



## Key recommendations



### Partnering with patients to enhance safety:

Staff must ensure that they involve, engage and listen to patients as 'partners' in their own care, including transfusion support. Engaging patients, their families, and carers as 'safety partners' helps co-create safer systems, identify, and rectify preventable adverse events.



### Investing in safety - well-resourced systems with safe staffing levels:

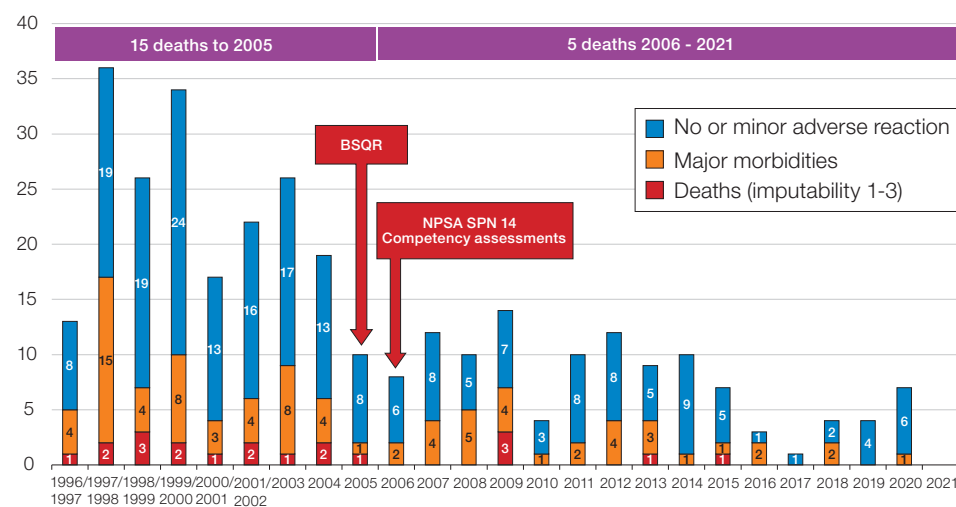
Healthcare leaders must ensure that systems are designed to support safe transfusion practice and allocate adequate resources in clinical and laboratory areas to ensure safe staffing levels, staff training in technical and non-technical skills and appropriate equipment, including IT systems.



### Just and learning safety culture:

All healthcare leaders must promote a just, learning safety culture with a collective, inclusive, and compassionate leadership. Effective leaders must ensure staff have access to adequate training, mentorship, and support. All staff in clinical and laboratory areas have a responsibility to speak up in case of any concerns and help embed the safety culture in teams.

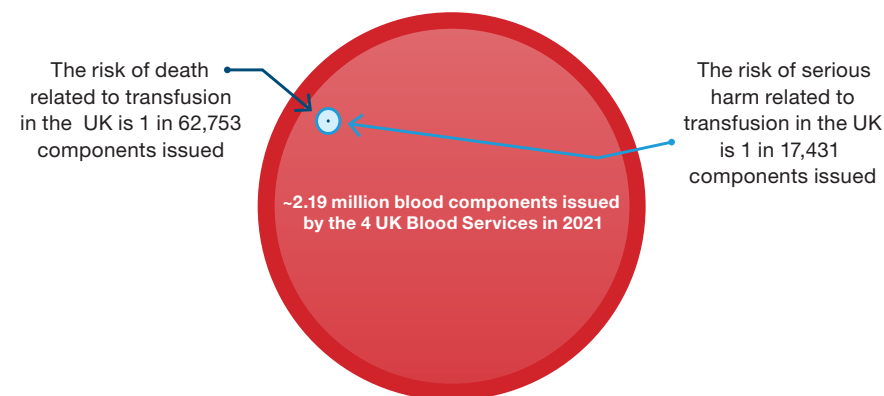
## Outcome of ABO-incompatible red cell transfusions in 25 years of SHOT reporting



## Risk of death and serious harm relating to transfusions in the UK in 2021

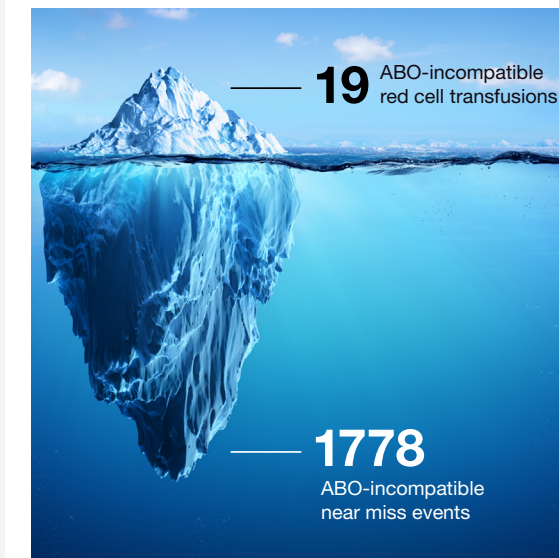
Transfusions in the UK remain very safe with low risk of harm in relation to the number of blood components issued.

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 2016-2021: few events (n=19) but many near misses (n=1778)



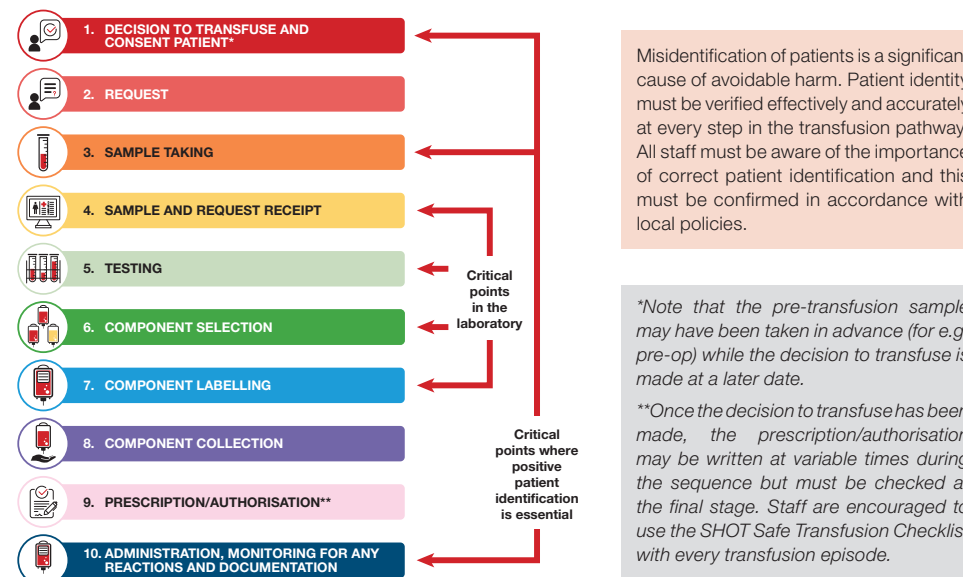
SHOT

Serious Hazards of Transfusion

# ANNUAL SHOT REPORT 2021 SUMMARY




## The 10 steps in the transfusion pathway

The transfusion pathway has been updated to 10 steps to include the decision to transfuse and patient consent



## TACO pre-transfusion checklist

TACO=transfusion-associated circulatory 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:			

## Paediatric SHOT summary from 2021

- Paediatric cases accounted for 7.6% (136/1790) of total cases analysed, excluding near miss and right blood right patient reports.
- There were 2 deaths possibly related to transfusion, one was related to transfusion-associated necrotising enterocolitis and the other was due to transfusion delay.
- 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 fully trained to these protocols.
- Hyperkalaemia is a recognised complication of large volume transfusion in neonates and infants, and 'fresh' red cells are recommended for this situation to reduce risk.
- Hospitals should ensure the correct use of the paediatric red cell transfusion formula, with the Hb units in g/L.
- 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.

## 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.



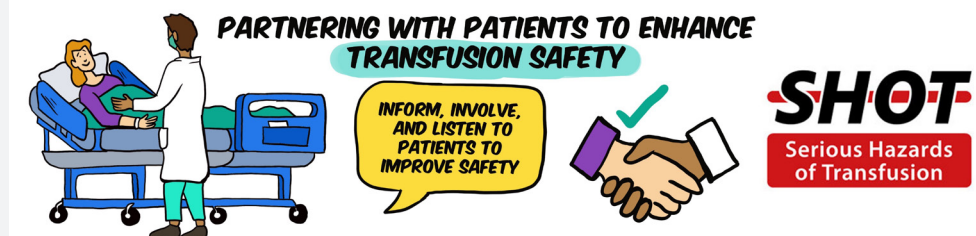
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## CONTACT DETAILS

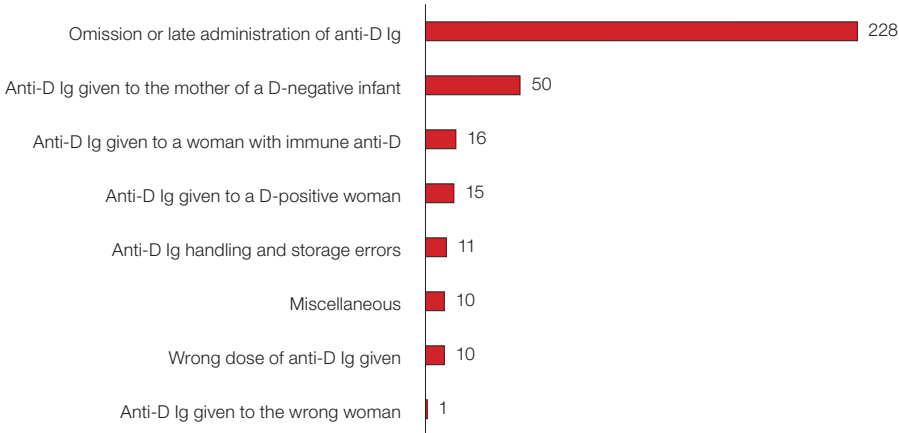
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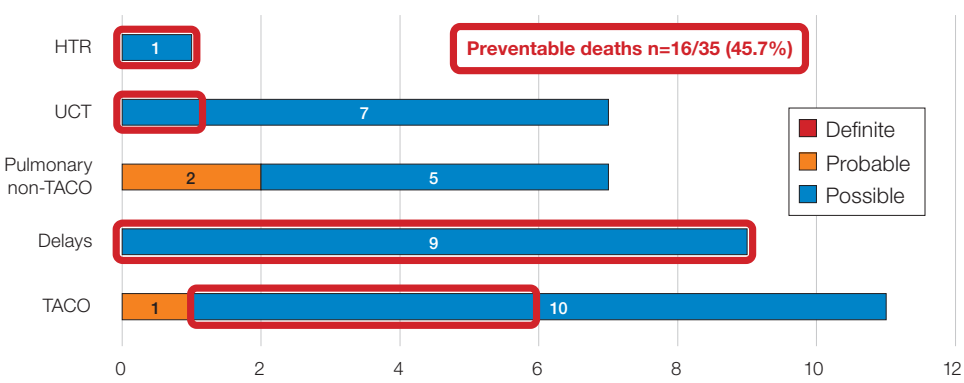
Serious Hazards of Transfusion

Distribution of anti-D Ig related error reports in 2021 (n=341)



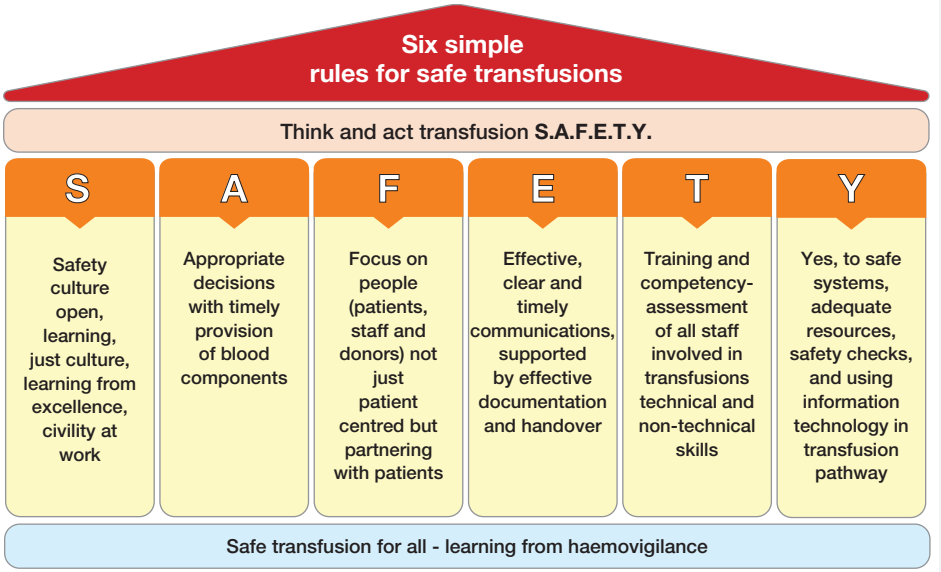
Note: Miscellaneous cases included 4 failures to complete follow up post FMH greater than 4mL, and 6 failures in sample taking or testing processes

Deaths related to transfusion (with imputability) reported in 2021 n=35

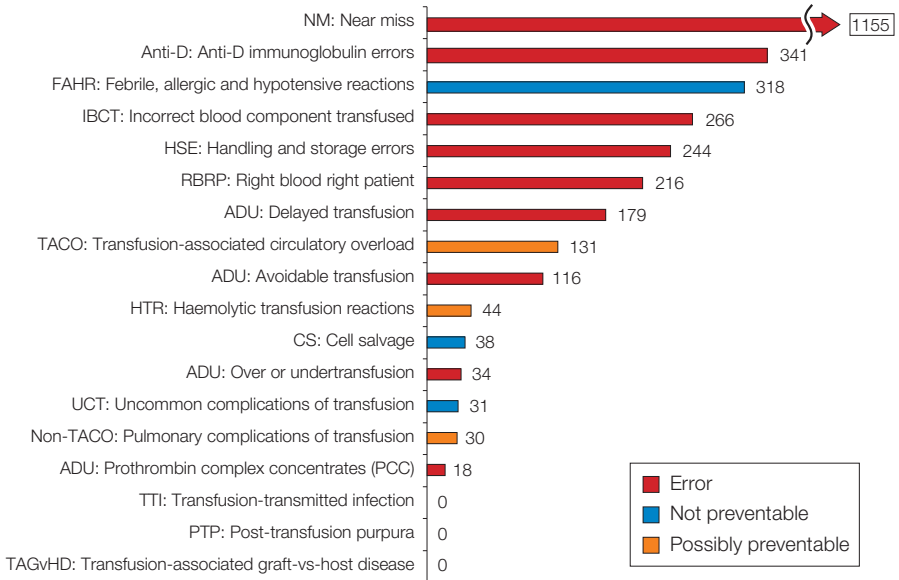


HTR=haemolytic transfusion reactions; UCT=uncommon complications of transfusion; TACO=transfusion-associated circulatory overload

Six simple rules for safe transfusions

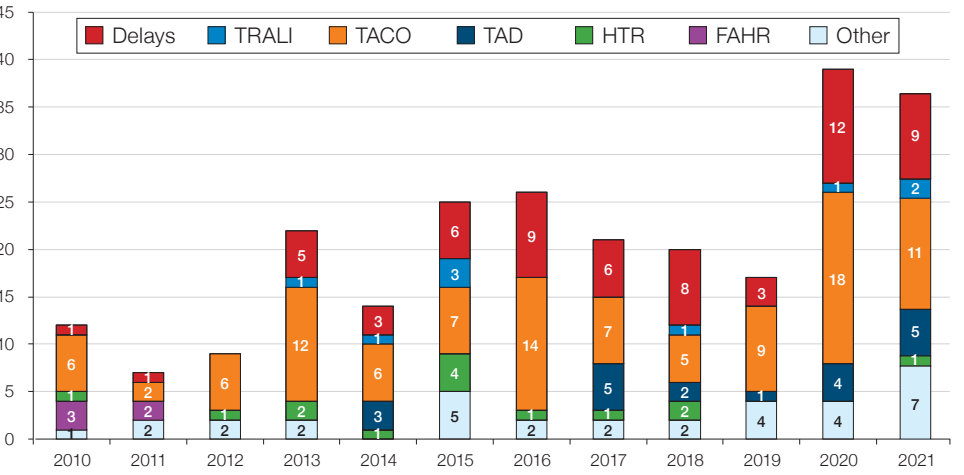


Summary data for 2021, all categories (includes RBRP and NM) n=3161



Transfusion-related deaths 2010-2021 n=247

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



TRALI=transfusion-related acute lung injury; TACO=transfusion-associated circulatory overload; TAD=transfusion-associated dyspnoea; HTR=haemolytic transfusion reaction; FAHR=febrile, allergic and hypotensive reactions  
Delays include 1 delay due to PCC in 2019; HTR includes 2 deaths due to ABO-incompatibility; '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, and 12 deaths related to other unclassified reactions

Key laboratory recommendations

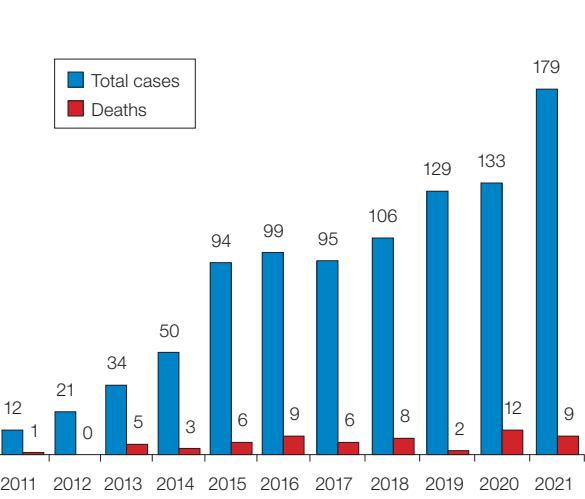
- Laboratories should have training programmes and regular competency-assessments that ensure staff have the appropriate knowledge and skills commensurate to their role.
- Laboratories should have a schedule for regular LIMS upgrades to ensure the LIMS is used to its full potential to support transfusion safety and safe laboratory transfusion practice.
- Laboratories should have capacity plans in place that include all aspects of transfusion practice. These should be reviewed regularly and have appropriate escalation processes when safe staffing levels are not met.
- Interoperability between patient administration systems and LIMS reduces the risk of errors. Transfusion laboratories should work with the LIMS supplier and IT departments to explore options for interfacing.

Errors account for most reports: 2569/3161

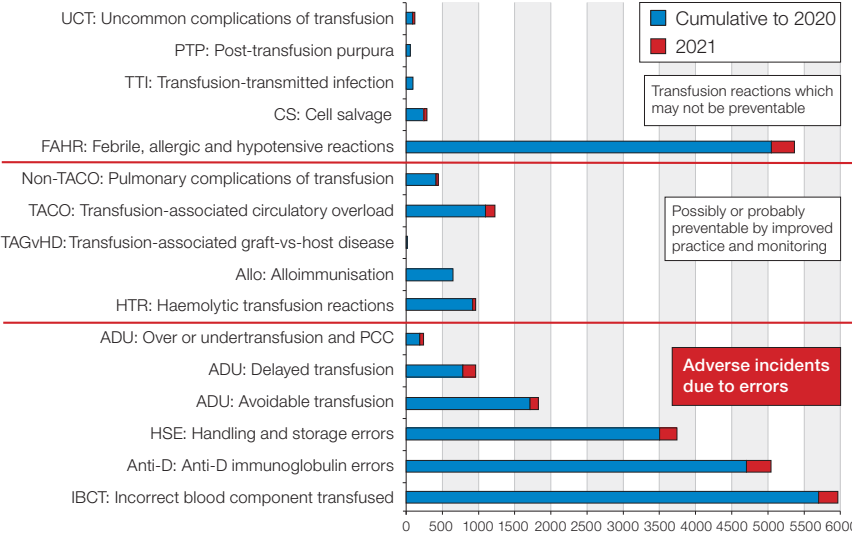


2569 Errors (all preventable)  
387 Not preventable  
205 Possibly preventable

Delayed transfusion reports and deaths by year 2011 to 2021 (n=952, deaths n=61)



Cumulative data for SHOT categories 1996-2021 n=27008



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

PAUSE

