# EMERGENCY BLOOD "QUICK BUT SAFE"

Dr. Megan Rowley
NHSBT and St Mary's (Imperial)

# Outline

- The ‘team approach’ to safe emergency blood
- Concentrate on the laboratory rules for safe emergency blood (rather than massive transfusion protocols)
- Preventing blood delays by having the right policies, clear responsibilities and good communication
- Making the right decision when patients have antibodies or special requirements

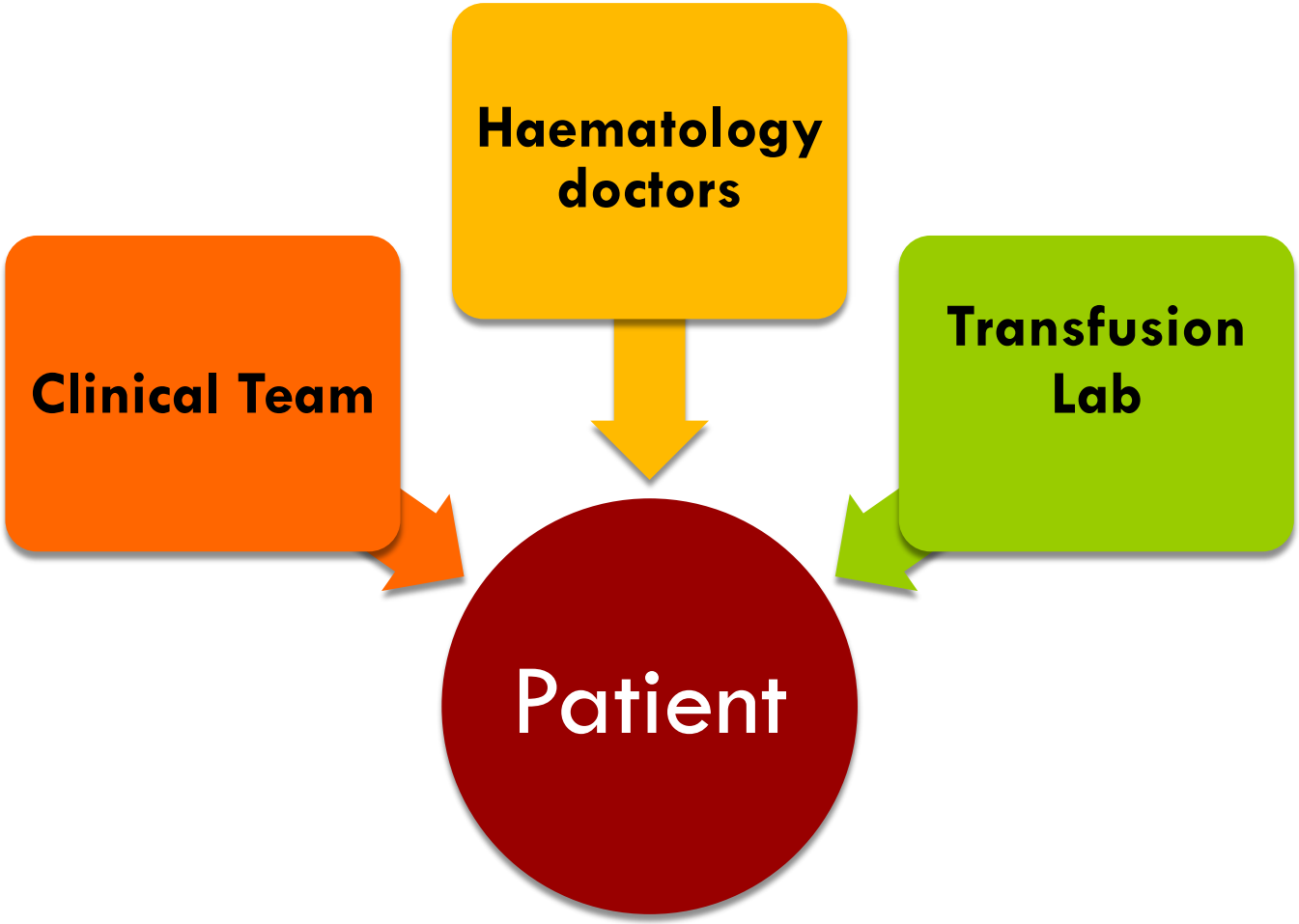
**<u>Emergency:</u>** a **serious situation** or occurrence that happens unexpectedly and demands **immediate action**

**<u>Routine:</u>** Performed as part of a regular procedure rather than for a special reason

# Teamwork in an emergency

**Teamwork:** the combined action of a group, especially when **effective** and **efficient**

# Who is in the team?



# Understanding each other

## Doctors & Nurses

- Know how ill the patient is and what the treatment plan is
- Know how and when to give blood
- Under pressure
- Work as part of a team
- Don't deal with transfusion every day

## Biomedical Scientists

- Are dependent on what they are told about the patient
- Know a lot about transfusion
- Work under (different) pressure
- Work as part of a team, or alone
- May be unsure of some aspects of patient care and can't give clinical advice

## Transfusion Team

- Aware of guidelines and are involved with policy making
- Give specialist advice and investigate when things go wrong

# “Quick but safe in an emergency”

**We have shared responsibility for emergency transfusion but the big risks look different depending on where you are working**

Giving wrong blood that could kill the patient

Not getting blood in time to save the patient

**How can we balance these two risks?**

# Delays in supplying emergency blood costs lives…

Risks are increased if staff are inadequately informed, appropriate urgent procedures are not in place, or because staff are not clear about their own responsibilities or the responsibilities of other staff groups in the transfusion chain

- Team approach (include porters and switchboard)
- Recognise early and communicate clearly
- Pre-agreed protocols and empowerment of lab staff supported by training and drills
- Nominate clinical team member to liaise with lab and support services
- Clear message to trigger response 'Major Haemorrhage Protocol'
- Regularly review activation of MHP
- Report incidents to SHOT

NHS National Patient Safety Agency

**Rapid Response Report**

NPSA/2010/RRR017

From reporting to learning

The transfusion of blood and blood components in an emergency

# Q1: Is your transfusion department part of the 'major haemorrhage' team?

*Which statement best reflects how you feel?*

1. Yes, they work in partnership with the clinical team

1. No, they just provide a service

1. Sometimes, when it goes well

# What do we need to succeed?

**Guidelines:**
are useful but don't cover every possible situation

**Policies:**
that cover responsibility, communication and actions

**Training:**
To enable staff to follow the rules consistently and under pressure

Common sense:
when planning for emergencies as well as in the heat of the moment

Respect:
for each other's professional role and the patient's needs

Reflection:
on what went well and how the process could be improved

*Transfusion*

# What guidelines do we have?

**BCSH guidelines on compatibility testing and blood administration**

*Giving the right blood to the right patient at the right time*

**NBTC guidance on the use of O RhD negative red cells**

*Conserving the supply of emergency blood*

Does the clinical team really understand why we follow this guidance?

***Laboratories*** should have written protocols in place which define the responsibilities of all staff in dealing with urgent requests

**BCSH 2012 Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories** *Transfusion Medicine* 2013:23(1);3–

**Sample acceptance criteria** – what is needed to identify a patient to issue group specific blood?

**Patients with red cell antibodies** – emergency transfusion vs. compatibility testing?

**Emergency blood** – who gets O- or O+?

**ABO/D testing of emergency samples** – 2 samples or 2 tests on one sample?

**Special requirements** – when is it alright to issue blood under concession?

# Q2: How should you identify 'unknown' patients?

*What are the minimum criteria for sample acceptance (and safe practice)?*

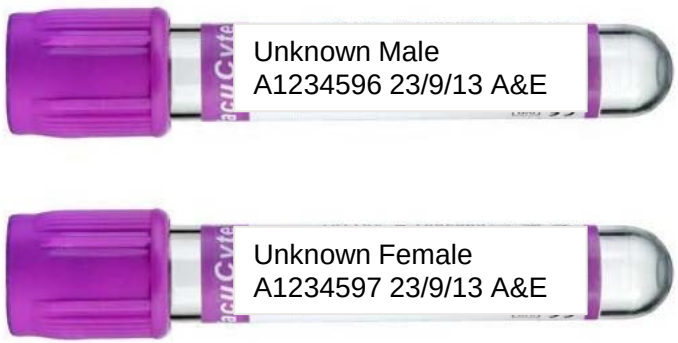
1. Assigned name (radio-alphabet) and gender

2. Gender and approximate age

1. Unique patient ID and gender

2. Approximate age and unique patient ID

# Identifying ‘unknown’ patients




For genuinely unknown patients, the minimum identifiers are gender and emergency ID number

CONSIDER:

- Non-sequential emergency ID numbers
  - *Risk of single digit difference in ID numbers between adjacent patients*
- Approximate age to help in rules-based component selection
  - *paediatric/adult/elderly*
- Assigned first name and last name based on radio alphabet
  - *Easier to communicate in clinical area and between lab and clinical area*

# Q3: Would this emergency sample be suitable for testing in your transfusion laboratory?

*Assume the label is handwritten!*

1. Yes

1. No


| D.O.B | Hospital No. | NHS No. | Date / Time Specimen Taken | Hospital |
|---|---|---|---|---|
| 30 ish | A1234596 | | 23/9/13 02.00 | St Elsewhere's |
| Surname: Male | | Sex: M / F | Full clinical / operation details including date (pre-op not acceptable): RTA internal bleeding for theatre | Ward / Clinic |
| Forename: Unknown | | | | |
| Address | | | | |
| Requesting Doctor / Signature / Bleep No.: Dr Milkins | | | Consultant /GP: Dr Rowley | |

**Blood Grouping / Crossmatching / Blood Component Issue**

| Investigation / Product | Date / Time required | Special requirements | Patient History | |
|---|---|---|---|---|
| ☐ Blood group & Save | | ☐ CMV Negative | Previous pregnancy? | Y / N |
| ☐ DAT | | ☐ Irradiated | Prophylactic anti D? | Y / N |
| ☐ Kleihauer | | ☐ Methylene Blue | Date last anti-D dose | .../.../... |
| X Crossmatch 6 units STAT | | Other ..... | Previous transfusion? | Y / N |
| ☐ Platelets .....pool(s) | .../.../... @...hrs | Risk? Attach sticker here | Date last transfused | .../.../... |
| ☐ FFP.....unit(s) | .../.../... @...hrs | | Transfusion reaction? | Y / N |
| ☐ Cryo.....unit(s) | .../.../... @...hrs | Known antibodies (specificity) | | |

24 hours notice required for routine crossmatching. Blood reserved for 24 hours only, unless laboratory is notified
Samples must be collected into crossmatch tubes and correctly hand labelled with the patient's full name and two other identifiers
All non-red cell blood products require consultant haematologist authorisation

# Q4: What are you going to do now?

*The patient has been in an RTA and is going for emergency surgery in 15 minutes*

1. A rapid ABO/D group?

2. Ask for a properly labelled repeat sample?

3. Ask for someone to come and initial the correction?

1. Give group O blood?

# Unsuitable samples

Already compromising on UNKNOWN patient details so emergency ID number has to be correct

- The responsibility for correct sample labelling is a clinical one
- The decision to reject the sample can be made by the BMS (and supported by haematology doctors)
- Giving group O blood is 'quick' and 'safe'
- Potential concerns about supply of group O blood – probably of more immediate concern to the BMS than the clinicians


If the sample does not meet the sample acceptance policy, group O should be issued until an acceptable sample has been tested

# Testing and issue of blood in non-routine situations

Where blood is required before full routine compatibility testing can be completed, procedures may need to be adapted, changed or omitted, to supply components in a clinically relevant timeframe

**BCSH 2012 Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories** *Transfusion Medicine* 2013:23(1);3–

- Inevitably higher risk of incompatible transfusion – ABO and non-ABO
  - ABO and D grouping errors occur in manual and rapid systems
  - Misidentification of patient is more likely in a stressed clinical environment
- But risks can be mitigated
  - Validation of rapid test system
  - Appropriate controls or reverse group
- Balanced against risk of failure to supply blood

# Q5: What testing is required before issuing ABO/D group-specific blood?

*This female patient was in A&E (ectopic) and has already had emergency O negative blood*

1. A forward and reverse group on one sample?
2. A forward group and immediate spin crossmatch?
3. Two forward groups on the same sample?
4. Two groups on two samples?
5. All of the above are acceptable

Following an emergency rapid group, a second test to detect ABO incompatibility should be undertaken prior to release of group specific red cells

1. A forward group with anti-A and anti-B **and**
2. A 2nd forward group **or** An immediate spin crossmatch **or** A reverse group

The 2nd test should be undertaken on a new aliquot

3. Perform an antibody screen *as soon as possible* **and** Repeat tests using routine procedures *as soon as possible* **and** Request and test a 2nd sample *as soon as possible*

**Patient 1**
Amy Stake female aged 39

"In theatres post ENT surgery, unexpected bleeding +++"

**Group A**
**D positive**

**Patient 2** Anna Mergenci
female aged 33
"Ectopic pregnancy, PV bleeding, for immediate surgery"

**Group O**
**dual population**
**D positive/D negative**

**Patient 3** Jim S
mal ag
"fractured femu a fall, for surgery in 60 to

**Group A**
**D negative**

**Anti-Jk$^{a}$**

**Exercise material**
Whole blood samples and a request form (expected blood to be 'provided' from stock)

**Instructions**
Assume all 3 requests arrive at the same time and test and issue blood as follows:

Patients 1 and 2 require blood within 10-15 minutes
Patient 3 requires a group and save only

UKNEQAS

# Level of testing within 15 minutes

| Procedure | Patient 1 | Patient 2 |
|---|---|---|
| ABO/D group on 1st sample within 15 minutes | 89% | 89% |
| Additional ABO/D group within 15 minutes | 55% | 53% |

UKNEQAS

# Patient 1: Blood Issued in 15 minutes

| ABO/D typing result | Red cells selected for transfusion | | | |
|---|---|---|---|---|
| | A D positive | A D negative | O D positive | O D negative |
| A D positive | 228 | 1 | 14 | 50 |
| A D variant | 0 | 1 | 0 | 0 |
| O D positive | 0 | 0 | 0 | 1 |
| None | 0 | 0 | 0 | 37 |

**26% received O D negative blo**

51%: 2 forward ABO/D groups on 2 aliquots
21%: 1 forward and 1 separate reverse group or ISXM
**28%: 1 forward group only**

# Q6: When would you use Group O RhD negative emergency blood?

*Indicate which is closest to your practice <u>in an emergency</u>*

1. To all patients where the blood group was unknown
2. To all patients who had a single ABO/D group
3. To all women of unknown blood group
4. To all women aged less than 50 years of unknown blood group

# Q7: What would you do?

*The first patient (male, RTA) is already in theatres and the lab discovers a positive antibody screen.*

1. Phone theatres and ask them to send the blood back while you investigate the antibody?
2. Phone the haematologist and explain the situation and ask them to speak to the clinicians urgently?
3. Determine the Ab specificity, select compatible blood and exchange it for the blood that has not been transfused?
4. Do nothing immediately but monitor the patient for a delayed haemolytic transfusion reaction

# Who is responsible for making the decision?

| Biomedical Scientist on-call | Biomedical Scientist in-charge | Haematology doctor | Clinician in charge of the patient |
|---|---|---|---|
| Knows what the significance of the antibody is | Can support and advise BMS and liaise with clinicians | Can advise clinical team of the significance of the antibody | Can decide the clinical significance of any delay |

This is the prime example of team work!

If emergency procedures are needed to provide 'quick' blood it will be less 'safe'.

The clinical risk of delayed blood needs to be weighed against the clinical consequences of delayed haemolytic transfusion reaction

# Other situations where emergency blood may not meet required specification

- Antigen positive blood to a patient with alloantibodies
- D positive blood to a D negative woman of childbearing potential
- Non-irradiated cellular blood components to an immunosuppressed patient
- Standard FFP to a patient born after 1.1.1996
- CMV non-tested blood to a pregnant woman

- Warnings on LIMS need to be overridden
- Concessions need to be agreed/supported by a clinician (before or after the event)

# Teamwork……


- Establish good effective lines of communication
  - Discuss any possible delays as soon as you are aware of them
- Do the safest thing;
  - The worst thing to do is to give ABO incompatible blood
  - Other RBC antibodies can be ignored if the patient would die for lack of blood
- And its always good if someone says …THANK YOU!