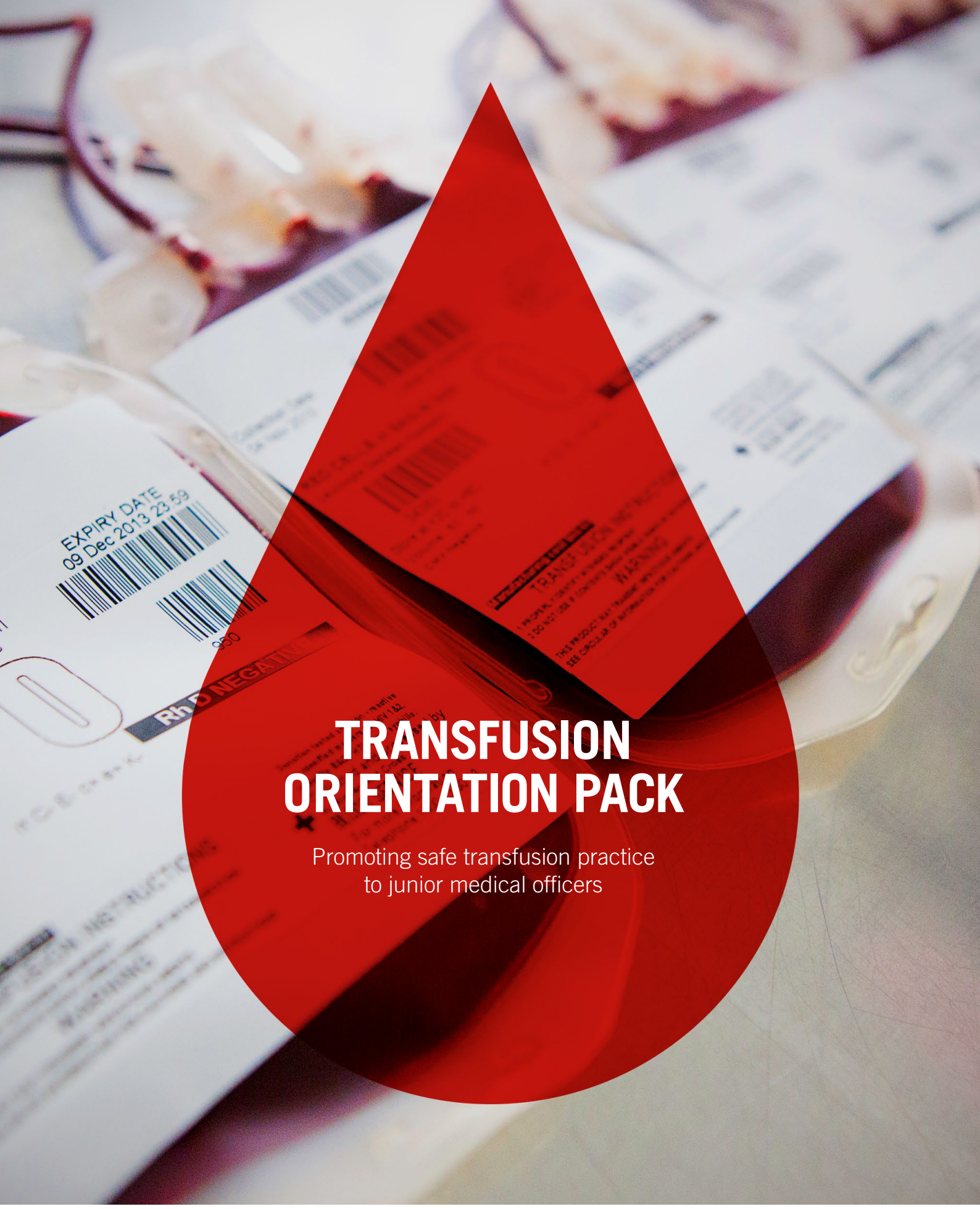

TRANSFUSION ORIENTATION PACK

Promoting safe transfusion practice
to junior medical officers

Australian Red Cross
BLOOD SERVICE

The Australian Red Cross Blood Service has developed this Transfusion Orientation Pack to promote safe transfusion practice and deliver education and training materials to JMOs.

What tools are included?

01 **TRANSFUSION CHECKLIST**

02 **HAEMOGLOBIN THRESHOLD TABLE**

03 **PLATELET THRESHOLD TABLE**

04 **ACUTE TRANSFUSION REACTIONS POSTER**

05 **LANYARD CARDS:**

Acute Transfusion Reactions Card

Blood Prescribing Card

Warfarin Reversal Card

How do I use the tools?

IF CONSIDERING A TRANSFUSION FOR A PATIENT:

- Review the Haemoglobin Threshold Table and/or the Platelet Threshold Table

IF A PATIENT NEEDS A TRANSFUSION:

- Refer to the Transfusion Checklist
- Check the Blood Prescribing Card

IF A SUSPECTED TRANSFUSION REACTION OCCURS:

- STOP the transfusion
- Check the Acute Transfusion Reactions Card and/or Acute Transfusion Reactions Poster

For more information visit **transfusion.com.au**
or email **transfusionlearning@redcrossblood.org.au**

01 TRANSFUSION CHECKLIST

Blood products required in emergency situation	☐ Contact your Transfusion Service Provider immediately	Emergency provision of red cells **j.mp/emergencyblood**
Transfusion is indicated as per patient blood management (PBM) and/or local guidelines	☐ Document transfusion decision ☐ Document any special requirements e.g. irradiated	PBM guidelines **j.mp/transfusionindicated**
Obtain informed consent from your patient	☐ Obtain informed consent (follow local policies) ☐ Complete prescription for blood product transfusion ☐ Inform nursing staff	Obtain informed consent **j.mp/consentpatient**

Request for group and hold and/or crossmatch	☐ Contact your Transfusion Service Provider to determine whether a request and sample is required
	☐ Complete pretransfusion testing request form, recording clinical indication and date and time blood product is required
	☐ Collect patient sample:
	  ☐ Confirm patient identity
	  ☐ Label samples immediately after collection with full patient name, date of birth and/or unique hospital ID number
	  ☐ Record date and time of collection
	☐ Confirm patient details on blood sample and request form are identical
	☐ Sign both the blood sample and collector's declaration on request form
	☐ Transport to laboratory
		Requests for blood transfusions
		j.mp/requesttransfusion
		
		Collection of pretransfusion blood samples
		j.mp/collectsample

Collect blood product from laboratory or remote fridge	☐ Present to laboratory or remote fridge with blood product order	Collection and delivery of blood to the ward or operating theatre **j.mp/collectionofproduct**

Follow guidelines for administration of blood components and monitor patient clinical status	☐ Ensure pre-administration checks meet the following requirements:
	  ☐ Right patient
	  ☐ Right blood product
	  ☐ Right pack
	  ☐ Right time
	☐ Final check between patient and blood product must be performed at bedside
		Administration of blood
		j.mp/administerblood

Monitor for signs of transfusion reaction	If suspected transfusion reaction occurs: ☐ STOP the transfusion ☐ Activate emergency procedure if required ☐ Follow local transfusion reaction protocols	Steps for managing suspected transfusion reactions **j.mp/managingreactions**
Response	☐ Assess to determine if desired outcome has been achieved ☐ Assess patient for further blood product transfusions as necessary	Monitoring and observation **j.mp/monitorandrespond**

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02 HAEMOGLOBIN THRESHOLD TABLE

- Transfusion should be **dictated by clinical status**[1] and **NOT** by Hb alone.
- Transfusion may not be required in well-compensated patients or where other specific therapy[2] is available.
- **Single unit transfusion** followed by clinical reassessment to determine need for further transfusion is current best practice.
- Transfusion is not without risk; **patient blood management** principles should always be considered.

Hb g/L	70	80	90	100
Postoperative with acute myocardial ischaemia (AMI) or cerebrovascular ischaemia (CVI)	● Transfusion is appropriate.			● Transfusion is usually inappropriate.
Postoperative without acute myocardial ischaemia (AMI) or cerebrovascular ischaemia (CVI)	● Transfusion may be appropriate.	● Transfusion may be inappropriate.		● Transfusion is usually inappropriate.
Acute coronary syndrome	● Transfusion likely to be appropriate.[3]	● Transfusion may be associated with an increased risk of recurrence of AMI.		● Transfusion is usually inappropriate.[4]
General medical and surgical unless otherwise specified (includes heart failure; cancer; chronic kidney disease; chemotherapy; haematopoietic stem cell transplant)	● Transfusion likely to be appropriate.[3]	● Transfusion may not be required.[5]		● Transfusion is usually inappropriate.
Acute upper GI bleed[6]	● Transfusion is appropriate.	● Transfusion likely to be unnecessary.	● Transfusion is usually inappropriate.[7]	
Critically ill[8]	● Transfusion is likely to be appropriate.	● Transfusion may not be required.[5]	● Transfusion is usually inappropriate.	
Obstetrics	● Transfusion may be appropriate.[3]	● Transfusion may not be required.[5]	● Transfusion is usually inappropriate.	
Paediatrics (excluding neonates)	● Transfusion is often appropriate.	● Transfusion may not be required.	● Transfusion is often unnecessary and usually inappropriate.	
Thalassaemia	● Patients transfused at regular e.g. monthly intervals to maintain pretransfusion Hb 90–100 g/L. Generally managed by a thalassaemia specialist, often as outpatient. May be prescribed a predetermined number of units.			● A pretransfusion Hb threshold > 100 g/L may be appropriate in some patients.
Myelodysplasia	● Decision around appropriate Hb thresholds and frequency of transfusion should be personalised and guided by patient's anaemia-related symptoms, functional or performance status, and response to previous transfusions.			

Notes

This table may not be relevant to patients undergoing active resuscitation.

[1] Symptomatic anaemia e.g. reduced exercise tolerance, organ or tissue compromise.

[2] E.g. iron therapy.

[3] RBC transfusion may be associated with reduced mortality.

[4] RBC transfusion is associated with increased mortality.

[5] RBC transfusion is not associated with reduced mortality.

[6] Villanueva C, Colomo A, Bosch A, Concepción M, Hernandez-Gea V, Aracil C et al. Transfusion Strategies for Acute Upper Gastrointestinal Bleeding. NEJM 2013;368:11-21.

[7] A restrictive transfusion strategy (Hb < 70 g/L) results in improved morbidity and mortality compared to a liberal transfusion strategy (Hb < 90 g/L).

[8] Critically ill refers to patients who are physiologically unstable and at risk of significant morbidity and/or mortality. They require treatment in an intensive care unit.

References

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03 PLATELET THRESHOLD TABLE

PROPHYLACTIC PLATELET TRANSFUSION FOR PREVENTION OF BLEEDING

(see over for therapeutic platelet transfusion)

PLATELET COUNT (x10⁹/L)	10	20	30	50	100
Neurosurgery	● Transfuse 1 adult dose. Calculate paediatric dose.				● Transfusion is usually inappropriate.
Invasive procedures	● Transfuse 1 adult dose. Calculate paediatric dose.			● Transfusion is usually inappropriate.	
Childbirth	● Transfuse 1 adult dose.			● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.
Central venous catheter (CVC)	● Transfuse 1 adult dose. Calculate paediatric dose.	● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.		
Critically ill patients	● Transfuse 1 adult dose. Calculate paediatric dose.	● Transfusion usually unnecessary – consider comorbidities.[4]		● Transfusion is usually inappropriate.	
Chemotherapy with risk factors	● Transfuse 1 adult dose. Calculate paediatric dose.	● Transfusion usually unnecessary – consider comorbidities.[4]		● Transfusion is usually inappropriate.	
Chemotherapy without risk factors	● Transfuse 1 adult dose. Calculate paediatric dose.	● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.		
Post-cardiac surgery	● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.			
Preterm and low birth weight infants	● Calculate paediatric dose.	● Transfusion usually unnecessary – consider comorbidities.[4]		● Transfusion is usually inappropriate.	
Preterm neonate with fetal and neonatal alloimmune thrombocytopenia (FNAIT)	● Calculate paediatric dose.			● Transfusion is usually inappropriate.	
Term neonate with FNAIT	● Calculate paediatric dose.		● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.	

References

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03 PLATELET THRESHOLD TABLE

THERAPEUTIC PLATELET TRANSFUSION

(see over for prophylactic platelet transfusion)

PLATELET COUNT (x10⁹/L)	10	20	30	50	100
Thrombocytopenia with clinically significant bleeding[1]	● Transfuse 1 adult dose. Calculate paediatric dose.		● Transfusion usually unnecessary – consider comorbidities.[4]		● Transfusion is usually inappropriate.
Thrombocytopenia with severe bleeding[2]	● Transfuse 1 adult dose. Calculate paediatric dose. Second dose may be appropriate.			● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.
Thrombocytopenia with bleeding at critical sites[3]	● Transfuse 1 adult dose. Calculate paediatric dose. Second dose may be appropriate.				● Transfusion is usually inappropriate.
Disseminated intravascular coagulopathy (DIC)	● Transfuse 1 adult dose, aim for > 50 x 10⁹/L. Calculate paediatric dose.			● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.
Fetal and neonatal alloimmune thrombocytopenia (FNAIT) with bleeding (non-intracranial)	● Calculate paediatric dose.			● Transfusion usually unnecessary – consider comorbidities.[4]	● Transfusion is usually inappropriate.
FNAIT with intracranial bleeding	● Calculate paediatric dose.				● Transfusion is usually inappropriate.
Functional platelet defects	● Platelet counts are not a reliable indicator; transfuse only if bleeding or individual clinical needs.				● Transfusion is usually inappropriate.
Immune thrombocytopenia (ITP), thrombotic thrombocytopenia purpura (TTP), heparin-induced thrombocytopenia (HIT)	● Transfuse only if severe bleeding.		● Transfusion is usually inappropriate.		

Notes

The use of a massive transfusion protocol (MTP) which includes platelet transfusions may reduce the risk of mortality in critically bleeding patients.

[1] Clinically significant bleeding e.g. prolonged epistaxis, extensive skin bleeding, haematemesis, melaena, WHO grade 2.

[2] Severe bleeding e.g. bleeding that requires a RBC transfusion, WHO grade 3–4.

[3] Critical sites e.g. CNS, eyes.

[4] Consider comorbidities e.g. anticoagulant and antiplatelet agents; significant renal, liver, cardiac or haematological disease; fever and/or infection; predicted platelet count and previous response to platelet transfusion; proximity to care, inpatient vs outpatient care.

Paediatric dose calculation

Neonates and infants < 5 kg	10mL/kg*
5–9 kg	1 paediatric unit (approx. 50 mLs)
10–19 kg	2 paediatric units (approx. 100 mLs)
20–29 kg	3 paediatric units (approx. 150 mLs)
≥ 30 kg	1 adult dose (apheresis or pooled)

**Note: Volume based on apheresis platelet products.*

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04 ACUTE TRANSFUSION REACTIONS

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SIGNS AND SYMPTOMS	ACTION	CAUSES AND INVESTIGATIONS	CLINICAL MANAGEMENT
FEVER **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	**STOP** **RECOGNISE** **REACT** **REPORT** 1. **STOP TRANSFUSION** activate emergency procedures if required 2. **CHECK VITAL SIGNS** respiration, pulse, BP, temperature and urine output 3. **MAINTAIN IV ACCESS** but do not flush existing line 4. **REPEAT ALL CLERICAL AND IDENTITY CHECKS** of the patient and blood product 5. **NOTIFY** medical staff and transfusion laboratory 6. **COLLECT** blood and urine samples. Save blood pack and IV line for culture if required 7. **COMMENCE SPECIFIC CLINICAL MANAGEMENT** 8. **DOCUMENT** reaction in patient's chart and complete incident report as per institution policy	**FNHTR** No investigation required Send notification to transfusion laboratory if local policy	**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 REACTION ***Within 15 minutes of starting transfusion but may be later*** **Temperature ≥ 38°C and rise ≥ 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 or **Temperature ≥ 39°C** **Potentially life-threatening**		**SEVERE FNHTR or TTBI or AHTR** **Sepsis workup:** Gram stain on blood product bag; blood cultures on both patient and products **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)	**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
SHORTNESS OF BREATH / DSYPNOEA **ACUTE ONSET SHORTNESS OF BREATH (DYSPNOEA, DECREASED O_2 SATURATION)** ***Within 15 minutes of starting transfusion but may be later*** Hypotension, fever, with/without tachycardia **Potentially life-threatening**		**TTBI or AHTR or ANAPHYLAXIS** TTBI or AHTR: see above ANAPHYLAXIS: see below	**TTBI (transfusion-transmitted bacterial infection):** see above **AHTR (acute haemolytic transfusion reaction):** see above **ANAPHYLAXIS:** see below
ACUTE ONSET SHORTNESS OF BREATH (DYSPNOEA, DECREASED O_2 SATURATION) ***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**		**TACO** Assess chest X-ray for pulmonary oedema Elevated BNP/N-terminal pro-BNP levels are more common in TACO	**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
ACUTE ONSET SHORTNESS OF BREATH (DYSPNOEA, DECREASED O_2 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**		**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	**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)
URTICARIA OR RASH **< 2/3 BODY** ***2–3 hours into transfusion*** Localised urticaria (hives), pruritus with **NO** other symptoms/signs		**MINOR ALLERGIC REACTION** No investigation required Send notification to transfusion laboratory if local policy	**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
> 2/3 BODY ***Early in transfusion*** Localised urticaria (hives), pruritus with **NO** other symptoms/signs		**SEVERE ALLERGIC REACTION** No investigation required Send notification to transfusion laboratory if local policy	**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
> 2/3 BODY ***Within 45 minutes of starting transfusion (majority within 5 minutes)*** With other symptoms e.g. dyspnoea/upper or lower airway obstruction (hoarseness, stridor, wheezing, chest pain, anxiety). Severe hypotension, bronchospasm, cyanosis. GI symptoms (nausea, vomiting). Urticaria is usually present with anaphylaxis **Potentially life-threatening**		**ANAPHYLAXIS** Check haptoglobin and IgA levels Test for anti-IgA	**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

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05 LANYARD CARDS

Acute Transfusion Reactions Card

Australian Red Cross BLOOD SERVICE

Signs and symptoms	Possible etiology	Action	Investigation
Fever (≥ 38ºC or rise ≥ 1ºC) and/or chills, rigors			
38°C to < 39°C (no other symptoms)	Febrile non-haemolytic transfusion reaction	STOP transfusion, exclude serious adverse events. Antipyretics. Recommence if reaction subsides	Reaction form to transfusion lab
< 39°C and other symptoms (hypotension, tachycardia) or ≥ 39°C	Bacterial contamination or acute haemolytic transfusion reaction **(may become a medical emergency)**	STOP transfusion. Check patient ID with label Initiate basic life support IV antibiotics if sepsis Notify lab and Blood Service for bacterial contamination.	Cultures from patient and product, reaction form, G&S If haemolysis suspected, order FBE, LDH, bilirubin, haptoglobin, coags, electrolytes, urinalysis
Rash or Urticaria (hives)			
< 2/3 body (no other symptoms)	Minor allergic	STOP transfusion. Antihistamine. Recommence if reaction subsides	None
> 2/3 body (no other symptoms)	Severe allergic	STOP transfusion. Antihistamine +/- corticosteriod	Reaction form and G&S
With dyspnoea, airway obstruction, hypotension **(this is a medical emergency)**	Anaphylaxis (consider IgA deficiency)	STOP transfusion. Initiate basic life support	Reaction form and G&S Perform haptoglobin and IgA test

05 LANYARD CARDS

Acute Transfusion Reactions Card

Australian Red Cross BLOOD SERVICE

Signs and symptoms	Possible etiology	Action	Investigation
Dyspnoea, ↓O_2 saturation			
With/without hypertension, tachycardia	TACO (transfusion associated circulatory overload)	STOP transfusion. Sit patient upright Diuretics, O_2	Reaction form and Group and Save (G&S)
With/without hypotension	TRALI (transfusion-related acute lung injury) **(may become a medical emergency)**	STOP transfusion. Assess chest X-ray for infiltrates O_2, possible intubation, ventilation Notify lab and Blood Service	Reaction form and G&S HLA & HNA antibodies and typing
	Bacterial contamination or acute haemolytic transfusion reaction **(may become a medical emergency)**	STOP transfusion Check patient ID with label IV antibiotics if sepsis Maintain good urine output Notify lab and Blood Service for bacterial contamination.	Cultures from patient and product, reaction form, G&S If haemolysis suspected order FBE, LDH, bilirubin, haptoglobin, coags, electrolytes, urinalysis

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05 LANYARD CARDS

Blood Prescribing Card

Australian Red Cross BLOOD SERVICE

Indications	Component*	Dose			Administration time**	Response
Symptomatic anaemia (e.g. reduced exercise tolerance, organ or tissue compromise)	**RED CELLS LEUCODEPLETED** Whole blood derived (WB) unit: 260 mL Paediatric (Paed) unit: 60 mL	Usually one unit and reassess or calculate **Adult:** 0.4 x patient wt (kg) x desired Hb rise (g/L) **Neonates and paediatrics:** 0.5 x patient wt (kg) x desired Hb rise (g/L)			2 hours At risk of cardiac overload: up to 4 hours	Expected Hb rise in a 70 kg stable adult is 10 g/L per unit
Thrombocytopenia or abnormal platelet function with bleeding or at risk of bleeding Not indicated for immune thrombocytopenia (e.g. ITP) unless life-threatening bleeding	**PLATELETS LEUCODEPLETED** Apheresis: 280 x 10^9 in 180 mL Pooled: 280 x 10^9 in 330 mL Paed: 75 x 10^9 in 50 mL	**Body wt (kg)**	**Volume (apheresis)**	**Units**	30 mins	Expected platelet rise in a 70 kg stable adult is 20–40 x 10^9/L Expected platelet rise in an 18 kg child from one paed unit is 20 x 10^9/L
		<5	5-10 mL/kg	<1 Paed		
		5–9	50 mL	1 Paed		
		10–19	100 mL	2 Paed		
		20–29	150 mL	3 Paed		
		≥ 30 kg or Adult	-	1 Apheresis or pooled		

*Approximate values only, see **transfusion.com.au** for detailed data. Consider special requirements e.g. irradiation.
**All components may be given more rapidly if required, and all must be completed within 4 hours of removal from controlled storage.
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05 LANYARD CARDS

Blood Prescribing Card

Australian Red Cross BLOOD SERVICE

Indications	Component*	Dose	Administration time**	Response
Deficiency of clotting factors with bleeding or risk of bleeding where specific therapy (e.g. clotting factor concentrate) is not appropriate or available (e.g. DIC)	**FRESH FROZEN PLASMA** WB or apheresis unit: 275 mL Paed unit: 70 mL FFP contains all coagulation factors	Adults, neonates and paediatrics: 10–15 mL/kg Round to nearest unit where possible	30–120 mins based on volume tolerance	Assess clinical response and repeat laboratory/ viscohaemostatic assay (e.g. ROTEM/ TEG) as per hospital protocol
Fibrinogen deficiency or dysfunction with bleeding or risk of bleeding (e.g. massive transfusion)	**CRYOPRECIPITATE** WB unit: 0.35 g fibrinogen in 35 mL Apheresis unit: 0.80 g fibrinogen in 60 mL	**Body weight (kg)** / **WB units** / **Apheresis units** 5–20 / 2 / 1 20–35 / 4 / 2 35–50 / 6 / 3 50–65 / 8 / 4 Adult / 10 / 5 WB and apheresis can be used to form a dose	30–60 mins	Assess clinical response and repeat laboratory/ viscohaemostatic assay (e.g. ROTEM/ TEG) as per hospital protocol

*Approximate values only, see **transfusion.com.au** for detailed data. Consider special requirements e.g. irradiation.
**All components may be given more rapidly if required, and all must be completed within 4 hours of removal from controlled storage.
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05 LANYARD CARDS

Warfarin Reversal Card

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Management of patients on warfarin therapy with high INR and WITHOUT bleeding

INR	Bleeding risk	Warfarin	Vitamin K	PTX-VF	Check INR	Comments
INR higher than therapeutic range but < 4.5		Reduce or omit next dose				Resume warfarin at reduced dose when INR reaches therapeutic range
INR 4.5–10.0	Low	Cease			Within 24 h	
	High	Cease	1–2 mg PO or 0.5–1 mg IV			
INR > 10.0	Low	Cease	3–5 mg PO or IV		Within 12 h	
	High	Cease	3–5 mg PO or IV	15–30 IU/kg		

Suggested doses of Prothrombinex-VF to reverse the anticoagulant effect of warfarin according to initial and target INR

Patient's initial INR	1.5–2.5	2.6–3.5	3.6–10.0	> 10.0
Target INR 0.9–1.3	30 IU/kg	35 IU/kg	50 IU/kg	50 IU/kg
Target INR 1.4–2.0	15 IU/kg	25 IU/kg	30 IU/kg	40 IU/kg

Adapted from ASTH. An updated consensus for warfarin reversal. MJA. 2013;198(4):198–199

Updated May 2017

See over for guidelines WITH bleeding

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05 LANYARD CARDS

Warfarin Reversal Card

Australian Red Cross BLOOD SERVICE

Management of patients on warfarin therapy WITH bleeding

INR	Bleeding risk	Warfarin	Vitamin K	PTX-VF	FFP	Check INR	Comments
INR ≥ 1.5 with life-threatening (critical organ) bleeding		Cease	5–10 mg IV	50 IU/kg	150–300 mL **If PTX-VF not available** administer FFP 15 mL/kg	In 20 mins	Resume warfarin when bleeding ceased and adjust dose to maintain INR within therapeutic range
INR ≥ 2.0 with clinically significant bleeding (not life-threatening)		Cease	5–10 mg IV	35–50 IU/kg	**If PTX-VF not available** administer FFP 15 mL/kg	In 20 mins	
Any INR with minor bleeding or INR > 4.5 with minor bleeding	Low	Cease				In 24 h	Resume warfarin at reduced dose when INR reaches the therapeutic range
	High	Cease	Consider 1–2 mg PO or 0.5–1 mg IV				

Adapted from ASTH. An updated consensus for warfarin reversal. MJA. 2013;198(4):198–199

See over for guidelines WITHOUT bleeding and suggested doses of Prothrombinex-VF

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