Site Applicability
BC Children’s Hospital and BC Women’s Hospital + Health Centre

Practice Level/Competencies
Completion of:
- Hospital orientation
- Administration of Component/products e-learning module on the Learning Hub.

Policy Statement(s)
Refer to transfusion practice standards.

Equipment & Supplies
- 0.9% Normal Saline
- Sterile dead-end cap (for administration set)
- Transfusion Reaction Report Form (TRRF) (00055606) the form is NOT AVAILABLE in ePOPS
  - Each unit should have a supply, if unavailable call TML for a form
- Requisition forms:
  - Urine Chemistry (95170 Rev. 5/93 00055597)
  - Bacteriology (L 1050 Rev. 03/10 0005197)
- 1 EDTA tube (lavender top) for transfusion reaction investigation
- Urine Specimen Container (for routine urinalysis)
- Blood Culture Bottles (for suspected bacterial contamination)
- Bio Hazard bag &/or zip lock transport bag

Clinical signs and symptoms of a transfusion reaction
A transfusion reaction is characterized by, but not limited to, one or any combination of the following signs and symptoms:

| Table 1: Signs and Symptoms of a Transfusion Reaction |
|---------------------------------|----------------|----------------|----------------|
| Hives                           | Flushing       | Heat / pain at IV site | Hypoxemia     |
| Itching                         | Headache       | Jaundice         | Hypertension  |
| Skin rash other than hives      | Dizziness      | Red or brown urine | Hypotension   |
| Fever*                          | Restlessness / anxiety | Oliguria         | Tachycardia  |
| Chills (sensation of cold)      | Nausea / vomiting | Diffuse hemorrhage | Shock        |
| Rigors (involuntary shaking)    | Chest pain     | Back pain        |               |
| Joint / muscle pain             | Facial or tongue swelling | Wheezing        | Shortness of breath |

*Fever Definition for transfusion reactions
A TEMPORAL temperature of 38.5°C, or higher, **AND** a one degree or more rise in temperature above the pre-transfusion baseline.
An ORAL temperature 38°C, or higher, **AND** a one degree or more rise in temperature above the pre-transfusion baseline.
An AXILLA temperature of 37.5 °C, or higher, **AND** a one degree or more rise in temperature above the pre-transfusion baseline.
A RECTAL temperature of 38.5°C, or higher, **AND** a one degree or more rise in temperature above the pre-transfusion baseline.

| Table 2: Temperature Equivalency Table |
|----------------|----------------|----------------|----------------|
| Oral | Temporal | Axilla | Rectal |
| 38°C | 38.5°C | 37.5°C | 38.5°C |
| 39°C | 39.5°C | 38.5°C | 39.5°C |
## Reaction Type / Signs or Symptoms

<table>
<thead>
<tr>
<th>Immediate steps</th>
<th>Blood Component/Product</th>
<th>Page</th>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hives &amp;/or itching are the only symptoms</td>
<td>All</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>IVIG Mild transient rate related signs &amp; symptoms</td>
<td>IVIG only</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Any Sign or Symptom</td>
<td>All</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Suspected Bacterial Contamination</td>
<td>All</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Fever is the only symptom in an oncology patient</td>
<td>RBC, Platelets or Plasma</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>An error has occurred</td>
<td>All</td>
<td>6</td>
<td>32</td>
</tr>
<tr>
<td>Reporting to TML</td>
<td>All</td>
<td>7</td>
<td>35</td>
</tr>
</tbody>
</table>

## STEPS

### Immediate steps

#### STEPS

1. **STOP** the transfusion immediately.
   - **Give** 0.9% Normal Saline, to keep vein open (TKVO) or prescribed rate, via rescue line
   - **Do Not** discard the component/product administration set.

   **RATIONALE**
   - Prevents the patient receiving additional component/product
   - Maintains vascular patency.
   - The product & administration set may be needed for inspection by TML as part of the transfusion reaction investigation.

2. **ASSESS** the patient’s vital signs and initiate resuscitative measures.
   - **Vital signs include:**
     - Pulse rate
     - Blood Pressure
     - Temperature
     - Respiration rate
     - O₂ saturation rate
     - **MONITOR** and record urine output.

   **RATIONALE**
   - To stabilize the patient.
   - To detect:
     - any changes in patient’s clinical condition from pre-transfusion assessment
     - hemoglobinuria (red/brown urine evidence of a hemolytic transfusion reaction)
     - decreased urine output

3. **RECONFIRM** the unique identifiers on both patient and component/product.
   - **VERIFY** the information is identical on the patient identification band, component/product tag and component/product label.
   - **Call TML immediately** at 7388 if an error has occurred; go to page 6, step 32.

   **RATIONALE**
   - Ensures that the patient is receiving the correct component/product.
   - If this product is not the intended product for your patient another patient may be at risk i.e. another patient may be about to receive the wrong product.

4. **CALL TML immediately** at 7388 if the patient has:
   - New onset red/brown urine, or
   - Sudden onset of hypoxemia, or
   - Sudden onset of hypotension, or
   - If you suspect bacterial contamination of the product; see table 4 page 4.

   **RATIONALE**
   - Signs and symptoms of a severe transfusion reaction.

5. **NOTIFY** the physician immediately.
   - **Follow** the physician's instructions for the treatment and management of the clinical symptoms.

   **RATIONALE**
   - To seek direction about patient management and stabilization.

### Hives and / or Itching are the only symptoms with all component/products

6. **STOP** the transfusion and follow steps 1 to 5

   **RATIONALE**
   - Clinical experience suggests that patients with hives and/or itching without additional signs & symptoms may continue to receive the transfusion.
   - Reducing the rate of the transfusion and medication
outlined above. The transfusion may be restarted, at a slower rate, if ordered by a physician, after consultation on the patient’s condition may ease symptoms.

7. IF transfusion is restarted:
   - Restart infusion at slower rate
   - Administer medication as prescribed
   - Directly observe the patient for the first 15 minutes after restarting the transfusion
   - Recheck vital signs 15 minutes after restart of the transfusion.
   - Complete the transfusion within 4 h of issue.
   Ensures early detection of deterioration in patient’s condition.
   Issue time is stamped on the Transfusion Record.

8. COMPLETE the TRRF; go to page 7, step 36.
   - No patient samples required.
   - Do not return the administration set.

9. STOP the transfusion subsequent to restarting if:
   - signs & symptoms persist, or
   - new signs & symptoms develop, or
   - patient’s condition deteriorates:
   Go to page 4, step 13.
   Indicative of a moderate to serve reaction.

<table>
<thead>
<tr>
<th>Table 3: IVIG Rate Related Signs and Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
</tr>
<tr>
<td>Flushing</td>
</tr>
<tr>
<td>Localized rash</td>
</tr>
</tbody>
</table>

10. For IVIG rate related signs and symptoms, see table 3, that are mild and transient.

11. STOP the transfusion immediately and follow steps 1 to 5 outlined on page 3.
   The transfusion may be restarted at a slower rate, if ordered by a physician, after consultation on the patient’s condition.
   If transfusion is restarted:
   - Administer medication as prescribed
   - Restart infusion at slower rate
   - Directly observe the patient for the first 15 minutes after restarting
   - Advance the IVIG infusion at a slower rate &/or longer intervals between rate increase
   - Record vital signs
   - 15 minutes after restarting the transfusion
   - prior to each rate increase
   - hourly for duration of transfusion
   - Observe for:
   - Response to interventions.
   - Emerging signs and symptoms.
   - Deterioration in the patient’s condition.
   - No TRRF required
   - No patient sample required
   - Do not return the administration set to TML
   These signs & symptoms are indicative of mild transient side effects of IVIG are:
   - usually rate related
   - not considered a transfusion reaction
   Ensures early detection of deterioration in patient’s condition.
Transfusion MUST be completed within 4 hours of issue from TML.

12. STOP the transfusion subsequent to restarting if:
   - signs & symptoms persist, or
   - new signs & symptoms develop, or
   - patient’s condition deteriorates
   Go to step 13.

All other sign and symptoms with all component/products; see table 1 page 1.

13. STOP the transfusion immediately:
   - Do not restart
   - Follow steps 1 to 5 outlined on page 2.

14. INITIATE the transfusion reaction investigation
    OBTAIN patient samples, see Table 6, page 7:
    - 1 EDTA tube (lavender tube)
    - for Direct Antiglobulin Test
    - 1 mL optimum, minimal 0.5 mL
    - sample does not need to be hand labeled
    - first voided post-reaction urine sample, and
    - sealed component/product bag & administration set

15. SEND patient samples:
    - 1 EDTA tube to TML, send with TRRF
    - Urine sample to chemistry, and
    - sealed component/product bag and administration set to TML, send with the TRRF

16. COMPLETE the TRRF; go to page 7, step 36

**Suspected Bacterial Contamination**

17. SUSPECT Bacterial Contamination of the component/product
    - IF the patient has signs or symptoms A, B, C or D; see table 4.

Table 4: Suspect Bacterial Contamination IF patient meets the criteria outlined in A, B, C or D:

A. A temporal temperature of 38.5°C or higher, or an oral temperature of 38°C or higher, or an axilla temperature of 37.5°C or higher,
   **AND** a one degree or more rise in temperature above the pre-transfusion baseline,
   **PLUS** any of the following: rigours, shortness of breath, hypertension, tachycardia, nausea or vomiting, or shock, **OR**

B. A temporal temperature of 39.5°C or higher, or an oral temperature of 39°C or higher, or an axilla temperature of 38.5°C or higher,
   **AND** a one degree or more rise temperature above the pre-transfusion baseline even in the absence of other signs & symptoms, **OR**

C. Fever* not responding to antipyretics, **OR**

D. A high suspicion of sepsis even in the absence of fever.

These are signs and symptoms of a severe reaction and bacterial contamination should be suspected regardless of the patient’s underlying condition.

18. STOP the transfusion:
   - DO NOT restart
   - Follow steps 1 to 5 outlined on page 2.

These are symptoms of a severe reaction & bacterial contamination should always be suspected regardless of the patient’s underlying condition.

Post-transfusion patient blood samples are tested for:
- Hemolysis (EDTA)
- Evidence of infection (blood cultures)

The component/product bag and administration set are:
- inspected by TML
- cultured for evidence of bacterial contamination

20. COMPLETE a transfusion reaction report form; go to page 7, step 36

**Fever is the Only Symptom For Oncology & BMT patients on T 8, Oncology Unit, only**

21. If fever is the only symptom, see table 5.

<table>
<thead>
<tr>
<th>Table 5: Fever is the Only Symptom in Oncology Patient only</th>
</tr>
</thead>
<tbody>
<tr>
<td>△ For Oncology &amp; BMT patients on T 8, Oncology Unit, only</td>
</tr>
<tr>
<td>△ Fever* is the only symptom</td>
</tr>
<tr>
<td>△ For patients receiving RBC, platelet or plasma transfusion only</td>
</tr>
<tr>
<td>△ This policy does not apply to Hematology Patients e.g. Thalassemia or Aplastic Anemia patients</td>
</tr>
</tbody>
</table>

**Authorization** for restarting the transfusion in a febrile patient may be given if:
- temporal temperature is less than 39.5 °C or, oral temperature is less than 39°C, and
- fever is the only symptom, and
- the onset of fever is greater than 15 minutes into the transfusion, and
- clinical condition warrants continuation of current transfusion, and
- the physician performs a bedside clinical assessment of the patient, and
- the physician writes an order to restart the transfusion in the patient’s chart, and

after administration of all medications as prescribed by the physician

22. STOP the transfusion and follow steps 1 to 5 outlined on page 2. 

Indicative of a moderate to severe reaction.

23. ADMINISTER medications as ordered by physician.

24. OBTAIN patient samples:
- 1 EDTA tube (lavender tube)
- sample does not need to be hand labeled
  - The sample must be collected before the transfusion is restarted.
- First voided post-reaction urine sample
  - Transfusion can be restarted before the urine sample is collected

SEND patient samples:
- 1 EDTA tube to TML, send with TRRF
  - Send sample STAT
- Urine sample to chemistry.

Even if the transfusion is restarted patient samples are required.

25. FOLLOW physician direction for restarting the transfusion.

26. RESTART the transfusion at 1 mL/kg/h, up to a maximum of 50 mL/h, for first 15 minutes.
- Remain with, or be in a position to directly observe, the patient for the first 15 minutes after restart.
- Recheck vital signs 15 minutes after restart of the transfusion.
- Record vital signs:

The first 15 minutes after the restart of the transfusion are the most critical.

Ensures early detection of deterioration in patient’s condition.

Serious and life threatening reactions can occur unpredictably and progress rapidly therefore patients must be closely monitored following restart of the
- 60 minutes after restart
- hourly for remainder of the transfusion, or
- as per physician’s orders

**Observe** for:
- **Response** to interventions.
- **Emerging** signs and symptoms.
- **Deterioration** in the patient’s condition.

- **Complete** the transfusion within 4 h of issue.

**Issue time is stamped on the Transfusion Record.**

### 27. REPORT

- **REPORT** the reaction, even if the transfusion is restarted the suspected reaction must be reported.

### 28. STOP

- **STOP** the transfusion if the:
  - patient’s temperature continues to rise one hour post antipyretic administration, or
  - patient develops additional signs and symptoms of a transfusion reaction e.g. rigors, hypotension, or
  - patient’s condition deteriorates, or
  - post transfusion DAT is newly positive or there is an increase in the strength compared to the pre-transfusion DAT

- **DO NOT** restart

**Indicative of a moderate to severe reaction.**

### 29. Follow

- **Follow** steps 1 to 5 outlined on page 2.
  - a. **Collect** patient blood cultures, if required, see Table 4, and **send** to microbiology
  - **Send** Sealed component/product bag & administration set to TML

**You do not need to recollect the EDTA blood sample or urine sample if the samples were sent previously at step 24.**

### 30. UPDATE TML:

- **Update** the photocopied version of the TRRF, if necessary.

### 31. Send

- **Send** the updated photocopied version of the TRRF to TML with the sealed component/product bag; go to page 7, step 36.

### An Error Has Occurred

### 32. STOP the transfusion:

- **DO NOT** restart
  - **Follow** steps 1 to 5 outlined on page 2.
  - **Call TML immediately** at 7388, **describe** nature of the error.

**For example:**
- Patient receiving blood intended for another patient.
- Patient receiving the wrong component/product.
- Component/product past expiry date.

If this product is not the intended product for your patient another patient may be at risk i.e. another patient may be about to receive the wrong product

### 33. INITIATE

- **INITIATE** the transfusion reaction investigation

**OBTAIN** patient samples, see table 6:
- 1 EDTA tube (lavender tube)
  - sample does not need to be hand labeled
  - First voided post-reaction urine sample, **AND**
  - Sealed component/product bag and administration set

**SEND** patient samples:
- 1 EDTA tube to TML, send with TRRF
Urine sample to chemistry, AND
- Sealed component/product bag and administration set to TML, send with TRRF.

34. COMPLETE the TRRF, go to step 36.

35. REPORT the error. Complete a PSLS

Reporting to Transfusion Medicine Laboratory

36. COMPLETE sections 1 to 6 of the TRRF, see appendix A.
- Photocopy page 1 of the TRRF and
- Retain photocopied version of TRRF in patient chart

The form is NOT AVAILABLE in E pops, every unit should have a supply (TML may have a form)

37. PROMPTLY send, see Table 6.
- Completed TRRF to TML
- Patient blood sample(s), if required
- Sealed component/product bag and administration set, if required.

Post-transfusion patient blood samples are inspected/tested for evidence of hemolysis & compared to pre-transfusion samples.
A clerical check & visual inspection is performed on the returned product.

Table 6: Requirements for TML Investigation

<table>
<thead>
<tr>
<th>Sample</th>
<th>Form</th>
<th>Send to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 EDTA tube</td>
<td>Transfusion Reaction Report Form (00055606)</td>
<td>TML</td>
</tr>
<tr>
<td>Urine (first voided post-reaction)</td>
<td>Urine Chemistry (95170-00055597))</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Patient blood cultures</td>
<td>Bacteriology (L1050-0005197)</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Component/product</td>
<td>Transfusion Reaction Report Form (00055606)</td>
<td>TML</td>
</tr>
</tbody>
</table>

38. Continue to MONITOR patient for:
- Emerging signs and symptoms
- Response to interventions
- Deterioration in patient’s condition.

Early detection of deterioration in patient’s condition.
Monitor effectiveness of interventions.

Documentation

DOCUMENT the event, interventions taken and patient response on appropriate record(s):
- Patient flow sheet, progress/nurse’s notes

DOCUMENT on Transfusion record:
- Tick box to indicate a transfusion reaction has occurred
- Retain in patient’s chart

DOCUMENT on Product Tag:
- Tick box to indicate a transfusion reaction has occurred
- Return product tag to TML (if not already returned to TML with product)

Definitions

A transfusion reaction is an undesirable or unintended occurrence during or after the administration of any blood component or product that is considered to be definitely, probably, or possibly related to the transfusion.

Acute transfusion reaction: Reaction occurs from first few minutes of transfusion up to 24 hours after the start of transfusion.

Delayed transfusion reaction: Reaction occurs more than 24 hours after start of transfusion.

Fever: A temporal temperature of 38.5°C or higher, or an oral temperature of 38°C or higher,
or an axilla temperature of 37.5°C or higher, **AND** a one degree or more rise in temperature above the pre-transfusion baseline.

**Blood component**: a therapeutic part of blood intended for transfusion (e.g. red cells, platelets, granulocytes, plasma and cryoprecipitate)

**Blood product**: a therapeutic product derived from human blood or plasma and produced by a manufacturing process (e.g. albumin, immunoglobulins, coagulation products)

References


Transfusion Medicine Medical Policy Manual revised 2010-07-03.

Consensus Recommendations for the use of Immunoglobulin Replacement Therapy in Immune Deficiency 2nd ed July 2009 APIIEG.

Quick Reference Guide - Response to Transfusion Reaction, March 2019, BC Provincial Model Document – BCTISS TTI.0001 Ver 2.1

Appendix

Appendix A: How to complete the Transfusion Reaction Report Form

Developed By

Transfusion Medicine – Transfusion Safety Nurse Clinician

Version History

<table>
<thead>
<tr>
<th>DATE</th>
<th>DOCUMENT NUMBER and TITLE</th>
<th>ACTION TAKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-Oct-2019</td>
<td>C-0506-12-60376 Transfusion Reaction Immediate Management</td>
<td>Approved at: Transfusion Safety Committee</td>
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**Appendix A: How to complete the Transfusion Reaction Report Form**

**How to Complete the Transfusion Reaction Report Form**

1. **Pt and blood product checks are identical. YES or NO**

2. **Category from standardized list e.g. Medical or Obstetrics**

3. **Diagnosis & Indication for transfusion are both needed as they may differ**

4. **C&W specific location e.g. T6 or Cedar**

5. **1. IF NO, (an error has occurred) contact TML IMMEDIATELY another patient may be at risk!**

6. **Use Cerner Label to give patient details**

7. **2. Information that the TML & pathologist need for investigation of the**

8. **3. T8 outpatient clinic, MDU & Renal Unit are Outpatient**

9. **4. Temp route is needed**

10. **4. Highest temp is needed for definition of fever**

11. **5. Blood product e.g. Platelets or IV Ig**

12. **5a. Record volume transfused if known estimate if volume is not known**

13. **5b. Filters or Equipment Used: tick all that apply**

14. **6. Please sign as well as print name. A print name improves identification of the contact person if follow up is required.**

15. **6a. Treatment measure taken: Click all measures that apply. Use “Other” to enter additional information.**