SHOT Shockers

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SHOT Aims

Improving patient safety by

- Raising standards of hospital transfusion practice
- Informing policy with UK Blood Services
- Stimulating research
- Aiding production of clinical guidelines
- Educating users on transfusion hazards and their prevention



Blood Safety v Transfusion Safety

Transfusion transmitted infections	Risk of infected donation entering blood supply
HBV	1 in 1.3 million
HCV	1 in 28.6 million
HIV	1 in 7.1 million

SHOT REPORTS	Risk per component issued
Total risk of death	1 in 125,000
Total risk of major morbidity	1 in 19,157
Risk of ABO incompatible red cells	1 in 263,157
Risk of wrong component	1 in 48,309
Risk of specific requirements not met	1 in 14,514



Reports analysed 2013 n=1571

*excluding near miss and right blood, right patient





Error – related cases in 2013

- Analysed Cases
 955
- Near Misses 996
- Right Blood Right Patient
 184





Failure to monitor transfusion requirements during a GI haemorrhage

- An elderly patient was admitted to the MAU with a haematemesis and an initial Hb of 106 g/L
- No details are provided of her observations or the findings on endoscopy but she had further episodes of vomiting blood
- Five units of red cells were transfused back to back before a repeat Hb was performed, which was 204 g/L
- The patient was recognised to have circulatory overload and died shortly thereafter



Patient given a transfusion despite responding to oral iron

- Following iron deficiency during pregnancy, a female delivered with a Hb of 78 g/L
- A decision was taken in conjunction with the patient not to transfuse her, but to discharge her on oral iron
- Nine days later, her Hb was checked by the midwife and found to have risen to 89 g/L
- Two weeks later, without a further check on her Hb, she was admitted to the community hospital for a blood transfusion at the GP's request



Lack of knowledge around major haemorrhage protocol (1)

- A middle-aged male was admitted to A&E with a Glasgow Coma Score (GCS) of 3/15 and received 1 L colloid
- The patient had a pulse-less electrical activity (PEA) arrest and a further litre of colloid was infused, and he then sustained a massive haematemesis
- No Incident Communication Coordinator had been identified in A&E and the transfusion laboratory had not been alerted to activate the major haemorrhage protocol
- The clinical staff in A&E were unaware of how to access the emergency O RhD negative units

Lack of knowledge around major haemorrhage protocol (2)

- A further 2 units of red cells were then requested and issued as group specific
- The clinicians also requested FFP and cryoprecipitate but the BMS referred to the major haemorrhage protocol then in existence, which required that a coagulation screen should have been interpreted by a haematologist prior to releasing these components
- The patient subsequently arrested and died, having received 10.5 L of colloid and only 4 units of red cells



Lack of correct final identity check leads to a Haemolytic Transfusion Reaction

- A patient with a haematemesis was in need of an urgent blood transfusion
- The patient's wristband was contaminated with blood and could not be read, and as a consequence the electronic bedside checking system was not used
- The compatibility form filed in the patient's notes, which belonged to another patient, was used to provide the identifiers for collecting the blood
- The patient, who was group O RhD positive, was transfused with >50 mL of A RhD positive red cells prior to the error being recognised
- The patient was admitted to ITU with intravascular haemolysis and renal impairment



Lack of POCT device knowledge leads to erroneous result and transfusion

- A consultant anaesthetist anaesthetised a paediatric patient for a procedure and halfway through surgery he asked the ODP for a POCT Hb estimation
- The ODP returned from recovery to state that they did not have the model requested but a different model was available. It was in fact a device for checking blood sugar
- The result of 72 was consistent with clinical suspicion and the anaesthetist requested blood on this basis. After 100 mL of blood had been transfused they realised their error
- The transfusion was stopped and a sample was sent to the laboratory. The result was 116 g/L



Neonate fails to respond to transfusion of red cells

- A top-up transfusion of 14 mL of RBCs administered to a neonate failed to increase the neonate's Hb
- The baby received a second aliquot of 14 mL without any Hb increment
- On investigation it is thought that the roller clamp between the Y-connection and the syringe driver may not have been fully engaged, resulting in the red cells being drawn back into the red cell unit.



Granulocyte transfusion – read it and weep

- A granulocyte transfusion was requested for a patient, but due to a processing error the pack provided did not have an appropriate port
- Due to the patient's deteriorating condition and concern over the expiry time, the pack was cut open and the contents decanted into a sterile receptacle, then sucked up into an empty saline bag
- The granulocytes were then transfused using a blood giving set



Remember to observe the patient !

- A unit of red cells was commenced on an elderly male patient at 05.30 for acute blood loss
- At 20.30 the ward staff contacted the laboratory to say the blood transfusion was still running after 15 hours
- On investigation it was noted that NO observations had been recorded following the 15 minute post-transfusion check



Change in laboratory reporting procedure results in significant delays in administration of RAADP

- A laboratory changed the way they report blood groups from paper forms to an electronic system
- The community midwives had relied on the paper reports to generate appointment lists for RAADP, but the change in procedure resulted in a series of 15 reports regarding patients whose RAADP was delayed by anything from 1 to 10 weeks, and in 1 case omitted altogether
- The laboratory now produces a regular paper list of RhD negative antenatal patients for the midwives.
 (This case highlights the need for a formal change control process involving all stakeholders when making changes to laboratory procedures)



Poor practice and lack of patient identifiers on cell salvaged units

- Two patients had undergone a total hip replacement (THR) and both were having postoperative cell salvage
- The patients had their units put up at the same time and both patients had rigors, temperature increase and vomiting within 15 minutes of the start of transfusion
- Both drains were removed from the patients at the same time and taken to a treatment room to be primed through the giving sets a staff nurse had transposed the units before returning to the bedside



Administration error resulting in transfusion of entire paedipack

- A 24-day-old baby in the neonatal unit was prescribed a transfusion of 14.3 mL of red cells
- The baby's Hb rose from 97g/L pre transfusion to 200 g/L post transfusion
- On examination of the paedipack it was noted the bag was empty, suggesting that the baby had received the full 50 mL paedipack in error
- This was felt to be due to the blood having been given via a neonatal Y blood-giving set and problems with the closure of the roller clamp



BMS ignores hospital transfusion laboratory fridge alarm

- During on-call, the hospital transfusion laboratory fridge alarmed as the door was left open
- The duty BMS turned off the alarm without any investigation and the open fridge was detected the following morning by another BMS
-58 units of red cells were wasted.



Home platelet transfusion administered without proper protocol or documentation

- Two units of apheresis platelets were released from the hospital transfusion laboratory on the instruction of the haematology consultant for a colleague to administer to her mother at home
- No request form, no patient ID or compatibility paperwork was completed, nor were any observations documented



Consultant continues to sign regular prescription for transfusion without checking Hb

- An elderly male patient with MDS attended the outpatient department for monthly transfusion
- A post-transfusion Hb was eventually found to be 174 g/dL
- The consultant had continued to sign a regular prescription for 2 units of red cells at each visit without reference to Hb results
- The last Hb result available was prior to treatment being commenced 8 months previously
- The patient received 16 units during this period without any repeat Hb measurements despite samples being taken regularly for grouping



Unlabelled components transfused to wrong patient in error

- Platelets for a patient in ITU were delivered to the ED by taxi from BTS
- The ED had also requested platelets for a different patient
- The ED took delivery of the platelets, assumed they were for their patient, and transfused them despite there being no documentation or label with any patient details.



Blood gas analyser Hb used as trigger for emergency transfusion

- An Hb of 50 g/L was obtained from an ED blood gas machine on a middle-aged female patient who was asymptomatic and not actively bleeding
- One unit of O RhD negative red cells was already transfused when the laboratory result became available which was 89 g/L
- A further unit of O RhD negative blood was wasted due inappropriate storage (on the patient's bed)



While changing an incorrect giving set the blood bag was inadvertently pierced

- Red cell transfusion was commenced in theatre using the wrong giving set. The recovery room nurse noticed the error and while changing the giving set pierced the blood bag at the inlet end
- With the agreement of the anaesthetist the blood bag was patched with a gauze swab and tape



Expiry date checks are important especially prior to starting a transfusion

- A unit of blood was collected from the hospital transfusion laboratory at 17.55
- The unit expired at midnight that night
- The staff had problems with the infusion device occluding during the transfusion
- The transfusion commenced at 18.00 and concluded at 03.40, a total transfusion time of 9 hours 40 minutes, resulting in transfusion of blood past the expiry date



Expired unit removed from blood tracked fridge and not detected at bedside check

- A unit of red cells was collected from a blood fridge with electronic tracking. The device produced an audible and visual alert that the unit had passed its expiry date
- The porter ignored the alert and took the unit to the ward
- Nursing staff failed to note that the unit was expired when the porter delivered it and again when performing the pre-transfusion check.



Red cells administered instead of platelets

- A unit of platelets was prescribed for administration overnight, with a further unit of red cells to be given in the morning
- Although the staff nurse believed she had given a unit of platelets, she had collected and transfused a unit of red cells, administering the component over 50 minutes as per the platelet prescription
- The prescription form was completed with confirmation of bedside checks. When questioned, the nurse stated she did not know the difference between a bag of red cells and a bag of platelets



Lack of handover in SCBU results in baby being transfused twice

- A 2-month old premature baby had a haemoglobin of 99 g/L, requiring top-up, and the team on duty that day administered 60ml of red cells
- Three days later, another team on the unit noticed the same Hb result, made a decision to transfuse and gave a further 70 ml red cells
- There was no indication on the treatment chart that the patient had been transfused, the prescription chart had been filed in the wrong place, and notes were not checked for evidence of previous transfusions



Transfusion based on a year-old haemoglobin result

- Two units of blood were requested and administered for an orthopaedic trauma case because of low pre-op haemoglobin of 97 g/L
- A phone call to the laboratory to check the pre-op Hb result and coagulation screen alerted the staff to the fact that the samples sent had been clotted and therefore could not have been analysed
- The result used to request the transfusion had in fact been taken on exactly the same date, but one year earlier
- The post-operative Hb was 139 g/L



'Weak D' baby recorded as RhD negative

- A BMS altered a baby's blood group on the laboratory computer from 'weak D' to RhD negative in order to facilitate a request for blood made by the clinical area for the baby
- Because the baby's group was now ostensibly RhD negative, the mother never received an injection of anti-D lg



Worrying lack of comprehension of reasons for standard procedures, and disregard for consequences

- A patient receiving a red cell transfusion complained of severe back pain, and then developed rigors
- The deputy Sister attended the patient, noticed it was the wrong blood, took it down and bleeped the FY1
- The ward then phoned Blood Bank requesting a further unit of blood for another patient as the first had been 'wasted'
- Only when the BB manager asked for the bag back was it revealed that the unit had erroneously been given to the wrong patient
- Consultant haematologist went to see patient immediately
- The sticky label from the blood bag tag had been removed from the medical notes, and the name had been crossed out on the blood bag label. The bag of blood had been thrown into the sharps bin
- The nurse who put up the blood had not performed any checks



Excessive transfusion follows misinterpretation of verbal instructions

- A 48 year old male patient was in the ED with a GI bleed
- Five units of blood arrived and a verbal order for 2 units was given by the doctor, who then wrote them up on a prescription chart
- Staff nurse asked the doctor if he wanted the blood given through the rapid infuser, and he confirmed that "all the blood can go though this"
- Five units were transfused instead of the intended 2 units



Helpful nurses and doctor administer platelets to the wrong patient

- Platelets arrived in ITU and sister took them a patient's bedside, but not the right bedside
- However, finding the patient unconscious and without an ID bracelet she went to write a wristband
- Two other nurses saw the platelets and checked them by asking other staff if it was the correct patient
- Finding the platelets were not written up for that patient, they asked the doctor to prescribe them, which he did



White cell count mistaken for Hb resulting in unnecessary transfusion

- A 70 year old woman presented in A/E looking very pale and had fainted at home
- A full blood count run on a POCT analyser in A&E showed a WBC of 7.9 which was mistaken for the Hb (old units!) and a two unit transfusion was administered
- The error was identified when the post transfusion Hb was found to be 163g/L
- The patient was informed of the error, but she stated that she was quite happy as she "felt so much better" after the transfusion



Lack of component knowledge leads to the incorrect component type being transfused

- A patient was prescribed two units of platelets before surgery. Red cells were also reserved because he had irregular red cell antibodies
- The staff gave two units of red cells thinking that the 'optimal additive solution' label meant that the bag contained platelets
- They gave each bag of red cells over 30 minutes as this was the time stated on the prescription for transfusion of platelets



Death attributed to delayed transfusion in a child with sickle cell disease

- A young child with sickle cell disease was admitted with a sickling crisis. His Hb was 57 g/L on admission. This was rechecked later the same day when it was 50 g/L
- The Hb was not checked the following day (a Sunday). On Monday the Hb was 28 g/L (reported at midday)
- It was stated in the report that there was a delay of more than 4 hours in requesting red cells and starting the transfusion – the child suffered cardiac arrest and died during the transfusion in the evening



Avoidable transfusion

- 75 yr old man visited at home by GP for unilateral swelling of the leg (Hb 124 g/L three weeks before)
- GP takes sample into syringe and walks 10 mins back to surgery to decant into sample tube
- Hb 76 g/L, so patient (with NO symptoms of anaemia) admitted overnight as an emergency by on call GP
- Repeat Hb and crossmatch sample at 0640, result available at 0700, Hb 114 g/L
- Transfusion started at 0955 without results review and stopped at 1120 (after 100 mL)



Alteration by a patient's friend could have lead to inappropriate transfusion

- A patient attended a clinic appointment with a friend following treatment for cancer
- The patient's friend, who was a retired paediatrician, altered the request form from a 'group and antibody screen' to a two-unit crossmatch
- A nurse noticed the alteration and a potentially inappropriate transfusion was averted



Undertransfusion due to error when setting up the infusion pump

- A neonate requiring an urgent transfusion had red cells commenced at 14:45
- At 15:40 it was noted that the 3-way tap on the blood transfusion line was open and the blood was being pumped from the baby into the bag



GP administers anti-D lg in error to a RhD positive woman

- A pregnant woman attended her GP surgery for a routine visit
- On the basis of an alleged family history of Rh immunisation, the GP went to another practice next door, requested a dose of anti-D Ig and proceeded to inject the woman without checking any blood grouping results
- She was RhD positive.



Two cases of daughters' samples labelled with mothers' details

- 1. A 15 year-old patient was identified with her mother's details, because they had exactly the same name and address. The doctor who took the sample did not check the patient's date of birth, so did not realise the mistake
- 2. In an emergency situation, a patient was identified with her mother's details, because she had her mother's credit card in her possession and the police presumed these were her details



Patient's identity band changed to match an incorrect blood unit

- Blood was prescribed for two patients. The staff nurse requested the health care assistant collect blood for patient X but handed her the prescription for patient Y
- The nurse checked the blood with patient Y's identity band using the electronic bedside scanner, which alarmed to warn of a mismatch
- The nurse contacted the laboratory and was advised that a new identity band should be printed to exclude problems with a corrupted barcode. The nurse used the details on the blood to generate a new identity band
- This incorrect identity band was then applied to the patient. The unit was rescanned and the system now accepted this was the right blood for the identity band scanned
- Fortunately the patient queried why the blood was not irradiated and on investigation the nurse realised she had the blood for the other patient in the bay



Massive over transfusion of 1 year old child

- A 10Kg child with a gastrostomy inserted a few days previously was brought into A&E, pale but alert, following an episode of vomiting blood Hb was 98 g/L
- He was (wrongly) diagnosed as having an acute arterial bleed, and the major haemorrhage protocol was activated
- Red cells were incorrectly prescribed in adult units rather than mL/kg and he was given a total of 4 units (1122 mL), the first 3 given over one hour
- He was taken to theatre, found to have no evidence of fresh bleeding in his stomach, and a Hb of 270 g/L
- Attempted venesection was difficult and only removed 40 mL blood. He required transfer to a paediatric intensive care unit and made a full recovery



Emergency intrauterine transfusion (IUT) for fetal anaemia

- A fetus of 21 weeks gestation with a history of maternal parvovirus infection during pregnancy required an urgent IUT following signs of severe anaemia on ultrasound
- As the fetal medicine unit understood that it was not possible to obtain red cells for IUT with less than 24 hrs notice to the Blood Service, they transfused 15 mL maternal blood to the fetus (non-leucodepleted, non-irradiated and related)
- The initial the procedure was uneventful, but the fetus subsequently developed a bradycardia with poor cardiac output so an emergency intracardiac transfusion with a further 18 mL maternal blood was given
- The baby was delivered by emergency Caesarean section at 32 weeks gestation due to reduced fetal movements. The baby was pancytopenic at birth with Hb 50 g/L, neutrophils 0x109/L and platelets 9x109/L, and required multiple blood and platelet transfusions
- A diagnosis of TA-GvHD was made, as the mother was found to be human leucocyte antigen (HLA) homozygous and the baby died a week later



Inappropriate administration of anti-D Ig to a male patient

- An 84 year old O RhD negative male presented in the emergency department with a gastrointestinal bleed and was given a unit of O RhD positive red cells
- The duty biomedical scientist issued a dose of anti-D lg 'in case the patient made immune anti-D'



In summary

- **CHECKS** are there for a reason
- Don't **ASSUME** that things have been done
- Do your **OWN** job well, let others do theirs
- Never stop THINKING



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