



# Living Donor Kidney Transplantation is the Best Treatment for All Patients with ESRD ?

**FICTION**

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# Contents

- **Outcomes following living kidney donor transplantation are NOT invariably better than those following deceased donor transplantation**
- **Risks to the donor**
- **But there are important benefits to living donation**
- **Reality as opposed to fantasy**

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## Abstract

Living donor kidney transplantation is the optimal treatment for end-stage kidney disease (ESKD) but confers a risk upon the donor, both in the short term and many years after donation.

# Living Donor Kidney Transplants are Best? Headline Figures May Be Misleading

Table 11.1 Graft survival after first adult kidney only transplant from a DBD									
Year of transplant	No. at risk on day 0	% Graft survival (95% confidence interval)							
		One year		Two year		Five year		Ten year	
2005-2007	2208	93	(92-94)	91	(90-93)	85	(84-87)	76	(74-78)
2008-2010	2184	94	(93-95)	92	(91-93)	87	(85-88)		
2011-2013	2318	94	(93-95)	92	(91-93)	87	(85-88)		
2014-2017	3772	95	(94-96)						

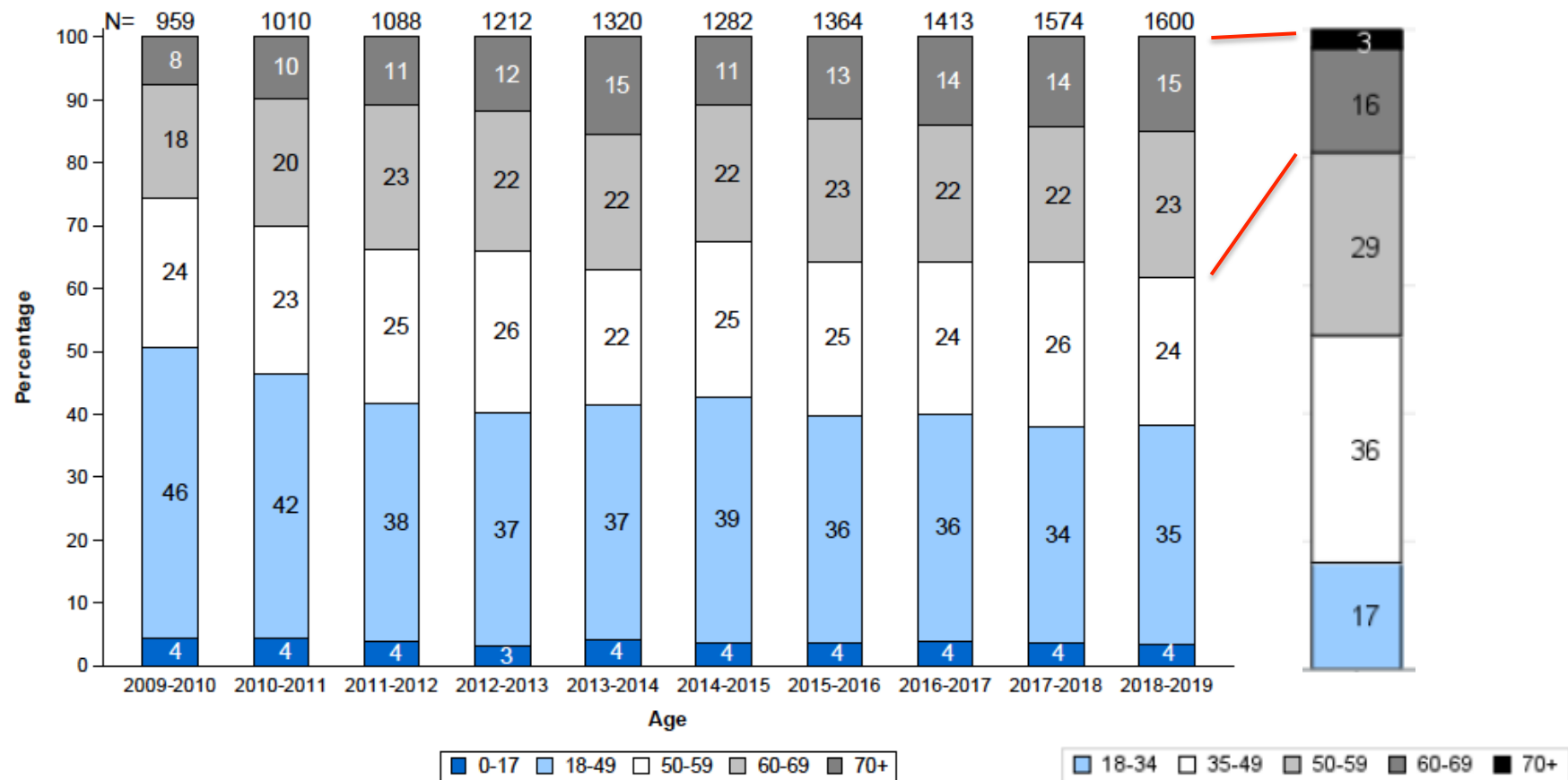
Table 11.5 Graft survival after first adult living donor kidney transplant									
Year of transplant	No. at risk on day 0	% Graft survival (95% confidence interval)							
		One year		Two year		Five year		Ten year	
2005-2007	1579	96	(95-97)	95	(94-96)	91	(90-93)	82	(80-84)
2008-2010	2230	97	(96-97)	96	(95-96)	92	(91-93)		
2011-2013	2229	97	(96-98)	96	(95-97)	91	(90-92)		
2014-2017	2609	98	(98-99)						

Table 11.2 Patient survival after first adult kidney only transplant from a DBD									
Year of transplant	No. at risk on day 0	% Patient survival (95% confidence interval)							
		One year		Two year		Five year		Ten year	
2005-2007	2210	97	(96-98)	95	(94-96)	89	(88-91)	77	(75-79)
2008-2010	2185	96	(95-97)	95	(94-95)	90	(88-91)		
2011-2013	2319	96	(95-97)	94	(93-95)	88	(87-89)		
2014-2017	3773	97	(96-98)						

Table 11.6 Patient survival after first adult living donor kidney transplant									
Year of transplant	No. at risk on day 0	% Patient survival (95% confidence interval)							
		One year		Two year		Five year		Ten year	
2005-2007	1579	99	(98-99)	98	(97-99)	96	(95-97)	90	(88-91)
2008-2010	2230	99	(98-99)	98	(97-98)	94	(93-95)		
2011-2013	2228	99	(99-99)	98	(97-99)	95	(94-96)		
2014-2017	2609	99	(99-99)						

# Living Donors are Younger (and with Fewer Comorbidities) than Deceased Donors

Figure 3.1 Age of deceased donors in the UK, 1 April 2009 - 31 March 2019

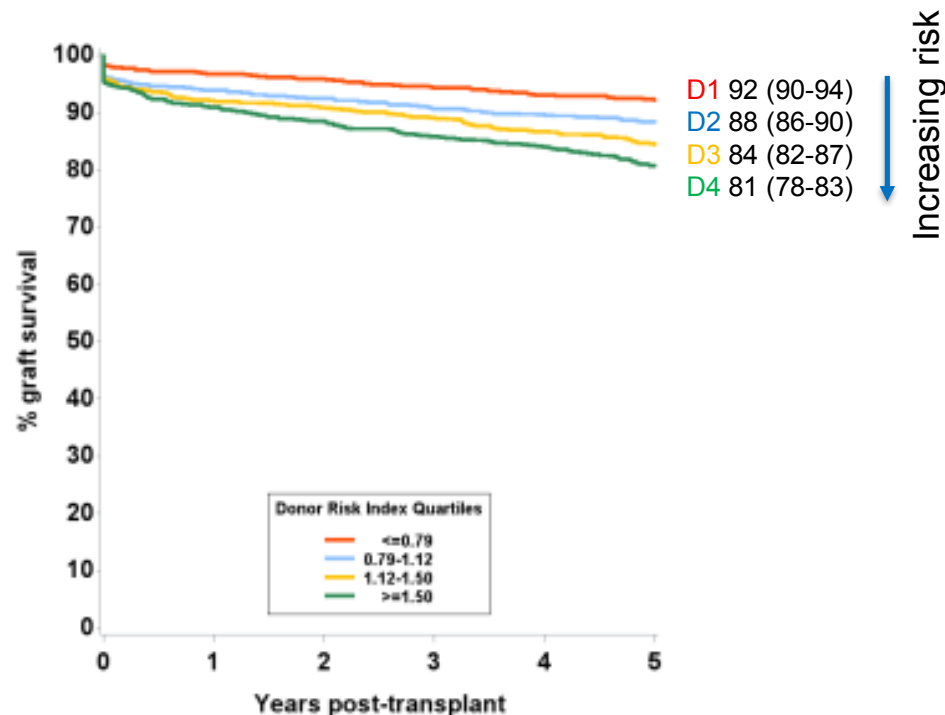


# Donor Risk Index (DRI)

## Validation dataset

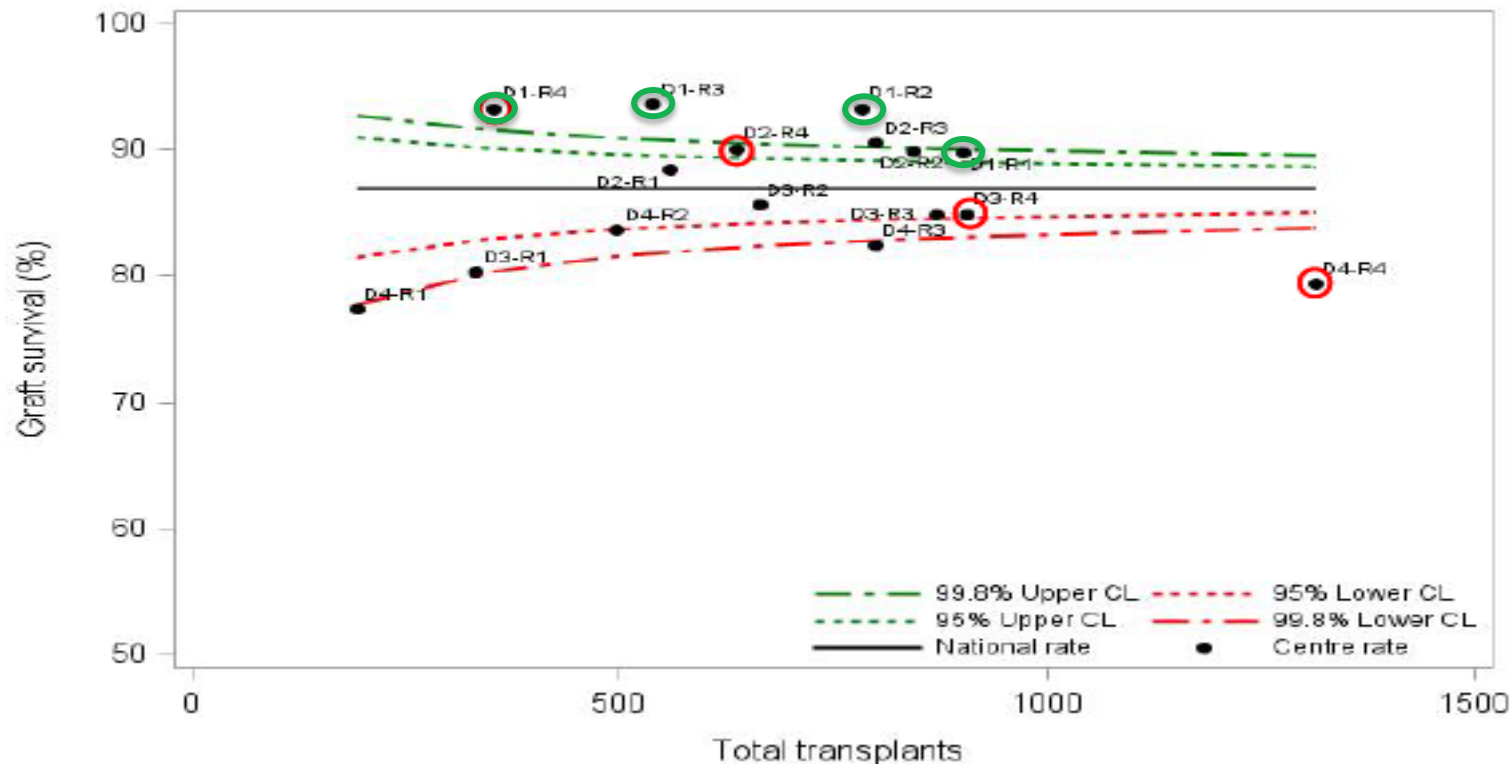
Donor Factor	Hazard Ratio	p-value
Age	1.02	<0.0001
Height	0.86	0.0005
Hypertension	1.15	0.1
CMV	1.20	0.02
Hospital stay	1.02	0.006
eGFR	0.98	0.02
Female	0.83	0.04

C-statistic = 0.64



## 5 Year Graft Survival after Deceased Donor Kidney Transplantation – Kidneys from Deceased Donors Similar to Living Donors have Equivalent Outcomes

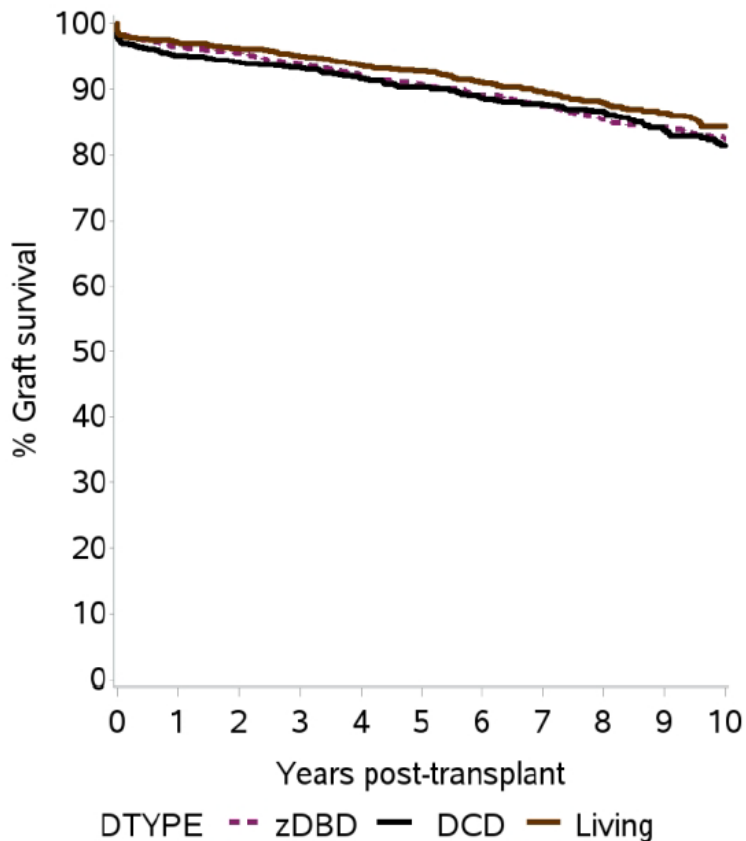
92%





# 10 Year Graft Survival after Living and Deceased Donor Kidney Transplantation

## From Donors Aged < 40 – NO DIFFERENCE



Summary of the Number of Censored and Uncensored Values					
Stratum	DTYPE	Total	Failed	Censored	Percent Censored
1	DCD	1449	172	1277	88.13
2	Living	1543	158	1385	89.76
3	zDBD	2493	290	2203	88.37
Total		5485	620	4865	88.70

## Fiction (1)

- **Living donor kidney transplant outcomes are NOT invariably better than those from deceased donors**
- **Graft survival is equivalent when comparing living and deceased donor transplants from 'matched' donors**
- **There are as many, if not MORE, deceased donor kidney transplants (D1 and D2) with outcomes comparable to living donor transplants**
- **It is misleading to imply that, by not donating, a potential donor is condemning their recipient to an inferior transplant outcome**

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- Outcomes following living kidney donor transplantation are NOT invariably better than those following deceased donor transplantation
- **Risks to the donor**
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# Clearly Demonstrated Risks to Living Donors

- **Small (*but not zero*) perioperative mortality - 1:3000**
- **Increased risk of ESRD – 3-5 fold above pre-donation risk**
  - **1:000 healthy non-donors vs 1:200-300 donors vs 1:100 general population, with greater relative risk in:**
    - **Young donors**
    - **Male donors**
    - **Black African ancestry**
    - **First degree relatives of patients with ESRD**
- **Long term medical complications (gout, hypertension)**
- **Pregnancy-related complications (hypertension, pre-eclampsia)**

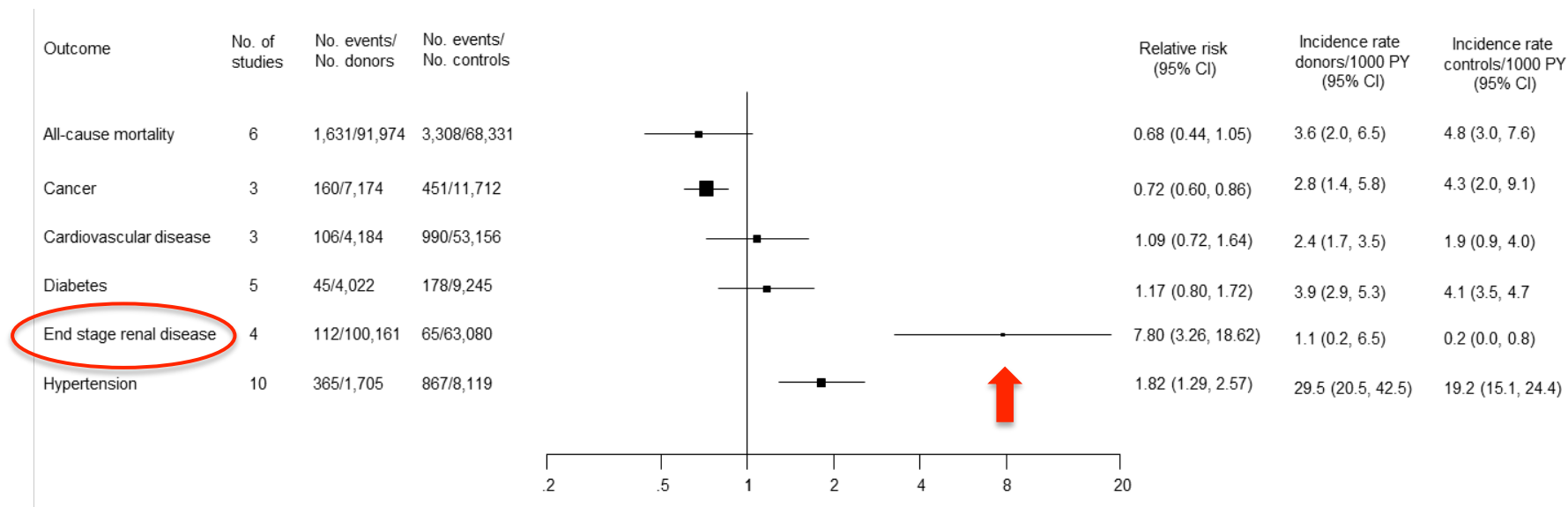
Lentine *et al* (2019). Clin J Am Soc Nephrol **14**, 597-608

Mjoen *et al* (2014). Kidney Int **86**, 162-167

Muzaale *et al* (2014). JAMA **311**(6), 579-586

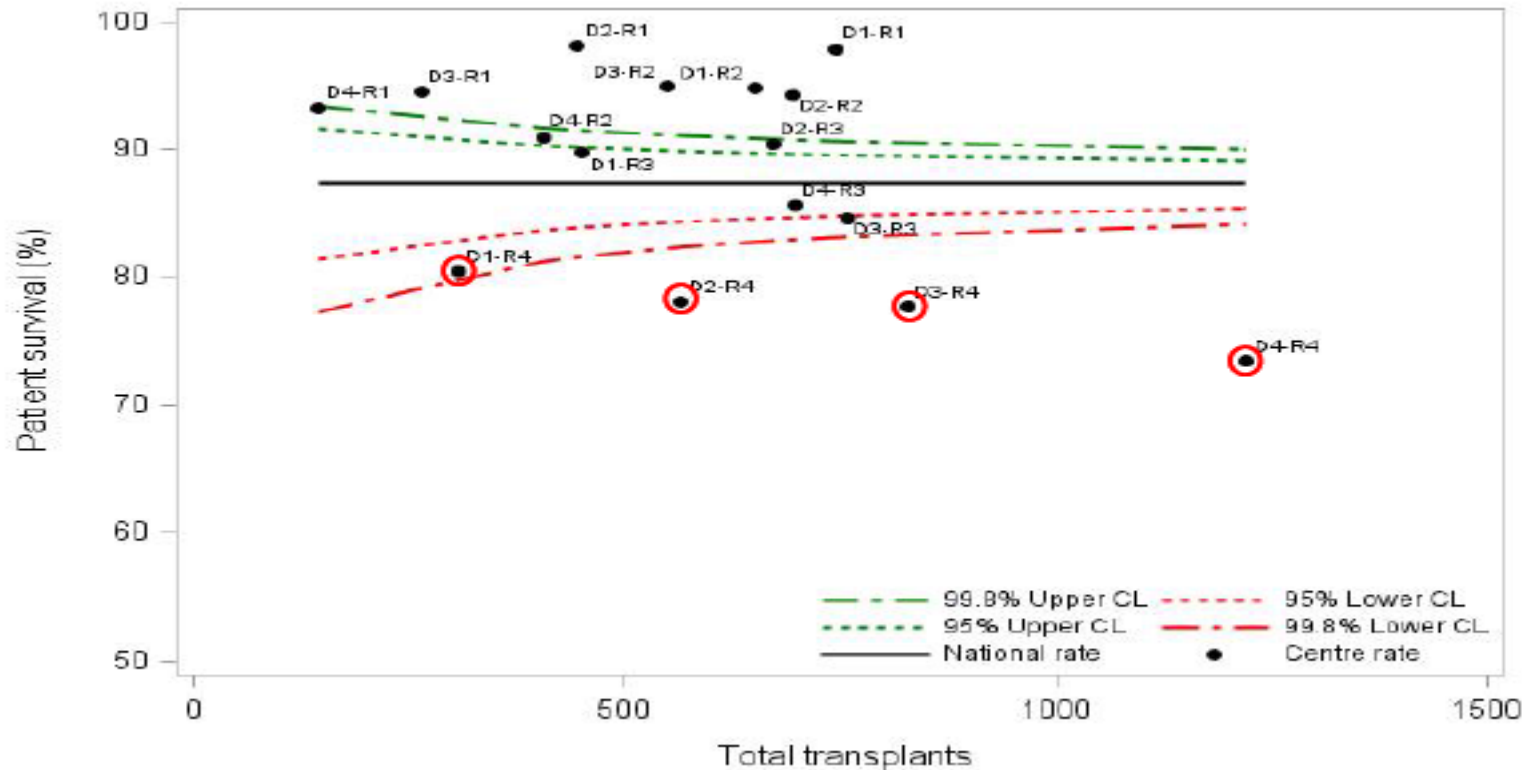
Massie *et al* (2017). J Am Soc Nephrol **28** (9), 2749-2755

**Figure 3.** Meta-analysis of relative risks for selected clinical endpoints in living kidney donors compared to non-donor controls



**Asking Donors to Accept Risks Cannot Be Justified by Claiming that Transplant Recipients will Invariably Receive a 'Better Kidney' or Live Longer Following Living (as opposed to Deceased) Donor Kidney Transplantation**

## 5 Year Patient Survival after Deceased Donor Kidney Transplantation – Healthy Recipients Live Longer



## Fiction (2)

- **As with graft survival, using 'headline' figures to suggest transplant recipients live longer following a living donor transplant are misleading**
- **Recipient survival is determined by the health and co-morbidities of the recipient**
- **A living donor kidney transplant does not convey mystical properties to extend life**
- **It is misleading to imply that, by not donating, a potential donor is condemning their recipient to an inferior transplant outcome**



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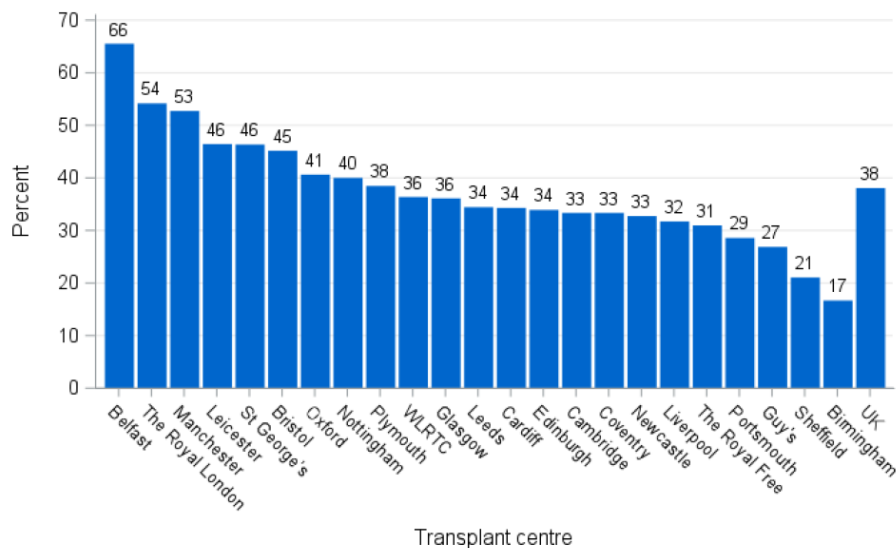
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# Benefits of Living Donation Kidney Transplantation

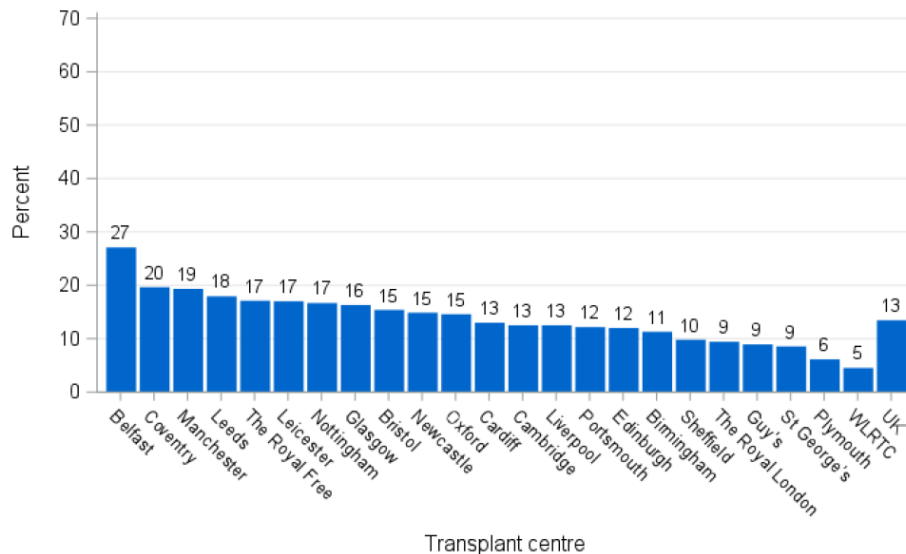
- **Careful donor kidney evaluation**
- **Planned procedure:**
  - **Consultant surgeon and anaesthetist on elective operating lists**
  - **Pre-emptive transplant**
- **UK Living Kidney Sharing Scheme**

# Greater Chance of Pre-emptive Transplant with Living Donation

**Figure 5.9** Adult living donor pre-emptive transplant rates by centre, 1 April 2018 - 31 March 2019

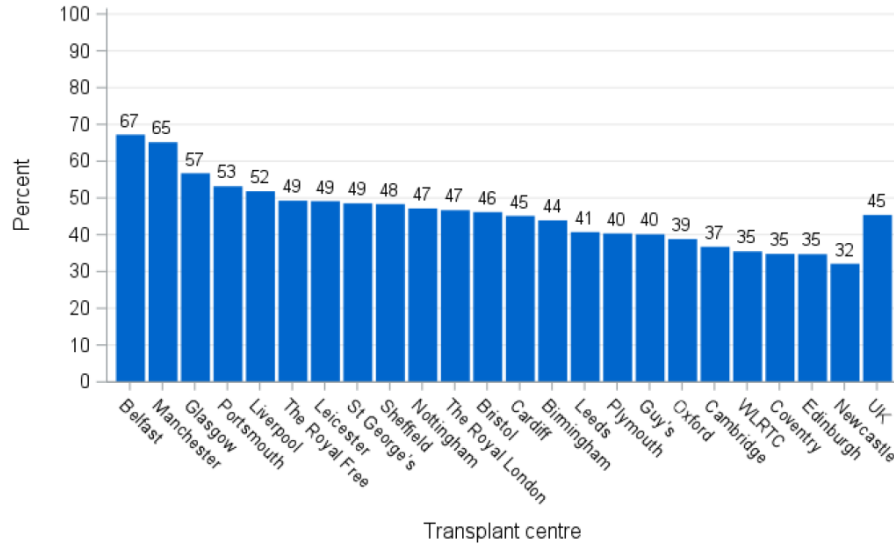


**Figure 5.8** Adult deceased donor pre-emptive transplant rates by centre, 1 April 2018 - 31 March 2019

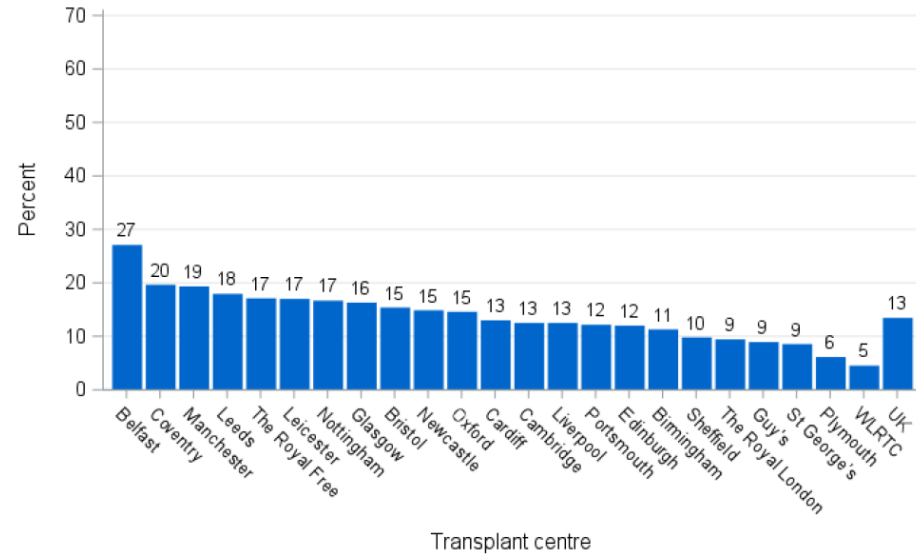


# Pre-emptive Listing vs Transplant with Deceased Donation

**Figure 3.12** Adult pre-emptive listing rates by centre, registrations between 1 April 2017 and 31 March 2018



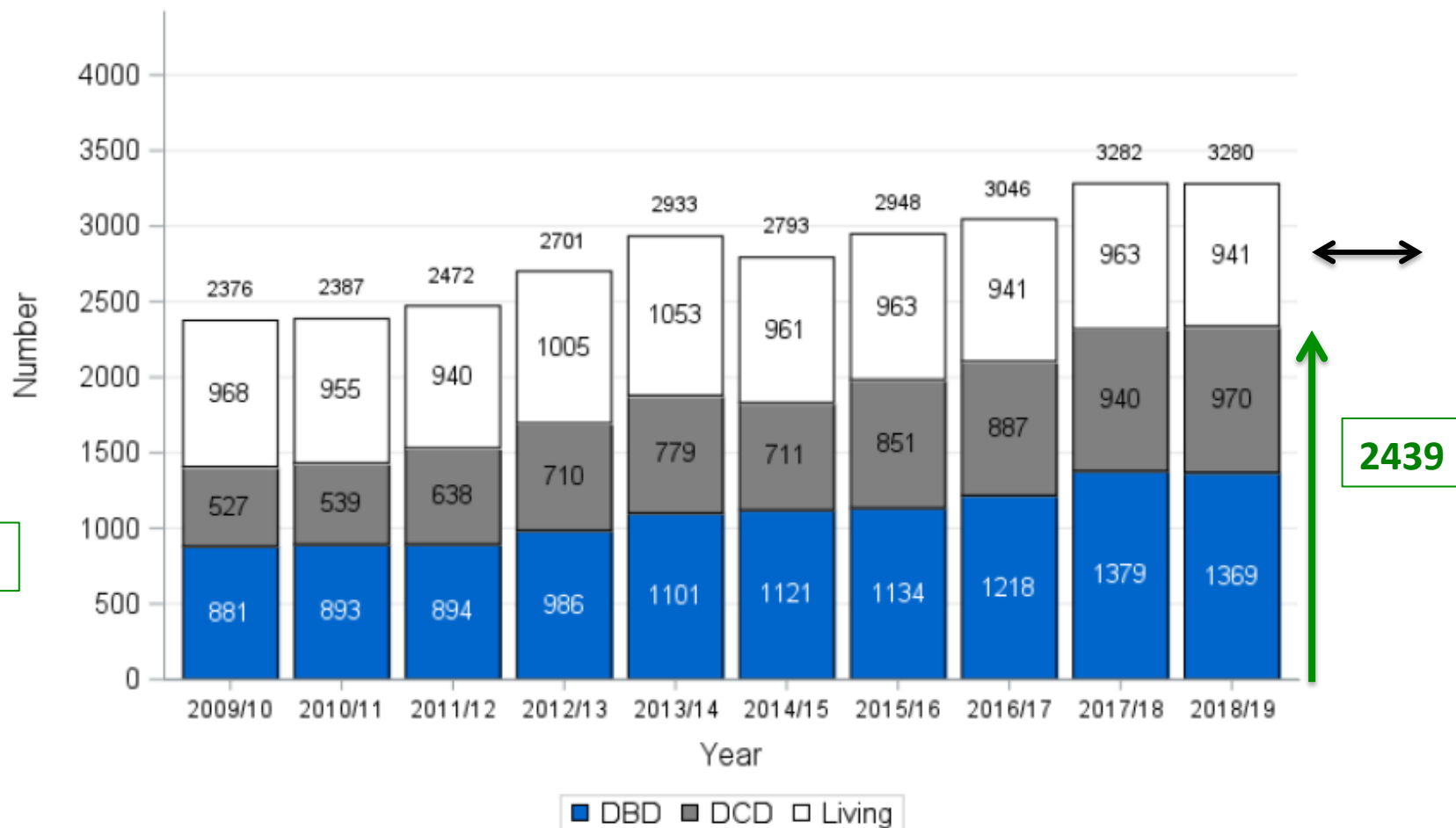
**Figure 5.8** Adult deceased donor pre-emptive transplant rates by centre, 1 April 2018 - 31 March 2019



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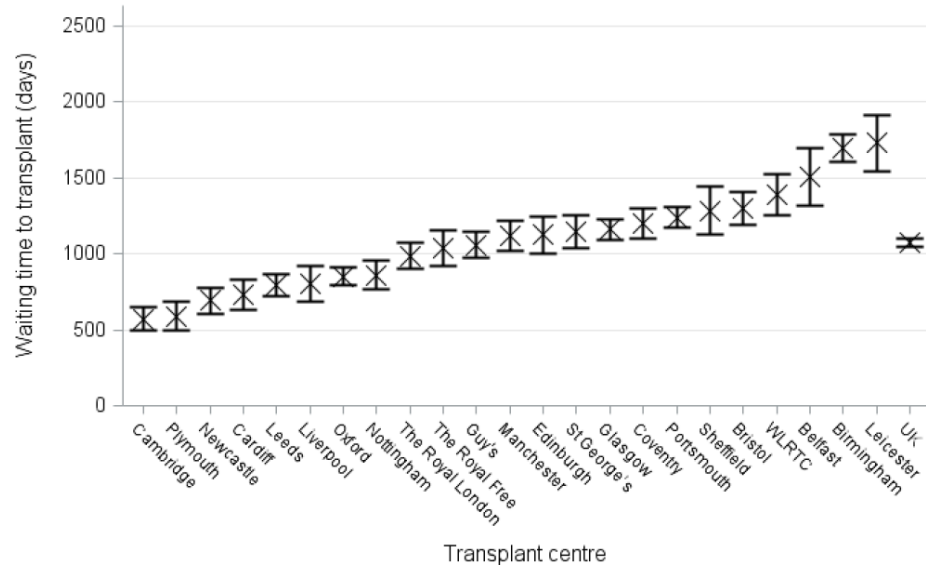
- Outcomes following living kidney donor transplantation are NOT invariably better than those following deceased donor transplantation
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**Figure 5.1 Adult kidney only transplants, 1 April 2009 - 31 March 2019**



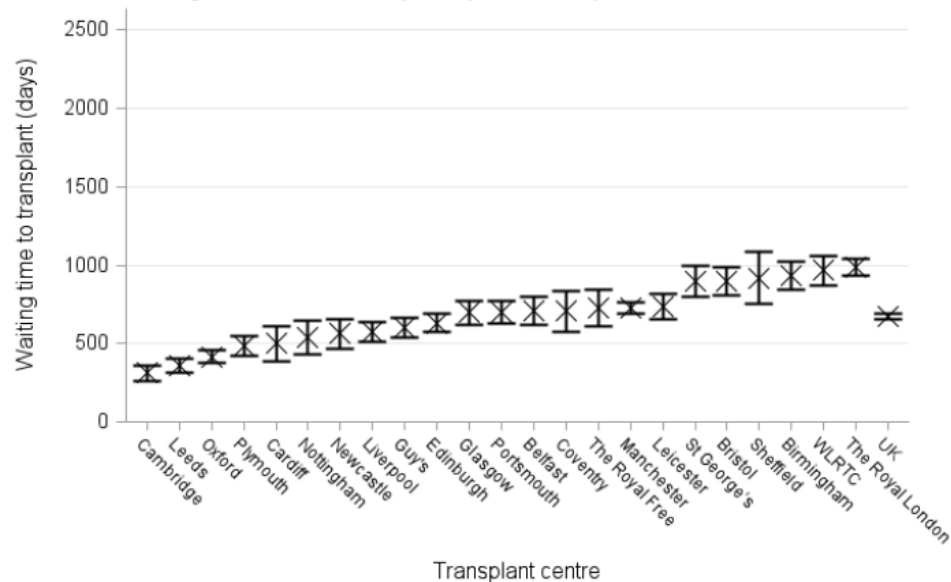
# Falling Median Waiting Time for Deceased Donor Kidney Transplant

**Figure 3.10** Median waiting time to deceased donor transplant for adult patients registered on the kidney transplant list, 1 April 2008 - 31 March 2011



**2013-14 Kidney Report**

**Figure 3.10** Median waiting time to deceased donor transplant for adult patients registered on the kidney transplant list, 1 April 2013 - 31 March 2016



**2018-19 Kidney Report**

## **Facts (1)**

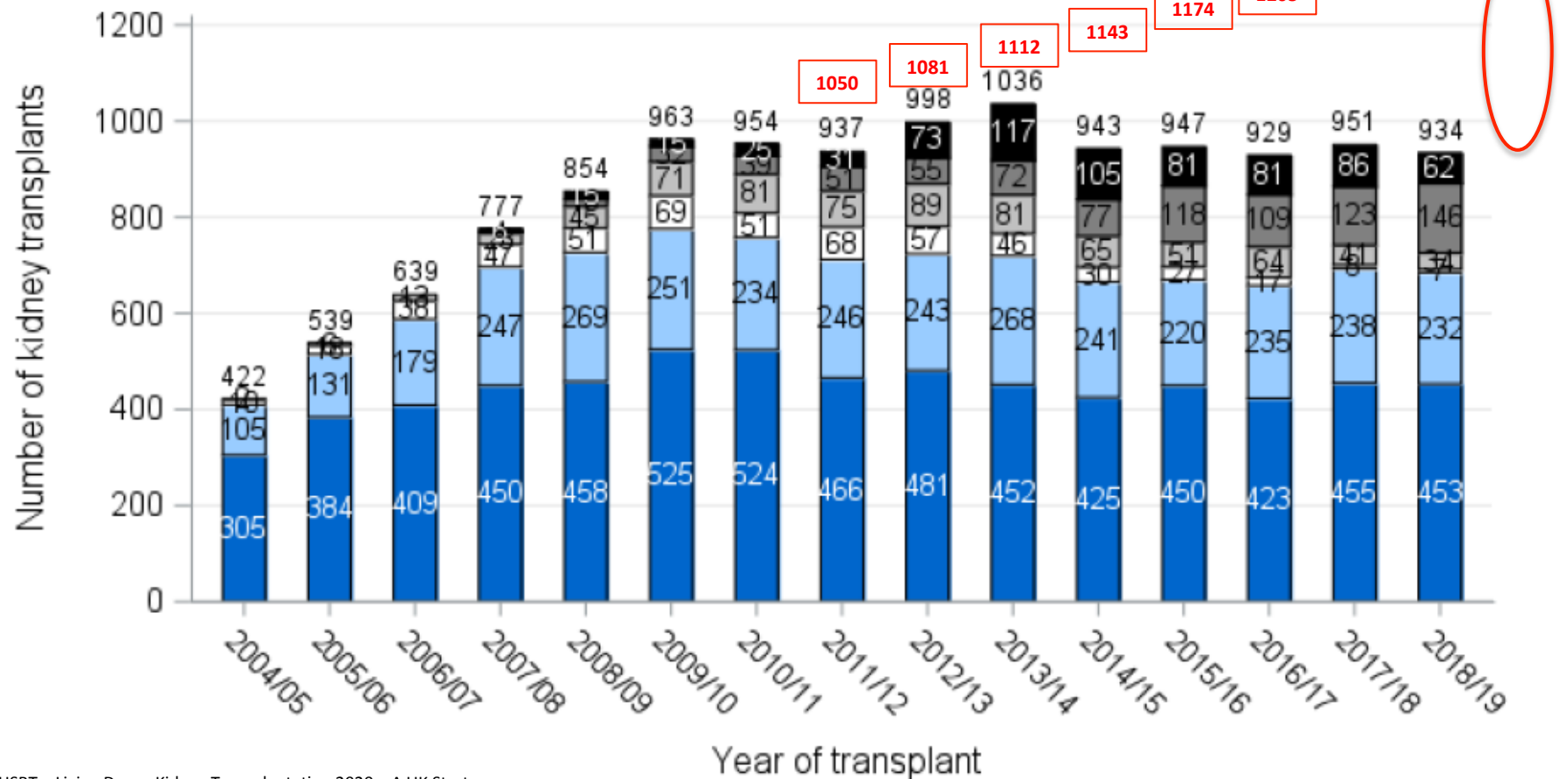
- **The number of kidney transplants from deceased donors is increasing year on year**
- **And will likely continue to do so with changes to organ donation legislation**
- **The waiting list and waiting times are falling year on year**
- **There remain important opportunities:**
  - **Organ reconditioning and assessment**
  - **Allocation – matching donor and recipient**
  - **Allocation – promoting pre-emptive deceased donor transplantation**



# **Living Donor Transplants are Best – A FICTION, But .....**

- **An important component in the care of patients with progressive CKD:**
  - **Management of CKD to slow disease progression**
  - **Preparation for dialysis**
  - **Preparation for pre-emptive transplant listing**
  - **Identification of potential living donors**
- **For some patients a pre-emptive living donor transplant will be the optimum treatment**
- **But only with absolute regard to donor safety**

**Figure 2.2 Adult living donor kidney transplants in the UK,  
1 April 2004 - 31 March 2019**



## Facts (2)

- The mismatch between the number of living donor transplants and the aspirations in the NHSBT Strategy are NOT a failing
- Instead this mismatch represents the transplant community placing donor safety at the centre of living donation
- Deceased donation presents tremendous opportunities
- The success of deceased donation means that taking additional risks to increase living donation (younger donors, donors with comorbidities) is NOT justified
- Doing deceased donor transplantation badly is not an excuse to justify living donation



From spring 2020  
**the law around organ donation  
in England is changing**

PASS IT ON

