# Blood Protocol - Adverse Transfusion Reactions

## Contents

## Purpose

To ensure that reporting of all adverse blood transfusion / infusion reactions is forwarded to NZBS Haemovigilance and reviewed by the Hospital Transfusion Committee. Both Medsafe and the Centre for Adverse Reactions Monitoring (CARM) are provided with the annual NZBS Haemovigilance Report.

To provide advice and guidance on the clinical management of an adverse transfusion reaction to either a blood component or a fractionated blood product. Where clusters of similar adverse reactions occur, these are reported to the NZ regulator, Medsafe.

To enable NZBS pharmacovigilance reporting of adverse reactions to a fractionated blood product to the relevant manufacturer.

## Scope

Registered Nurses / Registered Midwives / IV endorsed Enrolled Nurses

Registered Nurse Practitioners

Anaesthetic Technicians

Medical Officers

## Definitions

| | |
|---|---|
| Adverse Event: | an undesirable and unintended occurrence before, during or after transfusion which may be related to the administration of blood or component. It may be the result of an error or an incident and it may or not result in a reaction in a recipient. |
| ANZSBT: | Australia & New Zealand Society of Blood Transfusion Ltd |
| Incident: | is a case where the patient is transfused with a blood component which did not meet all the requirements for a suitable transfusion for that patient, or that was intended for another patient. It may or may not lead to a transfusion reaction. |
| Near Miss: | an error or deviation from standard procedures or policies that is discovered before the start of the transfusion and that could have led to a wrongful transfusion or to a reaction in a recipient |
| Adverse Reactions: | an undesirable response or effect in a patient temporarily associated with the administration of blood or blood component. It may, but need not, be the result of an incident. |
| Blood Component: | any fresh blood cells (red cells, fresh frozen plasma, cryoprecipitate, platelets, and granulocytes) |
| Blood Product: | Fractionated human derived plasma products (Immunoglobulin, Clotting factors, Clotting inhibitors, Albumin) |
| NZBS: | New Zealand Blood Service |
| PTT: | Pre-transfusion Testing blood sample (Group & Screen / Group & Hold / Crossmatch sample terms are used interchangeably) |

## Supporting Documents

| | |
|---|---|
| 2408295 | Blood Protocol – Pre-Transfusion |
| 2408293 | Blood Protocol – Blood Components |
| 2408296 | Blood Protocol – Fractionated Blood Products |
| 2405559 | Massive Transfusion Protocol – Adult |
| 232679 | Paediatric Massive Transfusion Protocol |
| NZBS 111F009 | Acute Transfusion Reaction (ATR) – Notification to Blood Bank form (Oracle 183949) |
| NZBS 111F003 | Notification of Suspected Adverse Reaction to a Fractionated Blood Product form |
| NZBS 111F159 | Blood Bank Testing form (Oracle 125523) |

## Blood Component Reactions

It is important to monitor a patient closely and complete observations according to protocol

Serious or life-threatening acute reactions are rare but new or unexpected symptoms that appear while a patient is being transfused must not be overlooked as they may be early warning signs of a more serious reaction.

If a patient experiences an adverse reaction clinical staff must report this to Blood Bank as soon as possible. It is essential that investigations are performed promptly.

Blood Bank may provide modified blood after appropriate investigations.

**The Acute Transfusion Reaction Notification to Blood Bank form algorithm** (on the reverse) **guides the clinical management for mild, mod & severe – life threatening transfusion reactions.**


**RECOGNISE** Stop / Pause the transfusion immediately

**RESPOND** Get a medical review of the patient immediately

Perform a rapid clinical assessment of the patient. Stay with the patient.

Check patient ID against unit compatibility label details again to confirm the right blood has been given to the right patient

Check the blood component unit for turbidity, clots or abnormal appearance

Talk with the patient to establish their status, inform and comfort

**REPORT** ALL transfusion reactions whether mild, moderate, severe or life threatening must be reported to Blood Bank on the Acute Transfusion Reaction notification form

- Do not use the Lamson tube to return spiked blood components
- Consider additional investigations and forward blood samples to the hospital laboratory for testing.
- Provide a contact number for Blood Bank or the NZBS/CDHB Transfusion Nurse Specialist.
- Date and sign the form.

On receipt of the -

1. Completed Acute Transfusion Reaction – Notification to Blood Bank form
2. fresh blood sample from the patient and Blood Bank Testing form
3. Used blood component unit and giving set for moderate – severe reactions

Blood Bank will recheck the blood group of the patient and the unit; complete a DAT and repeat cross match and re-screen for red cell antibodies

When appropriate, Blood Bank will arrange for specialised microbiological cultures of the blood component unit.

## Mild Transfusion Reactions

A mild reaction is where only ONE sign or symptom is present eg. the patient becomes febrile (>38$^{o}$C <1.5$^{o}$C from baseline recording) or the patient develops a localised urticarial or rash.

- Stop the Transfusion
- Inform Medical staff - seek a prompt clinical review
- Consider treatment with an antipyrexial or antihistamine.
- Consider restarting the transfusion at a slower rate of administration.
- Directly observe the patient for the first fifteen minutes
- Increase the frequency of monitoring vital signs
- Ensure that the blood component is transfused or discontinued within four hours from time of issue by Blood Bank.
- Document in clinical notes.

Complete the NZBS Acute Transfusion Reaction – Notification to Blood Bank form and return to Blood Bank as soon as possible. It is not necessary to provide a blood sample or return the blood component unit to Blood ban for MILD transfusion reactions.

## Moderate Transfusion Reactions

A moderate-severe reaction is all symptoms not classified as mild, severe or life threatening.

- Stop the transfusion
- Inform Medical staff - seek a prompt clinical review. Further clinical advice is always available from a Transfusion Registrar or Transfusion Medicine Specialist. Contact Blood Bank (80310)
- Disconnect the IV giving set, set line and unit aside for inclusion with reporting
- Flush the cannula with 30 mLs Normal Saline to maintain patency should further IV treatment be needed
- Treat patient according to clinical status.
- Perform ward urinalysis
- Return the implicated unit/IV set, a hand labelled PTT blood sample (pink tube), completed Blood Bank Request and Acute Transfusion Reaction – Notification to Blood Bank forms, to Blood Bank.
- Send a full blood count, blood film and UE to pathology labs. Also any additional investigations
    - If evidence of haemolysis – haptoglobin, LDH and coagulation screen
    - If respiratory distress – CXR, ABG, BNP
    - If severe allergy or anaphylaxis – serum tryptase +/- anti-IgA antibodies
    - If sepsis or shock is possible – blood cultures

## Severe or Life-Threatening Transfusion Reactions

Serious of life-threatening acute reactions are rare but new of unexpected symptoms that appear while the patient is being transfused must not be overlooked, as they may be early warning signs of a serious reaction

- Stop the transfusion
- Call for urgent medical help and review
- Initiate resuscitation: ABC
- Disconnect the IV giving set, set line and unit aside for inclusion with reporting
- Attach a new IV infusion set with Normal Saline to maintain venous access
- Monitor TPR, BP, $Sp0_2$/ urine output every 5-15 minutes. Administer fluids and oxygen if clinically indicated
- Treat according to clinical status/symptoms
    - Anaphylaxis/severe allergy - NZRC Anaphylaxis Guide
    - Septic Shock – DHB sepsis guidelines
    - Acute Haemolysis – Maintain BP, force diuresis, alkalinise urine
    - Circulatory Overload – diuretics, $O_2$, positive airway pressure
    - TRALI (Transfusion Related Acute Lung Injury) – respiratory support
    - Haemorrhage – resuscitate with fluids and consider further transfusion

- Return the implicated unit/IV set, a hand labelled PTT blood sample (pink tube), completed Blood Bank Request and Acute Transfusion Reaction – Notification to Blood Bank forms, to Blood Bank.
- Send a full blood count, blood film and UE to pathology labs. Also any addition investigations -
    - If evidence of haemolysis – haptoglobin, LDH and coagulation screen
    - If respiratory distress – CXR, ABG, BNP
    - If severe allergy or anaphylaxis – serum tryptase +/- anti-IgA antibodies
    - If sepsis or shock is possible – blood cultures

## Fractionated Blood Product Reactions

In the unusual event of an adverse reaction to a fractionated blood product notify Blood Bank immediately.

Reactions to IV immunoglobulin infusions tend to be related to the infusion rate (i.e. faster rate = more severe reaction) and are most likely to occur during the first hour of the infusion

**RECOGNISE:** Stop the infusion.

**RESPOND:** Get a medical review of the patient immediately

Perform a rapid clinical assessment of the patient. Stay with the patient.

Check the blood product for abnormal appearance

Talk with the patient to establish their status, inform and comfort

Disconnect the IV giving set, set line and unit aside for inclusion with reporting

Flush the cannula with 30mLs Normal Saline or attach a new IV infusion set with Normal Saline to maintain venous access

Administer fluids and oxygen if clinically indicated

Monitor TPR, BP, $Sp0_2$/ urine output every 5-15 minutes

**REPORT:** Notification can be made using the

- Acute Transfusion Reaction – Notification to Blood Bank form, or
- Notification of Suspected Adverse Reaction to a Fractionated Blood Product form (available from Blood Bank).

The Transfusion Nurse Specialist will obtain any further information from the treating clinician to complete pharmacovigilance reporting to the relevant manufacturer.

Collect a new blood sample from the patient and send to Blood Bank with a completed Blood Bank testing form.

Return all remaining bottles/vials to Blood Bank

## Near Miss or Actual Transfusion error

Inform medical staff and seek urgent medical help and/or review if it is believed that a patient has received

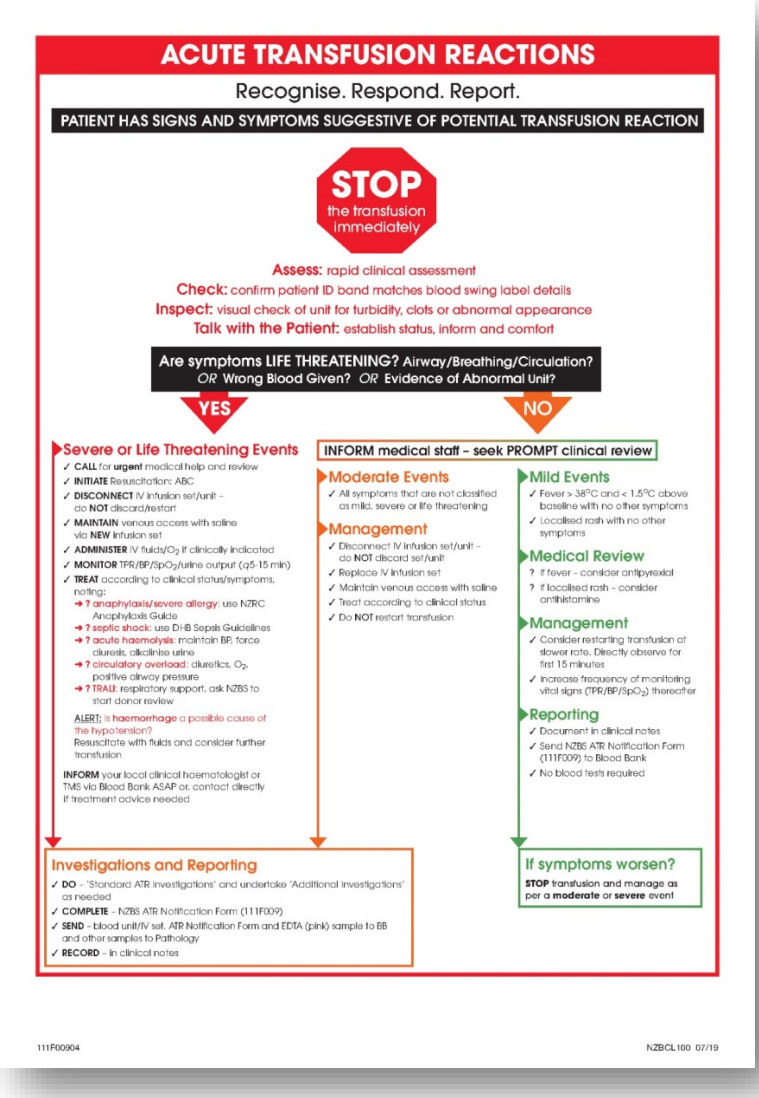
- a wrong blood component or fractionated blood product
- a blood component or fractionated blood product intended for another patient
- a transfusion that did not meet requirements, or
- a transfusion was inappropriate

Note: Patients may not always show a 'reaction' in these situations.

Blood Bank should be notified immediately

## Clinical Management Algorithm

Located on reverse of Adverse Transfusion Reaction – Notification to Blood Bank form



## Policy Measurement

CDHB transfusion guidelines are compliant with both the Australia and NZ Society of Blood Transfusion (ANZSBT) and New Zealand Blood Service (NZBS) recommendations.

NZBS DHB Clinical Oversight Programme (Audit) audits for evidence that:

- Blood components/products have been administered by a nurse or clinician with the appropriate training and certification to do so.
- Adequate Record of Transfusion is kept in patient clinical notes for traceability that a blood component / product / bone or tissue was actually used in the clinical setting. This includes the blood component swing label, start and finish times and double independent check signatures evidencing patient ID and component checks have been completed prior to transfusion.
- Policies and procedures related to valid informed consent, prescribing and transfusion administration support safe transfusion practice including reporting of adverse events or reactions, actual or near misses.

## References

NZ Blood Service Resource folder (located on intranet PRISM/Resources) or https://www.clinicaldata.nzblood.co.nz/resourcefolder/index.php?dhbid=2

ANZSBT. (2019). Guidelines for the Administration of Blood Products. https://anzsbt.org.au/wp-content/uploads/2019/10/ANZSBT-Administration-Guidelines-Revised-3rd-edition-Publication-Version-20191002.pdf

NZBS (2019). Haemovigilance Report. Haemovigilance-Annual-Report - 2019-min.pdf

NZBS 111G122 Transfusion Medicine Handbook. 2016. A guide to the Clinical Use of Blood Components, Blood Products and Blood Transfusion Procedures in New Zealand. https://www.**nz**blood.co.**nz**/assets/**Transfusion-Medicine**/PDFs/111G122

NZBS website. https://www.nzblood.co.nz/Clinical-information/Transfusion-medicine/Adverse-reaction-reporting-and-management

## NZBS 111F009 - Acute Transfusion Reaction – Notification to Blood Bank (Use original or print in colour)

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:** | **Volume transfused** (mL or units) |
| **Date / time transfusion reaction detected:** | |

**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.**