Procedure for Blood Components and Blood Products Collection and Administration

BLOOD COMPONENTS AND BLOOD PRODUCTS COLLECTION & ADMINISTRATION	
Applicable to: **MidCentral Health**	Issued by: **Hospital Transfusion Committee**
	Contact: **Blood Bank /Transfusion Medicine**

PURPOSE

To promote safe taking of pre transfusion blood samples and administration of blood components and products. To facilitate early recognition and treatment of transfusion-related reactions and events. To record and report any suspected adverse transfusion reaction to Blood Bank, New Zealand Blood Service (NZBS).

SCOPE

Applies to all Registered & Enrolled nurses, Midwives, Anaesthetic Technicians and Medical practitioner's within MidCentral Health.

Blood Bank hours:
Monday to Sunday 08:00 to 24:00hours
Statutory Holidays 08:00 to 24.00 hours
Out of Hours contact via the hospital operator - for Emergency work only.

Consent

- Obtain patient's written informed consent for any blood or blood related product, document on the Operation Procedure Consent Form (Section B).
- Provide the relevant NZBS brochure – "Your Guide to Blood Transfusion" to the patients who require this treatment as part of the Informed Consent process. These are available in the resource website in a many languages, or if the patient has an intellectual disability
- Check for known allergies, and previous transfusion reactions.
- **N.B. For the ongoing management of a particular disease or disorder, ensure the consent is valid until the treatment or condition or dose changes.**

Prescribing

- **Authorisation for products other than red cell components is needed:**

A Transfusion Medicine Specialist (TMS) or a Haematologist is responsible for authorising platelets, cryoprecipitate, Factor Concentrates, Prothrombinex, Intragam P, Evogam or Zoster Immunoglobulin.

N.B. Requests of >1 bag of platelets and >3 units of cryoprecipitate should be authorized by a TMS or a haematologist.

An Oncologist, ICU consultant or Anaesthetist can request: a unit of platelets; and up to 3 units of cryoprecipitate, or 1 adult dose equivalent to 1 unit / 30Kg bodyweight without this being approved by a haematologist.

- A haematologist or any consultant is responsible for authorising frozen plasma components.
- A midwife may authorise Anti-D Ig, Rhophylac or HIG100 International Units.

- A registered Nurse with prescribing rights can prescribe blood components for patients using standing orders.

Pre Transfusion Sample:

- Obtain a group and screen (G&S) blood sample with hand written patient details on the 6ml EDTA pink top blood sample tube and send to Blood Bank.
- Complete all sections of the NZBS Blood Bank Request Form. Ensuring the information on the sample & the form match.
- Label at the patients side.
- Ask open ended questions.
- Confirm patient's **family name, given name, NHI AND DOB**.
- Check the information against the patient's wristband
- Label the form and Sample immediately, **before leaving the patient**.
  *(NB: The patients address is **not** required on a group and screen sample*
- Check all details match. Date and sign the sample and form.

NB: ANY ERRORS WILL NOT BE ACCEPTED BY BLOOD BANK; YOU WILL BE ASKED TO TAKE ANOTHER BLOOD SAMPLE

Pre –Transfusion

- When the Registered Nurse/Midwife/Anaesthetic Technician(AT) is requested to give a transfusion, they must check via Eclair/Clinical portal that there are units available for the patient. If no units available contact blood bank.
- It is the responsibility of the requesting Registered Nurse/Midwife/AT to book an Orderly for blood collection.
- Explain the procedure and prior to ordering blood components ensure informed consent is obtained (Informed Consent [Policy] MDHB-1998) and documented on the operation/procedure consent form section B.
- Ensure the patient is wearing an identification wristband.
- Ensure once the blood component/product is prescribed it is administered promptly, without delaying treatment.
- Ensure that the peripheral IV cannula is patent prior to requesting the blood component.
- Prime the administration set and in-line blood filter with the blood component / Product or 100ml 0.9% Sodium Chloride
- Record the patient's **baseline** temperature, pulse, respiratory rate and blood pressure, O2 Saturation prior to ordering the blood component.
- Enter the following details on the Blood Transfusion Record form and attach a patient's addressograph label to the form [MDHB-4344].
- Arrange for the Orderly to collect the Blood Transfusion Record form [MDHB-4344] via the ward/department and take to Blood Bank to collect the blood products and components.
- Red cells & Fresh Frozen Plasma must be transfused within 4 hours from leaving controlled storage, or **return to Blood Bank within 30 minutes if transfusion is delayed.**

Ensure you check on éclair or the clinical portal your patients products or components are ready for collection.

Procedure for Blood Components and Blood Products Collection and Administration

Blood Collection:

Duty Nurse Manager & Orderlies:

- Duty Nurse Managers can collect blood labelled for an individual patient from the after hour's blood refrigerator.
- Duty Nurse Managers must complete training for afterhours blood uplift provided by Blood Bank.
- Duty Nurse Managers can uplift emergency O negative units from the theatre blood fridge only
- Orderlies will collect the Transfusion Record Form and take to Blood Bank to collect all blood products and components from a transfusion scientist.
- The Orderly must deliver each unit to the requesting Nurse/Midwife/Anaesthetic Technician/Medical Practitioner that will be administering the unit.

Taking Blood from the Theatre Fridge:

- Each unit placed into the blood fridge has a yellow tracking tag attached.
- This tracking tag **MUST** be completed every time a unit is placed into the fridge and removed from the fridge.
- The tracking tag can be completed by any staff handling blood.

Prescribed Blood Component	**Intravenous administration set appropriate for transfusion**
Red cells resuspended	IV Alaris Pump as required In-line Filter required for all blood components
Fresh frozen plasma	IV Alaris Pump **not** required In-line Filter required for all blood components
Platelets	
Cryoprecipitate	
Prescribed Blood Product	**No filters required for bottled products**
Albumex	IV Administration set
Prothrombinex	Mix2vial system, via Alaris syringe driver or slow push
Factor VIII (Biostate®)	Mix2vial system, via syringe.
IV Ig (Intragam P or Privigen®)	IV Alaris pump set.

- **Enrolled Nurse under the direct supervision of Registered Nurse/Midwife and Anaesthetic Technician under the direction of an Anaesthetist:**

Administration:

- Obtain baseline vital signs and document.
- Requesting a blood component between the hours of Midnight to 0800hrs. Call / page the Duty Nurse Manager to arrange for collection of pre prepared components from the After Hours Blood fridge.
- Ensure a double independent check is performed at the patients' side.
- Administer the blood component or blood related product as prescribed as soon as possible after receipt
- Dispose of the empty blood component bag 24 hours after administration.

- If a blood transfusion reaction is suspected ***do not*** discard blood administration set and unit of blood – return to blood bank for investigation.
- Monitor the patient for the response to the transfusion and immediately report all adverse events that occur with the recipient
- Double independent checks are to be performed for blood component/product administration as prescribed
- Monitor the patient closely for any response to the transfusion and immediately report all **Adverse Transfusion Reactions:**

Transfusion Administration:

- Verify the patient's identity, checking against the patients wristband and with the patient if possible, with two IV certified health professionals by way of **double independent checks** at the Patient's side:
- Obtain oral verification from the patient, where possible, by asking for their full name and date of birth.
- When the checks are completed, sign the "Blood Component & Blood Product: Transfusion Record" Form (MDHB-4344) and Medication Chart. Cleanse hands and put on non-sterile gloves.

Equipment

- Intravenous fluid – 100ml 0.9% Sodium Chloride for priming line
- 10ml 0.9% Sodium Chloride for Flushing
- 10ml syringe
- Non-sterile gloves
- Alcohol swabs
- Infusion pump if required
- Transfusion Record - Blood & Blood Products (MDHB-4344)
- Clamp off the Sodium Chloride 0.9% 100ml bag from administration set and switch on the line with the prescribed blood component.
- Regulate the flow with roller clamp or set the IV pump settings to the prescribed rate.
- Stay with and **observe** the patient during the first **15 minutes** of the transfusion.
- After the **15 minutes** record temperature, pulse, respiratory rate, O2 Saturation and blood pressure.
- If patient exhibits signs of transfusion reaction, follow the New Zealand Blood Service Transfusion-Related Adverse Reaction Notification Form
- If no reaction apparent, continue to record temperature, pulse, respiratory rate and blood pressure again after **30 minutes** and then **hourly**. And again **at the end** of the Transfusion.
- NOTE: this regimen of recording vital signs is a minimum requirement, for a blood transfusion. Your patient may require closer observation.
- **On completion of the transfusion**, flush the line with 0.9% Sodium Chloride. Remove the compatibility/swing label and attach to the blood transfusion record form.
- Ensure the end time is documented on the transfusion record form AND on the prescription.

- If more than one unit is being transfused, repeat the above.
- The giving set and filter must be changed every 12 hours or after 10 units. This may need changing sooner.
- Platelets must be transfused through a separate blood filter that has **not** been used previously.

Post Transfusion

If maintenance fluids are prescribed you *must* change the fluid administration set. If no further fluids are to be infused, remove the fluid administration set and flush the vascular access device with 10 – 20 ml 0.9% Sodium Chloride for injection as per MDHB 1019.

- Remove IV cannula, if no longer required.
- Place the empty blood component into the appropriate sealed delivery bag and store in utility room for 24 hours.
  i. If patient is given blood in the Emergency Department/Operating Theatre send empty bags with the patient on transfer to another ward/department.
  ii. (NB. If blood transfusion reaction is suspected, do not discard blood administration set with the unit of blood. Return to Blood Bank for investigation as per New Zealand Blood Transfusion-Related Adverse Reaction Notification Form.
- Dispose of equipment into designated containers in the approved manner.
- Update fluid balance chart and the clinical records.

2. ADVERSE TRANSFUSION REACTIONS MANAGEMENT GUIDELINES

Refer to the New Zealand Blood Transfusion-Related Adverse Reaction Notification Form

- **All transfusion reactions MUST** be reported to Blood Bank. For all **moderate to severe transfusion reactions** contact the Transfusion Medicine Specialist obtained via blood bank or Clinical Haematologist immediately.
- Refer to NZBlood Service Adverse Transfusion Reaction Management Guideline - (refer to the reverse of the Notification Form (111F009) New Zealand Blood Service Transfusion-Related Adverse Reaction Notification Form
- Return the blood with the administration set attached in the delivery bag to Blood Bank with the completed form 111F009.
- Document all assessments, interventions and patient responses in clinical records.

3. DEFINITIONS

Blood Component – Red cells, platelets, fresh frozen plasma, cryoprecipitate, cryosupernatant.

Blood Products – Manufactured from human plasma: Albumex, RhD Immunoglobulin, Coagulation Factors, Privigen, Immunoglobulin's, and Prothrombinex.

4. RELATED MDHB DOCUMENTS

MDHB-1998	Informed Consent -Policy-
MDHB-5609	Blood Transfusion and Monitoring Child Health -Guideline-
MDHB-4344	Transfusion Record - Blood Component and Blood Product 730464 -Form-
MDHB- 1019	Flushing Vascular Access Devices -Guideline-
MDHB-5372	Intravenous Immunoglobulin (IVIg) Therapy Children -Clinical Guideline-
MDHB-6317	Protocol for Patients Receiving Regular Blood Transfusions -Form-
MDHB-5896	Adult Massive Haemorrhage Pathway (MHP) & code crimson protocol

RELATED NZBS Documents

111F159	Blood Bank Request Form
111F009	Acute Transfusion Reaction Form

5. REFERENCES

- Australian & New Zealand Society of Blood Transfusion (2021) Guidelines for Administration of Blood Components.
- Infusion Nurses Society (2011) Policies and Procedures for Infusion Nursing (4th Ed).
- Bringing consensus to the use of IVIg in Neurology second edition.
- New Zealand Blood Service, Transfusion Medicine Handbook
- MDHB Blood resource folder: - https://www.clinicaldata.nzblood.co.nz/resourcefolder/.

6. FURTHER INFORMATION / ASSISTANCE

Transfusion Medical Specialist (Obtained via blood bank)
Clinical Haematologist
Blood Bank Scientists
Transfusion Nurse Specialist - New Zealand Blood Service
Clinical Nurse Specialist Intravenous therapies
Clinical Nurse Specialist, Coagulation & Haemostasis

7. APPENDICES

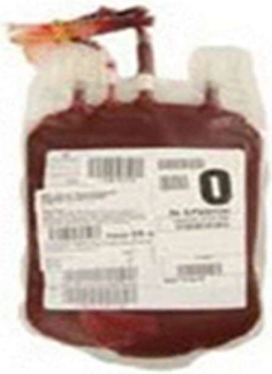
See attached appendices:

Appendix 1	Red Cells Resuspended
Appendix 2	Platelets
Appendix 3	Fresh Frozen Plasma
Appendix 4	Cryoprecipitate
Appendix 5	Factor Concentrates
Appendix 6	Prothrombinex
Appendix 7	Immunoglobulin (Ig)

BLOOD COMPONENTS

Fresh frozen plasma

Platelets



Red blood cells

Cryoprecipitate

BLOOD PRODUCTS

Appendix 1

RED CELLS RESUSPENDED (Leucocyte depleted, Plasma Reduced)

USES: To increase tissue oxygenation when critically reduced by loss of blood or anaemia of other origin.

STORAGE: 2-6° C in controlled blood refrigerator.
NOT to be stored in ward refrigerator.
See health and safety section of this document.

DOSAGE: Dosage depends on the clinical need of the patient and must be adjusted accordingly. A transfusion of 4-5ml/Kg will increase the circulating haemoglobin by approximately 10g/L.

INFUSION RATE: Must be transfused within four hours of leaving controlled storage.

COMPATIBLE WITH: 0.9% Sodium Chloride.

ADMINISTRATION: Administer through:

1. An IV cannula with a bore wide enough to allow for the viscosity of red cells Resuspended, e.g. 18 or 20 gauge, Or Central Venous Catheter 4French or greater.
2. An administration set plus an in-line 170-200 micron filter
3. An IV pump may be used.
4. Complete infusion within four hours of removal from controlled storage in blood bank.
5. Each unit of blood administered must be treated as a separate transfusion.

MONITORING:

Take **baseline** temperature, pulse, respiratory rate, and Blood Pressure (BP) and oxygen saturations. Stay with the patient during first 15 minutes and observe patient. After **15 minutes,** repeat all vital signs.

If no reaction noted – continue to record temperature, pulse, respiratory Rate, BP and oxygen saturations again after **30 minutes** and then **hourly** until transfusion is completed and **repeat at the end of the transfusion.**

If Transfusion-related reaction occurs refer to New Zealand Blood Transfusion-Related Adverse Reaction Notification Form

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Appendix 2 **PLATELETS**

USES:

To treat thrombocytopenia caused by:
1. Decreased platelet production
2. Functionally abnormal platelets
3. Massive transfusions of stored blood (dilutional thrombocytopenia).

INDICATIONS:

Patient bleeding and platelet count <50 x 10^9/L or less (depends on clinical situation).
Patient not bleeding but platelet count 10 x 10^9/L or less.
Usually not indicated where there is increased platelet destruction.

PRESENTATION:

Apheresis platelets: Bag containing leucodepleted platelets collected by apheresis from a single donor. **Usually 1 bag of these platelets is a normal adult dose.**
Platelet Pool – leucodepleted: Bag containing leucodepleted platelets harvested from four blood donations. Usually 1 bag of these is a normal adult dose.
Platelet Additive Solution (PAS Platelets): the additive solution contains citrate, acetate and glucose which maintain the life of the platelet for at least 5 days by providing energy and stabilising the ph. of the unit.

DOSE:

One unit equals adult therapeutic dose, as prescribed after consultation with a Haematologist/Transfusion Medical Specialist.

INFUSION RATE:

Must be completed within 1 hour of leaving controlled storage
Transfusion should generally be completed **within 30 minutes**

ADMINISTRATION:

Platelets need to be administered via an administration set plus a new in-line 170-200 micron filter.

CONTRAINDICATIONS:

Immune-mediated platelet destruction without haemorrhage
Thrombotic thrombocytopenia purpura.
Heparin induced thrombocytopenia (HITS)
Drug-induced thrombocytopenia without haemorrhage.

MONITORING:

Observe for transfusion reaction by close observation during the transfusion and immediately afterwards.
Take **baseline** temperature, pulse, respiratory rate, and Blood Pressure and oxygen saturations. Stay with the patient during first 15 minutes and observe patient. After **15 minutes** repeat all vital signs, and again **on completion**.

Appendix 3

FRESH FROZEN PLASMA

USES:

To supply coagulation factors:

1. With massive blood transfusion.
2. When patient's coagulation factors are deficient.
3. During sepsis.

PRESENTATION:

Unit volume 180-340ml. A delay of 20 minutes will occur as the plasma takes 20 minutes to thaw. Two units will be issued at a time.
FFP consists of male donated plasma only.

AB Plasma is compatible with all patient blood groups
A Plasma is compatible with Patient groups A and O
B Plasma is compatible with patients groups B and O
O Plasma is compatible with patients group O only

STORAGE:

Use immediately or return to Blood Bank for appropriate storage within 30 minutes of being thawed. Blood bank can hold thawed for a further 5 days

DOSAGE:

As prescribed after consultation with Haematologist/Transfusion Medical Specialist or consultant.

INFUSION RATE:

As prescribed must be administered within 4 hours of being thawed, and **transfused over 15- 20 minutes**.

CONTRAINDICATIONS:

Use with caution in patients with hypersensitivity to plasma protein.
Hypervolaemia

ADVERSE EFFECTS:

Urticarial rash, Allergic reactions,
Transfusion related acute lung injury (TRALI),
Transfusion associated circulatory Overload (TACO)

ADMINISTRATION:

Administer via a standard blood administration set plus an in-line 170-200 micron filter.
Complete administration within 1 hour of commencement.

MONITORING:

Observe for transfusion reaction by close observation during the transfusion and immediately afterwards.

Take **baseline** temperature, pulse, and respiratory rate, blood pressure, and oxygen saturations. Stay with the patient during first 15 minutes and observe patient. After **15 minutes** repeat all vital signs and again **on completion**.

Appendix 4

CRYOPRECIPITATE

USES:	Treatment of Von Willebrand's disease and patients with low fibrinogen and fibrinogen deficiencies, disseminating intravascular coagulation and situations requiring massive transfusions.
PRESENTATION:	Contains concentrated Factor VIII and XIII, Von-Willebrand's factor and fibrinogen. Bag containing cryoprecipitate. Requires thawing before use, but thawing is rapid for the small volume involved.
DOSAGE:	**One unit/30 kg of body weight,** as prescribed after consultation with Haematologist/Transfusion Medical Specialist. Usually 3 units is given for an adult dose
INFUSION RATE:	**Must be transfused immediately** and within four hours of being thawed. Generally **transfused within 15/20 minutes**.
ADMINISTRATION:	Administer via a standard blood administration set plus an in-line 170-200 micron blood filter.
CONTRAINDICATIONS:	Use with caution in patients with hypersensitivity to plasma protein. Hypervolaemia
MONITORING:	Observe for transfusion reaction by close observation during the transfusion and immediately afterwards. Take **baseline** temperature, pulse, respiratory rate, and blood pressure and oxygen saturations**. Stay with the patient for the duration of the transfusion and repeat all vital signs on completion.**

Appendix 5

FACTOR CONCENTRATES (Blood products)

	USES:	PRESENTATION:	STORAGE:	DOSAGE and INFUSION RATE:
Biostate®	Treatment of Haemophilia A (Factor VIII deficiency) and Von Willebrand's disease. Treatment and prophylaxis of haemorrhage or surgical bleeds.	CSL brand plasma-derived Factor VIII concentrate, Biostate®. Produced entirely from plasma from female volunteer New Zealand blood donors. Vial sizes: 250, 500 & 1000 International Units.	Below 8°C. Protect from light.	As prescribed by a Haematologist/Transfusion Medical Specialist. **Contact** CNS Coagulation & Haemostasis for advice/assistance

ADMINISTRATION: Use within 3 hours of reconstitution. Draw up reconstituted solution using Mix2Vial system. Administer as either a slow intravenous injection into a peripheral IV cannula/central venous access device or a continuous infusions using a standard administration set.
A filter is not required.

MONITORING: Take baseline temperature, pulse, and respiratory rate, blood pressure, and oxygen saturations. Observe for adverse reaction by close observation during the administration and immediately afterwards.

Other products available: Thrombotrol®-VF

Appendix 5

FACTOR CONCENTRATES RECOMBINANT (Non- Blood products)

	uses:	**Presentation:**	**Storage:**	**Dosage and infusion rate:**
Kogenate - FS®, (Bayer)	Treatment of Haemophilia A (Factor VIII deficiency)	Vial sizes: 250, 500, 1000, 2000 International Units. Note: the filter is in the butterfly provided in the kit that comes with the product.	Below 8°C. Protect from light.	As recommended by a Haematologist/Transfusion Medical Specialist. **Contact** CNS Coagulation & Haemostasis for advice/assistance.
Advate (Baxter)	Treatment of Haemophilia A (Factor VIII deficiency)	Vial Sizes: 250, 500,1000, 1500 & 3000 international units	Below 8°C. Protect from light.	
BeneFix®	Treatment of Haemophilia B (Factor IX deficiency	Vial Sizes: 250 & 1000 international units	Below 8°C. Protect from light.	
RiaSTAP	Section 29 Medication	50ml WFI vial & I gram of human fibrinogen Factor 1	Below 8°C. Bring to room temp for reconstitution	Contact TMS or TNS NZBS Via blood bank

ADMINISTRATION: Use within 3 hours of reconstitution. Reconstitute using devices issued with the factor as per instruction's provided in the packet. Administer as either a slow intravenous injection into a peripheral IV cannula/central venous access device or a continuous infusions using a standard administration set.
A filter is not required.

MONITORING: Take baseline temperature, pulse, and respiratory rate, blood pressure, and oxygen saturations. Observe for adverse reaction by close observation during the administration and immediately afterwards.

Appendix 6

PROTHROMBINEX

Coagulation factor concentrate. Contains Factors II, IX and X.

USES: Warfarin Reversal
Treatment of Factor IX deficiency, Haemophilia B.

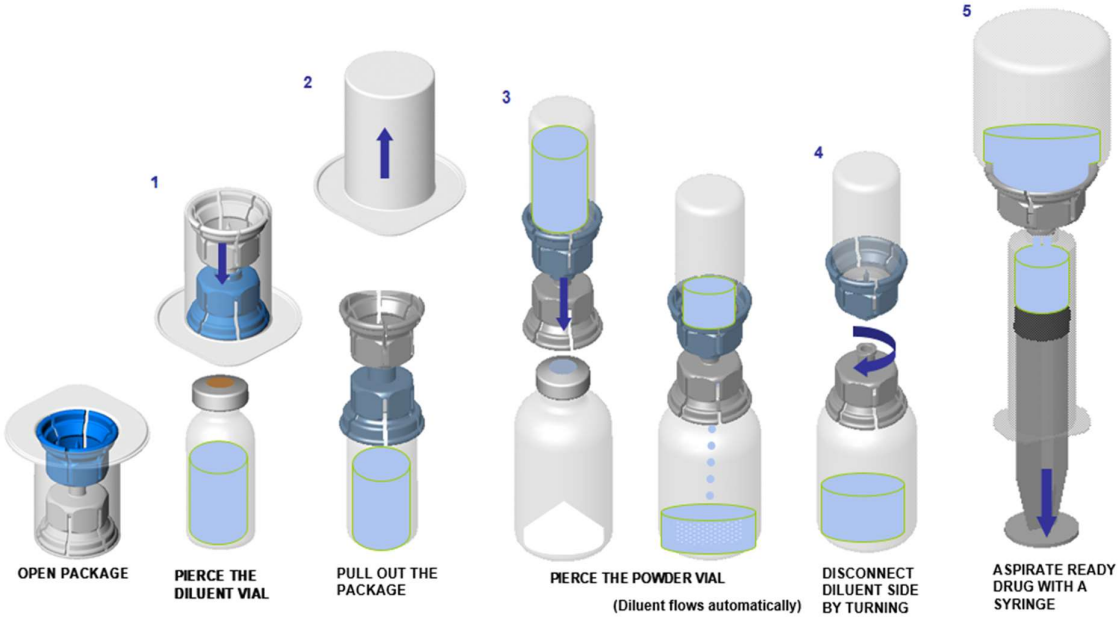
DOSAGE: As prescribed by a Haematologist/Transfusion Medical Specialist.
The recommended dosage is expressed in units of Factor IX/Kg of body weight.

INFUSION RATE: Refer to Warfarin Reversal Consensus Guidelines (2004), CSL Bioplasma. Infuse at a rate of 3ml/minute, or as tolerated by the patient.

ADMINISTRATION: Reconstitute using Mix2Vial system. Administer using an Alaris syringe driver or a slow push. Prothrombinex **must not** be mixed with Sodium chloride 0.9%.
A filter is not required.

MONITORING: Observe for transfusion reaction by close observation during the transfusion and immediately afterwards.

Take baseline temperature, pulse, respiratory rate, Blood Pressure and oxygen saturations and again on completion.



Appendix 7

IMMUNOGLOBULIN (Ig)

INTRAMUSCULAR PREPARATIONS

Normal human immunoglobulins. RhD Immunoglobulin.
Specific immunoglobulins, e.g. Tetanus, Zoster, Hepatitis B.

USES: Normal Human Immunoglobulin: little medical application.

RhD Immunoglobulin: prevention of Rh immunisation of Rh Negative mothers after delivery of Rh positive baby or after miscarriage. Administer within 72 hours. Mother must be observed for 20 minutes following administration.
Specific Immunoglobulins: as indicated.

ADMINISTRATION: Available as IM preparations.

Refer to package insert for specific information regarding administration, side effects, contraindications, monitoring. Patients must be observed for 20 minutes post administration.

INTRAVENOUS PREPARATION (for Adults) (Paediatrics please refer to MDHB-5372):

Normal human Immunoglobulin in IV preparation.

USES: Treatment of Idiopathic thrombocytopenic purpura (ITP).
Guillain Barre Syndrome, Immune deficiency.
Intravenous Immunoglobulin's.

New Zealand Blood Service is now a provider of two IV immunoglobulin. For clinical data see https://www.clinicaldata.nzblood.co.nz/resourcefolder/index.php?dhbid=4

The process of requesting these products are:

- Ensure blood bank has a blood group on your patient.
- Ensure you have an accurate weight in your patient.
- Complete the NZBlood "Approval for Immunoglobulin" form.
- When completed send to blood bank.
- Once approval has been given and the IVIg has been selected.
  Blood bank will inform you of the medication selected for prescription and for requesting.
- Send the "Blood Bank Request form to blood bank, requesting the selected product.
- It will be issued once blood bank receives the Transfusion record form.

PRESENTATION: **Intragam P** 12g in 200mL & 3g in 50mL
Privigen 5g in 50mL, 10g in 100mL & 20g in 200mL
– stored in controlled storage
NB. Each Bottle must be infused within 4 hours of spiking

DOSAGE: As prescribed by a Neurologist/Haematologist and authorised by Transfusion Medical Specialist

INTRAGAM P INFUSION RATE:

Intragam P is started at 1ml/min (rate 60ml/hour) for 15 minutes. If the patient's observations are stable increase rate by 1ml/minute every 15 minutes until rate is 240 ml/hour.

Rates:

Times	Rate	Amount infused Over 15 minutes
First 15 minutes	60 mL/hour	15 mL
Over next 15 minutes. Until finished	120 mL/hour	30 mL
	180 mL/hour	45 mL
	240 mL/hour	60 mL

NB: Maximum rate 240 ml/hour. Do not increase rate if observations are not stable, remain at slower rate as tolerated by recipient.

MONITORING:

Suitable IVIg monitoring schedule- e.g. Intragam P observation, are as follows:

- TPR/BP every 15 minutes, twice in the second hour, hourly for remainder of infusion
- There is no need to repeat these observations for each bottle.

PRIVIGEN® INFUSION RATE:

- Privigen contains no preservatives to prevent bacterial growth so each bottle should be infused within 4 hours of spiking
- The first infusion should be administered at an initial rate of 0.3 mL/kg/hour.
- If the infusion is well tolerated, the rate can be doubled at 30 min intervals to a maximum rate of 2.4mL/kg/hour, at the discretion of the healthcare professional and as tolerated by the patient.

First three infusions:

Dosing Schedule	mL/kg/hour
First 30 minutes	0.3mL/kg/hour
Next 30 minutes	0.6mL/kg/hour
Next 30 minutes	1.2mL/kg/hour
Next 30 minutes	2.4mL/kg/hour
Remainder of Infusion	2.4mL/kg/hour

Infusion four onwards:

Dosing Schedule	mL/kg/hour
First 30 minutes	0.3mL/kg/hour
Next 30 minutes	0.6mL/kg/hour
Next 30 minutes	1.2mL/kg/hour
Next 30 minutes	2.4mL/kg/hour
Remainder of Infusion – At the discretion of the healthcare provider	4.8mL/kg/hour

Check the administration rate using calculator available on:
https://www.clinicaldata.nzblood.co.nz/resourcefolder/privigen.php?dhbid=4

INCOMPATIBILITIES: Drugs or other additives must not be added to the bottle/line.

ADMINISTRATION: Use an IV pump set and administer via an infusion pump. A filter is not required.
When administering multiple bottles, if the batch number is the same then subsequent bottles do not need to be commencing at the slower rate, they can continue at the 240mL/hour.

MONITORING: Take baseline observations; temperature, pulse, respiratory rate, blood pressure (BP) and oxygen saturations.

- Take 15-minute observations (temperature, pulse, respiratory rate and BP) for the first hour then hourly or when changing each bottle.
- Monitor Patient for 20 minutes post infusion.

Appendix 8

ALBUMIN SOLUTIONS

USES:

Albumex 20%: Hypoproteinaemia, Burns
Albumex 4%: Hypovolaemic shock, Plasma exchange, Haemodialysis

PRESENTATION:

1. Albumex 4%

   Contains 4g Albumin in 100 ml of buffered solution or 2g Albumin in 50ml in buffered solution (Na contents 140mmol/l).

2. Albumex 20%

   Normal serum albumin (human) concentrated.
   Contains 20g of Albumin in 100ml of buffered solution (Na contents 85-130mmol/l). Osmotically equivalent to 500ml of human plasma.

STORAGE:

2-8°C in a controlled storage refrigerator, use promptly once issued for a patient or return to Blood Bank.

Do not freeze. Protect from light.

DOSAGE:

As prescribed, use immediately when opened.

INFUSION RATE:

1. Albumex (4%) - not exceeding 6 hours.
2. Albumex (20%) - over 30-60 minutes.

INCOMPATIBILITIES:

Drugs or other additives must not be added to the bottle/line.

CONTRAINDICATIONS:

See package insert.

ADMINISTRATION:

Inspect the contents immediately before use:

1. Do not use if any sign of turbity (cloudiness).
2. Insert a filtered air inlet needle into bottle when not using a vented administration set. (A 170-200 micron in-line filter is not required.)
3. Use immediately on opening.
4. Discard unused solutions.

MONITORING:

Monitor for signs of circulatory overload particularly with Albumex 20%. Monitor blood pressure and pulse hourly. Monitor other vital signs as indicated by patient's condition.

Appendix 9

EMERGENCY TRANSFUSION PACK

Advise Blood Bank that the Emergency O Negative units have been used, so that they can be replaced.

ISSUED:	**4 units O Negative units readily accessible in theatre**. Blood Bank MUST be informed of their use immediately. 2 further emergency packs available upon request to blood bank.
USES:	Immediate resuscitation of exsanguinating patients, where the risk of delaying transfusion is greater than the risk of transfusing incompatible blood.
PRESENTATION:	4 units of group O red cells resuspended, each with a blank Compatibility label attached stamped "CROSSMATCH NOT COMPLETE AT TIME OF ISSUE", in a blood box. Arrange collection by an Orderly.
STORAGE:	**4 units O negative in PACU/Operating Theatre.** Do not store in the boxes provided while in the blood fridge. Once removed from the blood fridge place unit into box provided and keep lid of blood box closed as much as possible.
DOSAGE:	As prescribed by senior medical practitioner responsible for management of the patient.
INFUSION RATE:	As prescribed.
COMPATIBLE WITH:	As for red cells resuspended. **Note:** These units MAY NOT be compatible with the intended recipient, particularly if the recipient has red cell antibodies. The Emergency Transfusion Pack issued for a male patient may contain Rh (D) Positive blood. Transfusion of units from the emergency Transfusion Pack should only be undertaken when the risk of this incompatibility is deemed to be lower than the risk of delaying transfusion until compatible blood is available.
ADMINISTRATION:	As for red cells resuspended **Note:** Document the transfusion as usual, using the supplied blank compatibility labels.
MONITORING:	As for red cells resuspended.

Appendix 10

Transfusions via a Blood Warmer

Indications

- Large volume rapid transfusions of >50 mL/kg/hour in adults and >15 mL/kg/hour in children.
- Exchange transfusion in infants.
- Patients with clinically significant cold agglutinins. Blood Bank will advise.
- **Note**: Blood must **not** be warmed above 41 °C. Rapid infusion of cold blood can cause arrhythmias and cardiac arrest.

If Blood Warmer is required, obtain blood warmer device and consumables from Post Anaesthetic Care Unit in Operating Theatre and instructions on how to use the blood warmer.

Blood Warmers are held in the following areas: Emergency Department, Intensive Care Unit and Operating Theatre.

General Recommendations:

- The operating temperature of the commercial blood warmer must be recorded on the patients' infusion record when used to warm red cells.
- Blood administration sets used with a warmer must be primed as with other blood administration sets prior to use.
- Improvised warming such as putting the pack in hot water, in a microwave oven, or on a radiator must NEVER be used. These methods may damage red cells and cause harm to the patient.
- All blood components can be put through a blood warmer

NZBLOOD Te Ratonga Toto O Aotearoa

Blood Bank Request Form

eTraceline Use Only

Patient:

Family Name			**Place of Surgery / Transfusion**
Given Names			**Date of Surgery / Transfusion**
NHI	**Date of Birth**	**Gender**	
If patient is a neonate please provide mother's details:	Family Name	NHI	**Ward / Hospital**
	Given Names	Date of Birth	
Diagnosis / Indication for transfusion			**Consultant**

History affects validity of the blood sample for the provision of red cells for transfusion – please see over

You must complete all 3 questions – please tick:

- **Transfused** in the last 3 months? ◯ Yes ◯ No ◯ Unknown
- **Pregnant** in the last 3 months? ◯ Yes ◯ No ◯ Unknown ◯ NA
- **RhD Ig given** in the last 3 months? ◯ Yes ◯ No ◯ Unknown

Blood Bank Tests: If the request is urgent please phone the Blood Bank

◯ Group & Antibody Screen ◯ Cord Group & DAT ◯ Direct Antiglobulin Test ◯ Other
◯ 1st Antenatal Group & Screen ◯ Subsequent Antenatal Group & Screen ◯ Antenatal Antibody Titre

Component Required:

		Number	Date and Time Required
Red Cells	Adult		
	Neonatal		
Platelets	Adult		
	Neonatal		
FFP	Adult		
	Neonatal		
Cryoprecipitate			
Other Components			

Fractionated Product Required:

	Dose	Date and Time Required
RhD Immunoglobulin	◯ 625 IU	
	◯ 250 IU	
Prothrombinex-VF		
IVIg* *Requires prior approval		
Albumex 4		
Albumex 20		
Hep. B Immunoglobulin		
Other		

Requester

Signature	**Print Name** (if not the labeller)	**Contact No. / Pager**	**Date**

MANDATORY DECLARATION by Person Collecting the Sample – ***Failure to complete may result in sample rejection***

I certify that I collected the sample(s) accompanying this request from the patient named above
I confirmed the identity of this patient by direct enquiry and / or inspection of their wristband
I labelled and signed the sample(s) by hand immediately after collection at the bedside and in the presence of the patient

Collector

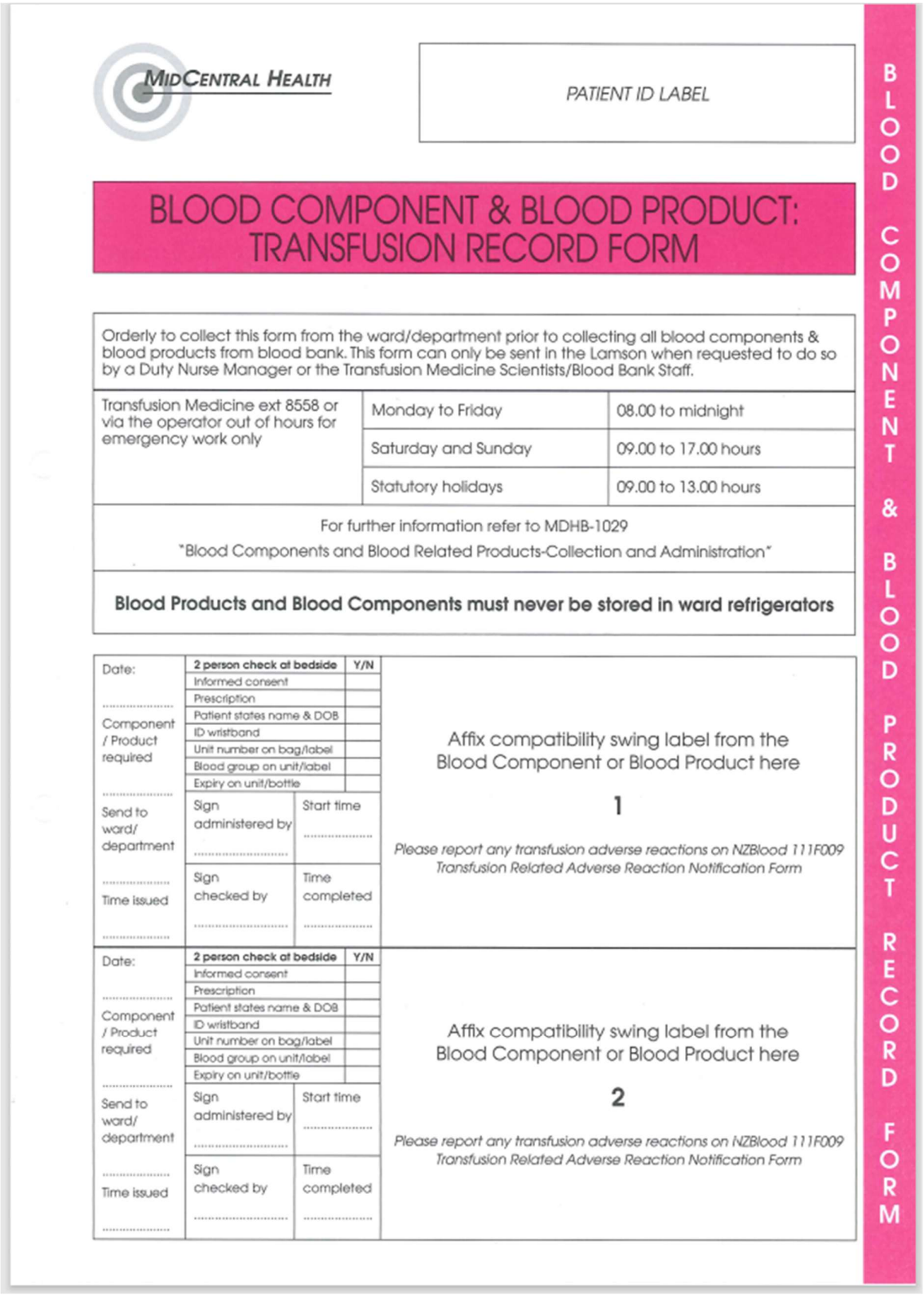
Signature Mandatory	**Print Name** (if not in the box above)	**Contact No. / Pager**	**Time** / **Date**

Blood Bank Use:

Received	Hx Patient Data No / Yes / Print	2nd Group No / Yes	Previous Tx	Validity	Registered	Pre-test Check	Frozen	Authorised	Date

Comments

Anti -A	Anti -B	Anti -AB	Anti -D		Ctrl	A cells	B cells		I	II	III						Poly	IgG	C3	Ctrl
								IAT												
Group				Date		Initial		RCAS	Date		Initial						DAT	Date		Initial
eTL		1010		3500		1013		3503	3903		3880		5050							



MIDCENTRAL HEALTH

PATIENT ID LABEL

BLOOD COMPONENT & BLOOD PRODUCT: TRANSFUSION RECORD FORM

BLOOD COMPONENT & BLOOD PRODUCT RECORD FORM

Orderly to collect this form from the ward/department prior to collecting all blood components & blood products from blood bank. This form can only be sent in the Lamson when requested to do so by a Duty Nurse Manager or the Transfusion Medicine Scientists/Blood Bank Staff.

Transfusion Medicine ext 8558 or via the operator out of hours for emergency work only	Monday to Friday	08.00 to midnight
	Saturday and Sunday	09.00 to 17.00 hours
	Statutory holidays	09.00 to 13.00 hours

For further information refer to MDHB-1029
"Blood Components and Blood Related Products-Collection and Administration"

Blood Products and Blood Components must never be stored in ward refrigerators

Date: ..... Component / Product required ..... Send to ward/ department ..... Time issued	**2 person check at bedside**	**Y/N**	Affix compatibility swing label from the Blood Component or Blood Product here 1 *Please report any transfusion adverse reactions on NZBlood 111F009 Transfusion Related Adverse Reaction Notification Form*
	Informed consent		
	Prescription		
	Patient states name & DOB		
	ID wristband		
	Unit number on bag/label		
	Blood group on unit/label		
	Expiry on unit/bottle		
	Sign administered by	Start time	
	Sign checked by	Time completed	

Date: ..... Component / Product required ..... Send to ward/ department ..... Time issued	**2 person check at bedside**	**Y/N**	Affix compatibility swing label from the Blood Component or Blood Product here 2 *Please report any transfusion adverse reactions on NZBlood 111F009 Transfusion Related Adverse Reaction Notification Form*
	Informed consent		
	Prescription		
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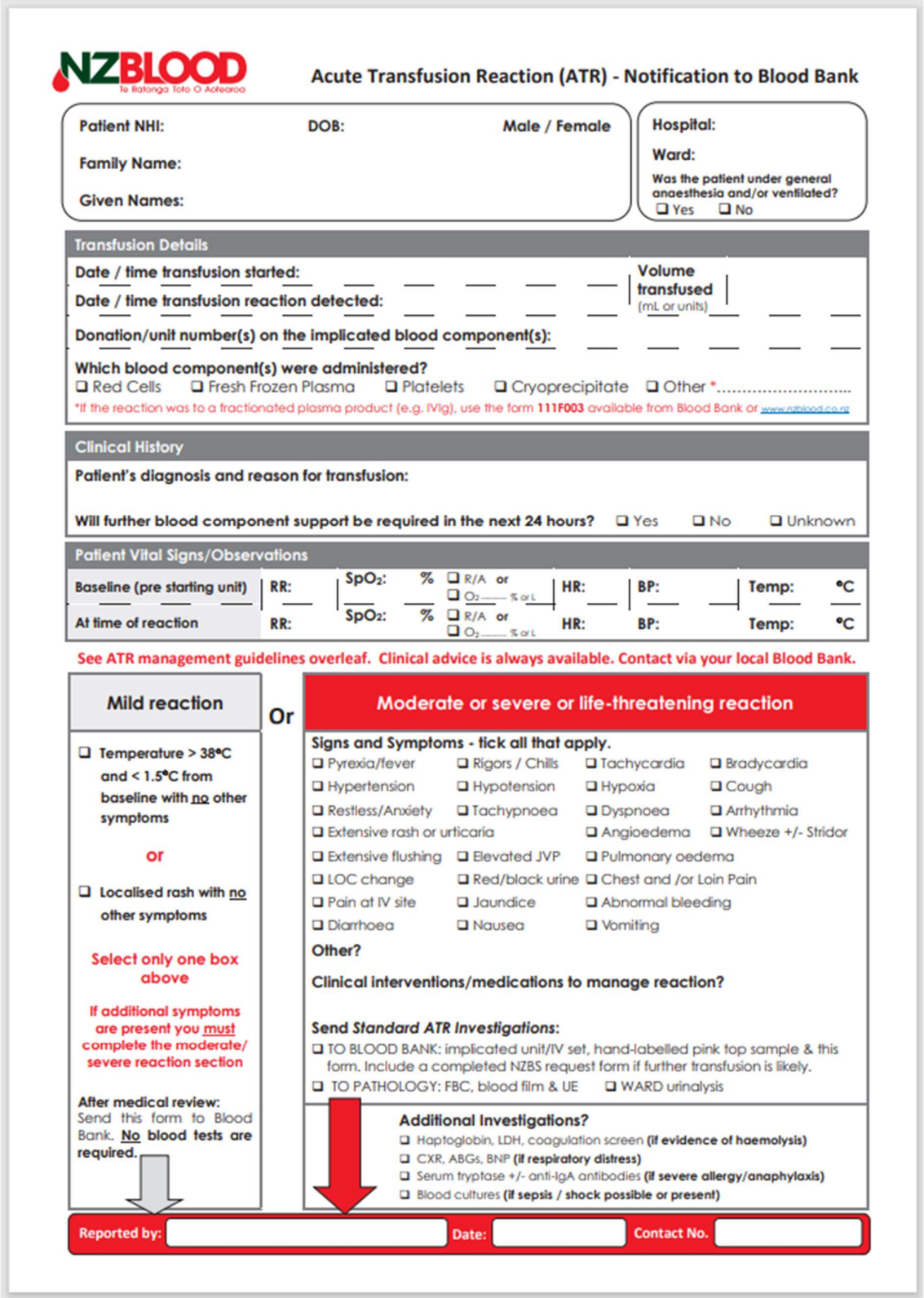
	ID wristband		
	Unit number on bag/label		
	Blood group on unit/label		
	Expiry on unit/bottle		
	Sign administered by	Start time	
	Sign checked by	Time completed	



NZBLOOD
Te Ratonga Toto O Aotearoa

Acute Transfusion Reaction (ATR) - Notification to Blood Bank

Patient NHI: **DOB:** **Male / Female**

Family Name:

Given Names:

Hospital:

Ward:

Was the patient under general anaesthesia and/or ventilated? ❑ Yes ❑ No

Transfusion Details

Date / time transfusion started: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Date / time transfusion reaction detected: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Volume transfused (mL or units) ___ ___ ___

Donation/unit number(s) on the implicated blood component(s): ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Which blood component(s) were administered?

❑ Red Cells ❑ Fresh Frozen Plasma ❑ Platelets ❑ Cryoprecipitate ❑ Other *.....

*If the reaction was to a fractionated plasma product (e.g. IVIg), use the form **111F003** available from Blood Bank or www.nzblood.co.nz

Clinical History

Patient's diagnosis and reason for transfusion:

Will further blood component support be required in the next 24 hours? ❑ Yes ❑ No ❑ Unknown

Patient Vital Signs/Observations

Baseline (pre starting unit) ___ ___ ___ ___	**RR:** ___	**SpO_2:** ___ %	❑ R/A or ❑ O_2 ___ % or L	**HR:** ___	**BP:** ___ ___	**Temp:** ___	°C
At time of reaction	**RR:**	**SpO_2:** %	❑ R/A or ❑ O_2 ___ % or L	**HR:**	**BP:**	**Temp:**	°C

See ATR management guidelines overleaf. Clinical advice is always available. Contact via your local Blood Bank.

Mild reaction

❑ **Temperature > 38°C and < 1.5°C from baseline with no other symptoms**

or

❑ **Localised rash with no other symptoms**

Select only one box above

If additional symptoms are present you must complete the moderate/ severe reaction section

After medical review: Send this form to Blood Bank. **No blood tests are required.**

Or

Moderate or severe or life-threatening reaction

Signs and Symptoms - tick all that apply.

❑ Pyrexia/fever	❑ Rigors / Chills	❑ Tachycardia	❑ Bradycardia
❑ Hypertension	❑ Hypotension	❑ Hypoxia	❑ Cough
❑ Restless/Anxiety	❑ Tachypnoea	❑ Dyspnoea	❑ Arrhythmia
❑ Extensive rash or urticaria		❑ Angioedema	❑ Wheeze +/- Stridor
❑ Extensive flushing	❑ Elevated JVP	❑ Pulmonary oedema	
❑ LOC change	❑ Red/black urine	❑ Chest and /or Loin Pain	
❑ Pain at IV site	❑ Jaundice	❑ Abnormal bleeding	
❑ Diarrhoea	❑ Nausea	❑ Vomiting	

Other?

Clinical interventions/medications to manage reaction?

Send *Standard ATR Investigations*:

❑ TO BLOOD BANK: implicated unit/IV set, hand-labelled pink top sample & this form. Include a completed NZBS request form if further transfusion is likely.

❑ TO PATHOLOGY: FBC, blood film & UE ❑ WARD urinalysis

Additional Investigations?

❑ Haptoglobin, LDH, coagulation screen **(if evidence of haemolysis)**

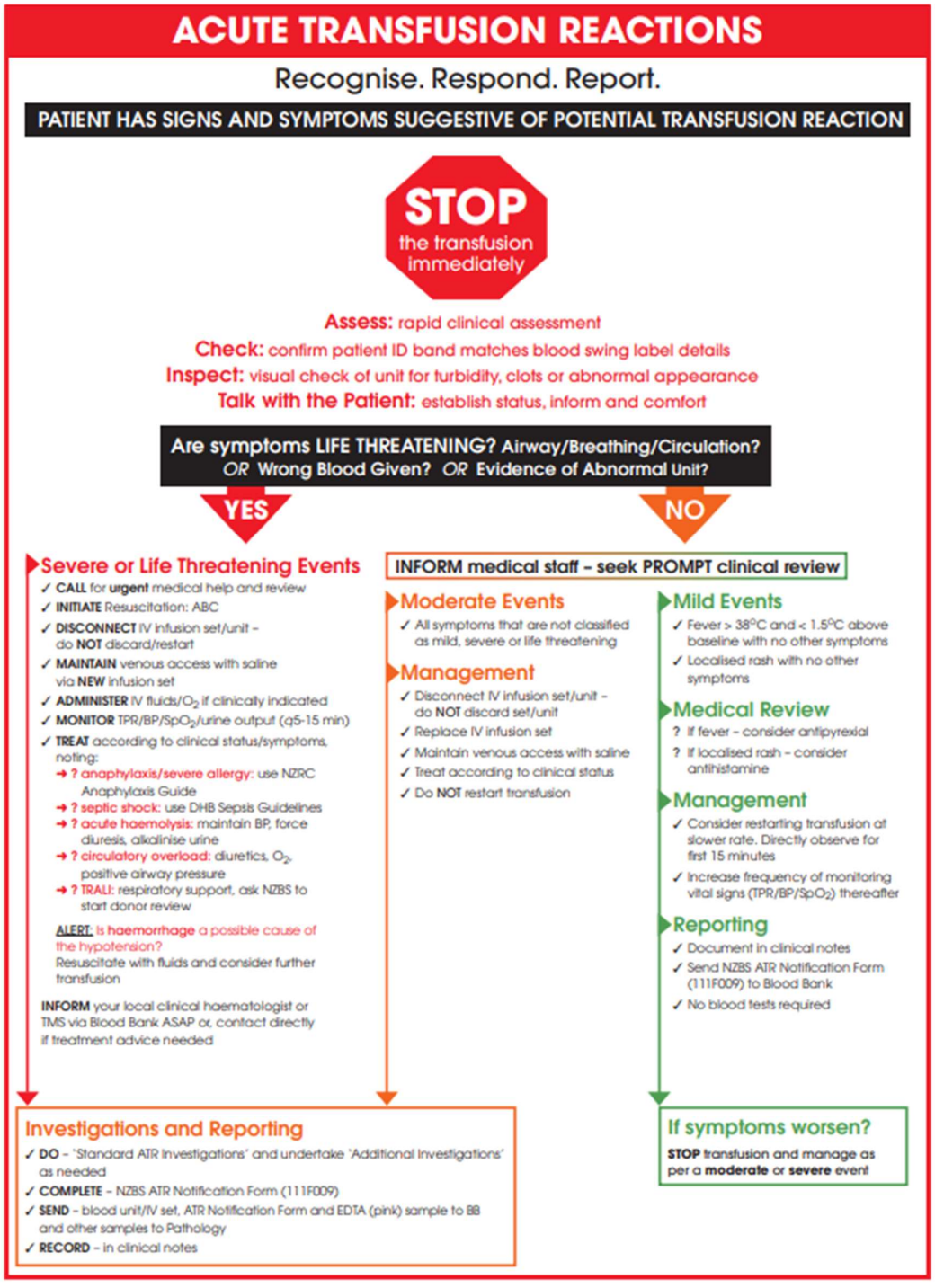
❑ CXR, ABGs, BNP **(if respiratory distress)**

❑ Serum tryptase +/- anti-IgA antibodies **(if severe allergy/anaphylaxis)**

❑ Blood cultures **(if sepsis / shock possible or present)**

Reported by: **Date:** **Contact No.**

Procedure for Blood Components and Blood Products Collection and Administration



ACUTE TRANSFUSION REACTIONS

Recognise. Respond. Report.

PATIENT HAS SIGNS AND SYMPTOMS SUGGESTIVE OF POTENTIAL TRANSFUSION REACTION

STOP the transfusion immediately

Assess: rapid clinical assessment
Check: confirm patient ID band matches blood swing label details
Inspect: visual check of unit for turbidity, clots or abnormal appearance
Talk with the Patient: establish status, inform and comfort

Are symptoms LIFE THREATENING? Airway/Breathing/Circulation?
OR **Wrong Blood Given?** *OR* **Evidence of Abnormal Unit?**

YES

Severe or Life Threatening Events
- ✓ **CALL** for **urgent** medical help and review
- ✓ **INITIATE** Resuscitation: ABC
- ✓ **DISCONNECT** IV infusion set/unit – do **NOT** discard/restart
- ✓ **MAINTAIN** venous access with saline via **NEW** infusion set
- ✓ **ADMINISTER** IV fluids/O_2 if clinically indicated
- ✓ **MONITOR** TPR/BP/SpO_2/urine output (q5-15 min)
- ✓ **TREAT** according to clinical status/symptoms, noting:
  - → ? **anaphylaxis/severe allergy:** use NZRC Anaphylaxis Guide
  - → ? **septic shock:** use DHB Sepsis Guidelines
  - → ? **acute haemolysis:** maintain BP, force diuresis, alkalinise urine
  - → ? **circulatory overload:** diuretics, O_2, positive airway pressure
  - → ? **TRALI:** respiratory support, ask NZBS to start donor review

ALERT: Is **haemorrhage** a possible cause of the hypotension?
Resuscitate with fluids and consider further transfusion

INFORM your local clinical haematologist or TMS via Blood Bank ASAP or, contact directly if treatment advice needed

NO

INFORM medical staff – seek PROMPT clinical review

Moderate Events
- ✓ All symptoms that are not classified as mild, severe or life threatening

Management
- ✓ Disconnect IV infusion set/unit – do **NOT** discard set/unit
- ✓ Replace IV infusion set
- ✓ Maintain venous access with saline
- ✓ Treat according to clinical status
- ✓ Do **NOT** restart transfusion

Mild Events
- ✓ Fever > 38°C and < 1.5°C above baseline with no other symptoms
- ✓ Localised rash with no other symptoms

Medical Review
- ? If fever – consider antipyrexial
- ? If localised rash – consider antihistamine

Management
- ✓ Consider restarting transfusion at slower rate. Directly observe for first 15 minutes
- ✓ Increase frequency of monitoring vital signs (TPR/BP/SpO_2) thereafter

Reporting
- ✓ Document in clinical notes
- ✓ Send NZBS ATR Notification Form (111F009) to Blood Bank
- ✓ No blood tests required

Investigations and Reporting
- ✓ **DO** – 'Standard ATR Investigations' and undertake 'Additional Investigations' as needed
- ✓ **COMPLETE** – NZBS ATR Notification Form (111F009)
- ✓ **SEND** – blood unit/IV set, ATR Notification Form and EDTA (pink) sample to BB and other samples to Pathology
- ✓ **RECORD** – in clinical notes

If symptoms worsen?
STOP transfusion and manage as per a **moderate** or **severe** event

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Prepared by: Transfusion Nurse Specialist NZBS Issue Date: 2022
Authorised by: MidCentral Hospital Transfusion Committee

MHP doc to be attached