

Transfusion Reactions

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Objectives

- 1) Identify a transfusion reaction
- 2) Treat a transfusion reaction
- 3) Report a transfusion reaction

1) Identify a transfusion reaction

Could this be a transfusion reaction?

Symptoms:

- | | | |
|-----------|--------------|---------------|
| •Fever | • Rash | • Stridor |
| •Chills | • Urticaria | • Dizziness |
| •Rigors | • Itch | • Hypotension |
| •Nausea | • Angioedema | • Pain |
| •Vomiting | • Wheeze | • Anxiety |
| •Myalgia | • Dyspnoea | • Bleeding |

Type of transfusion reaction

- 1)Febrile
- 2)Allergic
- 3)Mixed febrile and allergic
- 4)Hypotensive

- 1)Haemolytic
- 2)Pulmonary

Type of transfusion reaction

Febrile type

- | | | |
|-----------|--------------|--------------|
| •Fever | • Rash | •Stridor |
| •Chills | • Urticaria | •Dizziness |
| •Rigors | • Itch | •Hypotension |
| •Nausea | • Angioedema | •Pain |
| •Vomiting | • Wheeze | •Anxiety |
| •Myalgia | • Dyspnoea | •Bleeding |

Type of transfusion reaction

Allergic type

- | | | |
|-----------|-------------|---------------|
| •Fever | •Rash | • Stridor |
| •Chills | •Urticaria | • Dizziness |
| •Rigors | •Itch | • Hypotension |
| •Nausea | •Angioedema | • Pain |
| •Vomiting | •Wheeze | • Anxiety |
| •Myalgia | •Dyspnoea | • Bleeding |

Type of transfusion reaction

"Mixed" type

- | | | |
|-----------|-------------|---------------|
| •Fever | •Rash | • Stridor |
| •Chills | •Urticaria | • Dizziness |
| •Rigors | •Itch | • Hypotension |
| •Nausea | •Angioedema | • Pain |
| •Vomiting | •Wheeze | • Anxiety |
| •Myalgia | •Dyspnoea | • Bleeding |

Type of transfusion reaction

Hypotensive

- | | | |
|-----------|--------------|--------------|
| •Fever | • Rash | •Stridor |
| •Chills | • Urticaria | •Dizziness |
| •Rigors | • Itch | •Hypotension |
| •Nausea | • Angioedema | •Pain |
| •Vomiting | • Wheeze | •Anxiety |
| •Myalgia | • Dyspnoea | •Bleeding |

Type of transfusion reaction

Haemolytic

- Fever
- Chills
- Rigors
- Nausea
- Vomiting
- Myalgia
- Rash
- Urticaria
- Itch
- Angioedema
- Wheeze
- Dyspnoea
- Stridor
- Dizziness
- Hypotension
- Pain
- Anxiety
- Bleeding

Type of transfusion reaction

Pulmonary

- Fever
- Chills
- Rigors
- Nausea
- Vomiting
- Myalgia
- Rash
- Urticaria
- Itch
- Angioedema
- Wheeze
- Dyspnoea
- Stridor
- Dizziness
- Hypotension
- Pain
- Anxiety
- Bleeding

Severity assessment of reaction

See *handout 1*

Appendix 3: ISBT/IHN classification of ATRs			
	1 = Mild	2 = Moderate	3 = Severe
Febrile type reaction	A temperature $\geq 38^{\circ}\text{C}$ and a rise between 1 and 2°C from pretransfusion values, but no other symptoms/signs	A rise in temperature of 2°C or more, or fever 38°C or over and/or rigors, chills, other inflammatory symptoms/signs such as myalgia or nausea which precipitate stopping the transfusion	A rise in temperature of 2°C or more, and/or rigors, chills, or fever 38°C or over, or other inflammatory symptoms/signs such as myalgia or nausea which precipitate stopping the transfusion, prompt medical review AND/OR directly results in, or prolongs hospital stay
Allergic type reaction	Transient flushing, urticaria or rash	Wheezes or angioedema with or without flushing/urticaria/rash but without respiratory compromise or hypotension	Bronchospasm, stridor, angioedema or circulatory problems which require urgent medical intervention AND/OR, directly result in or prolong hospital stay, or Anaphylaxis (severe, life-threatening, generalised or systemic hypersensitivity reaction with rapidly developing airway and/or breathing and/or circulation problems, usually associated with skin and mucosal changes)
Reaction with both allergic and febrile features	Features of mild febrile and mild allergic reactions	Features of both allergic and febrile reactions, at least one of which is in the moderate category.	Features of both allergic and febrile reactions, at least one of which is in the severe category.
Hypotensive reaction		Isolated fall in systolic blood pressure of 30 mm or more occurring during or within one hour of completing transfusion and a systolic blood pressure 80 mm or less in the absence of allergic or anaphylactic symptoms. No/minor intervention required.	Hypotension, as previously defined, leading to shock (e.g., acidaemia, impairment of vital organ function) without allergic or inflammatory symptoms. Urgent medical intervention required.

Type of transfusion reaction – Pt 1

A 67 year old male develops a temperature of 38.1°C 30 minutes after starting transfusion of a unit of blood.

His baseline temperature was 37.1°C . His current observations reveal a HR 75, RR 14, BP 130/86, O_2 Sats 97% OA

Febrile type - mild

Type of transfusion reaction – Pt 2

A 28 year old female develops an urticarial rash 2 minutes after commencing transfusion of a pool of platelets. Within the next 5 minutes she begins to feel faint and breathless. On auscultation quiet wheeze is audible with reduced air entry globally

Her current observations reveal a HR 128, RR 24, BP 88/50, temp 36.5°C , O_2 Sats 92% OA

Allergic type – severe

Type of transfusion reaction – Pt 3

An 85 year old female develops gradual onset breathless 2 hours after having a 2 unit blood transfusion. On auscultation coarse crackles can be heard up to both mid-zones.

Her current observations reveal a HR 110, RR 36, BP 160/94, temp 37.4°C, O₂ Sats 88% OA

Pulmonary (TACO)

Type of transfusion reaction – Pt 4

A 38 year old male develops fever, rigors and dizziness with anxiety 5 minutes into a blood transfusion. He subsequently experiences back pain and dark urine

His current observations reveal a HR 120, RR 18, BP 90/66, temp 36.8°C, O₂ Sats 94% OA. On examination he appears unwell and mildly jaundiced.

Haemolytic

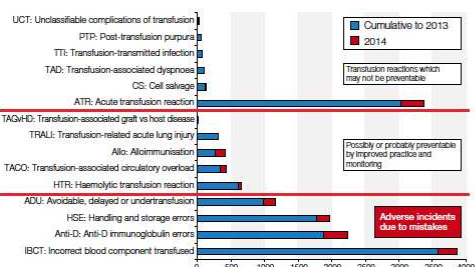
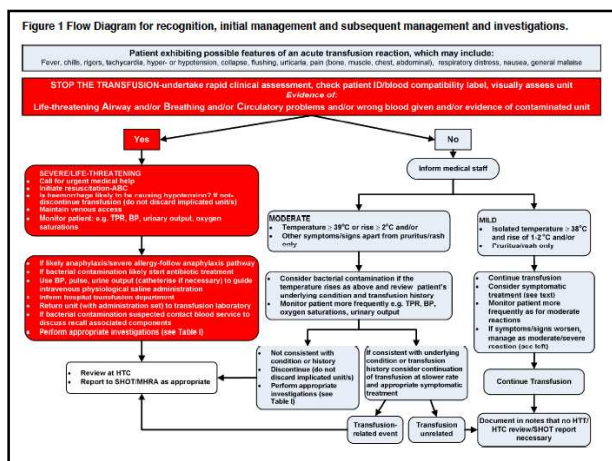


Figure 4.2:
Cumulative data for
SHOT categories
1996/7-2014
n=14822

2) Treat a transfusion reaction



What will you do next? – Pt 1

A 67 year old male develops a temperature of 38.1°C 30 minutes after starting transfusion of a unit of blood.

His baseline temperature was 37.1°C . His current observations reveal a HR 75, RR 14, BP 130/86, O_2 Sats 97% OA

- Immediate?
- Impact on future transfusions?

What will you do next? – Pt 2

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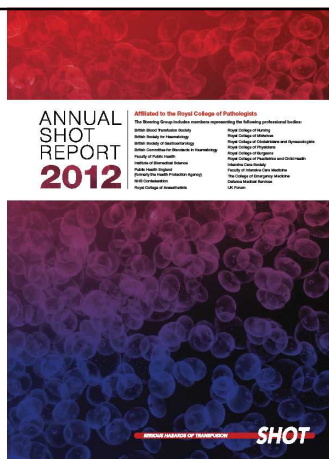
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His current observations reveal a HR 120, RR 18, BP 90/66, temp 36.8°C, O₂ Sats 94% OA. On examination he appears unwell and mildly jaundiced.

- Immediate?
- Impact on future transfusions?

3) Report a transfusion reaction



Serious Hazards of Transfusion (SHOT)

- Haemovigilance reporting scheme
 - Systemic reporting of morbidity and mortality arising from transfusion of blood and components
- Professionally mandatory
 - Francis report: (Need for) relentless focus on patient safety
- Works towards closer collaboration with the MHRA SABRE reporting scheme
 - SHOT analyses reports in depth
 - Classifies appropriately
 - Produces educational vignettes

Reporting - practicalities

- Does this need reporting?
- What reaction has occurred?
- Contact laboratory
- Contact transfusion CNS / haematologist
- Report issued to necessary agency

MHRA	SHOT also	SHOT only
Blood Centre and all hospital laboratory testing and issue errors	Laboratory errors (all)	
Wrong component collected	Incorrect blood component transfused (BCT) - WGT due to collection errors	Wrong component transfused (WCT) due to failure of bedside checks
Wrong or inappropriate component issued	Specific requirements not met (SRNM) laboratory errors	SRNM due to request or prescription errors and failures to inform laboratory where there are no laboratory errors
Breach of the 30-minute rule where blood is returned to the supply chain after 30 minutes	HSE – cold chain errors	HSE long transfusion time for single units or where units are set up more than 30 minutes after collection from cold storage
RBPR laboratory errors	RBPR laboratory errors	RBPR clinical errors
Some near miss (NM) errors would fit the EU definition		NM reporting
None of these		Anti-D Ig errors Anti-D sensitisation Avoidable, delayed or undertransfusion (ADU) Cell salvage

Table 3.3:
Comparison of
SAEs that might be
reported to MHRA
and SHOT or both

Any questions?
