POTENTIAL DONOR AUDIT
SUMMARY REPORT FOR THE 12 MONTH PERIOD
1 APRIL 2011 - 31 MARCH 2012

1 INTRODUCTION

The Potential Donor Audit (PDA) commenced in 2003, but in October 2009 changes to the data collection and definitions used were introduced. This report presents information on the financial year 1 April 2011 to 31 March 2012.

The dataset used to compile this report includes all audited patient deaths in UK Intensive Care Units (ICUs) and Emergency Departments as reported by 5 July 2012. Patients aged 76 years or older and those that died in a cardiothoracic ICU have not been audited.

This report summarises the main findings of the PDA over the 12-month period and should be read in conjunction with the PDA section of the Transplant Activity Report available on the ODT website.

2 DEFINITIONS

Potential donors after brain death (DBD) are defined as patients for whom death was confirmed following neurological tests and who had no absolute or relative medical contraindications to solid organ donation.

Potential donors after circulatory death (DCD) are defined as patients for whom imminent death was anticipated and treatment was withdrawn and who had no absolute or relative medical contraindications to solid organ donation.

Absolute or relative medical contraindications are defined as known HIV positive, known or suspected CJD, active untreated tuberculosis, any malignancy within the past 12 months (excluding brain tumour) and multi-organ failure.

Further definitions to aid interpretation are given in **Appendix 1**.

3 BREAKDOWN OF AUDITED DEATHS IN ICUs AND EMERGENCY DEPARTMENTS

In the 12-month period from 1 April 2011 to 31 March 2012, there were a total of 28,977 audited patient deaths in the ICUs and EDs in the UK. A detailed breakdown for both the DBD and DCD data collection flows is given in **Figure 1** and **2**, and **Table 1** summarises the key percentages.

Figure 1 Donation after brain death

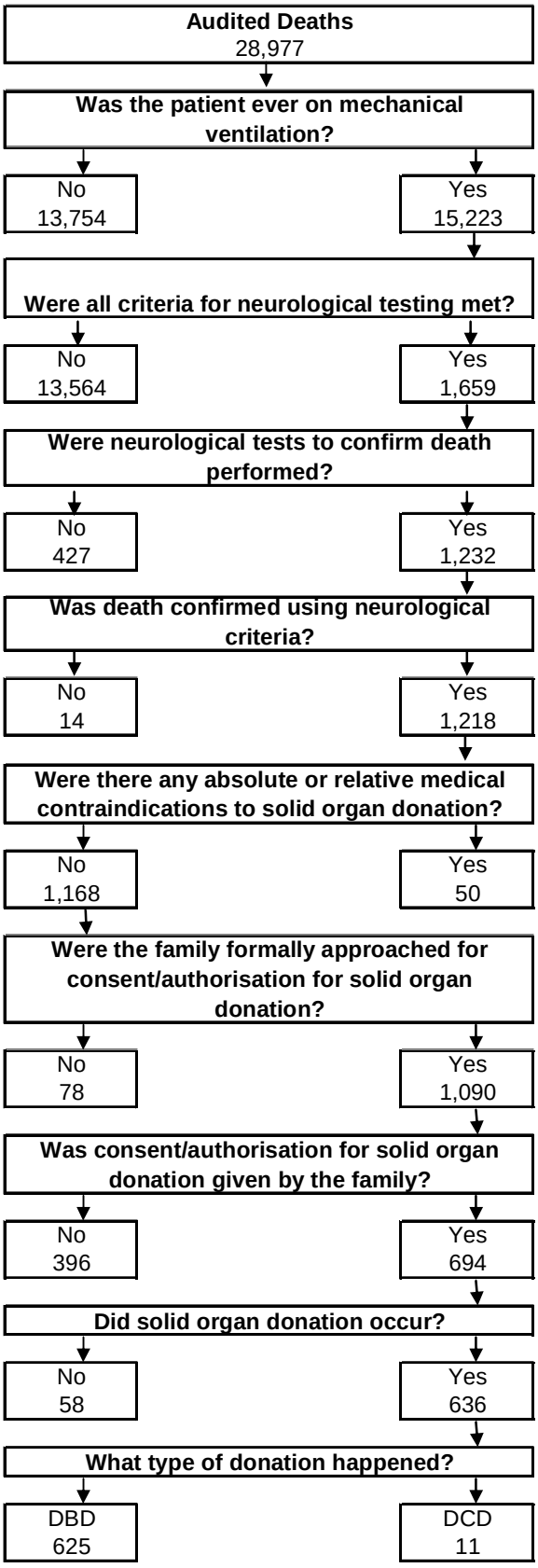


Figure 2 Donation after circulatory death

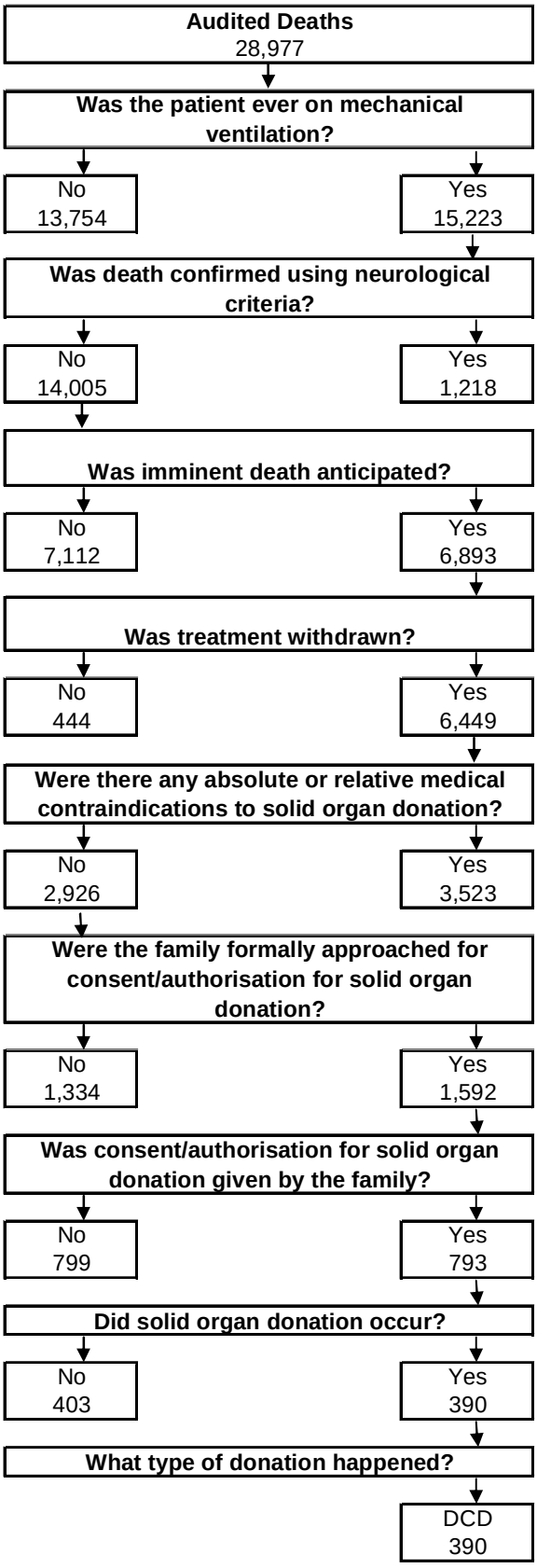


Table 1 Summary of data and key percentages

	Potential DBD		Potential DCD	
	N	%	N	%
Patients on mechanical ventilation at some point during their stay in ICU	15,223		15,223	
Referral criteria met	1,659		6,893	
Referred to SN-OD (referral rate %)	1,504	(90.7)	3,621	(52.5)
Neurological death tested (testing rate %)	1,232	(74.3)		
Potential donors	1,168		2,926	
Families who were approached for consent/authorisation (approach rate %)	1,090	(93.3)	1,592	(54.4)
Consent/authorisation given for solid organ donation (consent/authorisation rate %)	694	(63.7)	793	(49.8)
Actual solid organ donors (percentage of patients with family consent/authorisation %)	636	(91.6)	390	(49.2)
Conversion rate %		(54.5)		(13.3)

4 NEUROLOGICAL DEATH TESTING RATE

The neurological death testing rate was 74% and is the percentage of patients for whom neurological death was suspected that were tested. To be defined as neurological death suspected, the patients were indicated to have met the following four criteria - apnoea, coma from known aetiology and unresponsive, ventilated and fixed pupils. Neurological death tests were not performed in 427 patients (26%) for whom neurological death was suspected. The primary reason given for not testing is shown in **Table 2**.

For 84 (20%) patients not tested, the reason given was the patient was haemodynamically unstable. Of these 84 patients, 71 (85%) had their blood pressure supported by fluids and/or inotropes. There was a clinical reason or it was the clinician's decision not to perform tests for 57 (13%) of patients.

Table 2 Reasons given for neurological death tests not being performed		
	N	**%**
Patient haemodynamically unstable	84	19.7
Clinical reason/Clinicians decision	57	13.3
Continuing effects of sedatives	49	11.5
Family declined donation	43	10.1
Cardiac arrest despite resuscitation	43	10.1
Other	30	7.0
Treatment withdrawn	20	4.7
Biochemical/endocrine abnormality	19	4.4
Family pressure not to test	18	4.2
Medical contraindication to donation	17	4.0
Unknown	16	3.7
Neonates - Less than 2 months post term	10	2.3
Inability to test all reflexes	9	2.1
SN-OD advised that donor not suitable	6	1.4
Brain stem reflexes returned	4	0.9
Pressure on ICU beds	2	0.5
Total	**427**	**100.0**

5 REFERRAL RATE

A patient who meets the four criteria for neurological death tests or for whom imminent death is anticipated, i.e. a clinical decision to withdraw treatment has been made and the patient is ventilated, should be referred to a Specialist Nurse - Organ Donation (SN-OD). The DBD referral rate was 91% and the DCD referral rate was 53%. **Table 3** shows the reasons given why such patients were not referred. One patient can meet the referral criteria for both DBD and DCD and therefore some patients may be counted in both columns.

Of the patients who met the referral criteria and were not referred, the reason given for 28% of DBD and 25% of DCD was because the patient was not identified as a potential donor or organ donation was not considered. The reason given for 43% of DCD was medical contraindications.

Table 3 Reasons given why patient not referred

	DBD		DCD	
	N	**%**	**N**	**%**
Not identified as a potential donor/organ donation not considered	43	27.7	805	24.6
Other	41	26.5	312	9.5
Family declined donation prior to neurological testing	23	14.8	14	0.4
Medical contraindications	12	7.7	1,398	42.7
Thought to be medically unsuitable	10	6.5	553	16.9
Family declined donation after neurological testing	9	5.8	1	0.0
Neurological death not confirmed	6	3.9	8	0.2
Family declined donation following decision to withdraw treatment	5	3.2	110	3.4
Reluctance to approach family	2	1.3	22	0.7
Pressure on ICU beds	2	1.3	4	0.1
Coroner/Procurator Fiscal Reason	1	0.6	3	0.1
Thought to be outside age criteria	1	0.6	22	0.7
Donation after circulatory death not supported by ICU	-	-	19	0.6
Not reported	-	-	1	0.0
Total	**155**	**100.0**	**3,272**	**100.0**

6 APPROACH RATE

Families of potential donors were approached in 93% and 54% of DBD and DCD cases, respectively. The information in **Table 4** shows the reasons given why the family were not approached.

For potential DBD, in 51% of cases the reason stated was Coroner or Procurator Fiscal refused permission, whereas this reason only accounted for 3% of the potential DCD families not approached.

For potential DCD, in 761 (57%) of cases the reason stated was ‘other’. Investigating the text provided has shown that of the 761 cases where other was chosen, the text indicated that the patient was not identified as a potential donor or donation was not considered in nearly half the cases. The families of 21% of potential DCD were not approached because of the patient’s general medical condition.

Table 4 Reasons given why family not formally approached

	DBD		DCD	
	N	**%**	**N**	**%**
Coroner/Procurator Fiscal refused permission	40	51.3	35	2.6
Family stated that they would not consent before they were formally approached	13	16.7	33	2.5
Other	12	15.4	761	57.0
Other medical reason	5	6.4	110	8.2
Patient's general medical condition	4	5.1	279	20.9
Family untraceable	3	3.8	29	2.2
Family considered too upset to approach	1	1.3	33	2.5
Resource failure	-	-	25	1.9
Patient outside age criteria	-	-	29	2.2
Total	**78**	**100.0**	**1,334**	**100.0**

7 OVERALL CONSENT/AUTHORISATION RATE

The consent/authorisation rate is based on potential donors whose family were formally approached for consent to/authorisation for donation. The consent/authorisation rate is the proportion of these families who consented to/authorised solid organ donation.

During the financial year, the DBD consent/authorisation rate was 64% and the 95% confidence limits for this percentage are 61% - 67%. The DCD consent/authorisation rate was 50% and the 95% confidence limits for this percentage are 47% - 52%.

When a patient is known to have expressed a wish to donate, for example they were registered on the Organ Donor Register, carried a donor card or expressed a wish to donate verbally or in writing, the DBD consent/authorisation rate was 93% compared to 48% when a patient hadn't expressed a wish to donate. For DCD, the rates were 79% compared with 37%.

When a SN-OD was involved in the approach to the family, the DBD consent/authorisation rate was 68% compared with 53% when the SN-OD was not involved. Moreover, for DCD the rate was 64% compared with 30% when the SN-OD was not involved.

The reasons why the family did not give consent/authorisation are shown in **Table 5**. The main reasons that families of potential DBD patients gave for no consent/authorisation were because the patient had stated in the past that they did not wish to be a donor (16%) or the family were not sure whether the patient would have agreed to donation (16%). These were also the main reasons that families of potential DCD patients gave no consent/authorisation (17% and 15%, respectively).

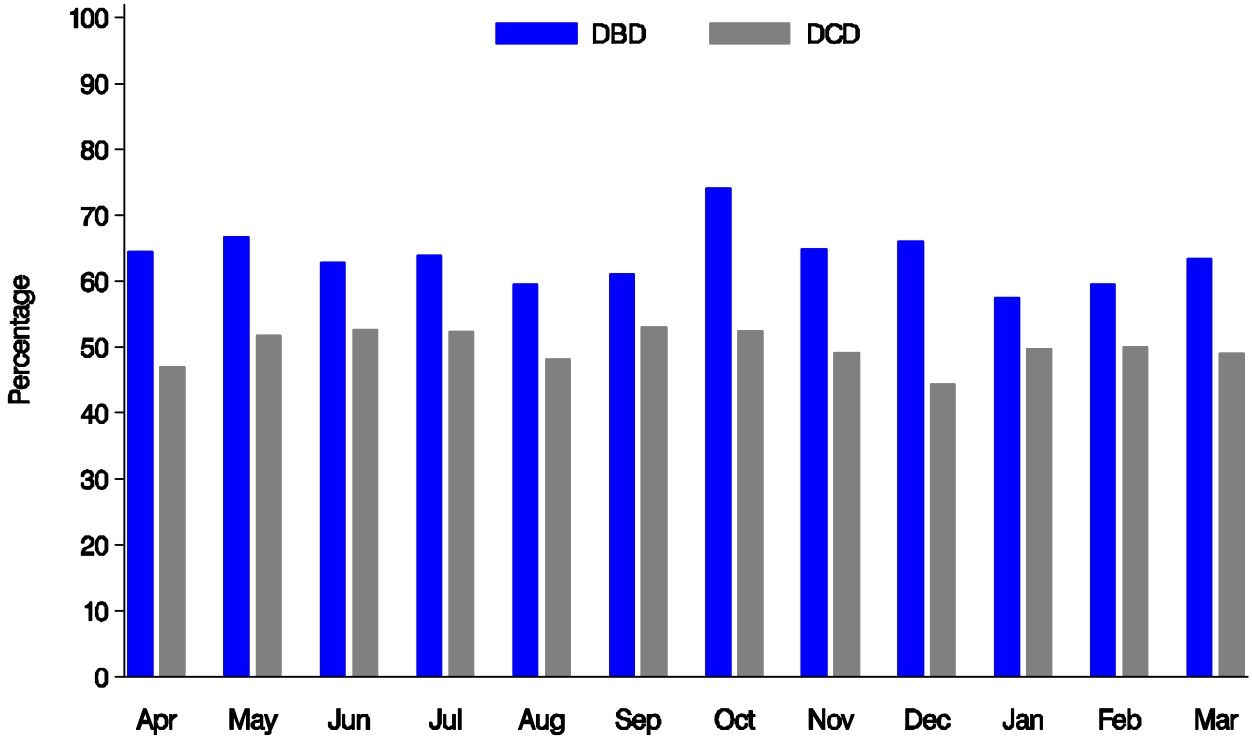
Table 5 Reasons given why family did not give consent

	DBD		DCD	
	N	**%**	**N**	**%**
Patient had stated in the past that they did not wish to be a donor	65	16.4	132	16.5
Family were not sure whether the patient would have agreed to donation	64	16.2	123	15.4
Family did not want surgery to the body	47	11.9	55	6.9
Family felt it was against their religious/cultural beliefs	36	9.1	29	3.6
Strong refusal - probing not appropriate	35	8.8	78	9.8
Other	29	7.3	103	12.9
Family were divided over the decision	25	6.3	50	6.3
Family did not believe in donation	24	6.1	28	3.5
Family felt the patient had suffered enough	23	5.8	58	7.3
Family felt the body needs to be buried whole (unrelated to religious or cultural reasons)	22	5.6	17	2.1
Family felt the length of time for donation process was too long	10	2.5	107	13.4
Family had difficulty understanding/accepting neurological testing	7	1.8	1	0.1
Family wanted to stay with the patient after death	4	1.0	9	1.1
Family concerned that organs may not be transplanted	3	0.8	7	0.9
Family concerned that other people may disapprove/be offended	1	0.3	1	0.1
Patients treatment may be or has been limited to facilitate organ donation	1	0.3	-	-
Families concerned about organ allocation	-	-	1	0.1
Total	**396**	**100.0**	**799**	**100.0**

8 MONTHLY VARIATION IN THE CONSENT/AUTHORISATION RATE

Monthly consent/authorisation rates are shown in **Figure 3**. From this figure it is apparent that over the financial year there is no clear monthly pattern. The DBD consent/ authorisation rate was highest in October 2011 (74%) and lowest in January 2012 (58%), whereas the DCD consent/authorisation rate was highest in September 2011 (53%) and lowest in December 2011 (44%). The differences in the monthly consent/authorisation rates from 1 April 2011 to 31 March 2012 are not statistically significant for either DBD or DCD, p=0.74 and p=0.96, respectively.

Figure 3 Month-to-month variation in consent/authorisation rate

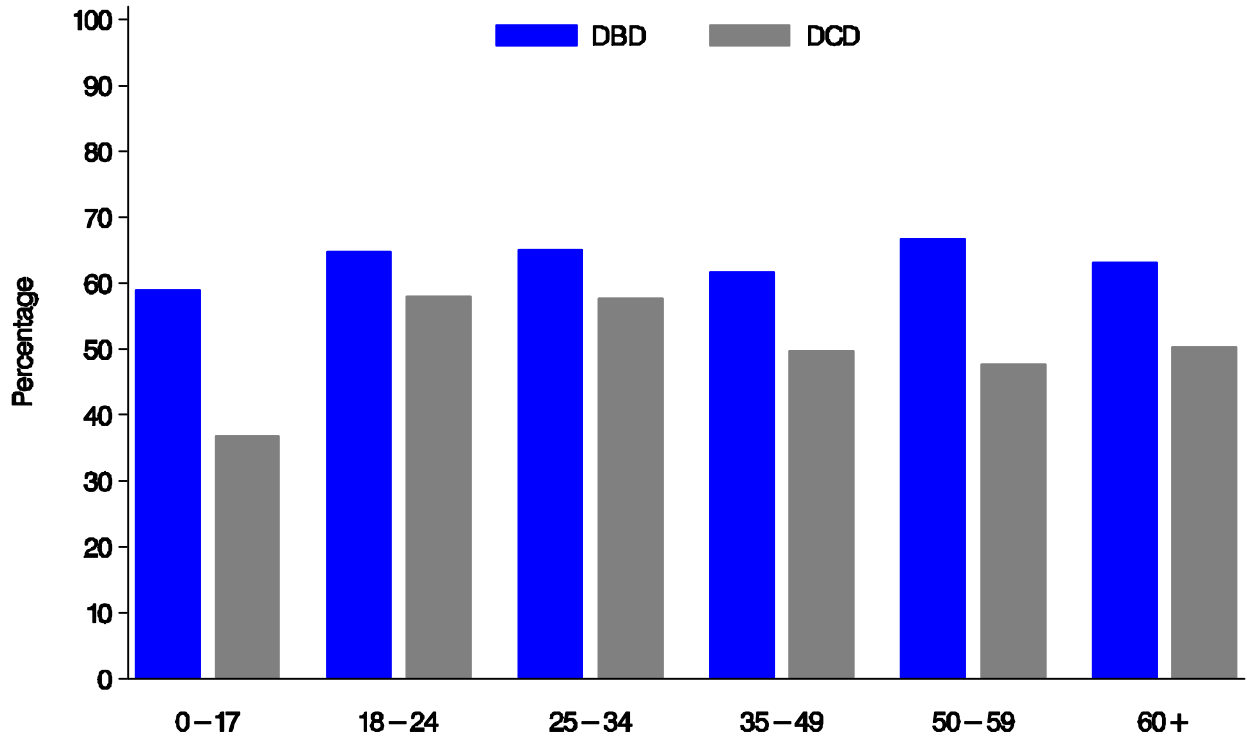


9 EFFECT OF DEMOGRAPHIC VARIABLES ON THE CONSENT/AUTHORISATION RATE

The consent/authorisation rate for the 530 male potential DBD was 62% and the consent/authorisation rate for the 560 female potential DBD was 66%. The difference is not statistically significant, p=0.19. For the 936 male potential DCD the consent/ authorisation rate was 52% and for the 656 female potential DCD was 46%. This difference is statistically significant, p=0.02.

Age is represented by a categorical variable with intervals 0-17, 18-24, 25-34, 35-49, 50-59 and 60+ years. The consent/authorisation rates for the six age groups (for the 1,090 potential DBD and 1,592 potential DCD whose families were approached) are illustrated in **Figure 4**. The highest consent/authorisation rate for potential DBD occurred in the 50-59 age group (67%) and for potential DCD in the 18-24 age group (58%). The lowest consent/authorisation rate for both potential DBD and DCD was in the 0-17 age group (59% and 37%, respectively). The differences in the consent/authorisation rates across the six age groups for both DBD and DCD are not statistically significant, p=0.80 and p=0.18, respectively.

Figure 4 Age variation in consent/authorisation rate

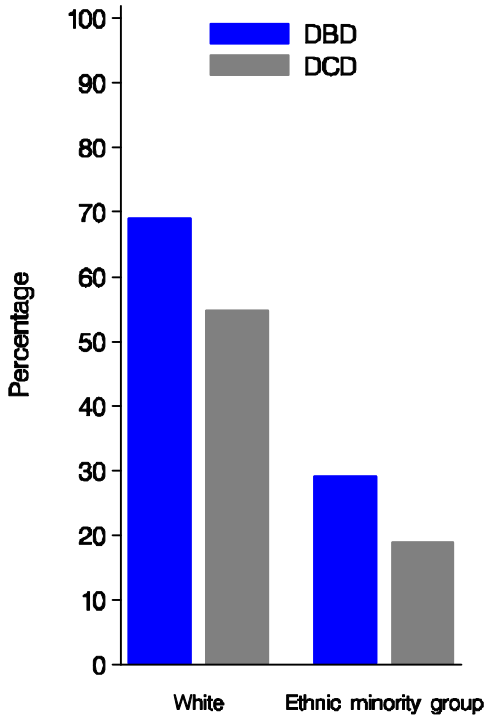


To conduct a meaningful analysis on ethnicity, patients have been categorised as white or in an ethnic minority group and the rates are shown in **Figure 5**. For potential DBD, the consent/authorisation rates (for the 1,067 potential donors out of 1,090 for whom ethnicity was recorded) were 69% for white potential donors and 29% for potential donors from ethnic minority groups. The 95% confidence limits for DBD consent/authorisation rates are 66% - 72% for white potential donors and 22% - 36% for potential donors from ethnic minority groups.

For potential DCD, the consent/authorisation rates (for the 1,494 potential donors out of 1,592 for whom ethnicity was recorded) were 55% for white potential DCD and 19% for potential DCD donors from ethnic minority groups. The 95% confidence limits for DCD consent/authorisation rates are 52% - 58% for white potential donors and 12% - 26% for potential donors from ethnic minority groups.

The difference between consent/authorisation rates for white potential donors and potential donors from an ethnic minority group is statistically significant for both DBD and DCD ($p<0.0001$ for both). The ethnicity effect remains highly significant after allowing for age, sex and month of death.

Figure 5 Ethnic group variation in consent/authorisation rate



10 SOLID ORGAN DONATION

Of the potential donors whose family consented to/authorised donation, 92% of the potential DBD and 49% of the potential DCD went on to become actual solid organ donors. **Table 6** shows the reasons why consented/authorised potential donors did not become actual solid organ donors.

Table 6 Reasons why solid organ donation did not happen

	DBD		DCD	
	N	%	N	%
Coroner/ Procurator Fiscal refusal	15	25.9	18	4.5
Organs deemed medically unsuitable by recipient centres	13	22.4	83	20.6
Organs deemed medically unsuitable on surgical inspection	10	17.2	21	5.2
Positive virology	9	15.5	6	1.5
Cardiac arrest	5	8.6	-	-
Other	4	6.9	20	5.0
Family changed mind	2	3.4	31	7.7
Prolonged time to asystole	-	-	206	51.1
General instability	-	-	13	3.2
Logistic reasons	-	-	3	0.7
Retrieval team not available	-	-	2	0.5
Total	**58**	**100.0**	**403**	**100.0**

For consented/authorised potential DBD the main reason given for solid organ donation not proceeding was because the Coroner/Procurator Fiscal refused permission (26%).

The main reason given for consented/authorised potential DCD not proceeding to become a solid organ donor was prolonged time to asystole (51%).

11 SUMMARY

In the year 1 April 2011 to 31 March 2012, there were 28,977 deaths audited for the PDA. Of these deaths, 1,659 and 6,893 patients met the referral criteria for DBD and DCD, respectively and 91% and 53% were referred to a SN-OD.

Of the 1,659 patients for whom neurological death was suspected, 74% were tested and there were 1,168 and 2,926 potential DBD and DCD, respectively. Families of these potential DBD and DCD were approached for consent to/authorisation for donation in 93% and 54% of cases, respectively.

Of the families approached, 64% and 50% consented to/authorised DBD and DCD donation. Of these, 92% and 49%, respectively, became actual solid organ donors.

There was no statistically significant difference in the consent/authorisation rates across the different age groups for DBD or DCD. The difference in the consent/authorisation rates for male and female patients was not statistically significant for DBD, however it was statistically significant for DCD. There was a statistically significant difference in both the DBD and DCD consent/authorisation rate between white patients and patients from ethnic minority groups and this effect remains after adjusting for patient age, sex and month of patient death.

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Appendix I - Definitions

Donors after brain death (DBD)	
Suspected Neurological Death	A patient who meets all of the following criteria: Apnoea, coma from known aetiology and unresponsive, ventilated, fixed pupils.
Discussed with Specialist Nurse – Organ Donation	A patient with suspected neurological death discussed with the Specialist Nurse – Organ Donation (SN-OD)
Neurological death tested	Neurological death tests were performed
Potential DBD	A patient whose death has been confirmed using neurological criteria, with no absolute contraindications or relative contraindications to solid organ donation
Absolute contraindications	Known or suspected CJD or known HIV positive
Relative contraindications	A relative contraindication is defined as any of:
	a) any malignancy within the past 12 months (excluding brain tumour) or
	b) multi-organ failure (Demonstrable failure of two or more vital organ systems and associated complications. Failure defined as requirement of organ support) or
	c) active untreated tuberculosis
Family approached for consent / authorisation	Family of potential DBD asked to make a decision on donation
Family consented / authorised	Family consented to / authorised donation
Actual donors: DBD	Neurological death confirmed patients who became actual DBD as reported through the PDA
Actual donors: DCD	Neurological death confirmed patients who became actual DCD as reported through the PDA
Neurological death testing rate	Percentage of patients for whom neurological death was suspected who were tested
Referral rate	Percentage of patients for whom neurological death was suspected who were discussed with the SN-OD
Approach rate	Percentage of potential DBD families approached for consent /authorisation for donation
Consent / authorisation rate	Percentage of families approached about donation that consented to / authorised donation
Adjusted consent / authorisation rate	Consent /authorisation rate adjusted for ethnicity case mix, based on those patients whose family were approached for consent /authorisation and patient ethnicity was known
Conversion rate	Percentage of potential DBD who became actual donors (either DBD or DCD)
Donors after circulatory death (DCD)	
Imminent death anticipated	A patient, not confirmed dead using neurological criteria, receiving assisted ventilation and a clinical decision to withdraw treatment has been made.
Discussed with Specialist Nurse – Organ Donation	Patients for whom imminent death was anticipated who were discussed with the SN-OD
Potential DCD	A patient in whom imminent death is anticipated, treatment has been withdrawn and who has no absolute or relative contraindication to organ donation.
Absolute medical contraindications	Known or suspected CJD or known HIV positive
Relative contraindications	A relative contraindication is defined as any of:
	a) any malignancy within the past 12 months (excluding brain tumour) or
	b) multi-organ failure (Demonstrable failure of two or more vital organ systems and associated complications. Failure defined as requirement of organ support) or
	c) active untreated tuberculosis
Family approached for consent / authorisation	Family of potential DCD asked to make a decision on donation
Family consented / authorised	Family consented to / authorised donation
Actual DCD	DCD patients who became actual DCD as reported through the PDA
Referral rate	Percentage of patients for whom imminent death was anticipated who were discussed with the SN-OD
Approach rate	Percentage of potential DCD families approached for consent /authorisation for donation
Consent / authorisation rate	Percentage of families approached or made an approach about donation that consented to / authorised donation
Adjusted consent / authorisation rate	Consent /authorisation rate adjusted for ethnicity case mix, based on those patients whose family were approached for consent /authorisation and patient ethnicity was known
Conversion rate	Percentage of potential DCD who became actual DCD