Transfusion in emergencies
Lessons from SHOT

East Midlands RTC January 2018
Key messages

- Whatever the emergency, be safe, be sensible
- Identify the patient at blood sampling and at the point of transfusion
- Don’t take short cuts
- Don’t make assumptions
- Communicate effectively
All incidents reported in 2016 n=3091

- NM: Near miss
- RBPP: Right blood right patient
- UCT: Unclassifiable complications of transfusion
- PTP: Post-transfusion purpura
- TTI: Transfusion-transmitted infection
- CS: Cell salvage
- ATR: Acute transfusion reaction
- TAD: Transfusion-associated dyspnoea
- TRALI: Transfusion-related acute lung injury
- TACO: Transfusion-associated circulatory overload
- TA-GvHD: Transfusion-associated graft vs host disease
- HTR: Haemolytic transfusion reaction
- ADU: Over or undertransfusion and PCC
- ADU: Delayed transfusion
- ADU: Avoidable transfusion
- HSE: Handling and storage errors
- Anti-D: Anti-D immunoglobulin errors
- IBCT: Incorrect blood component transfused

1283

Unpredictable

Possibly preventable

Errors

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SHOT reports for 2016 n=3091

- Possibly preventable: 121 (3.9%)
- Not preventable: 282 (9.1%)
- Errors: 2688 (87.0%)
2016 Good news: reduction in ABO-incompatible transfusions
Outcome of ABO-incompatible transfusions

66% have no adverse effect

15 deaths to 2005
5 deaths 2006-2016

Year of report *15 months in 01/02

BSQR
NPSA SPN 14
Competency assessments
Death in 2014 from ABO-incompatible transfusion

Filipina nurse who killed a pensioner when she mixed up his name with another patient and gave him the wrong blood during a transfusion is facing jail

- Lea Ledesma was working at London Heart Hospital as a nurse
- She injected Ali Huseyin, 76, with blood meant for Irfan Hussain
- Her blunder caused Mr Huseyin to have a heart attack and die
- She was today found guilty of manslaughter and cried at verdict

By ANTHONY JOSEPH FOR MAILONLINE

She was respected and experienced and known as ‘the mother’ of the intensive care unit. She received a suspended sentence
ABO-incompatible red cell transfusions 2015 n=7

- Patient Group O+ Donor Group B-
  - Laboratory error
  - EL failure
  - Case 6.1
- Patient Group O+ Donor Group AB-
  - Collection and administration error
  - Case 6.2
- Patient Group B+ Donor Group A+
  - Wrong blood in tube
  - Case 6.4

Use a bedside checklist

- Laboratory error
- RIP
- 1 WBIT
- 5 administration errors
Key recommendation 2017

be like a pilot – **use a bedside checklist** as standard of care. It will prevent administration errors and is the final opportunity to detect errors made earlier.

No amount of experience or years of practice will remove the risk of misidentification if you are interrupted or distracted.

The bedside check **will not detect a wrong blood in tube** at sampling.

(idea courtesy of Joy Murphy)
CMO/CNO alert

Actions

Who: All organisations providing NHS funded care which involves the provision of blood transfusions.

When: Immediate

Organisations should assess their bedside systems (including electronic systems) to ensure a confirmatory step is in place where the individual performing the checks must sign to say all steps have been followed.

This alert (and supporting information) should be circulated to all relevant staff, including to community nursing staff and midwives who may be involved in the transfusion of blood products in the community.
Be safe! Use the bedside checklist

- Check positive patient identification
  - ask the patient to state first name, last name and date of birth
  - these must match exactly those on patient identification band

- Check patient identification details on component pack
  - against patient identification band and prescription

- Check the prescription
  - has this component been prescribed?

- Check the component
  - is this the correct component? Is the group compatible with the patient?
    - check the expiry date
    - donation number and blood group must match attached laboratory produced label
    - check for any signs of leakage or damage to packaging and inspect for any defects

- Check for specific requirements
  - does the patient need irradiated components or other specially selected units?

Signature:
What about delayed transfusion?
2016 Bad news: 26 patients died where transfusion was implicated
9 related to delay

Preventable deaths n=16/26 (61.5%)
Transfusion-related deaths 2010 to 2016
n=115

Delays 21.7% of deaths

Pulmonary complications 53.1%

TTI 1
TA-GvHD 1
UCT 7
PTP 1
HTR 8
ATR 5
Anti-D 1
Avoidable 3
Delay 25
ABO-incompatible 2

Pulmonary complications 61

TACO 53
TAD 3
TRALI 5
The UK national patient safety agency (NPSA) was set up in 2001 to identify trends and patterns in patient safety problems through a national reporting and learning system (NRLS).

Between 2006 and 2010:
- **11 deaths** reported
- **83 incidents** in which patients were harmed as a result of delayed provision of blood in an emergency.
The transfusion of blood and blood components in an emergency

For IMMEDIATE ACTION by the NHS and independent (acute) sector. Actions should be led by an executive director nominated by the Chief Executive, working with the Chair of the Hospital Transfusion Committee. Deadline for ACTION COMPLETE is 26 April 2011.
Actions

- **HTCs** to review local practices/protocols for requesting and obtaining blood in an emergency
- **Release** of blood and components without authorisation by a haematologist
- **Everyone** knows where to find the major haemorrhage protocol (MHP) and have practice drills
- **Trigger** phrase
- Transfusion laboratory are **informed**
- Clinical teams to appoint a **co-ordinator**
- **Review** all incidents where the MHP has been activated
- All instances of delay to be **reported** to SHOT and **investigated** locally
SHOT: Delayed transfusion (reports from 2010 onwards)

- Where a transfusion of a blood component was clinically indicated but was not undertaken or was significantly delayed
- Delays in provision of blood components in an emergency
- Cases where a delay in transfusion affected the patient’s health/wellbeing, for example:
  - An out-patient who has to return to hospital the next day as components were not available at the planned time
  - Delayed surgery
  - Delayed red cell exchange
Delayed transfusions n=314

Number of delayed transfusions by year:
- 2010: 2
- 2011: 12
- 2012: 21
- 2013: 34
- 2014: 50
- 2015: 94
- 2016: 101
Delayed transfusion 2010-2016

- 314 reports of delayed transfusion
- 25 deaths where delayed transfusion was causal or contributory
- Urgent or emergency transfusions 222/314 (71%)
- 139/314 (44%) ED, theatres or ICU
- 18 cases of obstetric haemorrhage, 2 deaths
- 42/314 associated with massive haemorrhage protocols
Massive haemorrhage n=42

Divided into 4 broad categories:
• Failed activations
• MHP not followed
• Delayed activation of MHP
• Problems during MHP
Delayed collection and delivery of components

Incorrect trigger phrase used to activate MHP

Laboratory evacuated during fire drill

Delayed sample receipt

Communication failures

Delayed decision making

Algorithm not followed
Death from obstetric haemorrhage

- A 34 yr old woman had an unexpected severe post-delivery bleed (vaginal)
- MHP activated, 6 units arrived within 5 minutes
- Transferred from labour ward to theatre, bleeding from cervical tear controlled within 30 minutes
- MHP stood down, 2 units transfused
- 2 hours later developed shock and could not be resuscitated despite 12 units of blood and 3 FFP

Causes: 2 locations, shift change, two teams
Death after haematemesis due to delay in transfusion

- A 76-year-old man admitted with haematemesis and on anticoagulants for atrial fibrillation died associated with failure to activate the MHP and 5-hour delay in transfusion

- His haemoglobin (Hb) was 69g/L at 00:15. The biomedical scientist (BMS) was lone working and had attempted to contact the emergency department (ED) to inform them of abnormal blood result, but did not get an answer

Causes – Failure in communication, Assumptions, MHP not followed
Major morbidity in relation to delayed access to O D-negative units

• At 19:15hrs a porter attempted to collect a unit of emergency O D-negative blood from the ED refrigerator for a 39-year-old woman who was bleeding complicated by cardiac arrest, but was informed he was not allowed to take the blood because it was for ED patients only

• The porter then proceeded to the main theatre blood refrigerator and collected an emergency unit there

• This patient was admitted to intensive care and made a full recovery

• She received 5 units of red cells and 2 FFP
SHOT Bite No.8
Massive haemorrhage - delays

Desire to follow good transfusion practice in some areas, if taken out of context, may risk patient death or morbidity due to delays.
Reasons for delay 2015 (n=94)

- Decision making: 6
- Miscellaneous: 6
- Delayed collection of unit: 8
- Sample errors: 15
- Component availability: 18
- Other: 15
- Communication failures: 26

- Testing: 6
- Labelling: 5
- Prescribing error: 3
- Transposed result: 1
Key SHOT message

• Delays most often result from failures in communication and poor handovers

• Clinicians need to ensure the urgency of component requirements is clearly transmitted to laboratory staff

• Ensure that staff know how rapidly components can be made available
Emergency Transfusion

Urgent Red Cells (for acute but not life threatening haemorrhage)

- Group specific uncrossmatched red cells will be available 30 mins following receipt of sample in the lab. Fully crossmatched blood will be available in 60 mins.*
- It is safer to wait for fully crossmatched blood if time allows.
- *If antibodies are present, turnaround time will be determined on a case by case basis.

Urgent Platelets for urgent management of thrombocytopenia

A small stock of platelets is kept in the lab for life threatening emergencies. Telephone the transfusion laboratory if further platelets need to be ordered:
- Blue light delivery time: 1 hour
- Standard delivery time: 2 hours

ED patients:
- Quick reference guide can be found on Staffnet Departments > Blood Transfusion > Policies or follow the Critical Clinical Links (Staffnet front page) and click Clinical Emergency Information.
- Do not delay in administering this product.
- In patients with life threatening bleeding or head injury or who require emergency surgery, PCC should be administered before INR results are available.
- Supply of PCC in the ED Blood Fridge
- Supply of PCC Adult Theatre Fringe
- Please inform the transfusion laboratory if PCC has been used so that stock can be replenished.

Wards:
- Please contact haematology registrar for advice on indication and dosing.
- Do not delay in administering this product.
- In some patients that are bleeding, PCC is required before INR results are available.
- Quick reference guide can be found on Staffnet Departments > Blood Transfusion > Policies.
- Order PCC from the lab via OWS and telephone call to the transfusion laboratory.
- Complete the request form and fax the form to the lab on xxxxx.

Procedure for emergency blood collection:
- Massive Haemorrhage: ring xxxxx and you will be allocated an emergency response porter.
- Urgent blood collection: This may be when the massive haemorrhage pathway is not necessary but clinically you cannot delay in sending for blood/blood components/products via the routine collection route. You must confirm the location of the components and can then phone the portering team directly on xxxxx.

Life threatening haemorrhage

Follow the Massive Haemorrhage Pathway (See Blood Transfusion pages on Staffnet)

Dial xxxxx
- State ‘massive haemorrhage adult / child & location’
- Request emergency response porter to attend clinical area (if a sample needs to be collected) or go to lab (if no sample and blood already available in lab for collection).
- Stay on line and you will be put through to transfusion lab.
- State emergency blood requirements and patient’s details and the weight if a child.

Ensure that a correctly labelled pre transfusion sample is taken.

Group specific uncrossmatched blood will be available 30 mins after sample arrives in lab.

Massive haemorrhage pack 1
- Comprises:
  - 4 units red cells
  - 4 units FFP
  - (Platelets are not included in MHP1 unless requested)

If you need blood immediately, send a member of the team to collect emergency Group O Negative blood from the nearest blood fridge.

Emergency O Negative locations:
- Adult Emergency Department
- 1st Floor theatres
- Central Delivery Unit – Adult and Neonates
- Paediatric Theatre
- Paediatric Emergency Department

‘Out of hours’ bleep xxx
Massive haemorrhage activation: xxxxx
Urgent blood collection: xxxxx

Courtesy of Manchester Foundation Trust
Delayed provision of red cells as a result of poor labelling and communication confusion

• An elderly man required an emergency transfusion during massive gastrointestinal haemorrhage (Hb fell from 88 to 47g/L) complicated by a warfarin-related high INR of 11.5
• Group-specific red cells were issued but were unlabelled for the patient and could not be transfused Error 1
• The samples were sent by the incorrect route (pneumatic tube rather than hand-delivered), Error 2 there were communication failures between the clinical area and the laboratory Error 3
• The patient arrested and died, and the delay in transfusion may have contributed
More haste less speed – wrong date of birth

- A 66 year old man with a ruptured aortic aneurysm had delayed provision of major haemorrhage packs as the ambulance staff transferring him from one hospital to another gave the wrong date of birth to the emergency department.

- This was entered into the Trust information technology (IT) system. In addition, the blood sample was delayed reaching the laboratory and had not been marked as urgent.
Confusion about the trigger phrase for massive haemorrhage

• A patient was admitted to a maternity hospital collapsed due to hypovolaemia from a ruptured uterus. The MHP was triggered by the clinical staff at 23:40 using an incorrect trigger phrase. This was not recognised by the hospital switchboard who consequently activated only the cardiac arrest team in error.

• The caller from the clinical area did not realise he had not been connected to the transfusion laboratory to discuss the requirements for the patient. At 00:55 the clinical area called the transfusion laboratory to ask where the platelets were.

• The laboratory had not been advised of the activation of the MHP, but was able to prepare and rapidly issue appropriate components. Three emergency O RhD negative units were transfused before group specific blood became available. The patient required admission to ITU.
Reduce the risks

- Whatever the emergency, be safe, be sensible
- Identify the patient at blood sampling and at the point of transfusion
- Don’t take short cuts
- Don’t make assumptions
- Communicate
SHOT resources

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SHOT Symposium 2018
The Lowry Centre, Salford Quays
Thursday 12th July 2018

Registration is open
Abstract deadline April 27th 2018