
Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	1 of 7

PURPOSE AND SCOPE

To order and safely administer Fresh Frozen Plasma (FFP) or Cryoprecipitate Depleted Plasma (CDP), (also called Cryosupernatant) intravenously for prevention or reversal of a coagulopathy or as replacement fluid for Therapeutic Plasma Exchange (TPE) procedures.

Index

1. Emergency Fresh Frozen Plasma/Cryoprecipitate Depleted Plasma
2. Requests for Fresh Frozen Plasma/ Cryoprecipitate Depleted Plasma
3. Transportation of Fresh Frozen Plasma/Cryoprecipitate Depleted Plasma
4. Administering Fresh Frozen Plasma/Cryoprecipitate Depleted Plasma
 - Equipment
 - Product and Recipient Identification Procedure
 - Administration Procedure
 - Points to Note Regarding Administration
5. Transfusion Reactions
 - Signs and Symptoms
 - Nursing Intervention
6. General Information
 - Product Description – FFP
 - CDP (CDP)
 - Indications
 - Product Preparation
 - Storage
 - Dose
 - Blood Groups
7. Haemovigilance
8. References

PROCEDURE

1. Emergency Fresh Frozen Plasma/Cryoprecipitate Depleted Plasma

For emergency FFP/CDP contact Peter Mac Blood Bank (ext 1533) and communicate the urgency of the request.

2. Requests for Fresh Frozen Plasma (FFP)

To make a request for FFP/CDP the doctor must:

1. Either completes the Blood Product Request Form (MR/17A) or phone Peter Mac Blood Bank. Phone Orders require the following patient information; the patient's identification details, blood group, clinical details, indication & a coagulation profile (including fibrinogen).
2. Write the order for FFP/CDP on the Blood Product Prescription Form (MR/61AA) or Apheresis Service Procedure Record Form (MR/57A) for patients having Therapeutic Plasma Exchange.
3. Communicate order to nursing staff.

Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	2 of 7

4. **The indications for FFP/CDP must be documented in the patients medical record.** NHMRC Guidelines are available on each ward and on the reverse of the Blood Product Prescription Form (MR/61AA). Advice regarding the indication & dosing for this product can be discussed with either the Haematopathology staff (Consultant, Registrar or Scientists) or the Clinical Haematology Staff (Consultant or Registrar).

3. Transportation of FFP/CDP

To collect FFP/CDP from Blood Bank:

1. The Medical or Nursing staff are required to complete a Blood Product Release Form.
2. The person collecting the FFP/CDP (generally the PSA) presents the Blood Product Release Form to the Blood Bank Scientist
3. The Blood Bank Scientist logs out the FFP/CDP as a treatment episode from the Release Fridge and places the unit(s) in a transport eski for delivery to the ward.

4. Procedure for Administering Fresh Frozen Plasma and Cryoprecipitate Depleted Plasma

Equipment Required

NOTE: All blood components, except Granulocytes, are to be administered through an intravenous line incorporating a standard (170-200µm) filter to remove clots and aggregates. Plum A+ Administration sets are filter free lines, therefore blood components need to be administered via an Add-A-Line Secondary Medication Set through channel B.

- Plum A+ Administration set
- Add-A-Line Secondary Medication Set
- Transfusion Report Form (MR/17AA)
- Blood Product Prescription Form (MR/61AA)
- Non-sterile gloves
- Safety Goggles

Product and Recipient Identification Procedure

Two Division 1 Registered Nurses or Division 1 Nurse and RMO confirm that the following points correspond immediately prior to the transfusion, **at the patient's bedside.**

The transfusion **must not** commence if any discrepancies are noted. Clarification must be sought by contacting the Blood Bank Scientist

1.	Patient's full name and date of birth (DOB)	<ul style="list-style-type: none"> • Verbally with the patient (where possible) • Patient's Identification Band • Transfusion Report Form (MR/17AA) • Blood Product Prescription Form (MR/61AA) • Patient Label on Product (Name only)
2.	Patient's Unit Record Number (UR Number)	<ul style="list-style-type: none"> • Patient's Identification band • Transfusion Report Form (MR/17AA) • Blood Product Prescription Form (MR/61AA) • Patient Label on the product

Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	3 of 7

3.	ABO Blood Group of the patient	<ul style="list-style-type: none"> • Transfusion Report Form (MR/17AA) • Patient Label on the Product
4.	ABO Blood Group of the Product	<ul style="list-style-type: none"> • ARCBS Label on the Product • Transfusion Report Form (MR/17AA) • Patient label on the Product
5.	ARCBS Donation Number	<ul style="list-style-type: none"> • ARCBS Label on the Product • Transfusion Report Form (MR/17AA) • Patient label on the Product
6.	Expiry of the Product	<ul style="list-style-type: none"> • ARCBS Label on the Product
7.	Pack Integrity	<ul style="list-style-type: none"> • Pack is intact • Absence of clots, discoloration and foreign bodies
8.	Check to: <ul style="list-style-type: none"> • Ensure the product is labeled as non reactive for Hepatitis B & C, HIV, HTLV 1 & syphillis • Read “additional” scientist comments about the product 	

Both professionals checking the product **must** sign the Transfusion Report Form (MR/17AA) after checking **each unit** of FFP/CDP.

A summary of this checking procedure is tabulated on the Transfusion Report Form.

Administration Procedure

1. Prior to commencing transfusion ensure that the patient has received adequate education and has had an opportunity to ask questions about blood product transfusions and has given implied consent to the transfusion. (In addition to this, the Peter Mac Blood Transfusion Patient Information Brochure may be utilized).
2. Confirm if blood tests for clotting eg. INR, APTT and Fibrinogen are required pre/post transfusion/exchange.
3. Prime the Plum A+ Administration set with Normal Saline 0.9% (Dextrose is compatible; however, Sodium Chloride 0.9% is preferred). It is recommended that there is access to an IV line primed with Normal Saline 0.9% in addition to the Plum A+ administration set for immediate use if a transfusion reaction occurs. (An example of this set up is utilising a 3-way tap at the cannula site connecting a blood giving set and a standard giving set).
4. Connect Add-A-Line Secondary Medication set to channel B and back prime with Normal Saline 0.9%. Connect blood component to Add-A-Line.
5. Prior to commencement of the transfusion a set of baseline observations (temperature, pulse rate, respiration rate, blood pressure and O₂ saturations) needs to be recorded on the reverse of the Transfusion Report Form (MR/17AA)
6. Complete the product checking procedure outlined above at the patient's bedside
7. Instruct patient to report any symptoms such as headache, fever, chills, dyspnoea or itch.
8. Unless otherwise indicated by the patient's clinical condition, the transfusion should proceed no faster than 5mL/min for the first 15 minutes. The patient should be closely observed during this period. If no transfusion reaction is observed the rate can be increased according

Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	4 of 7

to the Blood Product Prescription Form (MR/61AA). (Generally 4-8mL/kg/hr or as the patient tolerates)

Note: It is recommended that the initial volume to be infused (VTBI) is set at that which will be transfused in the first 15 minutes. This ensures close monitoring of the patient and also that observations after the first 15 minutes are undertaken.

Observations (temperature, pulse rate, respiration rate and blood pressure) must be recorded for each unit at the following times:

1. Prior to each transfusion record baseline vital signs
2. **Remain with the patient for the first 5 minutes of the infusion** and observe for adverse effects.
3. Record vital signs after the first 15 minutes of the transfusion
4. Record vital signs at completion of the transfusion.

Continue to closely monitor the patient throughout the duration of the transfusion. More frequent vital signs may be required if the patient becomes unwell, shows signs of reaction or has an unstable condition.

Patients with congestive heart failure, increased intracranial pressure or renal dysfunction will require more frequent monitoring.

9. At completion of the transfusion flush the Plum A+ administration set (Line A) with 30 ml Normal Saline 0.9%.
10. Ensure that the completed Transfusion Report Form (MR/17AA) is filed in the patient's history
11. Dispose of empty blood packs in the appropriate infectious waste bins. (In the event of a transfusion reaction or incomplete transfusion, notify Peter Mac Blood Bank and return blood packs for possible testing.)
12. Collect blood tests for coagulation studies eg. INR, APTT and Fibrinogen as required
13. Complete transfusion reaction column on Blood Products Orders / Prescription Form (MR61AA).

Points to Note Regarding Administration

1. **Regular blood tests** for clotting profile eg. INR, APTT and Fibrinogen are usually done pre and post transfusion/exchange and as clinically indicated. The patient may need to be assessed by the medical officer depending upon the clinical situation.
2. **No premedication** is routinely given before administering FFP/CDP.
3. **Infusion pumps** should be used to administer FFP/CDP, although it can be given directly through a standard IV administration set incorporating a standard (170 to 260 µm) filter. (In the Apheresis setting, FFP is given via the cell separator machine)
4. **IV giving sets** must be changed after completion of the transfusion.

Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	5 of 7

5. **No medications or solutions** should be added to or infused through the same tubing with FFP/CDP except 0.9% Sodium Chloride. (Dextrose is compatible, however, Sodium Chloride 0.9% is preferred).
6. FFP/CDP should be **infused as soon as possible after thawing**, or within 24 hours of storage at 2-6°C in the Blood Product Release Fridge. **DO NOT REFREEZE AFTER THAWING.**
7. FFP/CDP **do not require irradiation or filtration/leukodepletion** as they contain no cellular components.
8. A major risk of excessively rapid infusion is pulmonary oedema.

5. Transfusion Reactions

Signs and Symptoms of a Transfusion Reaction

Dyspnoea, urticaria, fever, shivering/chills, restlessness, anxiety, chest pain, back pain, facial flushing, tachycardia, hypotension, headache, or nausea.

Nursing Intervention (if Adverse Reaction is Apparent or Suspected)

1. Stop infusion/procedure
2. DO NOT REMOVE IV ACCESS
3. Check all vital signs and confirm plasma was intended for recipient
4. Notify the medical officer
5. Initiate appropriate anaphylaxis procedures and treatment if appropriate
6. Complete Patient Safety Incident Report Form, ring Blood bank (ext 1533) communicate a transfusion reaction & return pack(s) to Peter Mac Blood Bank (if indicated).
7. For patients undergoing plasma exchange, document (Australian & New Zealand Apheresis Association) reaction code on procedure record (MR/57A).
8. Return FFP product bags post completion or if transfusion discontinued to Peter Mac Blood Bank in a sealed biohazard specimen bag or eski immediately.

6. General Information

Product Description

Fresh Frozen Plasma is plasma separated from whole blood and frozen within 8 hours of collection. It contains all coagulation factors and has a storage life of 12 months. It is stored at < -25°C.

Cryoprecipitate depleted plasma (CDP) (also called Cryosupernatant) is the supernatant remaining after cryoprecipitate has been removed from FFP. It contains all the coagulation factors in similar amounts to FFP except for reduced amounts of fibrinogen and Factor VIII. CDP is recommended for plasma exchange in Thrombotic Thrombocytopenic Purpura (TTP) and can also be used to reverse coagulopathies.

Indications

Fresh Frozen Plasma may be appropriate to use for the control or prevention of bleeding in patients with multiple coagulation defects, liver disease, or following massive transfusion.

It may be appropriate to use in the urgent reversal of warfarin anti coagulation and treatment of Disseminated Intravascular Coagulopathy (D.I.C.) (Ref. Blood Product Issue Policies, 1997).

Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	6 of 7

Other products i.e. Prothrombinex are also available for reversal of Warfarin and are the preferred method (see anticoagulation guidelines). In the Apheresis setting, CDP or FFP is accepted treatment during plasma exchange as replacement fluid in the treatment of Thrombotic Thrombocytopenic Purpura and Haemolytic Uraemic Syndrome (H.U.S.).

If the INR or Prothrombin time is less than 1.4 times normal, FFP transfusion is unlikely to benefit the patient.

Product Preparation

Fresh Frozen Plasma/CDP is thawed in pathology in a water bath.

Storage

FFP/CDP is stored in the freezer at < -25°C in Blood Bank until thawed.

Once thawed, FFP/CDP should be **infused as soon as possible**, or within 24 hours of storage at 2-6°C in the Blood Product Release Fridge.

FFP/CDP MUST NOT BE RE-FROZEN AFTER THAWING.

Dose

The dosage of FFP/CDP depends on the clinical situation and patient co-morbidities, but 10-15mL/kg is a generally accepted starting dose (i.e. 70kg pt X 15mL = 1050mL or 3 bags of FFP).

It is important to monitor the response, both clinically and with measurement of PT/INR or specific factor assays.

(One standard Unit of FFP has a volume of approximately 300mL, CDP comes in two sizes, 180mls and 540mls, and these are usually provided fresh for plasma exchange procedures.)

When patients are having Fresh Frozen Plasma as replacement fluid for Therapeutic Plasma Exchange, the number of units is typically considerably more, depending on the volume of exchange ordered.

Blood Groups

No cross match is necessary but the patient's ABO blood group is required.

ABO Group-compatibility is preferred, but not essential.

If large volumes of ABO incompatible product are transfused, haemolysis becomes more likely as the product does contain natural isoagglutinins (anti-A & anti-B).

Rhesus (Rh) grouping is not required.

Recipient's/Patient's Blood Group	Donor Blood Group, First Choice	Second Choice
Group A	Group A	Group AB
Group B	Group B	Group AB
Group O	Group O	Group A
Group AB	Group AB	Group A

Manual:	Policies and Procedures – Volume 2, Clinical	Ref. No.:	34.6
Section:	Blood	Issue Date:	February 2007
Subject:	FRESH FROZEN PLASMA (FFP) AND CRYOPRECIPITATE DEPLETED PLASMA (CDP) TRANSFUSIONS	Version No.:	4
		Page:	7 of 7

7. Haemovigilance

In an attempt to promote haemovigilance and best transfusion practice, PMCC Blood Bank scientific and medical staff may discuss the clinical indication or need to transfuse if requests are outside the NHMRC guidelines

8. References

Australian Red Cross Blood Service (ARCBS). 2006. Blood Component Information: Circular of Information – An extension of blood component labels. ARCBS, Australia.

Australian Red Cross Blood Service (ARCBS). 2003. Transfusion Medicine Manual, Available online: www.transfusion.com.au/ResourceLibrary/resource_tmm.asp

American Association of Blood Banks Technical manual, 13th Edition, 1999.

Australian & New Zealand Society of Blood Transfusion Inc (ANZSBT) & Royal College of Nursing Australia (RCNA). 2004. Guidelines for the Administration of Blood Components – 1st Edition. ANZSBT, Australia.

FURTHER INFORMATION

Peter Mac Blood Bank, Nursing Education, ARCBS

Approver Transfusion Committee
Authorizer Director of Haematology and Medical Oncology