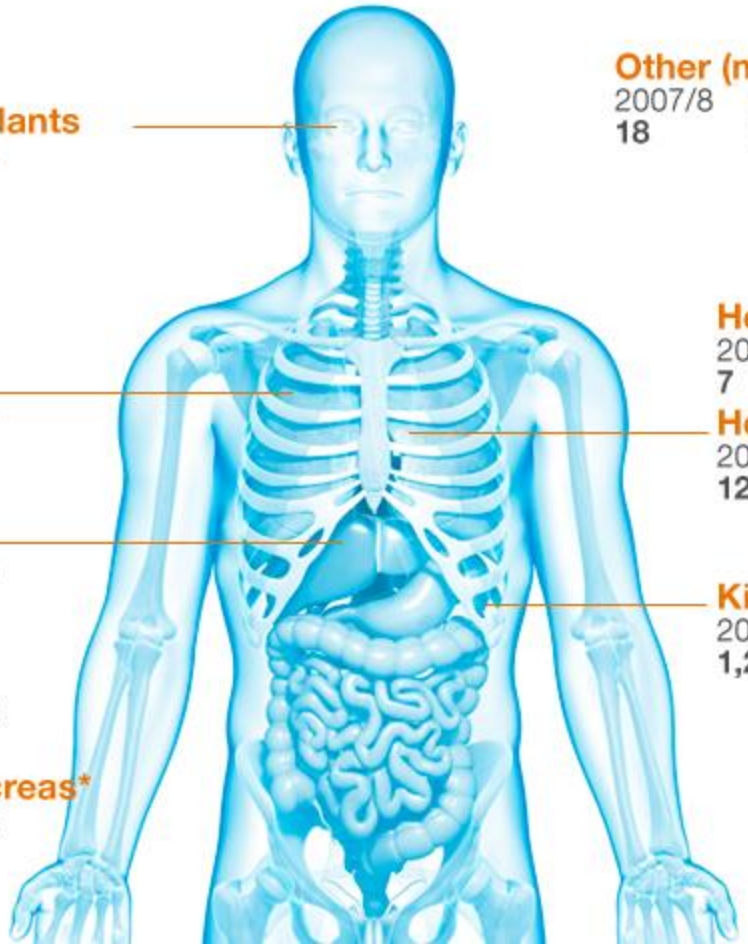
Complications associated with transfusing patients with a history of transplantation.

Presented by Tracey Tomlinson
Head of Laboratory, RCI Colindale

The good news

- Advances in the methods and treatment mean that more patients are being offered transplants as a treatment option
- Modern lifestyles and improved life expectancy means that more patients are diagnosed with diseases and conditions that can be treated or controlled by transplantation
- Advances in technology and drug therapy means that more patients survive to transplantation
- Advances in the management of the transplant process means that more patients are surviving post transplantation

UK organ transplants (from deceased donors)



Cornea transplants
2007/8 2012/3
2489 **3622**

Lung(s)
2007/8 2012/3
115 **187**

Liver/lobe
2007/8 2012/3
623 **774**

Pancreas*
2007/8 2012/3
58 **38**

Kidney & Pancreas*
2007/8 2012/3
188 **166**

Other (multi-organ)
2007/8 2012/3
18 **21**

Heart & Lung
2007/8 2012/3
7 **3**

Heart*
2007/8 2012/3
127 **142**

Kidney
2007/8 2012/3
1,249 **1,749**

* Not visible

Source: NHSBT, SPL

The good news

- ABO and D group is no longer the barrier to finding suitable donors leading to a increase in the number of ABO or D mismatched transplants taking place
  - Stem Cell transplants
  - Kidney transplants
- Use of stem cells vs bone marrow
- Increased application of stem cell transplants
  - Cancers & cancer treatment
  - Severe blood disorders
  - Immuno-deficiency disorders

More good news

- Increased emphasis on maintaining quality of life
- Increased emphasis on maintaining a normal life
- Increased emphasis on patient choice

But is all this good news really good?

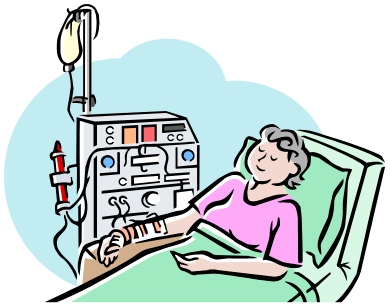
Impact on transfusion laboratories

- More patients requiring transfusion support post transplantation
- Transfusions are being used pre-transplantation
- Increased reliance on shared care

Is this good news really good?

Patient/family/friend

Yes



BMS in the lab

?

What problems can a history of transplantation cause a transfusion lab?

- Discrepant ABO and D type on forward group
- Discrepant ABO and D type on reverse group
- Alloantibodies
- Autoantibodies
- Special requirements

Depends on type of transplant

Case study 1

ABO mismatched transplants

Patient 1

- 46 year old male 3 days post liver transplant
- Recipient known to be group B
- Donor was known to be group A
- Doctor requesting two units of red cells to treat post op bleeding

What group of blood do you issue?

18%	1.	Group B
25%	2.	Group A
53%	3.	Group O
4%	4.	Group AB

Does the patient have any other special requirements?

25%	1.	No
2%	2.	CMV neg
37%	3.	Irradiated
2%	4.	HT-
4%	5.	Phenotype matched
29%	6.	All of the above

Patient 2

- 63 year old female 3 days post SCT
- Recipient known to be group B
- Donor was known to be group A
- Doctor requesting two units of red cells

What group of blood do you issue?

34%	1.	Group B
10%	2.	Group A
56%	3.	Group O
0%	4.	Group AB

Patient 2

- The same patient requires 1 unit of platelets

What group of platelets do you issue?

26%	1.	Group B
33%	2.	Group A
9%	3.	Group O
31%	4.	Group AB

Does the patient have any other special requirements?

2%	1.	No
0%	2.	CMV neg
69%	3.	Irradiated
5%	4.	HT-
5%	5.	Phenotype matched
19%	6.	All of the above

Patient 3

- 47 year old female, 3 days pre-transplant
- Recipient known to be group O
- Donor was known to be group A
- Doctor requesting 12 units of FFP for pre transplant plasma exchange

What group of FFP do you issue?

3%	1.	Group B
54%	2.	Group A
8%	3.	Group O
34%	4.	Group AB

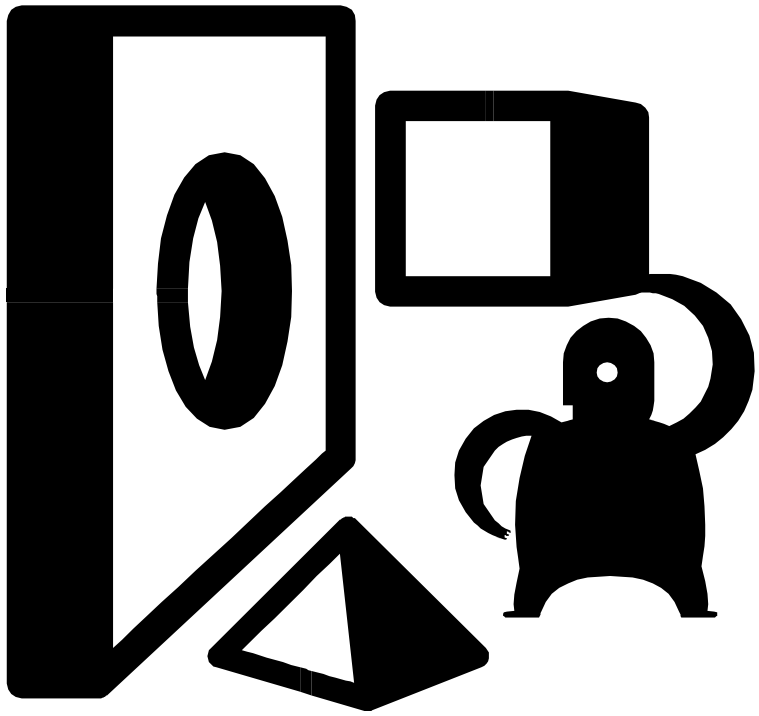
Patient 3

- 47 year old female 3 days post kidney
- Recipient known to be group O
- Donor was known to be group A
- Doctor requesting two units of red cells to treat post op bleeding

What group of blood do you issue?

0%	1.	Group B
16%	2.	Group A
84%	3.	Group O
0%	4.	Group AB

Simple?



ABO incompatible SCT protocol

BONE MARROW / STEM CELL TRANSPLANT	RECIPIENT	DONOR	ISSUE RED CELLS OF THIS GROUP
MAJOR ABO INCOMPATIBILTY			
Recipient has ABO antibody directed against the graft	O	A	O
	O	B	O
	A	AB	A
	B	AB	B
	O	AB	O
MINOR ABO INCOMPATIBILTY			
Graft has antibody directed against the recipient	A	O	O
	B	O	O
	AB	O	O
	AB	A	A
	AB	B	B

Case study 2

Presence of an antibody

Patient 4

- Male patient developed apparent anti-K post liver transplant
- The pre-transplant antibody screen was negative
- Audit of the units transfused showed that all units given had been K negative
- Patient group O Positive
- Historical phenotype R1r K+

Where has the antibody come from?

9%	1.	Autoantibody
31%	2.	Already present pre transplant but not at detectable levels
3%	3.	Already present pre transplant but not detected
9%	4.	Alloantibody developed post transplant
46%	5.	Anti-K developed against the donor liver
3%	6.	None of the above

How about……

An antibody against the recipient…

Passenger Lymphocyte Syndrome

- An unusual complication of solid organ transplantation
- Viable donor B lymphocytes transferred with the organ during transplantation produce antibodies against recipient red cell antigens
- An increased risk for PLS have been associated with
  - highly lymphoid grafts
  - past sensitisation of the donor against relevant RBC antigens
  - donor lymphocyte escape of host immune clearance
- The incidence of PLS following solid organ transplantation has been reported to be 9%, 29% and 70% for kidney, liver and heart-lung transplants respectively

Case study 3

Shared care

Shared care

- Emphasis on improved quality of life for patients
- Patient choice initiatives

Patient 5

- 45 year old male with CLL
- Due for an allogeneic STC
- Recipient known to be group O pos
- Donor was known to be group A pos

Patient 5

- The patient requires weekly platelet transfusions
- But the patient lives a 4 hour drive from the transplant hospital

Where should the patient receive the platelet transfusions?

8% 1. The transplant hospital

84% 2. The local hospital

8% 3. At home

Patient 5

- Two weeks prior to the scheduled transplant date the patient begins preconditioning treatment and is prescribed Fludarabine
- BCSH guidelines state that ‘Patients treated with purine analogue drugs should receive irradiated blood components’

Whose responsibility is it to inform the transfusion laboratory at the transplant hospital?

0%	1.	The transplant nurse
38%	2.	The transplant coordinator
31%	3.	The lead clinician
0%	4.	The SHO
27%	5.	The doctor prescribing the Fludarabine
4%	6.	Pharmacy
0%	7.	The patient
0%	8.	Somebody else

Patient 5

- 5 days later the patient goes to their local hospital for their weekly platelet transfusion

What platelets should the patient receive?

0%	1.	A pos
62%	2.	A pos irradiated
14%	3.	A pos irradiated CMV-
3%	4.	O pos
14%	5.	O pos irradiated
7%	6.	O pos irradiated CMV-

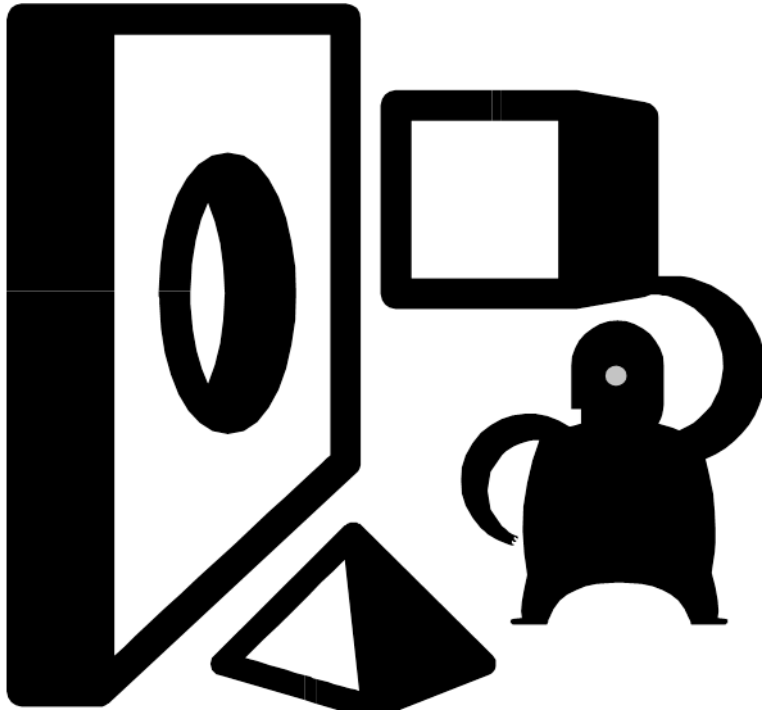
What group do you think they received?

Whose responsibility is it to inform the transfusion laboratory at the local hospital?

0%	1.	The transplant nurse
45%	2.	The transplant coordinator
7%	3.	The lead clinician
2%	4.	The SHO
18%	5.	The doctor prescribing the Fludarabine
0%	6.	Pharmacy
2%	7.	The patient
23%	8.	The BMS at the transplant hospital
4%	9.	Somebody else

Is this event reportable?

Conclusion



Conclusion

- Transfusion of transplant patient is not easy
- The patients blood requirements will depend on the type of transplant
- It also depends on the transfusion laboratory having all of the information regarding the patients treatment available to them
- This is even more difficult in the case of shared care

Conclusion

- In the lab you can only work with the information you are given
- However it is also important that you share this information with the appropriate people
- Appropriate patient management is everybody's responsibility

Thank you