

Length of the donation pathway

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Length of the donation, *retrieval and transplantation pathway*

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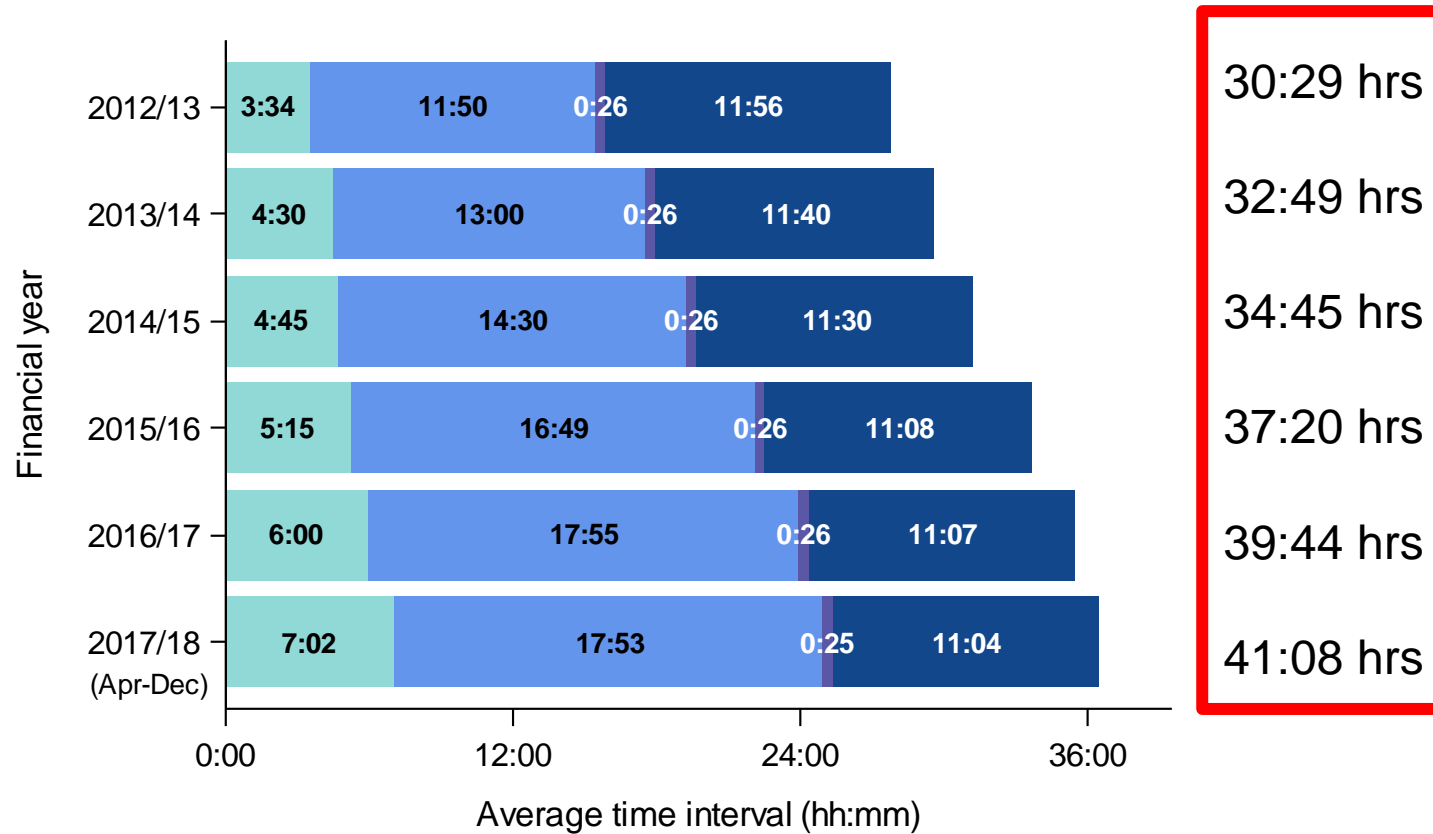
Outline

- The problem
- The impact of the problem
- The reasons for the problem
- The actions to resolve the problem



The problem

Length of the DCD pathway

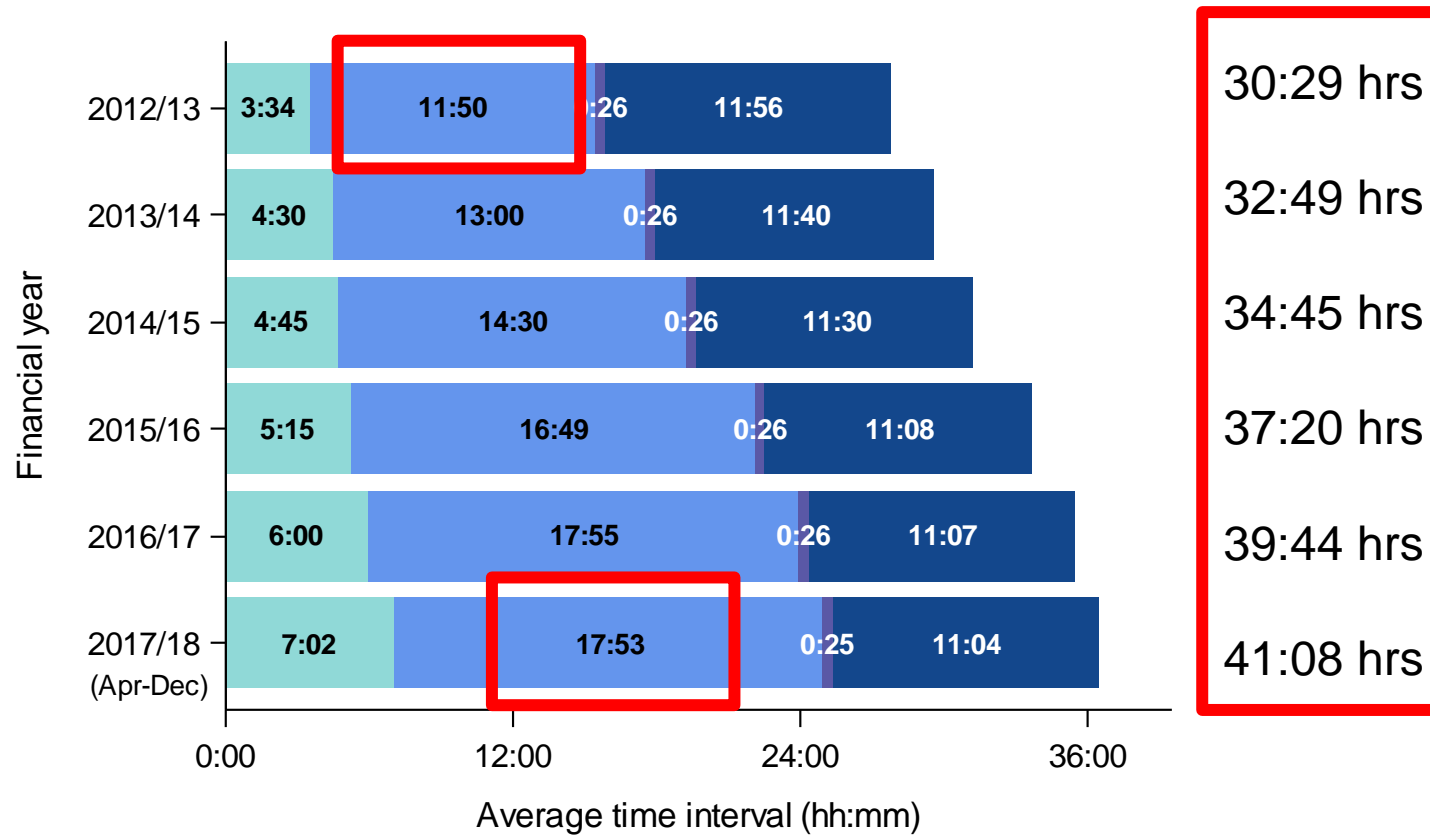


It now takes a median of 41 hours to get from referral of a DCD donor to implantation.

- Time from referral to formal approach
- Time from approach to withdrawal of life sustaining treatment
- Time from withdrawal of life sustaining treatment to retrieval operation start
- Time from retrieval operation start to kidney perfusion with recipient's blood

The problem

Length of the DCD pathway



It now takes a median of 41 hours to get from referral of a DCD donor to implantation.

With a median delay of 18 hours from family approach to treatment withdrawal.

- Time from referral to formal approach
- Time from approach to withdrawal of life sustaining treatment
- Time from withdrawal of life sustaining treatment to retrieval operation start
- Time from retrieval operation start to kidney perfusion with recipient's blood

The problem

Time of treatment withdrawal in DCD donors

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	3	5	9	12	16	28	133
Friday	26	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
													762

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	22	4	5	4	5	4	10	2	10	15	21	109
Tuesday	15	22	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	22	164
Friday	23	15	19	9	7	6	8	5	12	5	18	21	143
Saturday	23	18	13	8	10	9	7	7	4	9	13	18	139
Sunday	17	15	9	4	9	3	5	3	5	7	9	15	101
													828

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	5	4	7	6	8	8	8	10	102
Tuesday	19	24	1	11	11	9	11	7	9	4	12	20	155
Wednesday	25	27	1	17	3	10	3	12	6	10	11	21	172
Thursday	30	28	2	10	10	12	7	9	6	11	19	18	181
Friday	26	37	17	12	12	5	7	10	7	9	12	14	183
Saturday	32	28	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
													1088

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	13	13	5	7	7	5	5	8	3	7	8	12	86
Tuesday	24	19	20	6	14	13	11	9	6	10	10	19	161
Wednesday	19	26	25	3	13	8	3	11	6	10	14	17	171
Thursday	19	18	18	1	10	19	16	5	10	9	7	9	151
Friday	18	22	14	2	15	21	6	12	7	13	11	22	181
Saturday	24	26	15	12	18	19	11	9	5	9	11	9	183
Sunday	17	16	13	6	7	12	10	8	6	7	2	5	109
													1088

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	3	5	13	15	7	3	7	14	113
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	161
Thursday	21	21	22	17	11	19	26	10	12	9	11	15	194
Friday	16	28	22	16	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
													1108

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

Treatment withdrawal in DCD donors has been pushed from the evening to the following morning.

The impact of the problem

Donor family refusal

Table 5 **Reasons given why family did not give consent**

	DBD		DCD	
	N	%	N	%
Patient previously expressed a wish not to donate	83	20.1	162	21.3
Family were not sure whether the patient would have agreed to donation	63	15.3	114	15.0
Family did not want surgery to the body	33	12.3	35	8.0
Family felt the length of time for donation process was too long	19	4.6	125	16.4
Family felt the patient had suffered enough	21	5.1	33	7.0
Family felt it was against their religious/cultural beliefs	45	10.9	21	2.8
Strong refusal - probing not appropriate	27	6.6	39	5.1
Family were divided over the decision	25	6.1	32	4.2
Family felt the body needs to be buried whole (unrelated to religious or cultural reasons)	21	5.1	23	3.0
Family did not believe in donation	20	4.9	23	3.0
Family concerned that organs may not be transplanted	4	1.0	8	1.1
Family had difficulty understanding/accepting neurological testing	3	0.7	2	0.3
Family wanted to stay with the patient after death	2	0.5	11	1.4
Family concerned that other people may disapprove/be offended	1	0.2	0	0.0
Families concerned about organ allocation	0	0.0	2	0.3
Other	25	6.1	74	9.7
Total	412	100.0	760	100.0

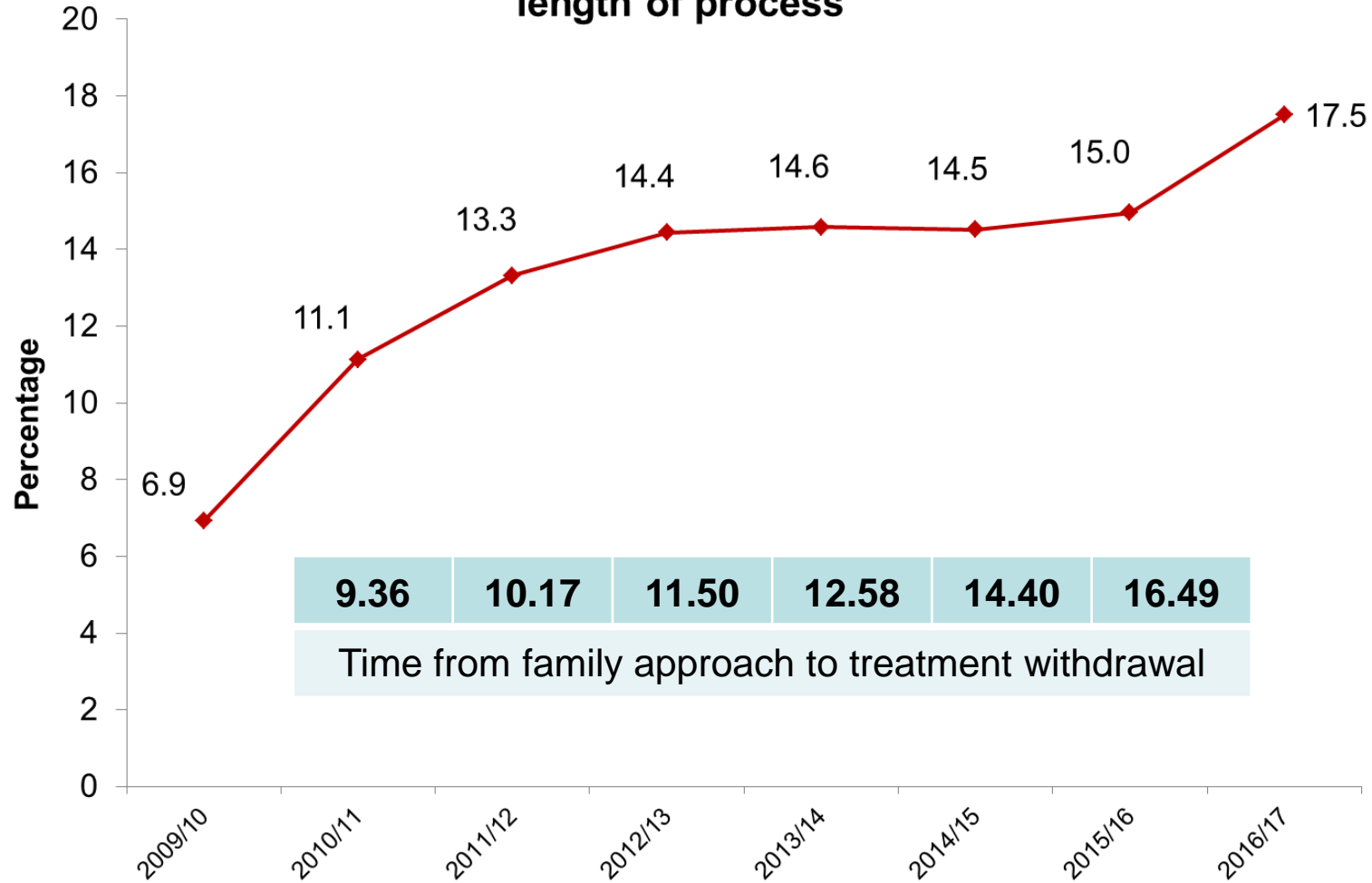
Potential Donor Audit
2016/17

www.odt.nhs.uk/statistics-and-reports/potential-donor-audit/

The impact of the problem

Donor family refusal

Families of eligible DCD donors declining donation due to length of process



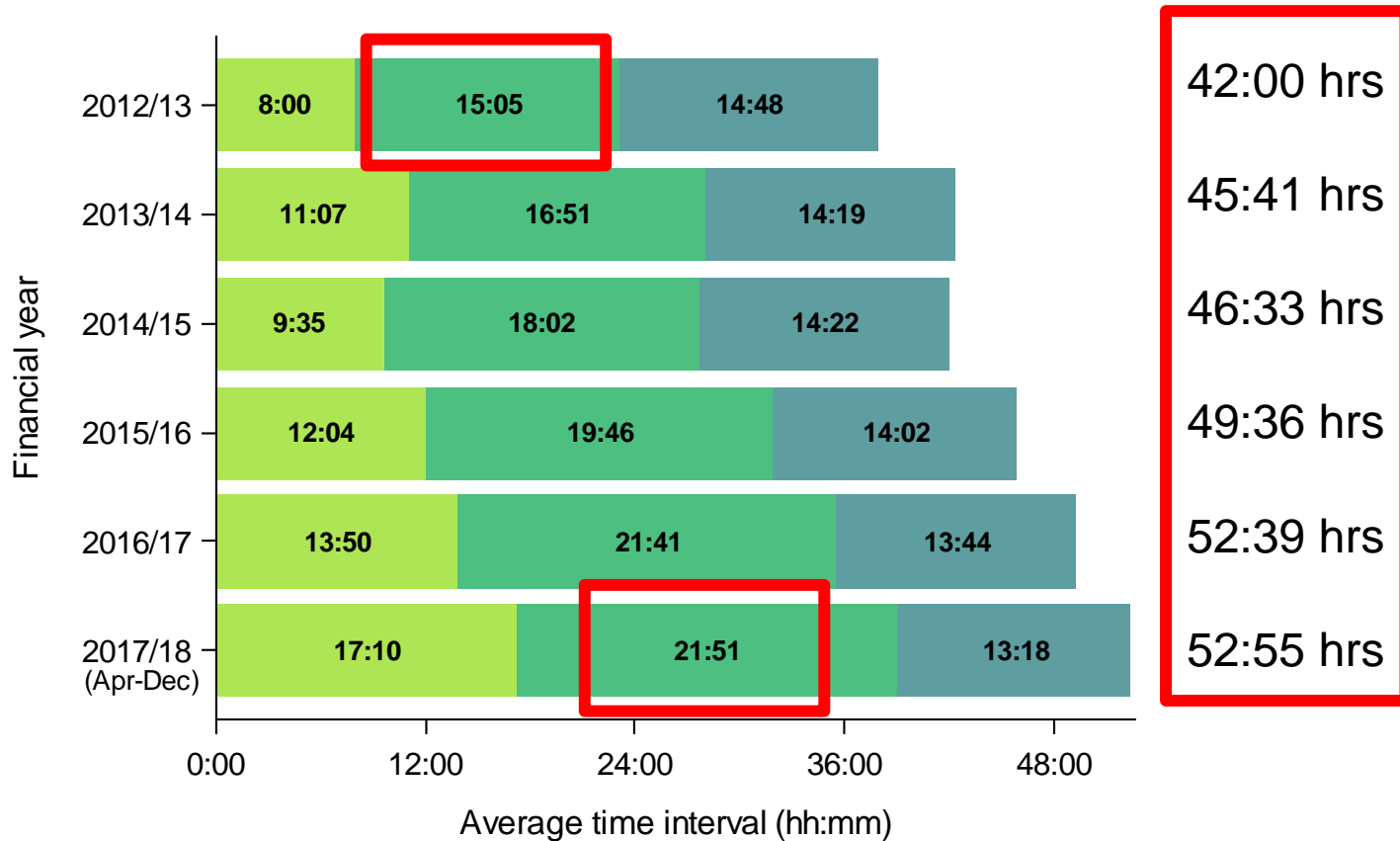
The impact of the problem

Donor family distress

- Medical
 - We are not being completely honest with families
 - SN-OD processes are too restrictive and inflexible
 - We risk damaging grieving families
- Family
 - Father: “You may gain an organ donor from my son, but I will not allow any other member of my family to be an organ donor because this is unacceptable.”

The problem

Length of the DBD pathway



- Time from referral to formal approach
- Time from approach to retrieval operation start
- Time from retrieval operation start to kidney perfusion w ith recipient's blood

It now takes a median of 53 hours to get from referral of a DBD donor to implantation.

DBD retrieval times

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	4	13	13	10	3	5	4	2	2	0	2	6	65
Tuesday	16	12	10	5	8	4	1	4	1	0	5	6	72
Wednesday	12	17	9	15	5	6	2	0	2	1	0	5	74
Thursday	9	14	10	8	5	5	4	2	0	4	3	7	72
Friday	10	14	19	3	5	5	2	2	0	2	0	3	65
Saturday	7	14	9	11	4	6	2	2	0	2	2	4	64
Sunday	7	10	14	5	2	7	2	2	1	0	5	6	62
													490

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	7	19	9	6	4	5	3	2	1	0	2	6	65
Tuesday	12	15	11	15	9	4	5	2	2	3	4	6	92
Wednesday	12	16	22	14	12	5	1	2	0	2	5	2	94
Thursday	7	5	10	13	7	4	4	1	2	0	6	3	70
Friday	10	9	17	12	10	9	7	2	4	3	5	3	92
Saturday	10	16	17	9	6	9	3	4	1	0	2	2	79
Sunday	11	10	11	6	9	10	3	5	2	1	1	4	72
													596

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	12	12	9	2	9	12	6	4	2	2	1	6	90
Tuesday	8	14	17	9	13	12	6	4	1	5	6	5	105
Wednesday	10	16	19	9	10	11	6	3	2	1	6	4	111
Thursday	12	9	21	1	5	9	9	7	1	1	4	6	100
Friday	8	17	15	2	11	10	3	2	1	5	1	4	66
Saturday	7	16	8	20	5	7	6	2	4	6	4	5	92
Sunday	9	15	17	7	12	8	10	3	2	0	1	6	96
													691

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	9	14	11	17	11	16	7	4	2	4	6	4	105
Tuesday	10	15	12	16	10	16	7	10	5	4	5	9	116
Wednesday	5	12	22	13	6	10	10	9	1	5	2	7	104
Thursday	10	12	9	16	5	12	16	7	4	5	4	2	105
Friday	9	16	12	9	12	12	6	11	2	1	2	6	95
Saturday	6	13	10	10	5	17	10	5	4	3	2	7	92
Sunday	8	10	11	9	9	9	6	3	4	0	5	6	80
													699

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	8	20	12	5	6	13	13	8	5	4	2	7	106
Tuesday	6	9	15	15	8	19	16	6	9	6	5	3	119
Wednesday	12	5	12	16	6	16	10	4	6	2	4	105	
Thursday	12	12	14	16	4	16	12	10	4	7	3	5	117
Friday	9	8	8	13	13	8	10	6	7	3	2	4	91
Saturday	6	9	12	12	5	15	11	10	7	3	2	7	102
Sunday	5	9	15	4	6	9	5	10	10	3	3	7	88
													729

Shift in time of day from 2-5 am to 6-12 am

DBD organ retrieval is now a daytime activity that very often competes with other demands on acute theatres

Time of mobilisation

Figure 6a Mobilisation time of abdominal teams

		Hour																								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Total
2015/16	Mon	23	15	7	9	11	10	10	9	18	8	10	3	8	9	0	3	2	1	4	2	8	9	9	14	202
	Tue	8	15	11	21	15	14	16	10	14	15	12	6	6	2	8	4	7	3	3	1	5	6	11	18	231
	Wed	14	20	25	26	22	19	12	19	16	11	11	11	6	2	5	7	7	4	4	4	5	10	20	17	297
	Thu	18	20	18	18	23	12	7	23	19	15	8	10	7	4	5	8	6	1	9	2	7	10	15	11	276
	Fri	13	14	21	14	12	18	13	18	18	8	14	10	6	6	4	2	2	8	4	6	4	7	12	14	248
	Sat	15	23	15	18	6	17	16	14	14	16	13	10	5	7	5	2	2	2	2	3	7	10	6	13	241
	Sun	9	13	19	11	5	8	8	13	13	13	11	7	8	5	1	0	4	3	7	3	9	4	10	20	204
Total	100	120	116	117	94	98	82	106	112	86	79	57	46	35	28	26	30	22	33	21	45	56	83	107	1699	
2016/17	Mon	9	7	13	13	6	13	13	14	15	6	13	3	11	9	8	4	2	1	2	2	5	6	9	3	187
	Tue	10	22	8	18	10	10	18	12	17	10	14	8	8	10	5	2	3	5	5	4	4	11	10	13	237
	Wed	12	17	11	21	9	7	20	20	13	11	14	6	12	15	10	4	9	6	5	4	12	6	12	15	271
	Thu	11	19	14	17	19	12	18	20	21	15	15	6	8	6	9	8	7	6	5	4	5	7	6	7	265
	Fri	10	14	20	22	17	15	14	17	12	16	6	8	10	5	8	3	6	7	2	6	8	7	9	14	256
	Sat	17	20	17	14	14	17	14	21	21	19	15	15	9	3	4	5	1	7	3	8	7	6	7	8	272
	Sun	16	11	9	9	9	12	14	18	14	10	13	9	6	4	5	6	5	3	4	5	10	3	10	15	220
Total	85	110	92	114	84	86	111	122	113	87	90	55	64	52	49	32	33	35	26	33	51	46	63	75	1708	

Donor hospital delays for retrieval Abdominal teams

DBD

DCD

Fig. 9.1 Wait at donor hospital to start retrieval - proceeding DBD abdominal team attendances

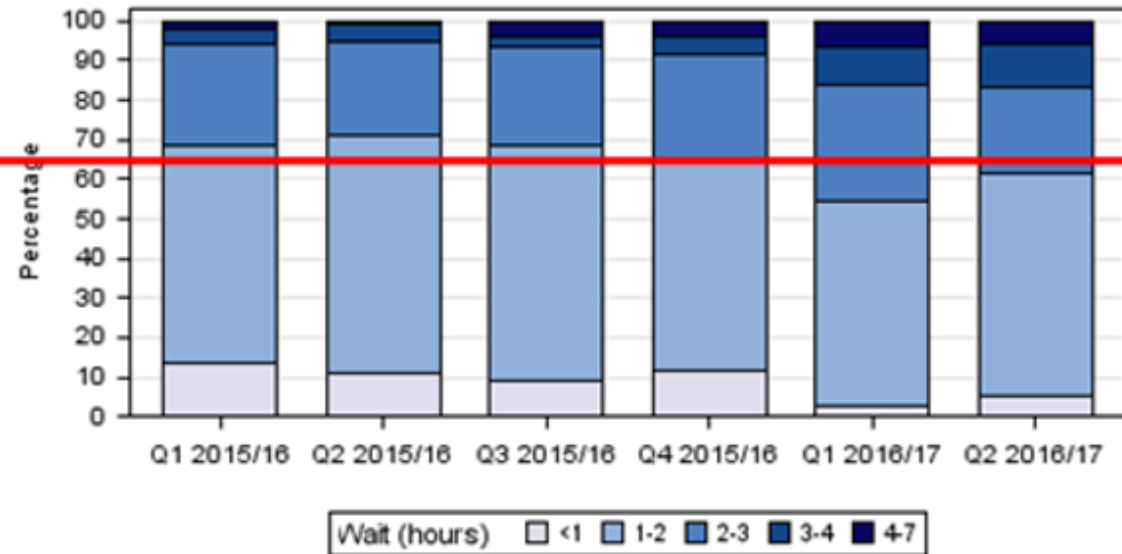
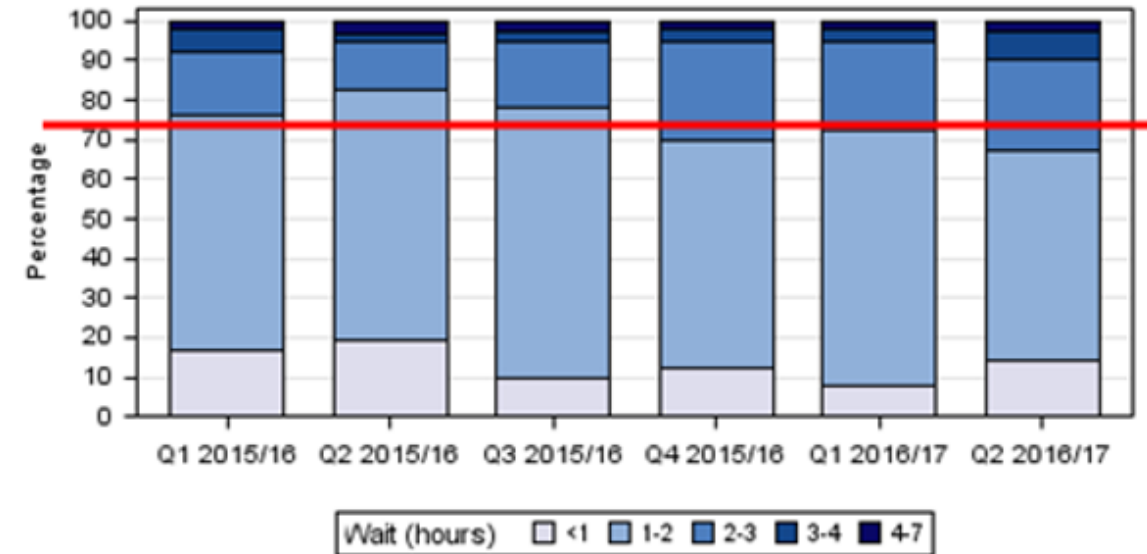


Fig. 9.2 Wait at donor hospital for treatment withdrawal - potential DCD abdominal team attendances



Donor hospital delays for retrieval Cardiothoracic

DBD

DCD

Fig. 9.3 Wait at donor hospital to start retrieval - proceeding DBD cardiothoracic team attendances

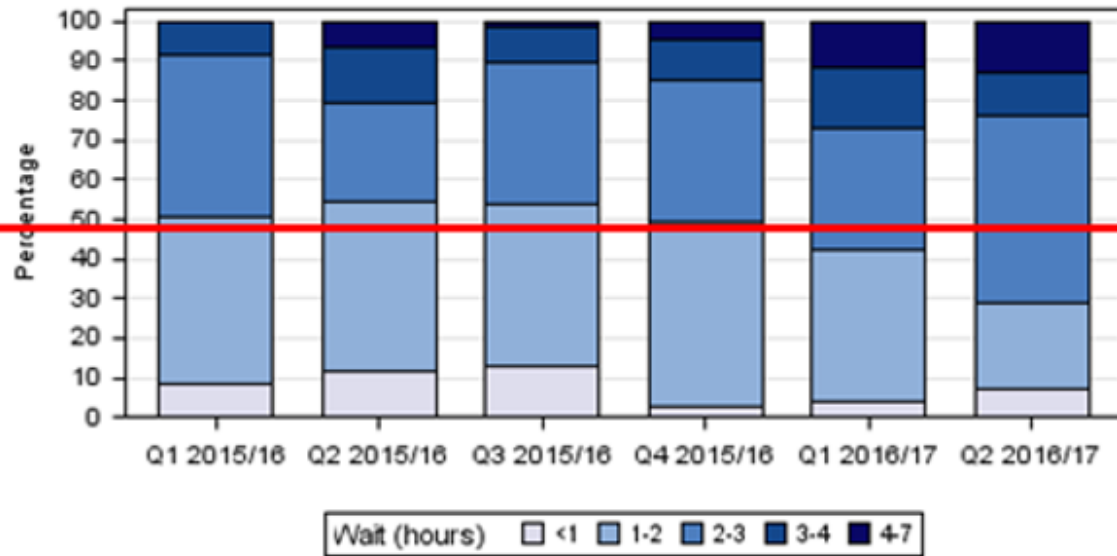
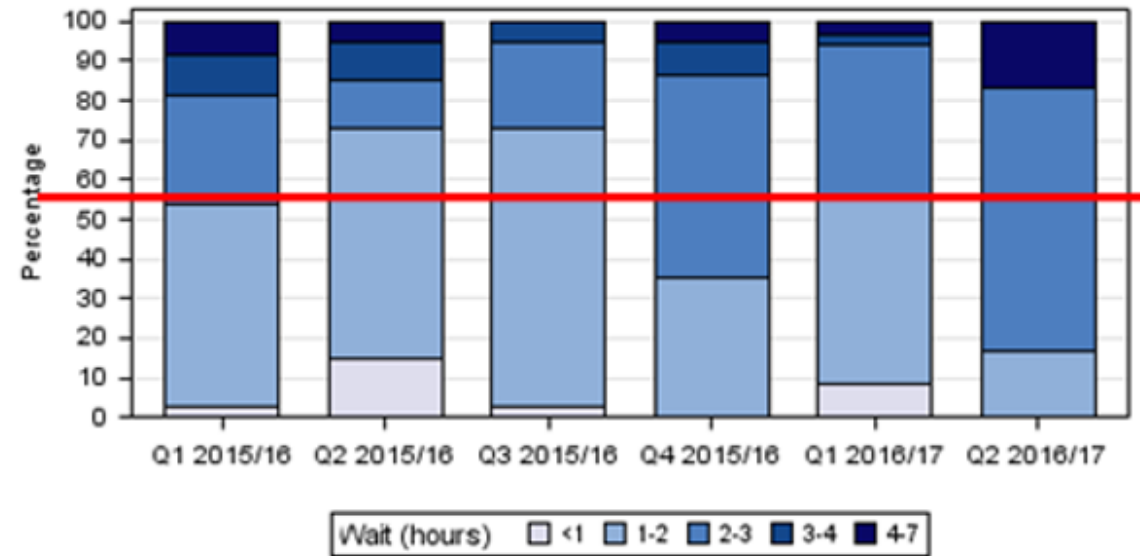
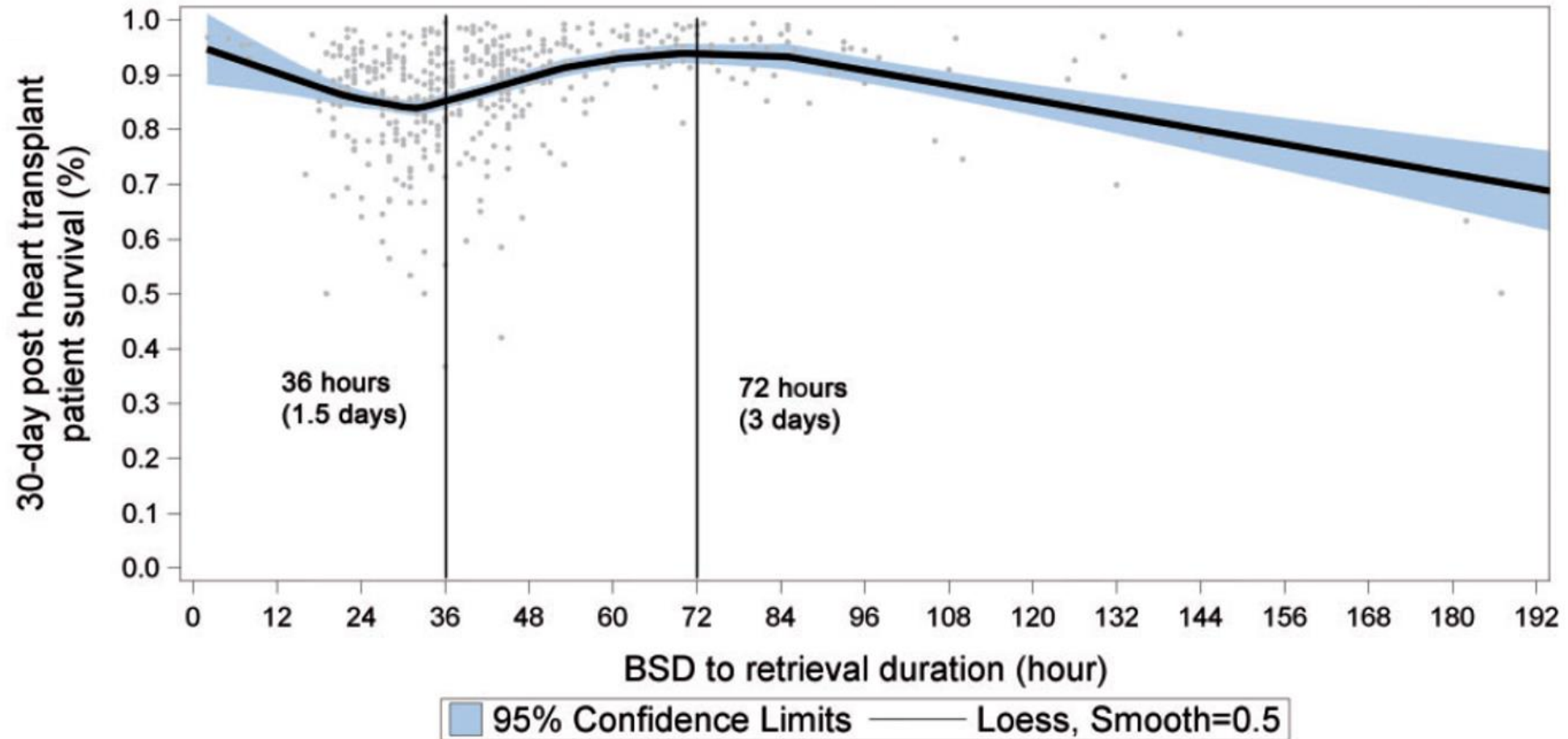


Fig. 9.4 Wait at donor hospital for treatment withdrawal - potential DCD cardiothoracic team attendances



Length of the DBD pathway

Benefits in heart retrieval

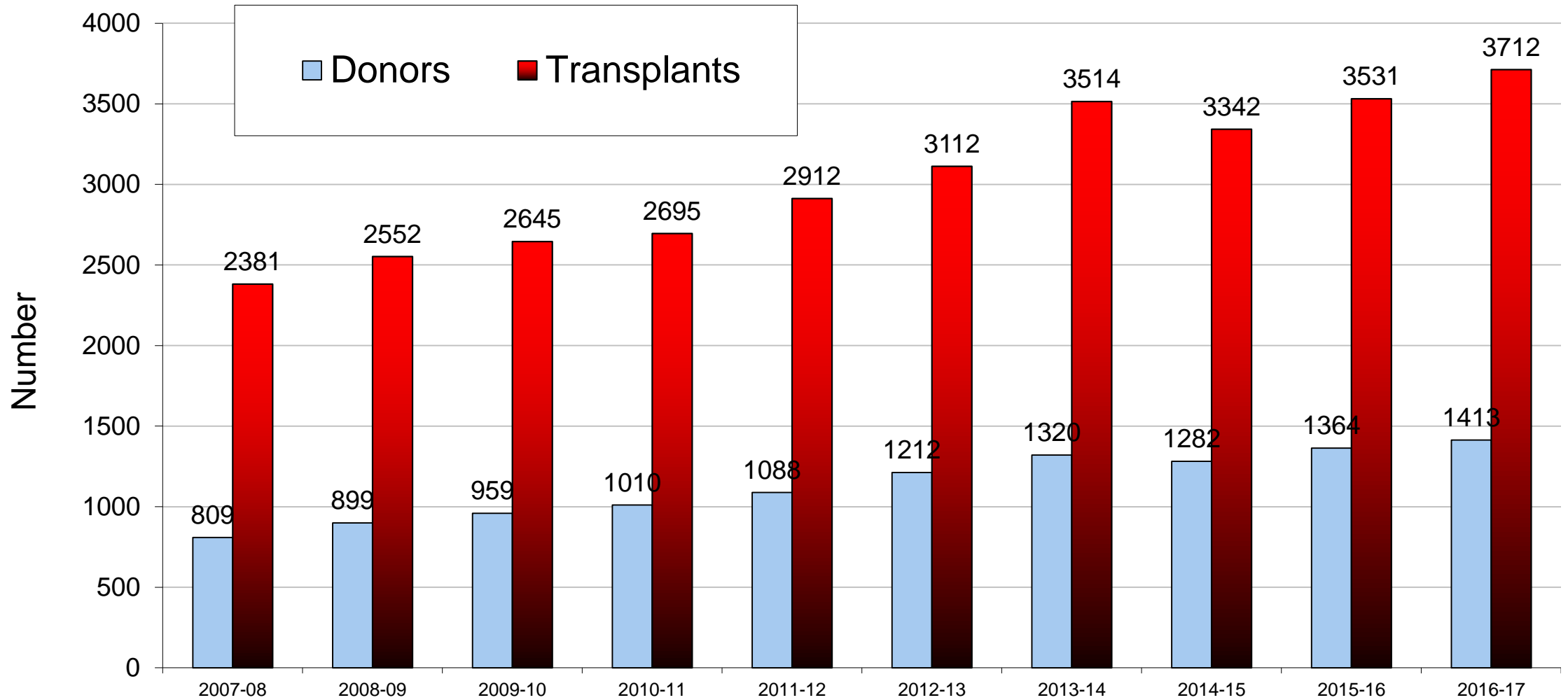


Dimarakis et al. The interval between brainstem death and cardiac assessment influences the retrieval of hearts for transplantation. *Eur J Cardiothorac Surg* 2018; doi:10.1093/ejcts/ezx513.

The consequences

- Donor hospitals
 - Delays for families (DCD)
 - Bed blocking on ICU
 - Encroachment into working day (acute theatre)
- SN-OD workforce
 - Multiple SN-ODs
 - Higher out of hours and transport costs
 - Reduced hospital development time
- Recipient coordination
 - Increasing out of hours workload
 - Impact on day job
- Retrieval
 - Retrievals over-running into following day
- Transplantation
 - Implantation out of hours

Deceased donation and transplantation in the UK



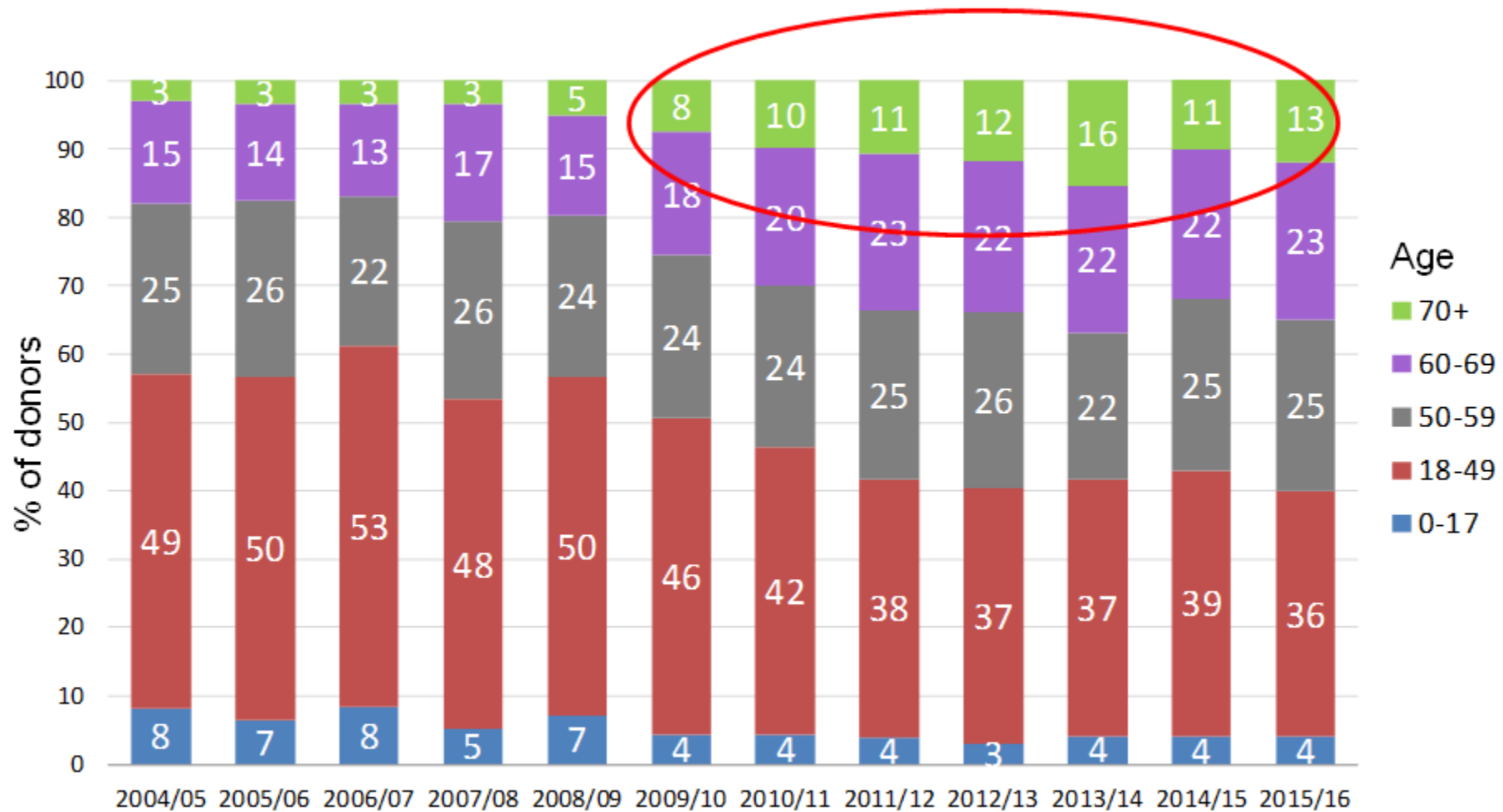
Referrals and attendances

		Referred to SNOD	SNOD attended	Family approached	Actual donors	Organs transplanted
2014/15	DBD	1671	1546	1284	772	2604
	DCD	5156	3138	2019	510	1132
2015/16	DBD	1684	1552	1296	785	2644
	DCD	5402	3231	1942	579	1288
2016/17	DBD	1740	1605	1339	829	2722
	DCD	5333	3126	1832	584	1303

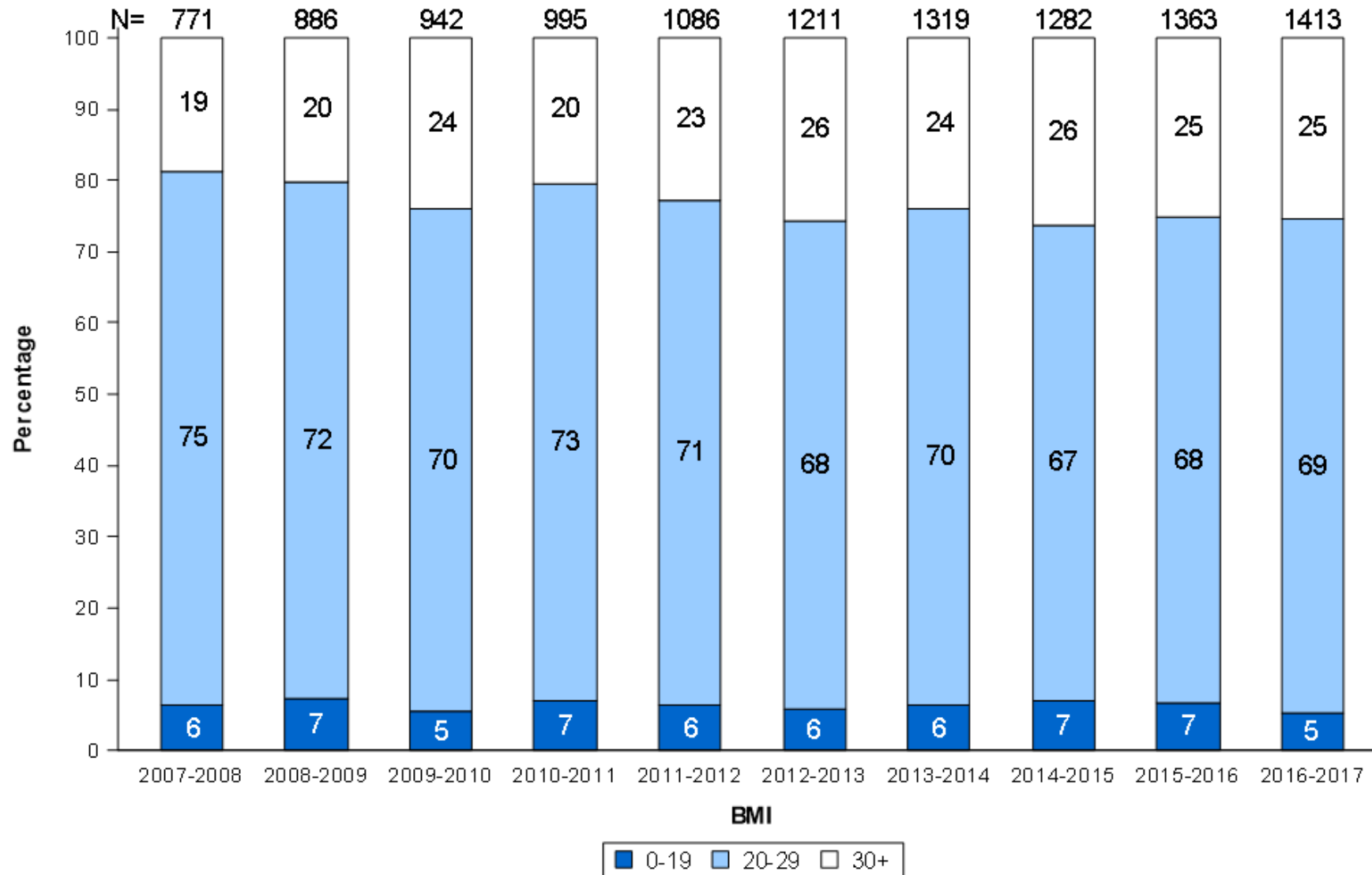
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2014/15	DBD	1671	1546	1284	772	2604
	DCD	5156	3138	2019	510	1132
2015/16	DBD	1684	1552	1296	785	2644
	DCD	5402	3231	1942	579	1288
2016/17	DBD	1740	1605	1339	829	2722
	DCD	5333	3126	1832	584	1303

Age of deceased donors in the UK *Blood and Transplant*



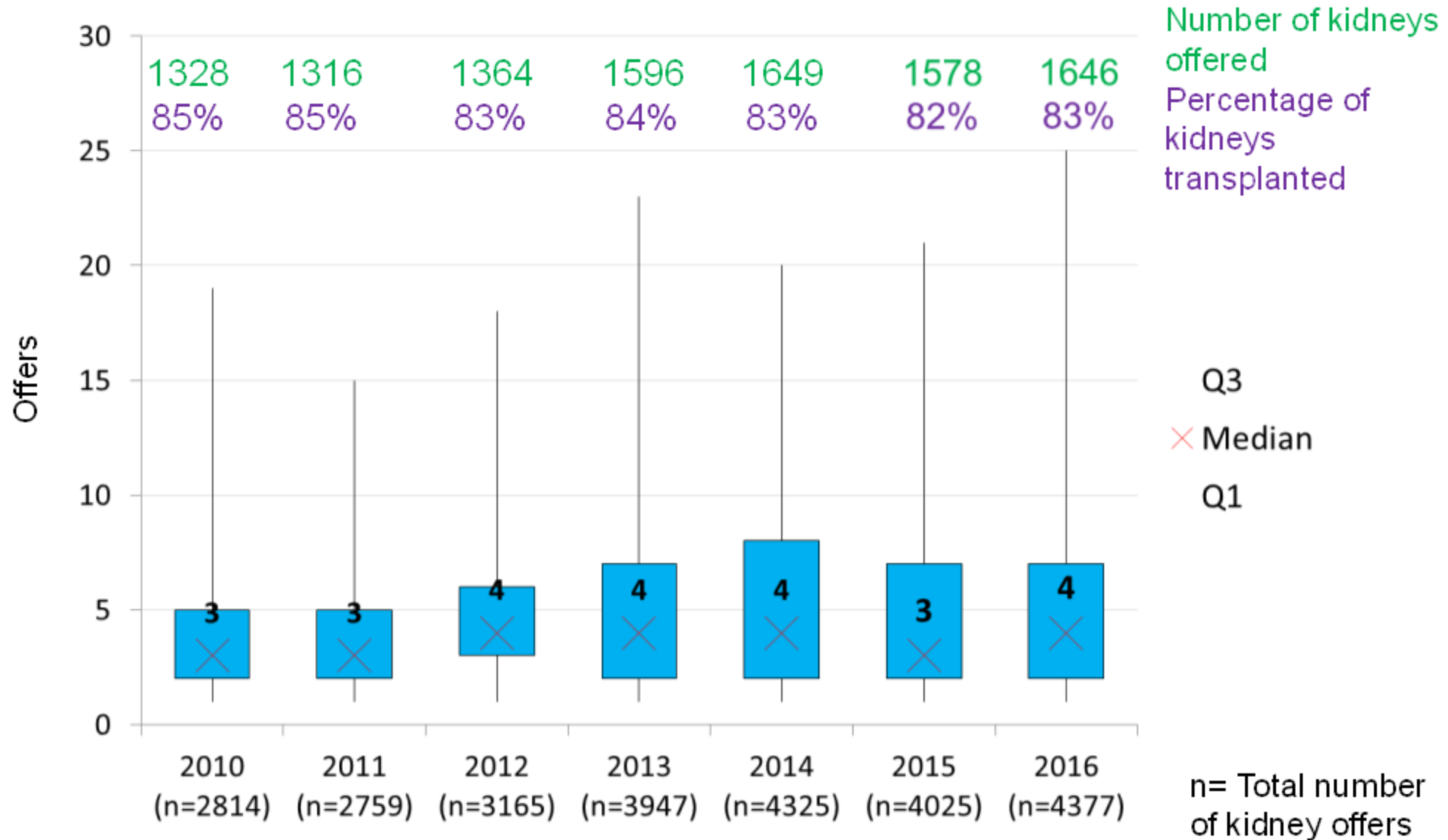
BMI of deceased donors in UK



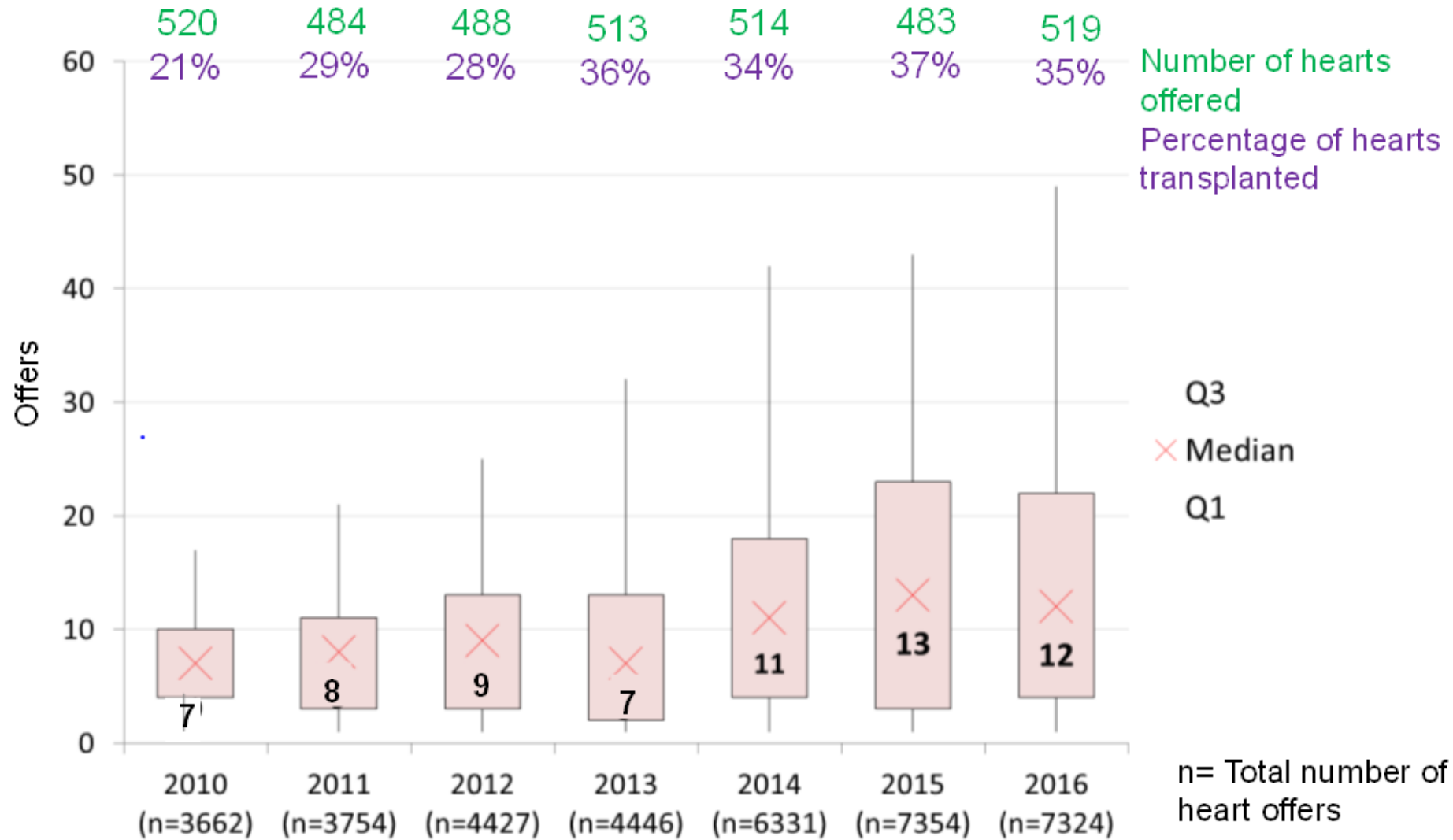
Average number of organs donated

Financial year	DBD solid organ donors	Total organs donated by DBD donors	Average organs donated per DBD donor	DCD solid organ donors	Total organs donated by DCD donors	Average organs donated per DCD donor
2012/13	705	2787	4	507	1326	2.6
2013/14	780	3116	4	540	1420	2.6
2014/15	772	2962	3.8	510	1398	2.7
2015/16	785	3038	3.9	579	1621	2.8
2016/17	829	3118	3.8	584	1622	2.8

Offers per DBD kidney donor



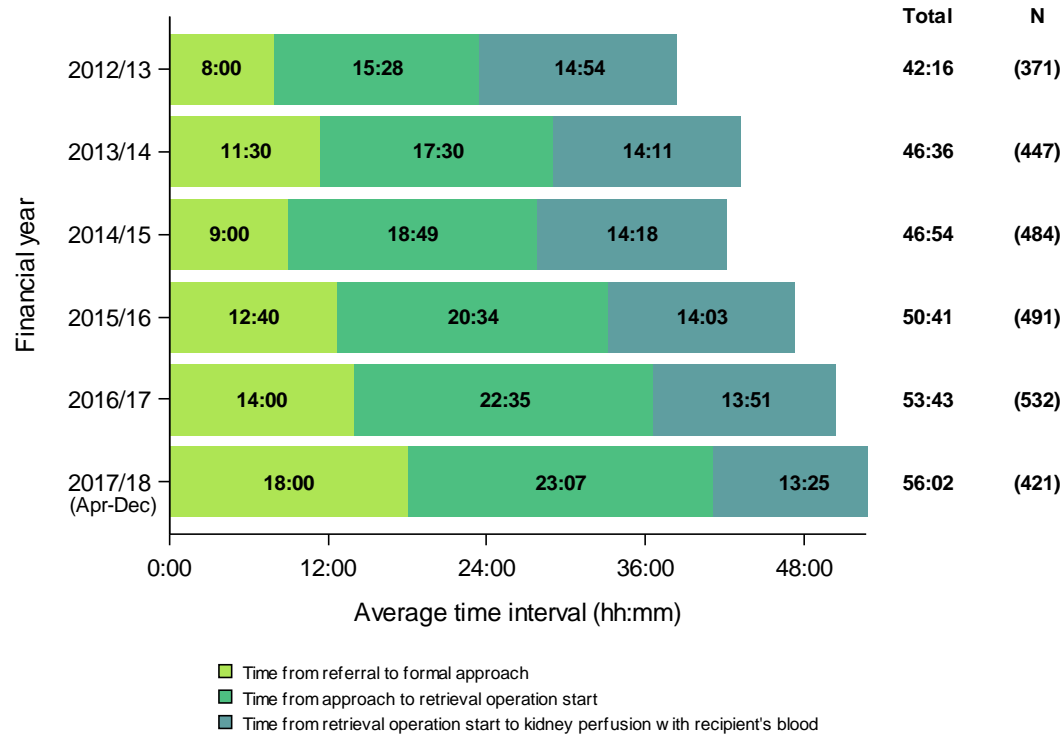
Offers per DBD heart donor



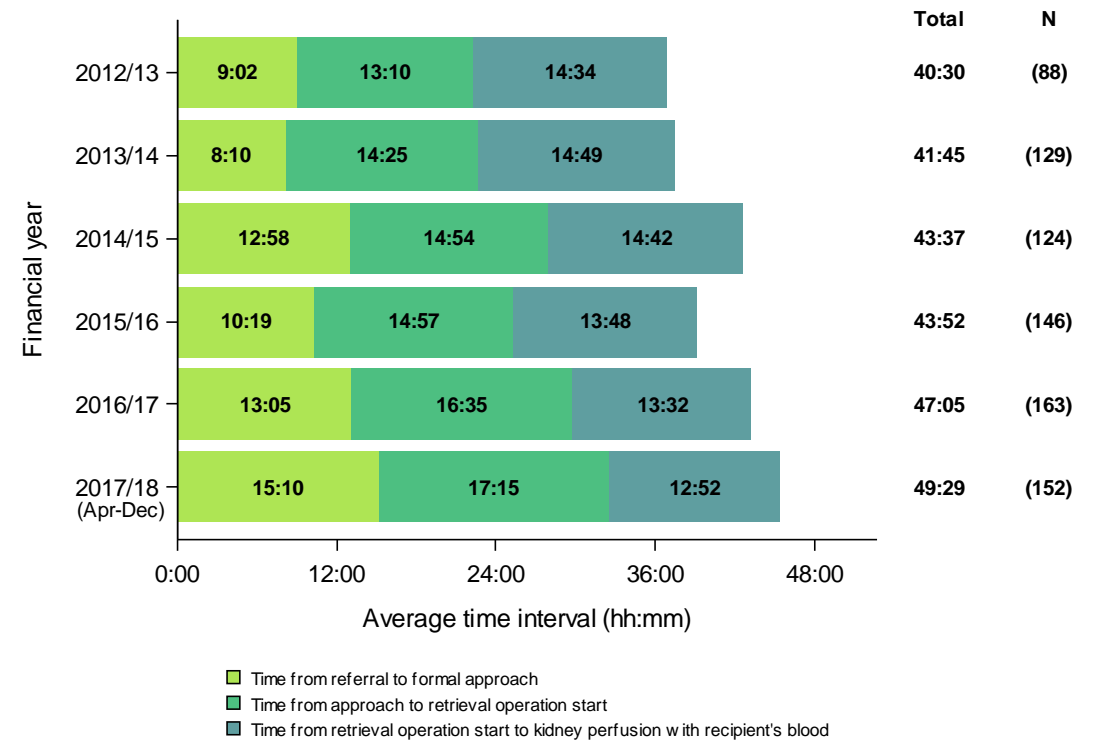
Length of DBD pathway

Impact of cardiothoracic offering and retrieval

Cardiothoracic organs offered



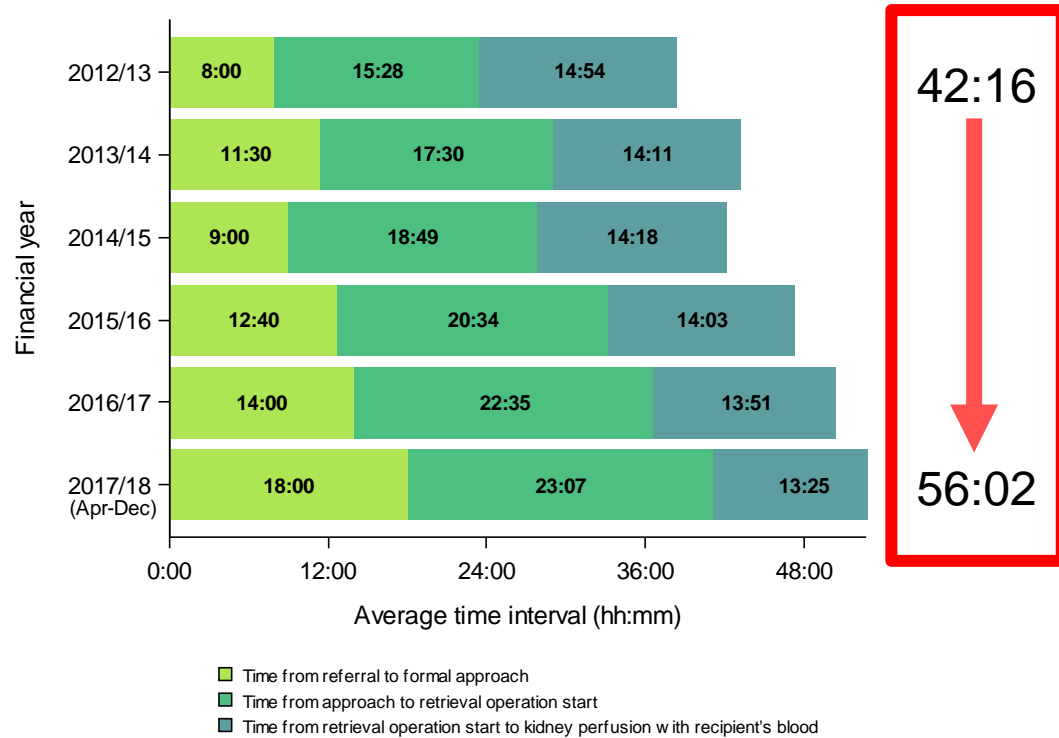
Cardiothoracic organs not offered



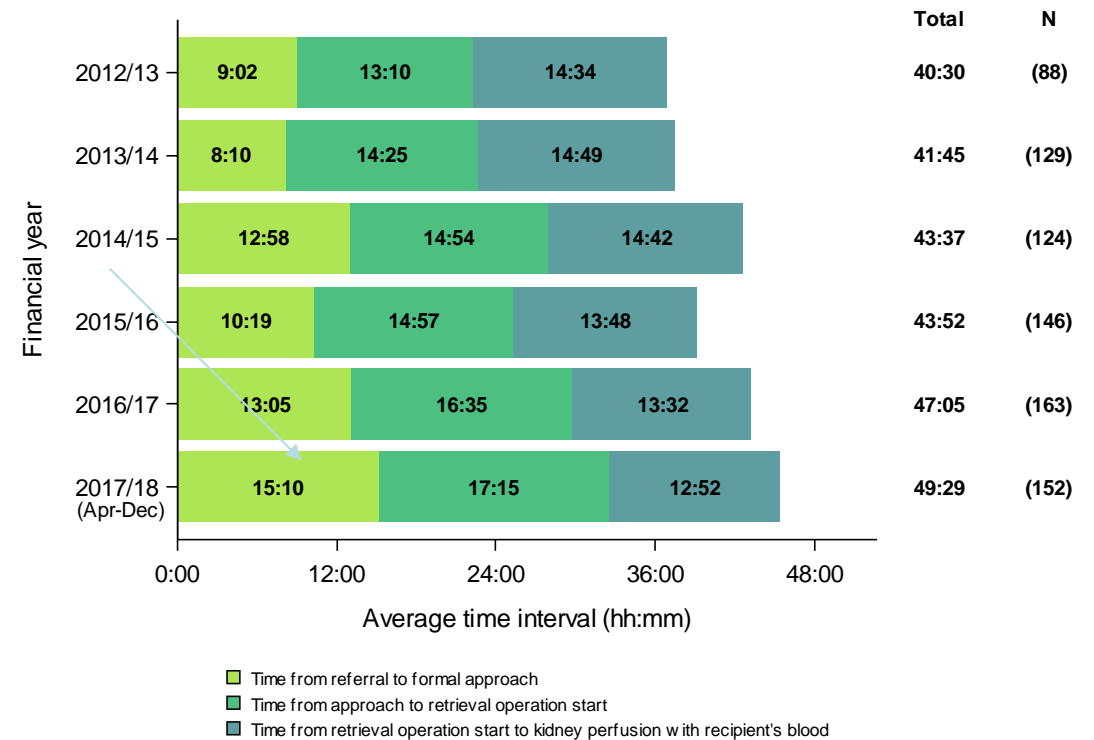
Length of DBD pathway

Impact of cardiothoracic offering and retrieval

Cardiothoracic organs offered



Cardiothoracic organs not offered

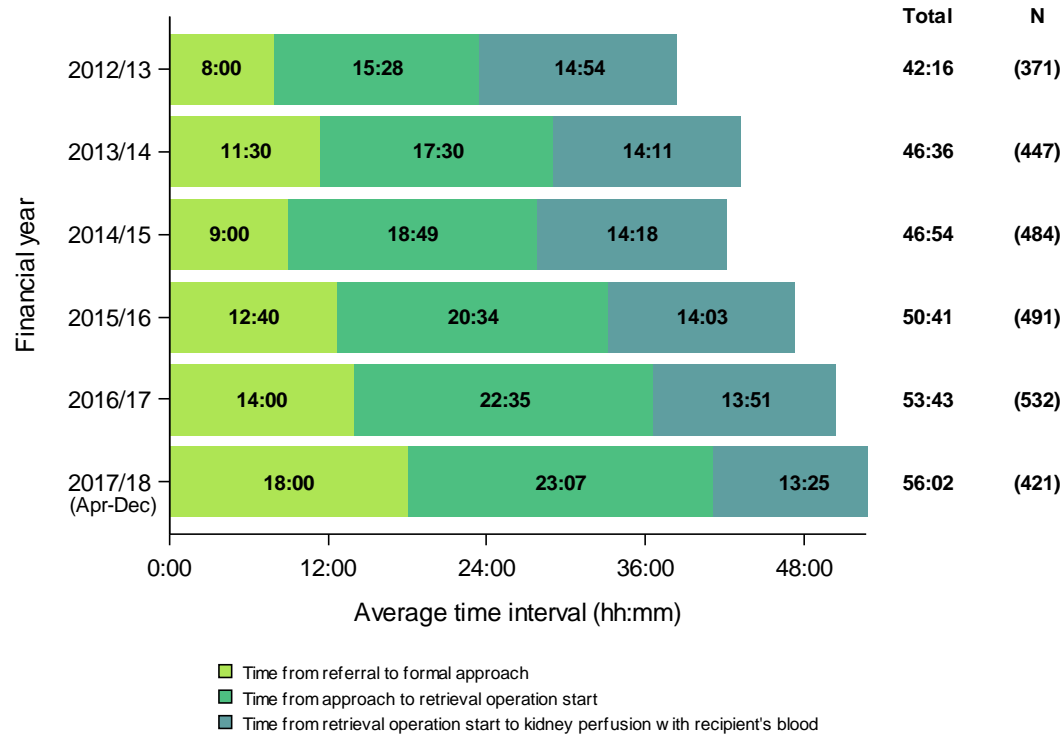


Overall process is 14 hours longer if cardiothoracic organs are offered

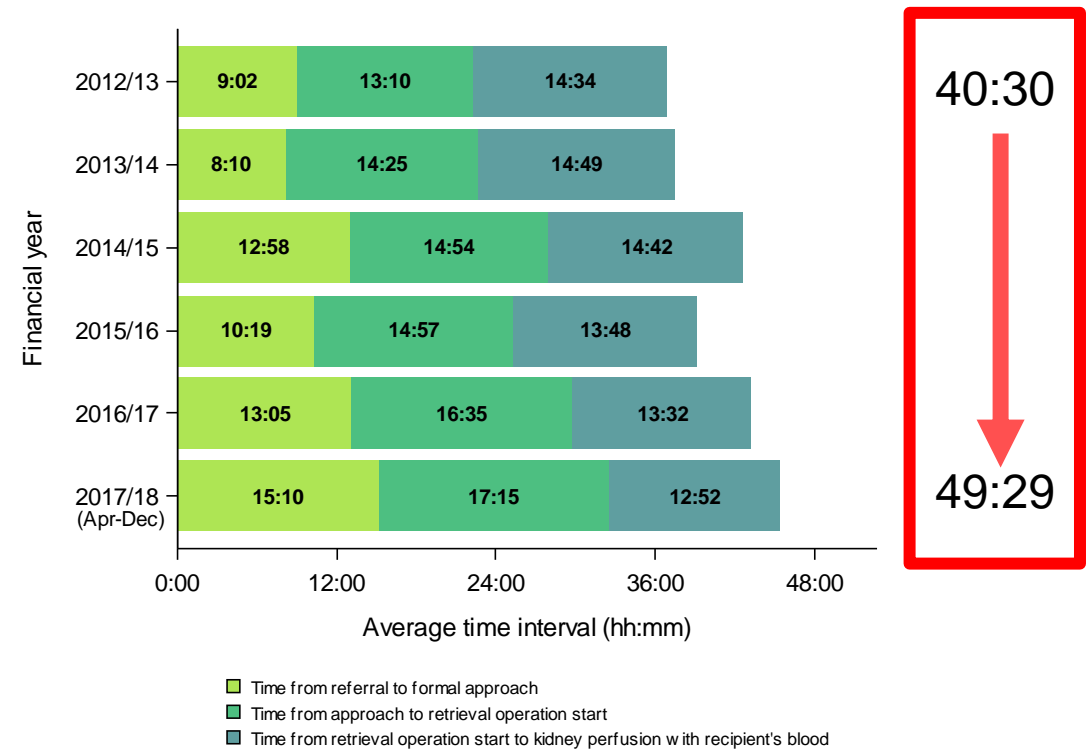
Length of DBD pathway

Impact of cardiothoracic offering and retrieval

Cardiothoracic organs offered



Cardiothoracic organs not offered



But is still 9 hours longer even if cardiothoracic organs are not offered

The actions

Preparation in donor hospital

- Early referral
- Expedient preparation in the donor hospital - Midlands
 - Checklist for ICUs
 - Medical and GP notes
- Earlier blood sampling and dispatch – all regions
- Prompt diagnosis of brain-stem death – South West
- Withdrawal in theatre (DCD) – South Central
- Review of SN-OD handover times

The actions

Allocation and offering

- Maximum 45 minute response time – all centres and organs
- Standard methods for communication
 - SMS messaging, pager, fax
- New cardiothoracic offering protocol
 - Simultaneous consideration for all patients on a centre's waiting list
- Review of kidney allocation policies
 - Mobilisation prior to acceptance of one organ

The actions

Allocation and offering II

- Standardisation of fast-track policies
 - Communication
 - Information re. declines (Montgomery)
- Automated simultaneous offering for positive microbiology
- Enhanced EOS functionality
 - More donor information visible to recipient centres

The actions

Retrieval

- Prompt to mobilise donor to theatre (DBD)
- Cease mobilisation between 6 - 9am
 - avoid mobilising close to handover time
- Earlier mobilisation of cardiothoracic teams
 - Bronchoscopy
 - Pulmonary artery catheterisation
- Embargo on requests to delay retrieval

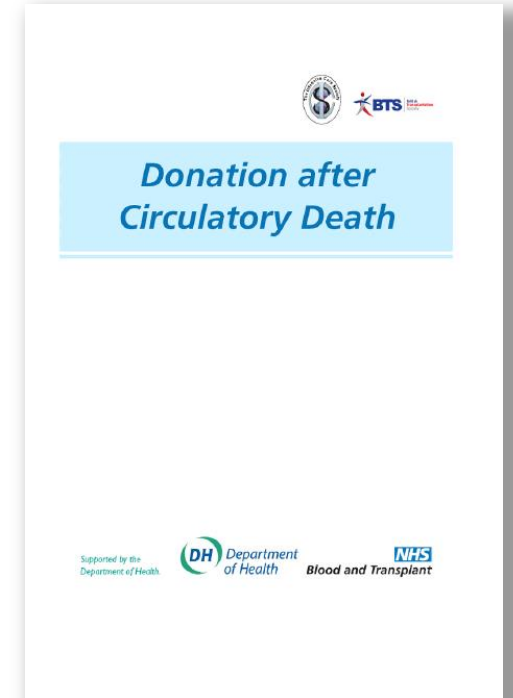
Next steps

- The NHSBT Hub
 - IT solutions for streamlined offering and acceptance
 - Live tracking of all donors
- Named patient allocation schemes
 - ? Solution for upstream delays
 - Could add to delays in implantation
- Stronger focus on DCD pathway
- Performance metrics
 - Target times for completion in theatres
- Stakeholder review meeting

Final remarks

At present most organs are offered to transplant centres sequentially rather than simultaneously. **This can result in considerable delays that place an intolerable and unnecessary burden on referring units and donor families.**

Simultaneous offering to all relevant centres would reduce these delays significantly, and must be addressed by NHSBT as a matter of urgency.



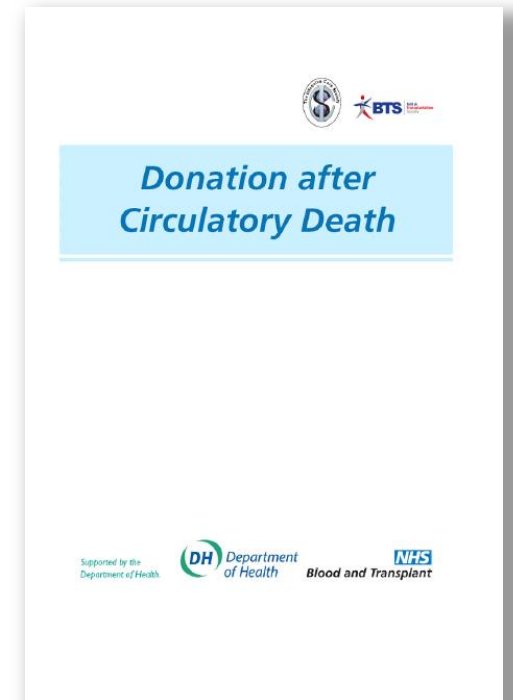
Final remarks

In 2010/11, for DCD

- total length 29 hours
- Consent to withdrawal 9.5 hours

In 2017/18, for DCD

- total length 41 hours
- Consent to withdrawal 18 hours



Consensus statement on DCD
British Transplantation Society / Intensive Care Society
2010

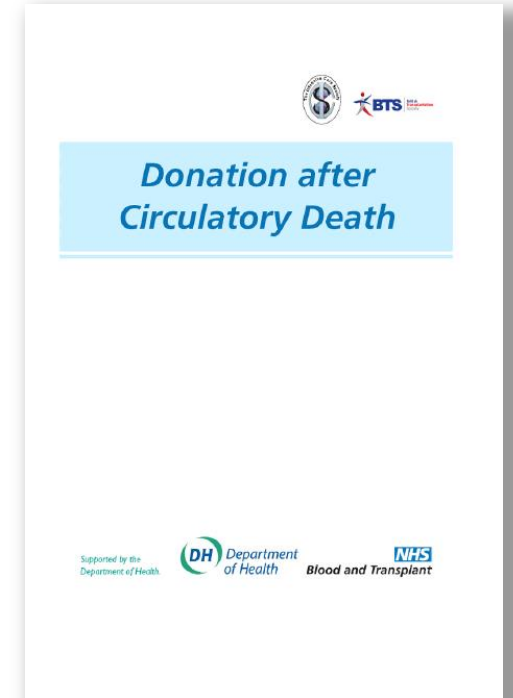
Final remarks

In 2010/11, for DCD

- total length 29 hours
- **Consent to withdrawal 9.5 hours**

In 2017/18, for DCD

- total length 41 hours
- **Consent to withdrawal 18 hours**



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