Avoidable, Delayed or Undertransfusion (ADU) n=185

10

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Definition:

- **Where the intended transfusion is carried out, and the blood/blood component itself is suitable for transfusion and compatible with the patient, but where the decision leading to the transfusion is flawed**
- **Where a transfusion of blood/blood component was clinically indicated but was not undertaken or was significantly delayed**
- **Avoidable use of emergency O D-negative blood where group-specific or crossmatched blood was readily available for the patient**

What to report:

- Prescription of components that are not required or are inappropriate as a result of erroneous laboratory results, transcription errors or faulty clinical judgement
- Prescription for an inappropriate indication
- Prescription at a dose or rate inappropriate for the patient's needs, excluding those cases which result in transfusion-associated circulatory overload
- Failure to transfuse when indicated, undertransfusion and significant delays in transfusion, whether caused by the laboratory or the clinical area

Key SHOT messages

- Avoidable and delayed transfusions continue to occur, many associated with poor communication or inappropriate clinical decisions contributing to bad outcomes including death
- The number of delays reported has increased; many were caused by misunderstandings related to the operation of major haemorrhage protocols (MHP). It is disappointing that ignorance of MHPs is still recorded 4 years after publication of the Rapid Response Report by the National Patient Safety Agency (NPSA) (NPSA 2010). It has been suggested that hospitals which have infrequent activations do not need to run practice drills but the opposite is the case. When MHPs are infrequently triggered the lack of familiarity may contribute to confusion as illustrated here
- The recommendations made in the NPSA Rapid Response Report remain relevant and should be followed, notably that 'local protocols should enable release of blood and blood components without the initial approval of a haematologist' and that the major haemorrhage protocol is 'supported by training and regular drills'

Overview

There were 185 reports of avoidable (n=129), delayed (n=50) or undertransfusion (n=3). Three additional cases are discussed under 'miscellaneous'.

- Age range: birth to 98 years (median 67) with 3 of unknown age
- Paediatric patients (i.e. <18 years of age) n=18

Deaths n=3

In three cases delay in transfusion contributed to the patient's death.

- Two were related to communication and confusion during activation of the major haemorrhage protocol (MHP) including a patient with a 'do not resuscitate' order
- One: the patient attended a routine anticoagulant clinic with symptoms suggesting gastrointestinal bleeding. He was admitted to the emergency department (ED) and later died. This case is discussed fully in Chapter 8, Human Factors, Case 1

Major morbidity n=4

Case 1: Elderly patients are vulnerable if transfusion is delayed

A 90 year old man deteriorated following surgery for a fractured neck of femur; delay in transfusion occurred because the urgency was not clear and he suffered cardiac arrest but was successfully resuscitated.

Case 2: Delay caused by inappropriate advice to used washed red cells

A 25 year old mother with obstetric haemorrhage and post-delivery Hb 67g/L suffered a transfusion reaction to a second unit of blood; the first unit had been started at 15:40. She was promptly reviewed (20:40, Thursday evening) but when the consultant haematologist was consulted at 02:00 he advised that washed red cells should be given. She continued to bleed dropping her Hb to 51g/L, then to 48g/L and was very frightened by 07:00 when the washed red cells were available. She then received 3 units. Surgery for retained products of conception was likely to be delayed until after the weekend (Monday) when further washed cells would be available, but when the Blood Centre consultant was contacted on the Sunday the advice was that washed cells were not necessary so surgery proceeded on the Sunday. As a result, a letter was issued regionally to clarify the indications for washed or plasma-reduced components.

Case 3: Failure to take notice of the medical history

A 63 year old woman had a history of autoimmune haemolytic anaemia (AIHA) for which she was on steroids, which was not noted in her pre-surgery clerking by the nurse (although it was listed in the GP referral letter). One week later she attended for day case surgery (repair of ventral hernia). The surgeon and anaesthetist were informed of her history of AIHA and also that in the past a splenectomy had to be abandoned (uncontrolled bleeding). A group and antibody screen sample was not taken. Postoperatively she became hypotensive and Hb was 56g/L at 00:43. Irregular antibodies were detected in the blood grouping sample and there were no compatible units in the hospital. The history of AIHA was noted when reviewed by the Critical Care team at 08:15 (followed by transfer to intensive care). The surgeon was adamant that the low Hb was caused by AIHA and not haemorrhage, despite the fact that the blood results and film reviewed by the haematologist did not fit with this. However at 12:00 imaging confirmed internal bleeding. At surgery 2.5L was evacuated. Red cells O D-negative were issued by concessionary release and given with hydrocortisone cover. She received 5 units of red cells, 2 units of FFP and 1 unit of platelets.

This case demonstrates complications that can arise, putting the patient at serious risk, when significant medical history is ignored. In this case the surgical pre-assessment was seriously inadequate, and there was failure to activate the major haemorrhage protocol once the bleeding occurred. Further MHP training will be undertaken.

Case 4: Misunderstanding of the MHP

A 41 year old woman suffered major obstetric haemorrhage losing more than 5L after abruption of the placenta and fetal death. She presented at 22:15 and delivery by caesarean section was planned. The coagulation screen was abnormal. At 01:15 a major obstetric haemorrhage (MOH) call was made, but there was delay in provision of blood components which may have contributed to the overall blood loss. The haematology biomedical scientist was unclear what blood products to issue after a MOH call and mistakenly thought authorisation by a haematology registrar was required. The process has been clarified. The patient was admitted to the intensive therapy unit (ITU) but made a full recovery.

Other cases illustrating difficulties with major haemorrhage protocols (MHP) n=8

The causes in 8 cases included: failure to activate the MHP (including Case 4 above), poor communication or a delay in decision-making and problems during major haemorrhage.

- In 2/8 delay contributed to the patient's death (see above)
- In 1/8 delay during massive obstetric haemorrhage was due to
  - Poor communication between the clinical area and the laboratory staff
  - The maternity clinical support worker did not use correct documentation to collect blood from the laboratory
  - Because of the urgent clinical situation the BMS released the components without further checks

Avoidable transfusions n=129

Cognitive errors (poor clinical decisions) n=27

All of these avoidable transfusions could have been prevented with adequate pre-transfusion assessment of the patient including:

- Review of current blood results prior to deciding to transfuse
- Avoiding incorrect management of immune thrombocytopenic purpura (inappropriate administration of a platelet transfusion when not bleeding)
- Avoiding treatment of non-bleeding patients suffering from liver disease with FFP
- Avoiding use of FFP to manage warfarin reversal, the correct management is with prothrombin complex concentrate (PCC)

In other instances the patient's specific care plan was not followed e.g. units reserved for surgery were prescribed and transfused the night before the surgery without any indication, or wrong patient transfused due to a misunderstanding of instructions on the ward round.

Transfusion on the basis of wrong results n=26

Reason	Number of cases
Cause of erroneous result unknown	10
Transcription error	5
Result of another patient used	4
Previous result used	4
Incorrect result issued	3
Total	**26**

Table 10.1: Erroneous results leading to avoidable transfusions n=26

In 10 cases the cause of the erroneous result could not be established but 5/10 probably resulted from dilute or inadequate samples. In 4/26 cases the blood result of another patient was used following errors when viewing or linking patient results on the hospital information technology (IT) system.

Case 5: A patient with poor intravenous access and multiple co-morbidities receives unnecessary blood transfusion due to wrong results from possible poor full blood count (FBC) sample

A 68 year old woman with multiple co-morbidities had a Hb recorded 2 days before at 97g/L, but a repeat showed Hb 40g/L (no clinical symptoms to fit with severe anaemia) which triggered a transfusion request. This was handed over for the on call doctor to prescribe. A repeat FBC sample was taken since the low Hb was unexpected and not consistent with the clinical findings, but nobody was informed. The first unit was started at 19:35. The second unit was started at 00:05 after insertion of a new cannula under ultrasound guidance (very difficult access due to oedema). At this time (00:05) the result of the repeat FBC was viewed (available at 18:18, 6 hours earlier): result Hb 95g/L. The transfusion was stopped at 00:25. The patient was currently asymptomatic, haemodynamically stable with no evidence of bleeding. The transfusion documentation/plan in the patient's notes was poor with no evidence of a decision to transfuse or that a repeat sample had been taken after the apparent fall in haemoglobin.

Sample errors n=22

In 22 cases the primary error was an inadequate, clotted/clumped, dilute or 'wrong blood in tube' FBC sample.

Table 10.2: Causes of FBC sample errors n=22

Error	Number of cases
Dilute	7
Inadequate	3
Clotted/clumped	6
Wrong blood in tube	6
Total	**22**

One additional 'wrong blood in tube' FBC sample resulted in delayed transfusion. This is discussed in the section on delays with an additional sample-labelling error.

Blood gas analyser/point-of-care testing (POCT) errors n=9

Wrong results from blood gas analysers and other POCT devices continue to be reported. In 9 instances an erroneous result was used as the basis for transfusion. The advantages of near patient testing are well documented (Briggs et al. 2008, Briggs et al. 2012) however clinicians are reminded that all staff must be trained and competent to use these devices and care must be taken when reading and interpreting results.

Avoidable use of O D-negative red cells n=17

In all these cases, more suitable red cells should have been available however, due to various errors in the process, emergency O D-negative units were used instead.

Table 10.3: Reports of avoidable use of emergency O D-negative red cells n=17

Reason	Number of cases
No preoperative group and antibody screen available	2
Type-specific red cell units available	2
Crossmatched red cell units available	4
Non-emergency situation	1
Group-check sample not taken	2
Crossmatched red cell units stored in wrong refrigerator	1
Patient's condition did not require emergency transfusion	2
Group and antibody screen sample lost	1
Emergency O D-negative red cell units taken instead of available group-specific units	1
Group and antibody screen sample labelling error	1
Total	**17**

In 2 cases emergency O D-negative units were issued because a group-check sample was not available. In a third case there was delay in transfusion of O D-negative red cells and this case is discussed later (Case 8).

Haematinic deficiency n=13 (the numbers do not relate to the case studies in the text)

Table 10.4: Red cell transfusions in patients with haematinic deficiency n=13

Case	Deficiency	Indication for transfusion	Symptoms Y/N	Hb and other indices where known Pre-transfusion	Number of red cell units given	Hb Post-transfusion
1	B12	Symptomatic anaemia secondary to possible GI bleed	Y	73g/L	2	87g/L
2	Iron	Chronic GI bleed	Y	36g/L	3	Not done prior to discharge
3	B12	GP referral with instruction to refer to haematologist on admission as blood tests showed B12 deficiency	Y	Hb unknown B12 75pg/mL folate 3.1ng/mL	4	unknown
4	Iron	Hb sample from 6 weeks earlier prior to iron treatment	N	67g/L, MCV 52fL ferritin 8µg/L (pre-iron)	3	159g/L HCT 0.489
5	Iron	Decompensated liver disease – chronic anaemia	N	68g/L	2	82g/L
6	Iron	Peri-operative Hb<7g/L (laproscopic hysterectomy) (? Non-compliance with iron)	N	Hb 69g/L MCV 56fL	2	unknown
7	Iron	Transcription error by nurse. Wrong patient transfused	N	unknown	1	unknown
8	Iron	Chronic anaemia	N	38g/L	4	114g/L
9	Iron	Menorrhagia – endometrial ablation	N	82g/L	1	98g/L
10	Iron	Listed for endoscopy	N	76g/L MCV 69.4fL ferritin 7µg/L:	3	124g/L
11	Iron	Aim for 100g/L post transfusion	N	84g/L	1	unknown
12	Iron	Preoperative hip replacement – chronic anaemia	N	Hb 56g/L MCV 62fL ferritin 2µg/L	2	unknown
13	Iron	Pregnant – fatigue and dizzyness	Y	65g/L	2	Clotted sample, not repeated

Inappropriate management of iron deficiency anaemia continues to occur. Where available the red cell indices are included otherwise classification is as given by the reporter.

Case 6: Inappropriate transfusion of patient with iron deficiency followed by development of multiple red cell antibodies

A 57 year old woman attended the preoperative clinic prior to an elective hip replacement. The Hb was reported as 62g/L. A routine transfusion of red cells was requested and prescribed by an orthopaedic trainee and the patient was planned to attend the haematology day case unit for transfusion. The junior haematology doctor did not review the patient before accepting her for transfusion and there had been no request for review by a consultant haematologist.

Results prior to the transfusion, which took place 5 days later, showed clear evidence of iron deficiency: Hb 56g/L, MCV 62fL, ferritin 2microg/L (folate and B12 levels normal). Two pre-transfusion antibody screens were negative. One month after transfusion, following iron therapy and endoscopy

to check for a possible source of gastrointestinal bleeding (no abnormality found), results were: Hb 105g/L MCV 77fL, ferritin 25microg/L.

A further preoperative group and screen sample 2 months later identified that the patient had developed anti-S, anti-E and anti-Lu^a following this unnecessary transfusion.

Overtransfusion n=7

This group included patients whose low body weight was not taken into consideration when prescribing the transfusion and includes two paediatric patients. There were 2 additional paediatric prescribing errors that resulted in overtransfusion (see below).

Prescription errors n=7

Components were incorrectly prescribed in 4 cases. Two of these were paediatric patients. Two transfusions of red cells to adult patients were prescribed to run in excess of 4 hours; one over 6 hours and the other over 8 hours. In a further 3 cases, transfusions were given that were neither prescribed nor appropriate.

Other n=1

Case 7: A Jehovah's Witness receives red cells

An 85 year old woman with a fractured hip and known dementia appeared to have consented to transfusion as part of the consent process for emergency surgery. In a previous admission a few months earlier for possible upper gastrointestinal (GI) bleed, she had expressed her preference not to receive blood transfusions and this was documented in the case notes together with a plan for conservative management with an iron infusion. There was no advanced directive.

Following a cardiac arrest on induction of anaesthetic for the hip surgery, the patient was returned to the ward, the 2 units of red cells which had been crossmatched prior to surgery were prescribed (Hb 67g/L MCV and MCH consistent with the blood sample at 04:53, more than 8 hours earlier) and the first unit was commenced at 14:40 and completed at 18:30. When the second unit was commenced at 21:30 the family raised a concern regarding the transfusion.

The validity of the patient consent in this case was clearly in question due to the patient's long term confusion. The patient's wishes and agreed management plan had been discussed with the patient in the presence of family members during a previous admission and this was documented in the case notes. There was no formal objection to transfusion (advanced directive) however, information about the patient's religion and decision to decline blood transfusion was available but this information had not been added in the recognised field of the electronic admission record. The patient reiterated her objection to transfusion when she recovered from the event.

Delayed transfusions n=50

There were 50 reports of delayed transfusion in 2014, an increase from previous years (Figure 10.1). Analysis provides important lessons and reflects the difficulties of managing patients in busy hospitals. The outcome of the root cause analyses (RCA) and corrective measures taken to address issues raised are useful learning tools which should be shared to continue to enhance patient outcomes and support other colleagues in practice. We encourage reporters to share anonymised RCA reports. Please contact the SHOT office.

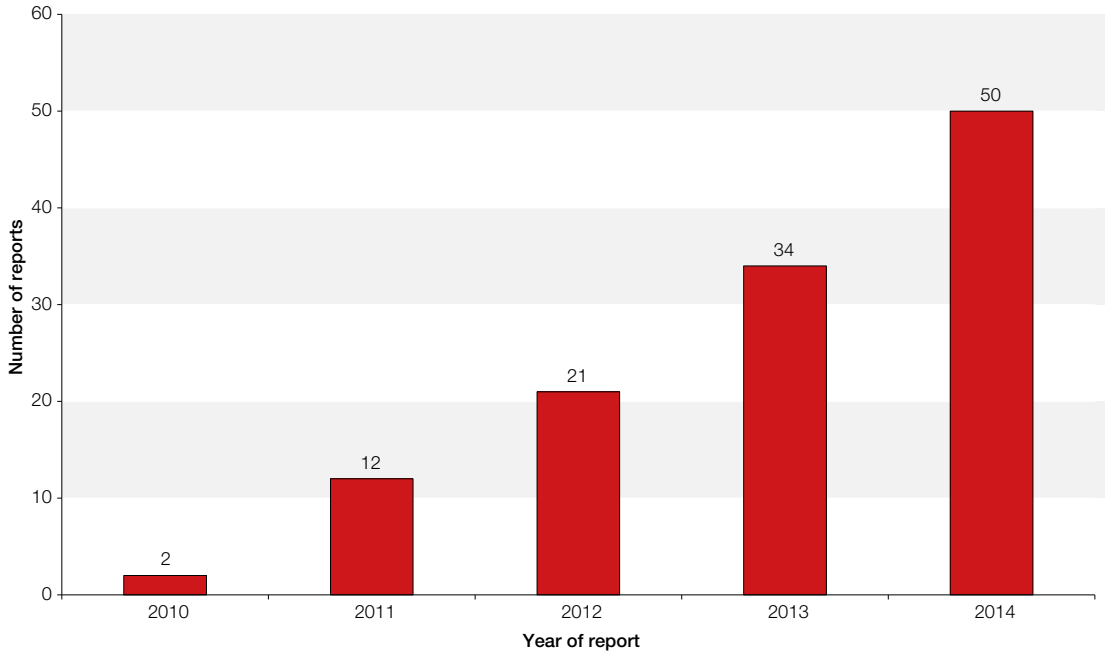

Figure 10.1: Cumulative numbers of reports of delayed transfusion n=119

Component not available n=10

In 10 cases components were not readily available for patients requiring transfusion.

- Two were routine transfusions and were linked. The BMS from the 'hub' transfusion laboratory inadvertently switched the delivery location of the components for the two patients who were in two separate 'spoke' hospitals. The error was detected by a nurse who contacted the transfusion laboratory. The components were recalled but this mistake resulted in delay in transfusion for the patients
- The other 8 cases were either urgent (5/10) or emergency (3/10) transfusions. Reasons identified for the delays included failed communication between departments about exact requirements or availability and delays while suitable components were sourced

In 2 of the above cases the problems occurred with collection of the component.

- A ward had recently relocated and the staff were unclear where they could collect blood from
- A porter was delayed in collecting blood for theatre due to the demands from other theatres

Communication failures n=17

These included failure to communicate the urgency (n=7) and other communication problems (n=10)

Case 8: Miscommunication and misunderstandings complicated by poor venous access leads to a delayed transfusion

An 81 year old man was admitted through the ED at 16:40 following a fall at home and possible compartment syndrome. He was receiving warfarin for atrial fibrillation and the INR was 4 at the time of the fall. On admission his Hb was 76g/L and INR 1.7, BP was 70/40mmHg, heart rate 98bpm, respiratory rate 32 breaths per minute and oxygen saturation 97%. The patient had visited the GP 24 hours earlier when his Hb was 112g/L. At 17:30 the patient was reviewed and was found to have no pulses in the foot due to an extensive haematoma. Prothrombin complex concentrate (PCC) and vitamin K were prescribed following discussion with the consultant haematologist.

At 18:30 the patient was reviewed by the consultant vascular surgeon who prescribed red cells. Blood was issued within 20 minutes together with PCC based on results from the GP. The PCC was given at 19:45, and a second grouping sample was requested prior to transfusion in accordance with the standard operating procedure. The clinical staff 'refused' to take a repeat sample and the BMS

would not release crossmatched red cells without the confirmation group. The clinical staff ordered emergency O D-negative red cells. The patient was transferred to ITU at 21:00 where the red cells were transfused. He was then transferred to theatre for evacuation of the haematoma with a 2L blood loss. A repeat group and antibody screen sample was taken at 22:55 and fully crossmatched units were issued and collected at 23:30.

On investigation there were several circumstances surrounding the events:

The ED was extremely busy, the patient had only one line of venous access, was shut down and difficult to bleed. ITU staff had been contacted to arrange central line insertion and to take over the patient's care. The ED team gave IV Vitamin K in a syringe driver over 1/2 hour (rather than as a bolus over 3-5 minutes) which caused delay. IV antibiotics were given which caused additional delay in giving PCC.

The vascular surgeon was very disappointed that no blood had yet been given to the patient and the O D-negative red cells were ordered to be given immediately so that the patient did not deteriorate any further.

The British Committee for Standards in Haematology (BCSH) guidelines for pre-transfusion compatibility procedures (BCSH Milkins et al. 2013) are clear regarding the need for a group-check sample and what to do in an emergency if it is not possible to obtain a second sample. There were 4 cases reported in 2014 relating to this. In 1 case the clinical staff refused to take a second sample and used the emergency O D-negative units.

In another case, in a woman aged 75 with GI bleeding, the group-check sample was labelled with the wrong patient details leading to delay in supplying red cells. However the BCSH guidelines (BCSH Milkins et al. 2013) clearly state that although a second sample should be requested for confirmation of the ABO group of a first time patient, this '**should not impede the delivery of urgent red cells or other components when urgent transfusion is required**'. In this case the laboratory BMS was also unaware of the exceptions to the 2 sample policy and this caused confusion/conflict and delay in receiving crossmatched blood.

Local review of this case unearthed frequent inappropriate practice: while bedside printing of labels was supposed to be in place there were insufficient printers so several users were printing out labels on a single printer, readily enabling collection of incorrect labels and labelling the wrong sample. As a result of this incident, the staff have returned to a policy of hand writing labels and a working party has been set up to review the blood sampling procedures across the hospital.

Wrong blood in tube: group and antibody screen n=2, FBC WBIT n=1 and sample-labelling error n=1

All four cases resulted in delayed transfusion.

An urgent sample for a patient with a GI bleed could not be located. It had been labelled with another patient's details and had been accepted and tested by the laboratory as the details on both the form and sample matched.

In the 'wrong blood in tube' FBC case, patients A and B were in adjacent beds. The full blood count sample from patient A was labelled with patient B's details. As a result, patient B received an unnecessary unit of platelets while patient A's transfusion was delayed until the error was discovered by the junior doctor when reviewing the biochemistry results.

In the sample-labelling case, the BMS requested a repeat FBC with a group and screen for patient S in the Emergency Department whose Hb was 46g/L. Two samples were received in the laboratory at the same time; one for patient S and a second for patient Y with clinical details recorded as 'Hb 4.6 on previous sample'. This was consistent with patient S. The BMS suspected that the patient details had been transposed during labelling, rejected the samples and requested they be repeated. When the clinical area contacted the laboratory to find out when blood would be available for the patient, the BMS was assured that the samples came from patient S, they had just been labelled with the wrong details and requested the sample be run anyway due to patient condition. The BMS refused and issued group specific when they received a repeat sample.

Although there have been no reports submitted to SHOT in the last 2 years where wrong components were transfused as a result of 'wrong blood in tube' group and antibody screen samples, patients are still receiving unnecessary or delayed transfusions due to errors and failures to positively identify patients when labelling other pathology specimens. This task must be completed according to the BCSH administration of blood component guidelines (BCSH Harris et al. 2009) and as recommended by SHOT (Bolton-Maggs, Poles et al. 2013).

Delayed decision making n=5

All 5 of these occurred in 'urgent' (2 cases) or 'emergency' (3 cases) situations as shown in Case 3 above and Case 6 in Chapter 8 Human Factors.

Case 9: Elderly patient with epistaxis poorly managed due to lack of ownership

An elderly woman was admitted to the ED with epistaxis (not on anti-coagulants) and was prescribed a 2-unit blood transfusion due to the severity of the bleeding (Hb 109g/L). The units were issued but were not given as nursing staff were trying to move patient before she breached the target time in the ED (4 hours). The patient had been referred and initially accepted by the surgical team who then declined the patient. She remained in the ED for another 2 hours but the transfusion was not started. She was reviewed by the Consultant who decided instead she was to be urgently transferred to another hospital (by 'blue light'). The blood was not used on transfer.

Case 10: Delayed admission following failure of communication in community care

A FBC sample was received on routine transport from a health centre. The clinical details included 'shortness of breath' and the Hb was 45g/L. As the sample was received after routine hours, the result was telephoned to the on-call GP service. The patient was not admitted to hospital until 6 days later. A repeat Hb confirmed the low result, and resulted in an urgent request for a 3 unit red cell transfusion which was started within 2 hours.

Component labels n=3

Two cases of transposed labels were detected at the bedside and components were therefore recalled for relabelling. In the third case the Blood Service provided HLA-matched platelets for two patients who had received HSCT but as a result of transplant, both had new ABO groups. The supplied platelets were of the original ABO group, not the new post-HSCT ABO group. The Blood Service laboratory staff are unable to change the blood group on their LIMS but agreed to provide platelets of the updated groups (which had been indicated on the original request forms). The platelets had to be returned to the hospital transfusion laboratory for checking which resulted in a delay in the transfusion.

Sample labelling errors n=5

All these incorrectly labelled samples were for group and antibody screens.

Case 11: Wrong date of birth recorded by GP leads to confusion, 7 mislabelled samples and consequent delay in transfusion

A 92 year old woman was admitted with chest pain, Hb 51g/L and as there was no previous record of her blood group, 2 independent samples were required. The month of birth on the hospital system was recorded as October as given by the GP, but in fact was September. The grouping samples were rejected on 5 consecutive occasions because of sample labelling errors. A doctor took two samples and completed the details on both samples but another member of staff signed for second sample (against hospital policy so rejected by the laboratory). The third sample had a mismatch between the date of birth given (September) on the sample, correct, and (October) on the form and so was again rejected. Fourth and fifth samples were collected, blood was then matched and 2 units issued more than 3 hours after the low Hb was telephoned to the clinical area.

However, bedside positive patient identification check at the time of administration established that the date of birth was incorrect. (The positive patient identification phlebotomy policy had not been followed for previous samples). Patient details were then updated on the hospital system, a new

wristband was provided, new blood request forms printed and the patient was rebled for sixth and seventh times with correct DOB. The patient was suffering from GI bleeding and the blood was issued urgently. The transfusion started at 16:25 nearly 6 hours after admission.

Other reasons for delay n=6

- In 2 cases the patient was being transferred between wards and the transfusion was not started because of this
- In 2 cases the delay was due to the late receipt of a group and antibody screen sample
- In 1 case an erroneous full blood count result with an unknown root cause resulted in delay
- In 1 case the staff could offer no explanation why an overnight transfusion had not been started as prescribed for a patient who needed it. The plan was made at 01:30 and the first unit was given by 06:30 however, the second unit was not commenced until 17:30 later that day. Therefore this second unit was delayed by >12 hours

Undertransfusion n=3

In all three cases, the dose of FFP was insufficient. In two cases the FFP was to be given before a procedure but in the third case the patient was undergoing surgery where three units were prescribed but only one was given. Lack of knowledge and poor prescribing were cited as the main cause of these cases.

Miscellaneous cases n=3

Two cases relating to prothrombin complex concentrate (PCC) are discussed here and we will accept such cases or instances of delayed PCC administration. Please contact the SHOT office if you have a case.

Case 12: Miscommunication regarding PCC causes inappropriate administration

A patient with history of haematuria had an INR of 8.9. The ward contacted the hospital transfusion laboratory requesting PCC. The BMS told the ward staff to discuss this request with the consultant haematologist. There was no further communication between the ward and the hospital transfusion laboratory. The next day, a request was received for PCC. The ward staff confirmed this had been agreed by the consultant haematologist. The PCC was issued and was transfused at 17:00. However, a repeat sample, taken at 15:00, gave an INR result of 1.5, thus the PCC was given unnecessarily. The nurse who administered the PCC had confirmed with the doctor that there was no INR result at that time. The doctor stated that the consultant said to go ahead with transfusion. Training sessions were to be set up for the nurses and doctors as PCC was not a regular treatment on the ward.

We have received several enquiries about reporting PCC incidents and have decided to accept reports of inappropriate or delayed administration of PCC. Reporters should contact the SHOT office for reporting guidance and to request the relevant questionnaire.

Case 13: Confusion when porter collected blood components in an emergency

An elderly man was admitted with an intracranial haemorrhage. The porter came to the hospital transfusion laboratory and informed the BMS that the massive haemorrhage protocol (MHP) had been activated. The laboratory staff had not received a telephone call from the clinical area to activate the MHP. The porter had brought hand written patient details without a hospital number. The BMS tried to contact the ward, but got no answer. He/she then created a 'LIMS ID' number to permit issue of 2 units of O D-negative blood and 2 units of FFP with appropriate documentation. The BMS was unable to print the issue record so the porter was allowed to take the units of blood without signing them out. The BMS then received a telephone call from the clinical area. The nurse in charge clarified the patient details. The BMS explained the risks of transfusing incorrectly labelled components and advised about MHP requirements including the need for an urgent crossmatch sample and an emergency ID number. The doctor then explained that the patient had an intracranial

bleed and required PCC not blood components. The components were returned to the laboratory within 15 minutes.

An additional case did not meet inclusion criteria for SHOT. The patient received an inadvertent peripheral arterial red cell transfusion. The staff were initially alerted when the appearance of the component changed in the bag during transfusion. This was confirmed when attempting to administer antibiotics.

Near miss ADU cases n=14

Similar lessons can be learnt from near miss ADU cases that were detected before the patient received an avoidable or inappropriate transfusion.

Point in the process	Type of error made	Number of cases	Percentage of cases
Request	Requested excessive volume or rate of transfusion of blood component	5	35.7%
	Requested on the basis of erroneous results	5	35.7%
	Requested for incorrect patient	2	14.3%
Sample taking	Wrong blood in tube FBC sample	2	14.3%
Total		**14**	**100%**

Table 10.5: Near misses that could have led to ADU n=14

IT-related ADU cases n=12

There were 12 ADU cases that also had an IT element, and these are described below. The numbers are included in the tables above where appropriate, so these are not additional cases. There were 6 clinical errors, and 6 laboratory errors.

Transfused on the wrong result n=8

IT systems or equipment failure contributed to the following unnecessary transfusions:

In two patients the platelets were low due to clumping or clotting but these spuriously low platelet counts, results which should not have been transmitted, appeared on the ward results enquiry system and both patients were give unnecessary platelet transfusions. On another occasion a faulty coagulation analyser gave an incorrect fibrinogen result and a baby was given a blood component that was not indicated.

In five cases clinical staff prescribed blood components because the wrong patient's record had been accessed.

- On two occasions, red cells were transfused to a patient based on a Hb result accessed via a ward computer for a different patient
- An unnecessary transfusion was given to a patient because they had two computer records, which had not been linked or merged. The low Hb level was an old result and the latest Hb was much higher and, as a result, the patient was overtransfused
- In one case the haematology laboratory picked up a wrong blood in tube (WBIT) on a delta check but the result was not withdrawn and the patient was transfused based on another person's results
- In the fifth case incorrect transcription of the platelet count from the computer to the patient's notes resulted in a platelet transfusion that was not needed

Transfusion delays n=4

IT systems or equipment failure led to transfusion delays in four patients:

- A delay occurred in providing blood for a postoperative surgical patient who did not have a current valid group and screen to enable issue of blood remotely. Although testing was undertaken in a timely manner, the LIMS did not release the results in a timely way and the patient ended up needing

emergency blood. This highlighted a problem with the remote issue set up that needed revising

- A woman who needed urgent transfusion of SD-FFP had a delayed transfusion because the labels for the component could not be generated during computer downtime
- Platelets with the wrong specific requirement were ordered for a patient because the flag on the LIMS which indicated that irradiated components were required was ignored and the platelets had to be reordered
- Blood could not be provided in an urgent situation because there was a wrong DOB on the PAS, which led to a difference between the request and the sample and multiple sample rejections

COMMENTARY

The number of reported delays to transfusion in 2014 has increased to 50 compared to 34 in 2013. Many reports demonstrate that there are still misunderstandings about activation of the MHP. It has been suggested that hospitals which have infrequent activations do not need to run practice drills but the opposite is the case. When MHPs are infrequently triggered the lack of familiarity may contribute to confusion as illustrated here. The recommendations made in the National Patient Safety Agency Rapid Response Report remain relevant and should be followed, notably that 'local protocols should enable release of blood and blood components without the initial approval of a haematologist' and that the major haemorrhage protocol is 'supported by training and regular drills'. It is disappointing to receive reports related to failure to put these arrangements in place some 4 years after publication.

The number and reasons for avoidable transfusion are similar to previous years.

References

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