Serious Hazards of Transfusion (SHOT)

Non-medical authorisation course

Learning objectives:

By the end of this session with the additional of the E learning delegates will be able to:

- Describe the role of SHOT in the UK haemovigilance system, including its function in collecting, analysing, and disseminating transfusion-related incident data
- Understand the role of Non-Medical Authorisation (NMA) practitioners in haemovigilance, including their contribution to transfusion safety, clinical decision-making
- Apply SHOT data to clinical practice by analysing case studies that illustrate key transfusion risks such as TACO, Delays and IBCT, and identifying lessons learned to improve patient safety

Join the Vevox session

Go to **vevox.app**

Enter the session ID: **160-896-402**

Or scan the QR code

What was the total number of reports submitted to SHOT in 2025?

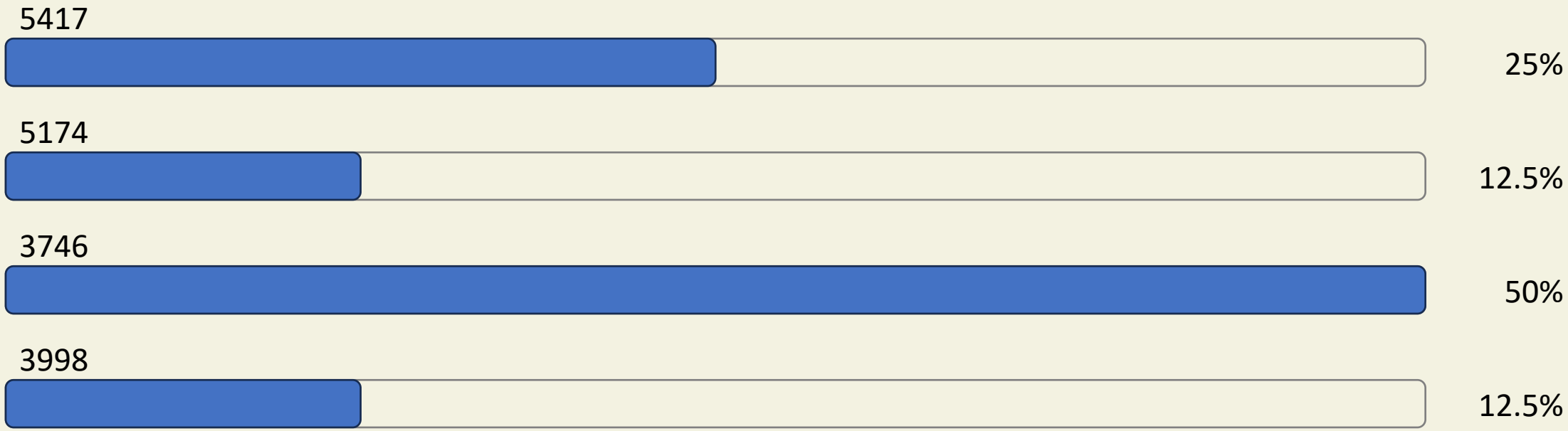
5417 0%

5174 0%

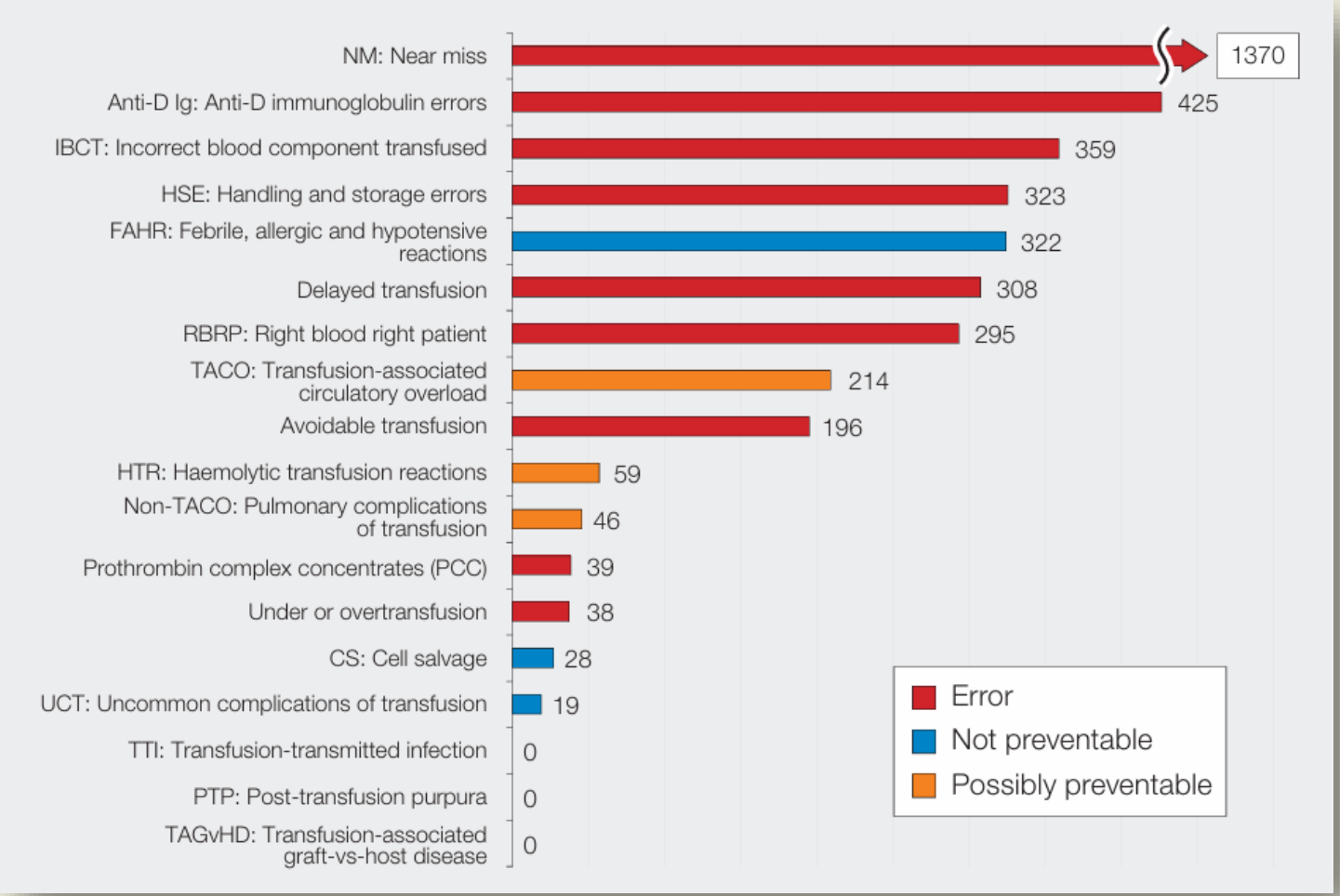
3746 0%

3998 0%

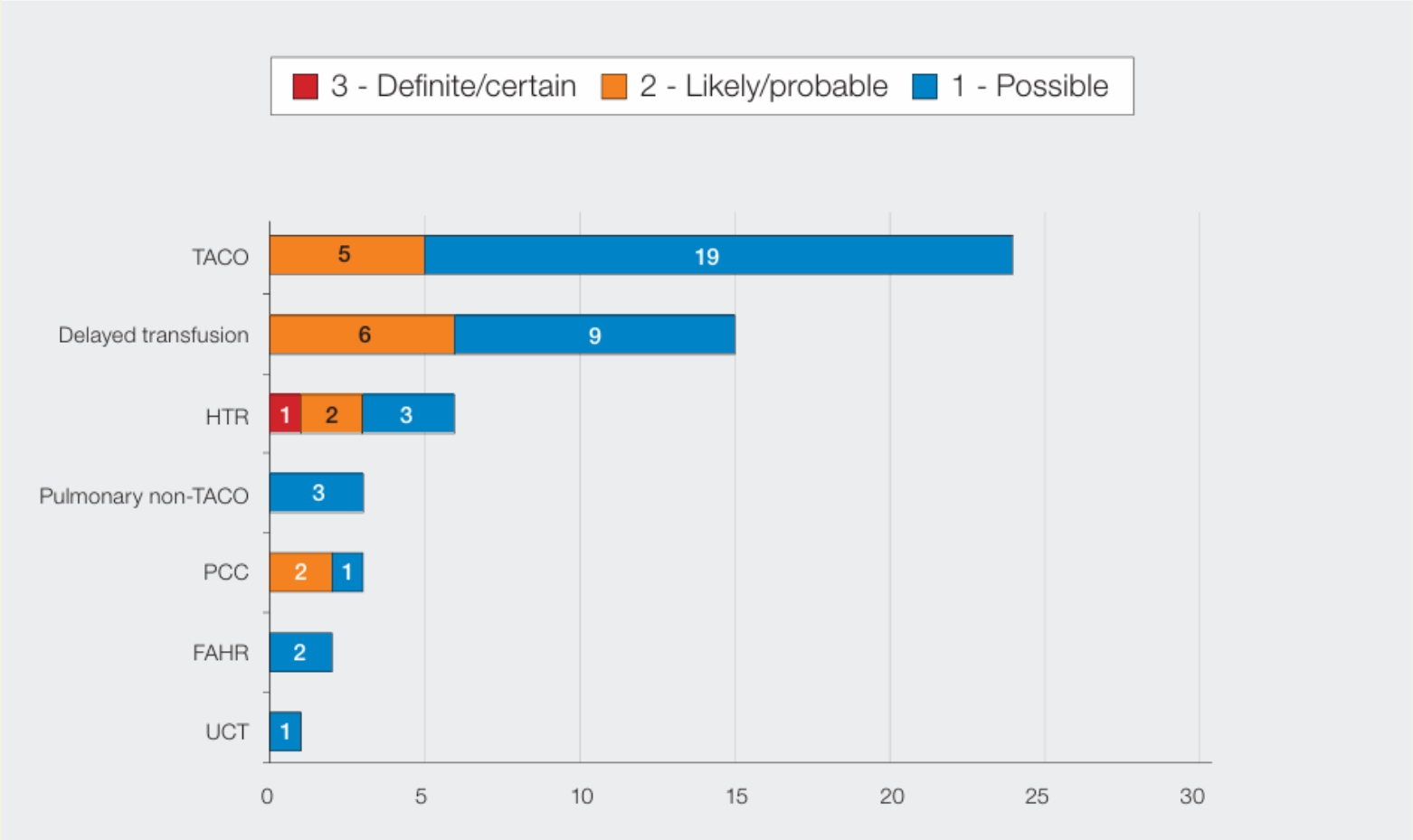
What was the total number of reports submitted to SHOT in 2025?



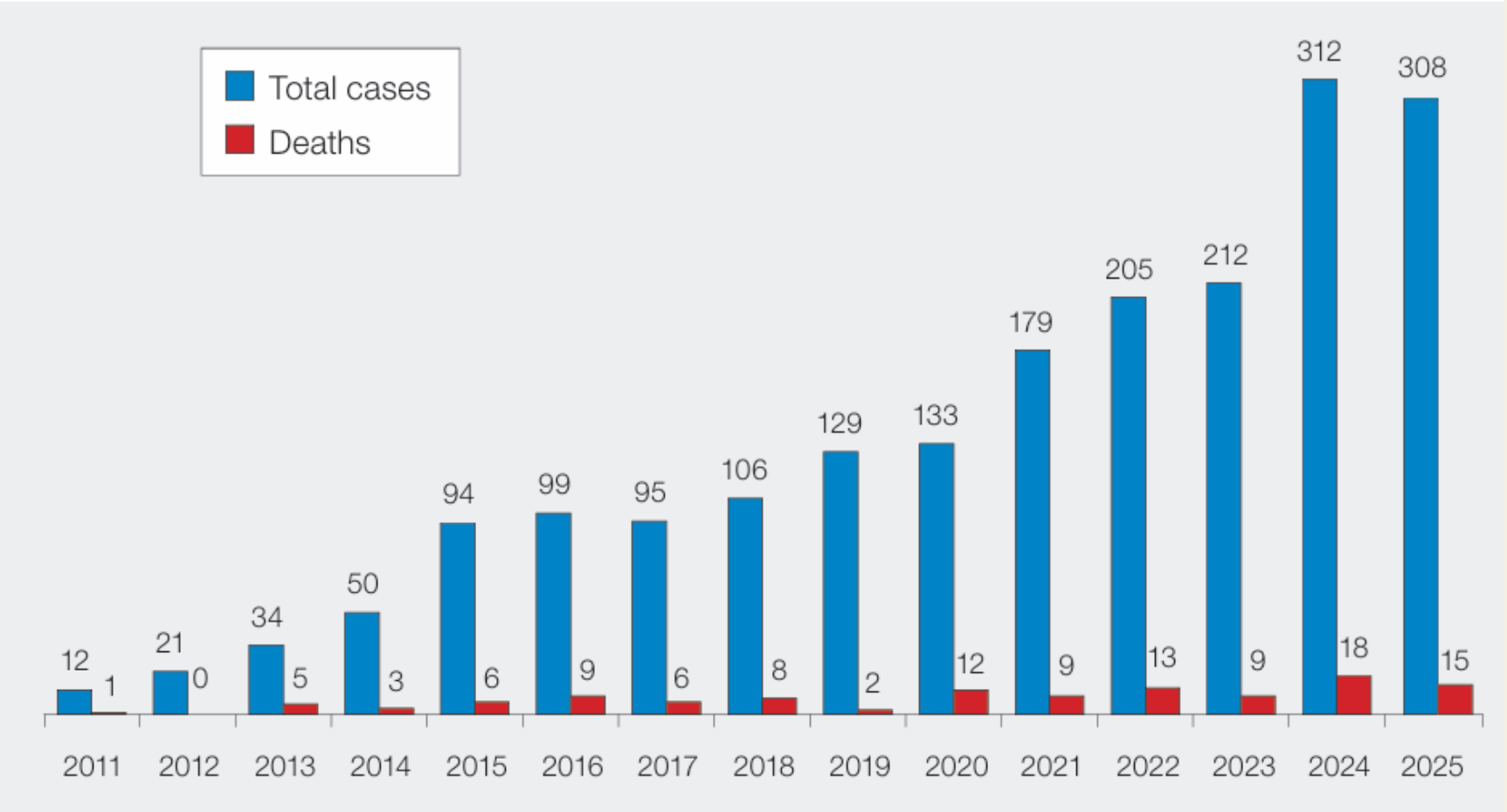
Summary of data for 2025 – all categories



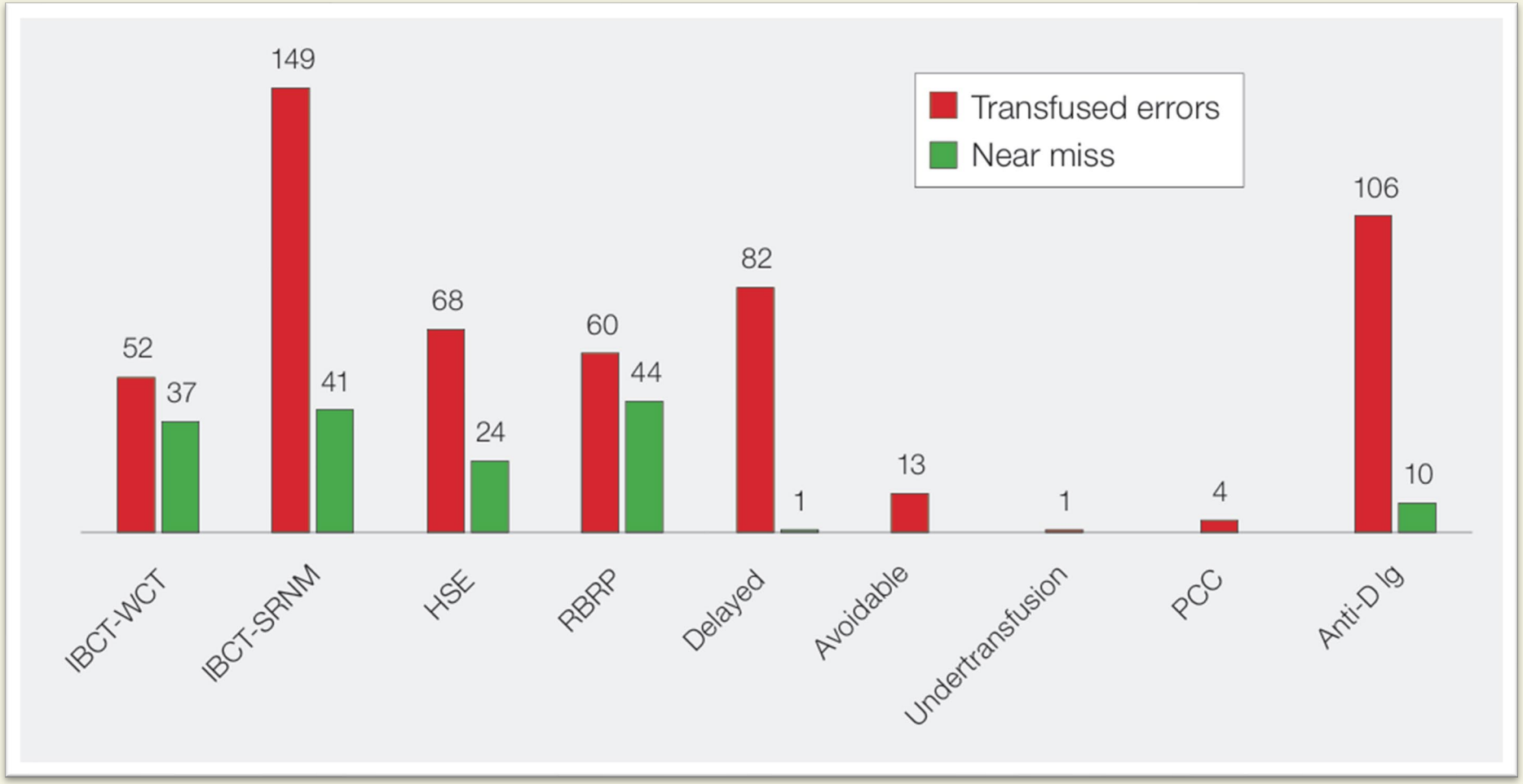
Transfusion related deaths in 2025 with imputability (n= 54)



Delayed transfusions by year 2011-2025



Laboratory errors and near misses in 2025 (n=692)



Laboratory – learning points

- Clear complete handover of urgent tasks is essential for patient safety.
- For complex cases, input from haematology consultants should be sought initially and for ongoing clinical management.
- Regular patient monitoring is essential to recognise any change in clinical picture.
- Consider using concessionary release pathways to prevent delays in blood provision.

Case 18.1: Death related to delay in transfusion due to incomplete handover and lack of recognition of clinical urgency (imputability 2 – probable)

Paediatric haemovigilance n=216

- Paediatric reports account for 9.1% (216/2381) of total reports to SHOT excluding near miss and right blood right patient events. Nearly 50% of the reports were in patient's 1-16 years of age and 38.8% cases were in children <1 year old.

- Transfusion delays in children continue to be significant and occur at all stages of the pathway. There was **one neonatal death following a delay in provision of red cells (imputability 1=possible).** Most delays were due to lack of availability of appropriate blood component/s and knowledge gaps about the component specification or patient requirement.

- Paediatric reports were **over-represented** in febrile, allergic and hypotensive reactions, incorrect blood component transfused (in both specific requirements not met and wrong component transfused), delayed and under or overtransfusion, uncommon complications of transfusion and in haemolytic transfusion reactions.

- Neonatal red cell exchange transfusions are now rarely performed and are an area of vulnerability, clear protocols for the practicalities and process of exchange transfusion are therefore important.

Case Study


CIVILITY
BENEFITS
EVERYBODY
YOUR WORDS & ACTIONS MATTER
SPREAD A LITTLE KINDNESS EVERYDAY
SHOT
Serious Hazards
of Transfusion

Patient Profile: Mrs. A, 37 years old, at 30 weeks gestation, presenting with shortness of breath, fatigue, and palpitations.

Medical History: Known coronary heart disease (CHD) with previous stent placement; currently on low-dose aspirin.

Pre-transfusion Findings: Haemoglobin critically low at 55 g/L.

Vital Signs: Tachycardia (HR 115 bpm), hypotension (BP 95/60 mmHg), increased respiratory rate (RR 24), and SpO_2 95% on room air.

What are your key considerations?

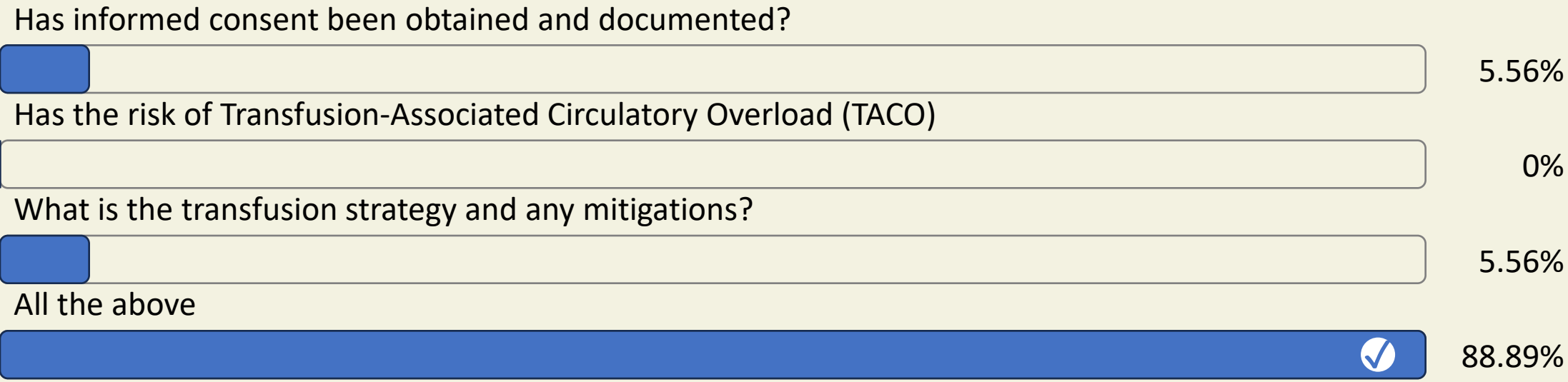
Has informed consent been obtained and documented? 0%

Has the risk of Transfusion-Associated Circulatory Overload (TACO) 0%

What is the transfusion strategy and any mitigations? 0%

All the above 0%

What are your key considerations?



What does the SHOT TACO Risk Assessment Tool help clinicians evaluate?

Blood group compatibility

0%

Risk of haemolytic transfusion reactions

0%

Risk of TACO and mitigation strategies

0%

Need for platelet transfusion

0%

19

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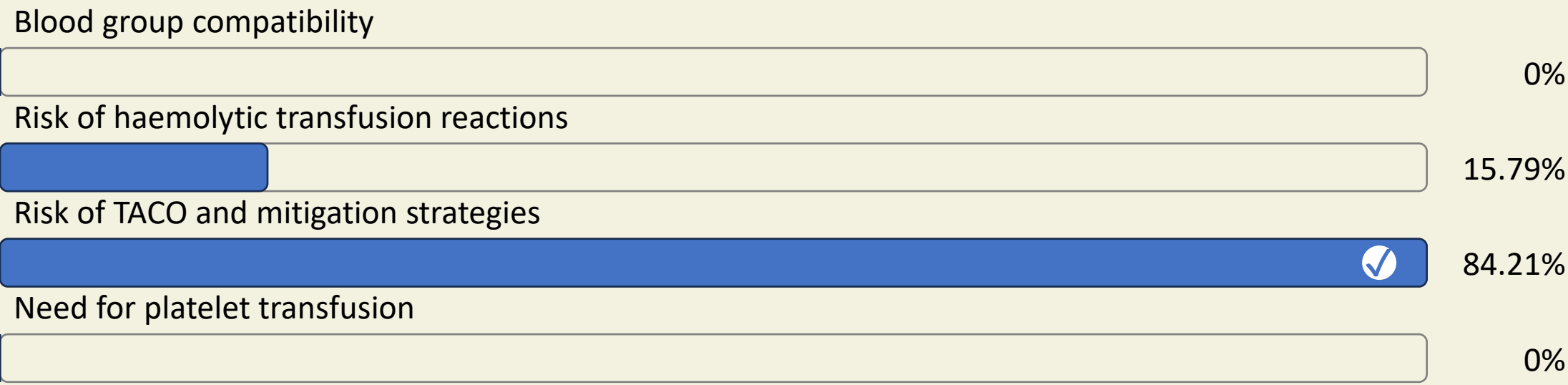
ID: **160-896-402**

Preparing Results

What does the SHOT TACO Risk Assessment Tool help clinicians evaluate?



What is one recommended mitigation strategy for a patient identified as high risk for TACO?

Transfuse both units rapidly

0%

Use whole blood instead of red cells

0%

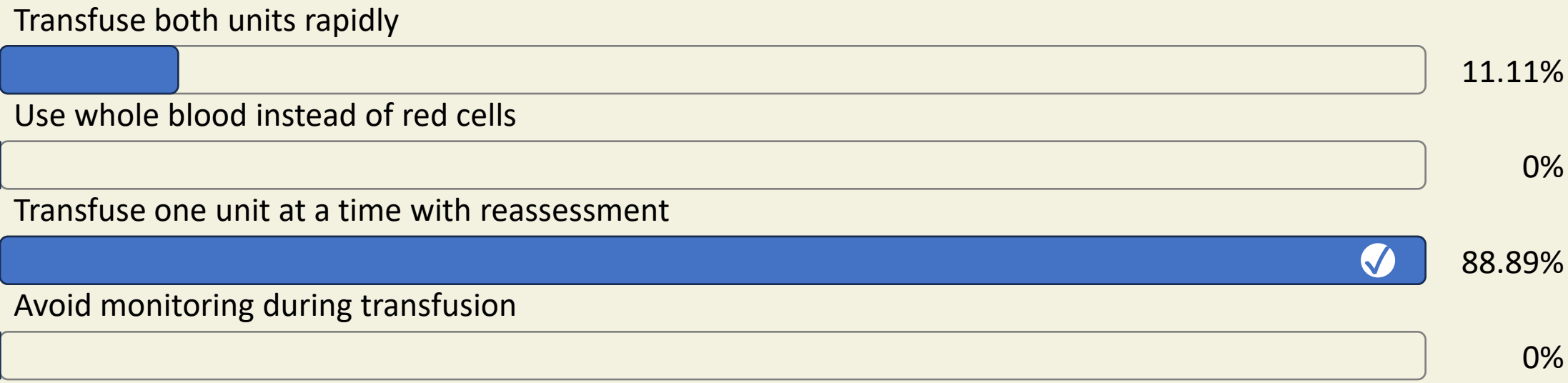
Transfuse one unit at a time with reassessment

0%

Avoid monitoring during transfusion

0%

What is one recommended mitigation strategy for a patient identified as high risk for TACO?



Question slide

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What other consideration should be made when selecting blood components for a pregnant patient?

Use of irradiated blood

0%

CMV-negative status is preferred to reduce foetal infection risk

0%

Whole blood is preferred for volume replacement

0%

Platelets should be given routinely in anaemia

0%

18

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Preparing Results

What other consideration should be made when selecting blood components for a pregnant patient?

Use of irradiated blood

0%

CMV-negative status is preferred to reduce foetal infection risk

100%

Whole blood is preferred for volume replacement

0%

Platelets should be given routinely in anaemia

0%

Patient review:

6 hours later you come back to review the patient

The patient has not started to received any of the red blood cell.

There was a misunderstanding regarding who should request the red cell units from the transfusion laboratory. You assumed the nurses would request the blood as this was routine practice in the clinical area where you have previously worked.

Conversely, the nurses assumed the authoriser would be requesting the blood as this was routine practice on the current ward.

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Question slide

Which of the following actions would best support role clarity and prevent delays in transfusion? (tick all that apply)

Assume the same transfusion workflow applies across all wards — 0%

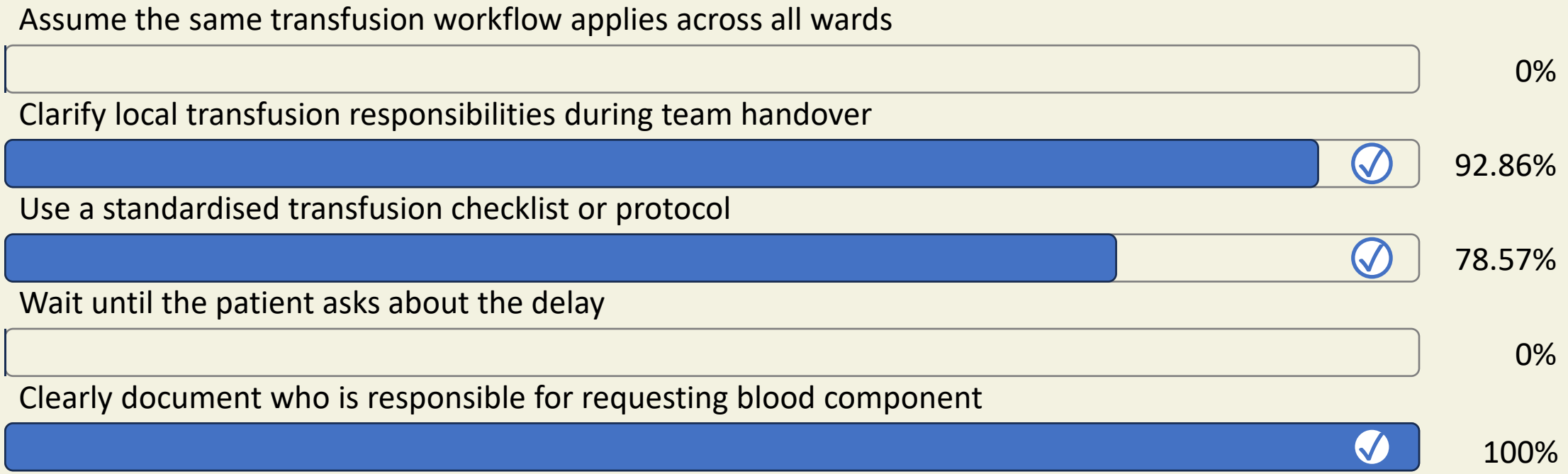
Clarify local transfusion responsibilities during team handover — 0%

Use a standardised transfusion checklist or protocol — 0%

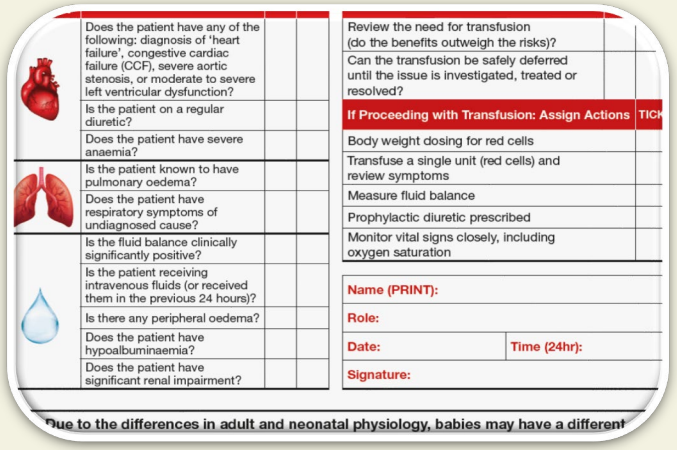
Wait until the patient asks about the delay — 0%

Clearly document who is responsible for requesting blood component — 0%

Which of the following actions would best support role clarity and prevent delays in transfusion? (tick all that apply)



TACO pre-transfusion risk assessment



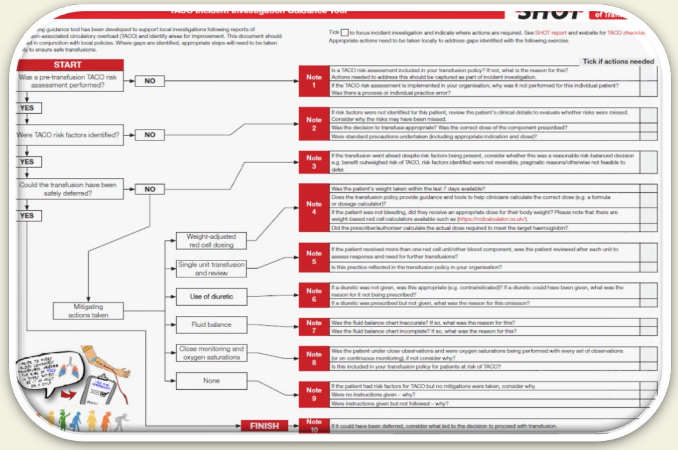
Does the patient have any of the following: diagnosis of 'heart failure', congestive cardiac failure (CCF), severe aortic stenosis, or moderate to severe left ventricular dysfunction?			Review the need for transfusion (do the benefits outweigh the risks)?
Is the patient on a regular diuretic?			Can the transfusion be safely deferred until the issue is investigated, treated or resolved?
Does the patient have severe anaemia?			**If Proceeding with Transfusion: Assign Actions** TICK
Is the patient known to have pulmonary oedema?			Body weight dosing for red cells
Does the patient have respiratory symptoms of undiagnosed cause?			Transfuse a single unit (red cells) and review symptoms
Is the fluid balance clinically significantly positive?			Measure fluid balance
Is the patient receiving intravenous fluids (or received them in the previous 24 hours)?			Prophylactic diuretic prescribed
Is there any peripheral oedema?			Monitor vital signs closely, including oxygen saturation
Does the patient have hypoalbuminaemia?			**Name (PRINT):**
Does the patient have significant renal impairment?			**Role:**
			Date: **Time (24hr):**
			Signature:

Due to the differences in adult and neonatal physiology, babies may have a different

The 2024 reporting year recorded **188** TACO cases which is the highest ever reported to SHOT.

A TACO pre-transfusion risk assessment should be utilised whenever possible prior to every transfusion, especially in vulnerable patients.

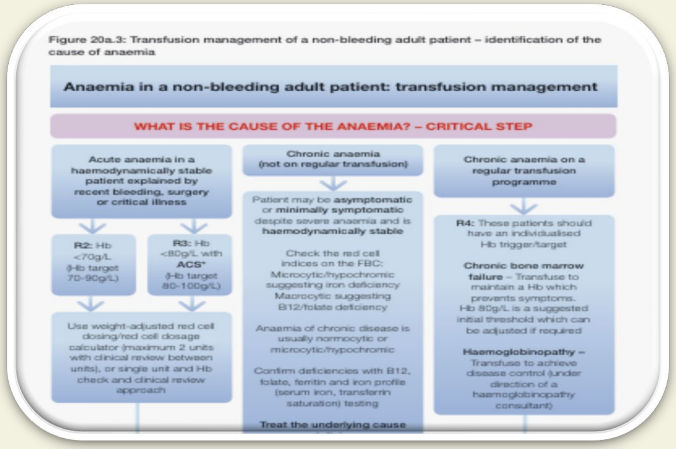
TACO investigation guidance tool



It is important that all TACO cases are used as a learning opportunity to prevent or mitigate TACO in other patients.

A TACO investigation guidance tool available from 'Current resources' on the SHOT website helps optimise learning from these events

Anaemia in a non-bleeding adult patient



Patients with severe chronic anaemia should receive only minimal red cell transfusion with the aim of alleviating symptoms as opposed to aiming for a Hb correcting to meet a target Hb level

Safety alerts

SHOT responding to trends seen in SHOT reported incidents/reactions – monitor it for effectiveness

National Patient Safety Alert

SHOT Serious Hazards of Transfusion

Medicines & Healthcare products Regulatory Agency

Reducing risks for transfusion-associated circulatory overload

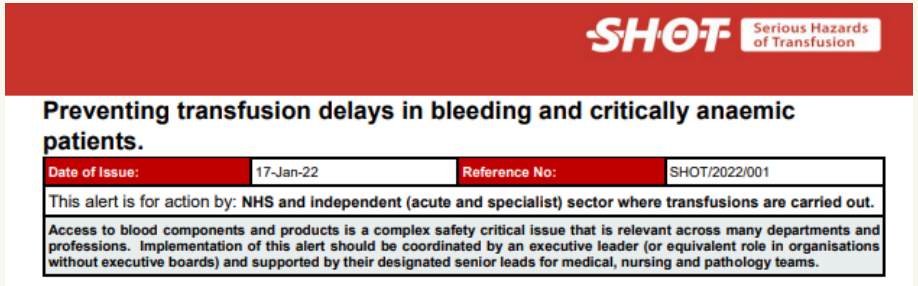
Date of Issue:	4-Apr-24	Reference No:	NatPSA/2024/004/MHRA

This alert is for action by: **NHS and independent (acute and specialist) organisations where transfusions occur**

This is a safety critical and complex National Patient Safety Alert that is relevant across many departments and professions. Implementation should be coordinated by an executive leader (or equivalent role in organisations without executive boards) and supported by their designated senior leads for medical, nursing, midwifery, scientific and allied health professionals.

Reference 1

CAS (central alerting system) patient safety alerts which call on organisations to put urgent safety steps in place



SHOT Serious Hazards of Transfusion

Preventing transfusion delays in bleeding and critically anaemic patients.

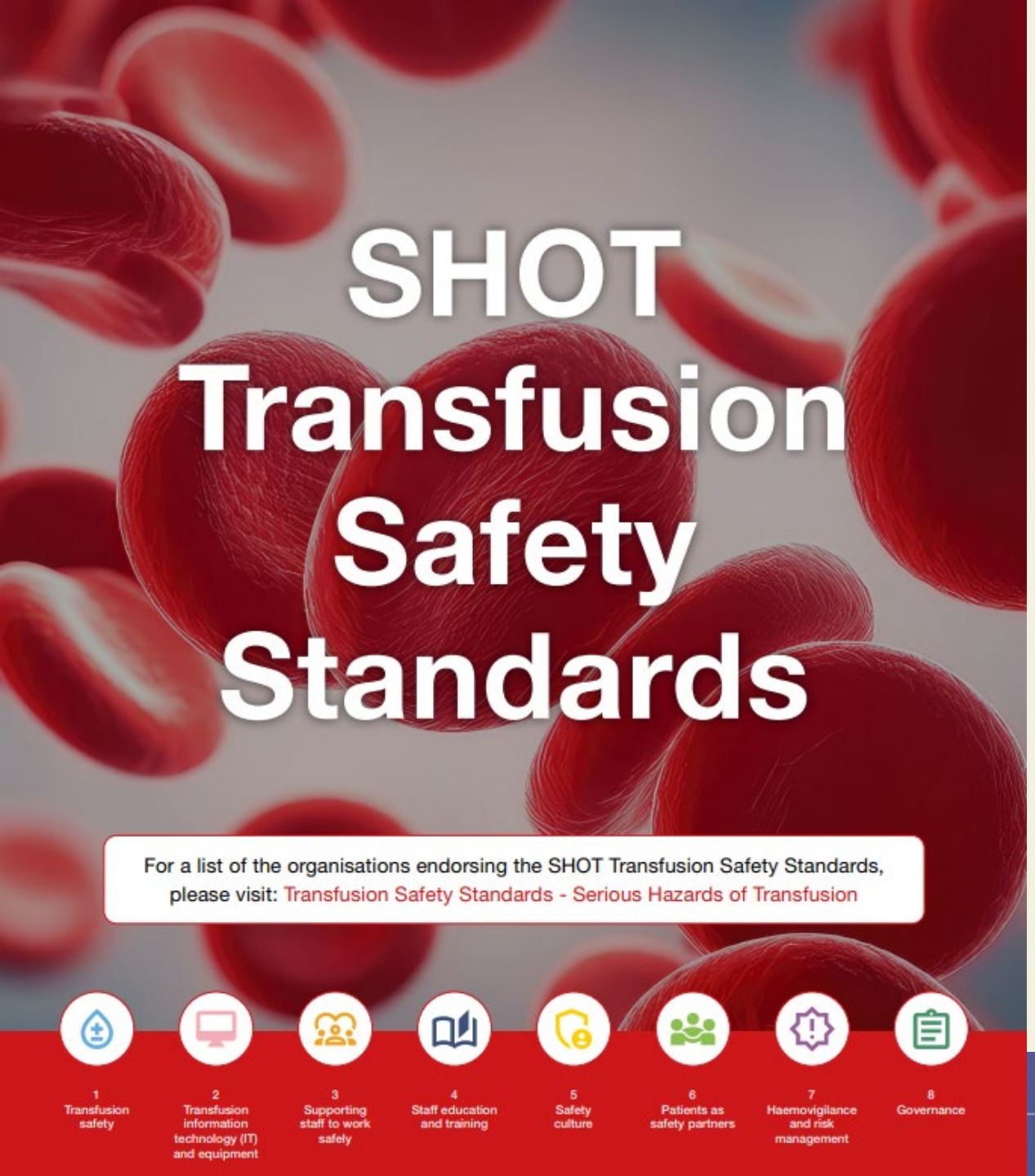
Date of Issue:	17-Jan-22	Reference No:	SHOT/2022/001

This alert is for action by: **NHS and independent (acute and specialist) sector where transfusions are carried out.**

Access to blood components and products is a complex safety critical issue that is relevant across many departments and professions. Implementation of this alert should be coordinated by an executive leader (or equivalent role in organisations without executive boards) and supported by their designated senior leads for medical, nursing and pathology teams.

Reference 2

NPSA / MHRA TACO – also has a very detailed TACO FAQ sheet to help identify areas for concersn.



1. Transfusion safety
2. Transfusion information technology and equipment
3. Supporting staff to work safely
4. Staff education and training
5. Safety culture
6. Patients as safety partners
7. Haemovigilance and risk management
8. Governance

1. Transfusion safety

Anaemia management

Performing TACO pre-administration risk assessment

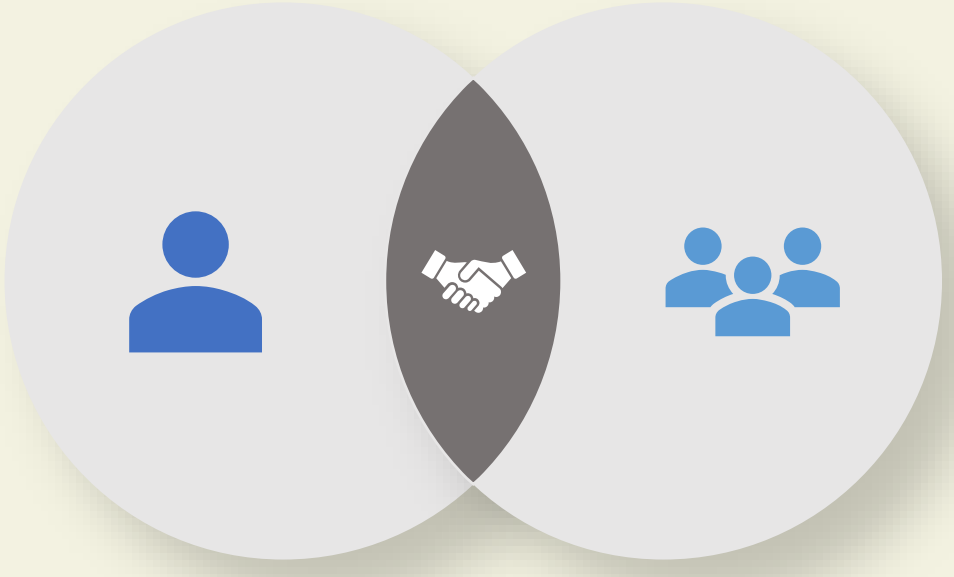
Management of reactions

Monitoring outcomes

Patient awareness upon discharge

Patient background and event

Haematology/oncology patient with a complex transfusion history.



Presence of multiple clinically significant red cell antibodies

Patient received 3 units of red cells that did not meet her documented specific requirements

Can you suggest any casual and contributory factors that might be attributed to this event happening?

Can you suggest any casual and contributory factors that might be attributed to this event happening?

Complex medical history Multiple transfusions required	Lack of communication, poor history taking (pmh), lack of knowledge	Complex history Patient unaware Staff education	Lack of safety check list
Having 3 units	Antigen negative wasn't requested in the special requirements	Nor assessing after each bag	

Reasons attributed to this incident are:

Documentation

Requesting clinician failed to complete specific requirement of the request form.

Integration

Patient's historical record not showing on new upgraded LIM system

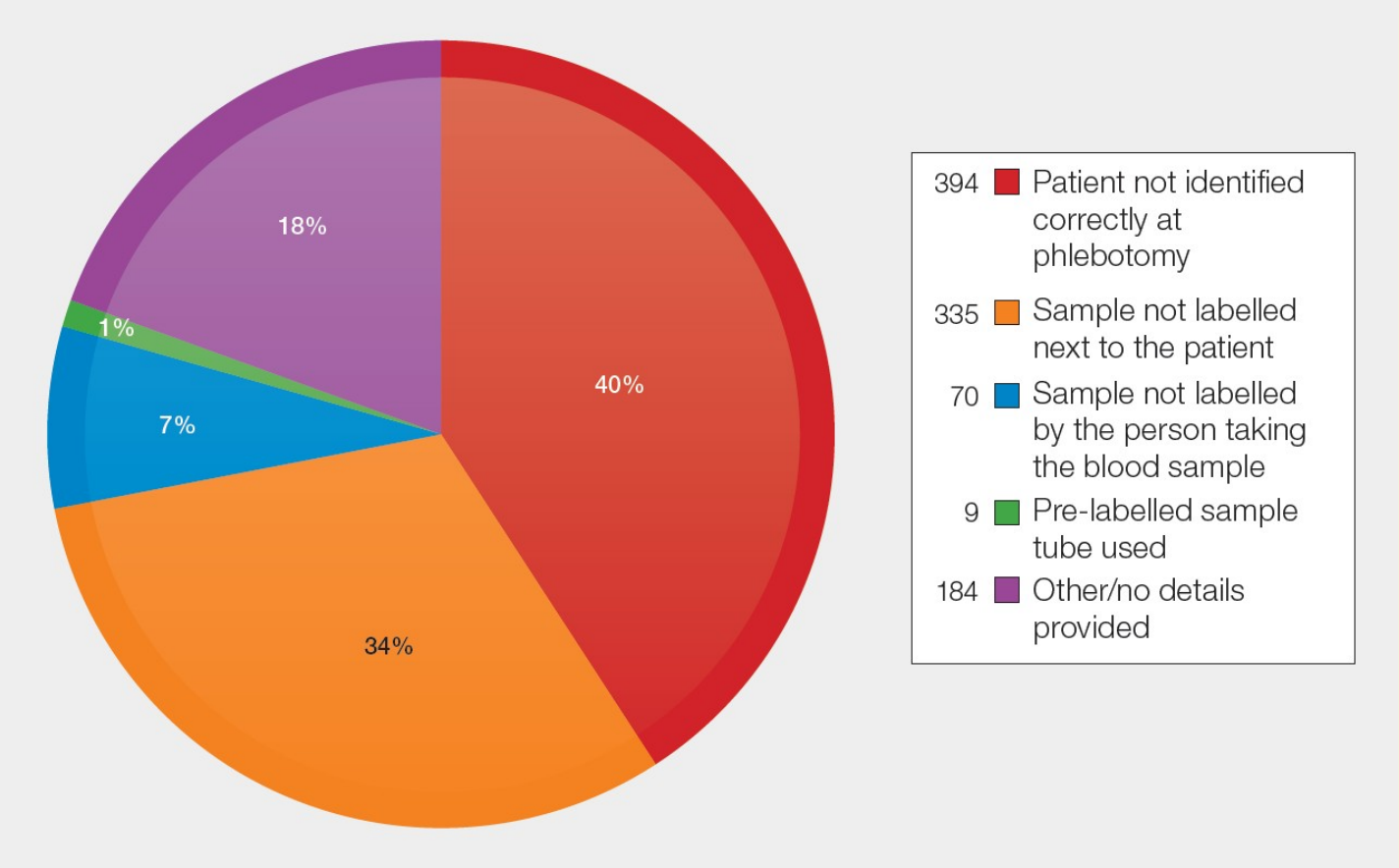
Oversight

Laboratory staff failed to check historical specific requirement flag from legacy LIM data

Remember Positive Patient Identification is essential

Positive Patient Identification

Figure 16a.1: Primary causes of WBIT in 2025 (n=992)



Inappropriate RBC transfusion – Case study

Case

Doctor reviewed FBC for Patient A (needed RBC) but arranged transfusion for Patient B by mistake. Patient B had no indication.

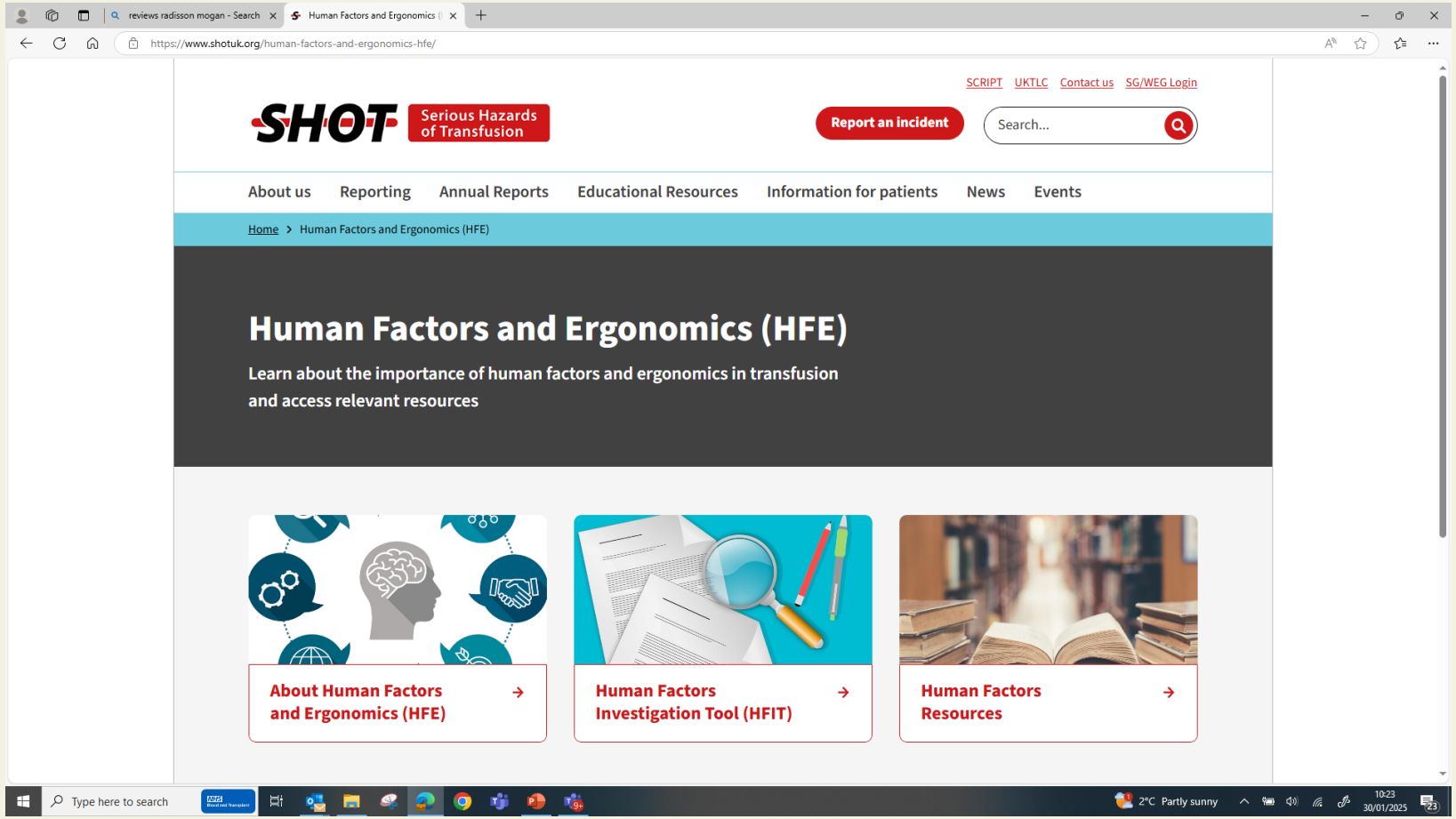
Contributing Factors

- Mix-up of patient names/results
- No electronic ordering system with decision prompts
- Out-of-hours, high multitasking
- Two staff reviewing results together

Learning point

• Patient identification errors resulting in inappropriate treatment can occur without the patient being present. It is essential to correctly identify the patient during any interaction

Human Factors resources developed by SHOT



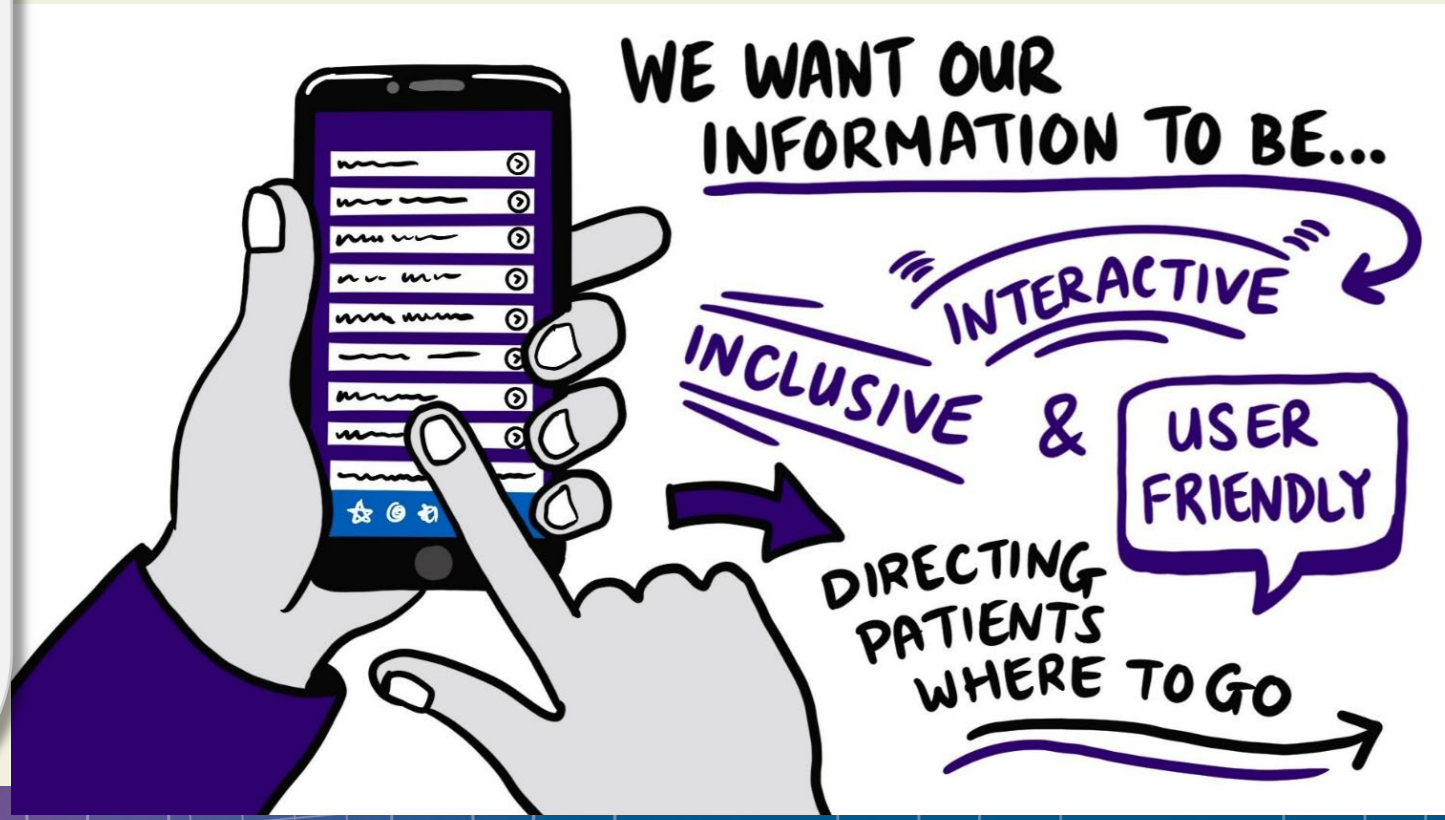
Cumulative SHOT Data by Category resources

Beyond Incidents: ACE Reports

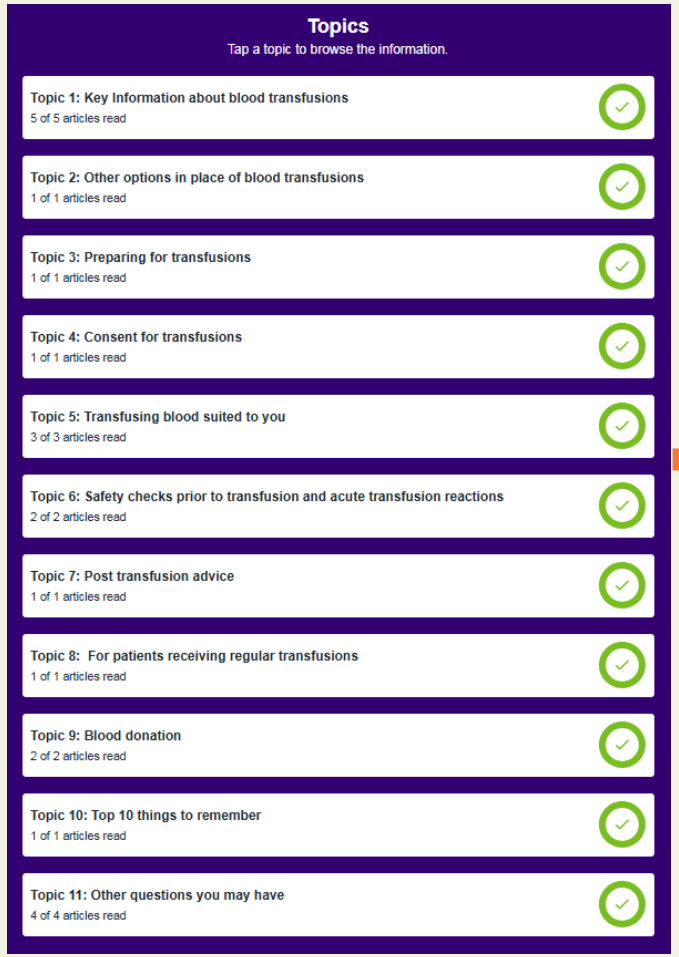
- SHOT also captures Acknowledging Continuing Excellence (ACE) reports
- Highlights good practice and promotes a Safety-II approach
- Resources and learning tools available via the SHOT website

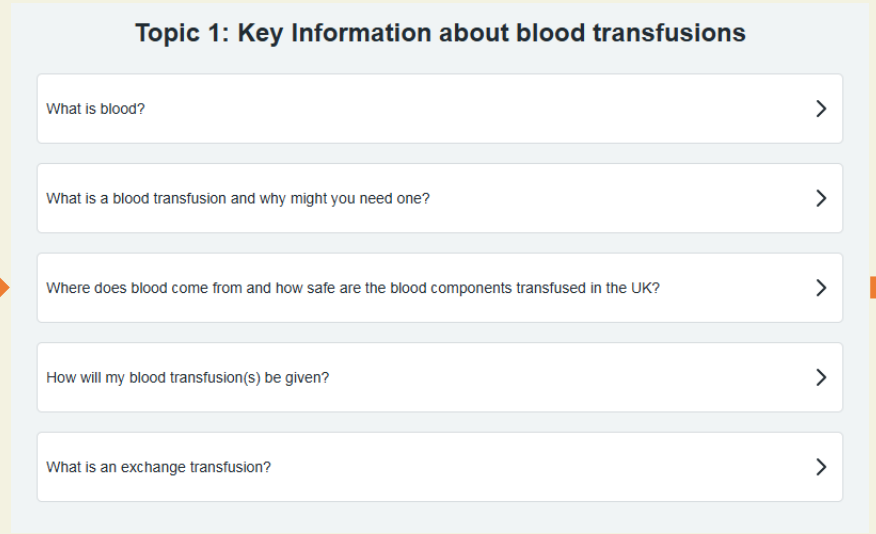
‘My Transfusion’ patient app

- For adult patients receiving transfusion and their carers/relatives
- Covers the transfusion journey, transfusion risks, benefits and alternatives for patients
- Based on current national guidelines
- Created with insights from patients and healthcare professionals



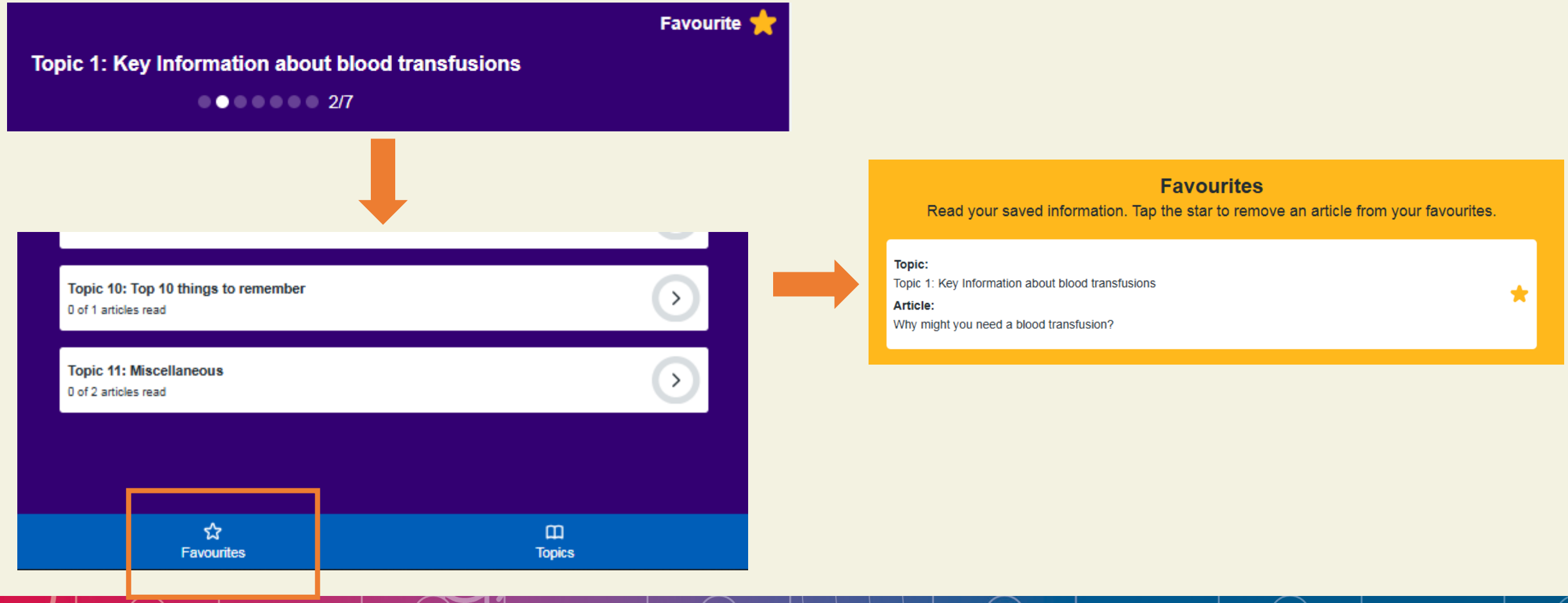
Topics


Topics
Tap a topic to browse the information.
Topic 1: Key Information about blood transfusions
5 of 5 articles read
Topic 2: Other options in place of blood transfusions
1 of 1 articles read
Topic 3: Preparing for transfusions
1 of 1 articles read
Topic 4: Consent for transfusions
1 of 1 articles read
Topic 5: Transfusing blood suited to you
3 of 3 articles read
Topic 6: Safety checks prior to transfusion and acute transfusion reactions
2 of 2 articles read
Topic 7: Post transfusion advice
1 of 1 articles read
Topic 8: For patients receiving regular transfusions
1 of 1 articles read
Topic 9: Blood donation
2 of 2 articles read
Topic 10: Top 10 things to remember
1 of 1 articles read
Topic 11: Other questions you may have
4 of 4 articles read


Topic 1: Key Information about blood transfusions
What is blood?
What is a blood transfusion and why might you need one?
Where does blood come from and how safe are the blood components transfused in the UK?
How will my blood transfusion(s) be given?
What is an exchange transfusion?


Articles
Favourite
Topic 1: Key Information about blood transfusions
1/5
WELL INFORMED PATIENTS MAKE BETTER CHOICES & HAVE BETTER OUTCOMES
SHOT
Serious Hazards of Transfusion
What is blood?
Blood is a red liquid that travels around your body in your blood vessels. It carries oxygen and nutrients around your body, and protects us from infections. Blood also helps your body maintain normal temperature.
The amount of blood a person has depends on their size. The bigger the person's body is, the more blood it will contain. In general, about 10% of a person's body is their blood.
Blood contains three types of cell called red blood cells, white blood cells and platelets. These are carried in a liquid called plasma.
Red blood cells
Red blood cells make up 40-45% of your blood. Red blood cells carry oxygen and help remove waste products.
White blood cells
White blood cells make up a small part of your blood and protect you by fighting infections.
Platelets
Platelets make up an even smaller part or your blood. They are sticky cells which help stop bleeding.
Plasma
Plasma is a liquid which makes up about 55% of your blood. It is mostly made of water. The rest is salts, proteins, sugars, fats and hormones. Plasma also carries proteins which help fight infection (called antibodies) and others to stop bleeding from a cut.
In this app, all of these will be called 'blood'.
Next Article

Favourites


Favourite
Topic 1: Key Information about blood transfusions
2/7
Topic 10: Top 10 things to remember
0 of 1 articles read
Topic 11: Miscellaneous
0 of 2 articles read
Favourites
Topics
Favourites
Read your saved information. Tap the star to remove an article from your favourites.
Topic:
Topic 1: Key Information about blood transfusions
Article:
Why might you need a blood transfusion?

Download and view

Download on the App Store

GET IT ON Google Play

Or view web browser version: https://www.mytransfusion.co.uk/

SHOT Serious Hazards of Transfusion

What can you do?

Report any errors or concerns to Transfusion Practitioner

Ensure a safe environment for transfusions

Be a champion for transfusion safety

Suggested activities

Spend some time with a haemovigilance reporter when they are completing a SHOT report

Attend a hospital transfusion committee meeting

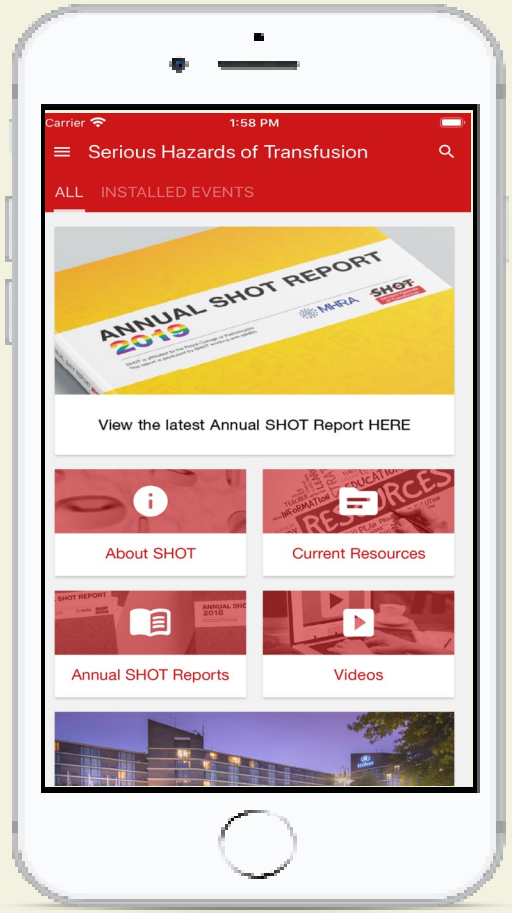
Attend an investigation meeting

Review your hospital transfusion policies

Carry out a consent review and the use of pre-transfusion checklist / SRNM

Carry out a review of your Trust's SHOT reports

SHOT App



Download on the App Store

GET IT ON Google Play

Acknowledgements

- **The reporters and hospital staff who share their incidents**
- The SHOT Steering Group and Working Expert Group members
- MHRA haemovigilance team
- The UK Forum for funding

For further information visit: www.shotuk.org

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