ADMINISTRATION AND MANAGEMENT OF BLOOD AND BLOOD PRODUCTS POLICY

Reviewed: August 2024

Policy Applies to:

All Clinical staff at Mercy Hospital involved with the management, prescribing or administration of blood, blood products and surgical bone management.

Related Standards:

- Refrigeration Guidelines, Requirements for the Storage of Blood and Blood Products and Tissue June 2023 (Appendix 32)
- ANZSBT Guidelines https://anzsbt.org.au/guidelines-standards/anzsbt-guidelines/
- NZBS Guidelines https://www.nzblood.co.nz/healthcare-professionals/transfusion-medicine/clinical-compendium/clinical-policies-and-procedures/
- Surgical Bone - Instructions for Use (appendix 31)
- Ngā Paerewa Health & Disability services standard

Cultural Considerations:

As per NZBS guidelines blood, blood products and surgical bones are stored and administered in a culturally appropriate manner consistent with tikanga and te ao Māori.

Rationale:

Ensure that blood, blood products and surgical bones are prescribed, obtained, stored and administered in a safe and effective manner, in line with the New Zealand Blood Service requirements.

Definitions:

Blood Transfusion - refers to the intravenous administration of blood components or blood products.

Fractionated Blood Products - This is the term used for plasma derived fractionated blood products and equivalent recombinant products. They are manufactured in a highly regulated environment. Products are frequently upgraded with the incorporation of new safety or purification steps e.g. Albumin.

Surgical Bone – A single femoral head supplied frozen from NZBS. Surgical bones are obtained aseptically from a consenting donor who has undergone orthopaedic surgery. The bone has been stored frozen from the time of donation. The consenting donor must be tested in accordance with NZBS requirements.

Abbreviations.

NZBS - New Zealand Blood Service
ANZSBT - The Australian & New Zealand Society of Blood Transfusion

Objectives:

- To ensure that the patient has understood the risks, benefits, and any alternatives, and has provided written consent prior transfusion of blood components and/ fractionated products/surgical bone

- To ensure the right patient is identified using the correct procedure
- To ensure the right blood component / fractionated product / surgical bone is issued to the right patient
- To ensure documentation requirements are met.
- To ensure that blood is transported and stored in a manner that meets all safety requirements

Implementation:

- Successful completion of IV certification
- Clinical orientation face to face discussion
- Online component via Health Learn "Medication and Fluid Foundation" repeated 3 yearly supported in area by the IV link area representative.
- Online component via Tautoko "Blood Education"

The registered nurse, the credentialed specialist, and registered anaesthetic technician/registered nurse anaesthetic assistant are responsible for administering, observing, and documenting the transfusion of blood components/fractionated product/surgical bone.

All clinical staff involved with the transfusion of blood components/fractionated products/surgical bone must have validated skills and expertise to provide clinical care in a safe and appropriate manner. For registered nurses and registered anaesthetic technicians/registered nurse anaesthetic assistants validation occurs through IV certification.

To ensure safety and best outcome, all Mercy Hospital staff authorised to administer blood components and blood products must follow the policy, process and guidelines related to blood components or products.

Mercy Hospital staff and credentialed specialists will use this policy and process in addition to the information available through the NZBS Clinical Data Resource website and the NZBS Clinical Compendium website to ensure currency of both practice and information.

Evaluation:

- Incident reports
- Daily Blood Fridge Temperature & Visual Check form
- Weekly review of temperature graph disk
- Monthly Blood Fridge Alarm Checks
- 6 monthly Internal audits of the completion of the Mercy Blood Component /Product Issue and Administration Record Form (Previously referred to as the Green Form)
- 6 monthly Blood Refrigeration Audit
- Preventive Maintenance reports
- 2 yearly NZBS external audit

Associated Legislation

- The Medicines Act 1981, Medicines Regulations 1984

References

Refrigeration Guidelines, Requirements for the Storage of Blood and Blood Products
10th Edition, June 2023
ANZSBT Guidelines
NZBS Guidelines

External Documents are noted below in appendices and are accessible via Policies on the Mercy SharePoint

Audit tool

- Blood Component – Product Issue and Administration Record Audit Tool F:\Mercy Shared\Audits\Clinical Audits\Clinical Audit Tools and Checklists\Tools\Blood Component - Product Issue and Administration Record Audit Tool.docx

Associated Forms

- Mercy Informed Consent form
- Medication chart
- Fluid Balance chart
- Patient Observation chart
- Anaesthetic record
- IV certificate practical checklist
- Mercy Hospital Blood Component/Product Issue and Administration (Green Form)
- Daily Blood Fridge Temperature and Visual Check Form

Audits

- Blood Refrigerator Audit (Clinical Audit tools /checklist/tools All Blood Audits)
- Mercy Hospital Blood Component/Product Issue and Administration Record Audit (Clinical Audit tools /checklist/tools All Blood Audits)
- Blood Refrigeration RBC Dispensing Audit (Clinical audit tools and checklists/tools/All Blood Audits).

References online

- NZBS Clinical Data Resource: https://www.clinicaldata.nzblood.co.nz/resourcefolder/index.php?dhbid=5
- NZBS Clinical Compendium: https://www.nzblood.co.nz/healthcare-professionals/transfusion-medicine/clinical-compendium/

Appendices

1. Mercy Blood Component/Product Issue and Administration form (Green Form) – *External*
2. NZBS Blood Request form – *External*

3. NZBS Acute Transfer Reaction (ATR) Notification to Blood Bank – *External*
4. NZBS Notification of Suspected Adverse Reaction to a Fractionated Blood Product – *External*
5. Mercy Hospital Blood Product Form
6. Monthly Blood Fridge Alarm Checks
7. Daily Blood Fridge Temperature and Visual Check Form
8. Blood Conservation – *External*
9. Return of Blood-to-Blood Bank Checklist
10. Receipt of Blood from Blood Bank Checklist
11. Blood Component List
12. Bleeding Disorder Discharge Checklist – *External*
13. Known Bleeding Disorder Preoperative Referral Form – *External*
14. Returned Blood Declaration Form – *External*
15. Blood Process Flowchart
16. Pre-transfusion Sample Collection for Blood Bank and Requesting Blood Components or Products – *External*
17. Mercy Hospital Emergency Blood Product Form
18. Receipt of Emergency O RhD Negative Blood – Checklist
19. Return of Emergency O RhD Negative Blood – Checklist
20. Administration of Emergency (O RhD) Negative Red Blood Cells
21. Return of Fractionated Products to Blood Bank Checklist
22. Receipt of Fractionated Products to Blood Bank Checklist
23. Dispatch Notification Form (Blood Bank use only) – *External*
24. Adult Massive Transfusion Protocol MTP Algorithm
25. Adult Massive Transfusion Protocol MTP Guideline
26. MTP Taxi Driver Instructions
27. Senior Nurse on Call MTP Instructions
28. Ward Staff MTP Instructions
29. MTP Lanyards
30. Femoral Head Checking in Protocol
31. Surgical Bone Instructions for Use – *External*
32. Refrigeration Guidelines, Requirements for the Storage of Blood and Blood Products and Tissue – *External*

Process

Introduction

Outlined in this process document is the management of red blood cells, fractionated blood products and surgical bone, the most common products that are administered at Mercy Hospital. Although there are many similarities in the management of other blood products particularly with consent, bedside checking and monitoring, for specific instructions on other blood products please use the NZBS Clinical Data Resource website. The NZBS Clinical Compendium website provides additional information on NZBS protocols and guidelines. Links to these two resources can be found on page three of this policy.

In order to minimise patient risk associated with the receipt of blood, blood components and surgical bone careful attention must be paid to:

1. Correct patient identification/pre transfusion testing - strict adherence to patient identification during blood sampling and clerical checks pre transfusion
2. Pre administration storage
3. Issuing from storage
4. Bedside checking
5. Administration and documentation
6. Monitoring

Points of Note:

Mercy Hospital blood inventory is primarily re-suspended red blood cells. In case of emergency, Mercy hospital is supplied with two units of O RhD negative blood, stored on top shelf of the blood fridge.

For elective surgery, cross-matched red cell units may be requested as clinically indicated.

Blood components and surgical bones are issued from the New Zealand Blood Service Blood Bank in Dunedin. Mercy Hospital is responsible for ensuring 100% traceability of all blood components or products supplied via NZBS Dunedin Blood Bank.

All movements into and out of the blood fridge MUST be documented in the *Mercy Hospital Blood Product Form (App:5)* or *Mercy Hospital Emergency (O RhD Negative) Blood Product Form (App:17)*

Refer to the NZBS *Refrigeration Guidelines (2023)* for full detailing of mandated fridge management and maintenance.

Refer to the *Mercy Clinical Services Work Manual/Blood Fridge Maintenance Guidelines* and to the appendices of this policy for all aspects of blood receipt, storage, uplift and return; the following guidance provides in-house responsibilities which are in addition to the processes outlined by NZBS Blood Bank.

PROCEDURES

1. Correct patient identification/ Pre transfusion testing

As Mercy hospital is a private elective surgical hospital, a group & screen or cross match for blood is generally done prior to admission to Mercy by the admitting credentialed specialist. The credentialed specialist also requests the surgical bone prior to the patient's admission. Similarly consent for receiving blood and blood products as well as bone graft is also generally undertaken prior to admission. This does not lessen our responsibilities for ensuring safe ordering, storage and administration of blood and blood products and surgical bones.

Transfusion of ABO–incompatible red cell components may result in acute and severe haemolysis and shock. In a conscious patient a few mL may cause symptoms within 1-2 mins.

Before a blood component (and some blood products – ref: *Blood Components List App:11)* can be issued the patient's ABO & RhD blood group needs to be determined and the presence of any red cell antibodies needs to be known (group and screen).

Where Mercy staff are undertaking to provide a specimen for group and screen (G&S) or cross match (XM) a fully and accurately completed *Blood Bank Request* form *(App:2)* must accompany the pre-transfusion specimen when forwarding to Blood Bank for processing.

As most transfusion errors are clerical in nature, specimens for group and screen (G&S) or cross match (XM) must be clearly hand labelled at the bedside (pre-printed labels are not accepted) with the patient's:

- Christian and surname (do not include middle names)
- Date of birth
- National Health Index (NHI)
- Date/time of collection
- Signature or initials of collector

For the EDTA 6 ml tube the details must be written directly onto the tube in the same pen as has completed the request form.

The Blood Request form must be completed with:

- Patient sticky label or fully completed by hand with patient identifying details
    - First name
    - Surname
    - Gender
    - NHI/hospital number and/or date of birth (both are preferable)
- Name and signature of requesting practitioner (doctor or nurse)
- Date and time of collection

- Signed and dated declaration that blood was labelled at the bedside and labelled by the person drawing the blood. This is part of the *Blood Bank Request* form
- Blood components/products and/or tests required

Should also include:

- Relevant patient history, details and tick box completed
- Note that an inadequate patient history may result in the sample expiring sooner than necessary and a lower priority when testing
- Patient's location
- Date of surgical procedure (if applicable)

A group & screen sample is only valid for 72 hours unless the following information is provided:

- Confirmation that the patient has not been transfused in the last three months
- Confirmation that the patient has not been pregnant in the last three months
- On special request that patient will not be available for pre-surgery sample OR the date of surgery is uncertain or subject to change

i.e.: If the patient has not been pregnant or transfused in the last three months, the sample is valid for 7 days. Extended validity (up to 21 days) is available for elective surgery if a date of surgery is provided.

All details on the *Blood Bank Request* form and specimen must match exactly before Blood Bank can process the specimen. The details supplied on the request form and specimen, are the details that will subsequently appear on the unit swing label.

The EDTA Tube (6ml pink top) accompanied by the *Blood Bank Request* form is then forwarded to NZBS Blood Bank, Dunedin Hospital. The specimen collector takes the sample with them (if they draw the sample) otherwise the sample is sent by taxi.

2. Mercy Hospital Blood Fridge

To ensure compliance with blood refrigeration requirements Post Anaesthetic Care Unit (PACU) staff undertake:

- A daily visual check of the blood fridge temperature recording and view any blood product cross match & expiry date and time
- A weekly copy of the blood fridge temperature graph is sent to Blood Bank by PACU staff to ensure the blood fridge's temperature remains within the required parameters
- A six-monthly Blood Refrigerator Audit is undertaken by PACU staff

Maintenance:
NZBS Refrigeration Guidelines, *10th Edition June 2023* (online) Section 5.
Blood Fridge Maintenance Guidelines – (Clinical Services Work Manual/Blood Fridge Maintenance Guidelines).

3. Consent and Prescription

Consent

Prior to administering a blood component (red cells, platelet concentrates, fresh frozen plasma, and cryoprecipitate), blood products (albumin, immunoglobulin, coagulation factors) or surgical bone the registered nurse, AT, RNAA or credentialed specialist needs to ensure that consent has been recorded on the Mercy Consent form.
If consent is not recorded on the consent form, consent to the administration of blood, blood products, tissue or bone substitute must be sought from the patient. In addition, the patient should be offered written (NZBS patient leaflet) and /or verbal information as part of the consenting process.

Consent (with the exception of an emergency) must be obtained prior to ordering any blood components/fractionated products/surgical bone from Blood Bank. Where administration of blood components and products are refused by an adult for any reason, this decision must be respected, recorded in the clinical record, ensuring that those making the decision fully understand the implications this may have on the clinical outcome (for additional information please access the Consent Policy on SharePoint)

For further information about care for patients who decline blood transfusion refer: *Blood Conservation (App:8)*

Prescription

Blood component and fractionated products are classified as prescription medicines. A prescription for a blood component / fractionated product must be written by the credentialed specialist on a Mercy Medication and IV Prescription Chart, Mercy Anaesthetic Record or ICU Medication Chart.

The prescription must specify.

- The blood component / fractionated product to be administered including any special requirements e.g. irradiation
- Route to be administered
- Quantity to be given (e.g. units, mL, grams)
- Duration of the transfusion (hours or parts of an hour) e.g. over 2 hours, not 2QH
- Special instructions e.g. premedication or diuretic
- Each item signed and dated (not one signature and brackets)

- Blood is a high-risk medication, and verbal orders shall not be taken for high-risk medications.

4. Obtaining Cross-matched Red Cells from the New Zealand Blood Service (NZBS):

Cross matched red cells are requested using the *Mercy Blood Component/Product Issue and Administration form* (*App:1)*

When you require the cross matched red cells:

- Scan the *Mercy Blood Component/Product Issue and Administration form* to the NZBS Blood Bank, Dunedin Hospital. Noting the type of blood product required and the number of units. (Scanner is pre-set on McAuley ward, ICU, Mercy Cancer Care, Theatre and Main Reception areas)
- In addition, phone Blood Bank to verbally confirm your request
- Notify Reception that you are waiting for blood to be delivered

Please note after being scanned to Blood Bank, the *Mercy Blood Component/Product Issue and Administration* form is no longer required and is to be Stamped [*Order Form only NOT for Clinical Notes. Destroy within 24 hrs]* and attached to clipboard beside the scanner, to be destroyed at a later date.

- NZBS Blood Bank will deliver the blood product to Mercy hospital main reception with a scanned copy of the *Mercy Blood Component/Product Issue and Administration form* inside the transport boxes.
- During office hours, Mercy Hospital main reception staff will contact the Theatre Clerk or PACU staff or the appropriate clinical area after hours when blood product/components/surgical bone have arrived at reception.

During Office Hours:

- Theatre Clerk will bring the transport boxes into PACU
- PACU staff will then sign blood product/component into the blood refrigerator (Appendix 10) and contact the area requesting the blood to inform them the blood product is now in the blood refrigerator
- Theatre Clerk will deliver the surgical bone to the appropriate theatre

After Hours:

- Reception will notify the appropriate clinical area, theatre (ATs/RNAAs or McAuley Ward) that blood has arrived
- After reception's manned hours, McAuley Ward staff will monitor intercoms and receive the blood directly from the taxi driver. They will notify appropriate clinical area as to the blood arrival. Theatre AT/RNAA, McAuley Ward or ICU staff will sign the blood product into the blood refrigerator.

5. Receipt of Blood Products Process

To ensure the blood products are stored in a safe and effective manner, in line with the New Zealand Blood Service requirements, when receiving blood from Blood Bank, Dunedin Hospital, follow appendix 10) – *Receipt of Blood from Blood Bank Checklist*

- Complete the *Mercy Hospital Blood Product Form* (App:5) on the clipboard on the shelves next to the blood fridge to record which individual units are being received
- Ensure
    - All steps are completed on *Receipt of Blood from Blood Bank Checklist* (App:10)
    - Contact the appropriate area that ordered blood and notify that the blood product is in the fridge

When taking a blood product from the blood fridge to areas that involve a commute where patrons may be encountered (i.e. Mercy Cancer Care or Manaaki), place the blood product into an opaque plastic bag (found on shelves next to the blood fridge) and ensure the commute is direct, without undue stops along the way.

6. Storage of Blood Products

All blood products, whether stored in the Blood Fridge, or administered directly to the patient, must be signed into the *Mercy Hospital Blood Product Form (App:5)*

- Details must include:
    - Date, Time
    - Nurse/AT/RNAA's signature
    - Patients full name and NHI
    - Type of blood product and each unit number

- The units must have been transported correctly according to the *NZBS Red Blood Cell packing profile* that will accompany the blood product.

- The *Mercy Blood Component/Product Issue and Administration* form (*Green* form) is kept in the blood fridge attached to a unit of blood product or in patients' notes if previous unit already transfused. If a discrepancy exists on any of the documentation or on the information attached to the blood product, notify Theatre or PACU Clinical Leaders, NZBS Personnel, surgeon and anaesthetist and appropriate action will be taken.
  NB: Ballasts are to be placed in the blood fridge immediately on arrival, in a plastic bag with the date and time attached. Ballast must be conditioned for 24-hours prior to it being used again. Ballast must be placed on shelves below red cells, never above.

- When retrieving blood from the blood fridge a date, time, signature / destination is required to be written on the *Mercy Hospital Blood Product Form (App:5)* held on the

red clipboard found on shelves next to the Blood fridge. This is to ensure that there is a robust audit trail for all blood products.

- Red cells cross match expiry date is generally up to 72 hours. After 72 hours a new cross match must be completed. (Platelets, FFP and Cryoprecipitate cannot be stored in any fridge including the Mercy Blood Fridge).

- Refrigerated blood components must only be stored in the dedicated blood fridge, located on the ground floor in the theatre suite. Never store blood components in the standard ward refrigerator nor the theatre freezer.

- All Blood components (except Platelets) should be infused within four hours of being removed from refrigeration. Platelets must be used immediately upon arrival from Blood Bank.

7. Return of Blood Products to Blood Bank Process

When returning blood to Blood Bank, Dunedin Hospital follow – *Return of Blood-to-Blood Bank Checklist (App:9)*

- Complete the *Mercy Hospital Blood Product Form (App:5)* on the clipboard on the shelves next to the blood fridge to record which individual units are being returned
- Complete
    - *Mercy Hospital Return of Blood Product Declaration Form (App:14)*
    - Check all steps completed on *Return of Blood-to-Blood Bank Checklist (App:9)*

- All blood must be returned following the *NZBS Blood Packaging Training and Information Pack* located in the red folder (Blood Packing Training and Information Pack) on shelves next to the Blood Fridge.
- Complete taxi chit and phone for taxi. Take items for NZ Blood Service to Main Reception for pick up. Notify main reception that the blood is there – blood products can only be stored for 2 hours in the transport boxes

8. Pre-Transfusion Prompts

Once blood obtained, prior to commencing the transfusion you must ensure the following have been checked:

- **Consent**: sighted patient's consent form
- **Prescription:** signed and relevant written information provided
- **Patent venous access and standard blood infusion set with filter in situ on hand**
- **Baseline observations:** documented

Mercy Hospital Medicines management policy requires **two registered health professionals,** to complete the checks for blood products at the patient's bedside. The second person needs to perform the checks independently. There must be no discrepancies.

Bedside check: Ask, verify, bag to tag and visual check

- Take to the bedside:
    - The medication chart (prescription),
    - *Mercy Blood Component/Product Issue and Administration (Green*) form *(App:1)*
    - The issued cells with a swing label attached.

Complete the **Blood Issue and Administration Record** documentation as outlined in the bedside check process below on the NZBS copy of the *Mercy Blood Component/Product Issue and Administration* (Green) form *(App:1)*.

- **Ask** the patient their identity (their full name and date of birth). Do not tell them.
- **Verify** that the patient details on the patient's wristband, the *Mercy Blood Component/Product Issue and Administration* (*Green*) form, the prescription, the swing label and the patient's response all match exactly.
- **Visual check** - assess the bag and contents for abnormalities.
- Check unit/batch numbers on bag & swing label are identical
- Check blood group on bag & swing label are identical
- Check expiry on bag/bottle
- Check "DO NOT USE AFTER" date on swing label
- Check consent

- Check prescription

- When the checks are completed, both checkers sign the *Mercy Blood Component/Product Issue and Administration (Green)* form and record the date and time the infusion commenced. In addition, when the unit is completed also record the time on the *Mercy Blood Component/Product Issue and Administration (Green)* form.

9. Administration

Transfusions at night (after 2200 hours) are undesirable and not recommended unless urgent

30 Minute Rule: Transfusion or red cells should begin as soon as possible following the removal from the blood fridge. Return the red cells to the Mercy blood fridge if the transfusion cannot be started within 30 minutes of removal of the blood from the blood fridge. Do not store red cells anywhere else. Follow Receipt of Blood from Blood Bank Checklist (App:10) and complete the *Mercy Hospital Blood Product Form* (App:5) on the clipboard on the shelves next to the blood fridge.

When administering platelets and red cells, administer the platelets first. If this is not possible, change the infusion set after administering the red cells and before commencing the platelet transfusion.

- All blood components or products require a dedicated line. The recommended cannula size is 18-20G for adults (smaller gauges can be used but they restrict the flow rate) and 22-24G for children.
- No medications are to be given into the unit of blood or the IV system as they may cause red cell haemolysis or adversely affect platelets or plasma proteins.
- Blood / solution set includes a 200-micron filter and must be used for administration of all blood components - red blood cells, plasma, platelets, cryoprecipitate and granulocytes. The filter will remove any aggregated material and fibrin clots. All blood components in New Zealand are leucodepleted at source by NZBS. The use of bedside leucodepletion filters is not necessary.
- Blood components are supplied in collapsible bags and must never be vented, this is to mitigate the risk of air emboli. A warning "Do not vent" is noted on every unit label.
- 2-4 units can be administered via one infusion set. Where the rate is rapid, e.g. theatre, 8-10 units may be administered via the set.
- The blood/solution set must be replaced at the end of the transfusion, before any further IV therapy is undertaken.
- Note that glass bottles need to be vented with v-air vent filter (see NZBS Clinical Data Resource)
- Prime the infusion set with Normal Saline or the blood component. Priming with blood must only occur after 2 health professionals (one of whom must be registered) complete the two person check at the bedside

- Never prime or flush using Dextrose Saline (causes haemolysis) or Lactated Ringers (causes clotting) or gel solutions (causes clotting).
- Remember to document any Normal Saline used to prime or flush on the fluid balance chart

Warming

Use warming only if clinically indicated.
A blood warmer may be indicated for:

- Large volume rapid transfusions of >50 mL/kg/hour in adults or >15 mL/kg/hour in children
- Exchange transfusions (unlikely at Mercy Hospital)
- Patients with clinically significant cold agglutinins

Blood and components must not be warmed above 41ºC. The temperature of the warmer must be monitored and recorded on the observation chart.

- A Ranger Blood/Fluid warming device that is kept in the Theatre 6 Anaesthetic room.

- Never improvise by placing a blood pack into hot water or a microwave.

Pumps

Pumps should be used to deliver blood products when:

- Controlled flow rates are required for specific patients, e.g. paediatric patients, or those at risk of fluid overload.
- Infusion of blood products via gravity is unreliable e.g. via PICC or small gauge cannula.
- Ensure pumps are blood compatible. Never use pumps with granulocyte/buffy coat infusions.

Pressure Bags

An external pressure bag may be used during emergency situations only and when a large gauge venous access cannula is in situ. Pressure must be exerted evenly over the unit and never exceed 100 mmHg. The pressure device must have a gauge to measure the pressure and be monitored at all times during its use. Monitor closely, the risk of air emboli is higher with external pressure bags.

Commencing the infusion

Ensure the baseline observations BP/TPR (blood pressure, temperature, pulse, respiration) are recorded up to 60 minutes prior to the infusion on the observation chart. If the patient is febrile before transfusion you must discuss with the medical staff before commencing the transfusion.

Aseptic Non-Touch Technique, and appropriate Personal Protective Equipment for potential blood and body fluid exposure.

- Gently agitate the blood bag.
- Attach the red cell bag to the blood /solution set
- Record start time on the Medication chart and the *Mercy Blood Component / Product Issue and Administration (Green)* Form
- Set the transfusion rate as prescribed; in the routine setting, transfuse each unit slowly (up to 50mL) for the first 15 minutes and observe the patient for any adverse reaction.
- Stay with the patient for the first 15 minutes of the transfusion then repeat the BP/TPR. The first 15 minutes carry the greatest risk of an acute adverse reaction.
- Ensure the call bell is within reach.

Completing the infusion

Note the completion time on the observation chart, the *Mercy Blood Component/Product Issue and Administration (Green)* form and the *fluid balance chart*

Affix the red cell compatibility sticker (swing label) to the *Mercy Blood Component/Product Issue and Administration (Green)* form

Disconnect the empty blood bag/bottle and discard into the appropriate waste stream

In the event there has been a transfusion related adverse reaction the blood bag and IV tubing must be placed within a sealed biohazard bag and returned to Blood Bank together with the completed *NZBS Acute Transfusion Reaction (ATR) Notification* form (Appendix 3), the patient's blood sample in pink top tube (refer to adverse reactions in this policy).

Place the blood bag/unit inside a sealed biohazard bag and leave in a dirty utility room until ready to send to Blood Bank.

Document the transfusion in the patient's clinical record.

10. Monitoring

TPR & BP at 15mins then, ½ hourly TPR and hourly BP until the transfusion is completed. Increase the frequency of the BP recording ½ hourly if there are any concerns over the patient's status or any other parameters are abnormal.

Remain in the room or in immediate proximity for the first 15 minutes of the commencement of each unit. Let the patient know to call a nurse if they start to feel itchy, develop a rash, shivery, and have any breathing difficulty or if they feel their heart is racing.

For each unit: Repeat TPR and BP at 15 minutes. Thereafter monitor TPR every 30 minutes and BP hourly. Increase BP monitoring if condition changes. Visually assess throughout the infusion

After each unit: record pulse, blood pressure, respiration rate and temperature and visual observation of the patient's appearance and condition up to 60 minutes post infusion.

If the transfusion rate is slow, reposition the limb where the IV is sited, investigate other variables including gravity, non-patent cannula, clogged filter and closed clamps.

Check the IV site before, during and after the transfusion. Document the VIP Score on the Observation Chart.

11. Surgical Bone

Pre-transfusion check Follow *Femoral Head Checking in Protocol (App:30)* and ensure consent has been obtained

Bedside checks

- Take to the bedside:
  - *Mercy Blood Component/Product Issue and Administration (Green*) form *(App:1)*
  - The consent form
  - Swing label

Complete the Blood Issue and Administration Record documentation as outlined in the bedside check process below on the NZBS copy of the *Mercy Blood Component/Product Issue and Administration* (Green) form *(App:1)*. Some of the checks in section 3 would be not applicable

- Patient will be unable to communicate, tick appropriate box
- Verify that the patient details on the patient's wristband, the *Mercy Blood Component/Product Issue and Administration* (*Green*) form, the consent form and the swing label all match exactly

- Check unit/batch numbers on bone container & swing label are identical
- Check expiry on bone container
- Check consent
- Check date

Administration
Staff to follow the instructions in Appendix 31 - Surgical Bone instructions for use.

Completion
- Transfused and checked by must be recorded
- Record start time
- Finish time is not required as the bone is an implant/bone graft

Adverse Reactions
Most patients receiving blood products or components do not experience any adverse effects. Unfortunately, a small proportion of patients (1 in 100) may have an adverse effect. The reactions range from mild to severe, and can have effects immediately or delayed, occurring during the next few hours or days. NZBS asks all health care professionals to report all adverse reactions so that data on the frequencies and types of reactions can be collected, collated and monitored. This data provides an early warning system for NZBS.

If patient has signs and symptoms suggestive of potential transfusion reaction, stop the transfusion immediately.

Follow the algorithm for Acute Transfusion reaction (ATR) found on the second page of the *NZBS Acute Transfer Reaction (ATR) - Notification to Blood Bank (App:3)*

- For ATRs related to red cells, fresh frozen plasma, platelets and cryoprecipitate products use - *NZBS Acute Transfer Reaction (ATR) - Notification to Blood Bank (App:3)*
- For ATRs related to fractionated blood products, use *NZBS Notification of a Suspected Adverse Reaction to a Fractionated Blood Product (App:4)*

Note Refer to NZBS Clinical data Resource online for information about types and management of transfusion reactions.

Surgical Bone Adverse Reactions include local infection, resorption and transmission of viral infection. Any case of infection or adverse reaction must be reported to NZBS.

Obtaining Blood Products in Adverse Weather

Delivery of blood from Dunedin Hospital will be required if theatre is running. Liaise with the PACU or Theatre Clinical Leader/Senior Nurse on Call (after hours) as to what is required and use the 4WD for pick up.

12. Obtaining Blood Products After Hours

- Blood Bank Staff are on-call from midnight to 0700 (7 days)
- Follow the usual process for ordering blood products as per the laminated flow chart – NZBS: Blood Product Request: Process and Paperwork; AND
- Phone Dunedin Hospital Switchboard (474 0999) and ask to be put through to the on-call person.
- Order a taxi to take the blood specimen to Dunedin Hospital for crossmatch. Ask them to meet you at the Mercy ambulance entrance.
- Taxi will deliver the ordered blood product to the ambulance bay entrance. They will communicate via the intercom with McAuley Ward.
- Check blood products into the Mercy Blood Fridge as usual.

NB: McAuley Ward staff must know that a specimen for crossmatch or that blood products have been ordered as they monitor the ambulance entrance intercom.

Blood Transfusions during Closedown

- There will be no access to the blood fridge during hospital closedown.
- During this period Mercy Cancer Care will request each unit of blood/blood products one at a time from the Blood Bank.
- When ordering blood product, call the Blood Bank and advise them to deliver blood products directly to Mercy Cancer Care.
- Mercy Cancer Care staff must advise taxi drivers to report to Manaaki Reception via intercom at Manaaki front door.

13. Emergency O RhD Negative Red Cells – for Acute Haemorrhage Only

Points of note:

Mercy Hospital is supplied with two units of O RhD negative red cells, to be used for acute haemorrhage only.

PACU staff exchange the units of blood with Blood Bank weekly, usually on Tuesday

All movements into and out of the blood fridge MUST be documented in the *Mercy Hospital Emergency Blood Product Form (App:17)* and on the unit's *Tracking Form* to ensure 100% traceability and to confirm temperature standards are met.

Obtaining Emergency O RhD Negative Red Cell Component from NZBS Blood Bank

Underlying component's principles and agreement:

- Two units of emergency O RhD negative red cells will be issued weekly (exchanged) on Tuesdays, by Dunedin Blood Bank for Mercy Hospital Dunedin.
- Reception will notify theatre clerk when the replacement red cell inventory arrives via Dunedin Taxi Service. The theatre clerk brings the transport box to PACU.
- The two emergency O RhD negative red cells units held in inventory will be returned to Dunedin Blood Bank, directly after the safe receipt and storage of the new units.

Receiving O RhD Negative Red Cell Components (App:18)

To ensure the blood products are stored in a safe and effective manner, in line with the New Zealand Blood Service requirements, when receiving blood from Blood Bank, Dunedin Hospital, follow appendix 18) – *Receipt of Emergency O RhD Negative Blood from Blood Bank Checklist*

- Complete the *Mercy Hospital Emergency O RhD Negative Blood Checklist (App:17)* on the clipboard hanging to the right of the blood fridge to record which individual units are being received
- Ensure
    - All steps are completed on *Receipt of Emergency O RhD Negative Blood from Blood Bank Checklist* (App:18)

If there is any discrepancy, notify the Blood Bank immediately on 03 470 9369.

Traceability of Emergency O RhD Negative Red Cells

- The *Notification of Transfusion of Emergency Blood* form must stay with the Emergency O RhD negative red cells packs at all times, to ensure compliance to traceability mandates.
- Blood Bank supply each emergency unit as a sealed 'pack', which includes all the necessary paperwork. Store as a complete 'pack', do not separate the items.

When emergency units are used:

- Notify Dunedin Blood Bank 03 470 9369 without delay, to ensure component's replacement can be progressed
- Complete and e-Scan the *Notification of Transfusion of Emergency Blood* form located within the red cell 'pack', to ensure 100% traceability

Ensure the unit swing label is permanently attached to the *Mercy Blood Component/Product Issue and Administration* form (*App:1)*

It is mandatory to link the patient details (recipient) to the unit number details (donor)

Return of Emergency O RhD Negative Blood Components to Blood Bank (App:19)

When the emergency blood components are ready to be returned to Blood Bank, Dunedin Hospital follow – Return of Emergency O Rhd Negative Blood Checklist (App:19)

- Complete the *Mercy Hospital Emergency Blood Product* Form (App:17) on the clipboard hanging to the right of the blood fridge to record which individual units are being returned
- Complete
    - *Mercy Hospital Return of Blood Product Declaration Form (App:14)*
    - Check all steps are completed on *Return of Emergency O RhD Negative Blood Checklist (App:19)*
- All blood must be returned following the *NZBS Blood Packaging Training and Information Pack* located in the red folder (Blood Packing Training and Information Pack) on shelves next to the blood fridge.
- Complete taxi chit and phone for taxi. Take items for NZ Blood Service to Main Reception for pick up. Notify main reception that the blood is there – blood products can only be stored for 2 hours in the transport boxes

If in doubt or unclear ring Blood Bank on 03 470 9368 for advice.

When the hospital is to close, i.e. Christmas Holidays, notify Dunedin Blood Bank, return all units and arrange for delivery of emergency units when hospital reopens in January.

14. Massive Transfusion Protocol (MTP)

Massive Transfusion Protocol (MTP) is an algorithm designed to standardise the management and transfusion of adult patients with massive bleeding in Mercy Hospital.
Adult Massive Transfusion Protocol Guideline (App:25) guides decision making and response in the event of rapid and massive haemorrhage with associated shock or coagulopathy

In an event with massive and rapid bleeding with wither shock or coagulopathy, follow *Adult Massive Transfusion Protocol Algorithm (App:24).*