



TRANSFUSION MEDICINE PROTOCOLS

Fresh Frozen Plasma and Cryoprecipitate Administration

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

Contents

Description	1
Indications	2
Contraindications	2
Shelf Life and Storage	2
Ordering	2
Transfusion Dose, volume and rate	3
Consent	3
Administration of Fresh Frozen Plasma and Cryoprecipitate	4
Monitoring of Transfused Patient	5
Care and Management of Transfusion Reaction	6
Completing the Transfusion	6
Documentation	6
References	7

	Fresh Frozen Plasma (FFP)	Cryoprecipitate (CRYO)
Description	<p>FFP is separated from whole blood and frozen within 18 hours of collection.</p> <p>FFP contains all coagulation factors including Factor VIIIc >0.7 IU/mL.</p>	<p>Cryoprecipitate (cryo) is separated from FFP after thawing at 1-6°C and recovering the precipitate, which is then refrozen.</p> <p>Cryo contains most of the Factor VIII, Fibrinogen, Factor XIII, vWF and fibronectin from the FFP. Fibrinogen >140mg/unit, FVIIIc >70 IU/unit.</p>

Indications	<p>Reverse warfarin in presence of life-threatening bleeding. Use in addition to vitamin-K-dependent concentrates.</p> <p>Thrombotic thrombocytopenic purpura (TTP).</p> <p>Bleeding or abnormal coagulation in: acute DIC, massive transfusion or cardiac bypass, liver disease, coagulation inhibitor deficiencies.</p>	<p>Treatment of fibrinogen deficiency or dysfibrinogenaemia when there is clinical bleeding, an invasive procedure, trauma or acute disseminated intravascular coagulation (DIC).</p>
Contraindications	<p>Not generally considered appropriate:</p> <ul style="list-style-type: none"> • When coagulopathy can be corrected more effectively with specific therapy such as Vitamin K, cryoprecipitate, Factor VIII or other specific factor concentrate. • For volume replacement when other volume expanders such as 0.9% Sodium Chloride, Albumex 4%, etc can be used. • For plasma exchange procedures. 	<ul style="list-style-type: none"> • Haemophilia, von Willebrand's disease or deficiencies of factor XIII. • Fibronectin unless alternative therapies are unavailable.
Shelf life and storage	<ul style="list-style-type: none"> • 1 year at below – 25°C in a Transfusion Medicine Unit (TMU) monitored freezer. • Thawed at below 41°C in a monitored Transfusion Medicine thawing bath for immediate infusion. • Transfuse immediately after thawing and complete within 4 hours of issue from TMU. 	<ul style="list-style-type: none"> • 1 year at below –25°C in a TMU monitored freezer. Thawed at below 41°C in a monitored Transfusion Medicine Unit thawing bath for immediate infusion. • Transfuse immediately after thawing and complete within 4 hours of issue from TMU.
Ordering	<ul style="list-style-type: none"> • Telephone order to TMU or by completed Transfusion Request Form. • ABO compatibility routinely required. • Allow 20 mins for TMU to thaw FFP 	<ul style="list-style-type: none"> • Telephone order to TMU or by completed Transfusion Request. • ABO compatibility routinely required. • Allow 5 mins for TMU to thaw cyro.

Transfusions dose volume, duration and rates

Blood Product	Paediatric Volume Formula	Pack Size	Rate
Fresh Frozen Plasma (FFP) DO NOT REFRIGERATE	Dose depends on clinical situation – contact Haematologist for advice Suggested therapeutic dose is 10-15 mL/Kg	Adult pack: 280 ± 14 mL (mean volume ± 1 standard deviation) Pedi pack: 70 ± 4 mL (mean volume ± 1 standard deviation)	MUST start within 30 minutes of issue OR notify TMU. Duration: Usually 30 mins per unit* <i>NB:* Transfusion duration depends on clinical indication and medical history, but infusion MUST NOT exceed 4 hours from issue.</i> Rate: Start transfusion slowly, where possible. Increase rate (in accordance with prescription) if no adverse reactions.
Cryoprecipitate (Cryo) DO NOT REFRIGERATE	Dose depends on clinical situation and patient size, and guided by laboratory assays of coagulation factors – contact Haematologist for advice (A common dose for Fibrinogen replacement is 1-1.5 units per 10kg patient body weight each dose)	Pack: 36 ± 2 mL (mean volume ± 1 standard deviation)	MUST start within 30 minutes of issue OR notify TMU. Duration: Often given STAT - As per Medical Officer's instructions* <i>NB:* Transfusion duration depends on clinical indication and medical history. Transfuse immediately after thawing and complete within 4 hours of issue.</i>

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 fresh frozen plasma and cryoprecipitate

All blood products must be double checked and confirmed at the point of administration by the two staff members 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.

- FFP and Cryoprecipitate MUST be administered through a dedicated intravenous giving set containing a 170-200 micron filter via a B line or an infusion pump or to gravity.
- 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.
- Transfusion may be as fast as tolerated e.g. FFP is usually infused over 30 minutes and cryoprecipitate is often administered STAT in treatment of acute haemorrhage.
- 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 warning 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 2nd 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>
- FFP - The Australian Blood Service (ARCBS) Blood Component Information
http://www.transfusion.com.au/blood_products/components/plasma
- Cryoprecipitate The Australian Blood Service (ARCBS) Blood Component Information
http://www.transfusion.com.au/blood_products/components/cryoprecipitate

Related policies

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

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](#)

File path:	WNHS.HAEM.FreshFrozenPlasmaAndCryoprecipitateAdministration.pdf		
Keywords:	Blood, Prescription, risk of transfusion, transfusion reaction, refusal of blood products, patient blood management guidelines, indication for blood products, special requirements for blood products, irradiated blood products, CMV Fresh Frozen Plasma, FFP, Cryoprecipitate, Cryo, Factor deficiency, low fibrinogen, liver dependant clotting factors Delayed transfusion reaction, allergic transfusion reaction, TRALI, Transfusion Reaction classification, Transfusion observations, management of transfusion reaction and adverse events, post transfusion purpura, transfusion infective shock, Transfusion Reaction Flowchart, reporting a transfusion reaction, transfusion reaction investigation form		
Document owner:	Chair of KEMH Hospital Transfusion Committee		
Author / Reviewer:	Consultant Haematologist, Scientist in Charge Transfusion Medicine, KEMH Transfusion Coordinator		
Date first issued:	01 01 2005		
Last reviewed:	01 06 2015	Next review date:	01 03 2020
Endorsed by:	KEMH Hospital Transfusion Committee	Date:	01 03 2017
Standards Applicable:	NSQHS Standards: 1  Governance, 2  Consumers, 5  Patient ID/Procedure Matching, 7  Blood Products		
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