



## TRANSFUSION MEDICINE PROTOCOLS

# Red Blood Cells (RBC) Prescription and Administration

This document should be read in conjunction with the [Disclaimer](#)

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## Description

- Universally Leucocyte Depleted (leucocyte count  $<1.0 \times 10^6/L$ ).
- Adult Pack Hct adjusted to 0.50 - 0.70, volume  $260 \pm 19$  mL (mean volume  $\pm 1$  standard deviation).
- Adult Pack - Hb  $>40g$ , Haemolysis at expiry  $<0.8\%$ .
- Paediatric RBC minipacks may be supplied in sets of 4 units from 1 single donor. These units are Group O, CMV negative and are used to reduce donor exposure in neonates requiring multiple transfusions.
- Paediatric Minipack Volume 61 mL  $\pm 5$
- Paediatric Minipack Hct adjusted to  $0.63 \pm 0.03$

## Indications

- Treatment of symptomatic anaemia where there is insufficient time to treat with specific medications such as iron, vitamin B12, folic acid or recombinant erythropoietin.
- Replacement of significant traumatic or surgical blood loss.

## Appropriate use in stable patients > 4 months (corrected) age

Hb	Considerations
<60 g/L	Lower thresholds may be acceptable in patients without symptoms and / or where specific therapy is available (e.g. iron).
60-90 g/L	Likely to be appropriate during surgery associated with major blood loss or if there are signs and symptoms of impaired oxygen transport.
>80 g/L	May be appropriate to control anaemia-related symptoms in a patient on a chronic transfusion regimen or during marrow suppressive therapy.
>90 g/L	Not likely to be appropriate unless there are specific indications.

## Specific factors to consider

- Patient's cardiopulmonary reserve — if impaired, it may be necessary to consider transfusing at a higher threshold.
- Volume of blood loss – attempt to quantify the volume of blood loss before, during and after surgery, to ensure blood volume replacement is appropriate.
- When considering the decision to transfuse and the dosage, it is best to undertake careful clinical assessment of patients. A single-unit transfusion practice approach should be undertaken, with further clinical assessment after transfusion. Further transfusions are not required if the signs and symptoms are relieved. Clinical experience suggests that, in many patients, it may take 24 hours or more for patients to report an improvement in symptoms.
- In some situations, prescribing more than one unit at a time may be appropriate; for example, where there is significant ongoing or anticipated blood loss, severe anaemia or the patient has chronic transfusion requirements (e.g. for bone marrow failure). The number of units prescribed, however, should still be carefully based on individual patient factors.

## Shelf life & storage

Red cells may be stored up to 42 days at 2-6°C with appropriate additive. They must be stored in a designated, monitored, blood fridge. **DO NOT** store in a ward fridge.

## Ordering

In-date Group & Hold (G&H) sample required for compatibility testing. ABO and Rh D compatibility required.

## Transfusion dose, volume and rates

Blood Product	Red Cell Volume Formula	Pack Size	Rate
<p><b>Red Blood Cells</b></p> <p>All ARCBS issued red blood cells are leucocyte depleted/filtered and therefore do not require bedside leucodepletion</p> <p><b>DO NOT STORE IN WARD FRIDGE</b></p>	<p><b>Neonates:</b> As per WNHS Neonatal Policy 20mL/Kg</p> <p>Dose will depend on indication. If advice required, contact Neonatologist.</p> <p><b>For patients &lt;20 kg,</b> prescribe volume in mL.</p> <p><b>Adults:</b> One RBC unit will raise the Hb by approximately 10g/L in average sized adult. Dose will depend on indication. If advice required, contact Haematologist.</p>	<p><b>Pedi pack:</b> 61 ± 5 mL/pack (mean volume ± 1 standard deviation)</p> <p><b>Adult pack:</b> 260 ± 19 mL/pack (mean volume ± 1 standard deviation)</p>	<p>MUST start within 30 minutes of issue OR notify TMU.</p> <p><b>Duration:</b> Adults usually 60-120 mins per unit*</p> <p><i>NB:* Transfusion duration depends on clinical indication and medical history, but infusion MUST NOT exceed 4 hours from issue or removal from monitored blood fridge</i></p> <p><b>Rate:</b> Start transfusion slowly (e.g. half the hourly rate) for first 15 minutes where possible. If no adverse effects occur increase transfusion to hourly rate.</p>

### Consent

Consent must be documented for all fresh and plasma derived blood products in the patient's medical notes. Refer to [WNHS Transfusion Medicine Blood Product Prescription Consent and Refusal](#)

### Consumer Information

A range of patient information leaflets are available for use at WNHS:  
Adults & Babies:

[Blood Transfusion - KEMH Patient Information Leaflet](#)

[Blood Transfusion for your Baby - KEMH Patient Information Leaflet](#)

Pregnant Women:

[Anti D – You and Your Baby](#)

[Anti D – Information regarding Anti D for women with early pregnancy loss.](#)

Surgical Patients:

[Blood Transfusion – Intraoperative Cell Salvage](#)

An interpreter should be provided for non-English speaking patients/guardians. There is also a Multi-cultural consent checklist with brochures available in different languages available on the ARCBS website [Multi cultural consent checklist](#) .

All WNHS consumer leaflets are available from Blood Bank or may be viewed on the [WNHS Intranet Consumer information link](#)

## Administration of RBC

All blood products must be double checked and confirmed at the point of administration by the two nurses who prepared the infusion.

- **WARNING** Ensure RIGHT PATIENT – RIGHT BLOOD. Refer to [WNHS Checking Procedure for Blood Products](#).
- Informed consent must be gained from the parent/carer and documented prior to commencement. Refer to [WNHS Transfusion Medicine Blood Product Prescription Consent and Refusal](#)
- Explain procedure to patient/parent, including potential adverse reactions and symptoms.
- Record baseline observations: TPR and BP and general patient status including pre-existing rashes.
- Administer pre-medication, if prescribed, at a suitable time before the infusion commences to allow it to be effective.
- Peripheral intravenous access should be sufficient to maintain an adequate rate for the transfusion without risk of haemolysis. 18-20 Gauge is recommended for adults and 22-24 Gauge or larger is recommended for paediatric patients.
- Transfusion must be commenced within 30 minutes of arrival to ward and must be completed within 4 hours of issue from Transfusion Medicine Unit or removal from cold storage.
- Red cells may be administered by gravity, via a B line or an infusion pump or Plum A+ Pump but a dedicated intravenous blood administration set containing a 170-200 micron filter designed to remove large aggregates formed during storage MUST always be used.
- For neonates and infants, special paediatric giving sets or screen filters for administration by syringe may be used provided they incorporate a 170-200 micron filter. Refer to [WNHS Blood Transfusion – Equipment and Administration](#)
- Sets should be primed with 0.9% Sodium Chloride and used according to the manufacturer's instructions.
- Administer via a separate IV line. DO NOT mix/piggy back this product with other medications or IV fluids.
- The line may be flushed with Normal Saline following infusion.

- Routine warming of blood is NOT necessary. Blood warmers should be used when there is a significant risk of transfusion induced cardiac hypothermia (adult flow rates of >50 mL/kg/hr, children flow rates of > 15 mL/kg/hr), exchange transfusions or patients with clinical significant cold agglutinins. Refer to [WNHS Blood Transfusion – Equipment and Administration](#)

### Monitoring of transfused patient

Severe reactions are most likely to occur within the first 15 minutes of the start of each component and patients MUST be closely observed during this period. It is preferable that the patient be located in an area where they can be observed by clinical staff throughout the transfusion.

Prior to commencement of the transfusion, patients should be appropriately educated and advised to report to staff immediately any adverse effects that they may experience during or after the transfusion.

Vital signs (temperature, pulse, respiration, blood pressure) must be undertaken and recorded on the observation chart in the medical notes to enable the information to be retrieved later, if necessary.

- Baseline TPR and BP
- TPR and BP at 15 minutes and then hourly until completion.
- TPR and BP on completion.

This is a **MINIMUM** requirement, some clinical areas may require more frequent observations such as unaccompanied, anaesthetised or unconscious patients, clinically unstable or patients who are unable to verbalise symptoms due to mental or physical limitations.

The possibility of a transfusion reaction should be considered in the event of any deterioration in the patient's condition. For further information on Transfusion Reactions, Management and Classification see [WNHS Management of Transfusion Reactions and Adverse Events](#)

### Care and management of a transfusion reaction

Symptoms of acute reactions may occur up to 24 hours following administration of the blood product. Delayed transfusion reactions may occur days or even weeks following the transfusion episode.

Signs and symptoms include: Rise in temperature > 1 degree from baseline, chills/rigors, urticarial rash, hyper or hypotension, tachycardia, dyspnoea, pain in chest, loin or back, nausea/ vomiting, unexplained bleeding e.g. haematuria

If you suspect an adverse reaction:

- **STOP** transfusion.
- Provide emergency patient care.
- Arrange immediate medical review. Code Blue if necessary.

- Keep IV line open with normal saline (do not flush existing line – use a new IV line if required).
- Monitor vital signs at least every 15 minutes until stable (document in medical record).
- Refer to [WNHS Management of Transfusion Reactions and Adverse Events](#) as a guide to further treatment and management of the patient.
- All suspected reactions should be reported to TMU for investigation.
- Check Patient ID, labels and blood packs for discrepancies

### **Completing the transfusion**

If there is any suspicion of a transfusion reaction, Transfusion Medicine Unit must be informed of the clinical details and the product should be returned. Refer to [WNHS Management of Transfusion Reactions and Adverse Events](#)

Empty blood component bags/bottles should be discarded according to the hospital policy for disposing of clinical waste. There is no requirement to return used bags to the Transfusion Medicine Unit unless a suspected transfusion reaction has occurred, or in a massive transfusion situation where additional testing on the blood component bags may be required.

Ensure documentation is complete.

### **Documentation**

The following must be documented in the medical record:

- Indication for blood product transfusion.
- Consent for blood product.
- Blood product prescription.
- The bag sticker should be placed on the Transfusion Medicine Record (MR735), the date, start and stop times and checking signatures should be completed in the relevant boxes.
- Patient's observations, general condition during the transfusion and adverse effects and their management.
- Volume administered.
- Any equipment used (e.g. pumps/blood warming devices including operating temperatures).
- Outcome of the transfusion in terms of desired effect.

## References

- Australian & New Zealand Society of Blood Transfusion (ANZSBT) & Royal College of Nursing Australia (RCNA) Guidelines for the Administration of Blood Products 2<sup>nd</sup> Edition, December 2011  
<http://www.anzsbt.org.au/publications/index.cfm#societyg>
- [ARCBS Blood Component Information Booklet](#)
- Guideline on the investigation and management of acute transfusion reactions. Prepared by the BCSH Blood Transfusion Task force. British Journal of Haematology 2012, 159, 143-153.
- Blood Transfusion: crucial steps in maintaining safe practice. BNJ; 2000. 9(3): 135-138. Bradbury, M Cruickshank, J.
- Flippin' Blood BloodSafe SA / ARCBS Second Edition June 2012  
<http://resources.transfusion.com.au/cdm/ref/collection/p16691coll1/id/20>
- Management of Massive Blood Loss – Template: Br J Anaesth. 2002, 85, 487 - 491  
Guideline BJH 2006 135 634-641
- National Blood Authority, Patient Blood Management Guidelines  
<http://www.blood.gov.au/pbm-guidelines>

## Related policies

- National Safety and Quality Health Service Standards, October 2012. [Standard 7: Blood and Blood Products](#)
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## Related WNHS policies, procedures and guidelines

- [KEMH Blood Transfusion Checking Procedure](#)
- [WNHS Transfusion Medicine Blood Product Prescription Consent and Refusal](#)
- [Women & Newborn Health Service Patient Identification Policy](#)
- [WNHS Checking Procedure Pre Administration of Blood Products](#)
- [WNHS Blood Transfusion Equipment and Administration](#)
- [WNHS Management of Transfusion Reactions and Adverse Events](#)
- [Neonatology Clinical Care Guidelines](#)
- [Obstetrics and Gynaecology Clinical Guidelines](#)

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