NMP ? $HMPO_2$ in livers
  - $HMPO_2$ in kidneys
- Bile duct viability in DCD
  - NRP
  - $HMPO_2$



The UK DCD futility score: low, intermediate and high risk

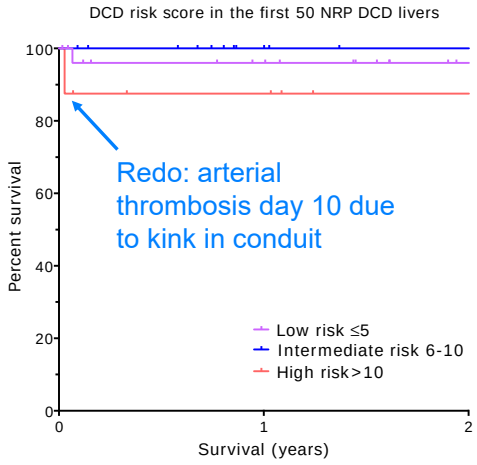
- Donor age
- Donor BMI
- Functional warm ischaemic time
- Cold ischaemic time
- Recipient age
- Recipient lab MELD
- Retransplant

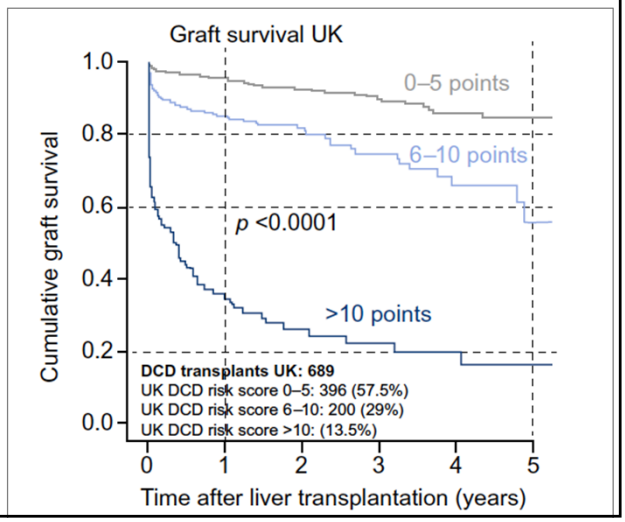


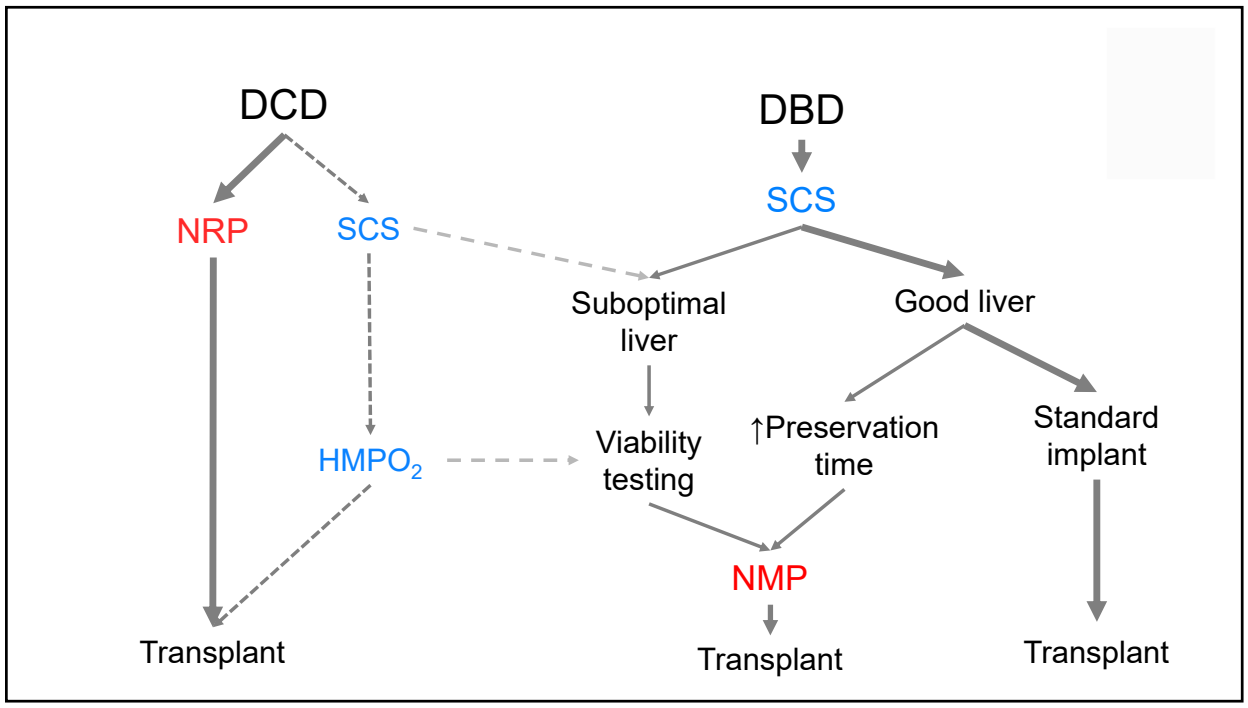


Schlegal *et al.* J Hepatol 2018

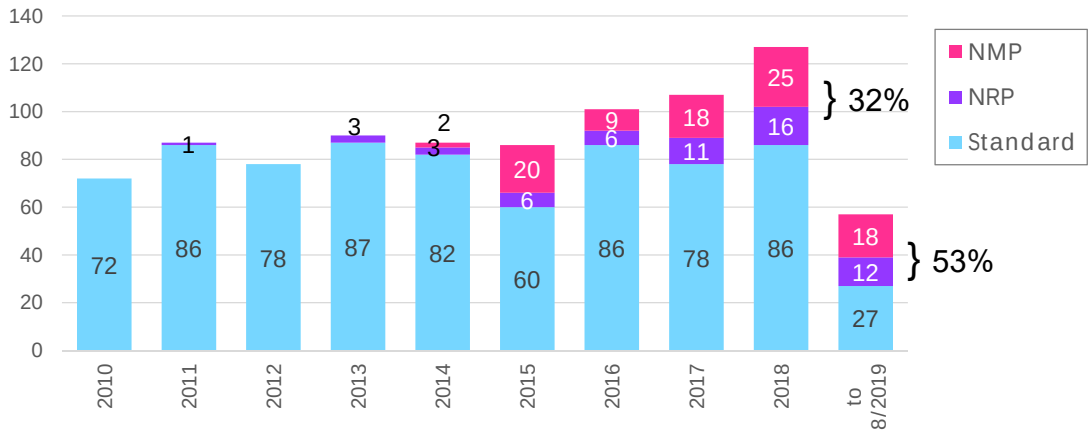
NRP reduces risk of graft loss, even in the futile groups





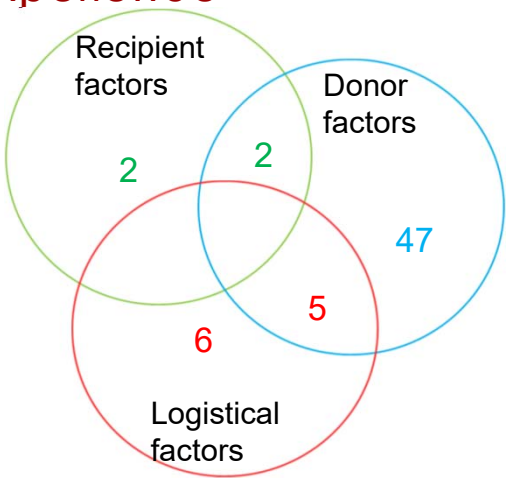


Impact of using new perfusion devices on number of liver transplants in Cambridge



Ex situ machine perfusion experience

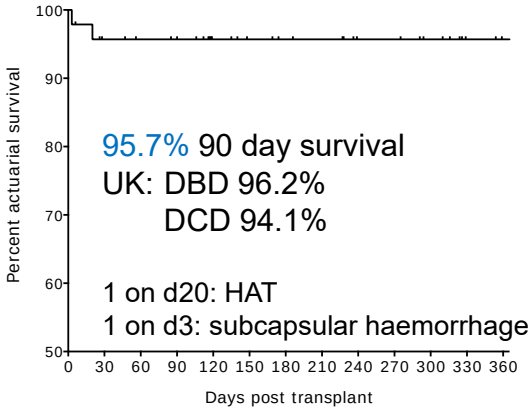
- 47 transplants from 62 perfusions
  - 19/21 DBD, 28/41 DCD
- Logistics (n=11, 18%)
  - Theatre access & donor biopsy
- Recipient factors (n=4, 6%)
  - Unstable superurgent
  - Difficult explant
- Donor factors (n=47, 76%)
  - Steatosis 8
  - Function 13
  - DCD 26



Data from 1/2/18 to 30/8/19. OrganOx *metra*

Survival following *ex situ* normothermic perfusion

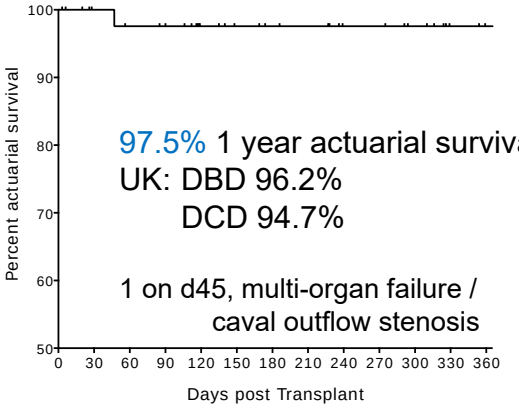
Graft survival



95.7% 90 day survival
UK: DBD 96.2%
DCD 94.1%

1 on d20: HAT
1 on d3: subcapsular haemorrhage

Patient survival



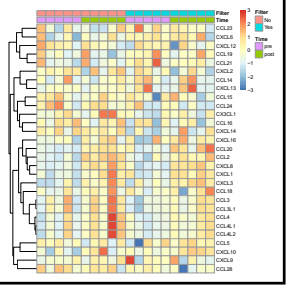
97.5% 1 year actuarial survival
UK: DBD 96.2%
DCD 94.7%

1 on d45, multi-organ failure / caval outflow stenosis

UK data from NHSBT Annual Report, 2019

Future: Modifying organs *in situ* and *ex situ*

- Refined viability criteria
  - Drugs to interrogate kidney and liver function
- Extend preservation safely
  - Optimise perfusate & gas delivery
- Reduce reperfusion injury on transplantation
  - Malonate compounds to block succinate
- Reduce immunogenicity
  - Leucocyte capture & cytokine absorption column
- "Recondition" organs



technologies in preservation and perfusion
DCD heart transplantation

12th October 2019 Organ donation day

Stephen Large ma ms mrcp frcs(cth) frcs mba pae(rcp)
on behalf of the PIT
Papworth intra-thoracic transplant team

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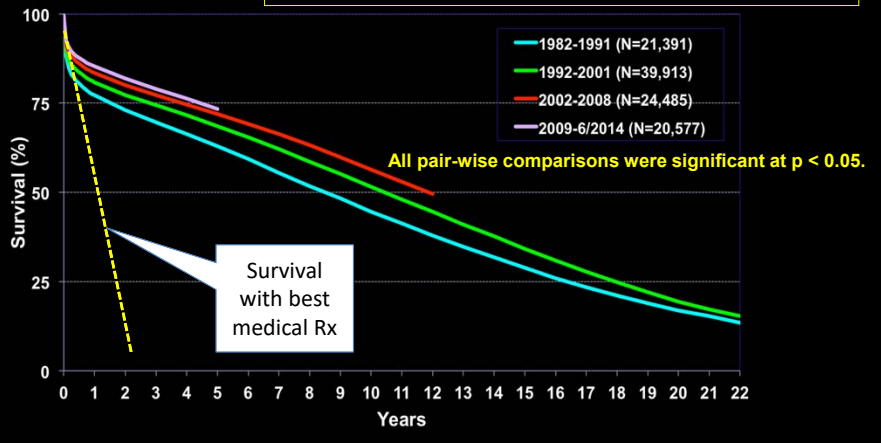
Adult Heart Transplants
Kaplan-Meier Survival by Era

(Transplants: January 1982 – June 2014)

Median survival (years):
1982-1991=8.5; 1992-2001=10.4; 2002-2008=11.9; 2009-6/2014=NA



ISHLT • INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION 2016
JHLT. 2016 Oct; 35(10): 1149-1205

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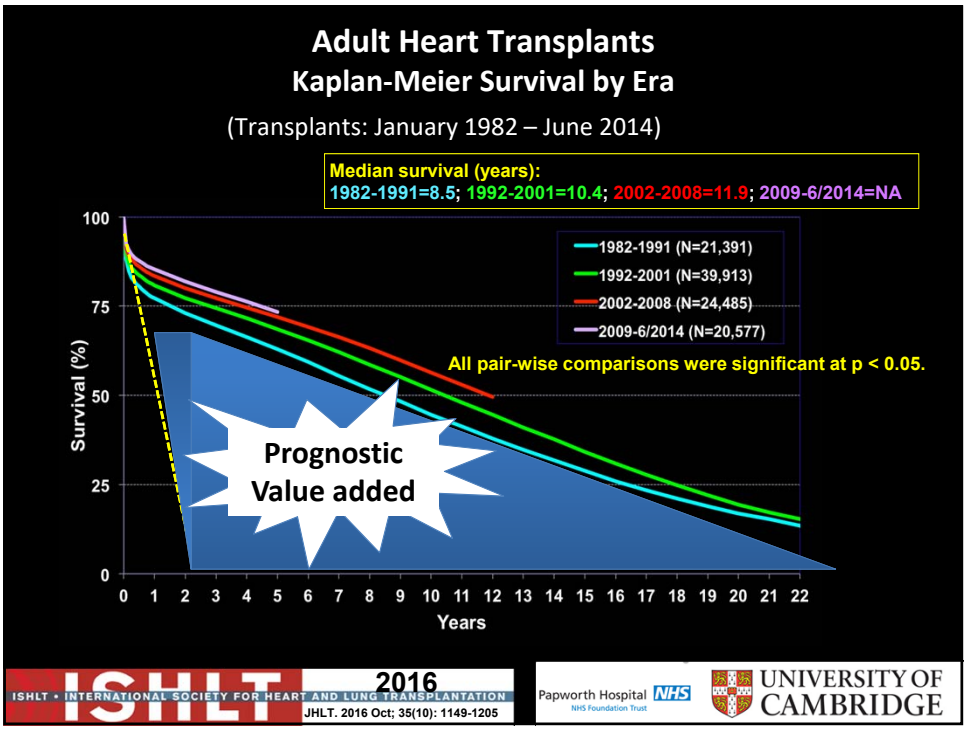
Adult Heart Transplants
Kaplan-Meier Survival by Era
(Transplants: January 1982 – June 2014)
Median survival (years):
1982-1991=8.5; 1992-2001=10.4; 2002-2008=11.9; 2009-6/2014=NA
1982-1991 (N=21,391)
1992-2001 (N=39,913)
2002-2008 (N=24,485)
2009-6/2014 (N=20,577)
All pair-wise comparisons were significant at p < 0.05.
Prognostic Value added
Survival (%)
Years
ISHLT • INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION
2016
JHLT. 2016 Oct; 35(10): 1149-1205
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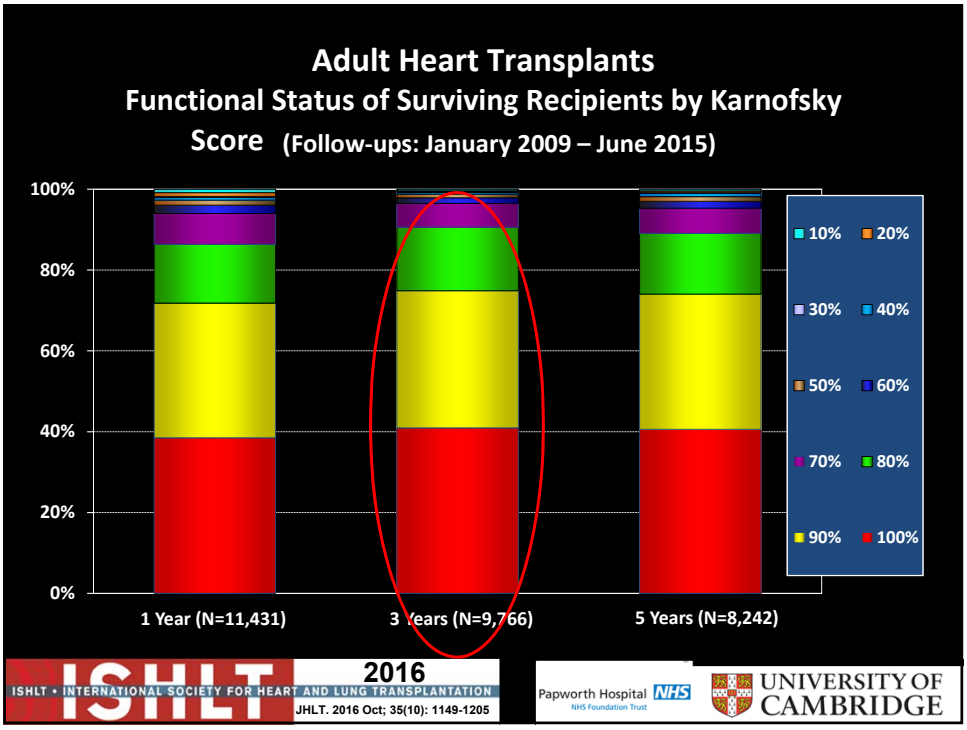
Adult Heart Transplants
Functional Status of Surviving Recipients by Karnofsky Score (Follow-ups: January 2009 – June 2015)
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
1 Year (N=11,431)
3 Years (N=9,766)
5 Years (N=8,242)
ISHLT • INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION
2016
JHLT. 2016 Oct; 35(10): 1149-1205
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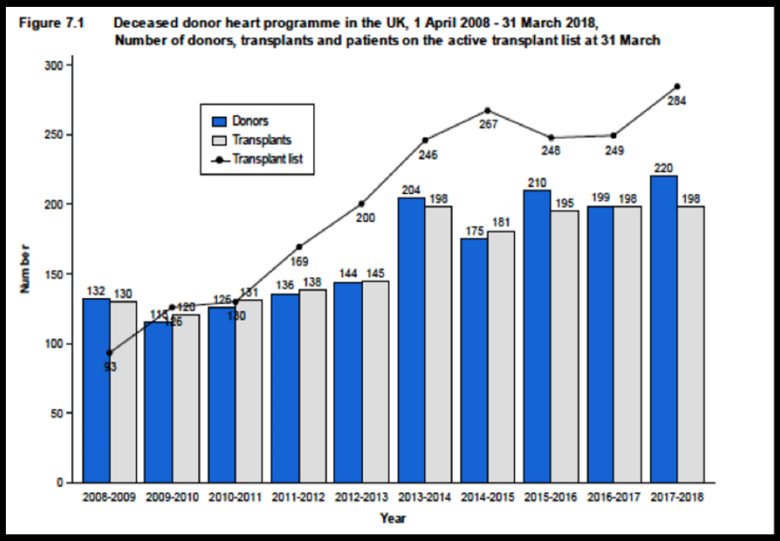
Heart Transplantation in UK: Demand vs Supply



www:NHSBT/report 2017-2018

Is DCD heart transplantation possible?

Recent NHSBT update:
probably 135 more donor /year

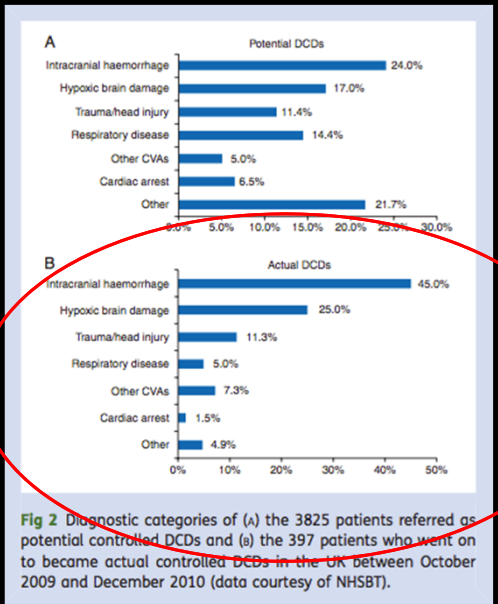
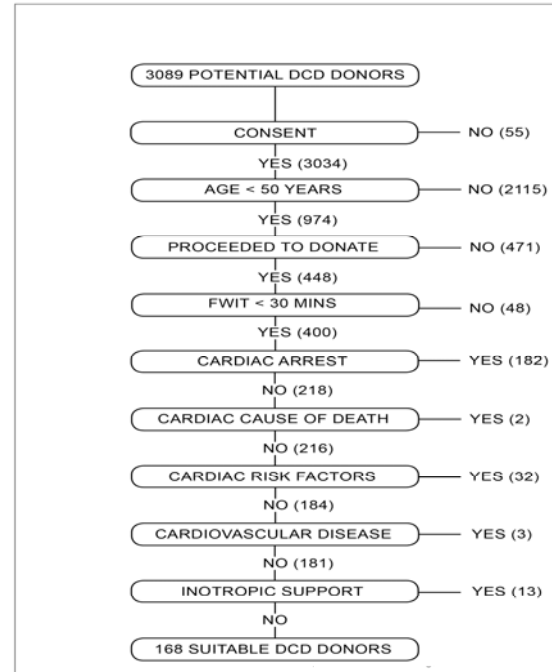


Fig 2 Diagnostic categories of (A) the 3825 patients referred as potential controlled DCDs and (B) the 397 patients who went on to became actual controlled DCDs in the UK between October 2009 and December 2010 (data courtesy of NHSBT).

British Journal of Anaesthesia 108 (S1): i108–i121 (2012) Donation after circulatory death A. R. Manara 1, P. G. Murphy 2 and G. O'Callaghan 3*

The size of the pool:



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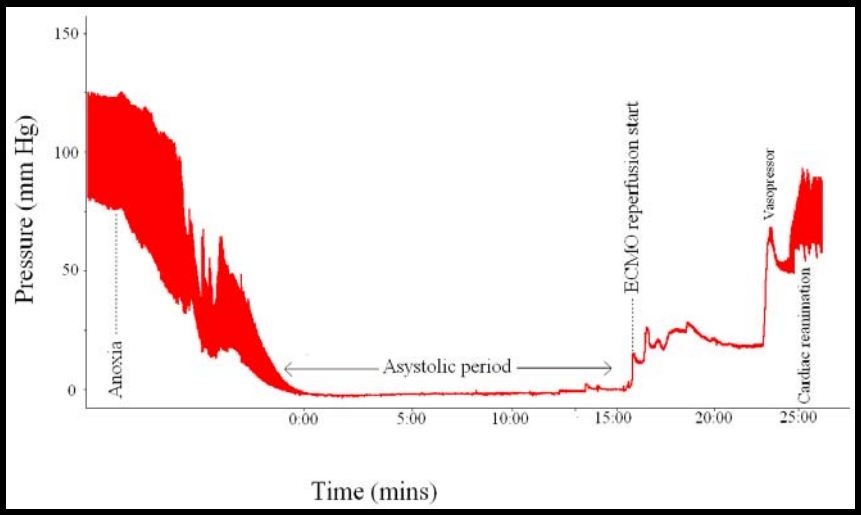
Method for modelling DCD (rat and pig): Circulatory determined brain death DCD



Am J Transplant 2011 11(8) 1621-32 Ali A et al.

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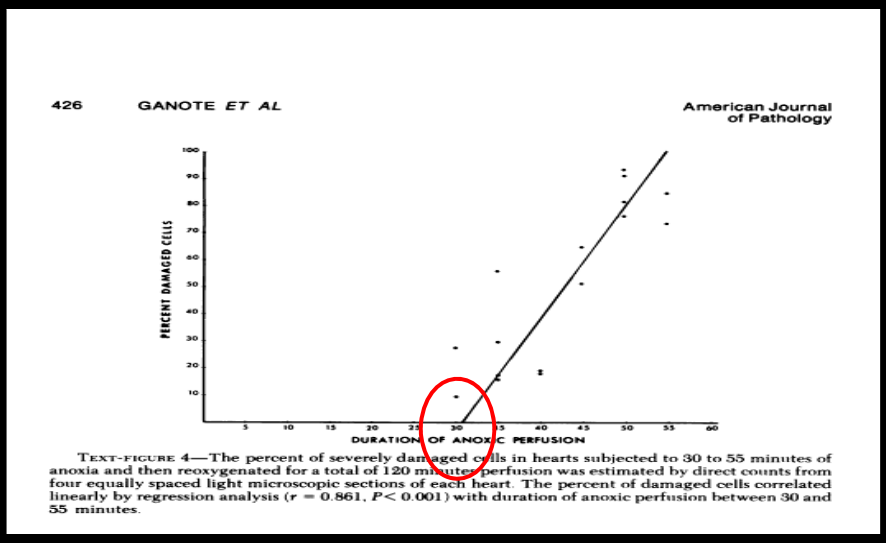
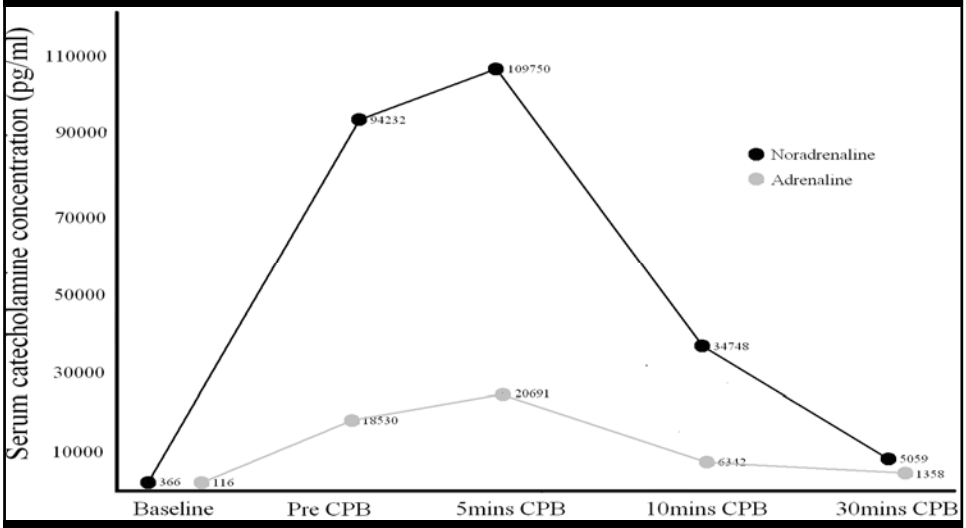
Tolerance of ischaemia (*rat*):



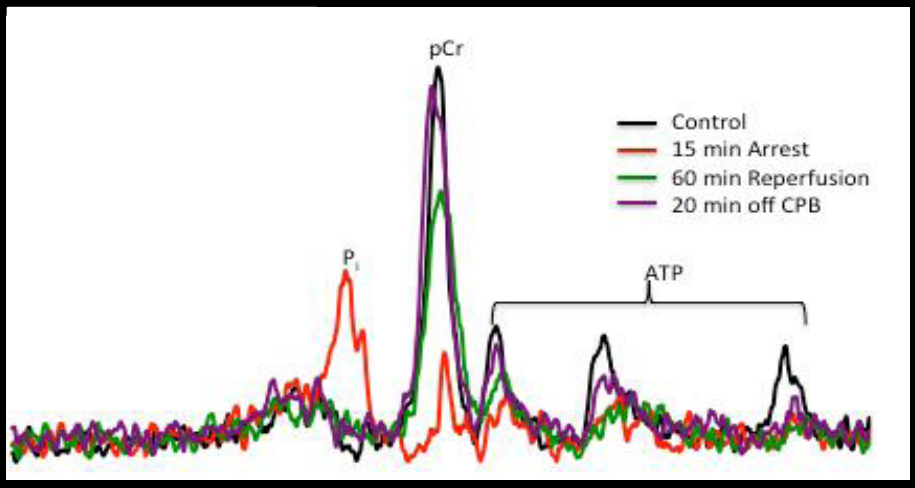
Ganote et al AJP 80(3) 1975 426

Catecholamine concentrations after brainstem death and in the NHBD donor



Hearts from DCD donors display acceptable biventricular function after heart transplatation. Am J Transplant 2011 11(8) 1621-32 Ali A et al.

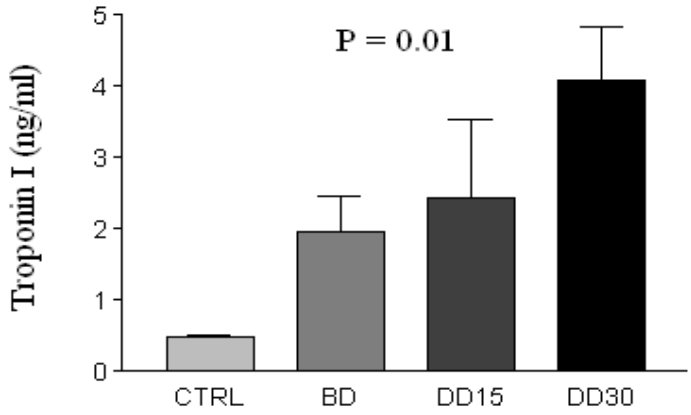
DCD heart transplantation: How tolerant the heart to normothermic ischaemia?



Looks to be largely an ischaemic insult

Am J Transplant 2011 11(8) 1621-32 Ali A et al.

Is the heart damaged?



Hearts from DCD donors display acceptable biventricular function after heart transplatation.
Am J Transplant 2011 11(8) 1621-32 Ali A et al.

OK! So clinically?

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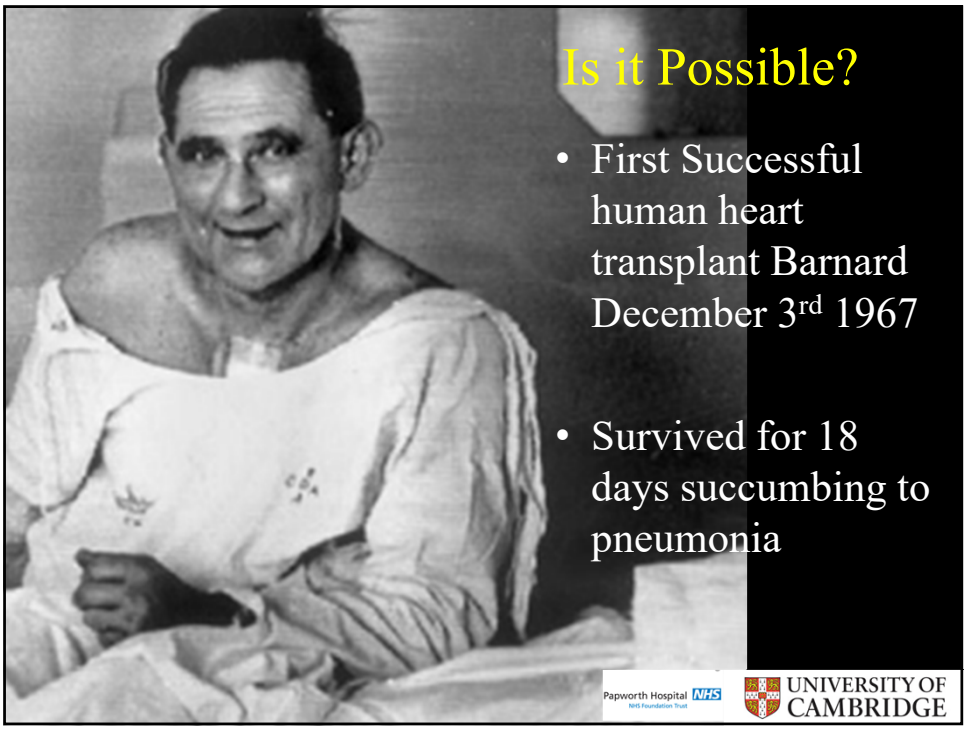

Is it Possible?

- First Successful human heart transplant Barnard December 3rd 1967
- Survived for 18 days succumbing to pneumonia

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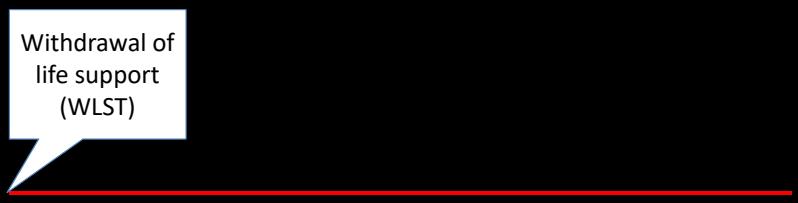
Timings following identification of futile treatment & consent for DCD organ donation:



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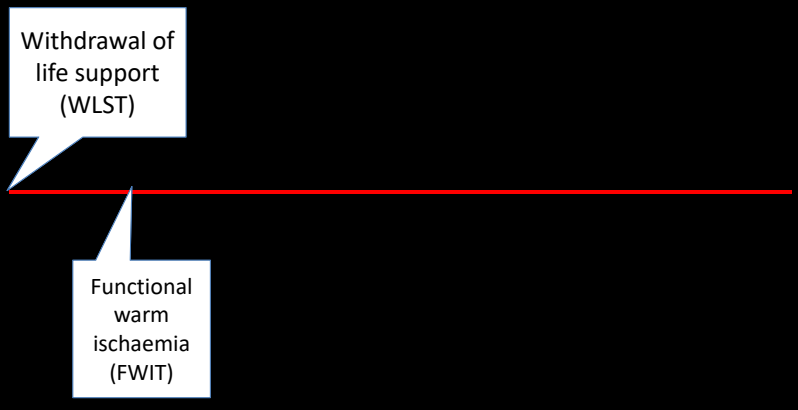
Timings following identification of futile treatment & consent for DCD organ donation:



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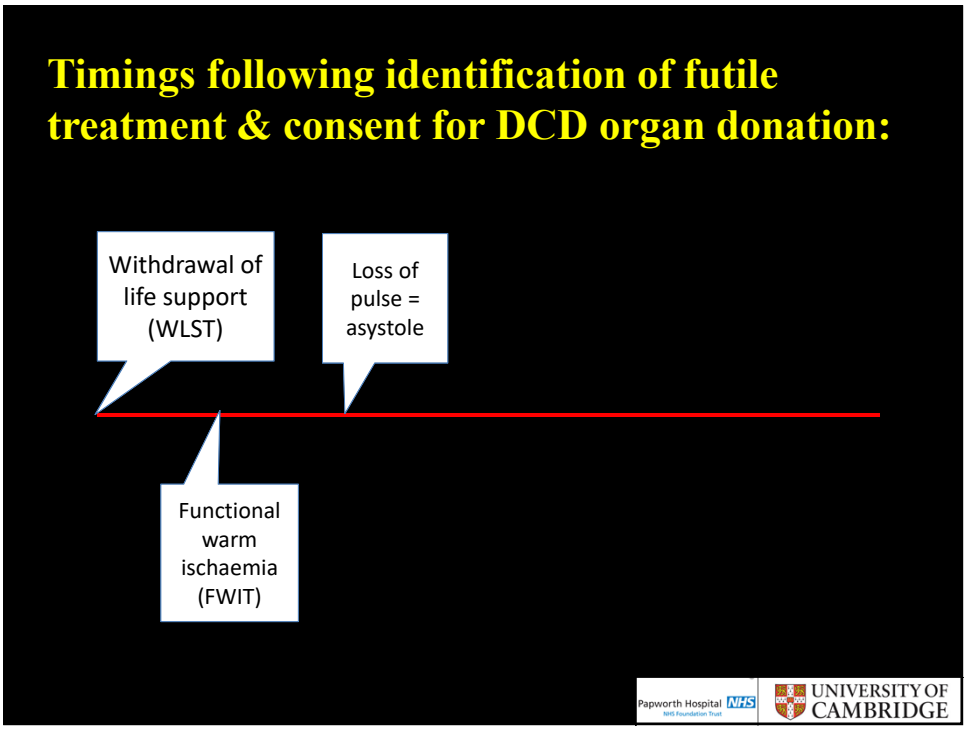
Timings following identification of futile treatment & consent for DCD organ donation:
Withdrawal of life support (WLST)
Loss of pulse = asystole
Functional warm ischaemia (FWIT)
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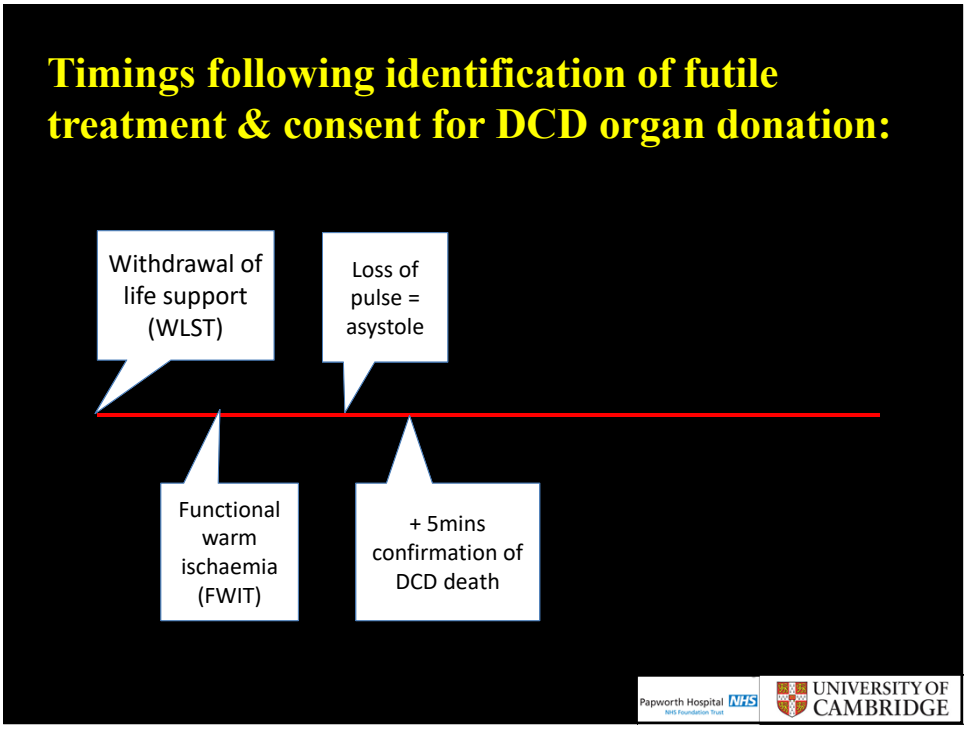
Timings following identification of futile treatment & consent for DCD organ donation:
Withdrawal of life support (WLST)
Loss of pulse = asystole
Functional warm ischaemia (FWIT)
+ 5mins confirmation of DCD death
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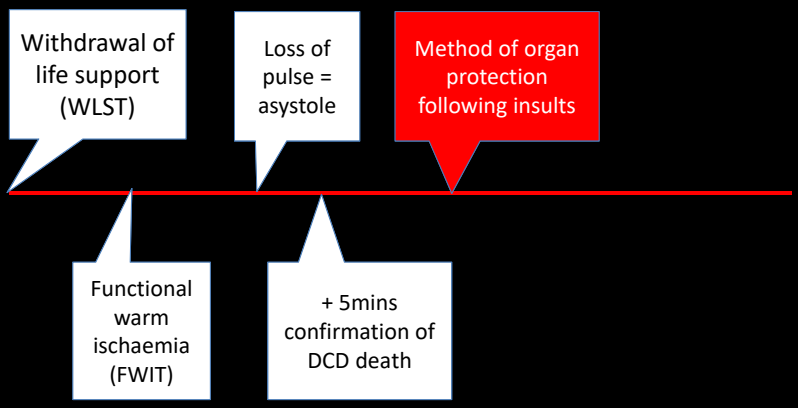
Timings following identification of futile treatment & consent for DCD organ donation:



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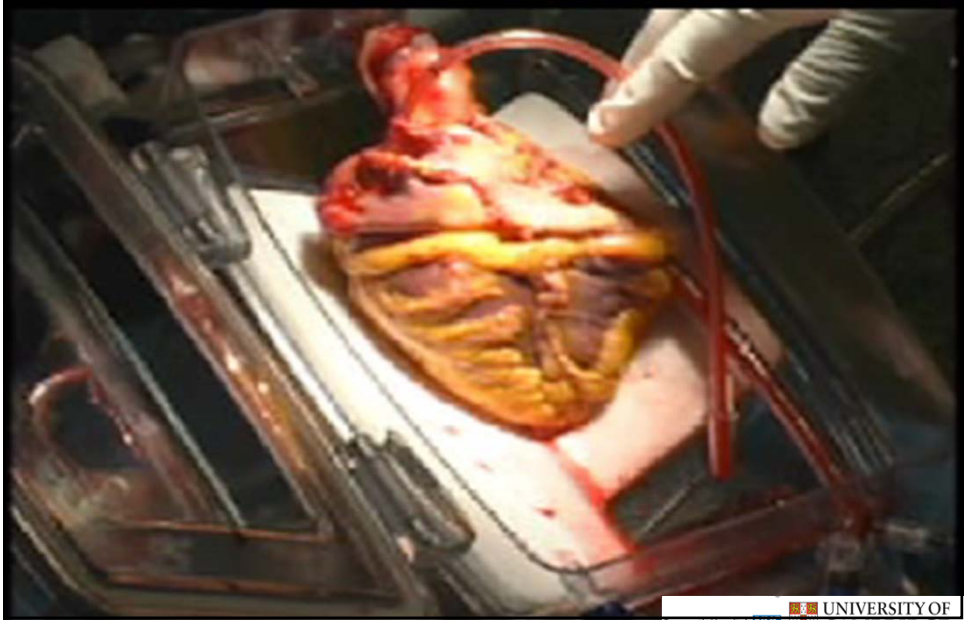
Direct Procurement



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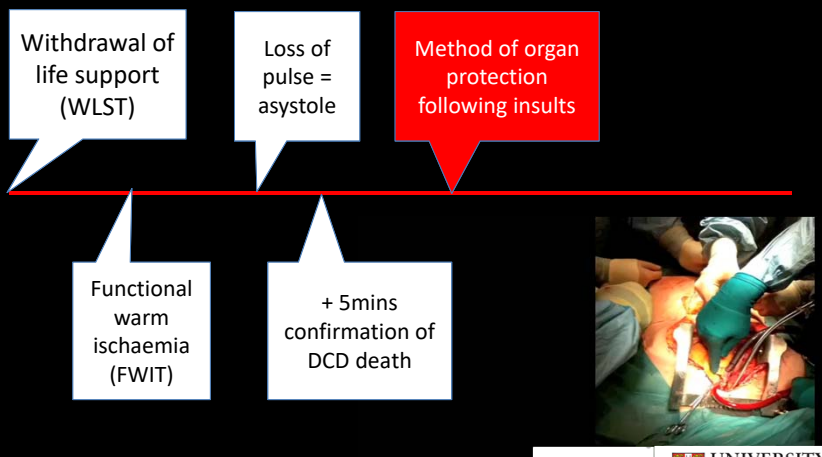
Timings following identification of futile treatment & consent for DCD organ donation:



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Normo-thermic Regional Perfusion (NRP)

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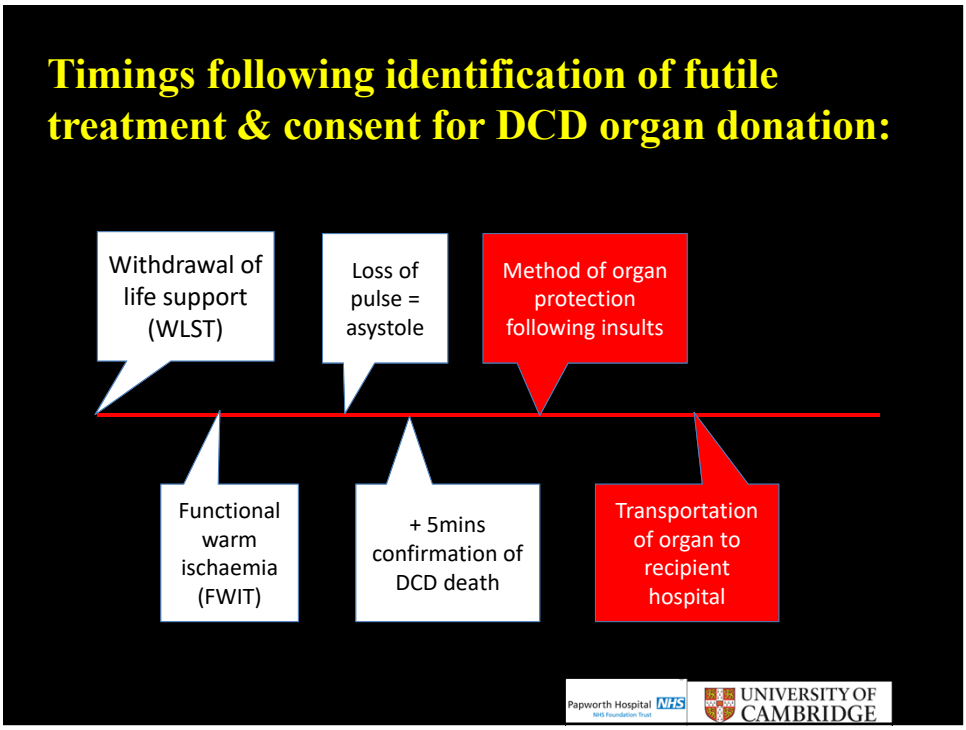
Timings following identification of futile treatment & consent for DCD organ donation:
Withdrawal of life support (WLST)
Loss of pulse = asystole
Method of organ protection following insults
Functional warm ischaemia (FWIT)
+ 5mins confirmation of DCD death
Transportation of organ to recipient hospital
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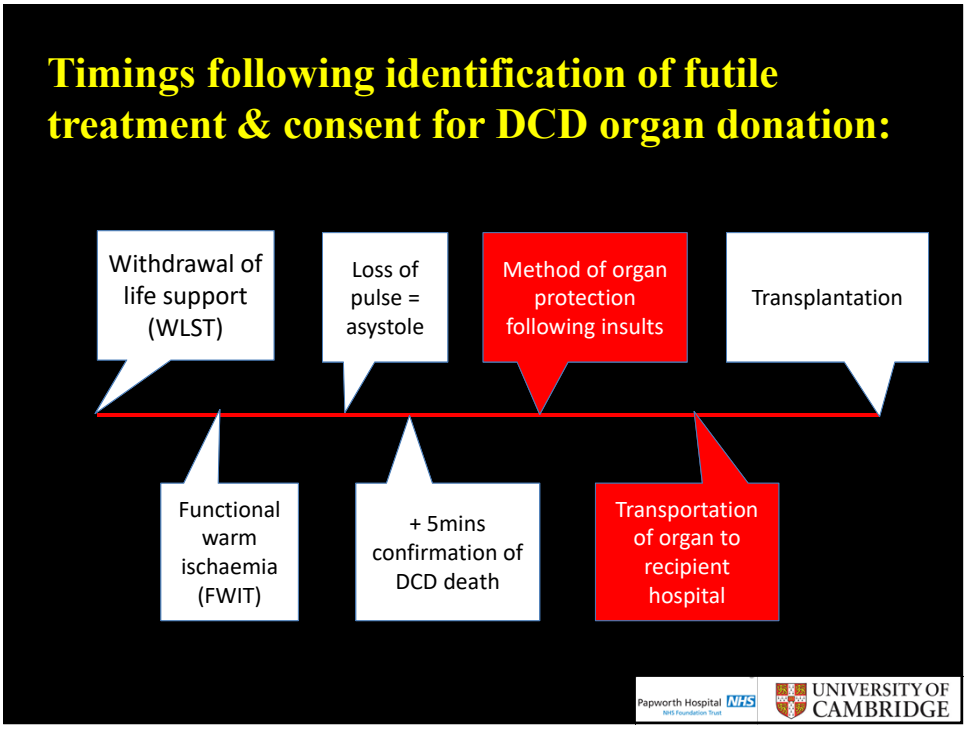
Timings following identification of futile treatment & consent for DCD organ donation:
Withdrawal of life support (WLST)
Loss of pulse = asystole
Method of organ protection following insults
Transplantation
Functional warm ischaemia (FWIT)
+ 5mins confirmation of DCD death
Transportation of organ to recipient hospital
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Donor Demographics

	DCD n=75
Age Med(IQR)	36 (30-43)
Male n (%)	61 (82)
Height cm	175 (171-180)
NRP/DPP	23/52
OCS/CS	73/2
Cause of Death	
HBI n (%)	42%
ICH n (%)	22%
TBI n (%)	18%
Other n (%)	18%

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Outcomes

	DCD n=75
Survival	
30 day survival n (%)	100%
90 Day survival n (%)	95%
1 year survival (33 patients to Oct 2017)	*89%*
Mechanical Support	
IABP n (%)	20%
VA-ECMO n (%)	10%
VAD n (%)	4%

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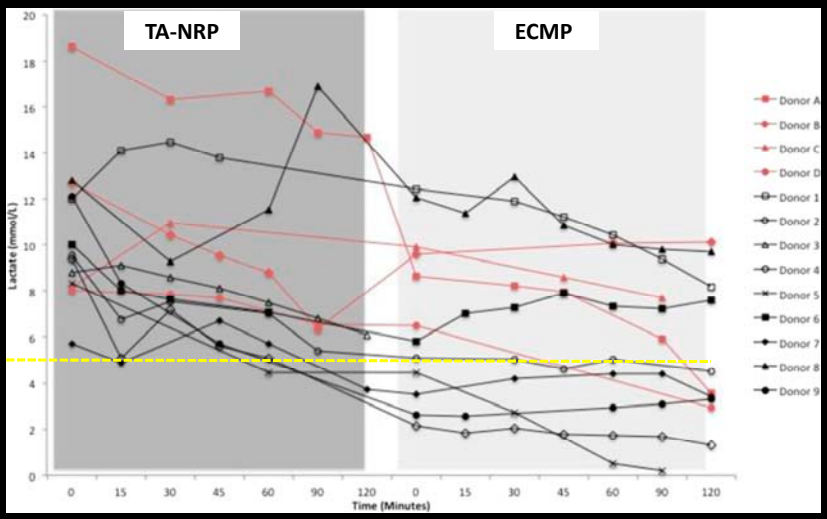
Ischaemic Timings NRP/DPP

Time	NRP n=17	DPP n=27	P value
Withdrawal to death (mins) Med(IQR)	17 (13-21)	18 (14-25)	ns
Donation Withdrawal Ischaemic Time (mins)	24 (21-28)	36 (30-41)	**0.005**
Functional Warm Ischaemic Time (mins)	18 (16-22)	25 (23-30)	**0.003**
NRP Duration (mins)	39 (32-52)	-	-
OCS Perfusion Time (mins)	173 (140-186)	243(210-280)	**0.003**
Starting A lactate (mmol/L)	6.34 (3.49-6.83)	7.33 (6.39-9.25)	ns
Final A lactate (mmol/L)	4.25 (3.48-6.98)	5.5 (4.05-6.7)	ns
Implant Duration (mins)	32 (31-39)	42 (35-51)	**0.03**

Issues with NRP/DPP

- Organ assessment

Serum lactate levels in the blood based perfusate of the DCD donor heart on donor NRP and OCS or ECMS (extra corporeal machine perfusion)
(*Messer S 2016 by kind permission*)



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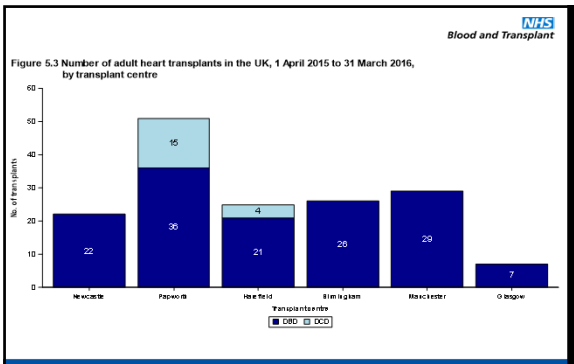
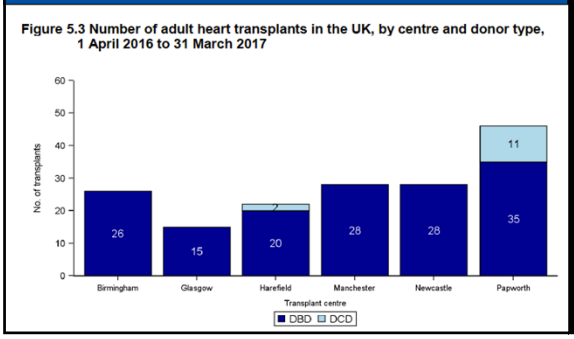
Issues with NRP/DPP

- Organ assessment
- Organ usage



Source: Annual Report on Cardiothoracic Transplantation 2015/16, NHS Blood and Transplant



Royal Papworth (April 2015 – March 2018)

- 153 adult heart transplants
- 42 DCD donors
- > 35% increase in activity

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DCD Clinical Program

- Set up February 2015
- Early Outcomes
  - Comparable allograft function, hospital stay, treated rejection episodes.
  - 90 day survival DCD 92% DBD 96% (p= 1.0)

Early Outcomes after Heart Transplantation from DCD donors

	DCD (n=26)	DBD (n=26)	p value
Cardiac output L/min	4.9 (4.0-5.2)	3.9 (3.2-4.4)	**0.006**
Cardiac index L/min/m²	2.5 (2.1-2.7)	2.0 (1.8-2.4)	**0.04**
Ejection fraction %	63 (58-63)	63 (62-63)	1.00
Length of stay, days	20 (17-28)	27 (21-34)	0.09
Treated rejection	9 (35)	15 (58)	0.15
90 day survival %	92 (24)	96 (25)	1.00

Messer S et al (Dec 2017). Outcome after heart transplantation from donation after circulatory-determined death donors. J Heart Lung Transplant. 36 (3), 1311-1318.

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Renal Function at One Year

No patients on renal replacement therapy

eGFR (mL/min/1.73m^2)	DCD	DBD	P value
>60	53%	58%	0.59
30-60	47%	38%	
<30	0%	14%	

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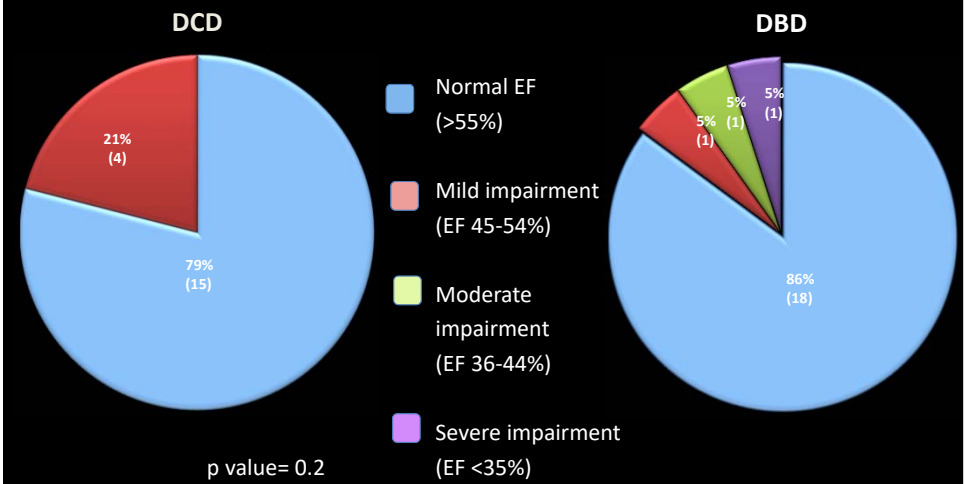
Cardiac Performance. Echocardiography



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Issues with NRP/DPP

- Organ assessment
- Organ usage
- Does NRP upset other organ procurement?

Other solid organ usage with DCD heart Tx:

Organ	Donor organ utilisation
	Papworth DCD heart donors
Heart	83 %
Lung	15 %
Kidney	78 %
Liver	47 %
Pancreas	26 %

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Normothermic Regional Perfusion of Donors Following Circulatory Death Improves Outcomes in Liver Transplantation.

E. Mowlem,[1] L. Randle,[2] C. Fear,[1] K. Crick,[1] S. Messer,[4] S. Large,[4] A. Butler,[3] C. Watson.[3]

[1]Cambridge Transplant Unit, Addenbrookes Hospital, Cambridge, United Kingdom
[2]OrganOx Ltd, Oxford, United Kingdom
[3]Dept of Surgery, University of Cambridge, Cambridge, United Kingdom
[4]Papworth Hospital, Cambridge, United Kingdom

Meeting: 2017 American Transplant Congress

Papworth Hospital NHS NHS Foundation Trust

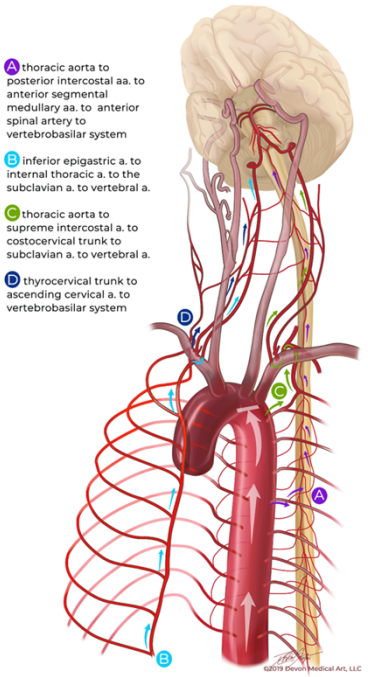
	NRP livers (n=20)	non-NRP livers (n=40)
1y actuarial graft survival (censored for death)	100%	87%
1 year actuarial patient survival	93%	94%
1y actuarial graft survival (not death censored)	93%	81%
Peak ALT (iu/L) in week one (median (IQR))	480 (349-1016)	840 (437-1443)
Biliary anastomotic leaks	6% (n=17)	5%
Biliary anastomotic strictures	12% (n=17)	5%
Ischaemic cholangiopathy	0 (n=17)	15%

Issues with NRP/DPP

- Organ assessment
- Organ usage
- Does NRP upset other organ procurement?
- Concerns about intra-cranial blood flow

Concerns about intra-cranial blood flow

- Canadian DCD summit 2018
- What risk: intra-cranial blood flow?



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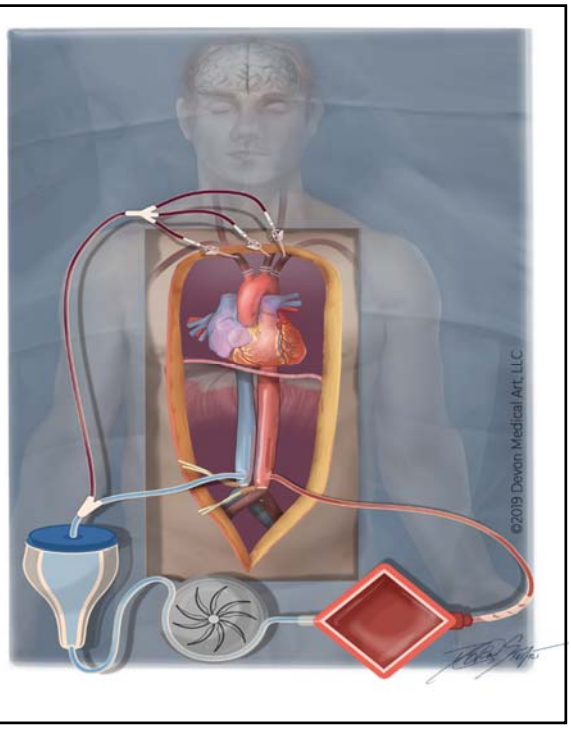
Concerns about intra-cranial blood flow

- Ligation of arch vessels
- and drainage of blood within arch vessels
- but concerns over ischaemic insult



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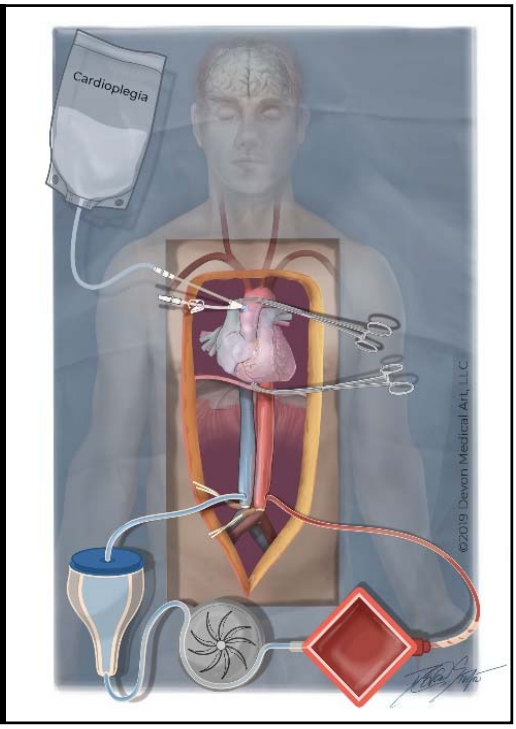
Concerns about intra-cranial blood flow

- Ligation of arch vessels
- and drainage of blood within arch vessels
- but concerns over ischaemic insult
- Leading to the speediest solution: *Messer technique*



9 take home points

1. NRP probably offers earliest replenishment of energy stores within all organs,

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9 take home points

1. NRP probably offers earliest replenishment of energy stores within all organs,
2. …. a chance to assess cardiac function after death.
3. ….. a chance to review the heart in terms of coronary disease and
4. ….. a chance to assess the donor to exclude malignancy

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9 take home points

5. We believe that the size of this new donor group may be as high as 100 patients/year for our 65million population (1.54donors pmp. which has the potential to raise our transplant activity by 50%).

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9 take home points

5. We believe that the size of this new donor group may be as high as 100 patients/year for our 65million population (1.54donors pmp. which has the potential to raise our transplant activity by 50%).

6. A chance to transport with cold storage as the Barnard brothers did in 1967.

Papworth Hospital NHS

9 take home points

5. We believe that the size of this new donor group may be as high as 100 patients/year for our 65million population (1.54donors pmp. which has the potential to raise our transplant activity by 50%).

6. A chance to transport with cold storage as the Barnard brothers did in 1967.

7. Heart donation from individuals dying of circulatory determined death (DCD) has led to heart transplantation in some 120pts world-wide 73 of which attended procured by 71 of which transplanted by RPH. 29% using NRP

Papworth Hospital NHS

9 take home points

8. DCD heart transplantation has delivered the same early and midterm outcomes as heart transplantation from heart donors after brain death

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9 take home points

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   i. We believe that the size of this new donor group may be as high as 100 patients/year for our 65million population (extra 1.54donors pmp.
   ii. which has the potential to raise our transplant activity by 50%)….with a technique now has international acceptance.

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DBD v DCD survival

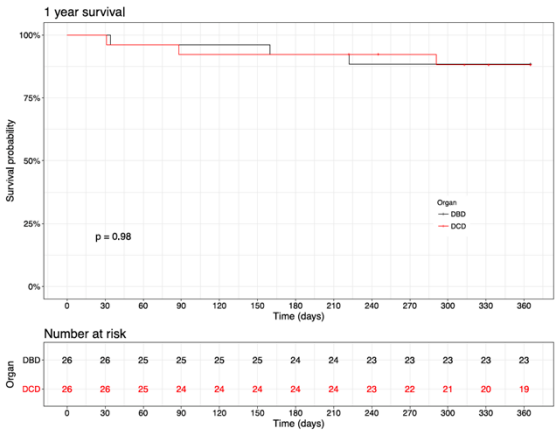

Figure 2 Kaplan-Meier survival of donation after circulatory-determined death (DCD) and donation after brain death (DBD) heart transplantation.

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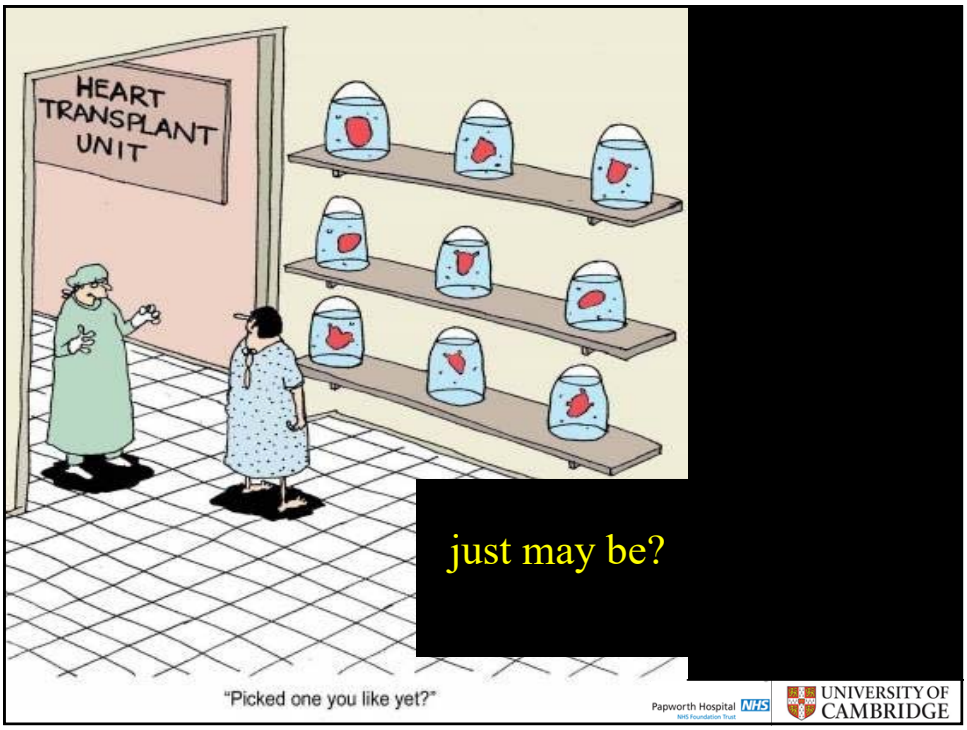

HEART TRANSPLANT UNIT
"Picked one you like yet?"
just may be?
Papworth Hospital NHS
UNIVERSITY OF CAMBRIDGE

NHS Blood and Transplant

DCD heart donation Specialist Nurse Role

Marian Ryan

Regional Manager – Organ Donation and Transplantation

Background

NHS Blood and Transplant

- Currently in the UK only 8 out of 10 patients listed for heart transplantation will receive a donor organ
- DBD donors static
- DCD most common organ donation pathway in the UK and growing
- 9.7 DCD donors pmp in the UK
- Increase in consent rate but below that of DBD
- Potential for even more DCD donors

NHS
Blood and Transplant

Why?

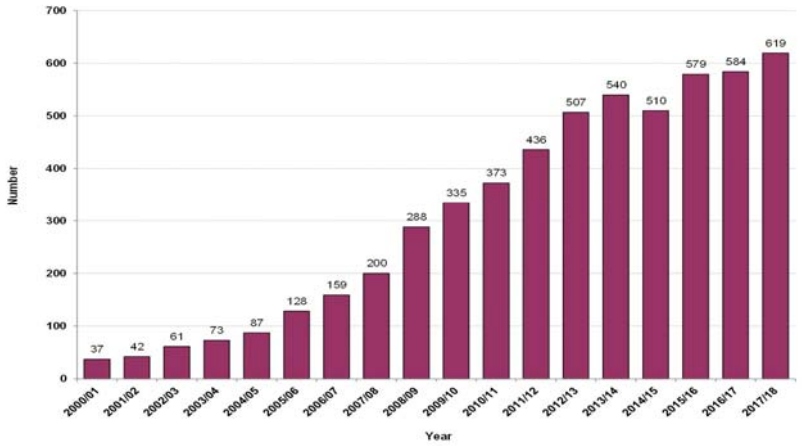
- A combination of factors.
- Increased average age of organ donors.
- Growing number of patients requiring heart transplantation.
- The static number of Brain Stem Dead donors with limited further potential identified.

NHS
Blood and Transplant

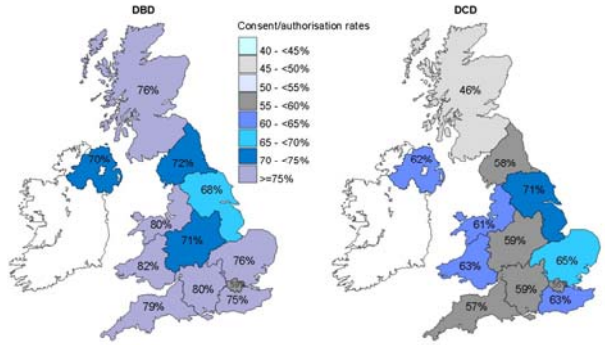
What's the Solution?

In order to balance the limited supply of donated hearts with the increasing demand there is a clear indication that alternative approaches must be explored.

DCD donors in the UK



Consent rates by Organ Donation Services Team, 2017/18



NHS
Blood and Transplant

Key steps

- 2006 – the proposal
- Legal and ethical permissions
- Protocols approved by national committees
- Extensive education for hospital staff
- Feasibility phase (2014)
- Clinical phase (2015)
- Evaluation and further development

NHS
Blood and Transplant

Education and training

- Multidisciplinary approach
  - Transplant teams
  - Specialist Nurse teams
  - Clinical Leads
- Regional collaborative meetings
- Local training/awareness for hospital staff
- Debrifing each donation locally
- Communication from National Clinical Lead
- National DCD Heart steering group

NHS
Blood and Transplant

Specialist Nurse Responsibilities

- Assess suitability of potential donor
  - Inclusion - Maastricht 3 and 4 aged 16-60
- Contact transplant team prior to consent whenever possible
  - Assess suitability and resources
- Family approach
  - Direct procurement and NRP

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Blood and Transplant

Approach / Consent

"During the donation operation, a special by-pass machine may be used to allow blood to flow through the heart and other organs but not the brain. If this occurs the heart would restart in the body. This is so the surgeons can assess the heart and keep it in the best possible condition until it is transplanted".

If family want more information – better to know method of retrieval:

NHS
Blood and Transplant

Specialist Nurse Responsibilities

- Facilitate donation as usual
- Location of treatment withdrawal
- End of life care and withdrawal of treatment will not be changed to facilitate donation
- Echo
- Communication cascade
  - Clear and frequent!
- Media interest
  - Business as usual

Lessons learned

- Large theatre suite
  - Lots of people and equipment
- No of people in theatre
- COMMUNICATION!!!

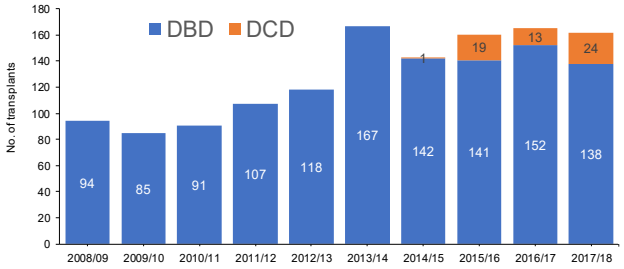
NHS Blood and Transplant

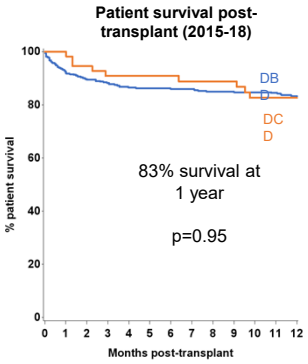
Family and hospital staff reactions

- Some staff expressed concerns that the process would be greatly prolonged
- Others stated that they felt uncomfortable and concerned about explanations to the family
- Can't understand why it hasn't happened before
- "The most amazing thing that I've seen in 23 years of nursing!"
- 100% of families who consented to DCD donation and were approached gave consent for heart donation

NHS Blood and Transplant

Adult heart transplants - by donor type





NHS
Blood and Transplant

In Summary

- Significant stakeholder and staff engagement resulted in enthusiastic support for DCD heart donation
- So far 100 DCD heart transplants have been carried out nationally with outstanding outcomes
- Currently Routine in some regions / requested in others and we are poised for national implementation
- We are confident that many more lives can be saved and transformed with the continued support from donating hospitals and the generosity of donor families

NHS
Blood and Transplant

Thank you

Increasing Donation from under-represented groups with an emphasis on Black and Asian Donors

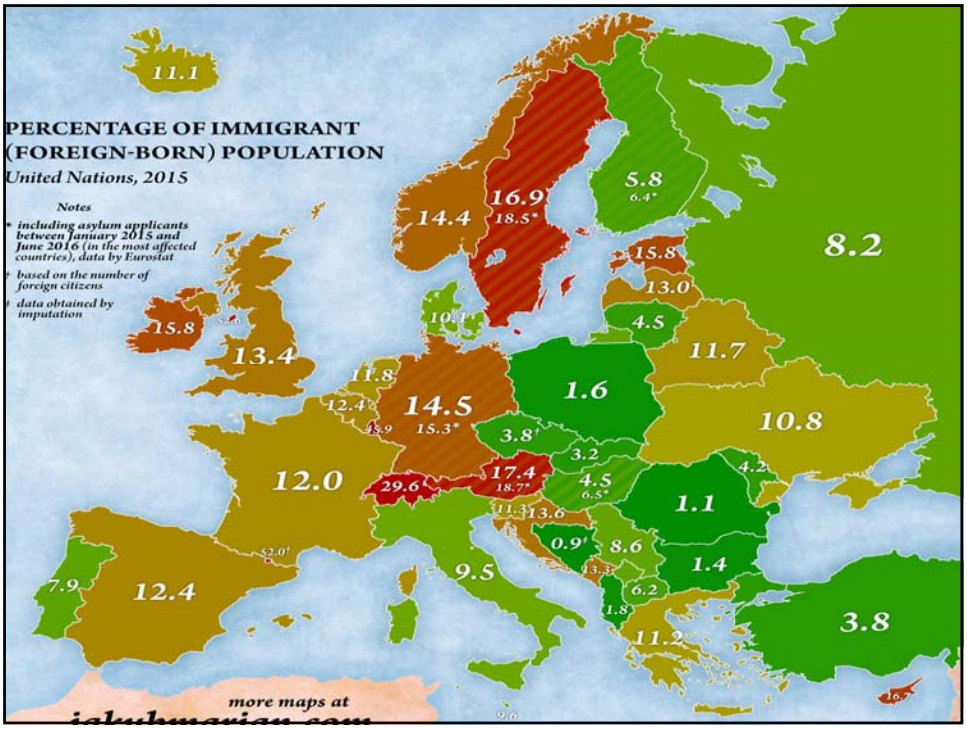
Professor Gurch Randhawa
gurch.randhawa@beds.ac.uk
@gurchrandhawa
Director, UK Organ Donation & Transplant Research Centre
University of Bedfordshire

Content

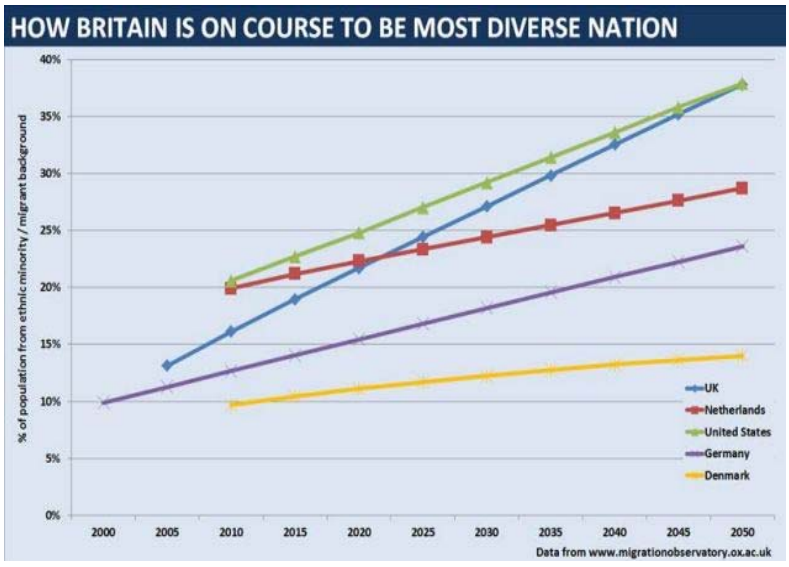
- Diverse populations and impact upon demand for organs
- Diverse populations – organ donor/recipient disparity
- Culturally competent engagement of multi-ethnic and multi-faith communities
- Organ donation in multi-ethnic and multi-faith communities – the culturally competent way forward?

Content I

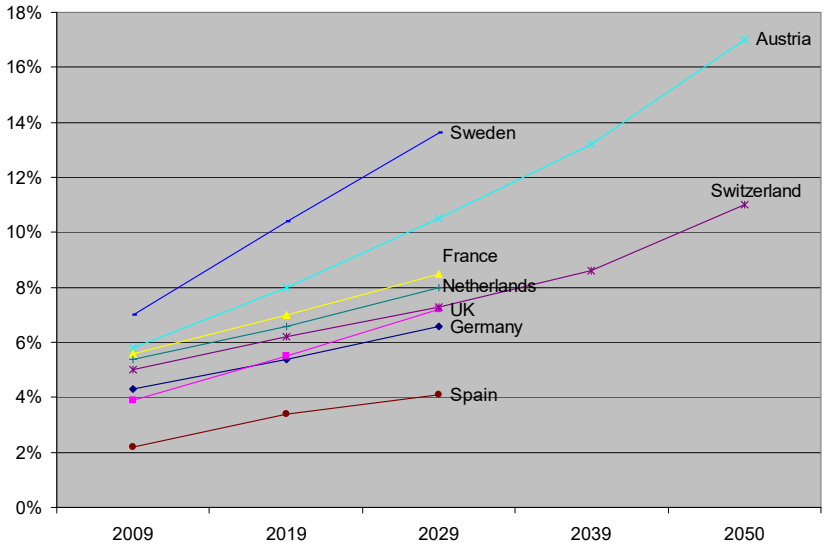
- Diverse populations and impact upon demand for organs




MOST COMMON COUNTRY OF ORIGIN OF FOREIGN-BORN POPULATION
United Nations, 2015
(Note: The results remain unchanged even when asylum applicants between Jan. 2015 and June 2016 are taken into account)
Poland
Finland
Estonia
Ukraine
Russia
Germany
United Kingdom
India
Turkey
Italy
Portugal
Algeria
Spain
Angola
Morocco
Romania
Bosnia
Croatia
Moldova
Czechia
Albania
Greece
Syria
more maps at
jakubmarian.com


HOW BRITAIN IS ON COURSE TO BE MOST DIVERSE NATION
% of population from ethnic minority / migrant background
40%
35%
30%
25%
20%
15%
10%
5%
0%
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
UK
Netherlands
United States
Germany
Denmark
Data from www.migrationobservatory.ox.ac.uk

Projected Muslim Population, Selected European Countries, 2009-2050



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What does our research show in the UK ?

- Increased risk of diabetes, high blood pressure, kidney disease among South Asians and African Caribbean's (Polish community is fastest growing in the UK)
- Increasing number of dialysis patients from South Asian and African Caribbean communities
- Overseas transplants
- Transplant Tourism
- Reduced opportunities for transplantation
- Poor end-of-life care

Kidney Research UK · BIG LOTTERY FUND · NHS Blood and Transplant · King's Fund

University of Bedfordshire

Solving inequalities in kidney care requires a 'whole systems' research programme

- High rates of severe Type 2 diabetes (x8)
- >10 times the risk of developing kidney failure secondary to diabetes
- Late diagnosis of diabetes ?
- Late referral to nephrologists ?
- Poor patient understanding ?
- Poor end of life care ?
- Why the shortage of donors – organs, blood, tissue, stem cells, etc

Randhawa (2000)

University of Bedfordshire

Access to Kidney Care Pathway

Original Article

An examination of concordance and cultural competency in the diabetes care pathway: South Asians living in the United Kingdom

E. Wilkinson, G. Randhawa

Institute for Health Research, University of Bedfordshire, Luton, UK

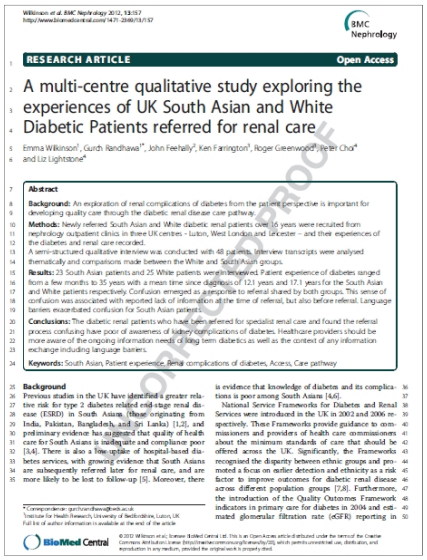
ABSTRACT

The Care Pathway project used a multilevel and multimethod approach to explore access to the care pathway for diabetic renal disease. Taking what was known about the outcomes of ethnic minority patients with diabetic renal disease; the study sought to explore and further understand how and why South Asian patients' experiences may be different from the majority of population in relation to access. Through improved understanding of any observed inequalities, the study aimed to inform the development of culturally competent diabetes services. The design incorporated audits of patient indicators for diabetes and renal health at key points in the pathway; Diagnosis of diabetes and referral to specialist renal services in two years- 2004 and 2007, and qualitative individual interviews with patients and providers identified through the 2007 samples. This article describes the care provider perspective of access to diabetes care from a thematic analysis of 14 semi-structured interviews conducted with professionals, at three study sites, with different roles in the diabetes pathway. National policy level initiatives to improve quality have been mirrored by quality improvements at the local practice level. These achievements, however, have been unable to address all aspects of care that service providers identified as important in facilitating access to all patient groups. Concordance emerged as a key process in improving access to care within the pathway system, and barriers to this exist at different levels and are greater for South Asian patients compared to White patients. A conceptual model of concordance as a process through which access to quality diabetes care is achieved and its relation to cultural competency is put forward. The effort required to achieve access and concordance among South Asian patients is inversely related to cultural competency at policy and practice levels. These processes are underpinned by communication.

Key words: Concordance, cultural competence, diabetes

Introduction

Previous studies in the UK had identified a greater relative risk for diabetes-related end stage renal failure (ESRF) in South Asians (those originating from India, Pakistan, Bangladesh, and Sri Lanka),[1–3] and suggested that quality of healthcare for South Asians is inadequate and compliance poor.[4–6] There was also a low-uptake of hospital-based diabetes services, with some evidence to suggest that South Asians were subsequently referred later for renal care, and more likely to be lost to follow-up.[7] Moreover, knowledge of diabetes and its complications has been seen to be poor among South Asians.[4–6] This study – Care Pathway project – explored the concept of patient access to quality primary care – how patients gain access to services? and how services are perceived by patients and care providers? The premise being that services need to be relevant and effective if the population is to have access to quality care for improved health outcomes. The concept of access operates on multiple levels.[7] The role of healthcare providers in facilitating access includes the provision of meaningful information to support patients to make decisions about their own care.[7] Considering access in the context of primary care services and from the perspective of a diverse sample of providers can help to shed light on where, how, and for whom care could be improved in the primary care pathway for diabetes.



BMC Nephrology

RESEARCH ARTICLE Open Access

A multi-centre qualitative study exploring the experiences of UK South Asian and White Diabetic Patients referred for renal care

Emma Wilkinson, Gurch Randhawa, John Feehally, Ken Farrington, Roger Greenwood, Peter Cha and Liz Lightstone

Abstract

Background: An exploration of renal complications of diabetes from the patient perspective is important for developing quality care through the diabetic renal disease care pathway.

Methods: Newly referred South Asian and White diabetic renal patients over 16 years were recruited from nephrology outpatient clinics in three UK centres - Luton, West London and Leicester – and their experiences of the diabetes and renal care recorded.

A semi-structured qualitative interview was conducted with 48 patients. Interview transcripts were analysed thematically and comparisons made between the White and South Asian groups.

Results: 23 South Asian patients and 25 White patients were interviewed. Patient experience of diabetes ranged from a few months to 35 years with a mean time since diagnosis of 12.1 years and 17.1 years for the South Asian and White patients respectively. Confusion emerged as a response to referral shared by both groups. This sense of confusion was associated with reported lack of information at the time of referral, but also before referral. Language barriers exacerbated confusion for South Asian patients.

Conclusions: The diabetic renal patients who have been referred for specialist renal care and found the referral process confusing have poor of awareness of kidney complications of diabetes. Healthcare providers should be more aware of the ongoing information needs of long term diabetics as well as the context of any information exchange including language barriers.

Keywords: South Asian, Patient experience of Renal complications of diabetes, Access, Care pathway

Background

Previous studies in the UK have identified a greater relative risk for type 2 diabetes related end-stage renal disease (ESRD) in South Asians (those originating from India, Pakistan, Bangladesh, and Sri Lanka) [1,2], and preliminary evidence has suggested that quality of healthcare for South Asians is inadequate and compliance poor [3,4]. There is also a low-uptake of hospital-based diabetes services, with growing evidence that South Asians are subsequently referred later for renal care, and are more likely to be lost to follow-up [5]. Moreover, there is evidence that knowledge of diabetes and its complications is poor among South Asians [4,6].

National Service Frameworks for Diabetes and Renal Services were introduced in the UK in 2002 and 2006 respectively. These Frameworks provide guidance to commissioners and providers of health care commissioners about the minimum standards of care that should be offered across the UK. Significantly, the Frameworks recognised the disparity between ethnic groups and promoted a focus on earlier detection and ethnicity as a risk factor to improve outcomes for diabetic renal disease across different population groups [7,8]. Furthermore, the introduction of the Quality Outcomes Framework indicators in primary care for diabetes in 2004 and estimated glomerular filtration rate (eGFR) reporting in

Access to kidney care pathway

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Abstraction & theory building

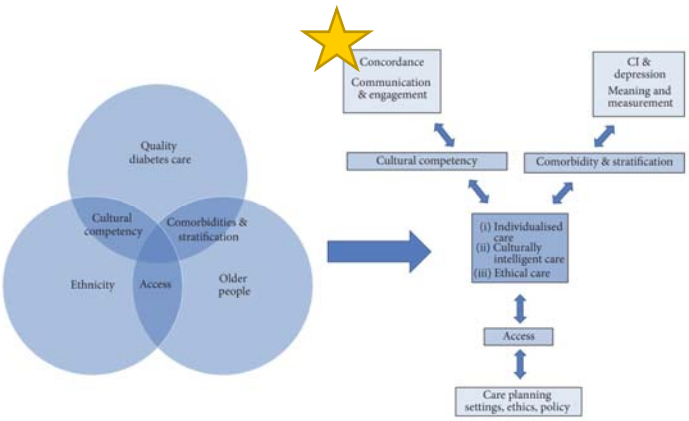

FIGURE 4: Theory building: concepts and mechanisms.

Concordance (Communication & Engagement)

Peer Educator Model (Kidney Research UK)

Content II

- Diverse populations – organ donor/recipient disparity

National Black And Minority Ethnic (BAME) Deceased organ donor/recipient disparity

The UK BAME population constitutes:

- –11% of the population
- –31% of the organ waiting list (35% of the kidney waiting list)
- –3.5% of registered organ donors (where ethnicity is known)
- –7% of actual deceased organ donors
- -Consent rate for organ donation is lower amongst BAME families 42% (was 35% until 2017) versus White families 69.0%

What does our research say?

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Qualitative studies among African-Caribbean, South Asian & Polish communities:

"They(doctors) would finish me off before I was dead."

"I would not donate my eyes, ever, because of the ceremony prior to cremation when people come to the funeral to see the body. I don't want to not have any eyes."

"If the religious leaders gives us a clear cut opinion on this matter then we have less confusion. More discussion and information will help us to proceed in this direction."

"I don't like the idea of my relatives having to see my body been carved up."

"I'm not sure about life after death, but if there is life I want to go complete."

(Randhawa et al, 1995; 1998; 2010)

University of Bedfordshire

Fears with deceased donation

- Fear that Intensive care staff will not try as hard to save the patient if consent / authorisation for donation been given
- Perceived historical racism of health service
- Fear of death - barrier to thinking about/discussing donation
- Would process of transplantation maintain 'sanctity of the body'?
- How does OD process relates to burial/cremation?
- Personal unease about a loved one's organs being inside another person
- Religion could be a predisposing factor as it may be felt that deceased transplantation violate religious principles (Randhawa et al, 1995; 1998; 2010)

Organ Donation Taskforce 2007

Terms of reference

To identify barriers to donation & transplantation and recommend solutions within existing operational and legal frameworks in England

Organ Donation Taskforce 2007

Membership

Critical Care	Paul Murphy, Martin Smith
DTC	Christine Elding, Karen Morgan,
Transplantation	Robert Bonser, Simon Bramhall, Chris Watson
Ethics	Bobbie Farsides
Trust Executive	Julie Moore
NHS Management	Helen Bevan, Mark Britnell
Cultural & Ethnicity Expertise	Gurch Randhawa
Communications	Vivienne Parry
National Kidney Foundation	Robert Dunn
Donor Family	Michael and Kathryn Lewis
In attendance: NHSBT, 4 Health Departments, NSCAG	

Organ Donation Taskforce 2008

14 recommendations

- Clarified roles
  - Acute hospital Trusts
  - Departments of Health/NHS
- Review of co-ordination & retrieval – Role of intensivists
- Training for Nurses, Doctors, Donation Committee Chairs
- Legal and ethical issues
- Public outreach and education

TARGET: 50% increase in donation over 5 years

ACHIEVED ✓

Public promotion...A role for us all 2008

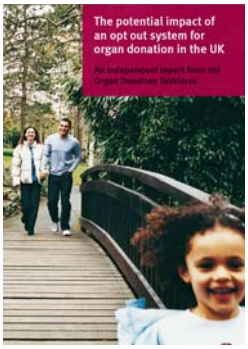
Recommendation 13

There is an urgent requirement to identify and implement the most effective methods through which organ donation and the "gift of life" can be promoted to the general public, and specifically to the BME population

Major Public Campaign launched Autumn '09

The Taskforce's enquiry into opting out 2008

- Will presumed consent be effective?
- Are there any ethical & legal obstacles?
- Will presumed consent be acceptable to
  - –healthcare professionals?
  - –general public?
  - –patients and their families?
- What are the practicalities?
  - –timescales
  - –costs



Taskforce members came to this review of presumed consent with an open mind.

ODTF, November 2008

Fieldwork 2008

- Empirical studies show: cultural issues are important influencing factors

Recommendation 13: 'There is an urgent requirement to identify and implement the most effective methods through which organ donation and the "gift of life" can be promoted to the general public and specifically to the BME population…." (Organs for Transplants, Organ Donation Taskforce, 2008)

ODT commissioned engagement with faith and belief group representatives.

A total of 17 interviews were conducted by Professor Randhawa (supported by COI).

Key findings 2008

- Supportive of organ donation but more engagement is needed
- Most participants cited lack of engagement on the issue but open to future engagement.
- Any engagement needs to be ongoing if it is to be effective.
- Organ donation currently not a priority for most groups & felt that the debate needs to be opened.

"Like any learning, it is not enough to hear a lecture once… You can be inspired by one talk, but you will lose the inspiration over time" (Lord Indarjit Singh, Network of Sikh Organisations UK)

"Need to take two or three steps back. Rather than saying 'this is what we want to do, this is the opinion we want you to have, and can you support us', instead we need to ask them what they think, and have a drawn out conversation. Then I think there would be movement" (Mufti Zubair Butt, Muslim Council of Britain)

Culturally Competent Staff Training

- Donor identification – is everyone identified and every family asked?
- Developing a family-centred approach – Role of extended family
- Definition of death – Brain-stem death
- Religious and cultural values
- Complexities of grief – Western and Eastern Bereavement models
- Death rituals – Burial/cremation
- Grass-roots engagement with the public – What are the messages and who are the messengers?
- Role of the Donation Committee?

(Randhawa, 2011)

	Religious Affiliation		Attend Weekly		Religion Important		'Practice' Religion	
	2001	N	1994	N	1994	N	2003	N
UK Bangla & Pak	97%	409	53%	118	92%	126	80%	290
Foreign Bangla & Pak	97%	936	71%	703	97%	759	88%	847
UK Afro-Carib	73%	1071	24%	149	77%	151	43%	509
Foreign Afro-Carib	79%	580	44%	287	85%	292	73%	1170
UK White	78%	8893	n.a.	n.a.	n.a.	n.a.	23%	8304
Foreign White	80%	400	17%	2009	55%	2007	42%	442

Source: Berthoud et al. 1997; Home Office 2003; Home Office and ONS 2005. 'UK' refers to UK-born while 'Foreign' denotes foreign-born. 'Pak' refers to Pakistani Muslims and 'Bangla' to Bangladeshi Muslims.

Content III

- Culturally competent Engagement of Multi-Ethnic and Multi-Faith Communities –

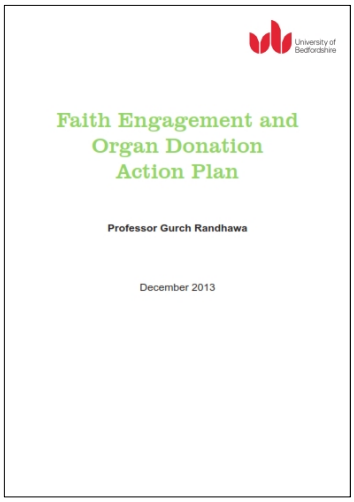
Concordance (Communication & Engagement)
Making Organ Donation Chat Usual.....
Community organ donation campaign launch

Living kidney donor, donor families, transplant recipients, & community leaders

Faith and community leadership

Faith & Organ Donation Summit (NHSBT-led)

Faith Action Plan – intercultural approach

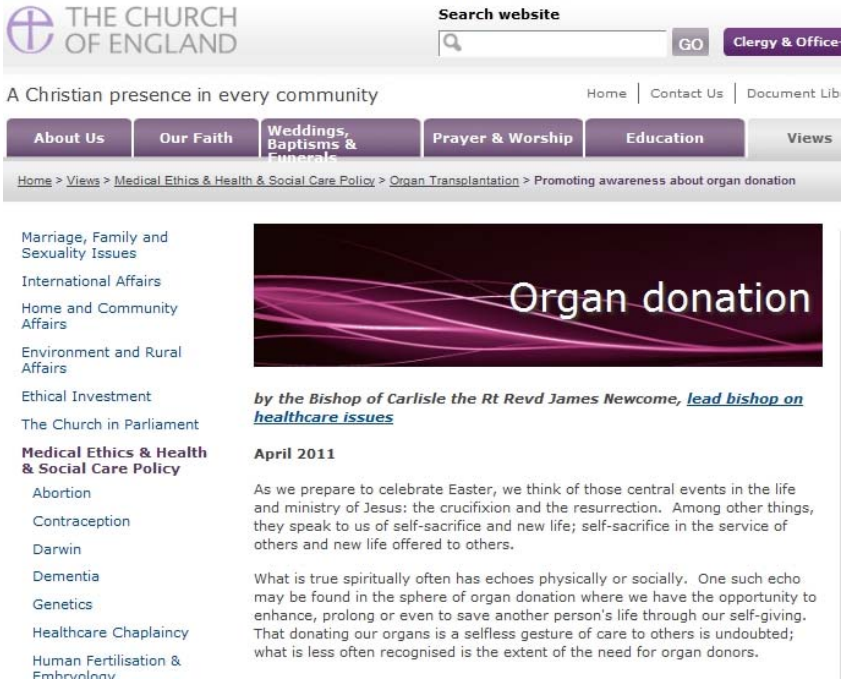


University of Bedfordshire

Faith Engagement and Organ Donation Action Plan

Professor Gurch Randhawa

December 2013



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Home | Contact Us | Document Lib

About Us | Our Faith | Weddings, Baptisms & Funerals | Prayer & Worship | Education | Views

Home > Views > Medical Ethics & Health & Social Care Policy > Organ Transplantation > Promoting awareness about organ donation

- Marriage, Family and Sexuality Issues
- International Affairs
- Home and Community Affairs
- Environment and Rural Affairs
- Ethical Investment
- The Church in Parliament
- **Medical Ethics & Health & Social Care Policy**
  - Abortion
  - Contraception
  - Darwin
  - Dementia
  - Genetics
  - Healthcare Chaplaincy
  - Human Fertilisation & Embryology

Organ donation

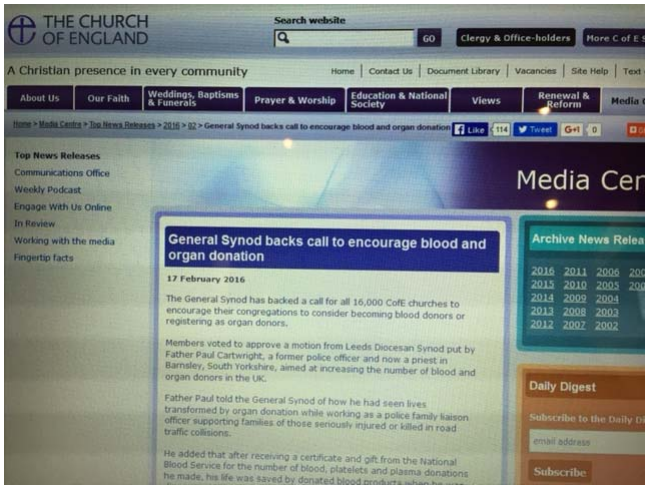
by the Bishop of Carlisle the Rt Revd James Newcome, lead bishop on healthcare issues

April 2011

As we prepare to celebrate Easter, we think of those central events in the life and ministry of Jesus: the crucifixion and the resurrection. Among other things, they speak to us of self-sacrifice and new life; self-sacrifice in the service of others and new life offered to others.

What is true spiritually often has echoes physically or socially. One such echo may be found in the sphere of organ donation where we have the opportunity to enhance, prolong or even to save another person's life through our self-giving. That donating our organs is a selfless gesture of care to others is undoubted; what is less often recognised is the extent of the need for organ donors.

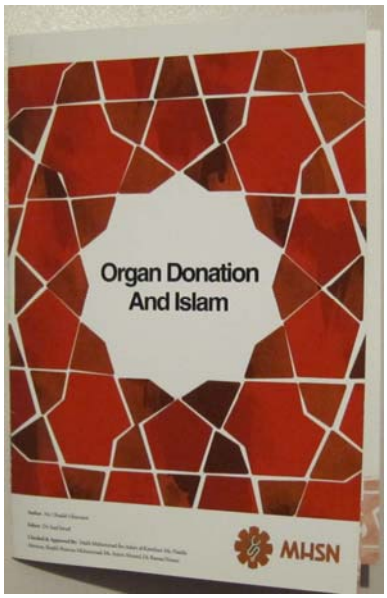
Church of England



Upahaar

Hope Channel

Muslim Health Student Network (MHSN)



Engagement with Islamic Faiths – Amjid Ali

Engaging faith communities

Dialogue on definitions of death

On the Ethics of Organ Transplantation:
A Catholic Perspective
The report of a working party

Jewish Medical Association UK

Home » News » General News » Medical Halacha Conference / UK visit of Rabbi Prof Avraham Steinberg

Medical Halacha Conference / UK visit of Rabbi Prof Avraham Steinberg

More than 100 physicians, including many junior doctors, attended a Medical Halacha Conference organised by Drs David Landau and Jacob Opat in November 2011. The main guest visitor, Rabbi Prof Avraham Steinberg took part in all three main symposia, on Organ Donation, End of Life and General themes respectively. He also lectured on Friday morning on Complementary Medicine, and delivered a very well-attended public lecture to a lay audience on Friday night covering "Halachic Issues in Childbirth and the Newborn". Speakers from the UK included Prof Antony Warrens, Prof Daniel Hochhauser, Prof David Katz and Rabbi Akiva Tatz. There were study sessions on Friday and Sunday mornings about aspects of Jewish Law relating to medicine.
Following this conference Prof Steinberg met with the chairs of BMA and GMC Ethics Committees, together with senior UK medical ethics experts and representatives of the Muslim and Catholic Medical Associations, at the Board of Deputies offices. At this meeting he described how the Israeli End of Life law, known colloquially as the "Steinberg Law", had been developed. Later the same day he met with Sir Peter Simpson and Prof Gurch Randhawa from the UK Organ Donation Ethics Committee. Finally he gave a lecture on the topic of "Recent Developments in Jewish Medical Ethics – the Israeli Experience". In this talk he outlined four examples of how Israeli law on such issues has developed over the years taking cognisance of both medical and halachic concerns.
Following on the success of the conference Drs Landau and Opat have already convened a meeting to arrange a follow – up event in 2012. The intention is that this will include a symposium at a central London venue on the Wednesday evening before the conference in order to attract as wide a medical audience as possible.

Published in General News, on January 5th, 2012

Community engagement at the grassroots

Sawyers Church, Brentwood

Forest Hill Methodist Church

Seven Kings Gurdwara

Islam Channel

Hope Channel

Students spreading the word...

Music Festival

OD Night

Sainsburys Supermarket

Fresher's week

Meeting Sayeeda Warsi – former Tory Chair

BBC Newsnight

Bangla Channel

National Organ Donation Week (Zee TV)

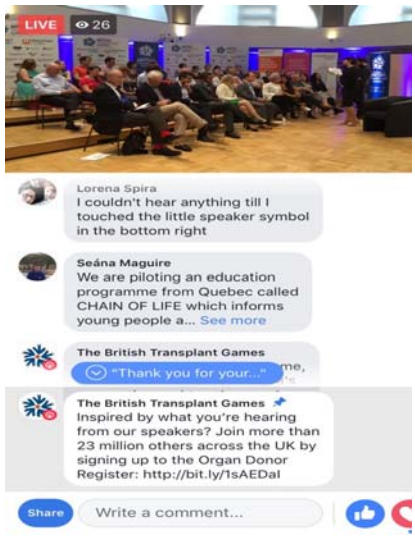
Content IV

- Organ donation in multi-ethnic and multi-faith communities – the Culturally Competent way forward?

‘Messages’ and ‘Messengers’

England Opt-Out Consultation

Social Media Dialogue



Faith Engagement

BBC TV National Evening News

Political Engagement and Minority Ethnic Organ Donation

Political and multi-ethnic and multi-faith engagement

BBC TV Breakfast News

BBC National TV Debate

Sikh TV Channel – religious debate

Real-life case-studies – multi-lingual ethnic media

Schools & Organ Donation Pack Launch with BAME case-studies

Visibility of organ donors….

Minister for Health launches MPs Organ Donation Toolkit with BAME Organ Donor Family

Multi-ethnic and Multi-Faith Donor families becoming more visible – Mainstream media

Multi-ethnic and Multi-Faith Donor families becoming more visible - Sport

Multi-ethnic and Multi-Faith Donor families becoming more visible – Ethnic media

HM Queen's Award for Voluntary Services – Mandip Mudhar Memorial Foundation

Community Investment Scheme Launch

Real-life case-studies – multi-lingual

Real-life case-studies – multi-lingual – social media interaction

Real-life case-studies – multi-lingual ethnic media

Real-life case-studies – multi-lingual ethnic media

Celebrity Ambassadors

National Organ Donation Week (Faith engagement)

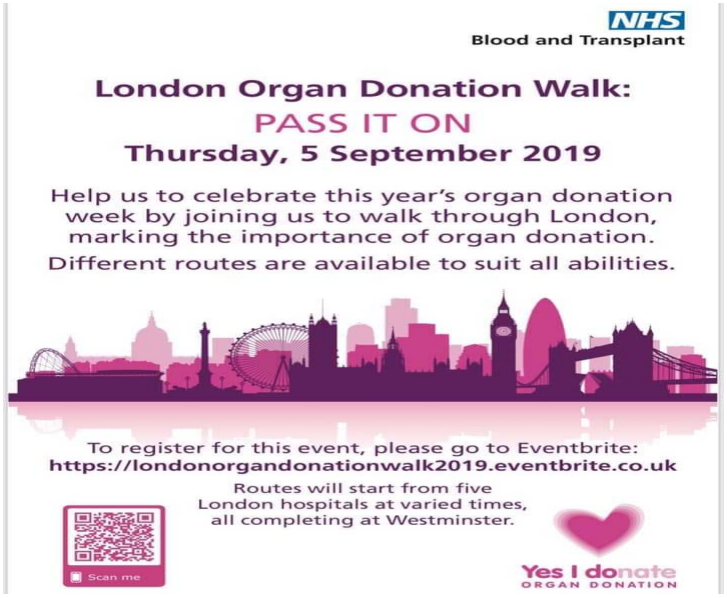
National Organ Donation Week (Zee TV)

Punjabi singers engaging with Organ Donation

Sikh Channel SKY 748

Islamic fatwa – organ donation

Public engagement – Organ Donation

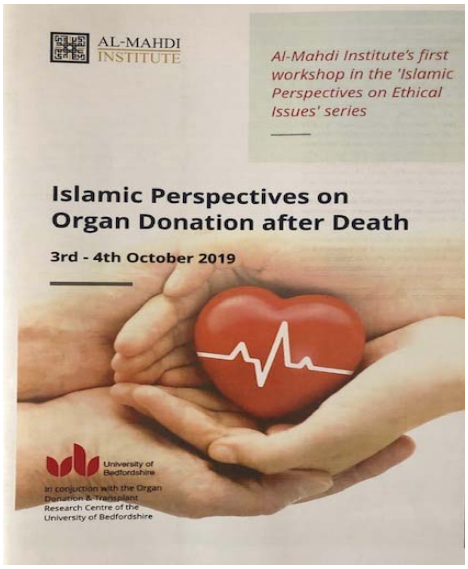


National Political Leadership – organ donation

Local Political Leadership – organ donation

Local Political Leadership – organ donation

Community Ownership – organ donation



Impact……

2014/15	2018/19
6.3% of new ODR registrations were ethnicity given were BAME	7.1% of new ODR registrations were ethnicity given were BAME
BAME consent rate = 36%	BAME consent rate = 41.7%
BAME waiting list = 1957 (28.6% of list)	BAME waiting list = 1883 (31.4% of list)
80 deceased donors (6.2% of deceased donors)	121 deceased donors (7.6% of deceased donors)
159 BAME living donors (14.6% of living donors)	149 living donors (14.3% of living donors)
892 BAME organ transplants (20.3% of all transplants)	1,148 BAME organ transplants (23.2% of all transplants)

'Donation & Transplantation are 2 sides of the same coin'

The Future - Developing Organ Donation public engagement in the UK

- **What is the message? Who are the messengers?**

Donors, donor families, recipients, community leaders, faith leaders, NHS staff……

NHSBT funded feasibility study of Primary Care (single GP Practice) and Organ Donor Registration – Pedder-Jones C, Papadopoulos C, Randhawa G & Asghar Z (2018) Research protocol: general practice organ donation intervention—a feasibility study. (GPOD). Pilot and Feasibility Studies. 4:171 https://doi.org/10.1186/s40814-018-0362-9

Culturally Competent Workforce = Diversity in the Workforce

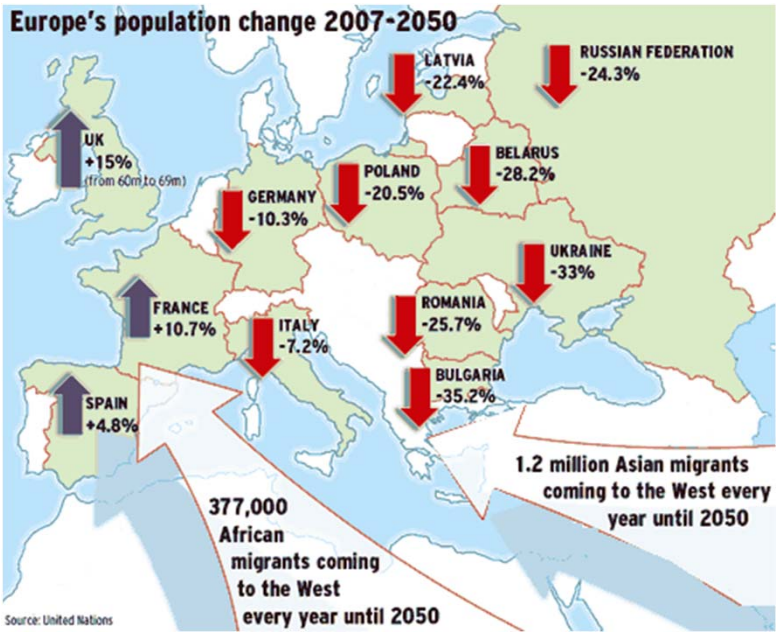
Diversity and Equality in Health and Care (2018) 15(4): 190-197 ©2018 Insight Medical Publishing Group

Research Article

Barriers and Enablers for UK 'Home Grown' South Asian Prospective Students Choosing Nursing and Midwifery Courses and Careers

Nasreen Ali[1*], Irtiza Qureshi[2], Tamanna Sidika[3], Andrea Mondokova[4], Sultan Mahmood[5], Azra Jan[6], Rebecca Garcia[7], Erica Cook[8], Barbara Burden[9], Caroline Reid[10], Gurch Randhawa[11]

[1]Institute for Health Research, University of Bedfordshire, Putteridge Bury, Luton Bedfordshire, UK
[2]Institute for Health Research, University of Bedfordshire, Putteridge Bury, Luton Bedfordshire, UK
[3]University of Bedfordshire, Park Square, Luton Bedfordshire, UK
[4]University of Wolverhampton, Wolverhampton, UK
[5]DiverseCT, Luton, UK



Barcelona's focus on Immigrants, Faith & Organ Donation

Barcelona's focus on Immigrants, Faith & Organ Donation


Gurch **RANDHAWA**

«Famílies i escoles han de parlar sobre la donació d'òrgans»

Potential issues to consider as we plan for the future....

- ***Collation*** and ***use*** of data - ethnicity? religion?
- 'Politics' of immigration
- Cultural competency in national policy making
- Cultural competency of organ donation campaigns
- Equality impact assessment of transplant waiting list and organ allocation programs
- Developing an ongoing 'Organ Donation' dialogue with ALL communities is important to ensure sustainable transplantation programs

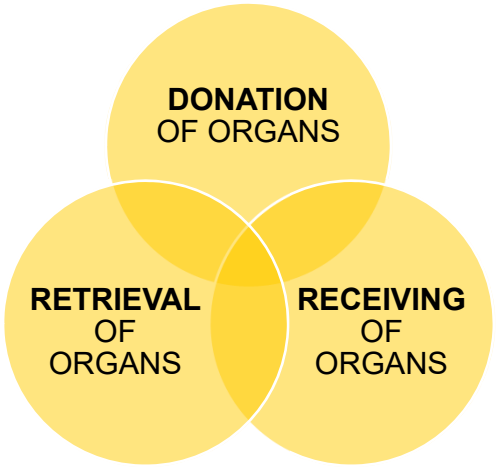
Research Gaps

- Follow on from the single practice study – feasibility Randomised Controlled Trial of Primary Care and Organ Donor Registration
- A process and outcome evaluation of the Community Investment Scheme - to establish what works, and why it works?
- An evaluation of the SNOD approach to families from different ethnic and faith background

University of Bedfordshire

Public Engagement & Organ Donation Taxonomy

(Randhawa G (2011) Organ donation and transplantation – meeting the needs of a multi-ethnic and multi-faith UK population. In: Farrell A, Price D, Quigley M. Organ Shortage: Principles Pragmatism and Practice Cambridge University Press.)



Reading list:

- https://www.beds.ac.uk/research-ref/ihr/odtc
- https://www.nhsbt.nhs.uk/media/news/nhs-blood-and-transplant-encourages-people-to-talk-about-organ-donation-during-interfaith-week/
- Randhawa G & Neuberger J (2016) The role of religion in organ donation - Development of the UK Faith and Organ Donation Action. Transplantation Proceedings. 48: 3, 689–694. doi:10.1016/j.transproceed.2015.10.074
- Randhawa G (2013) Faith Engagement & Organ Donation Action Plan, University of Bedfordshire, Available from http://www.odt.nhs.uk/donation/deceased-donation/professional-resources/faith-action-plan/

Thank you to the Research Funders, Participants and Partners

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@gurchrandhawa
Director, UK Organ Donation & Transplant Research Centre
University of Bedfordshire

Source: bpb Datenreport 2018

Minorities in organ donation and transplantation

Germany - Increasing Donation from under-represented donors

20th European Day for Organ Donation and Transplantation (EODD)

Axel Rahmel
Medical Director

DSO
DEUTSCHE STIFTUNG ORGANTRANSPLANTATION
Gemeinnützige Stiftung
Koordinierungsstelle Organspende

Definitions

DSO

1. **Foreigners:**
   - Residents without German nationality
2. **Migration background**
   - Persons who have
     - immigrated to today's territory of the Federal Republic of Germany after 1949 and
     - all foreigners born in Germany as well as
     - all people born as Germans in Germany with
       1. at least one parent who has immigrated or
       2. one parent born as a foreigner in Germany.
3. **Repatriates and late repatriates**
   - Ethnic Germans from Eastern Europe and the former Soviet Union (In 1953, the German federal government offered them an opportunity under the Federal Expellee Act to immigrate together with their families, and to enjoy full civil rights in Germany.

Nationalities in Germany - Foreigners

Citizenship and countries of origin

Source: BMI

- 88% (~72mn) of the population in Germany hold the German citizenship
- 12% (~10,9mn) are foreigners, of which
  - 43,9% (~4,9mn) come from EU-MS (Poland, Romania, Italy)
  - 17,8 % (~1,9mn) come from EU candidate countries (Turkey, Serbia)
  - 21,1% (~2.3mn) from Asia (Syria, Afghanistan, Iraq)
  - 16,5% (1,8mn) come from other states

https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/_inhalt.html
https://www.eurotransplant.org/cms/mediaobject.php?file=Chapter2_recipient14.pdf

3

Migration and Integration in Germany

Background

Source: bpb Datenreport 2016

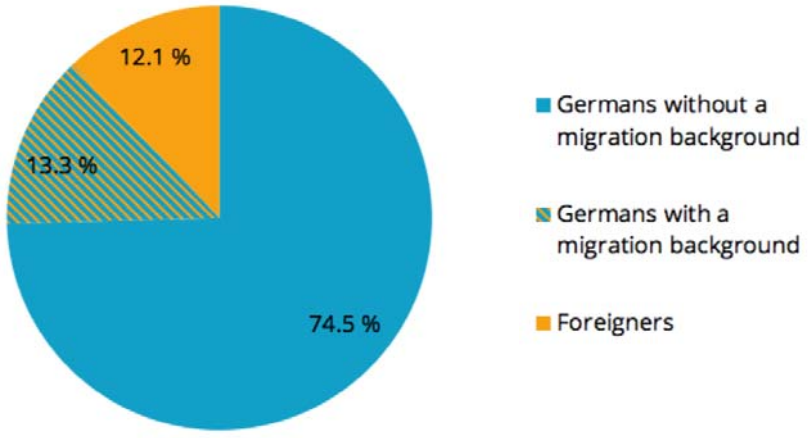
- One in four people in Germany has at least one non-German parent (~20,8mn)
- Major countries of origin are
  - Turkey 13,3% (~2.8mn)
  - Poland 10,8% (2.3mn)
  - Russia 6,6% (~1.4mn)
- Major non-European countries are
  - Kazakhstan 6% (~1.3mn)
  - Syria 3,9% (~0.8mn)

https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/_inhalt.html
https://www.bpb.de/nachschlagen/zahlen-und-fakten/soziale-situation-in-deutschland/61646/migrationshintergrund-i

4

Population with and without a migration background

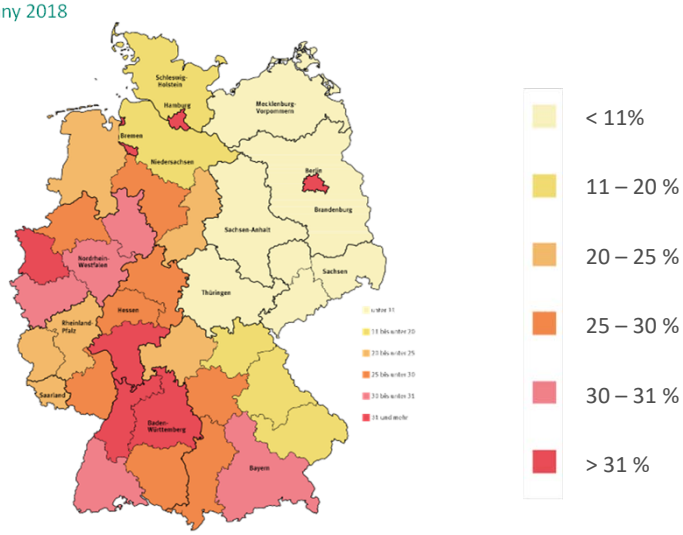
Germany - Mikrozensus 2018



Statistisches Bundesamt, Mikrozensus 2018 © MEDIENDIENST INTEGRATION

Population with a migration background

Germany 2018



© GeoBasis-DE / BKG 2015 (Daten verändert) - Statistisches Bundesamt, Fachserie 1 Reihe 2.2, 2018

Migrant backgrounds and ODT

- The ethnical background of neither the donor nor the recipient is critical for transplant-related decision making
- Only the medical indication determines whether a patient is listed for transplantation, not his/her nationality. For every patient, the decision is reached using a multiple assessor principle (transplant conference)
- The ethnical background is also not covered within donation and transplant related statistics

7

Linguistics in Germany

source: Pixabay

- Official language: German
- In majority of multi-person households where at least one person had a migrant background the language largely spoken in 2017 was German (56%)
- most common foreign language in households with at least one person of migrant background
  - Turkish (17%)
  - Russian (15%)
  - Polish (8%)
  - Arabic (7%)

https://www.destatis.de/EN/Press/2018/09/PE18_329_122.html

8

Multilingual information

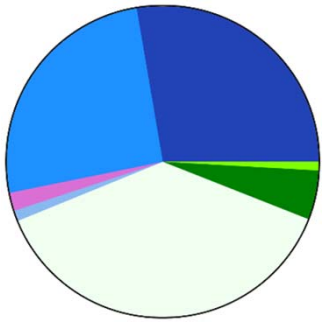
- The Federal Centre for Health Education (BZgA) has the legal task of educating on the subject of organ and tissue donation.
- The BZgA offers information in several languages
- The German Donor Card is available in 29 languages, including:
  Arabic, Bulgarian, Danish, Estonian, Finnish, French, Greek, Gaelic, Croatian, Latvian, Lithuanian, Maltese, Dutch, Turkish...

Source: BZgA

https://www.bzga.de/

Religious diversity in Germany

Source: BMI



- Catholic Church (27.7%)
- Evangelical Church (25.5%)
- Orthodox Christianity (1.9%)
- Other Christians (1.1%)
- Unaffiliated with a church tax receiving religious organization (37.8%)
- Islam (5.1%)
- Other religions (0.9%)

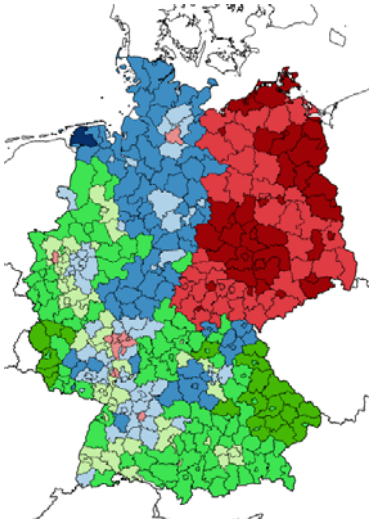
Judaism	–	100.000
Buddhism	–	270.000
Hinduism	–	100.000
Sikhism	–	10.000
Yazidism	–	100.000

https://fowid.de/meldung/religionszugehoerigkeiten-2018

Axel Rahmel | European Organ Donation Day – London, UK | 12.10.2019

Religious denominations in Germany

2011 Census



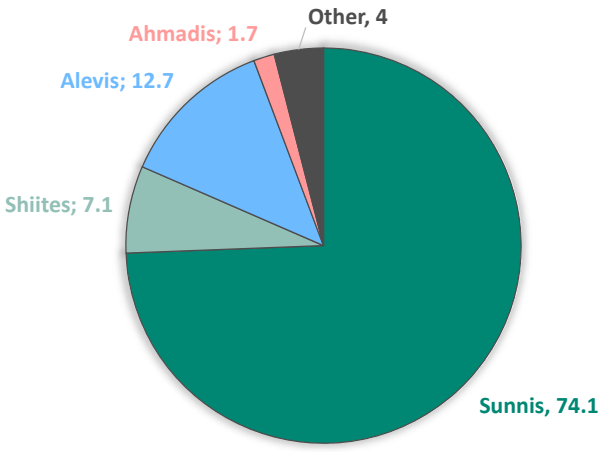
Catholic church

Evangelical church

Unaffiliated

https://commons.wikimedia.org/wiki/File:Religious_denominations_in_Germany,_2011_Census,_self-identification_of_the_population.svg

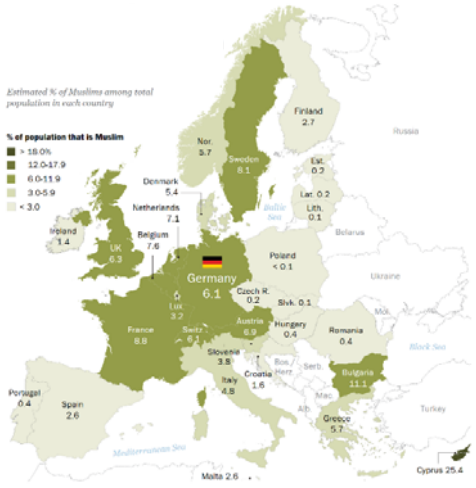
Denominations of Islam in Germany

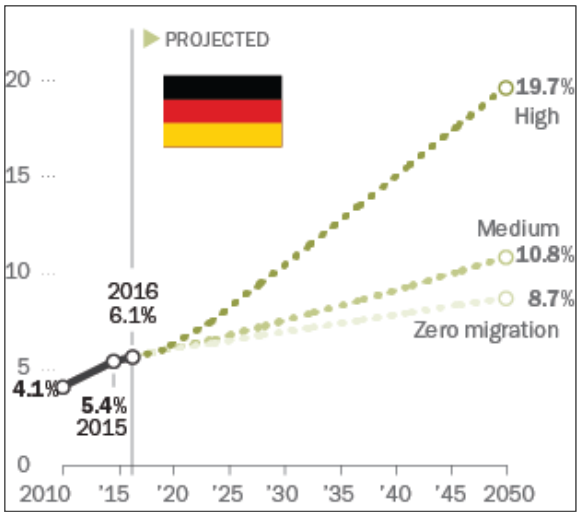


Deutsche Islam Konferenz, Muslimisches Leben in Deutschland, 2009, © Mediendienst Integration 2018

Amount of growth in Germany‘s Muslim population

Muslim share of Germany‘s population under different migration scenarios





https://www.pewforum.org/essay/the-growth-of-germanys-muslim-population/; © Pew Research Center

Religious communities and ODT

Source: DSO

Among the religious communities in Germany, the prevailing opinion on organ donation and transplantation is positive.

Religious leaders are invited as speakers to awareness-raising events and expert conferences on a regular basis.

https://www.bmi.bund.de/DE/themen/heimat-integration/staat-und-religion/staat-und-religion-node.html
https://www.katholisch.de/suche/?suchbegriff=organspende
https://www.ekd.de/geistliches_wort_zur_organspende.htm
http://www.migazin.de/2018/09/10/islamrechtler-klaert-auf-ist-organspende-im-islam-erlaubt/
http://www.obkd.de/Texte/OrganspendeundTransplantation.pdf
https://www.juedische-allgemeine.de/politik/organspende-ist-eine-mizwa/

Gender inequalities in organ donation

- Men and women show the same degree of willingness to donate
- More women hold a donor card than men
- Of 933 post-mortem organ donors in Germany in 2018, 52.6% (491) were male and 47.4% (442) female

source: pexels.com

- No information is available regarding the sex of the 695 living donors in Germany in 2018. Past data however show that more women donate their organs than men

http://statistics.eurotransplant.org/reportloader.php?report=52093-6010-6113&format=html&download=0
https://www.organspende-info.de/fileadmin/Organspende/05_Mediathek/04_Studien/BZgA_Studie_Organspende_2018_Ergebnisbericht.pdf
http://dip21.bundestag.de/dip21/btd/15/050/1505050.pdf

15

LGBT Community

- Some restrictions for members of the LGBT community with regard to the donation of substance of human origin
- In 2014, the Lesbian and Gay Association in Germany (LSVD) openly criticised the DSO for using inadequate wording in its donor characterisation form (to ask for the sexual orientation of the deceased)

source: pexels.com

- In cooperation with LSVD, DSO explained the rationale why the sexual orientation was queried at all. Afterwards, the form was jointly revised and modified.

https://www.lsvd.de/recht/ratgeber/blutspende.html

16

…a long way to go

- Ethnical background of organ donors and recipients is legally not relevant for donation or transplant-related decision making
- Ethnical background of organ donors and recipients is not reported and recorded in Germany. The influence of religious affiliation on the probability of becoming an organ donor is not known in Germany
- Among the religious communities in Germany, the prevailing official opinion on organ donation is positive
- First steps
  - The German Donor Card is translated in 29 languages
  - Information material specific for Muslim community
- National initiative plan
  - One element: targeting the different religious, cultural, ethnic groups

17

Minorities in organ donation and transplantation

National Initiative Plan - Germany

- National / Society level
  - Rising public awareness
    - Identification of key stakeholders and opinion leaders
    - Development and distribution of information material specifically adapted to religious, ethnic social and cultural background of different minority groups
    - Using different, specific communication channels
- Organ procurement organization
  - Training of coordinators
    - Funeral customs, rituals and services
    - Attitude towards (brain) death
  - Information material / overview
- Donor hospitals
  - Training of hospital staff / ICU personnel
  - Identification of local contact persons for the different religious/cultural groups

https://www.funeralwise.com/customs/

Axel Rahmel | European Organ Donation Day – London, UK | 12.10.2019

18

source: pexels.com

19

NHS
Blood and Transplant

Increasing donation from under-represented groups

Angela Ditchfield
Diversity Lead Nurse Specialist Nurse Organ Donation

Yes I donate
ORGAN DONATION

NHS
Blood and Transplant

Why is it so important?

- On average, patients from black and Asian communities will wait six months longer for a kidney transplant than a white patient, due to the lack of suitable organs
- Organs from people from the same ethnic background are more likely to be a close match and give the best chance of a positive outcome.
- Although more than half a million people die each year across the UK, only around 1 in 100 die in circumstances where their organs can be donated, so every donor is precious.
- We need to help reduce these inequalities and work with communities to deliver these key messages

Yes I donate
ORGAN DONATION

NHS
Blood and Transplant

Working together

- Objective to reduce health inequalities within the Muslim communities
- Raising awareness of health issues effecting the Muslim community
- Challenging start
- Amazing progress

one voice BLACKBURN

Yes I donate ORGAN DONATION

NHS
Blood and Transplant

Yes I donate
ORGAN DONATION

NHS
Blood and Transplant

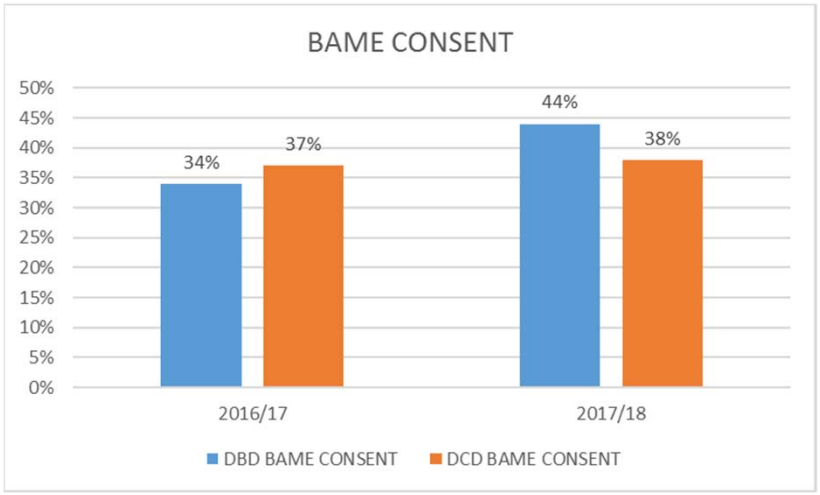
Mary Seacole Award

- Community engagement
- Mary Seacole Leadership award
- Research project
- Younger generation
- Change in attitudes
- Challenged & delivered by the community

Yes I donate
ORGAN DONATION

NHS
Blood and Transplant

Measuring Success



Yes I donate
ORGAN DONATION

NHS
Blood and Transplant

Thank you

NHS
Blood and Transplant

Aari's Story

https://www.youtube.com/watch?v=zYaQVk3levU

NHS
Blood and Transplant

Be brave.
Talk to us.

NHS
Blood and Transplant

Donor families. We can make a difference.

NHS
Blood and Transplant

Organ Donation Education among the South Asians using HBM Framework

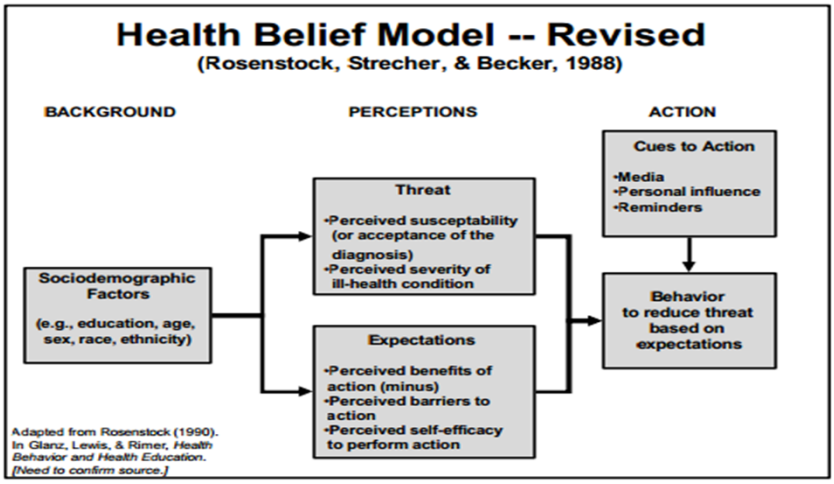
20th European Day for Organ Donation and Transplantation (EODD)
12th October 2019

Dr. Agimol Pradeep BEM

Yes I donate
ORGAN DONATION

NHS
Blood and Transplant

Health Belief Model -- Revised
(Rosenstock, Strecher, & Becker, 1988)



Adapted from Rosenstock (1990). In Glanz, Lewis, & Rimer, *Health Behavior and Health Education.* *(Need to confirm source.)*

Yes I donate
ORGAN DONATION

Perceived Susceptibility

NHS Blood and Transplant

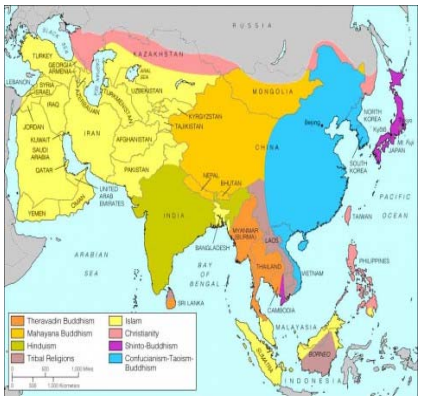
Incidence of ESRD In Asians

•Asians are three to four times more likely to develop ESRD than whites.

•This rises to eight times for older Asians

•Diabetes five times the rate of the white population

•Hypertension is twice the rate of the white population.



Yes I donate ORGAN DONATION

Perceived severity

NHS lood and Transplant

Key messages given during community education sessions

- Better match and outcome if the donor and recipient are from the same ethnicity
- In the UK, three people die every day waiting for an organ
- One in five people who died on the waiting list in 2017/18 was from BAME background
- More than 6,000 patients on the waiting list in total and 17% are South Asians

Yes I donate ORGAN DONATION

Perceived Benefit

NHS Blood and Transplant

- The increase in available ethnic minority appropriate organs, reduced time on the waiting list.
- More Asians receiving the optimum treatment option of transplantation reducing the number on dialysis and increasing those within the community who can work and contribute.
- Saving upto nine lives

Yes I donate ORGAN DONATION

NHS Blood and Transplant

Perceived Barrier

- Medical mistrust
- Religious beliefs
- Mistrust in the health care system
- Lack of awareness
- Misinterpretation of faith
- Lack of discussion by the health professionals
- Lack of motivation
- Lack of knowledge about the process of organ donation
- Lack of knowledge about how and where to register

Yes I donate ORGAN DONATION

Cues of Action

NHS Blood and Transplant

Example of best practice engagement using HBM

- Influence of South Asian Press
- Influence of Community Leader
- Influence of Religious Leader
- Influence of 'real' person/ patient within community

Yes I donate ORGAN DONATION

Religious /Political Leader and Patient's influence and Network

NHS Blood and Transplant

Support by Hindu & Sikh Religious leaders

Support by Asian Christian Religious Leaders

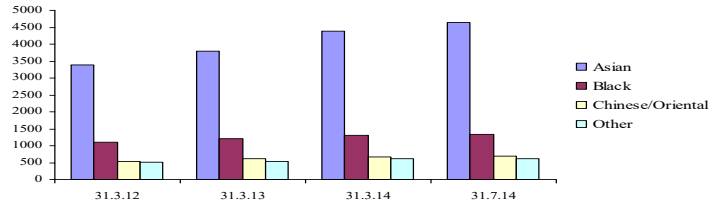
Support from Asian Mayors and Councillors

Help with patient's network, **First time in the North West**
Meeting organised and attended by 35 Muslim Religious Scholars to discuss organ donation.

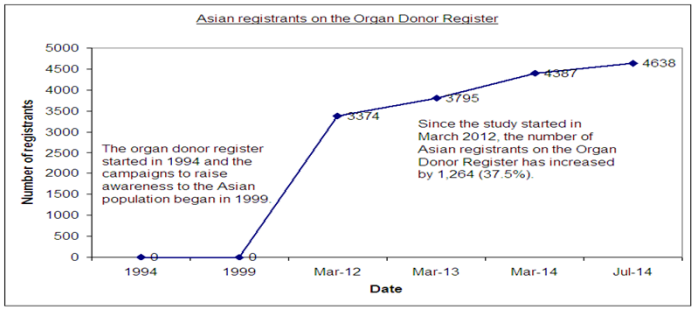
<3000 individuals joined the organ donor register
<3000 individuals joined the organ donor register

North West ethnicity ODR data for the UK during the Study period

NHS Blood and Transplant



Total of Asian organ donor registrants in the North West



Yes I donate ORGAN DONATION

Self-Efficacy

NHS Blood and Transplant

Confidence in one's ability to take action.

- Information
- Knowledge
- Encouragement and
- Support.

Helped in own decision making and to make appropriate decisions for next of kin and wider community

Yes I donate ORGAN DONATION

NHS
Blood and Transplant

Thank you to *NHSBT, British Renal Society, University of Salford, Central Manchester Hospital and all supporting this journey*

My contact
Dr. Agimol Pradeep BEM (PhD)
Phone No: 07886922313
Mail id: agimolpradeep@gmail.com

Yes I donate
ORGAN DONATION

OUTLINE

1. The history of how we learn about under-represented donors
2. How ONT tackle the problem: action plan
3. Implementation of the tools
4. Results

Acknowledging , identifying and tackling the problem

1st International Symposium donation without borders

Analysis of the attitudes and motivations of the Spanish population towards organ donation after death. Scandroglio B, Domínguez-Gil B, Lopez J.S., O. Valentín M, et al. Transplant International 2010

Identification of groups that refuse donation

Workshop on donation without borders: looking for tools. The mediator as a main character and approach to the comunity leaders

2006 — 2007 — 2007

Why are they reluctant to organ donation?
Knowing their reasons , how to overcome their difficulties

2007

2º Symposium. Challenges in donation without borders

Specific survey López JS, Valentín MO, Scandroglio B, Coll E, Martín MJ, Sagredo E,Martínez JM, Serna E, Matesanz R.
Factors related to attitudes toward organ donation after death in the immigrant population in Spain. Clin Transplant 2012

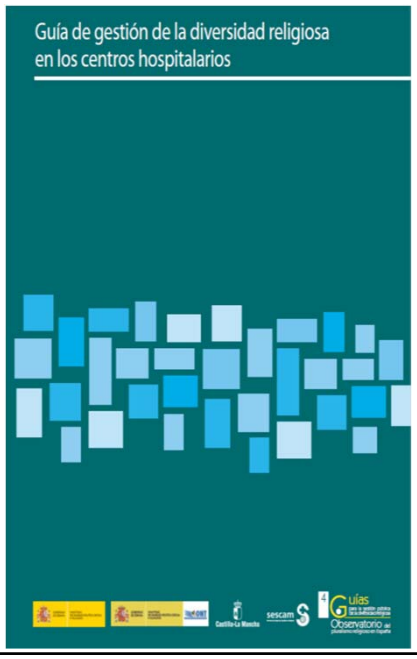
2007

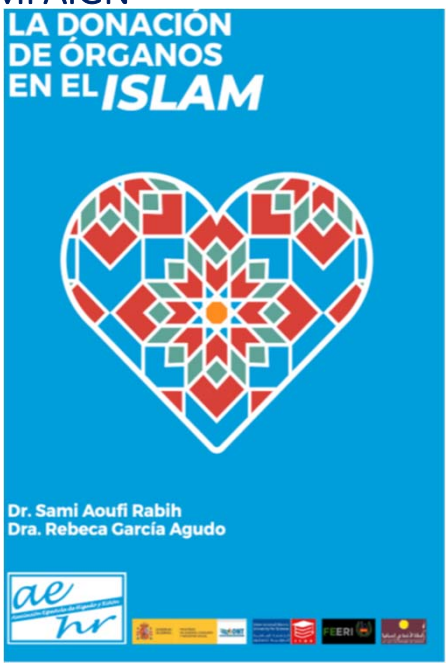
Training the donor coordinator on how to approach inmigrants' families

How the donor coordinator and mediator can cooperate.

Information and training

INFORMATIONAL CAMPAIGN





Clin Transplant 2012 DOI: 10.1111/j.1399-0012.2011.01586.x

Clinical Transplantation

Factors related to attitudes toward organ donation after death in the immigrant population in Spain

A random sample of the resident immigrant population in Spain, comprising 1202 subjects from: Latin america, West Europe, East Europe, North Africa, Sub-Saharan, Africa, Asia.

Predisposition to donate varies strongly across geographical origin and religious beliefs and also shows relationships with additional socio-demographic, social integration, and informative variables.

López JS, Valentín MO, Scandroglio B, Coll E, Martín MJ, Sagredo E, Martínez JM, Serna E, Matesanz R. Factors related to attitudes toward organ donation after death in the immigrant population in Spain. Clin Transplant 2012 DOI: 10.1111/j.1399-0012.2011.01586.x.

Identified factors that influence the willing to donate

- Language barriers.
- Lack of donation practices in their native countries.
- The interpretation of one's religion towards donation.
- Fear that the burial will not be performed as it should be.
- Level of social integration:
  - ✓ The level of affinity with the host society.
  - ✓ The better an immigrant fits in the host society the more prone they will be to perform an altruistic gesture aimed at that society.

Conclusions from the study

- Although the majority of creeds support donation, their followers do not necessarily do so. Individual religious commitment is the main reason to refuse donation.
- The attitude toward donation within a creed may be modulated by factors from other spheres (i.e. level of social integration) that are the target of modification.
- Insufficient information about the donation and transplantation process in Spain.
- Family interview with the DC is paramount.
- Practicing muslims are the most challenging in terms of donation.

Interventions

Donor Coordinator

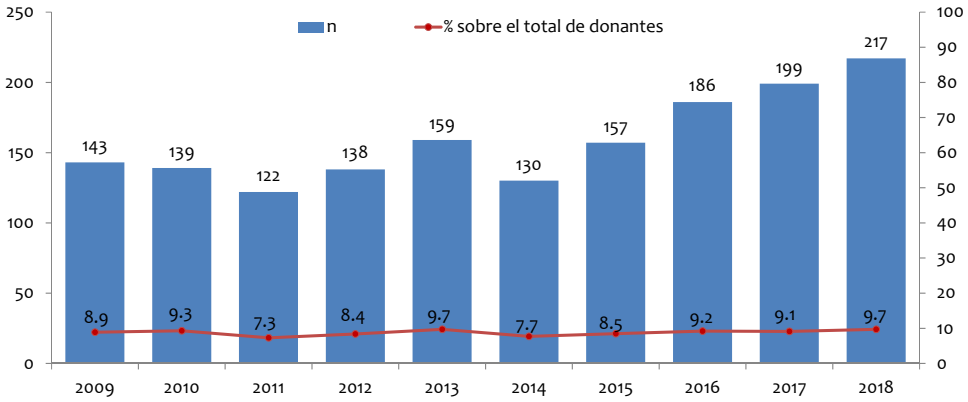
- Works with intercultural mediators and religious leaders to adequately channel communication.
- Trains the mediator in the Spanish model of organ donation and transplantation.
- Trains the mediator on how to collaborate with them during the family interview.

Mediator

- Helps the DC to understand the idiosyncrasy of the donor's culture, religious creed and burial ceremony.
- Helps the DC to conduct the interview with foreigners that are ignorant of the Spanish language and the NHCS.

RESULTS

Number of foreign donors and percentage of total donors



The percentage of foreigners in the Spanish general population is **10%**

This is close to the **9.7%** contribution of foreign donors

https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176951&menu=ultiDatos&idp=1254735572981

Countries of birth of foreigners living in Spain 2014 - 2018

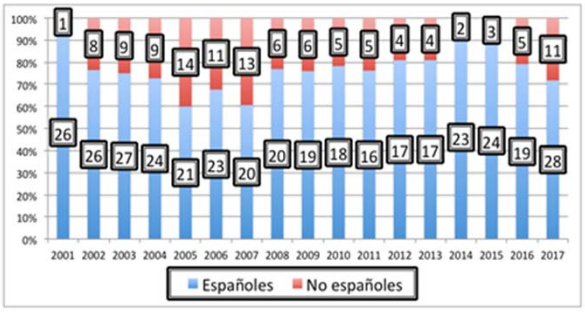
2014: 130 / 1681 (7.7%)	2015: 157 / 1851 (8.5%)	2016: 186 / 2019 (9.2%)	2017: 199 / 2183 (9.1%)	2018: 217 / 2241 (9.7%)
✓ **UK: 21** ✓ Gemany: 11 ✓ **Romania: 10** ✓ France: 7 ✓ **Argentina**: 7 ✓ **Ecuador:** 6 ✓ Portugal: 6 ✓ **Colombia**: 4 ✓ Senegal: 4 ✓ **Perú: 4**	✓ **UK: 19** ✓ **Romania**: 17 ✓ **Ecuador**: 13 ✓ France: 10 ✓ Gemany: 9 ✓ Portugal: 8 ✓ **Venezuela**: 7 ✓ **Brasil: 5** ✓ **Rep. Dominicana: 5** ✓ Italy: 5 ✓ Filipins: 5	✓ **UK: 31** ✓ **Romania:** 22 ✓ Gemany: 15 ✓ France: 9 ✓ **Argentina: 8** ✓ **Ecuador: 7** ✓ **Colombia: 7** ✓ Portugal: 6 ✓ Belgium: 5 ✓ Norway: 5 ✓ **Venezuela: 5**	✓ **UK 41** ✓ Gemany: 17 ✓ **Romania:** 17 ✓ **Colombia: 11** ✓ **Argentina: 9** ✓ **Ecuador**: 7 ✓ Venezuela: 7 ✓ Italy: 5 ✓ France: 5 ✓ Portugal: 5 ✓ **Brasil: 5** ✓ **Cuba: 5**	✓ **UK: 34** ✓ Gemany: 20 ✓ **Romania:** 18 ✓ France: 12 ✓ **Colombia: 10** ✓ **Ecuador: 10** ✓ **Argentina: 9** ✓ **Rep. Dominicana: 9** ✓ **Uruguay: 7** ✓ **Brasil: 6** ✓ Portugal: 6 ✓ **Venezuela: 6** ✓ Belgium: 5 ✓ Italy: 5

COMUNIDAD VALENCIANA HOSPITAL GRAL UNIV DE ALICANTE

Hospital General Universitari d'Alacant

GENERALITAT VALENCIANA

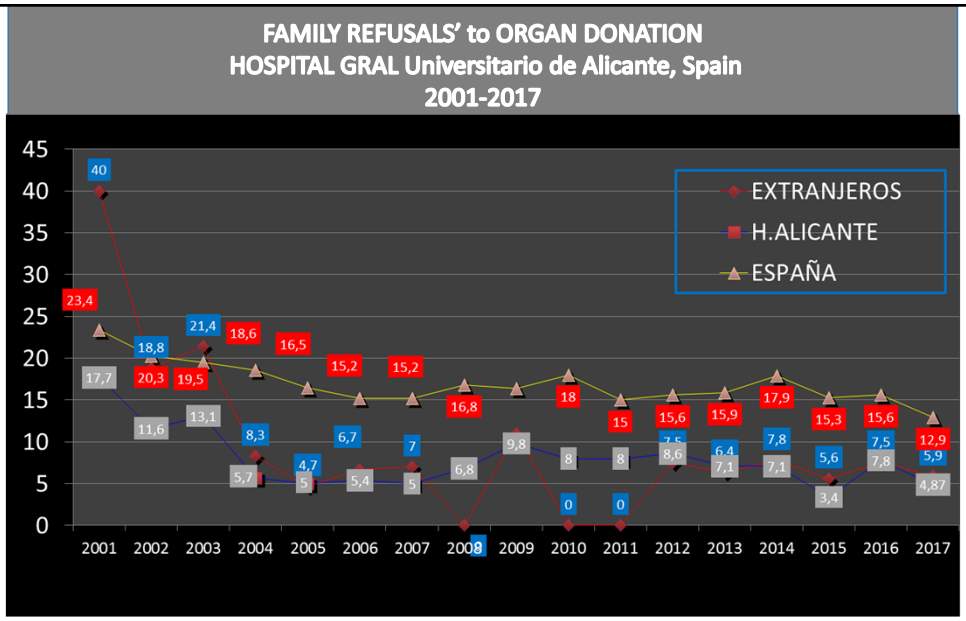
DONANTES ESPAÑOLES Y NO ESPAÑOLES 2001-2017 HGUA



N=116 foreigners donors 2001-2017

51% UE, 30% Sud America, 20% Argel, Morocco, Asia

Census Alicante nearly 2 million people (18% foreigners)



% families' refusals in Spain

% families' refusals in the Hospital Gral Univ. Alicante(all interviews)

% foreigners families'refusals in the Hospital Gral Univ. Alicante

NHS Blood and Transplant

The Specialist Requester Role

Olive McGowan
Assistant Director Education & Governance
NHS Blood and Transplant

20th European Day for Organ Donation and Transplantation

Caring Expert Quality

NHS Blood and Transplant

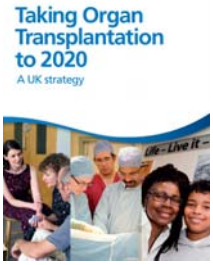
The Specialist Requester (SR) Role

- Aim
- Motivation for the SR role
- SR role:
  - The data
  - Operational elements
- SRs- the training
- Planning and approach on stage

Specialist Requester (SR) Role

NHS Blood and Transplant

- Motivation
  - TOT2020 Strategy – increase consent /authorisation rates
  - Workforce – ensure safe and sustainable workforce model
- Aim to deliver
  - Improved donor family experience
  - Increase consent/authorisation rates
  - Positively impact on 24 hour working
  - Increased variety and potential for specialisation within workforce



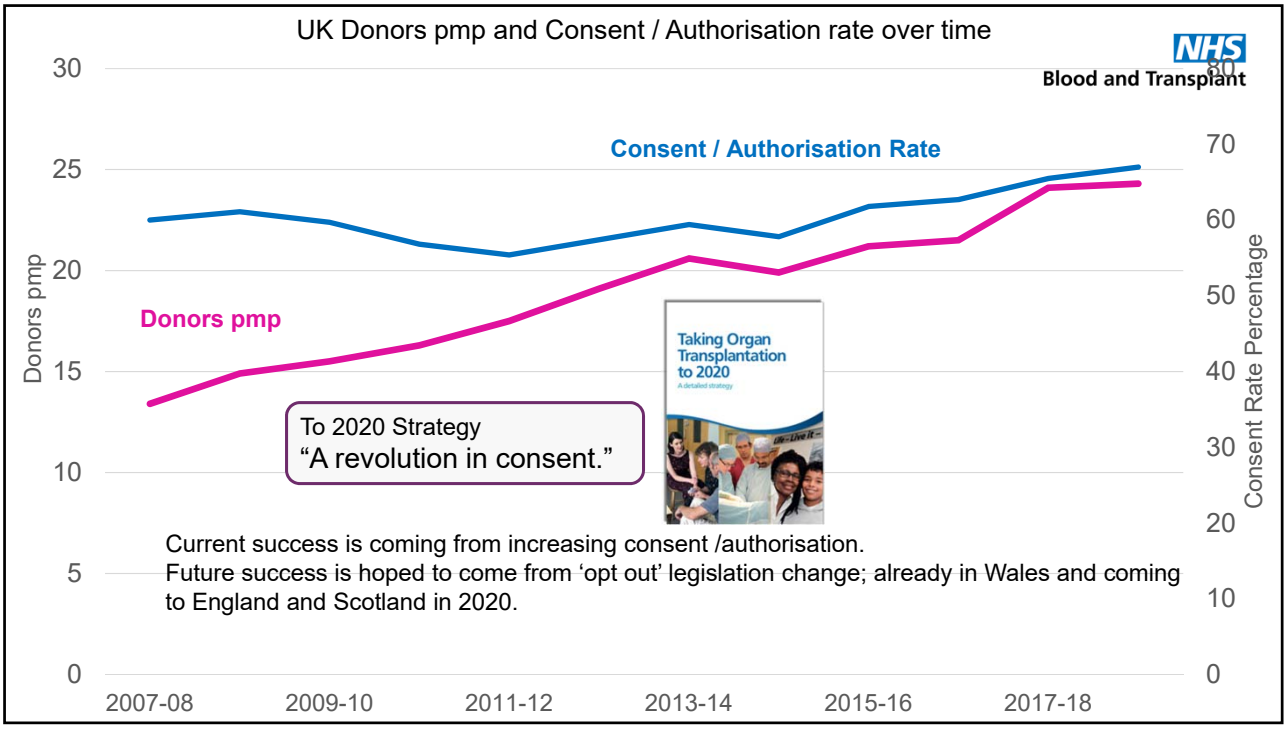
Yes I donate ORGAN DONATION

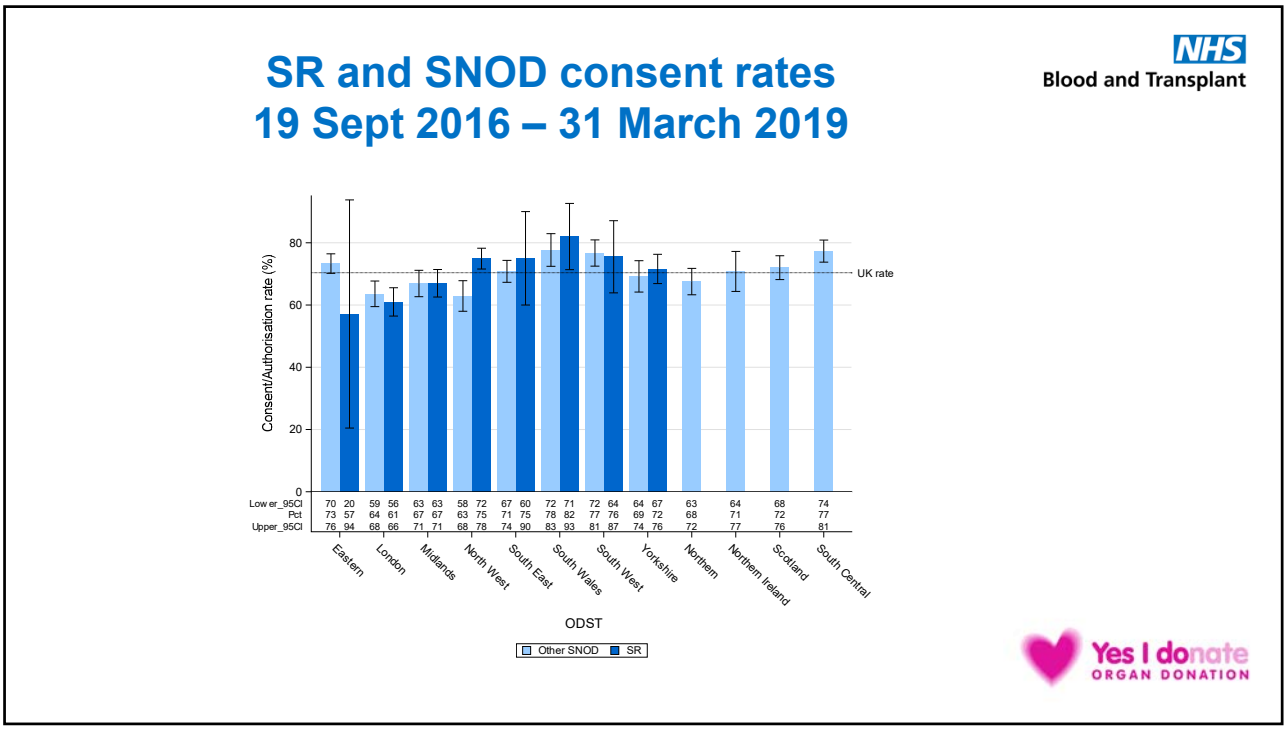
Implementation of SR Role

NHS Blood and Transplant

- Phased approach following a successful pilot
  - 1) Northwest – April 2015
  - 2) Yorkshire- April 2015
  - 3) London – 3 October 2016
  - 4) Midlands – 17 October 2016
  - 5) South Wales – 3 September 2018
  - 6) South West – 3 September 2018
  - 7) South East – 7 January 2019
  - 8) Eastern – 21 January 2019
  - 9) South Central – 1 July 2019
  - 10) Northern Ireland – 18 August 2019
  - 11) Northern – October 2019
  - 12) Scotland – January 2020

Team selection based on greatest potential to impact donor numbers and increase performance

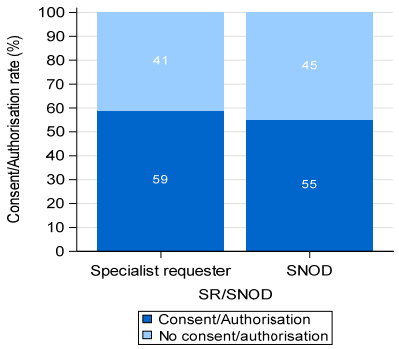

UK Donors pmp and Consent / Authorisation rate over time
NHS
Blood and Transplant
Consent / Authorisation Rate
Donors pmp
Donors pmp
Consent Rate Percentage
30
25
20
15
10
5
0
80
70
60
50
40
30
20
10
0
2007-08
2009-10
2011-12
2013-14
2015-16
2017-18
To 2020 Strategy
"A revolution in consent."
Taking Organ Transplantation to 2020
Current success is coming from increasing consent /authorisation.
Future success is hoped to come from 'opt out' legislation change; already in Wales and coming to England and Scotland in 2020.


SR and SNOD consent rates
19 Sept 2016 – 31 March 2019
NHS
Blood and Transplant
Consent/Authorisation rate (%)
UK rate
Lower_95CI
Pct
Upper_95CI
Eastern
London
Midlands
North West
South East
South Wales
South West
Yorkshire
Northern
Northern Ireland
Scotland
South Central
ODST
Other SNOD
SR
Yes I donate
ORGAN DONATION

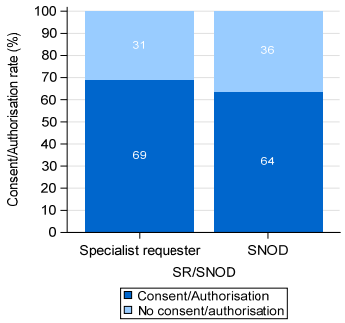
Consent rates: patients with no know decision to donate and DCD patients, SR start date to 31 March 2019

Blood and Transplant

No known decision



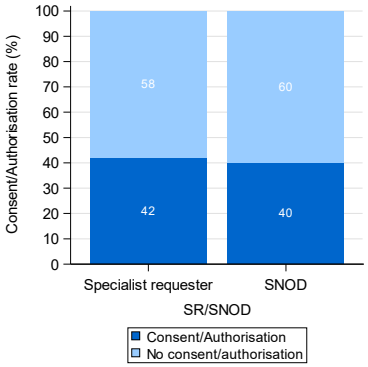
DCD



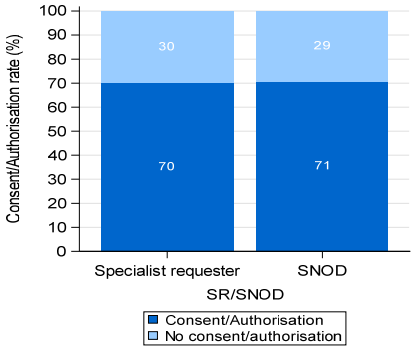
Consent rates for BAME patients and DBD patients, SR start date to 31 March 2019

Blood and Transplant

BAME

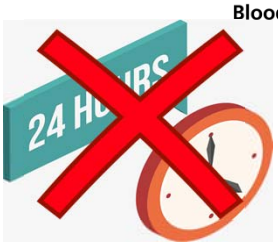


DBD



Operational Impact

NHS Blood and Transplant



- Reduction in 24 hour working
- Better work/life balance
- Improved donor family experience
  - Improvement in quality of approach
  - Potential for 2 nurses on site to expedite the process
- Clinicians familiar with same group of nurses attending and approaching

Specialist Requestor - Training

NHS Blood and Transplant

- In-House Professional Development Team
  - 2 consecutive days annually
  - 4 regional shared practice days

Practice, Practice, Practice

- Clean language
- Active listening skills
- Advanced communication skills
- Inclusivity- unconscious bias & cultural decision making
- Portfolio of practice

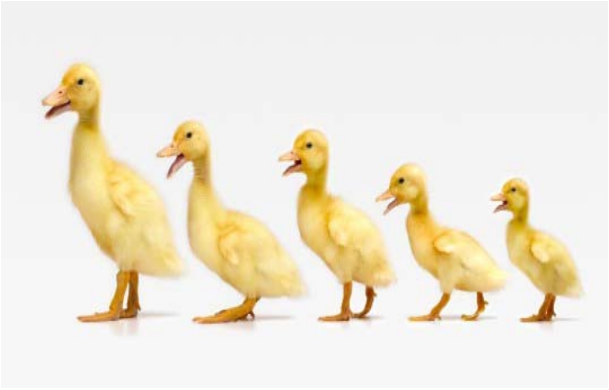
NHS
Blood and Transplant

When it's time to perform

It's too late to practice

NHS
Blood and Transplant

Best Practice



NHS
Blood and Transplant

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Blood and Transplant

Specialist Requestor Role

Acknowledgements

NHS Blood and Transplant

Professional Development Team

Sue Madden - Statistical Team

Organ Donation Services Teams

Specialist Requestors

Charlotte, Dan, Bobbie, Lawrence & Rene

BTS Congress, March 2019

Increasing donation from under-represented donors

Massimo Cardillo, MD
Director-General Italian National Transplant Centre
Rome, Italy

Who are under-represented donors?

- Donors belonging to:
  - *religious minorities*
  - *cultural minorities*
- Travelling foreigners
- Resident foreigners

Which are the barriers?

- Poor knowledge of the existing law in the country where donation takes place
- Cultural and religious differences
- Linguistic barriers

Adopted strategies in Italy

- Support of cultural mediator during donation process
- Supply of tailor-made information material, duly translated in several languages
- Adhoc training of local coordinators

Virtuous examples: the Italian donor association

In Italian Association of Organ Donors (AIDO) developed information material in ELEVEN LANGUAGES

Italian
Albanese
Arabic
Chinese
English
French
German
Philippine
Polish
Rumenian
Spanish

Contents

LEGAL FRAMEWORK AND PRINCIPLES

How

You can express consent or objection to organ donation and modify at any time the expressed intention.

In the presence of a statement of intention (positive or negative) to the donation, the family can not object to the choice made in life by their relative. Having ascertained the willingness of the potential donor, the doctors will proceed to the removal in the event of a positive expressed intention.

In the absence of an explicit statement of intention to donate, the doctors will perform the removal if there is no opposition from the family members.

Where

Those who have completed the age of majority can express the intention on donation of organs and tissues in the following ways:

- at the appropriate counters of the Healthcare office that one belongs to;
- at the registry office of the municipalities that have already activated the service of intention declaration;
- by registering to the Italian Association for the donation of organs, tissues and cells (AIDO) for the sole positive intention;
- filling out the blue card sent by the Ministry of Health in 2000 or the cards prepared by associations for the donors and patients;
- with a statement on plain paper complete with personal data, dated and signed.

The statements of intention (Le dichiarazioni di volontà), together with those collected by AIDO, are recorded in the Informative System of Transplants (SIT); with the exception of plain paper declaration, the blue card and the DonorCard. All statements, including those unregistered in the SIT, are still considered valid under the law.

ANONYMITY – FREE OF CHARGE – RESPECT

It is impossible to know the name of the donor nor the recipient because the law guarantees the anonymity of both parties.

The organs are allocated according to the conditions of urgency and the clinical and immunological compatibility of the persons awaiting transplants.

It is illegal to buy or sell human organs: the donation is always voluntary, free and anonymous.

The costs of the transplant are paid by the National Health Service.

Organs and tissues are taken with the greatest respect of the deceased. After the removal, the body of the deceased is available to the family for burial procedures.

LIVING DONATION OF ORGANS AND TISSUES

The kidney and part of the liver, lung, pancreas and intestine, hematopoietic stem cells (from bone marrow, peripheral blood and cord blood), skin, placenta and bone segments can be donated.

All other organs and tissues can be donated only after death.

Exceptions are the brain and the gonads that can not be donated.

THE RELIGIONS

The main religions are in favor of organ donation. All recommend that the donation should be a matter of free choice and should not be forced.

RELIGIOUS and CULTURAL REFERENCES

ADAPTED TO THE CONTEXT IN THE COUNTRY OF ORIGIN

"It is about the gift of our bodies and our possessions in Buddhism. It is about the gift of all our merits and our virtues.
There's even a way to donate their organs in the Buddhist tradition when the person is still alive. In this case this should be in harmony with the level of our practices.
When we are dead it is very useful that the body could serve to help others. After death there are no obstacles."

His Holiness the Dalai Lama

"Those who would treat me, would take care of those who are ill"

Mahavagga VIII.26.1 – 8

"Donating an organ can become a great gesture of communion which gives someone else a hope and a dream of a new life. I pray that the culture of organ donation will spread in our society through the creation of this network."

The Myon, Buddhist monk and director of the Buddhist-operated Life Share Association

"Organ donation is considered acceptable in Theravada Buddhism. To extend generous assistance to other sentient beings is a Buddhist virtue, and this regards the case of organ donation."

Phramaha Laow Panyasiri, Abbot of The Buddhavihara Temple

Allah (SWT) says in the Koran:
"...And if one could give life to another person, it will be as if he had saved the whole humanity"

Verse 32 of Surah no.5

An authentic Prophet "saying" affirms:
"There is no illness that God would creat if He had not also created the cure"
"If you happen to be ill and need a transplant; definitely you would like someone else's help giving you the necessary organ".

Shaykh Zaki Badawi, Muslim College / London

The Council of Islamic Law in Britain stated that:

1) The decease is the authority that can define the signs of death
2) The current medical knowledge considers the cerebral arrest a definition of death
3) The Council accepts the cerebral arrest as the end of life for the purpose of organ transplants
4) The Council sustains the organ transplantation as a means to relieve pain or to save lives on the basis of the conditions of Shariah
5) The Muslims can have the donor card
6) The next of kin of the deceased, even in the absence of a donation card, can give consent to donate their organs to save other lives
7) Organ donation must be free without any recompense
8) The selling of organs is prohibited

Within this world, we must seize the opportunity to selfless actions toward others (SEVA), then we would have the opportunity to reside in the divine abode.

Guru Nanak

An example:
Piedmont regional transplant centre

In 2011 Piedmont Regional Transplant Centre has organized a training course addressed to intercultural mediators and focused on organ and tissue donation. The course has allowed to set up an official list of trained mediators, that is available in the reserved area of the dedicated hospital coordinators website (www.donalavita.net)

More initiatives:
Piedmont regional transplant centre

In 2014 a compulsory training course for hospital coordinators was focused on migrants


Beyond the Officially Sacred, Donor and Believer: Religion and Organ Transplantation

E. Messina*

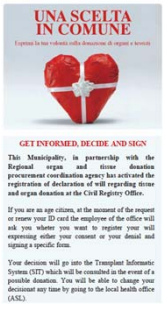
Piedmont Regional Tissue and Organ Procurement Coordination Agency, Molinette Hospital, Turin, Italy

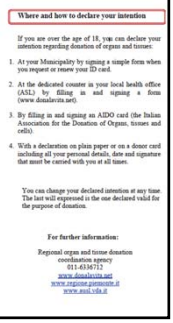
ABSTRACT

Religious concerns might represent an important issue when donation for transplantation is discussed. Even if no religious tradition formally forbids organ donation and transplantation, members of the same religious group may have differing and often conflicting opinions in their own interpretation of how their religion encourages and/or supports organ donation and transplantation, as discussed in this article. It also should be considered that even if a religion refuses to define concrete rules about organ donation and transplantation, there are a great number of factors that may influence the decision-making process. Examples may include negative perceptions of the cutting and removal of organs or ignorance about the transplantation system, both of which would influence the decision-making process concerning transplantation. Knowledge of these facts may provide useful information, perhaps increasing transplant numbers.

In 2015, in collaboration with a specialized anthropologist, further elaborations on the link between religion and organ donation were carried out in the press and through a devoted section of regional AIDO website

In 2019 the brochure developed for registry offices, where ID paper is released (including donor will statement), was translated in English, French and Spanish





Are these measures effective?

A five-year single-centre experience, where cultural mediator alone was involved during donation process

AGE	NATIONALITY	DEATH DIAGNOSIS	NEXT-OF-KIN	DONATION OUTCOME
34	ALGERIA	YES	NOT FOUND	YES
23	ITALY (BORN in THE PHILIPPENES)	YES	YES	NO
55	PHILIPPENES	YES	YES	YES
35	EGYPT	YES	YES	NO
31	UCRAINE	YES	YES	NO
32	MOLDOVA	YES	YES	YES
61	PERU	YES	YES	YES
14	NIGERIA	YES	YES	NO
30	SENEGAL	YES	YES	YES
30	PERU	YES	YES	NO
17	ITALY (BORN in THE PHILIPPENES	YES	YES	YES
54	ROMANIA	YES	YES	YES
41	NIGERIA	YES	YES	NO
57	PAKISTAN	YES	YES	NO
4	ROMANIA	YES	YES	YES
42	ROMANIA	YES	YES	NO

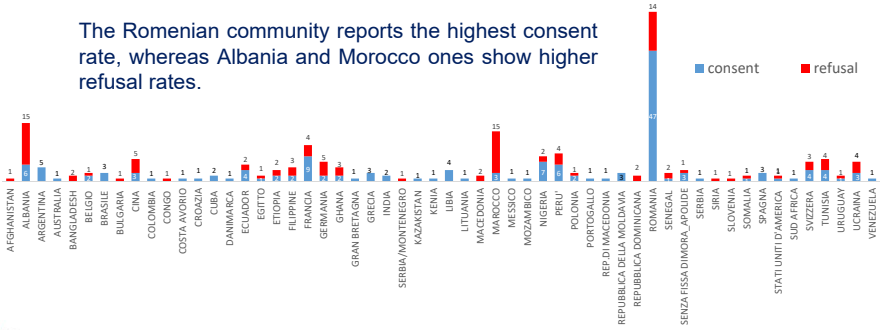
50% refusal rate!

Data from Piedmont experience

From 2004 to May 31st 2019 3.461 brain deaths have been diagnosed in Piedmont and Valle d'Aosta. Out of these **264** (7,6%) donors were born abroad, in 56 nations.

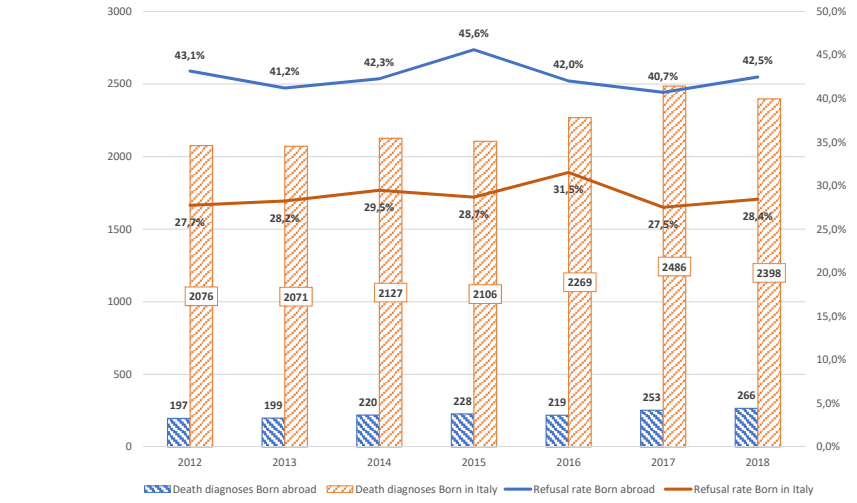
Piedmont and Valle d'Aosta 2004 - May 31° 2019			
Donors	**Average age (years)**	**Non suitable donors (%)**	**Refusals (%)**
Born in Italy	60,3	11,70	29,6
Born abroad	48,2	11,70	39

The Romenian community reports the highest consent rate, whereas Albania and Morocco ones show higher refusal rates.

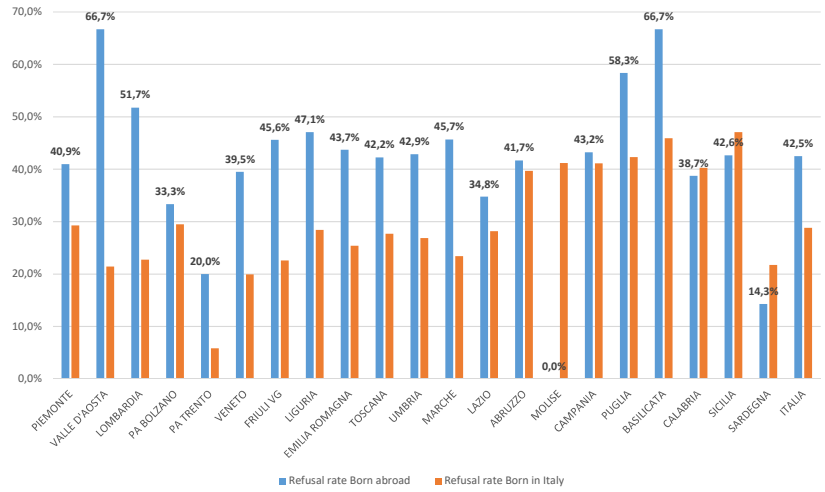


National data from Italian info tx system

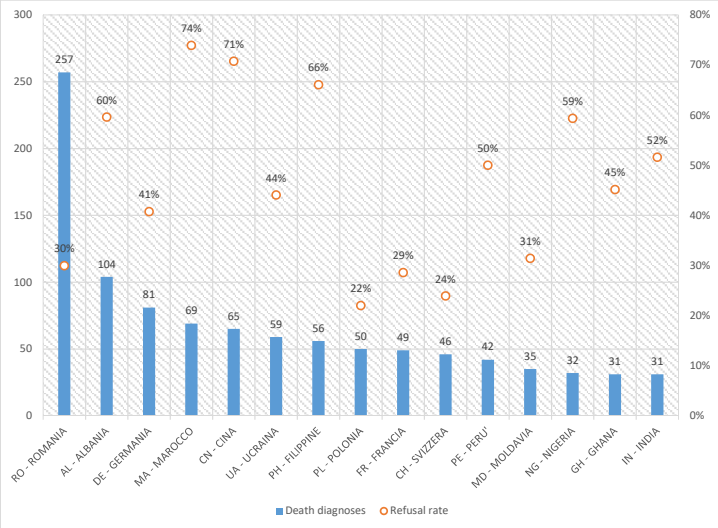
Death diagnoses and refusal rate in born abroad vs born in Italy donors



Refusal rate per donation region



Death diagnoses and refusal rate per nation of birth



LESSONS LEARNT

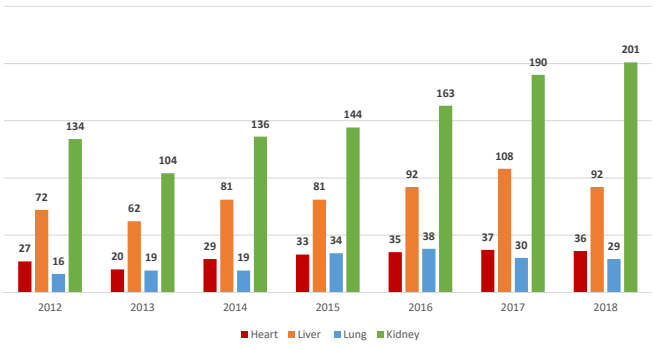
The most useful tool has proved to be the **specific training** of cultural mediators, since it has also allowed medical doctors and professionals to learn details of customs and habits of the different foreign groups.

Awareness of ICU doctors plays an important role

The official list of cultural mediators is a useful tool, but it may be difficult to involve them in urgency, therefore foreign-language-speaking colleagues have been more often involved and proved to be effective

An important population of donors

Donated organs from donors born abroad



2062 organs in seven years!

CONCLUSIONS

- Globalization requires us to take these donor population in due account
- Undeniable need of targeted initiatives
- ???

NHS
Blood and Transplant

Organ Donation Ambassador Programme

Caring Expert Quality

Presenters

NHS
Blood and Transplant

Katy Portell

Ambassador Programme Manager, NHS Blood and Transplant

Prafula Shah

Organ Donation Ambassador and Living Kidney Donor

NHS
Blood and Transplant

Background

- Based in the 2020 Strategy: 'Develop a community volunteer scheme to support Trust/Health Board donation committees to promote the benefits of donation in local communities, particularly amongst groups with little tradition of organ donation'.
- Recruit, train, and empower volunteers to deliver impactful messaging about organ donation across UK communities

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Pilot

- Piloted in Midlands and London Regions in 2018
- Development of recruitment, training, and operations
- Ambassadors:
  - Shared their powerful testimonies
  - Organised and generated opportunities in their own communities
  - Covered and supported events Specialist Nurses did not have capacity to cover and support

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Pilot

During the pilot period from August to October 2018, Ambassadors recorded:	
Volunteer Hours*	165
Approximated monetary value of volunteer time**	£2,675
Number of Promotional Activities	31
Interactions	1,512
Commitments to Converse with Families	727
Living Donation Interest	39
Sign-ups to the NHS Organ Donor Register	489

NHS Blood and Transplant

To Date

- Just finished recruiting and training in Great North Cluster: Northern, Yorkshire, and North West Regions (10% BAME)
- Total of 68 trained Ambassadors in 5 regions
- More support coming in to place due to programme's growth

Diversity - Experience

NHS Blood and Transplant

- 25 Donor Family Members
- 20 Transplant Recipients
- 6 Recipient Family Members
- 12 Living Donors
- 5 Community Charity/Group Leader
- 3 Former NHSBT employees
- 3 Healthcare Professionals
- 1 Waiting Patient

Diversity - Background

NHS Blood and Transplant

	Total Ambassadors	BAME	South Asian	Black/ African/ Caribbean	Other: Any other Ethnic Group
Midlands	12	8	8	0	0
London	18	9	7	0	2
Great North Cluster	40	8	5	2	1

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Insight

- Cultural Differences (including sub-cultures)
- Relevant historical events that inform culture and opinions
- Influencers and Key Organisations
- Examples
  - ‘What about others like my mum?’
  - Insight regarding communication (direct vs. indirect)
  - Understanding of faith (vs. culture)

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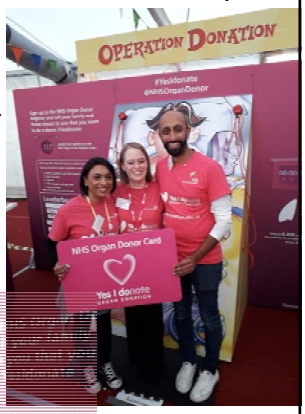
Success Story

- Donor Daughter and Organ Donation Ambassador
- Shree Kutch Leva Patel Community event
- Arranged for interactive game
- Recruited family and friends to help
- Record breaking sign-ups
- Further invitations and networking
- Building a presence and awareness



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Ambassador Testimony

Prafula Shah

Caring Expert Quality

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Thank You

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