



Transplant Sustainability and Resilience Summit – Summary Report

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 - c. John Forsythe – NHSBT Medical Director, Organ Donation and Transplantation
 - d. Steve Wigmore – BTS Vice-President
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 - a. Units represented
 - b. Disciplines represented
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Executive Summary

Context

The numbers of organ donations and transplants have increased year on year and 2017/ 18 saw another record year of number of lives saved through organ transplantation. Changes in legislation around organ donation, combined with novel technologies in donor organ procurement and preservation, mean that the numbers of transplants in future years are likely to increase further.

The British Transplantation Society is keen to ensure that the UK transplant service is able to keep pace with these developments and to ensure that no opportunity for accepting a transplantable organ is missed.

The Summit

To support this work, a summit was held on the 12th June 2018. The Summit brought together over 150 people with a role in organ transplantation. The delegates included representatives from all transplant units in the UK, with national stakeholders such as NHS Blood and Transplant and UK Commissioners, to explore what the future challenges for transplantation might be and how we can work together to meet these challenges.

The Summit sought to achieve two key objectives:

1. To identify the challenges for organ transplantation and their causes
2. To identify practical solutions that maximise the use of existing resources.

A survey that was sent to all UK transplant units identified four main challenges to meeting the current and future demands:

- Out of hours provision
- Access to theatres and ICU
- Competing pressures on time and workload
- Staff recruitment and retention

These applied across transplant teams and other associated services, nephrologists, physicians and histocompatibility and immunology.

During the Summit, the causes of these challenges were discussed and there were some issues which were common across all four categories. These include:

- The unpredictable nature of transplantation
- IT infrastructure
- Infrastructure
- Competing priorities

A number of suggestions were put forward about what more could be done to meet that challenges. These can be broadly categorised into:

- Improved collaboration between units and services, working across teams and consolidating resources where appropriate to make the best use of available resources.
- Increasing the numbers of people who want to work within the service, through providing models and minimum standards for staffing and clear career pathways.
- Changing the culture in transplantation – particularly regarding long working hours, which leads to burnout.

- Improved triage systems, both nationally and locally, to manage increase in offered organs.
- Improved relationship with NHS Boards

Next steps

The British Transplantation Society will work with transplant units, those involved in supporting services (e.g. nephrologists; physicians) and the relevant stakeholders, such as the UK Commissioners and Royal Colleges, to further consider the wealth of information and potential solutions.

Together, we will identify the best steps that can be taken nationally, regionally and locally. We will build a service that can continue to keep pace with increased activity whilst driving forward innovations and developments to ensure that no opportunity for transplantation is missed.

Summit aims and objectives

- To identify the challenges posed by:
 - Increasing number of donors
 - Changing donor demographics
 - Changes to legal basis for consent
 - Increasing number of organs available for transplant
 - Infrastructure
 - i. Offering
 - ii. Pathology services
 - iii. Retrieval
 - Innovation/ technological advances
- To determine what can be done to overcome these challenges by:
 - Transplant units
 - NHS Blood and Transplant
 - British Transplantation Society
 - Commissioners
 - Professional/ Regulatory Bodies
 - Government

Summit scope

- Paediatric and adult
- All solid organs, hepatocytes and islets
- Deceased and live donation
- Actions to be taken nationally and locally

Summit output

Report on challenges in organ donation and recommendations on potential solutions, to be agreed by both BTS and NHSBT in discussion with Commissioners and UK Health Departments, and then made publicly available.

Meeting format

A survey was sent to each transplant unit prior to the summit to seek views on:

- the challenges within transplantation
- who is impacted by these challenges and the nature of the impact
- how the challenges should be addressed

A summary of this survey is provided in the Annex. The analysis identified four key issues to be addressed:

1. Out of hours provision
2. Workload
3. Recruitment and retention
4. Access

The meeting was split into three sections:

1. Setting the context (presentations and plenary discussion) – Including presentations from NHS Blood on Transplant and the British Transplantation society (see Annex)
2. Identifying the problem (group work) – Using fishbone diagram methodology (see Annex) to identify the causes of the challenges identified by analysis of the pre-event survey.
3. Identifying the solutions (group work and panel discussion) – Identify solutions to the causes of the challenges, as discussed in the previous section. In addition, a Panel comprised of NHS Blood and Transplant the British Transplantation Society and Commissioners outlined potential future national action.

The delegates were sat in tables of up to 11 people, split by abdominal and cardiothoracic teams. Each table had a range of different disciplines. Those with a national role, such as commissioners and NHS Blood and Transplant, were spread across the tables. Each table included two facilitators – one from the British Transplantation Society and one from NHS Blood and Transplant. Their role was to ensure that all those at the table had an opportunity to speak, keep the discussion within the remits of the meeting and capture any discussion.

Summary of the discussion

The issues and their causes

Each table produced fishbone diagrams to identify the causes of the one or more of the issues identified through the pre-event survey. The feedback was then summarised in to figures 1 – 4 below.

Figure 1: Workload

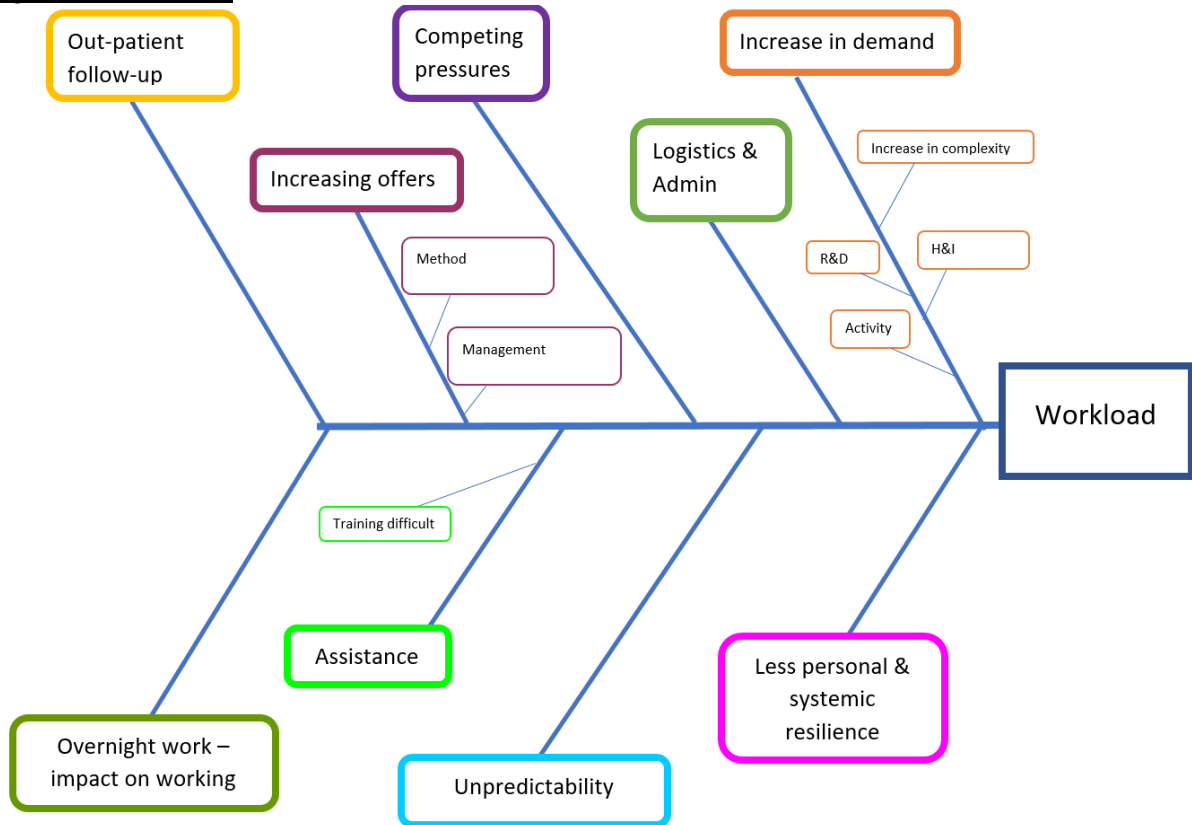


Figure 2: Out of hours provision

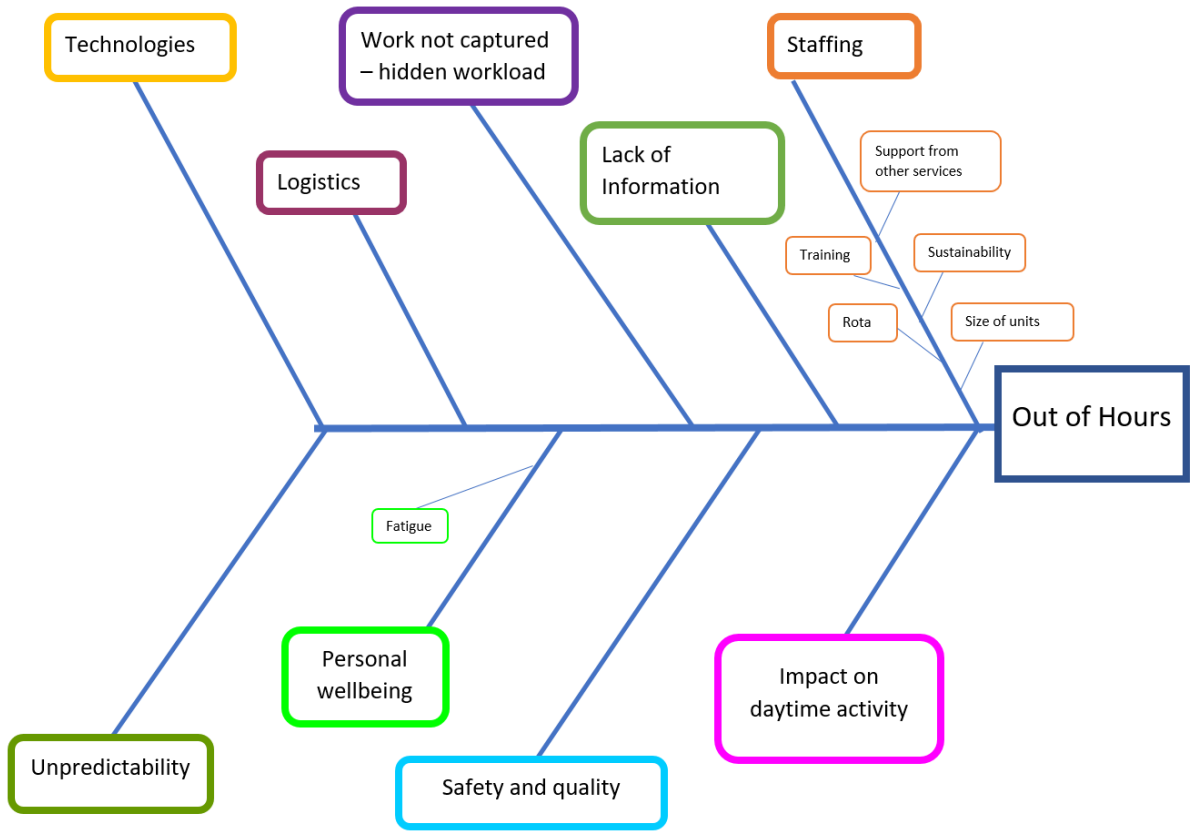


Figure 3: Recruitment and Retention

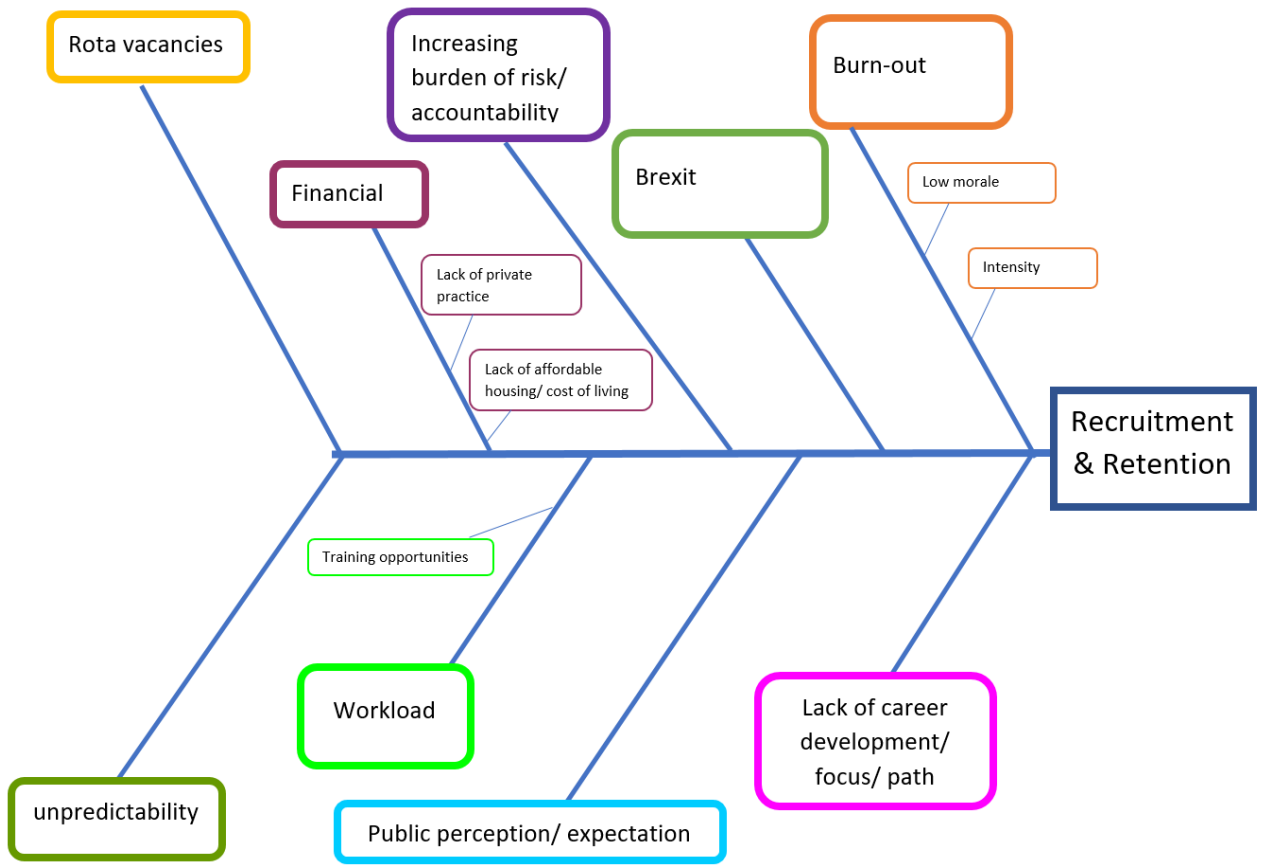
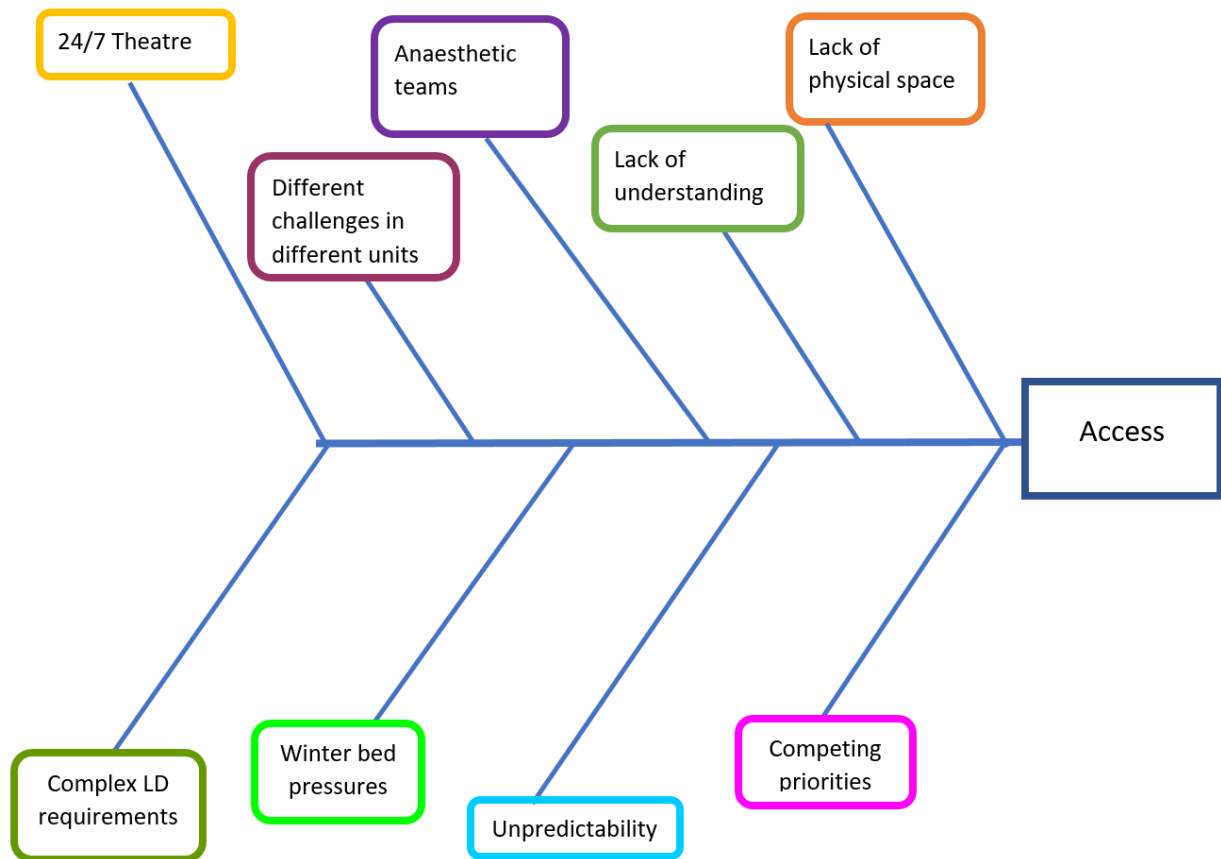


Figure 4: Access



The solutions

The suggestions raised by each table for solutions to address the causes of the issues were reviewed and are summarised in Table 1 below.

Table 1: Suggested solutions

Issue/ Causes	Potential solution
Workload - Increasing offers	<ul style="list-style-type: none"> • Centralised Triage <ul style="list-style-type: none"> ○ Centralised Recipient Co-ordinator for Screening/ Triage ○ 'Respect and Trust' for NORS teams to determine what organs are transplantable • Develop local acceptance criteria for trainees
Recruitment and retention – workload and rotas	<ul style="list-style-type: none"> • Increased Collaboration <ul style="list-style-type: none"> ○ Share workload between units ○ Shared rotas between units ○ Share knowledge and skills & learning – best practice • Unified approach to research
Recruitment and retention – Workforce sustainability	<ul style="list-style-type: none"> • Eliminate the unpredictability <ul style="list-style-type: none"> ○ Daylight decision making and transplantation ○ Increased use of perfusion and preservation enable longer cold ischaemic times ○ Increase numbers of live renal transplants • National Standards

Issue/ Causes	Potential solution
	<ul style="list-style-type: none"> ○ Development of national standards, 'model' ideal staffing for units ○ Incentives for units who meet standards/ ideal 'model' ○ Consider removing 24 hour working and replace on call rotas with shifts ● Recruitment <ul style="list-style-type: none"> ○ Map career pathways for surgeons, physicians, recipient co-ordinators, nurses with regards to transplantation ○ Develop education and promotional videos to promote roles and career progression ○ Opportunities for early exposure to transplant careers ○ Explore the potential for new and different roles in transplantation ● Culture <ul style="list-style-type: none"> ○ Remove the mystery, raise the profile of transplantation in trusts, increase understanding and accountability ○ It's ok to be tired
Access - Unpredictability	<ul style="list-style-type: none"> ● Consolidation of Units <ul style="list-style-type: none"> ○ Combine units where geographical variance allows ○ Increased activity, leading to dedicated theatres running at 80% capacity
Out of hours - Infrastructure	<ul style="list-style-type: none"> ● Centralised systems, networks and increased integration, H & I, Pathology & IT ● Increased Collaboration <ul style="list-style-type: none"> ○ Share workload between units ○ Shared rotas between units

Panel discussion and potential national action

The focus for the Summit was on action that could be taken and led by those in the transplant service. However, it was acknowledged that there was a need for some support at a national level, to drive forward improvements and innovation. Representatives from the national organisations provided views on the potential steps that could be taken to address the challenges identified. These are summarised in Table 2 below.

Table 2 – Proposals for national action

Organisation	Proposed action
NHS Blood and Transplant	Support the establishment of Regional Transplant Collaboratives
Commissioners	<ul style="list-style-type: none"> ○ Introduction of CQUINs to support transplantation ○ Peer Review ○ Revised service specifications ○ Improved tariff

Annex 1 - Presentations

Lorna Marson – BTS President



Sustainability survey

Lorna Marson, President, BTS

Claire Williment, NHSBT

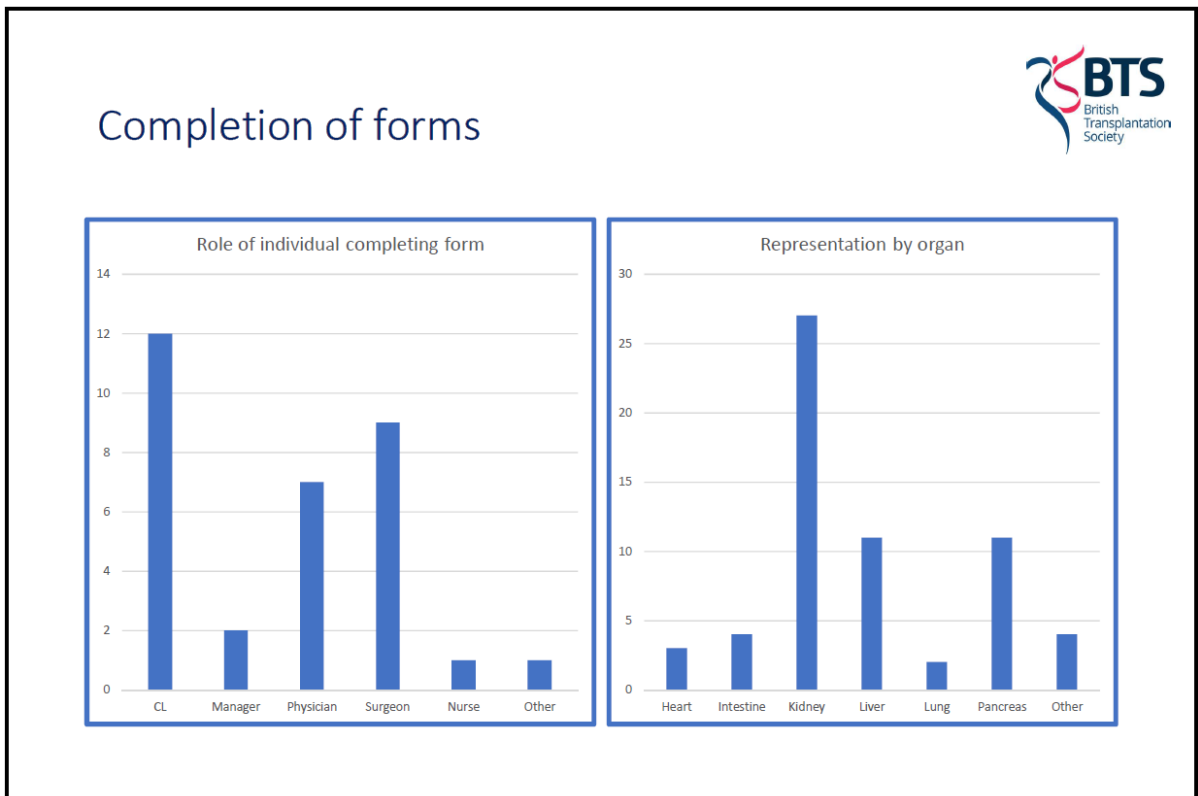
Survey-process



- Sent to clinical leads at all transplant centres, requesting that the contents and responses be discussed at a MDT or equivalent
- Focused on pressures in transplantation, did not include donor care, or impact of donors on provision of ICU beds
- Each centre invited to select 5 people to represent their unit today

HOSPITAL	NUMBER OF RESPONSES
Birmingham - Children's Hospital	0
Birmingham - Queen Elizabeth Hospital	3
Bristol - Southmead Hospital	1
Cambridge - Addenbrooke's Hospital	1
Cardiff - University Hospital of Wales	2
Coventry - University Hospital	0
Edinburgh - Royal Infirmary	3
Glasgow - Golden Jubilee National Hospital	0
Glasgow - Western Infirmary	2
Leeds - St. James' University Hospital	3
Leicester - General Hospital	0
Liverpool - Royal Liverpool University Hospital	1
London - Great Ormond Street Hospital	0
London - Guy's Hospital	2
London - King's College Hospital	1
London - St. George's Hospital	2
London - The Royal Free Hospital	0
London - The Royal London Hospital	3
London - West London Renal and Transplant Centre	0
London- Harefield Hospital	0
Manchester - Royal Infirmary	0
Manchester - Wythenshawe Hospital	0
Newcastle - Freeman Hospital	1
Nottingham - City Hospital	0
Oxford - Churchill Hospital	2
Papworth - Royal Papworth Hospital	2
Plymouth - Derriford Hospital	0
Portsmouth - Queen Alexandra Hospital	4
Sheffield - Northern General Hospital	0

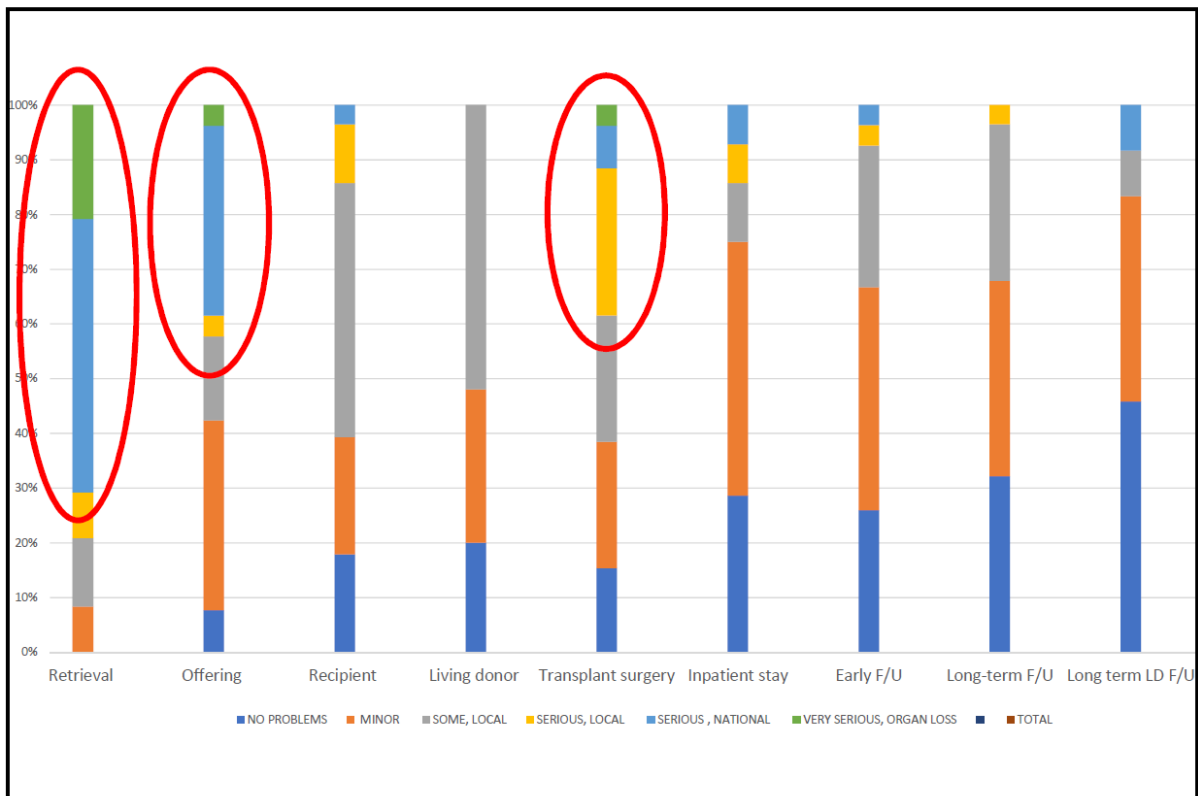
17 of 29 centres responded (58%)



Please indicate which of the following options best represents your experience of each stage of the care pathway

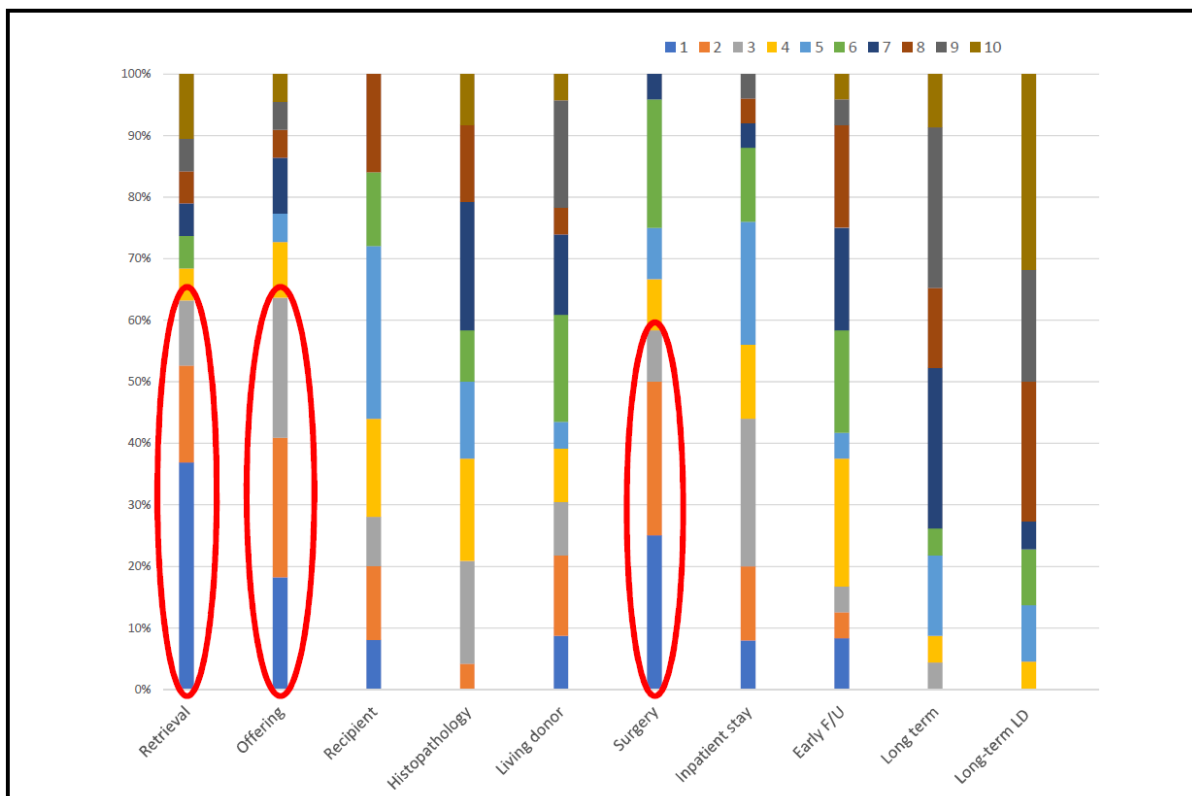


- Retrieval surgery
 - Offering process
 - Recipient assessment/preparation
 - Living donor assessment/preparation
 - Transplant Surgery
 - Inpatient stay
 - Early follow up (<6 months)
 - Long term follow up
 - Recipient
 - Living donor
- No problems
 - Minor difficulties
 - Some issues, address locally
 - Serious issues, address locally
 - Serious issues, national
 - Very serious issues, leading to loss of organs nationally
 - No experience

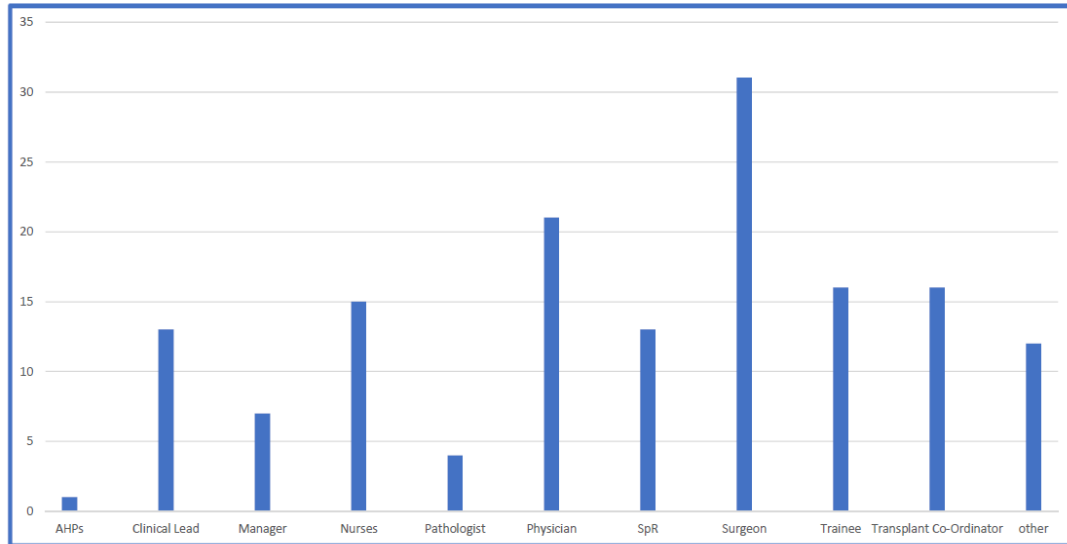


Please rank stages in order of greatest pressure

- Retrieval surgery
- Offering process
- Recipient assessment/preparation
- Histopathology
- Living donor assessment/preparation
- Transplant Surgery
- Inpatient stay
- Early follow up (<6 months)
- Long term follow up
 - Recipient
 - Living donor



Which team members are most affected?



How are team members affected?

Response	Number of times cited
Out of hours pressures	18
Staff shortages	12
Competing pressures (time & resources)	12
Bed/ theatre availability	10
Workload	8
Capacity in clinics	5
Stressed/ demoralized workforce	4
NORS	2
Lack of donor/ patient data	1
Potential loss of funding	1
High number of non-viable offers	1

'It is only a question of time before the system/ staff break'

Three biggest national challenges



Response	Number of times cited
Lack of experienced staff	11
ICU/ Theatre capacity	10
Utilise new technology/ IT	5
Burnout	4
Public trust/ support/ education	4
Pre/ post transplant patient management	4
Organ utilisation	3
Need improved collaboration/ communication	3
Increase in the number of living and deceased transplants	3
Tariff/ funding	3
Managing peaks in activity	2
Referral process	2
Need transplant champions in non-transplanting hospitals	2

Potential solutions



Response	Number of times cited
Improve the efficiency of the process	11
Freedom to rearrange rotas	6
Improved use of IT (e.g. telepathology; skype clinics)	6
Use of novel technologies	4
Funding	4
Increase HDU/ ICU capacity	3
Improved communication	3
Recruit/ train more staff	3

Summary

- There are significant pressures on transplant teams
- Requires careful consideration about how to take this forward
- Specific areas of concern
 - Retrieval surgery
 - Offering process
 - Transplant Surgery
- Long term follow up?



Trends in organ donation and transplantation

Rachel Johnson
Statistics and Clinical Studies
NHS Blood and Transplant

BTS Transplant Summit, June 2018

Caring Expert Quality

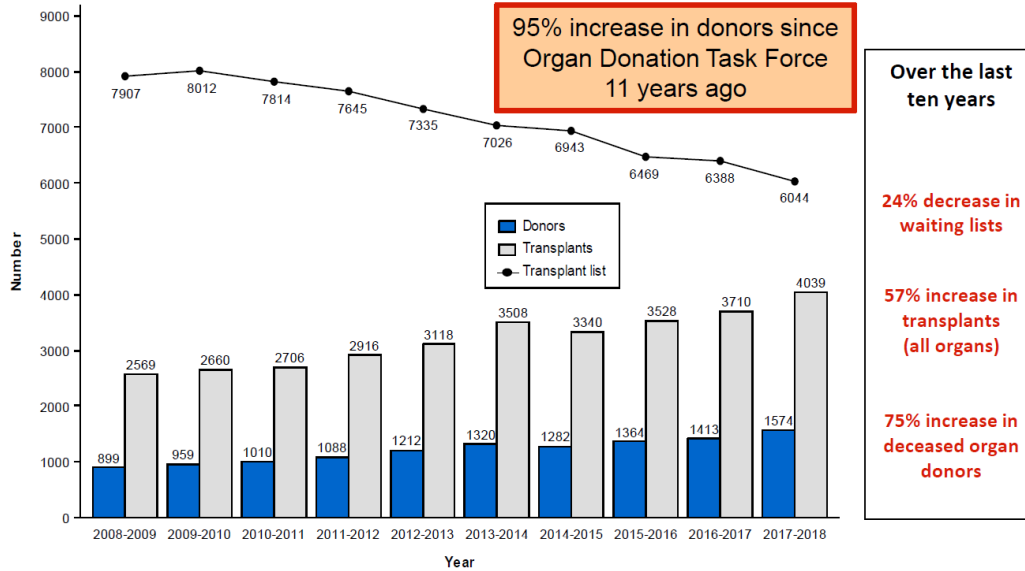
Deceased donation and transplantation



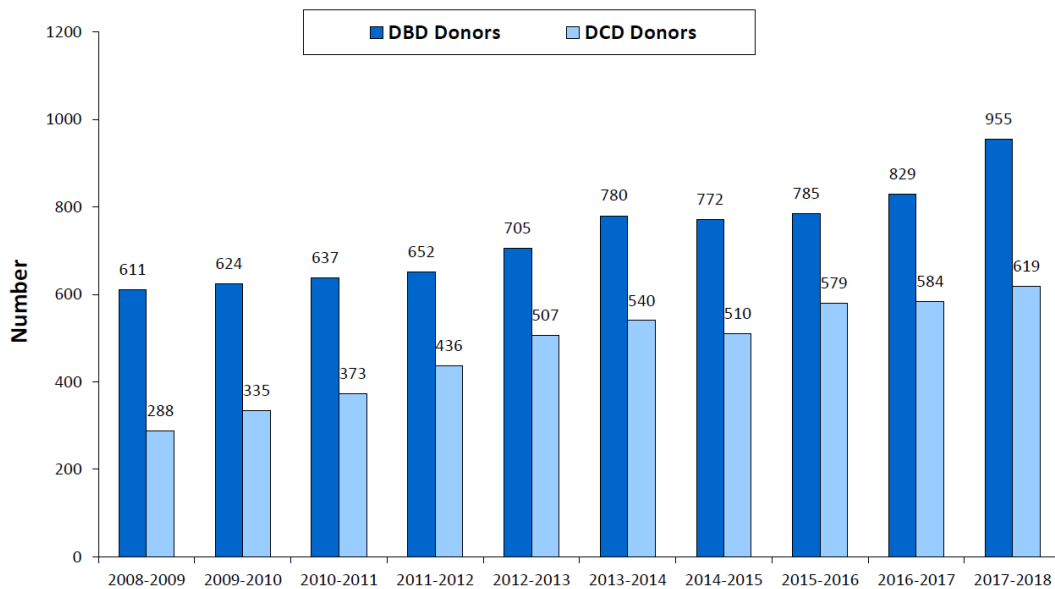


Deceased donors and transplants

Figure 2.1 Number of deceased donors and transplants in the UK, 1 April 2008 - 31 March 2018, and patients on the active transplant list at 31 March

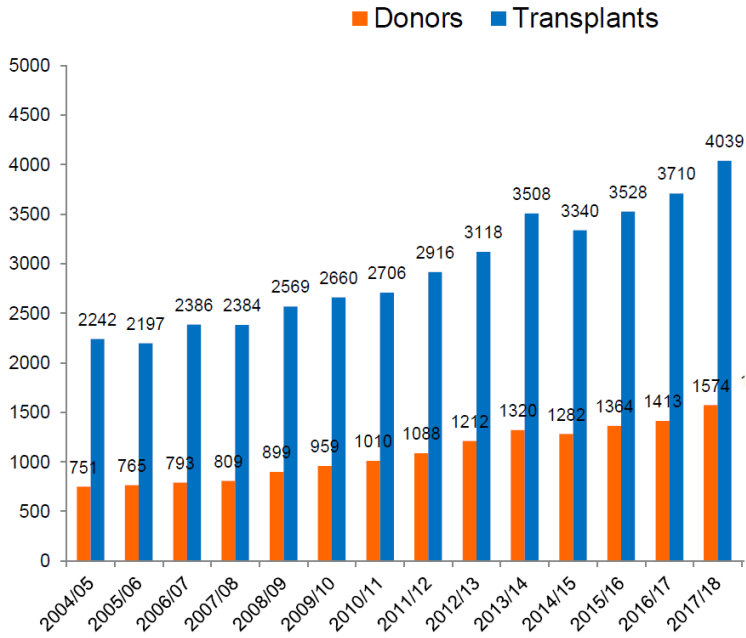


Deceased donors



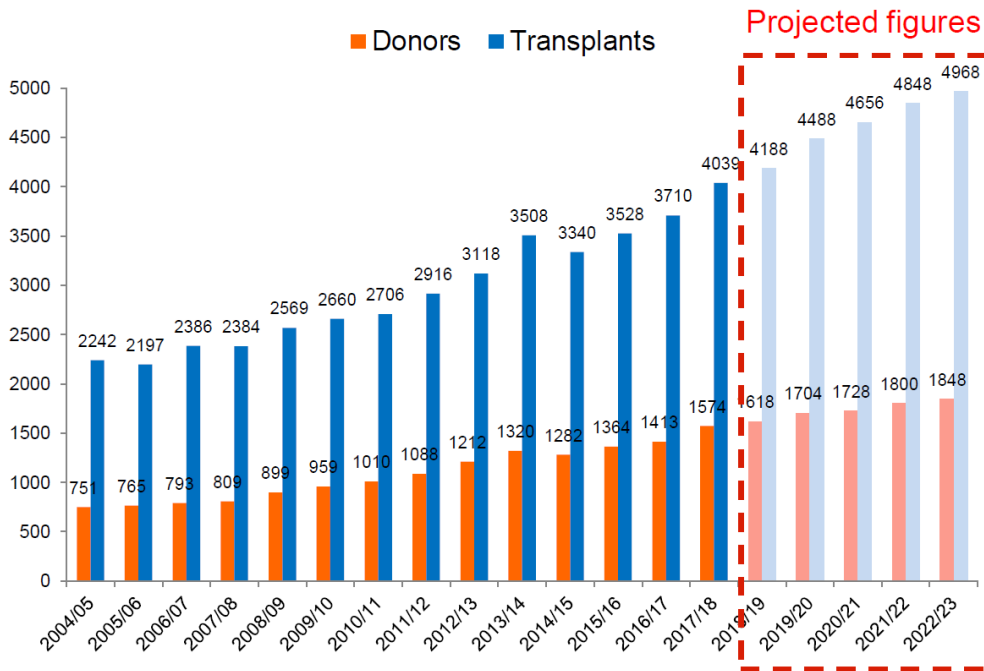


Projections for deceased donors and transplants

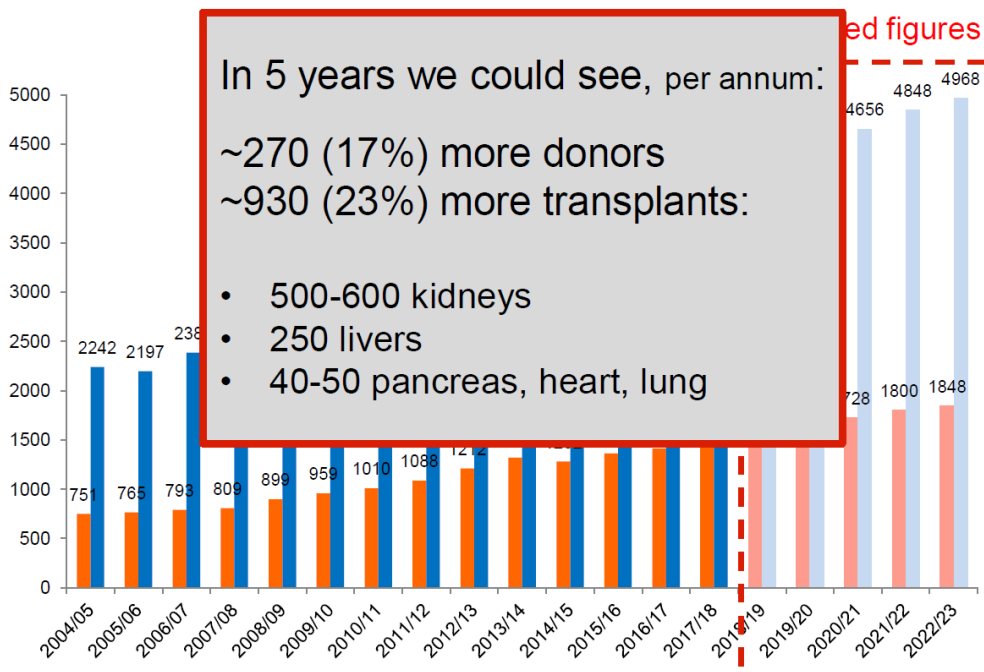




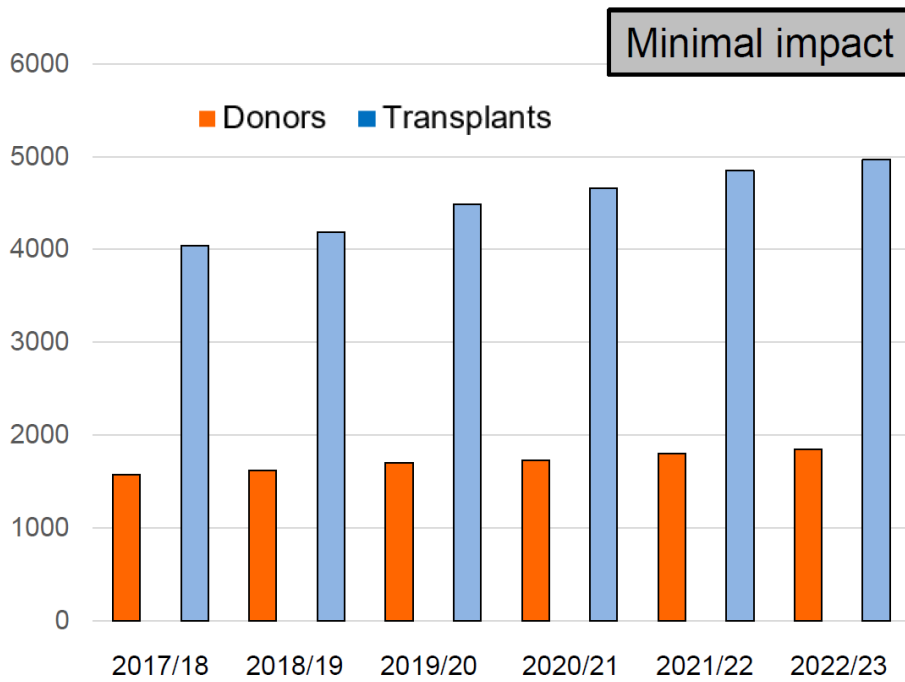
Projections for deceased donors and transplants



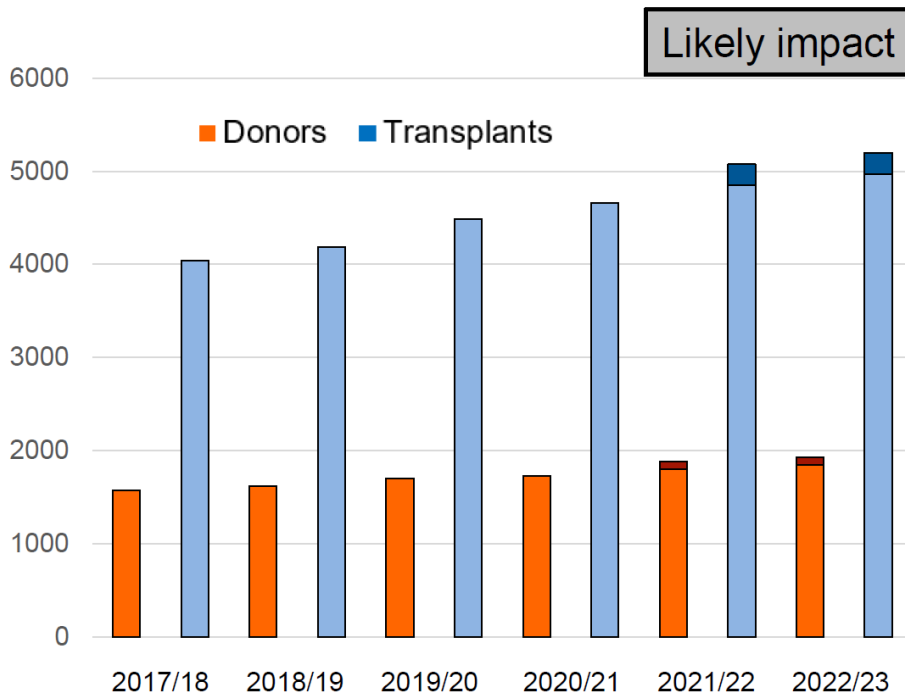
Projections for deceased donors and transplants



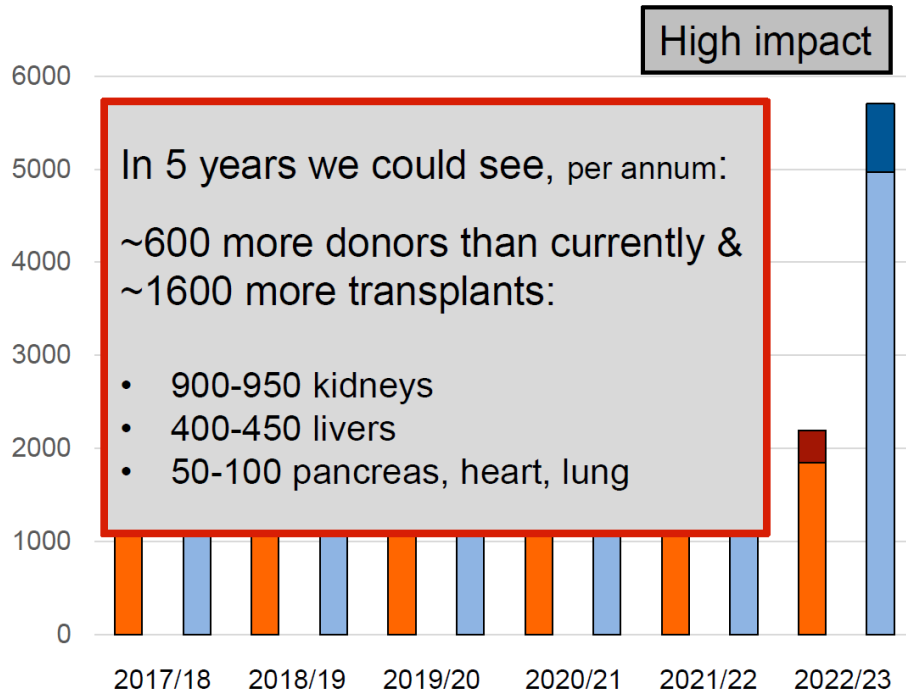
Impact of opt-out legislation?



Impact of opt-out legislation?



Impact of opt-out legislation?



Predicting the future

- Difficult to predict future activity given many unknown influences:
 - Opt-out
 - Organ perfusion / preservation technologies
 - Increasing donor complexity
 - Changes in organ offering schemes
 - Increases in organ utilisation eg Scouting, HCV donors, DCD hearts, other initiatives
- However, current projected increases in donor and transplant activity likely based on new developments and underlying trends

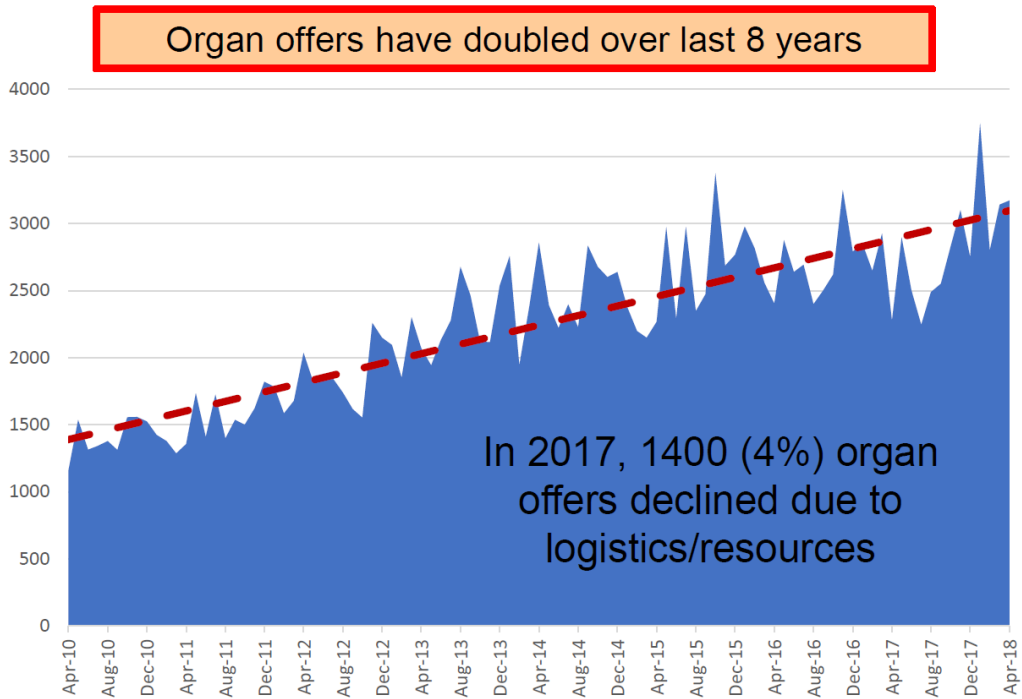
How will further increases impact capacity and sustainability?



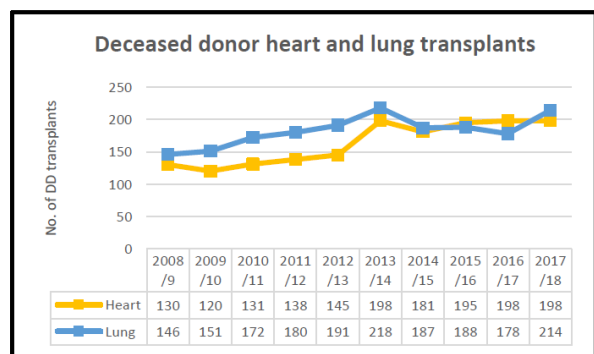
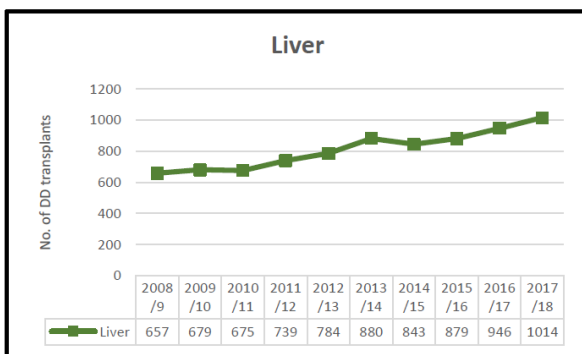
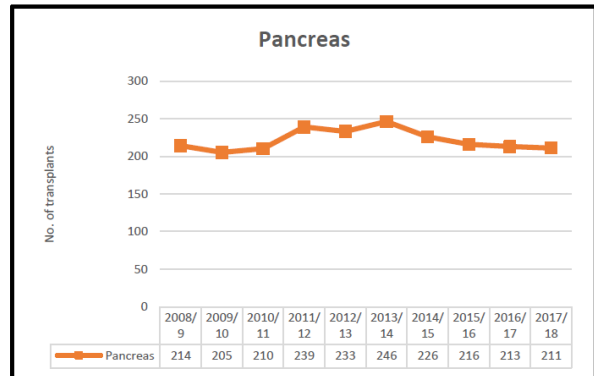
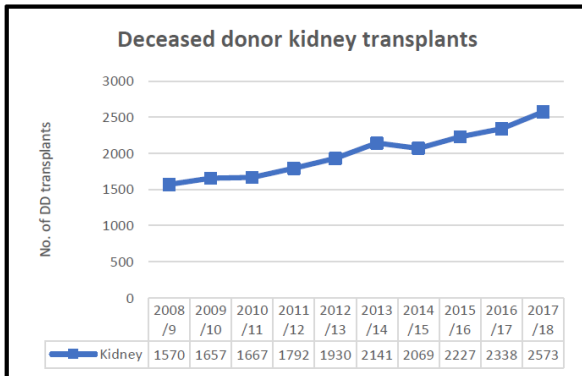
Deceased donation and transplantation – Areas of impact



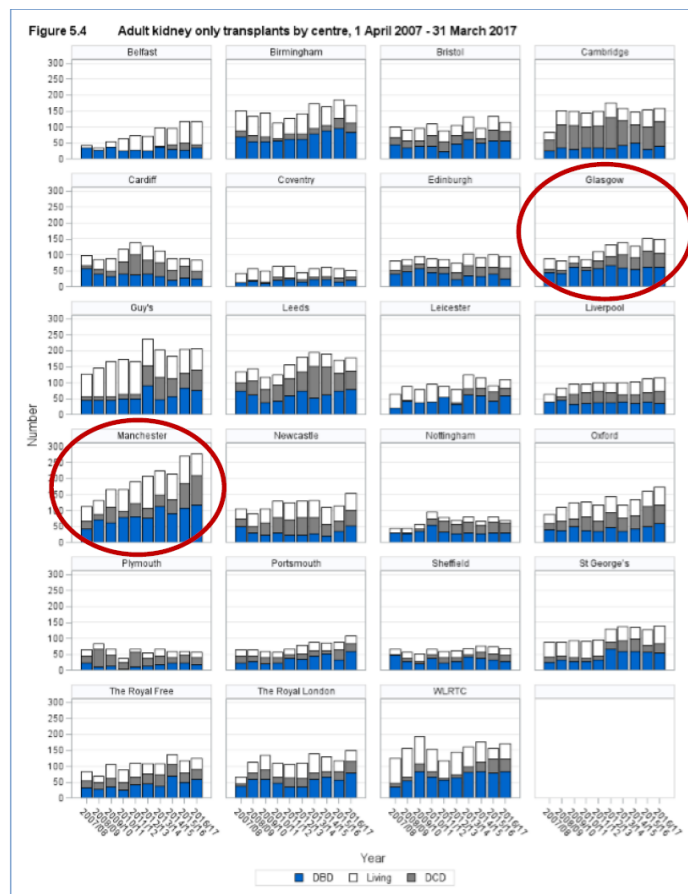
All organ offers per month



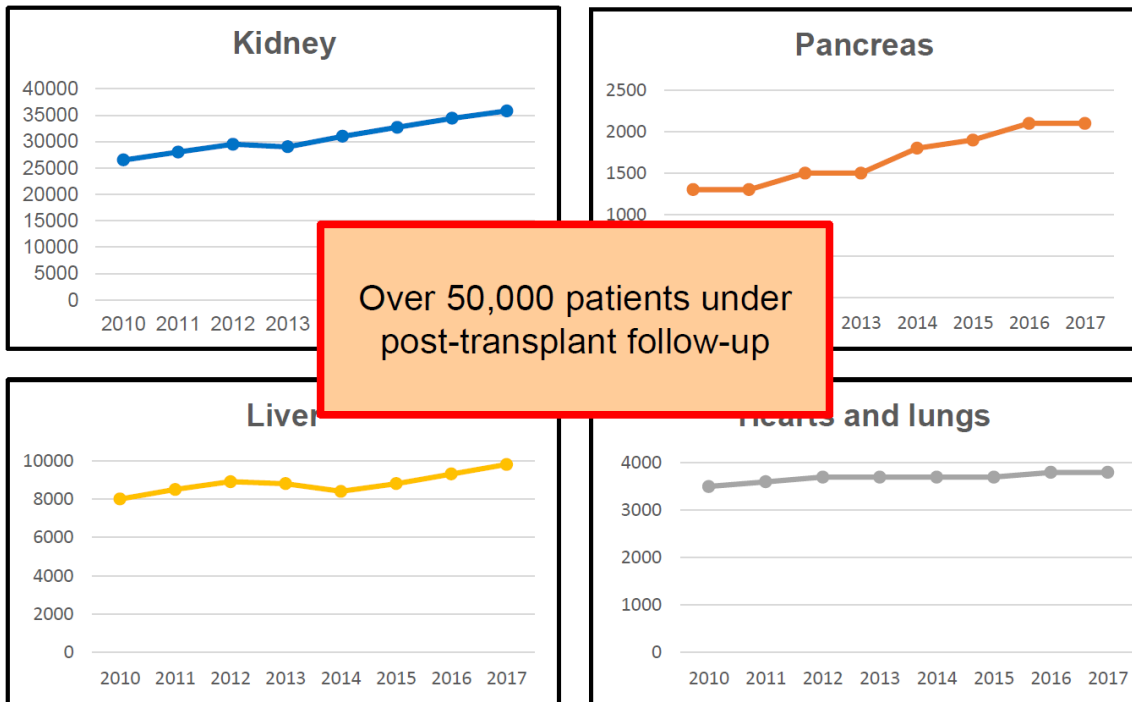
Trend in transplants by organ



Kidney transplant activity by centre



Number of patients under post-transplant follow-up care

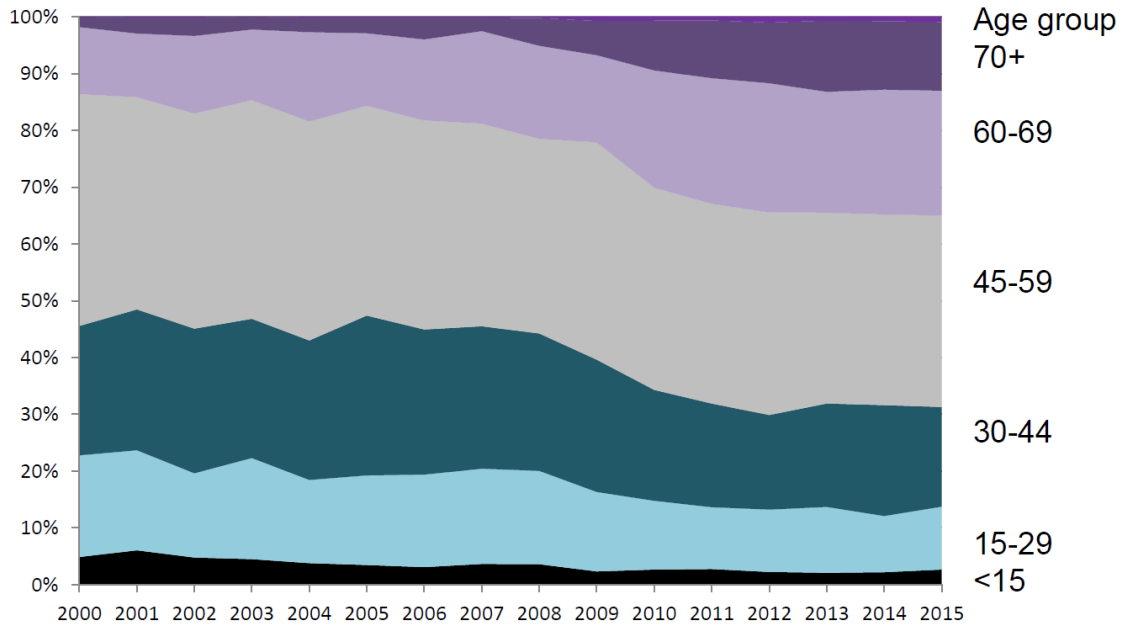


Deceased donation and transplantation –

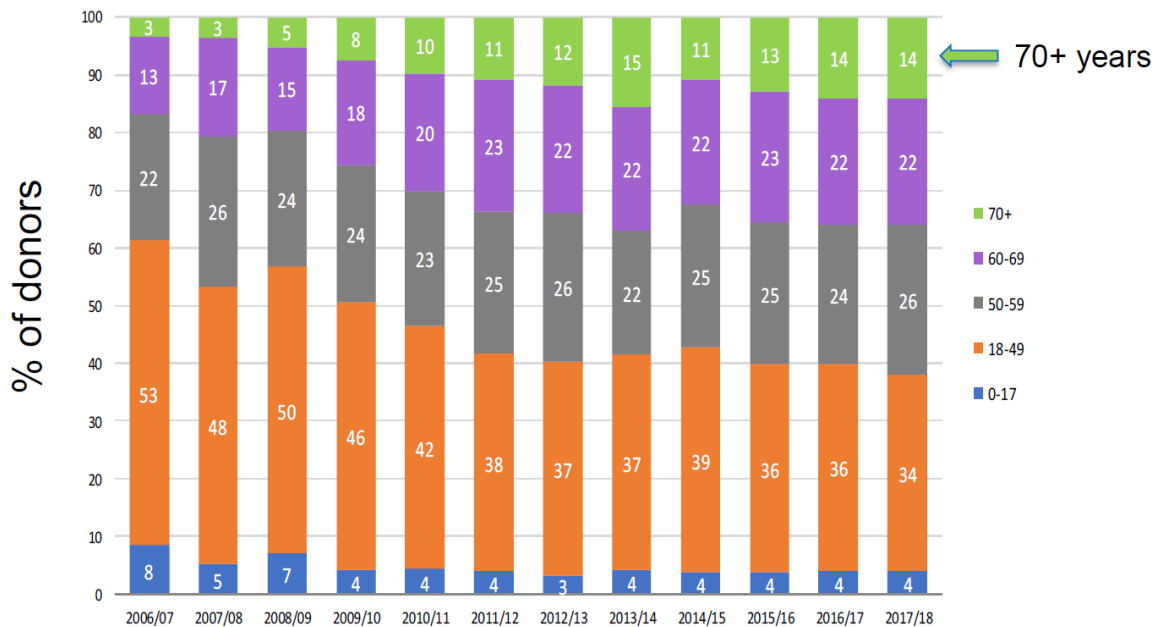
Added complexities



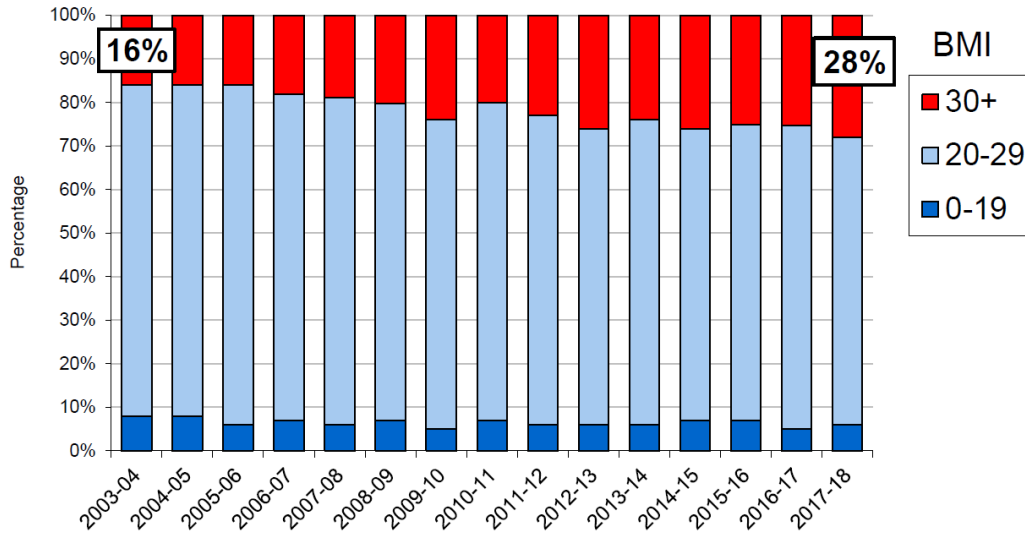
Age of deceased donors



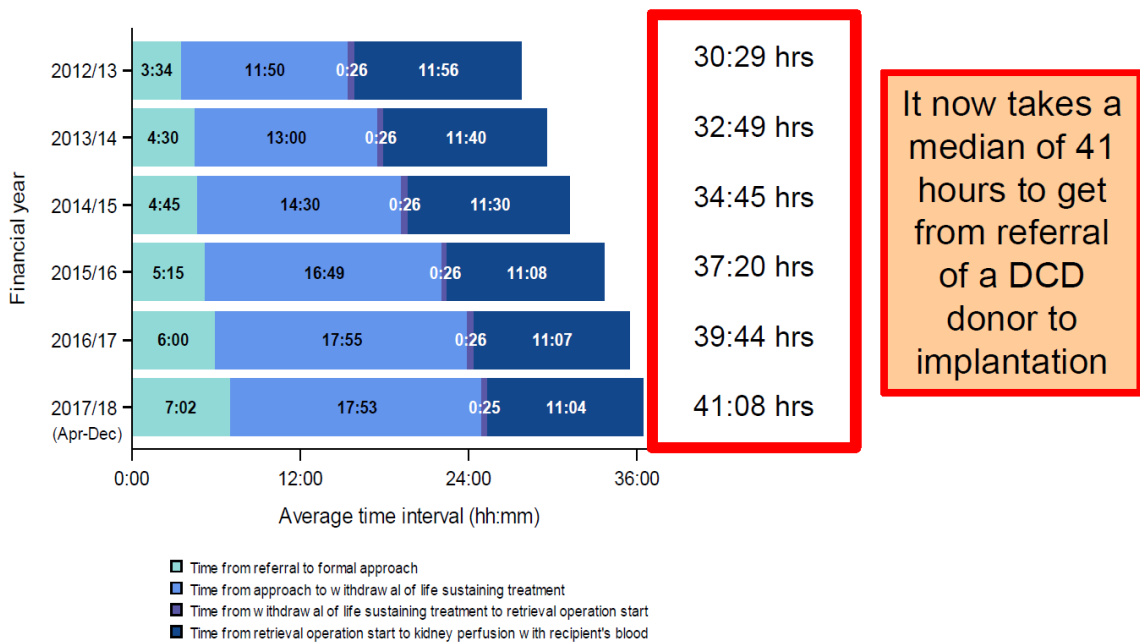
Age of deceased donors



BMI of deceased donors



Length of the DCD pathway



Time of treatment withdrawal in DCD donors

2011/12													TOTAL
Hour													
	0-1	2-3	4-6	6-7	8-9	10-11	12-13	14-16	16-17	18-19	20-21	22-23	
Monday	9	14	5	5	1	5	2	3	3	11	15	20	97
Tuesday	20	16	5	4	2	3	3	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	25	133
Friday	26	17	13	7	1	5	2	3	9	5	19	24	142
Saturday	19	20	13	3	1	7	4	2	7	4	12	14	108
Sunday	14	11	6	3	5	5	1	3	1	2	10	16	77
													762

2012/13													TOTAL
Hour													
	0-1	2-3	4-6	6-7	8-9	10-11	12-13	14-16	16-17	18-19	20-21	22-23	
Monday	9	4	4	5	4	5	4	10	2	10	15	21	103
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	22	18	22	16	11	7	6	1	7	4	12	22	154
Friday	22	15	19	9	7	6	8	5	12	5	18	21	148
Saturday	22	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
													829

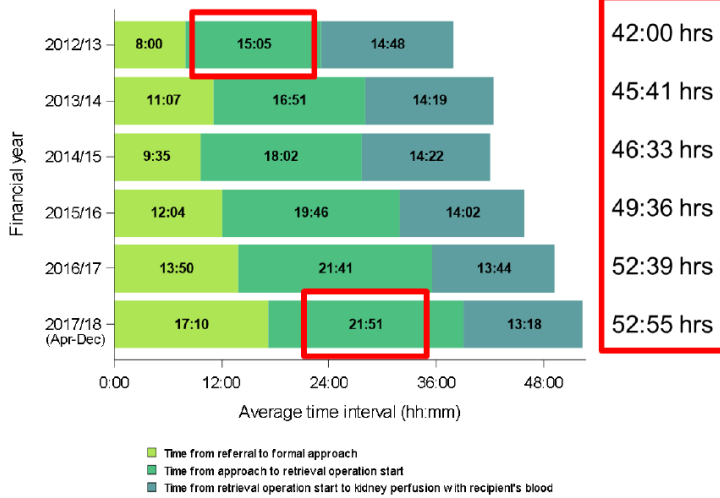
2013/14													TOTAL
Hour													
	0-1	2-3	4-6	6-7	8-9	10-11	12-13	14-16	16-17	18-19	20-21	22-23	
Monday	14	14	4	6	5	4	7	6	6	8	8	10	102
Tuesday	19	24	11	11	9	11	7	9	4	4	12	20	155
Wednesday	25	27	1	17	8	10	8	12	6	10	11	21	172
Thursday	30	28	2	10	10	12	7	9	6	11	19	18	181
Friday	25	37	17	12	12	5	7	10	7	9	12	14	183
Saturday	34	28	18	17	13	15	11	7	4	7	12	15	178
Sunday	17	14	12	5	5	6	5	7	4	9	16	19	109
													1088

2014/15													TOTAL
Hour													
	0-1	2-3	4-6	6-7	8-9	10-11	12-13	14-16	16-17	18-19	20-21	22-23	
Monday	12	15	6	7	7	6	5	6	3	7	6	12	96
Tuesday	24	19	20	6	14	13	11	9	6	10	10	19	161
Wednesday	19	26	25	4	13	8	8	11	6	10	14	17	171
Thursday	19	18	18	10	19	16	5	10	9	7	9	15	151
Friday	18	22	14	22	15	21	6	12	7	13	11	22	181
Saturday	24	26	15	12	18	19	11	9	5	9	11	9	188
Sunday	17	16	13	6	7	12	10	8	6	7	2	5	109
													1069

2016/18													TOTAL
Hour													
	0-1	2-3	4-6	6-7	8-9	10-11	12-13	14-16	16-17	18-19	20-21	22-23	
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	20	17	22	19	14	16	7	10	8	18	181
Thursday	21	21	22	17	11	19	26	10	12	9	11	15	194
Friday	18	23	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
													1169

Treatment withdrawal and thus organ retrieval in DCD donors has been pushed from the evening to the following morning

Length of the DBD pathway



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	12	12	10	3	3	4	2	2	0	2	6	85
Tuesday	16	12	10	5	5	4	1	4	1	0	5	6	72
Wednesday	12	11	9	15	5	6	2	0	2	1	0	5	74
Thursday	9	14	16	6	5	5	4	2	0	4	2	7	106
Friday	10	14	16	2	5	5	2	2	0	2	0	2	85
Saturday	7	14	9	11	4	6	3	2	0	2	2	4	84
Sunday	7	10	14	5	3	7	2	2	1	0	5	6	82
													480

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	16	15	6	4	5	2	2	1	2	2	6	85
Tuesday	12	15	15	15	9	4	5	2	2	2	4	6	92
Wednesday	12	16	22	14	12	5	1	2	0	2	5	2	94
Thursday	7	5	15	12	7	4	4	1	2	0	6	2	70
Friday	10	9	11	12	10	9	7	2	4	2	5	5	86
Saturday	10	16	11	9	6	9	3	4	1	0	2	2	79
Sunday	11	10	11	6	9	10	3	5	2	1	1	4	73
													586

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	13	9	12	9	12	6	4	2	3	1	6	90
Tuesday	5	14	17	13	12	5	4	1	2	5	5	1	103
Wednesday	10	15	19	10	11	5	3	2	1	6	4	1	111
Thursday	13	9	21	1	5	9	9	7	1	1	4	6	100
Friday	5	11	15	9	11	10	2	2	1	5	1	4	86
Saturday	7	16	5	20	5	7	6	2	4	6	4	3	93
Sunday	9	15	17	7	12	5	10	2	3	0	1	8	98
													881

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	15	7	10	5	4	5	9	116
Wednesday	5	12	22	12	5	10	10	9	1	5	2	7	104
Thursday	10	12	9	16	7	12	16	7	4	5	4	2	109
Friday	5	18	12	9	12	6	11	2	1	2	6	5	95
Saturday	8	13	10	10	16	10	5	4	2	2	7	6	96
Sunday	5	10	11	9	9	9	6	2	4	0	5	6	90
													899

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	5	20	12	8	6	12	13	5	5	4	2	7	106
Tuesday	6	9	15	15	5	12	16	5	9	6	5	2	119
Wednesday	12	5	12	16	5	16	16	10	4	5	2	4	103
Thursday	12	12	14	10	4	12	10	4	7	3	3	5	111
Friday	9	5	8	13	13	6	10	5	7	3	2	4	91
Saturday	5	9	10	12	5	15	11	10	7	3	2	7	102
Sunday	5	9	15	4	6	9	5	10	3	2	7	1	85
													720

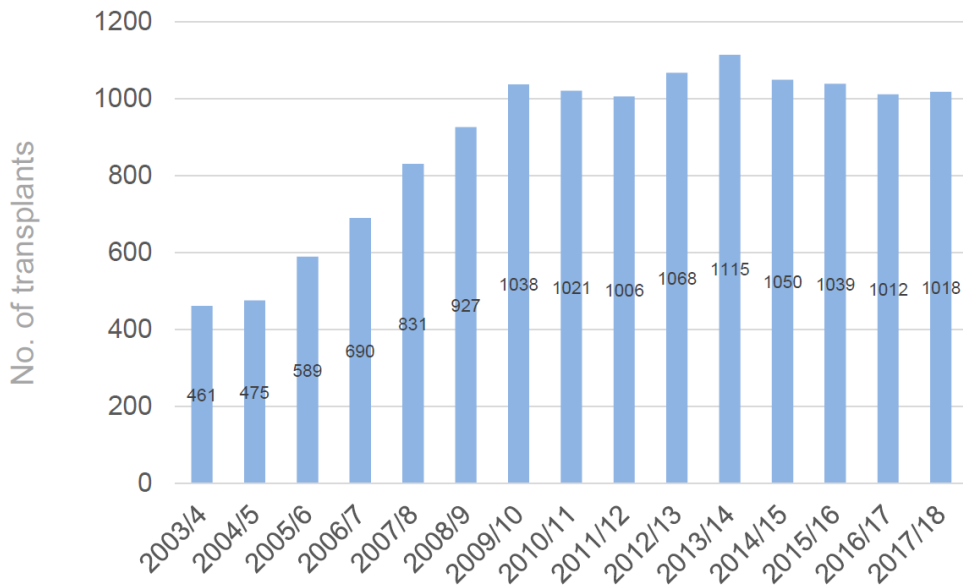
DBD organ retrieval is now a daytime activity that very often competes with other demands on acute theatres

Living organ donation





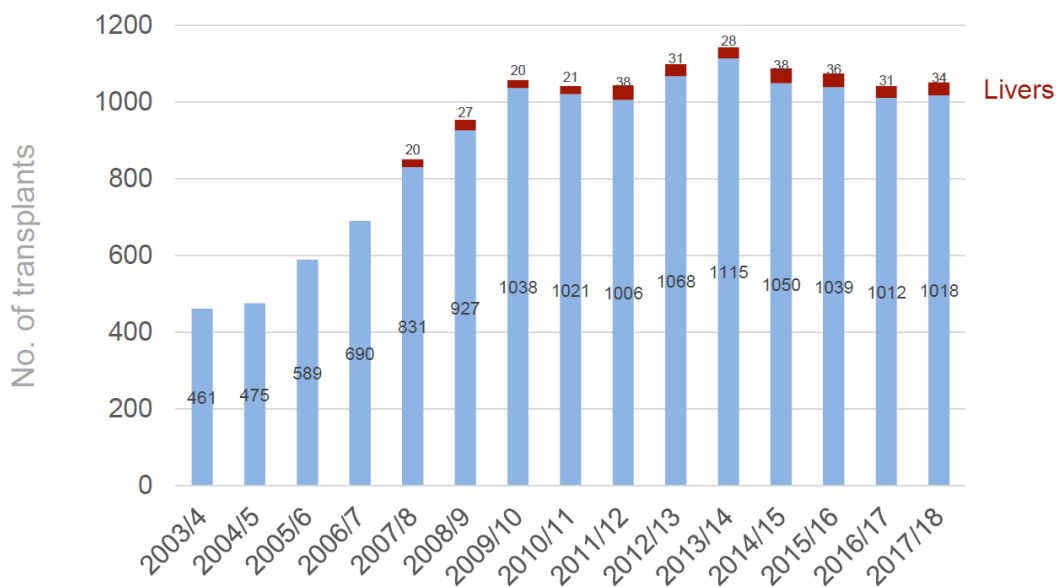
UK Living Donor Kidney Transplants



Includes adult and paediatric patients and transplants in private hospitals



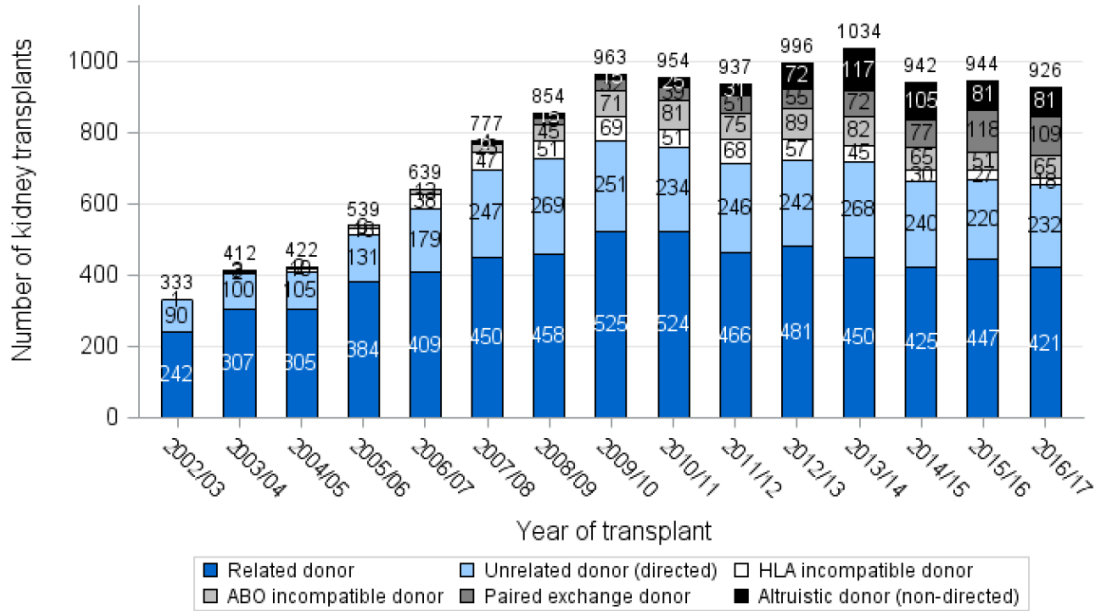
UK Living Donor Kidney & Liver Transplants



Includes adult and paediatric patients and transplants in private hospitals

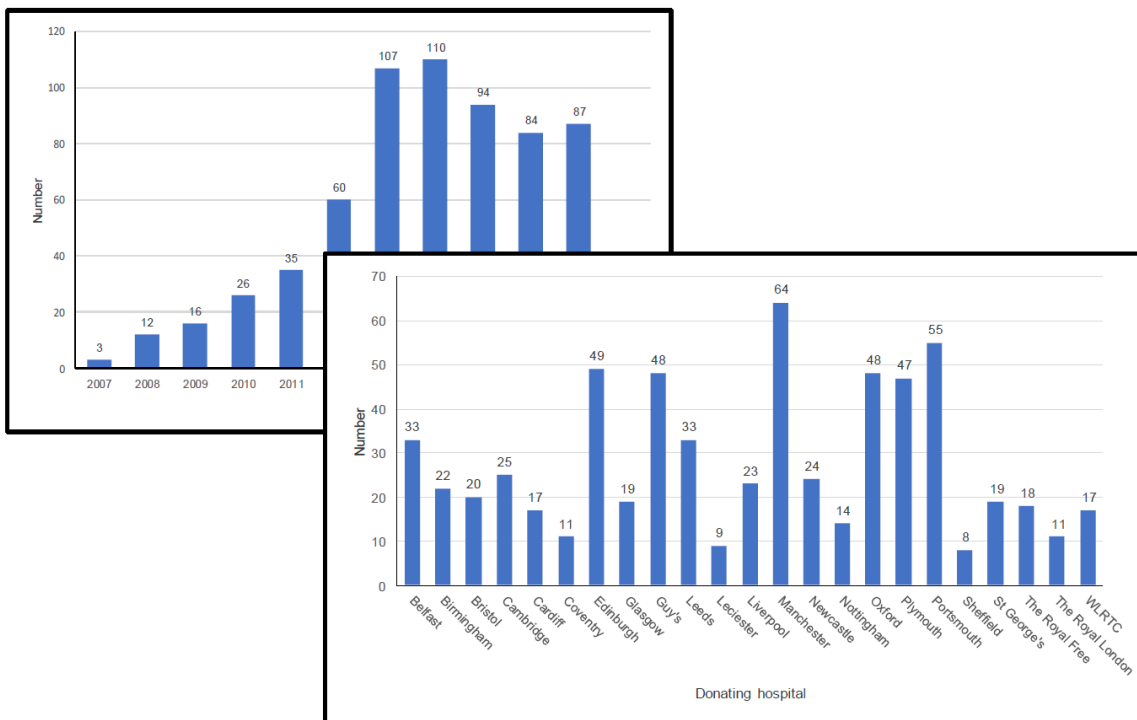
Total Adult Living Kidney Donor Transplants

Complexity increasing = workload increasing



Non-Directed Altruistic Living Kidney Donors

2007-2017



Summary



Summary

- Deceased donors & transplants have hit a record high again in 2017/18
- Living donation numbers pretty constant
- Difficult to predict future activity given many unknown influences:
 - Opt-out
 - Organ perfusion / preservation technologies
 - Increasing donor complexity
 - Changes in organ offering schemes
 - Increases in organ utilisation
- However, further substantial increases in donor and transplant activity expected based on new developments and underlying trends

In 5 years we could see, per annum:

~270 (17%) more donors

~930 (23%) more transplants:

- 500-600 kidneys
- 250 livers
- 40-50 pancreas, heart, lung

Challenges

Major challenge: 20-25% more transplants likely over next 5 years, but could be more....

Associated challenges:

- More (out of hours) offers of organs for those on call
- Difficulty in getting theatre access for retrieval and transplant
- Ever growing number of patients under post-transplant follow-up
- Increasing complexity of deceased donors
- Increasing complexity of living kidney transplantation




Acknowledgements

Transplant unit and other hospital staff and Specialist Nurses for Organ Donation for provision of data to the UK Transplant Registry




www.odt.nhs.uk

 @NHSBT_Stats




Blood and Transplant



DEMAND AND CAPACITY NORS Teams

NORS Demand and Capacity Event

Caring Expert Quality



Blood and Transplant

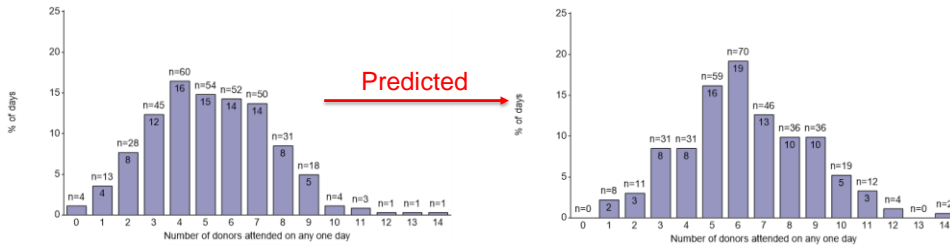
Content

- “Busyness” of teams - current and predicted
- Compare current closest team first vs. retrieval zones
- Cardiothoracic – alternative scenarios for current and predicted activity (from NORS Review)
- Abdominal - alternative scenarios for current and predicted activity
 - with fewer part-time teams
 - with 8 or 6 teams on call
 - zonal team first
 - increase activity of part-time teams

“Busyness” of abdo teams

2017/18
Mean no. donors per day
= 5.3

2022/23
Mean no. donors per day
= 6.3

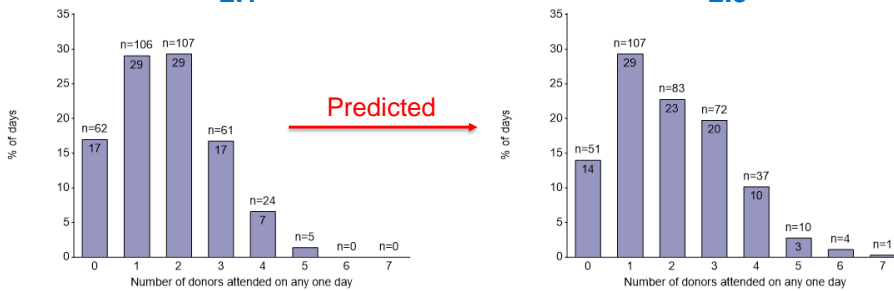


Mean number of donors attended per day							
Actual			Predicted				
2010/11	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
3.7	4.8	5.3	5.5	5.8	5.9	6.1	6.3

“Busyness” of cardio teams

2017/18
Mean no. donors per day
= 2.1

2022/23
Mean no. donors per day
= 2.3

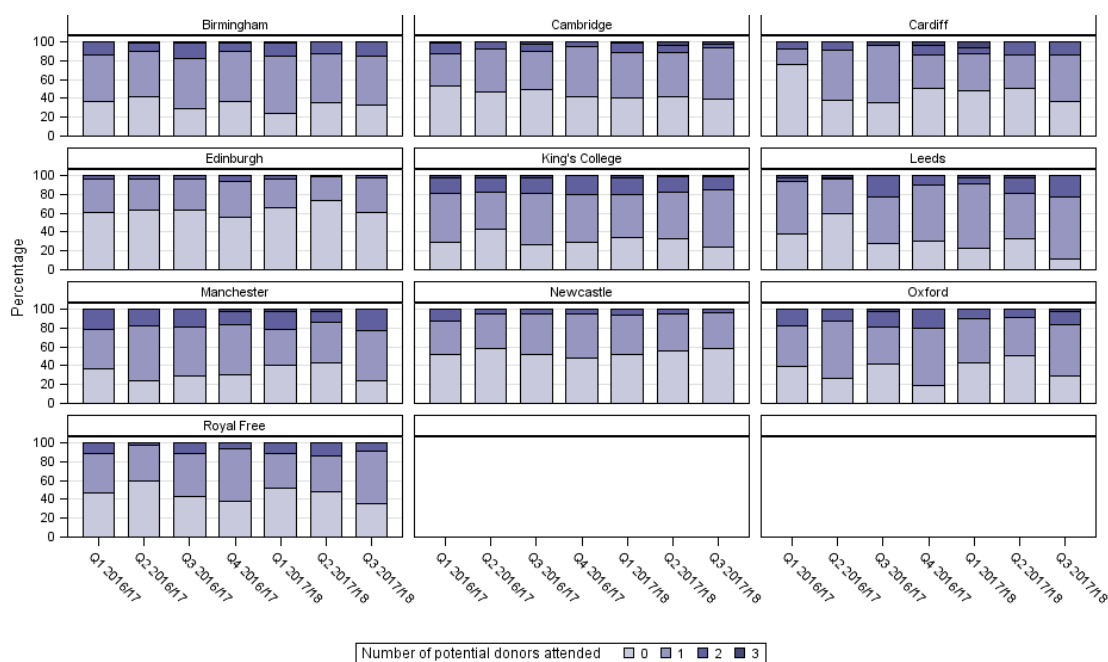


Mean number of donors attended per day							
Actual			Predicted				
2010/11	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
1.6	1.9	2.1	2.1	2.2	2.2	2.3	2.3

“Busyness” of abdo teams



Blood and Transplant



Abdominal timings – 2016/17



Blood and Transplant

Down-time

Travel time

Retrieval team	N	Median hrs (IQR)
Manchester	156	13 (5 - 25)
Oxford	156	14 (7 - 24)
King's	313	15 (7 - 29)
Leeds	129	16 (8 - 31)
Birmingham	188	16 (9 - 34)
UK	1,676	17 (8 - 36)
Cambridge	219	20 (9 - 40)
Cardiff	63	22 (11 - 39)
Royal Free	106	22 (9 - 46)
Newcastle	192	24 (11 - 51)
Edinburgh	154	31 (11 - 66)

Retrieval team	N	Median mins (IQR)
King's	314	72 (33 - 108)
Cardiff	64	75 (30 - 157)
Leeds	136	75 (43 - 105)
Manchester	161	75 (55 - 115)
Edinburgh	155	80 (55 - 145)
UK	1,704	85 (50 - 128)
Royal Free	108	87 (50 - 128)
Cambridge	222	90 (55 - 127)
Oxford	158	90 (70 - 120)
Birmingham	192	105 (70 - 136)
Newcastle	194	120 (35 - 155)

Birmingham on call 37 weeks, Cardiff on call 13 weeks
 Oxford and Royal Free on call 26 weeks each
 Leeds and Manchester on call 26 weeks each

Off duty activity not included in down time

Cardiothoracic timings – 2016/17

Down-time

Travel time

Retrieval team	N	Median hrs (IQR)
Papworth	108	19 (8 - 40)
Harefield	109	24 (10 - 43)
Birmingham	96	25 (14 - 52)
UK	478	27 (13 - 55)
Manchester	76	30 (16 - 63)
Newcastle	59	43 (17 - 82)
Glasgow	30	63 (38 - 153)

Retrieval team	N	Median mins (IQR)
Harefield	117	85 (64 - 140)
Birmingham	98	120 (90 - 145)
Manchester	80	122 (60 - 157)
UK	516	120 (80 - 160)
Papworth	123	125 (90 - 165)
Glasgow	35	150 (85 - 200)
Newcastle	63	150 (115 - 190)

Travel times include road travel and also any flights if used

NOTE: The N's are larger for travel time as there is more complete data to calculate travel time

Content

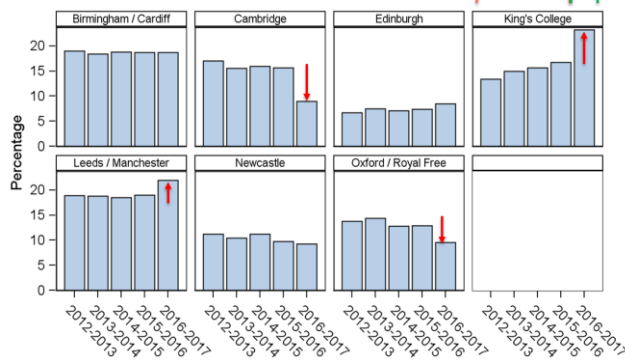
- “Busyness” of teams - current and predicted
- Compare current closest team first vs. retrieval zones
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 - with fewer part-time teams
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 - zonal team first
 - increase activity of part-time teams

Share of donors - abdominal



Blood and Transplant

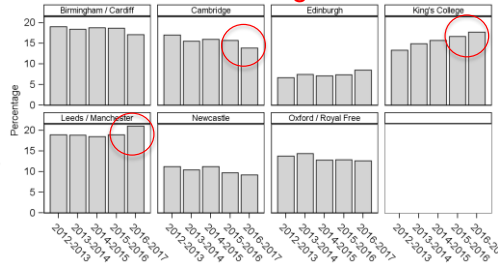
% share of donors by first on call team



Actual attending team



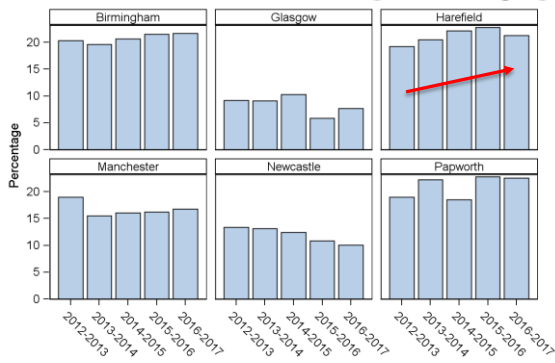
First on call team assuming zonal



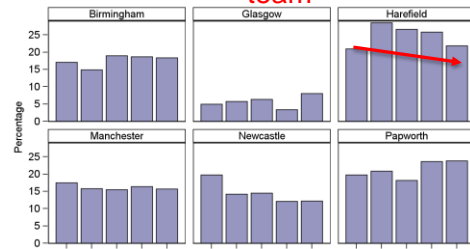
Share of donors - cardiothoracic

% share of donors by first on call team

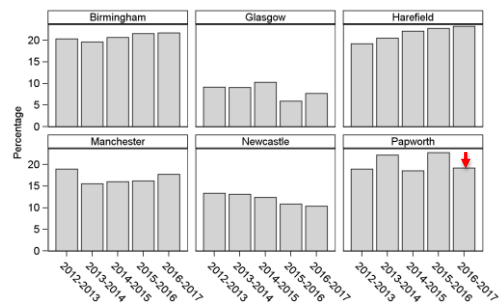
Zonal Closest first



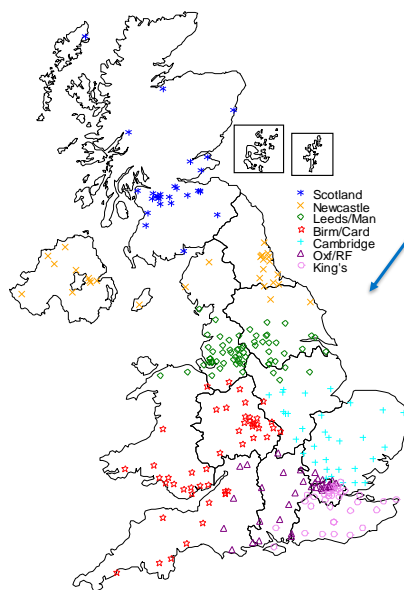
Actual attending team



First on call team assuming zonal



Abdominal NORS teams zones as at March 2016



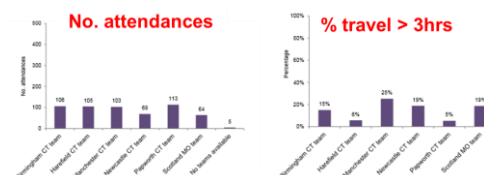
- Simulations assume first team zonal
- If unavailable then order teams by closest to furthest

Content

- “Busyness” of teams - current and predicted
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 - zonal team first
 - increase activity of part-time teams

Summary of simulations Cardiothoracic

- Full and part-time scenarios simulated to see activity by team
- Using data from NORS review - 2013/14 vs 2019/20 predictions
- Four metrics are presented from the simulations:
 - Expected number of attendances
 - % of days used
 - % travel times >3 hours
 - Average travel time



- Reduced travel if Birmingham, Harefield and Newcastle cardio teams full time, but otherwise comparable with six part-time teams
- Other 4 team scenarios were modelled as part of the NORS review and did not appear to add much benefit above 3 teams. It also led to greater variation in team activity

Content

- “Busyness” of teams - current and predicted
- Compare current closest team first vs. retrieval zones
- Cardiothoracic – alternative scenarios for current and predicted activity (from NORS Review)
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 - with fewer part-time teams
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 - zonal team first
 - increase activity of part-time teams

Simulating other scenarios Abdominal

Different full and part-time scenarios simulated to see activity by team

- 7 teams incl L/M part-time with the following full-time:
 - B / C and O / RF
- 7 teams incl 0 part-time with the following full-time:
 - B / C, L / M and O / RF
- 8 teams incl L/M part-time with the following full-time:
 - B, C and O / RF
 - B / C and O, RF
- 8 teams incl 0 part-time with the following full-time:
 - L, B, C and O / RF
 - L, B / C and O, RF
 - M, B, C and O / RF
 - M, B / C and O, RF
- 6 teams incl Newcastle/Edinburgh part-time with:
 - B, L and RF
 - B, L and O
- Other options to model in future could include: increasing activity of all part-time teams so there are more teams on call at any time

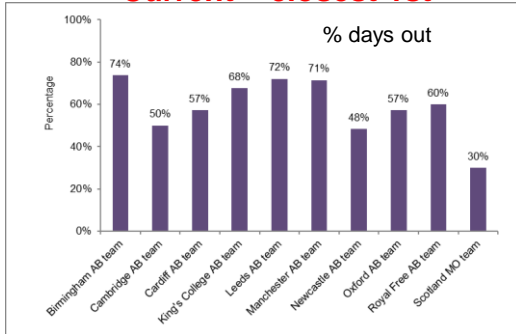
2017/18 – simulated results

**7 teams including following part-time
Birm/Cardiff, Leeds/Manc and Oxford/R Free**

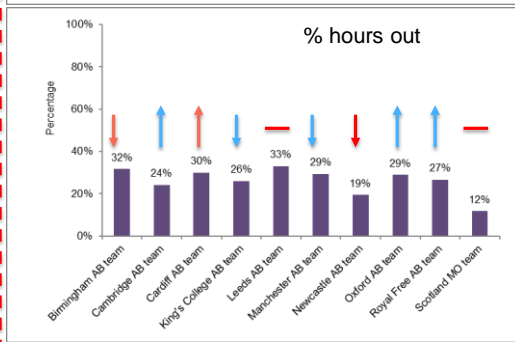
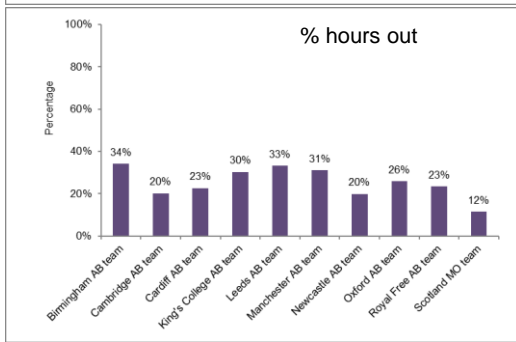
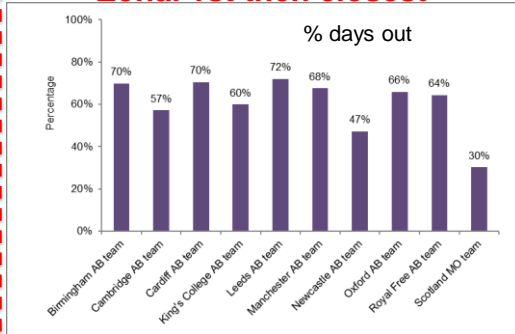


Blood and Transplant

Current – closest 1st



Zonal 1st then closest



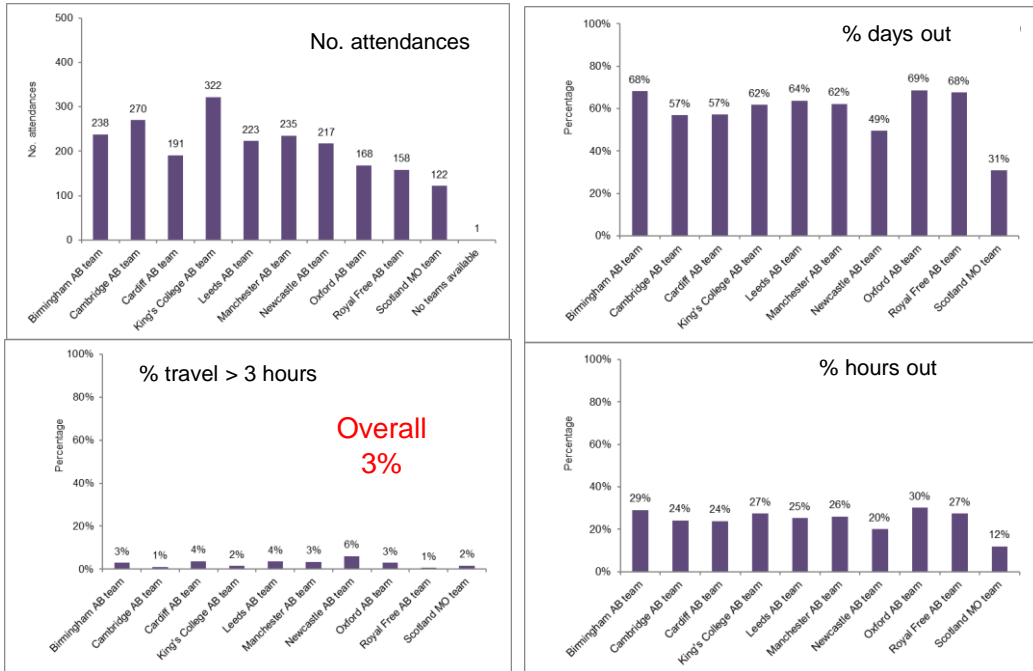
2020/21 – simulated results



Blood and Transplant

Zonal first then closest

8 teams on call – L+M, B+C on call 39 weeks a year



Summary of simulations

Abdominal



Blood and Transplant

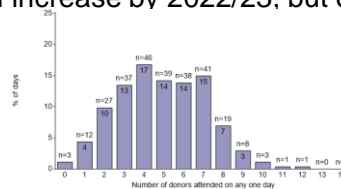
- All scenarios would meet demand for donor numbers with 0 cases where no teams available, except when only 6 teams on call
- Maintaining 7 teams on call but with fewer part-time teams gives comparable results to current rota
- 8 teams relieves strain on busier teams but also lowers activity for less busy teams, and does not add much benefit from current rota
- 6 teams with Edinburgh/Newcastle as part-time teams leads to an even spread of activity across teams but increases travel time for many teams

Further simulations Abdominal

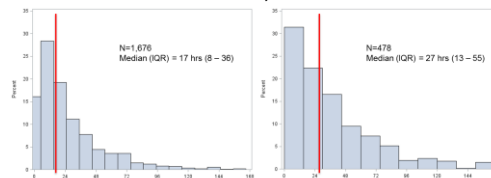
- Simulations assuming first team zonal then closest teams
- Simulations to show activity if increase activity of part-time teams so there are more teams on call at any time
- Use new measure - % hours out attending donors, of total hours on call
- Apply to:
 - current 2017/18 abdominal activity (n=1,880)
 - predicted 2020/21 abdominal activity (n=2,145 attendances)
 - predicted 2022/23 abdominal activity (n=2,294 attendances)

Summary

- No. donors attended per day will increase by 2022/23, but currently enough teams to meet demand



- Median downtime: abdominal teams - 17 hrs; cardiothoracic teams - 27 hrs
Varies between teams



- In theory closest team first should change activity, in practice it hasn't





Monitoring Future Activity and Thresholds for Increases/Reduction in Capacity

NORS Demand and Capacity Event

Caring Expert Quality

Current Triggers

- NORS teams that are busy at least 70% of their time on call for three successive quarters.
- NORS teams that are inactive at least 70% of their time on call for three successive quarters.
- Loss of donor due to insufficient NORS capacity.

Data Monitoring

Table 10.1: Proportion of days each NORS team spent attending at least one potential donor when on call*

Retrieval team	Proportion of days spent attending at least one potential donor when on call							
	Q1 2016/17	Q2 2016/17	Q3 2016/17	Q4 2016/17	Q1 2017/18	Q2 2017/18	Q3 2017/18	YTD 2017/18 (Apr-Dec)
Abdominal								
Birmingham	63.6	58.8	70.3	62.9	75.9	64.3	67.1	68.7
Cambridge	47.3	53.3	51.1	57.8	59.3	58.7	60.9	59.6
Cardiff	24.0	62.5	64.3	50.0	51.5	50.0	63.6	54.5
Edinburgh	39.6	37.0	37.0	44.4	34.1	26.1	39.1	33.1
King's College	70.3	57.6	72.8	71.1	65.9	67.4	76.1	69.8
Leeds	62.2	40.4	72.7	70.2	77.3	66.7	88.4	77.0
Manchester	63.0	75.6	70.8	69.8	59.6	56.8	75.5	64.3
Newcastle	48.4	42.4	47.8	52.2	48.4	44.6	42.4	45.1
Oxford	60.9	73.3	58.3	81.4	57.4	50.0	71.4	60.0
Royal Free	53.3	40.4	56.8	61.7	47.7	52.1	65.1	54.8
OVERALL	54.0	52.0	58.1	60.8	56.5	53.0	62.1	57.2
Cardiothoracic								
Birmingham	52.2	48.9	50.0	53.5	44.7	45.5	46.9	45.7
Glasgow	24.4	25.5	22.7	21.3	20.5	20.8	25.6	22.2
Harefield	56.5	46.7	45.8	72.1	51.1	61.4	57.1	56.4
Manchester	44.4	34.0	45.5	48.9	59.1	41.7	48.8	49.6
Newcastle	30.4	20.0	35.4	41.9	40.4	29.5	30.6	33.6
Papworth	51.1	44.7	65.9	57.4	54.5	68.7	48.8	57.8
OVERALL	43.2	36.6	44.2	48.9	45.1	44.6	43.1	44.2

*Only on call donor attendances are included.

Donor Characterisation

- Microbiology
- Histocompatibility and Immunogenetics
- Predominantly England



Learning points?

People 'break' or show 'distress' in different ways

- Mental health problems
- Displacement
- Physical injury/illness

Loss of team members

- Reduced performance
- Increased pressure on remaining team
- Resentment
- Loss of resilience
- Increased likelihood of 'injury'
- Difficulty in recruitment

Consequence for team performance

- Change of priorities competing to surviving
- Went from leading race to 6th/8 teams
- We survived
- What else?

Personal Resilience

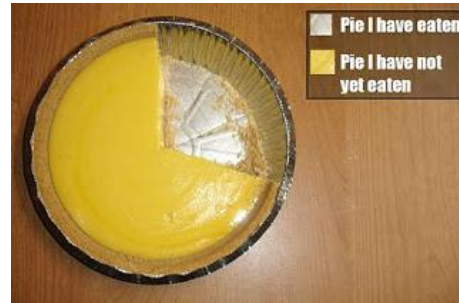
- Team related
 - I know I'm good at what I do
 - I know I don't have a problem with calling for help
 - I know my team all support each other
 - I hope my CD will have an eye on everyone's personal safety and well being
 - I hope my organization will provide a safe climate for us to work within

Key messages Team

- Unrelenting stress will cause problems
- People respond to “stress” or demonstrate “injury” in different ways
- Loss of even 1 or 2 individuals can have a major impact on the rest of the team
- External perception of ‘climate’ can impact on retention & recruitment
- Coping should always be a short term strategy

Key Messages Personal

- Be wary of when abnormality becomes so usual that it feels normal
- Have outside interests
- Listen to your body
- Look at your life pie



Go to work on an egg!

People are our most precious assets
we really have to look after them

Annex 2 - Delegates

Units represented

Addenbrookes
Barts and The London
Birmingham Queen Elizabeth Hospital
Bristol Southmead
Cambridge Tissue Typing Laboratory
Cambridge university Hospitals
Cardiff University Hospital
Coventry University Hospital
Edinburgh Royal Infirmary
Glasgow Western Infirmary
Guy's & St Thomas'
Harefield
Imperial
Leeds - St James University Hospital
Leicester General Hospital
London - St Georges' Hospital
Manchester Royal Infirmary
Newcastle - Freeman Hospital
NHS Greater Glasgow & Clyde
North Belfast
North Bristol Trust
Nottingham City Hospital
Oxford Churchill Hospital
Portsmouth - Queen Alexandra Hospital
Royal Brompton and Harefield NHS Foundation Trust
Royal Free
Royal Liverpool University Hospital
Royal London Hospital
Royal Papworth Hospital
St Georges
University Hospitals Coventry & Warwick
University Hospitals Plymouth NHS Trust

Disciplines represented

Allied Healthcare Professional
Chair
Chief Executive
Clinical Lead
Clinical Service Manager
Clinical Transplant Laboratory
Commissioner
Consultant Anaesthetist
Director - ODT
Donor Care Physiologist
H & I Laboratory
Lay Member
Manager
Medical Director
Nephrologist
Nurse

Pharmacist
Physician
Post-Transplant Clinic Sister
Provider
Service Manager
Specialist Registrar
Surgeon
Tissue Typing
Trainee
Transplant Co-Ordinator

National organisations represented

2020 Oversight Group
British Liver Transplant Group
British Transplantation Society
Human Tissue Authority
NHS Blood & Transplant
NHS England
NHS National Services Scotland
NHS Transplant Service Provider
Scottish Blood Transfusion Service
South London Renal Operational Delivery Network
UK Government Health Department
UK Health Department

Annex 3 - Fishbone diagram templates



Fishbone diagram

- For each main issue, explore what are the major and minor causes
- Break them down as much as possible – keep asking ‘why’
- Think about people, places, policies, procedures
- Focus on the causes, not more problems

