

Blood Product Administration in PICU and NNU

Safety

Transfusion safety

- Make sure the **right** patient gets the **right** blood – always adhere to the pre-transfusion check on the back of the Blood Transfusion Record
- Start blood products within **30 minutes** of issue and complete within **4 hours**
- The Blood Transfusion Record is a legal document and must be filed in the medical record on completion of transfusion

Immediate management of suspected transfusion reaction

Recognise

- Fever
- Chills
- Hypotension/hypertension
- Pain (along IV site, chest or back)
- Acute respiratory distress/stridor/wheeze
- Dark urine
- Bleeding, oozing (DIC)
- Urticaria (hives)

React

- **Stop transfusion** (leave IV line in place), then:
 - Provide emergency patient care
 - Arrange immediate medical review
 - Keep IV line open with N/Saline (flush IV cannula or attach side arm)
 - Repeat pre-transfusion check

Report

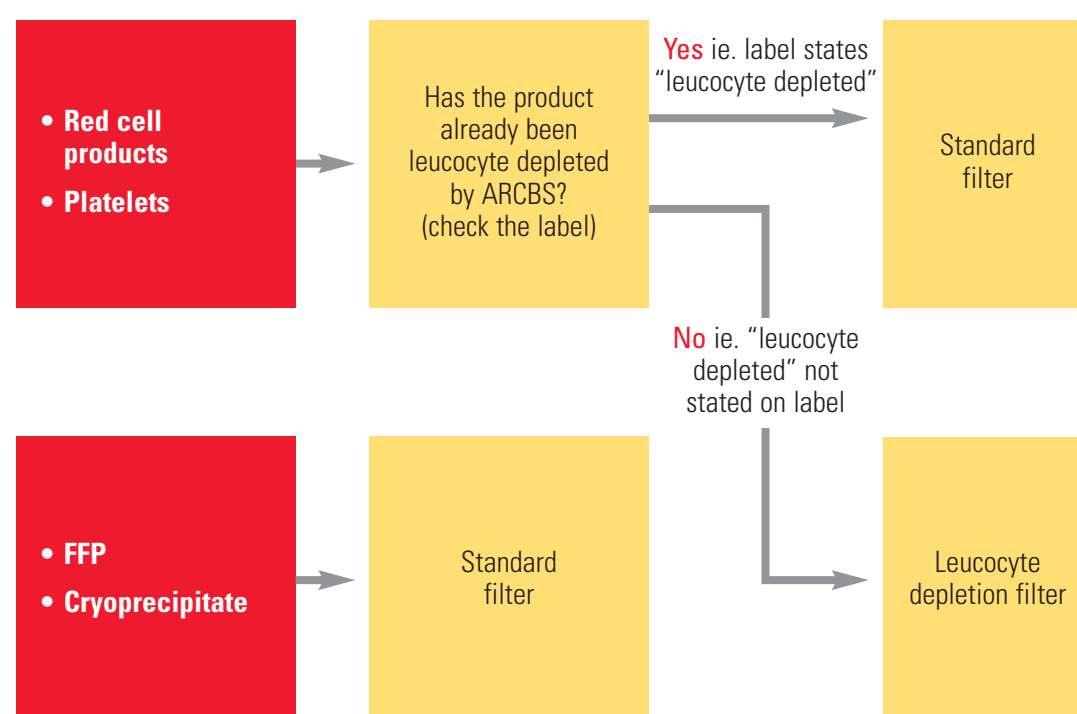
Further detail on reverse of Blood Transfusion Record and Blood Transfusion Website

Care of transfused patients

- Monitor your patient for adverse effects of transfusion, observe closely during the first 15 minutes
- As a minimum take and record vital signs (T, P, BP)
 - before starting
 - 15 minutes after commencement
 - on completion of each pack of red cells/platelets/FFP/cryoprecipitate

Blood filters

Which filter should I use?



*Not sure that the product has been leucocyte depleted? – ring hospital blood bank on 5829

About blood filters



1. Dispensing pin may be used with McGaw
2. McGaw
3. Baxter neonatal set



Filter type	Standard (170–260µm)	Leucocyte depletion for red cells
Purpose	To filter out large clots and aggregates	To filter out contaminating leucocytes to <math><1 \times 10^6</math> (also removes large clots and aggregates)
Clinical indication	For administration of FFP, cryoprecipitate, and leucocyte depleted red cells and platelets	Use for red cell products that have not been leucocyte depleted at ARCBS
Filters how many packs?	Change when flow rate compromised or at least 12 hourly	1 pack of red cells
Can be flushed with N/saline?	Yes	No
Brand/name	McGaw In-line blood filter Baxter neonatal transfusion set Tuta blood/sol. Admin pump set	Terumo Immugard III-RC
Stores order number	McGaw 001466 Baxter 948942 Tuta 304633 Dispensing pin 301502	301371

Note that most platelet products are leucocyte depleted by ARCBS. Check the product label – if "leucocyte depleted" not stated, administer via Terumo Immugard III-PL (leucocyte depletion filter for platelets)

Common blood products

Blood product	Volume (approx.)	Irradiation required?	Maximum infusion/hang time#
Red cell products			
Red cells Leucocyte depleted	>200mls	Yes (Irradiated just prior to pick up from hospital blood bank)	4 hours
Red cells leucocyte Depleted paediatric (in quad packs "Pedipak")	25–100mls		
Red cells	>240mls	No	6 hours
Red cells Buffy coat removed	>230mls		
Pump blood (post cardiac bypass)	Variable		
Platelet products			
Platelets leucocyte depleted	40–60ml	Yes Irradiated at ARCBS (ARCBS = Australian Red Cross Blood Service)	4 hours (generally infused at a rate approximately 1–1½ x maintenance unless active bleeding)
Platelets pooled in T-Sol Leucocyte depleted	>240ml		
Platelets apheresis Leucocyte depleted	100–400ml		
Platelets apheresis Leucocyte depleted Paediatric	40–60ml		
Fresh frozen plasma (FFP)	150ml, 300ml or paediatric (av. 60ml)	No	4 hours
Cryoprecipitate	10–40ml	No	4 hours
Albumex 4 Albumex 20	50ml, 500ml 10ml, 100ml	No	Up to 24 hours (single use only—do not respice)

Maximum infusion/hang time is from spiking blood pack until completion of infusion

Leucocyte depletion

What does it do?

Removes leucocytes to less than 10^6 per blood component

Which products?

Cellular products (platelets and red cells) even if CMV -ve

Why do it?

- Reduces the risk of CMV transmission when CMV -ve products are not available
- Reduces frequency of recurrent febrile reactions
- Reduces alloimmunisation to HLA and leucocyte antigens

When?

Some products are leucocyte depleted by ARCBS – check the product label

Which patients?

All PICU & NNU patients

Irradiation*

What does it do?

Destroys donor lymphocyte's ability to divide (does not remove/destroy them)

Which products?

Cellular products (platelets, red cells, granulocytes)

Why do it?

Prevents Transfusion-Associated Graft Versus Host Disease (TA-GVHD)

When?

Ring blood bank to request irradiation of unit prior to collection – (allow at least 5 minutes)

Which patients?

All PICU & NNU patients

* Life-saving transfusion should not be delayed while waiting for irradiated blood products

Compatible ABO groups

Group identical blood products should be given. However, in circumstances where this is not possible, a non-identical but compatible group may be issued.

Recipient ABO group	ABO group of compatible red cells					ABO group of compatible FFP/cryoprecipitate				
	Group	O	B	A	AB	Group	O	B	A	AB
AB		★	★	★	★					★
A		★		★					★	★
B		★	★				★			★
O		★					★	★	★	★

What about platelets?

Should ideally be compatible with the recipient's red cells. However due to supply issues cross grouping may be necessary – consult with Haematologist on call.

Neonatal testing – ASBT protocol

(Australian and New Zealand Society of Blood Transfusion protocol for pre transfusion testing in the neonate)

What is it?

A protocol that allows issue of red cell products to suitable infants without repeated crossmatching

Which infants?

- Under 4 months of age
- Ongoing need for blood
- Crossmatch meets lab criteria (blood bank will inform requesting clinician if not eligible)

How to request ASBT?

- Request "ASBT protocol" with first crossmatch
- Indicate if any previous transfusion

Ordering Blood

Once on ASBT crossmatch not required, order blood by telephoning hospital blood bank (Xn 5829)

Cardiac Surgery

Babies on ASBT requiring whole blood for cardiac surgery will require a crossmatch prior to surgery. The ASBT protocol can resume post-operatively

Recipient ABO group	ABO group of compatible red cells					ABO group of compatible FFP				
	Group	O	B	A	AB	Group	O	B	A	AB
AB	★	★	★	★	★					★
A	★			★					★	★
B	★	★					★			★
O	★					★	★	★	★	★

About Blood Filters

Filter Type	Standard (170-260µm)	Leucocyte depletion for platelets	Leucocyte depletion for red cells
Purpose	To filter out large clots and aggregates that accumulate during storage	To filter out contaminating leucocytes to < 1 X 10 ⁶ (also removes large clots & aggregates)	To filter out contaminating leucocytes to < 1 X 10 ⁶ (also removes large clots & aggregates)
Filters how many packs?	Up to 4 packs of red cells (change at least 12 hourly or earlier if flow rate compromised)	Up to 10 packs of single donor platelets (=2 packs of pooled platelets)	1 pack of red cells
Can be flushed with N/Saline?	Yes	No	No
Brand/name	† McGaw "In-line blood filter IV set"	Terumo Immugard III-PL	Terumo Immugard III-RC
Stores Order Number	001466	305291	301371

† NB Some IV lines incorporate a standard filter eg. Tuta "Blood/Solution Administration Pump Set" (PICU/theatre)