# **ACUTE TRANSFUSION REACTIONS**



## **SIGNS AND SYMPTOMS**

### **MILD REACTION**

### Within 4 hours of starting transfusion

Temperature ≥ 38°C and rise ≥ 1°C from baseline

May have chills or rigors but **NO** other symptoms e.g. respiratory distress, nausea, vomiting or haemodynamic instability



## SEVERE REACTION

#### Within 15 minutes of starting transfusion but may be later

Temperature  $\geq$  38°C and rise  $\geq$  1°C from baseline

With other symptoms e.g. chills/rigors, hypotension/shock, tachycardia, anxiety, dyspnoea, back/chest pain, haemoglobinuria/oliguria, bleeding from IV sites, disseminated intravascular coagulation (DIC), nausea/vomiting

Temperature ≥ 39°C **Potentially life-threatening** 

## ACUTE ONSET SHORTNESS OF BREATH (DYSPNOEA, DECREASED O, SATURATION)

#### Within 15 minutes of starting transfusion but may be later

Hypotension, fever, with/without tachycardia

**Potentially life-threatening** 



**DSYPNOEA** 

## 1-2 hours following transfusion

Typically with **hypertension**, also cyanosis, orthopnea, increased venous pressure/ jugular venous distension, tachycardia, pulmonary oedema, elevated BNP, cardiomegaly Potentially life-threatening

ACUTE ONSET SHORTNESS OF BREATH (DYSPNOEA, DECREASED O, SATURATION)

## ACUTE ONSET SHORTNESS OF BREATH (DYSPNOEA, DECREASED O SATURATION)

## Within 6 hours following transfusion (usually within 1–2 hours)

Typically with hypotension, also bilateral pulmonary oedema, severe hypoxemia, cyanosis, fever, bilateral interstitial and alveolar infiltrates (pulmonary oedema), without elevated pulmonary pressures. No evidence of circulatory overload or pre-existing ALI/ARDS

Potentially life-threatening

## < 2/3 BODY

#### 2-3 hours into transfusion

Localised urticaria (hives), pruritus with **NO** other symptoms/signs

#### > 2/3 BODY

## Early in transfusion

Localised urticaria (hives), pruritus with NO other symptoms/signs

# **OR RASH**

### > 2/3 BODY

With other symptoms e.g. dyspnoea/upper or lower airway obstruction (hoarseness, GI symptoms (nausea, vomiting). Urticaria is usually present with anaphylaxis

## **ACTION**

**STOP** 

RECOGNISE

1.STOP TRANSFUSION

activate emergency procedures if required

CHECK VITAL SIGNS

respiration, pulse,

BP. temperature

and urine output

existing line

3. MAINTAIN IV ACCESS

4. REPEAT ALL CLERICAL

of the patient and

blood product

5.**NOTIFY** medical

AND IDENTITY CHECKS

staff and transfusion

6.**COLLECT** blood and

blood pack and IV line

for culture if required

COMMENCE SPECIFIC CLINICAL MANAGEMENT

8.**DOCUMENT** reaction

report as per

in patient's chart and complete incident

REACT

REPORT

# **CAUSES AND INVESTIGATIONS**

#### **FNHTR**

No investigation required

Send notification to transfusion laboratory if local policy

#### SEVERE FNHTR or TTBI or AHTR

Sepsis workup: Gram stain on blood product bag; blood cultures on both patient and

Incompatible blood workup: Group, screen and DAT on pre and post-transfusion samples

Haemolysis workup: FBC, LDH, bilirubin, haptoglobin, electrolytes, creatinine, urinalysis Disseminated intravascular coagulation (DIC) may complicate a severe reaction - perform aPTT, PT, fibrinogen, D-Dimer (or FDP)

#### TTBI or AHTR or ANAPHYLAXIS

TTBI or AHTR: see above ANAPHYLAXIS: see below

#### **TACO**

Assess chest X-ray for pulmonary oedema Elevated BNP/N-terminal pro-BNP levels are more common in TACO

## TRALI

Assess chest X-ray for pulmonary infiltrates Normal BNP/N-terminal pro-BNP levels are more common in TRALI

HLA/HNA typing and antibodies

TRALI is a clinical diagnosis – investigations to exclude other reactions

## MINOR ALLERGIC REACTION

No investigation required

Send notification to transfusion laboratory if local policy

### SEVERE ALLERGIC REACTION

No investigation required

Send notification to transfusion laboratory if local policy

## **ANAPHYLAXIS**

Check haptoglobin and IgA levels Test for anti-IgA

## **CLINICAL MANAGEMENT**

### FNHTR (febrile non-haemolytic transfusion reaction)

- 1. Exclude serious or severe reaction
- 2. Give antipyretic and **restart transfusion slowly** if reaction subsides and product still viable
- 3. If no improvement or worsening of symptoms, stop transfusion and do not restart transfusion, and investigate for a severe reaction

### **SEVERE FNHTR (febrile non-haemolytic transfusion reaction):** see above FNHTR

#### TTBI (transfusion-transmitted bacterial infection)

- 1. Do not restart transfusion
- 2. Take cultures and if TTBI suspected, start broad-spectrum IV antibiotics, IV fluids and inotropes to provide cardiovascular support and maintain urine output
- 3. Send implicated unit(s) to the transfusion laboratory for urgent culture and Gram stain; notify the Blood Service to ensure quarantine and testing of components from same donation(s)

### AHTR (acute haemolytic transfusion reaction)

- 1. Do not restart transfusion
- 2. IV fluids and inotropes to maintain blood pressure and urine output. Induced diuresis is often needed
- 3. For further transfusions consider consultation with haematologist

TTBI (transfusion-transmitted bacterial infection): see above

AHTR (acute haemolytic transfusion reaction): see above

ANAPHYLAXIS: see below

#### TACO (transfusion associated circulatory overload)

- 1. Do not restart transfusion
- 2. Give oxygen, diuretics and sit patient upright
- 3. Future transfusion in susceptible patients (i.e. paediatric or elderly patients, severely anaemic or CHD): infuse slowly and consider diuretic

### TRALI (transfusion-related acute lung injury)

- 1. Do not restart transfusion
- 2. Provide cardiovascular and airway support; give oxygen and ventilation as necessary; diuretics are not beneficial and may worsen TRALI
- 3. Notify the Blood Service to ensure quarantine and testing of components from the same donor(s)

#### MINOR ALLERGIC REACTION

- 1. Give antihistamine and **restart transfusion slowly** if reaction subsides and if product still viable
- 2. If no improvement or worsening of symptoms, stop transfusion and manage as a severe allergic reaction
- 3. Consider premedication with antihistamine for future transfusions if recurrent minor allergic reactions occur

## SEVERE ALLERGIC REACTION

- 1. Do not restart transfusion
- 2. Give antihistamine and corticosteroid as required
- 3. If recurrent severe allergic reactions occur, consider premedication with antihistamine or transfusing with plasma-depleted or washed products

## ANAPHYLAXIS

- 1 Do not restart transfusion
- 2. Maintain airway and blood pressure. Resuscitate with IV fluids, oxygen, adrenaline, antihistamine and corticosteroid as required
- 3. To prevent recurrence, consider corticosteroid and antihistamine premedication. If IgA-deficiency with anti-IgA present, consider IgA-deficient or washed products
- 4. For further transfusions consider consultation with haematologist

## URTICARIA

## Within 45 minutes of starting transfusion (majority within 5 minutes)

stridor, wheezing, chest pain, anxiety). Severe hypotension, bronchospasm, cyanosis. **Potentially life-threatening**