SHOT

Serious Hazards of Transfusion

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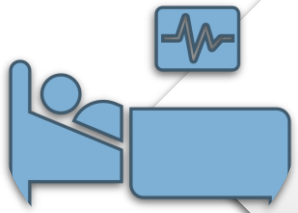
SHOT

Interactive Case studies



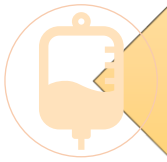
IT impact on errors in transfusion

SHOT reported cases

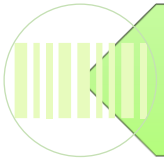
Corrective and preventative actions and learning from experiences

Interactive case studies

Case 1



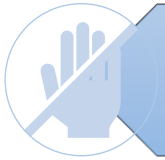
Platelets for patient A scanned against wristband for patient B



Wristband was faint, and nurse decided to reprint

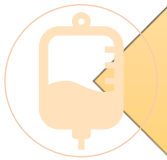
On way back from printer dropped wristband, and picked up someone else's from the floor

Did not check wristband, and attached to patient



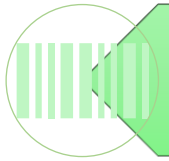
Tracker detected error and new wristband applied and unit transfused safely

Case 2



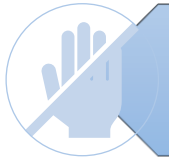
Patient A transfused with RBC intended for Patient B

Nurse collected unit correctly, but bedside tracker lost power during bedside checking stage



Nurse did not follow downtime procedures and continued to check unit without second checker

Next shift nurse noticed wrong patient's details on unit and transfusion stopped



Fortuitously both patients were O D-positive with no red cell antibodies

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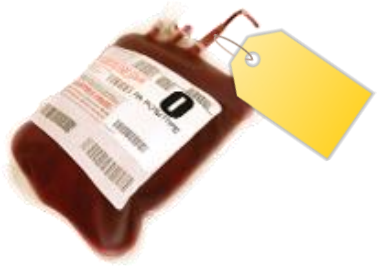
Enter Text and Press Send

How would you have prevented this in your organisation?



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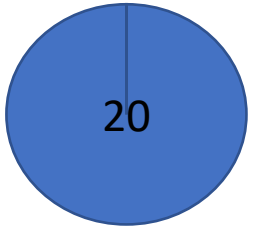
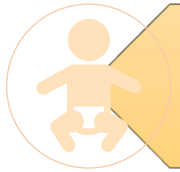
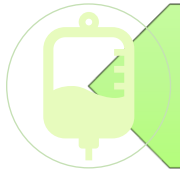


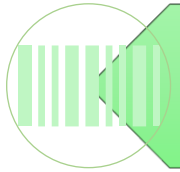
Case 3



Clinical area requested FFP for an actively bleeding neonate, with unknown group

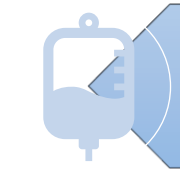


BMS selected neonatal FFP but was given a prompt by LIMS for pack number as part of a multiple split unit



BMS incorrectly thought LIMS asking for donation number again, which would not scan. BMS thought LIMS would not issue as unit was not AB

BMS selected an AB unit from freezer. Unit was actually cryoprecipiate. Both were stored on the same shelf. Cryo was not part of a split pack.



Unit issued

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Which two options would you consider to be the best preventive action?

Vote for up to 2 choices

1. Retraining of BMS involved
2. Relocation of different component types to separate shelves
3. Update of LIMS with clearer alerts
4. Training of staff in cognitive bias

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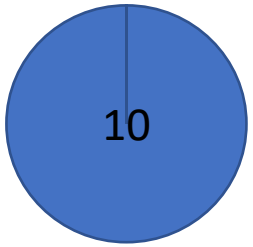
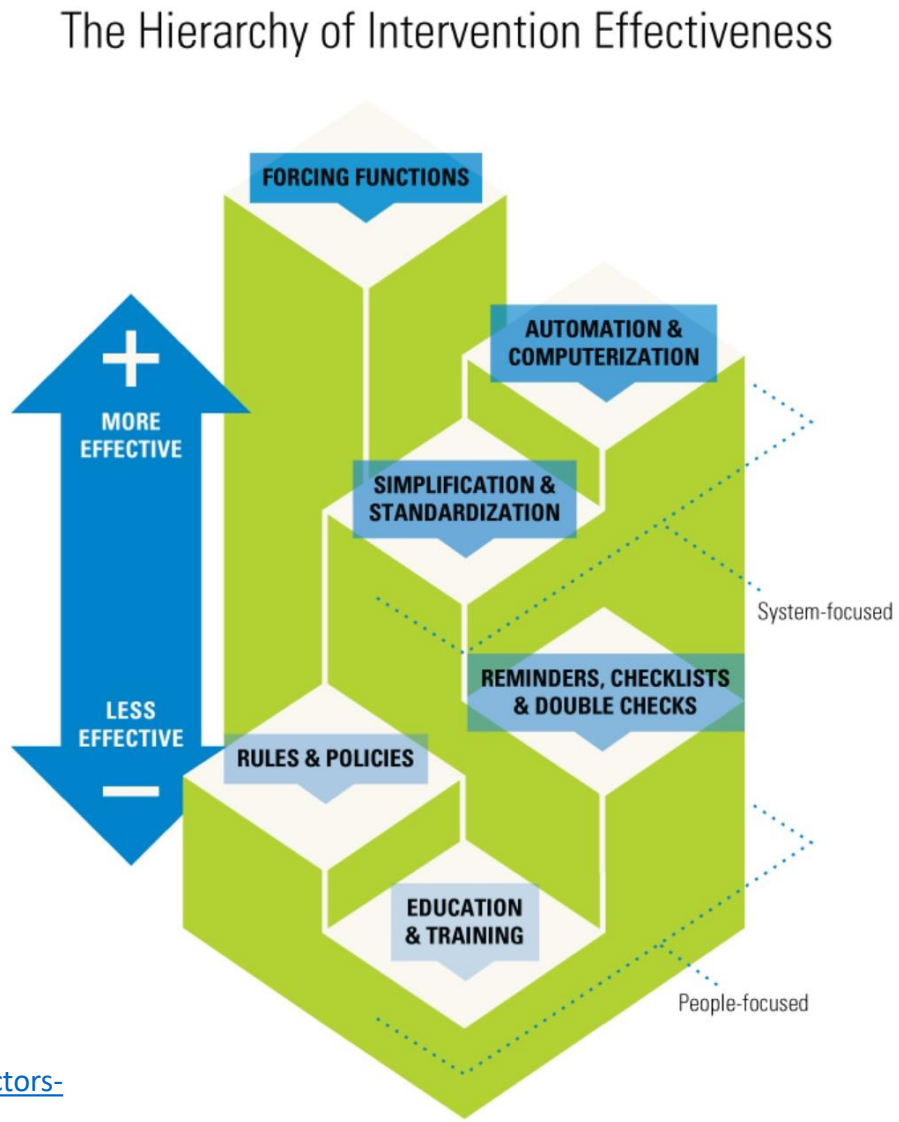
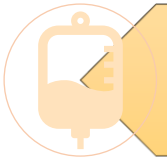


Vote Trigger



https://www.longwoods.com/content/22845/healthcare-quarterly/from-discovery-to-design-the-evolution-of-human-factors-in-healthcare

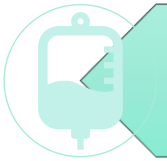
Case 4



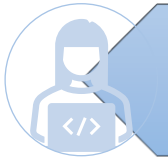
Two O FFP transfused to a group A patient

Patient was MHP, and group could not be determined, but as received +++ group O emergency units, entered as O Neg

Note and flag added to LIMS to state give ‘universal’ blood components



Group O FFP issued by BMS as they thought anyone could receive O plasma



LIMS alerts overridden

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What could have helped to prevent this ABOi transfusion?

1. Update SOP to include ABO compatibilities between groups
2. Create ABO compatibilities chart for laboratory and clinical area
3. Educate all staff involved in ABO compatibilites for ALL components
4. Update LIMS flag with clearer actions
5. All of the above ✓

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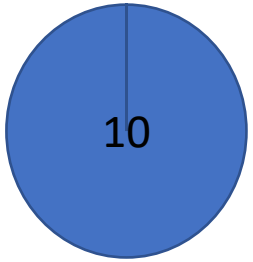
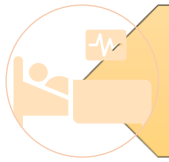
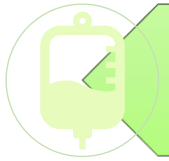


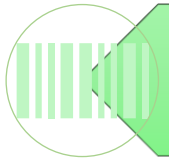
Case 5



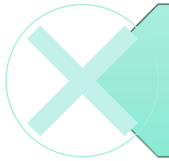
Patient requiring irradiated red cells transfused standard units



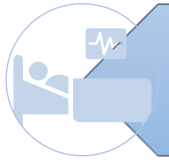
LIMS had an IRRADIATION alert, but patient had two separate alerts



BMS was distracted by other staff and missed the distinct alerts



Inexperienced BMS was second checker – error not detected prior to issue



Error not detected at bedside, unit transfused

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What percentage of SHOT reports involve overriding of IT alerts?

1. 1%
2. 3%
3. 5%
4. 8%
5. ✓ 10%

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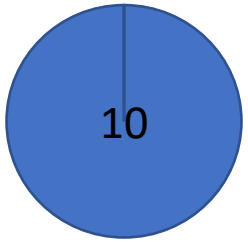
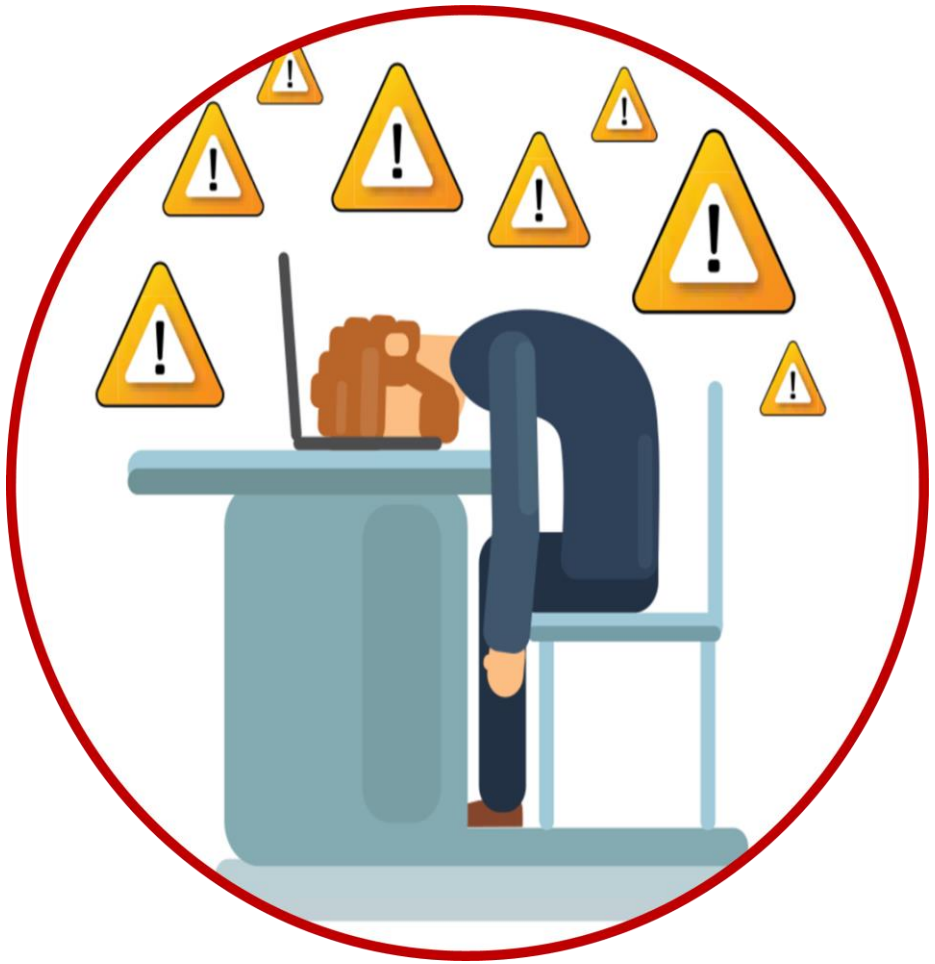


Alert Fatigue



Alert fatigue occurs when staff are **exposed to large numbers of alerts, leading to desensitisation**

Staff then ignore critical alerts that warn of **impending serious patient harm**

Between 2016-19 over 10% of SHOT reports stated the source of error was **overriding alerts**

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Which of these should be applicable to LIMS alerts?

1. Not easily overridden
2. Clear actions associated with them
3. Relevant to the task
4. Understandable to LIMS users
5. Auditable
6. All of the above

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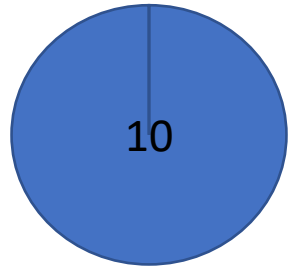
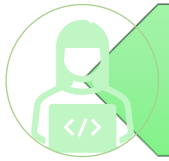


Case 6

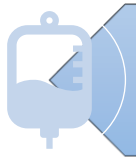
Post HSCT patient transfer from another hospital, laboratory not informed of transplant status

Grouping results were discrepant, so laboratory contacted ward



Ward informed laboratory HSCT, BMS updated the ‘notepad’ section but did not add any LIMS alerts

BMS did not update LIMS group to HSCT recipient group



Patient received incorrect D-group components

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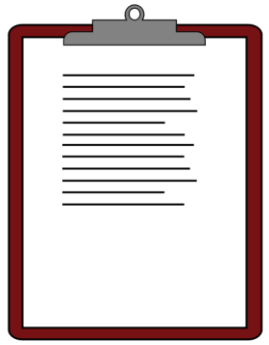
Does your organisation have a clear process for informing the laboratory of a specific requirement?



1. Yes - paper form notification
2. Yes - electronic notification
3. Yes - added to request form
4. No
5. Unsure

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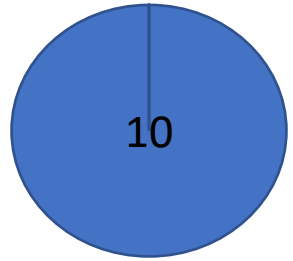
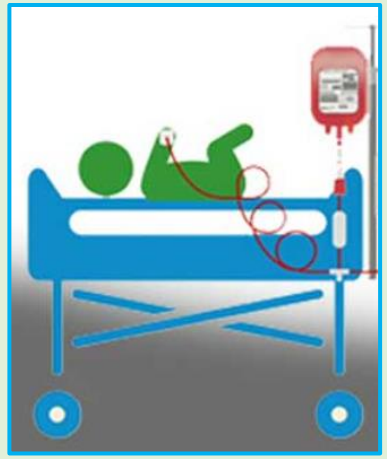
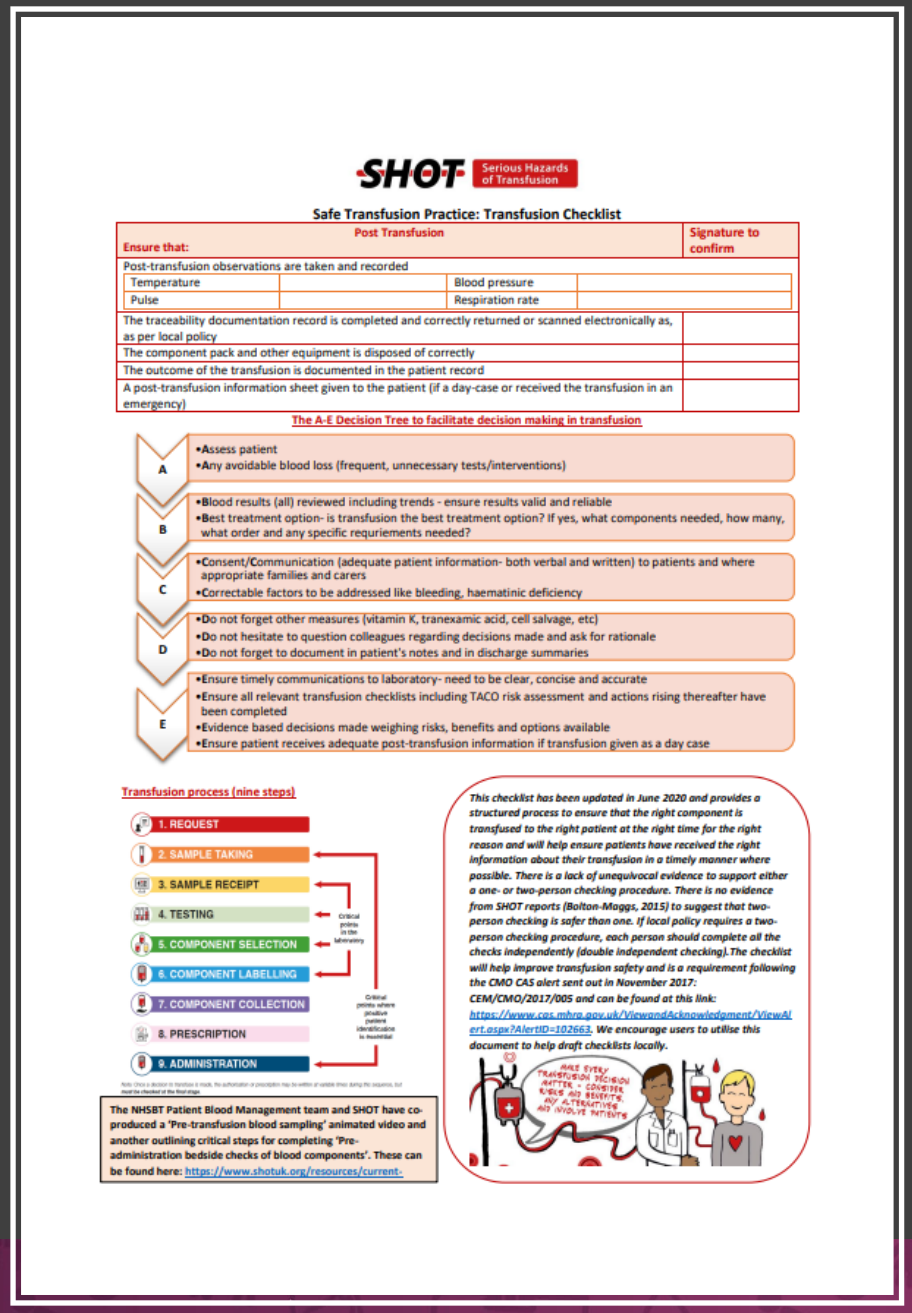


Between 2016-2020, communication failures between clinical areas including shared care, or between clinical and laboratory areas were stated as a contributory factor in **39.4%** (459/1167) of IBCT-SRNM reports.

This reiterates the **importance of good communication** links between all areas involved with patient care

110/1167 (9.4%) cases were reported in **paediatric** patients





SHOT Serious Hazards of Transfusion

Safe Transfusion Practice: Transfusion Checklist

Post Transfusion Ensure that:				Signature to confirm
Post-transfusion observations are taken and recorded				
Temperature		Blood pressure		
Pulse		Respiration rate		
The traceability documentation record is completed and correctly returned or scanned electronically as, as per local policy				
The component pack and other equipment is disposed of correctly				
The outcome of the transfusion is documented in the patient record				
A post-transfusion information sheet given to the patient (if a day-case or received the transfusion in an emergency)				

The A-E Decision Tree to facilitate decision making in transfusion

A
- Assess patient
- Any avoidable blood loss (frequent, unnecessary tests/interventions)

B
- Blood results (all) reviewed including trends - ensure results valid and reliable
- Best treatment option- is transfusion the best treatment option? If yes, what components needed, how many, what order and any specific requriements needed?

C
- Consent/Communication (adequate patient information- both verbal and written) to patients and where appropriate families and carers
- Correctable factors to be addressed like bleeding, haematinic deficiency

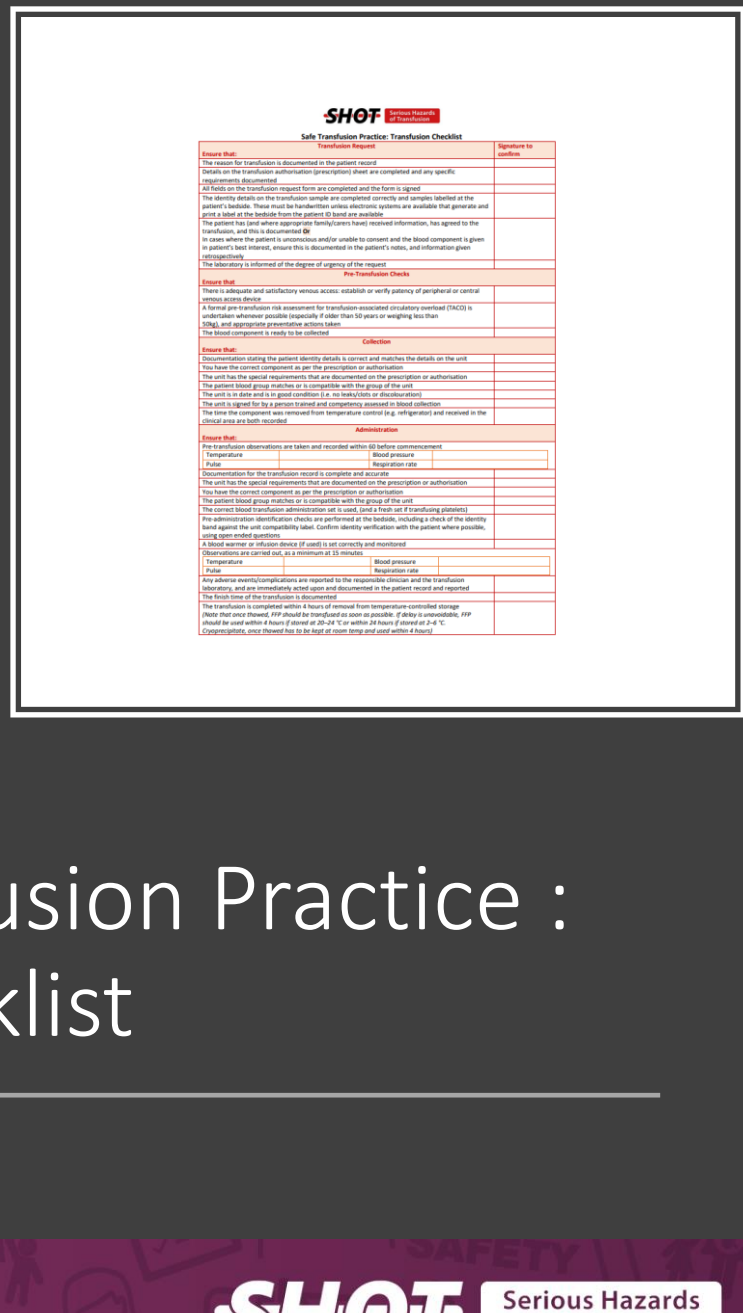
D
- Do not forget other measures (vitamin K, tranexamic acid, cell salvage, etc)
- Do not hesitate to question colleagues regarding decisions made and ask for rationale
- Do not forget to document in patient's notes and in discharge summaries

E
- Ensure timely communications to laboratory- need to be clear, concise and accurate
- Ensure all relevant transfusion checklists including TACO risk assessment and actions rising thereafter have been completed
- Evidence based decisions made weighing risks, benefits and options available
- Ensure patient receives adequate post-transfusion information if transfusion given as a day case

Transfusion process (nine steps)

The NHSBT Patient Blood Management team and SHOT have co-produced a 'Pre-transfusion blood sampling' animated video and another outlining critical steps for completing 'Pre-administration bedside checks of blood components'. These can be found here: https://www.shotuk.org/resources/current-

This checklist has been updated in June 2020 and provides a structured process to ensure that the right component is transfused to the right patient at the right time for the right reason and will help ensure patients have received the right information about their transfusion in a timely manner where possible. There is a lack of unequivocal evidence to support either a one- or two-person checking procedure. There is no evidence from SHOT reports (Bolton-Maggs, 2015) to suggest that two-person checking is safer than one. If local policy requires a two-person checking procedure, each person should complete all the checks independently (double independent checking).The checklist will help improve transfusion safety and is a requirement following the CMO CAS alert sent out in November 2017: CEM/CMO/2017/005 and can be found at this link: https://www.cas.mhra.gov.uk/ViewandAcknowledgment/ViewAlert.aspx?AlertID=102663. We encourage users to utilise this document to help draft checklists locally.



SHOT Serious Hazards of Transfusion

Safe Transfusion Practice: Transfusion Checklist

Transfusion Request Ensure that:	Signature to confirm
The reason for transfusion is documented in the patient record	
Details on the transfusion authorisation (prescription) sheet are completed and any specific requirements documented	
All fields on the transfusion request form are completed and the form is signed	
The identity details on the transfusion sample are completed correctly and samples labelled at the patient's bedside. These must be handwritten unless electronic systems are available that generate and print a label at the bedside from the patient ID band are available	
The patient has (and where appropriate family/carers have) received information, has agreed to the transfusion, and this is documented In cases where the patient is unconscious and/or unable to consent and the blood component is given in patient's best interest, ensure this is documented in the patient's notes, and information given retrospectively	
The laboratory is informed of the degree of urgency of the request	
Pre-Transfusion Checks Ensure that	
There is adequate and satisfactory venous access: establish or verify patency of peripheral or central venous access device	
A formal pre-transfusion risk assessment for transfusion-associated circulatory overload (TACO) is undertaken whenever possible (especially if older than 50 years or weighing less than 50kg), and appropriate preventative actions taken	
The blood component is ready to be collected	
Collection Ensure that:	
Documentation stating the patient identity details is correct and matches the details on the unit	
You have the correct component as per the prescription or authorisation	
The unit has the special requirements that are documented on the prescription or authorisation	
The patient blood group matches or is compatible with the group of the unit	
The unit is in date and is in good condition (i.e. no leaky/clots or discolouration)	
The unit is signed for by a person trained and competency assessed in blood collection	
The time the component was removed from temperature control (e.g. refrigerator) and received in the clinical area are both recorded	
Administration Ensure that:	
Pre-transfusion observations are taken and recorded within 60 before commencement Temperature / Blood pressure Pulse / Respiration rate	
Documentation for the transfusion record is complete and accurate	
The unit has the special requirements that are documented on the prescription or authorisation	
You have the correct component as per the prescription or authorisation	
The patient blood group matches or is compatible with the group of the unit	
The correct blood transfusion administration set is used, (and a fresh set if transfusing platelets)	
Pre-administration identification checks are performed at the bedside, including a check of the identity band against the unit compatibility label. Confirm identity verification with the patient where possible, using open-ended questions	
A blood warmer or infusion device (if used) is set correctly and monitored	
Observations are carried out, as a minimum at 15 minutes Temperature / Blood pressure Pulse / Respiration rate	
Any adverse events/complications are reported to the responsible clinician and the transfusion laboratory, and are immediately acted upon and documented in the patient record and reported	
The finish time of the transfusion is documented	
The transfusion is completed within 4 hours of removal from temperature-controlled storage *(Note that once thawed, FFP should be transfused as soon as possible. If delay is unavoidable, FFP should be used within 4 hours if stored at 20–24 °C or within 24 hours if stored at 2–6 °C. Cryoprecipitate, once thawed has to be kept at room temp and used within 4 hours)*	

SHOT Safe Transfusion Practice : Transfusion Checklist

SHOT Serious Hazards of Transfusion

Case 7

Sickle cell patient required red cell transfusion

Units issued did not meet specific requirements (were not Rh K matched, HbS negative or <10 days)

LIMS alert had been added, but at level 1 only so only one BMS could view the alert

Standard red cells issued

Patient did not develop red cell antibodies on this occasion

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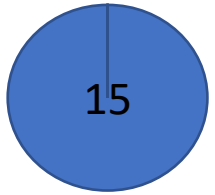
POLL OPEN

Between 2010-20, how many haemoglobinopathy patients received red cells that DID NOT meet their specific requirements?

Please enter a value between 0 and 150.



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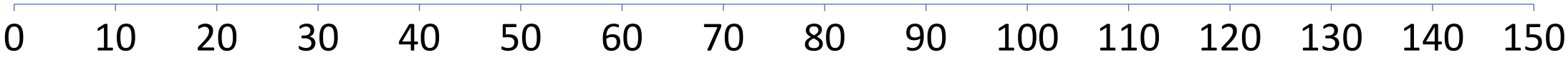


Answered Correctly: 0%

Correct Answer : 127

SHOT Serious Hazards of Transfusion

SHOT Safety Notice 02: Ensuring patient specific transfusion requirements are met

Ensuring patient specific transfusion requirements are met

This SHOT Safety Notice has been issued to highlight the importance of meeting transfusion specific requirements for all elective transfusions. Modified or special blood components may be appropriate in specific clinical settings to reduce the risk of transfusion-related harm, including death. In an emergency such as active bleeding in major haemorrhage, haemolysis or severe decompensated anaemia, standard components MUST be given to preserve life if specific components cannot be sourced quickly enough. Do NOT delay the issue of standard components as **every minute counts in emergencies and transfusion delays must be avoided.**

This notice should be used as a basis to review local policies and procedures, to identify areas for improvement and implement effective solutions.

Incidents where a patient was inadvertently transfused with a blood component that did not meet their specific requirements are reportable to SHOT, for example;

- Irradiated components
- Cytomegalovirus (CMV) negative components
- Human leucocyte antigen (HLA)-matched platelets
- Antigen-negative red cell units for a patient with known antibodies
- Red cells of extended phenotype (e.g., haemoglobinopathy, or treatment with monoclonal antibodies such as anti-CD38 and anti-CD47)
- Component with a neonatal specification

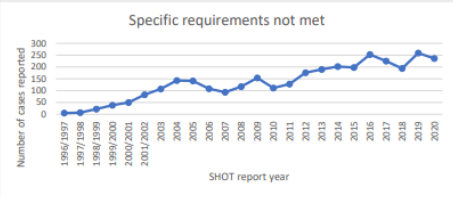
This does not include cases where a clinical decision was taken to transfuse components not meeting the specification due to clinical urgency. Other incidents in this category reportable to SHOT include;

- Inadvertent release of components prior to completion of laboratory testing (including internal quality control)
- Failure to use blood warmer when clinically indicated
- Inappropriate use of electronic issue

The SHOT definitions can be accessed using this link: https://www.shotuk.org/reporting/

Reports relating to incorrect blood components transfused where the specific requirements were not met (IBCT-SRNM) have been increasing since SHOT reporting began in 1996 (see figure 1 below).

Figure 1: IBCT-SRNM errors reported to SHOT 1996-2020



Between 2016-2020, IBCT-SRNM errors accounted for 8.4% (1167/13833) of errors analysed and included in the Annual SHOT Reports. Ten percent (117/1167) of cases involved paediatric patients. No deaths occurred due to IBCT-SRNM during this period, but 12 cases of major morbidity resulted due to these errors (Figure 2). Errors have been reported from both clinical and laboratory settings. Most clinical errors are failure to request irradiated or CMV screened

SHOT Serious Hazards of Transfusion

components, and most laboratory errors are failure to complete testing prior to issue, inappropriate use of electronic issue or providing the incorrect phenotype.

Figure 2: Major morbidity caused by IBCT-SRNM between 2016-2020 (n=12)

11 cases resulted in sensitisation to K antigen	One case of haemolytic transfusion reaction

Regulatory aspects and relevant guidelines

Blood Safety and Quality Regulations 2005. The Blood Safety and Quality Regulations 2005 (legislation.gov.uk)

Good Practice Guidelines (Council of Europe, 2018: https://www.edqm.eu/en/good-practice-guidelines-blood-establishments)

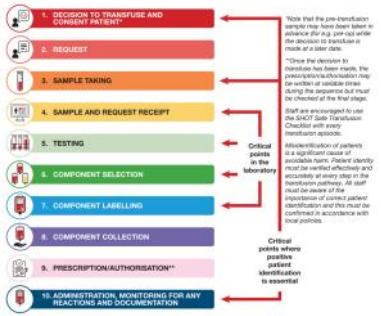
ISO15189:2012 Medical laboratories — Requirements for quality and competence (https://www.iso.org/standard/56115.html)

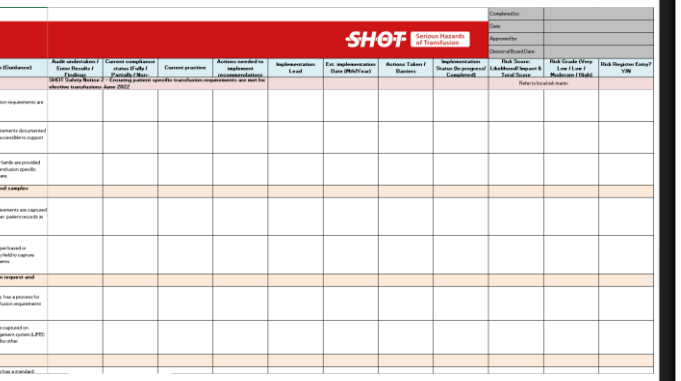
BSH Guidelines https://b-s-h.org.uk/guidelines/?category=Transfusion&fromdate=&todate=

Ensuring safe transfusions for patients

Staff involved in blood transfusions need to have knowledge of blood components, indications for use, rationale for specific transfusion requirements and an understanding of the availability of alternative options. Staff should be aware of the risks and benefits of transfusions and MUST be able to identify and manage possible reactions. Ensuring transfusion process safety is as important as blood component safety and quality. Potential for error exists at each step in the process of transfusion and learning from incidents should drive improvements in healthcare. Figure 3 covers the steps in the transfusion process from making the decision to transfuse to administration of blood and monitoring for any reactions.

Figure 3: The ten steps in the transfusion pathway





SCAN ME

SHOT SPECIFIC REQUIRMENTS NOT MET SAFETY NOTICE – JUNE 2022

Lessons learned

IT can be helpful, but must be set up correctly

LIMS must be set up appropriately

Alerts must be understandable and actionable

IT can introduce new errors both clinical and laboratory

Interoperability between systems

Alert fatigue, cognitive bias and over reliance on IT

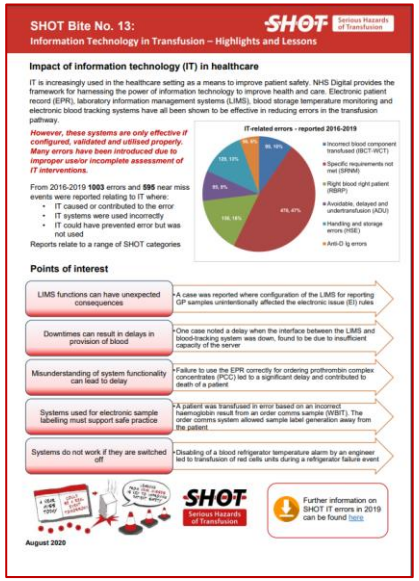
Contingency plans for downtime

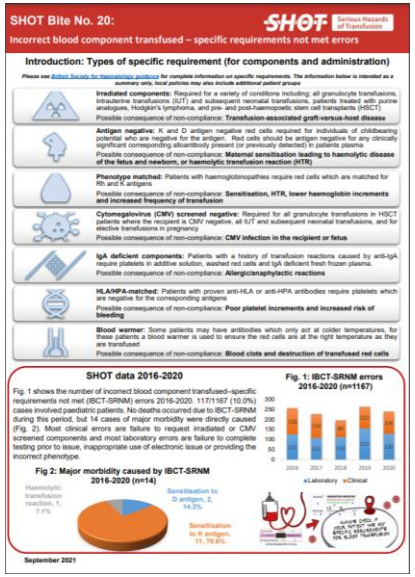
Resources

- Many more resources, including the 2021 Annual SHOT Report are available on the SHOT website www.shotuk.org

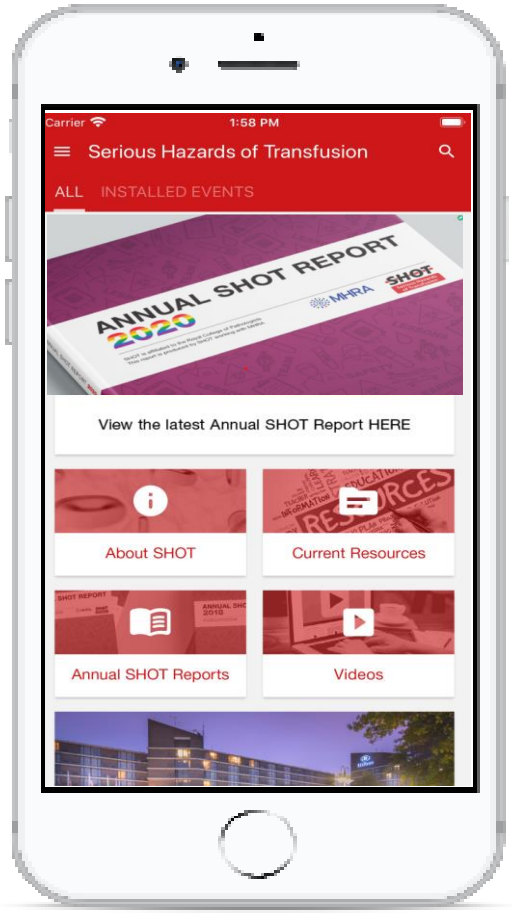
- In particular our educational resources
  - SHOT Bites
  - SHOTcasts
  - Webinars
  - Videos (Laboratory errors)
  - Email signatures

SCAN ME





SHOT App



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