

# Clinical Guidelines (Hospital)

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## Administration of fresh blood products

### Introduction

This guideline refers to the administration of fresh blood products only (please see definition)

This guideline provides a framework for clinicians administering fresh blood products at The Royal Children's Hospital.

### Definition of Terms

Fresh blood products include:

- Red Blood Cells (RBC)
- Platelets (Plts)
- Fresh Frozen Plasma (FFP)
- Cryoprecipitate (Cryo)

ARCBS- Australian Red Cross Blood Service

WHO- World Health Organisation

NHRMC- National Health and Medical Research Council

ANZSBT- Australian and New Zealand Society of Blood Transfusion

### Standards

The administration of fresh blood products is governed by the standards and recommendations published by WHO, ARCBS, NHRMC and ANZSBT.

### Consent

Refer to Hospital Clinical Guideline 'Blood Transfusion, consent and documentation'

### Picking up blood

A Blood Bank Release Order is required for all products to be picked up from the blood bank. The release order can be completed by all clinical staff (nursing and medical). Attach patient identification label, sign and date form and indicate which product is to be collected.

- Note that FFP and Cryo are thawed (in a temperature monitored water bath) by blood bank prior to issue. Telephone blood bank when these products are required, allow 30 minutes for thawing.
- The person picking up the blood from blood bank must check the patient details on the blood bank release order and those on the blood pack tag. If there is any discrepancy, this must be resolved before leaving the blood bank.
- If a blood product is not used it should be returned to blood bank within 30 minutes of allocation for the purpose of updating the laboratory database. This ensures the product is not recorded as being transfused to a particular patient.

## Pretransfusion checks

When administering any fresh blood product the following checks must be made:

1. Prior to collecting the blood from blood bank ensure the patient has patent IV access and is ready to receive the transfusion.
2. Check medical orders. Are the product type, special requirements and administration requirements correct?
3. To ensure the right patient receives the right blood product the following checks must be made at the bedside prior to administration of the blood product:
  1. Patient identification. Check the name, DOB and UR on the blood transfusion record, blood pack and tag and on the patient's wristband. Are they identical?  
*NB: If parent or guardian are present or child is of appropriate developmental age include them in the patient identification checking process.*
  2. Blood product identification. Check the pack number on the blood transfusion record, pack label and the pack. Are they identical?
  3. Blood Group. Check the blood group (ABO and RhD) of the product on the blood transfusion record, pack tag and pack. Do they match?
  4. Check expiry date. Is the product in date?
  5. Check blood product for any signs of leakage, clots or abnormal colour
  6. Complete documentation: sign, date, start and finish time the Blood Transfusion Record and file in the patient's medical record.

**If there are any discrepancies with any of the above please contact blood bank on x5829, before going any further.**

## Storage of Fresh Blood Products

- Fresh blood products should **never** be stored in clinical areas.
- **All** fresh blood products should begin administration within **30 minutes** of collection from blood bank or returned to blood bank for correct monitored storage.

**All** Fresh blood products need to be administered within **four hours** of the product bag being spiked.

## Staff Safety- Personal Protection Equipment

It is the responsibility of all staff to familiarise themselves with the hospital policy [Prevention of patient to patient transmission of blood - borne viral infections](#).

## Care of transfused patients

The following must be undertaken for each unit of fresh blood product that the patient receives

- Monitor your patient for adverse effects of transfusion; observe closely during the first 15 minutes.
- As a minimum take and record vital signs (Temperature, Pulse, Respiration and Blood Pressure) on the observation chart
  - Before starting the transfusion
  - 15 minutes after commencement of the transfusion
  - On completion of each pack of fresh blood

This is a minimum requirement. Some clinical areas may require more frequent observations particularly in unstable/unconscious patients.

Patients should be observed closely during the first 15 minutes of transfusions some life-threatening reactions may occur after the infusion of only a small amount of blood. Where possible, patients should be informed of possible symptoms of a transfusion reaction and should inform staff immediately if they feel unwell during transfusion.

Refer to the blood transfusion website for information on the adverse effects of blood transfusion, or the later section on transfusion reactions.

## Blood Filters/Giving Sets

Standard Blood Filter (170-260 microns)

- A standard blood filter must be used for all fresh blood products unless you are using a leucocyte depletion filter.
- It filters large clots and aggregates from the blood preventing them entering the patient.
- It can be used for up to 4 units of fresh blood.
- A standard blood filter should be changed every 12 hours, or earlier if the flow rate is compromised.
- Platelets should not be administered through a blood filter that has been used for red cells.
- Standard blood filters can be flushed with normal saline.

## Leucocyte depletion filters

- A leucocyte depletion filter is required if blood is prescribed as leucocyte depleted or reduced and the blood label does not state that the product has been leucocyte depleted or reduced at ARCBS (please check the blood label).
- If a leucocyte depletion filter is used a standard blood filter is not required.
- There are different leucocyte depletion filters for red cells and platelets.
- Leucocyte depletion filters filter out 99.9% of leucocytes from the blood product.
- Buffy coat poor products are not leucocyte depleted.

## Platelets

- Leucocyte depletion filters for use with platelets can be used for 10 units of single donor units or 2 pooled platelets. Note that all platelet products produced by ARCBS in Victoria are leucocyte depleted.

## Red Blood Cells

- Leucocyte depletion filters for red blood cells can only be used for 1 unit of red cells.

## Giving Sets

- It is recommended practice to change intravenous giving sets used for fresh blood product transfusion every 12 hours or sooner if warranted.

## Infusion Pumps

- Infusion devices which have been validated for the administration of blood and blood products may be used. These include:
- IMED GEMINI (validated for red cells up to 999mls/hour and platelets up to 150 mls/hour)
- IVAC 560, IVAC 565 (validated for red cells and platelets up to 999mls/hour).
- Syringe pumps are an acceptable mechanism for delivering blood products to infants, when these are used the blood product pack should remain at the bedside, whilst the transfusion is in progress. Transfuse small volumes via the Baxter Neonatal Transfusion set where possible so that the pack remains inline.

## Blood Warmers

Consider warming red blood cells in the following circumstances:

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- Patient's receiving massive transfusion
- The hypothermic patient requiring transfusion
- Exchange transfusion

Beigler blood warmers are used at RCH, they can be found on ICU/Oncology and Emergency. Blood should **NEVER** be warmed via a microwave, immersion in water or by placing it on heat generating machinery.

## Compatible fluids and medications

In general, no medications or solutions should be added to or infused through the same tubing as blood products except for sodium chloride 0.9%, ABO compatible plasma or 4% Albumin.

Co-administration of morphine (1mg/ml in sodium chloride 0.9%), pethidine (10mg/ml in sodium chloride 0.9%) and ketamine (1mg/ml in sodium chloride 0.9%) has been shown to not adversely affect red blood cells or these medications. Where co-administration is required the blood product and medication should be administered via separate IV lines, with the blood product being connected closest to the patient to minimise mixing.

If other medications are required during a blood transfusion the transfusion must be stopped and the line flushed with sodium chloride 0.9% before and after administration of the medication, the blood transfusion can then recommence.

Fluids containing glucose are not compatible with red blood cells, they cause clumping of the red blood cells.

Crystalloid or colloid solutions that contain calcium should never be added to or administered concurrently with any blood product. Calcium reverses the anticoagulant citrate, causing red blood cells to clot.

## ICU/Neonates/Oncology

- **All** red cell and platelet products used in ICU/Neonate or Oncology must be leucocyte depleted and irradiated prior to transfusion.

## Transfusion Reactions

### Recognise

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

## React

**Stop transfusion** (leave IV line in place)

- Provide emergency patient care
- Arrange immediate patient review
- Keep IV line open with N/Saline
- Repeat pretransfusion check

## Report

Further detail on the reverse of the blood transfusion record and blood tag.

## Links

- [RCH blood transfusion website](#)
  - RCH "[Blood Product Administration](#)" Poster (non PICU/NNU) (PDF 82 KB)

## Evidence table

- [Evidence table for Administration of fresh blood products](#) (PDF)

## Acknowledgements

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