

# Practical Session 4- Antibody Identification and Blood Selection

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## Learning Outcomes

- To be aware that there are many blood group systems which have the potential to cause alloimmunisation.
- To perform an antibody screen.
- To understand the basic principles behind a full antibody identification.
- To perform a cross match.
- To understand basic principles with regards to appropriate blood selection.

## Reagents and materials

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Coombs Cards

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3 Cell Screen Reagent Red Cells

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3 Patients' Plasma

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3 Donor Units

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Pipettes

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Incubator

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Centrifuge

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## **Exercise 1: Antibody Screening (1hr)**

The main blood groups which a transfusion laboratory encounters are ABO and Rh however there are many more blood group systems that exist of which an individual can potentially develop and alloantibody to. Pre- Transfusion compatibility procedure guidelines state that a patient must have a blood group and antibody screen performed to ensure the safety of the blood product.

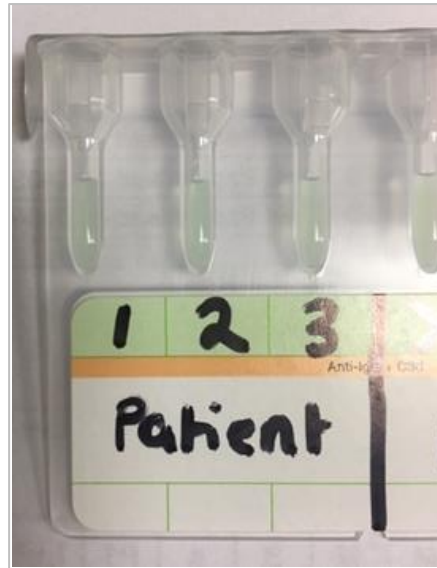
The 'antibody screen' consists of 3 red cell reagents with a known antigen composition. The patient's plasma is incubated with these red cells and then centrifuged. If agglutination occurs then the patient has a potentially clinically significant antibody in their plasma.

### **Task**

**Determine the antibody status of 3 patients.**

### **Method**

1. Label the AHG/Coombs cards 1 to 3 for each patient.



2. Add 50 $\mu$ l (two drops) of the corresponding red cell reagent to each well
4. Add 25 $\mu$ l (one drop) of patients' plasma is added to every well
5. Incubate the cards at 37°C for 15minutes.
6. Centrifuge the cards for 10 minutes.

**Results**

Patient	Cell 1	Cell 2	Cell 3	Antibody Status (Pos/Neg)
A				
B				
C				

**Exercise 2: Determining the Antibody Specificity (20mins)**

**Task**

Use the antigram below to determine the possible ID of the antibodies for patients that have a positive antibody screen.

**Method-**

1. Write the results on the antigram provided from the 3 cell screen you have performed for each patient.
2. See if the pattern matches that of any potential antibody.

Antigram for 3 cell antibody screen					
	C	c	D	E	e
1	+	0	+	0	0
2	0	0	0	+	+
3	+	+	0	0	+

Patient	Possible Antibodies
A	
B	
C	

### **Exercise 3: Blood Selection and Cross Matching. (1hr)**

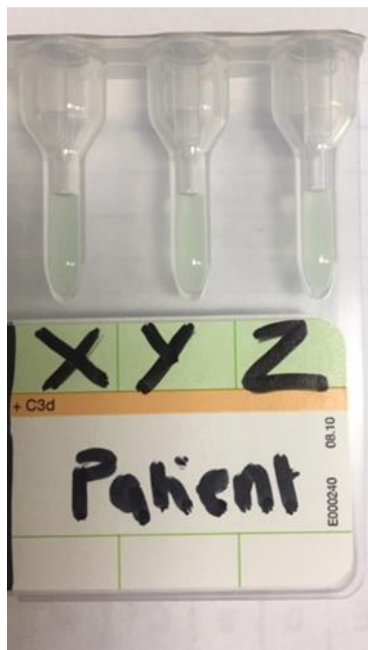
The final stage in providing safe blood for a patient is to perform a compatibility test. This is called a cross-match. This involves incubating the patient's plasma with the donor unit red cells and then centrifuging. This will demonstrate any incompatibility.

#### **Task**

**Perform a cross match with the patient's plasma against the 3 donor cells. Select which units you would issue to the patient giving reasons why.**

#### **Method-**

1. Label the AHG/Coombs card for **patient C** to be cross matched against donor units **X, Y** and **Z**.

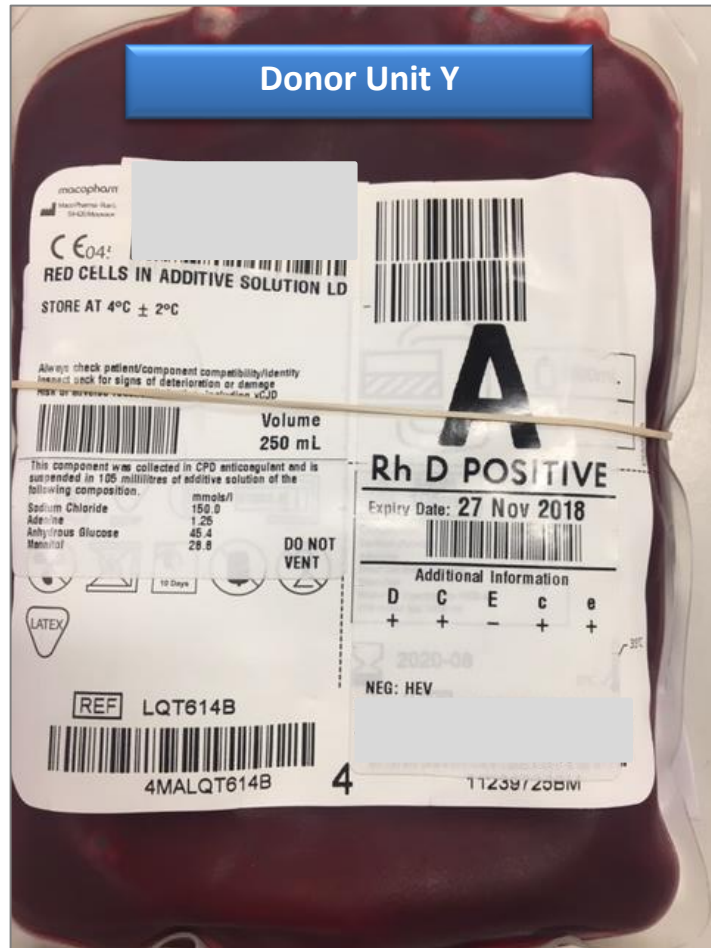


2. Add 50 $\mu$ l (two drops) of the donor red cells to the corresponding well.
4. Add 25 $\mu$ l (one drop) of patients' plasma to each well.
5. Incubate the cards at 37°C for 15minutes.
6. Centrifuge the cards for 10 minutes.

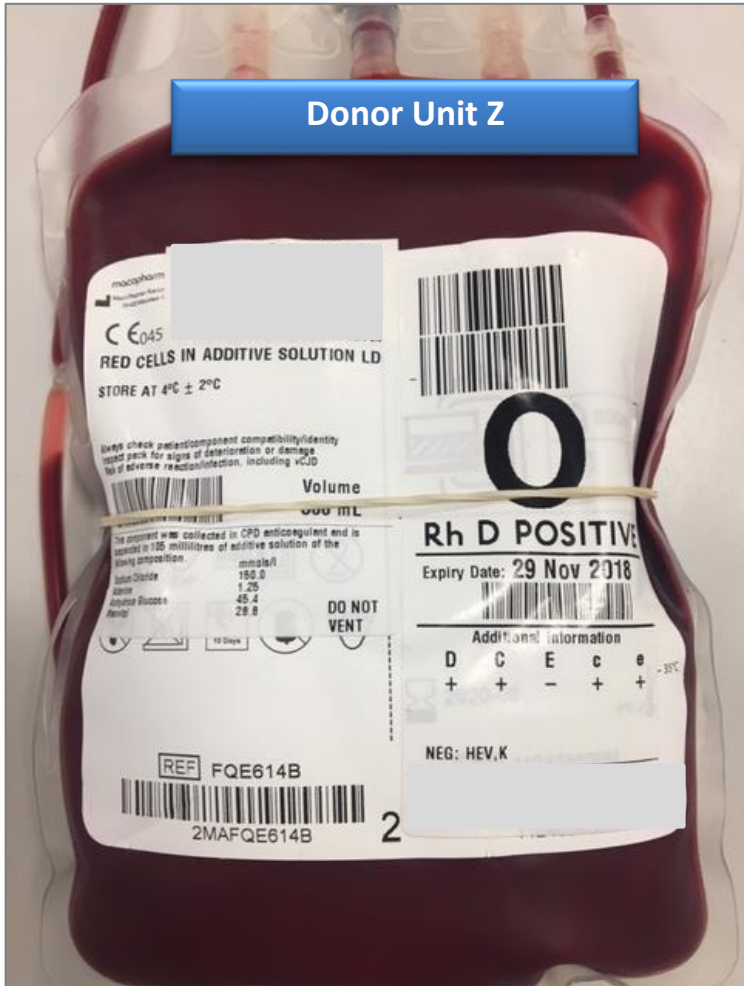
Donor Unit X



Donor Unit Y



Donor Unit Z



**Results**

<b>Unit</b>	<b>Compatible/Incompatible</b>	<b>Is it Safe to Issue and Why?</b>
<b>Donor X</b>		
<b>Donor Y</b>		
<b>Donor Z</b>		