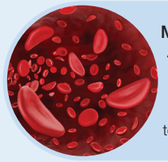
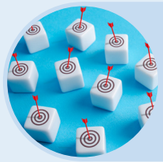
Key SHOT recommendations



Main recommendation 1:
Appropriate management of anaemia with effective patient blood management and safe transfusion decisions are vital to improve safety

Main recommendation 2:
Well-resourced systems, with adequate numbers of trained staff supported by technology and automation help ensure safe transfusions

Main recommendation 3:
System-focused interventions to address gaps identified during incident investigations must be implemented for a sustained improvement

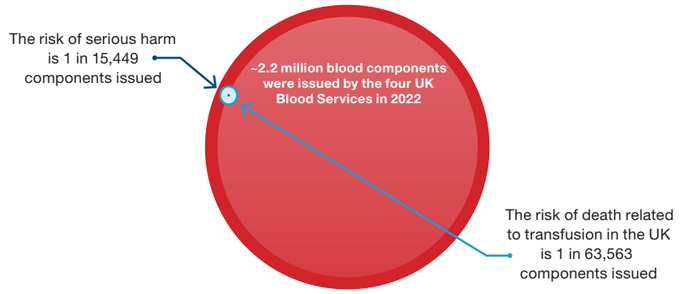


Main recommendation 4:
Learning from excellence and day-to-day events will support a proactive approach to safety

Risk of death and serious harm related to transfusions in the UK in 2022

Transfusions in the UK remain very safe with low risk of harm in relation to the number of blood components issued.

The risk of transfusion-transmitted infection is much lower than all other transfusion-related complications



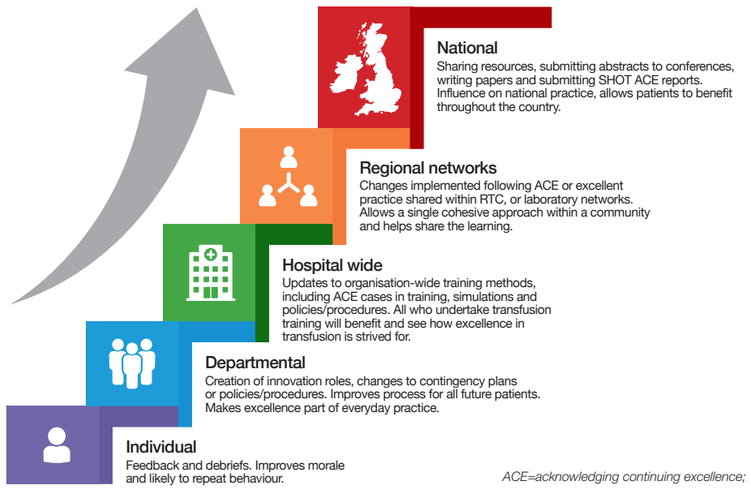
Note: This is a representative image and not accurate to scale

ABO-incompatible transfusions 2016-2022: small numbers of actual events (n=24) but many near misses (n=2118)

SHOT
Serious Hazards of Transfusion

ANNUAL SHOT REPORT 2022 SUMMARY

Range of ways to acknowledge continuing excellence (ACE) and potential impact



ACE=acknowledging continuing excellence; RTC=regional transfusion committee

Paediatric SHOT summary from 2022

- Paediatric reports account for 263/3499 (7.5%) of all reports to SHOT including near miss and right blood right patient events. More than a third of reports involved neonates. There were no transfusion-related deaths reported in children or neonates in 2022
- Transfusion delays with paediatric major haemorrhage continue to be reported. Ten of 22 delayed transfusions involved communication failure within teams and between clinical and laboratory areas
- Protocols must be in place for the management of massive haemorrhage in infants and children. These should include guidance on the appropriate component volumes to be used in resuscitation. Staff involved in paediatric transfusions must be trained and aware of the content of this protocol
- The paediatric transfusion formula remains the best way to calculate the volume of red cells for transfusing a child. Hospitals should ensure the correct use of the paediatric red cell transfusion formula, with the Hb units in g/L
- The decision around whether to irradiate components for patients with known or suspected DiGeorge syndrome is based upon assessment of immune function and not all children with DiGeorge will require irradiated blood components
- Paediatric medical and nursing education must include specific transfusion requirements for patients with haemoglobinopathies and processes must be in place to ensure these are communicated effectively to the hospital transfusion laboratories to ensure safe transfusions

TACO pre-transfusion checklist

TACO=transfusion-associated circularly overload

TACO Checklist	Patient Risk Assessment	YES	NO
	Does the patient have any of the following: diagnosis of 'heart failure', congestive cardiac failure (CCF), severe aortic stenosis, or moderate to severe left ventricular dysfunction?		
	Is the patient on a regular diuretic?		
	Does the patient have severe anaemia?		
	Is the patient known to have pulmonary oedema?		
	Does the patient have respiratory symptoms of undiagnosed cause?		
	Is the fluid balance clinically significantly positive?		
	Is the patient receiving intravenous fluids (or received them in the previous 24 hours)?		
	Is there any peripheral oedema?		
	Does the patient have hypoalbuminaemia?		
	Does the patient have significant renal impairment?		

If Risks Identified	YES	NO
Review the need for transfusion (do the benefits outweigh the risks)?		
Can the transfusion be safely deferred until the issue is investigated, treated or resolved?		

If Proceeding with Transfusion: Assign Actions	TICK
Body weight dosing for red cells	
Transfuse a single unit (red cells) and review symptoms	
Measure fluid balance	
Prophylactic diuretic prescribed	
Monitor vital signs closely, including oxygen saturation	

Name (PRINT):		**Due to the differences in adult and neonatal physiology, babies may have a different risk for TACO. Calculate the dose by weight and observe the notes above.**
Role:		
Date:	**Time (24hr):**	
Signature:		

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Tel: +44 (0) 161 423 4208
Enquiries: shot@nhsbt.nhs.uk
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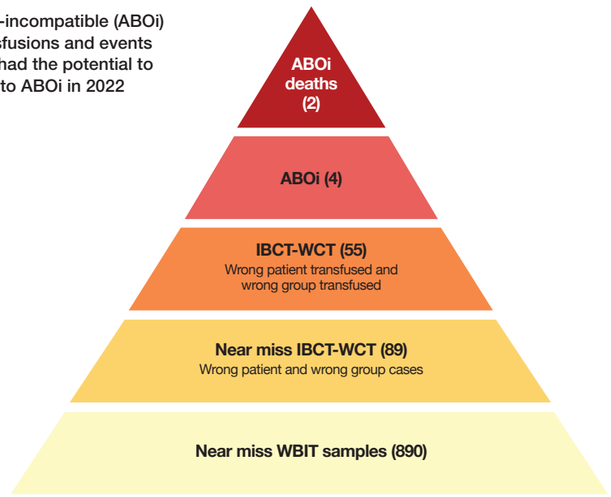
ABO-incompatible (ABOi) transfusions and events that had the potential to lead to ABOi in 2022

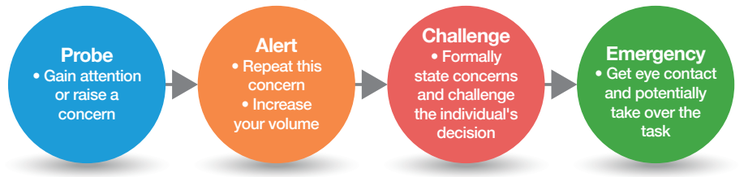


ABOi=ABO-incompatible; WBIT=wrong blood in tube; IBCT-WCT=incorrect blood component transfused-wrong component transfused

To ensure safe transfusions in patients with haemoglobin disorders the following aspects need to be addressed

- A detailed transfusion history must be obtained in all sickle cell disease (SCD) patients requiring transfusion. The transfusion history, including antibody status, must be communicated between clinical and laboratory teams involved in the care of the patient. This should include any specialist tests from reference laboratories
- Individual transfusion decisions in SCD patients can be challenging, and advice from haemoglobinopathy specialists is recommended
- For patients with complex transfusion requirements, a multidisciplinary approach is recommended with representation from haemoglobinopathy experts and transfusion medicine specialists. Where possible, a transfusion plan should be agreed in advance of an anticipated transfusion

PACE model - communication tool for graded assertiveness



PAUSE - Clinical

Pre-administration checks - PAUSE!

P — Patient identification
Do the patient details match on ID band/patient statement/authorisation and component label?

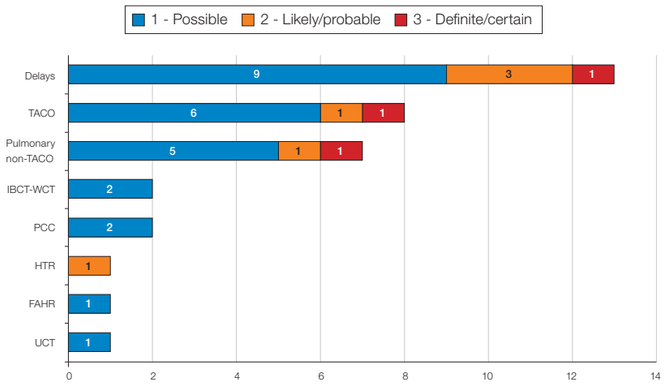
A — Authorisation
Does it state the component type required, any specific requirements, the rate and volume.
Is the date correct and authorisation signed?

U — Unit
Is it the correct component? Does the donor number on the traceability label and component match?
Have traceability requirements been met? Has the unit had a visible check (clumps/leaks).
Does it meet all specific requirements?

S — Speak up!
Are there any discrepancies? If yes seek urgent advice and do not commence the transfusion.

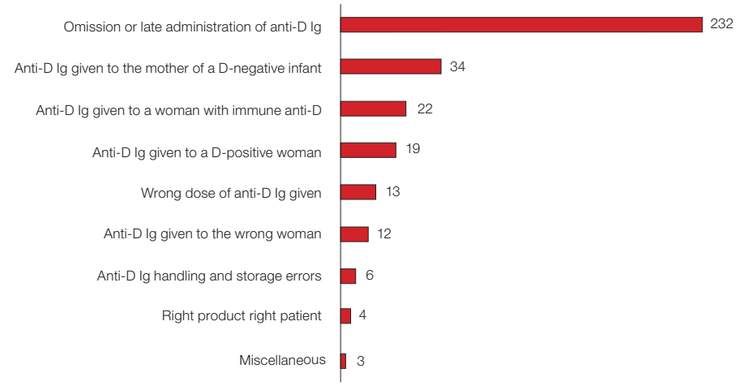
E — Expiry
Is the unit in date and will it finish by midnight of the expiry date?

Deaths related to transfusion with imputability reported in 2022 (n=35)

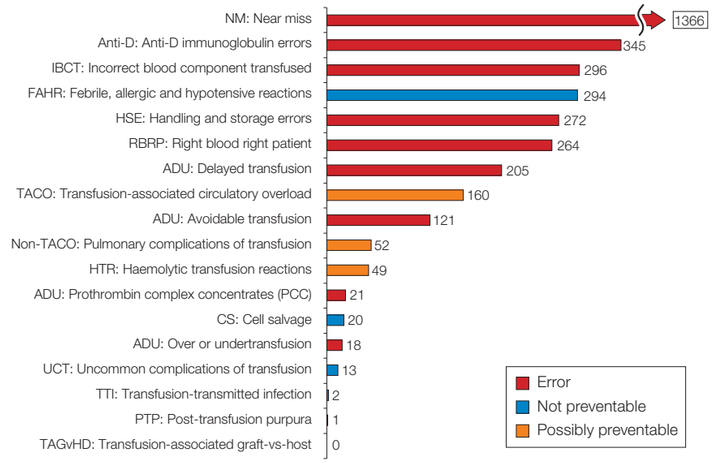


HTR=haemolytic transfusion reactions; FAHR=febrile, allergic and hypotensive reactions; UCT=uncommon complications of transfusion; TACO=transfusion-associated circulatory overload; IBCT-WCT=incorrect blood component transfused-wrong component transfused; PCC=prothrombin complex concentrates

Distribution of anti-D Ig related error reports in 2022 (n=345)

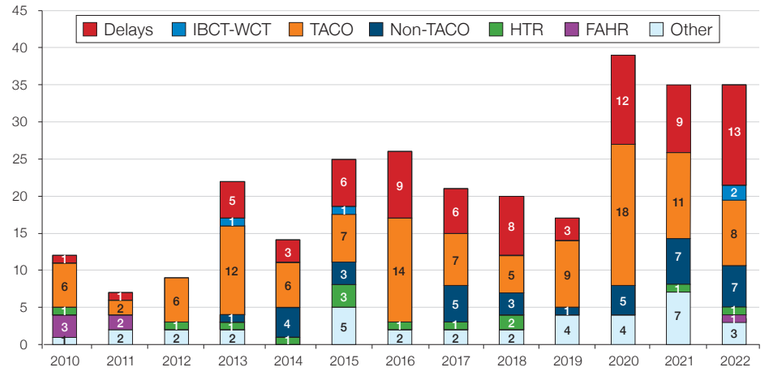


Summary data for 2022, all categories (includes RBRP and NM) (n=3499)



Transfusion-related deaths 2010-2022 (n=282)

TACO and delays are the most prevalent causes of transfusion-related deaths year on year.



IBCT-WCT=incorrect blood component transfused-wrong component transfused; TACO=transfusion-associated circulatory overload; HTR=haemolytic transfusion reaction; FAHR=febrile, allergic and hypotensive reactions

Delays include 1 delay due to PCC in 2019; 'Other' includes 1 each for post-transfusion purpura, transfusion-associated graft-versus-host disease (2012) and anti-D Ig related; there were 8 in the avoidable, over or undertransfusion category, 3 transfusion-transmitted infections, 2 PCC administration errors and 20 deaths related to other unclassified reactions

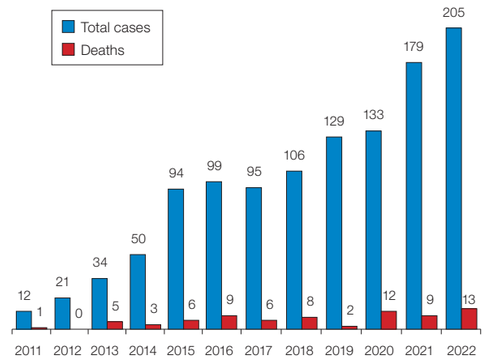
Key laboratory recommendations

- Sensitisation to the K antigen in patients of childbearing potential is preventable in most circumstances
- A mismatch in workload and staffing levels had some impact upon over half of all laboratory incidents. When staffing levels are unsafe this must be escalated
- Electronic systems should act as an additional barrier. Having transfusion IT systems in place does not negate the need for staff knowledge and skills. Staff should not rely on IT as the only fail-safe mechanism
- Final checking of the unit prior to issue is essential. The use of label verification in LIMS or electronic blood-tracking systems helps to optimise safety. Use of the PAUSE checklist would detect many laboratory errors prior to release of the unit

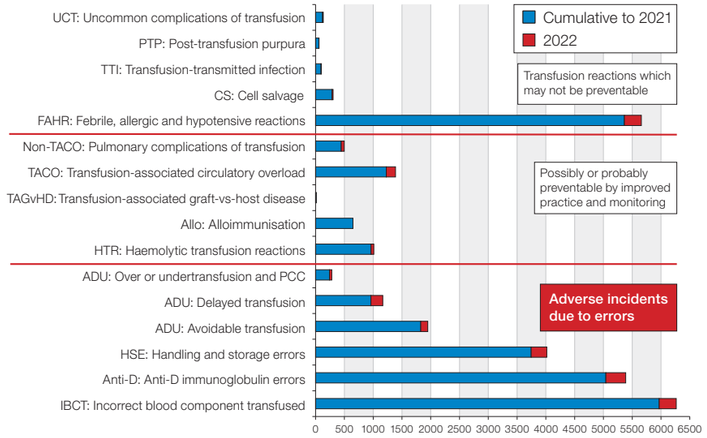
Errors account for most reports (n=2908/3499)

2908 Errors (all preventable)
330 Not preventable
261 Possibly preventable

Delayed transfusions by year 2011 to 2022



Cumulative data for SHOT categories 1996-2022 (n=28877)



**Data on alloimmunisation is no longer collected by SHOT since 2015*

PAUSE - Laboratory component exit checklist

P — PATIENT IDENTIFICATION
Are all the details correct and match on sample/form/label/LIMS?

A — AUTHORISED
Have all required tests been completed and authorised, including antibody investigation?

U — UNIT NUMBER
Does the unit number match the compatibility label?

S — SELECTION OF COMPONENT
Is it as requested? Is it ABO AND D compatible?
Does it meet all specific requirements?

E — EXPIRY
Will the unit expire before required date/time?
Will sample expire before required date/time?