Blood/Blood Products: Transfusion Reaction Identification and Management

Site Applicability

PHC Acute Care Sites

Practice Level:

Registered Nurses (RNs), Nurse Practitioners (NPs), Physicians, Perfusionists and Anesthesia Assistants (AAs) may transfuse blood/blood products and are referred to as the **Transfusionist** in this document.

- Completion of initial education and annual Nursing Competency Checklist is required for nurses.

Licensed Practical Nurses (LPNs) or Registered Psychiatric Nurses (RPNs) CANNOT act as the transfusionist but may provide initial response to a transfusion reaction.

- Employed Student Nurses (ESNs) and Student Nurses (SNs) **CANNOT** act as the transfusionist but can work alongside the transfusionist to respond to a transfusion reaction.

Need to Know:

1. All transfusions carry the risk of a reaction.
2. The transfusionist is responsible for the recognition of a reaction and any needed interventions if a reaction or suspected reaction occurs.
    - Anaphylaxis: Initial Emergency Management is a nurse independent activity (NIA) and if the RN has appropriate training they may follow that procedure (BD-00-12-40091)
3. Transfusion reactions are to be **immediately** reported to both the Prescriber and to the Transfusion Medicine Laboratory (TML) via the "Transfusion Reaction Report Form" (Form ID - 2880)

Protocol

Assessment:

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

Blood Transfusion Reaction – Clinical Signs and Symptoms		
Urticaria (rash)	Joint/muscle pain	Diffuse hemorrhage
Pruritus (itching)	Back pain	Dyspnea (Shortness of breath)
Headache	Chest pain	Wheezing
Fever (oral T 38°C or more AND more than 1°C rise above baseline) **Low – risk:** • fever of 38.9°C or less with NO other signs or symptoms occurring after 15 minutes of transfusion initiation **High- risk** : • Fever of any temperature with any additional signs or symptoms (e.g. chills, rigors), OR • Any fever of 39.0°C or higher, OR • Any fever occurring within the first 15 minutes of transfusion initiation	Facial or tongue swelling	Hypoxia (any of the following) • SpO_2 less than 90% on RA • PaO_2 less than 60mmHg on RA • PaO_2/FIO_2 ratio 300 or less)
Chills	Flushing	Hypertension
Rigors	Jaundice	Hypotension • SBP drop 30 mmHg or more • SBP below 80 mmHg
Restlessness	Red or brown urine	Tachycardia (HR rise 40 bpm or more)
Anxiety	Nausea/vomiting	Shock
Dizziness	Heat/pain at IV site	Oliguria

*See: (Appendix A) for more information regarding Identifying Transfusion Reactions

Interventions:

See clinical procedure on reverse of Transfusion Record that comes with all blood products (Appendix B)

In the event of a suspected or confirmed transfusion reaction **immediately stop the transfusion**, and perform the following (**unless IVIG**):

1. Disconnect the blood line from the patient and cap the tubing
2. Connect transfusion reaction line to the patient and run NS at TKVO
3. Take vital signs and assess symptoms
4. Start resuscitative measures as needed i.e. call code BLUE if required
5. Notify the Prescriber and TML
6. Administer medications as per Prescriber's order
7. Prescriber to enter TM Transfusion Reaction Module in Power Plan
8. Obtain blood and first-voided urine sample, or catheter sample, as per Prescriber's order
9. Continuously monitor patient for worsening symptoms
10. Return remainder of the blood/blood component and attached tubing to TML if appropriate (for guidance see Appendix B
11. Complete Transfusion Reaction Report Form from Form Fast (Form ID – 2880) and send to TML

If IVIG, refer to Appendix C or follow the guidelines in: Intravenous Immunoglobulin (IVIG): Patient Care and Administration (B-00-13-10164).

Documentation:

- **Transfusion Reaction Report Form from**
  - Print the Transfusion Reaction Report form from FormFast
  - Ensure all fields on the front of the form are completed
  - Send the completed form to TM with the appropriate samples and/or remaining blood product
- **Cerner free text note, include:**
  - Patient's symptoms, including time of onset and resolution
  - Actions taken by transfusionist and patient response to actions

Patient Education and Resources:

1. All patients and caregivers should be aware of the risks, benefits and alternatives of transfusion.
2. Patients should be educated on the signs and symptoms of a transfusion reaction.
3. Patients should be instructed to promptly report any unusual symptoms to staff.
4. If the patient is being discharged within 24hr or is an outpatient give "After your Transfusion" pamphlet for aftercare and delayed transfusion reaction reporting information.

Related Standards & Resources:

1. BD-00-12-40091 - Anaphylaxis: Initial Emergency Management (Adult and Pediatric)
2. B-00-12-10065 - Blood/Blood Products Administering
3. B-00-13-10164- Intravenous Immunoglobulin (IVIG): Patient Care and Administration
4. B-00-12-10133- Hemodialysis: Blood/Blood Product Administration
5. B-00-13-10028- NICU: Blood/Blood Product Transfusion for Newborns
6. Transfusion Medicine: Blood Product Fact Sheet
7. Transfusion Medicine: Laboratory Manual
8. Nursing Competency: Blood/Blood Product Administration Online Learning Hub

References:

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8. Provincial Blood Coordinating Office (PBCO). (2022) .*Transfusion Medicine- Medical Policy Manual (TM- MPM),* Version 3.0. Retrieved from : https://www.pbco.ca/images/Resources/Manuals/TM_Medical_Policy_Manual/TMMPM_Section11.0_V3.1.pdf
9. Provincial Blood Coordinating Office (PBCO). (2017). *Clinical Transfusion Resource Manual: Transfusion Reaction Chart*, Version: 3.2. Retrieved from http://pbco.ca/images/Resources/Manuals/Clinical_Transfusion_Resource_Manual/10_CTRM.A.002_Appendix-B_V3.2_Transfusion_Reaction_Table.pdf

Appendices

Appendix A – Identifying type of transfusion reaction

Appendix B –Clinical Procedure – Transfusion Reaction Quick Reference Guide

Appendix C - IVIG Infusion Reaction Management

Appendix A: IDENTIFYING TYPE OF TRANSFUSION REACTION

Clinical Signs & Symptoms	Possible reaction type
• Urticaria • Pruritis • Localized angioedema without respiratory distress	**Allergic Reaction, Minor**
• Urticaria • Pruritis • Localized angioedema without respiratory distress • Facial and glottal edema • Severe respiratory compromise • Profound hypotension • Bronchospasm • Cytokines • Loss of consciousness • Death	**Anaphylactic** **Or** **Anaphylactoid** **Or** **Anaphylactic Shock**
May occur immediately or 1-2 h after transfusion completed & persist for 8 h Experiencing 1 or more of the following and does not always include fever: • Fever • Muscle cramps • Chills • Rigors • Nausea • Headache • Flushing of skin • Tachycardia	**Febrile Non-Hemolytic Transfusion Reaction (FNHTR)**
• Fever • Chills • Headache • Facial flushing • Dyspnea • Burning along vein • Low back pain • Angina-like-chest pain • Disseminated intravascular coagulation • Hemoglobinuria • Oliguria • Renal failure • Shock • Slow, bounding pulse • Hypotension **Contact TM Lab immediately if patient has any of the following:** • New onset of red/brown urine, or • Sudden onset of hypoxemia, or • Sudden onset of hypotension	**Hemolytic Reaction**

** Adapted from: PBCO Clinical Transfusion Manual: Transfusion reaction chart, Version 3:2*

Clinical Signs & Symptoms		Possible reaction type
• Headache • Dry cough • Cyanosis • Dyspnea • Chest tightness	• Pulmonary edema • Congestive heart failure (CHF) • Engorgement of neck veins • Tachycardia • Hypertension	**Transfusion Associated Circulatory Overload (TACO)**
• Acute Onset • Fever • Chills • Tachycardia • Hypotension • Shortness of Breath	• Hypoxemia • Chest X-ray findings of Bilateral infiltrates • No evidence of circulatory overload • Occurs within 6 hours of completion of transfusion	**Transfusion Related Acute Lung Injury (TRALI)**
A) Fever PLUS any of the following signs and symptoms: • Rigors • Nausea and Vomiting • Dyspnea • Hypotension • Tachycardia • Shock	and/**or** **B)** Fever even in the absence of other signs and symptoms in the first 15 minutes of transfusion. and/**or** **C)** Fever not responding to antipyretics and/**or** **D)** A high suspicion of sepsis even in the absence of fever.	**Suspected Bacterial Sepsis**
Contact TM Lab Immediately		

** Adapted from: PBCO Clinical Transfusion Manual: Transfusion reaction chart, Version 3:2*

Appendix B: Clinical Procedure

TRANSFUSION REACTION QUICK REFERENCE GUIDE

IF YOU SUSPECT A TRANSFUSION REACTION

1. STOP	2. CHECK	3. CONFIRM	4. NOTIFY	5. FOLLOW
the transfusion and maintain IV access	vital signs and support the patient	patient and component/product identifier	the MRP and Transfusion Medicine Lab (TML)	Symptom Based Management below.

SYMPTOM BASED MANAGEMENT

Localised rash and itch	Low Risk FEVER Occurs more than 15 min after initiation Oral temp of 38 to 38.9 °C AND 1 °C or less rise + NO other symptoms	IV Ig Mild Symptoms (Limited to flushing, muscle aches, shivering, light-headedness, dizziness, irritability, anxiety)	IV Ig Headache With no other symptoms	High Risk FEVER Fever in first 15 min OR low risk fever + other symptoms OR Oral temp 39 °C or more AND greater than 1 °C rise + NO other symptoms	Dsypnea /shortness of breath	All others
POSSIBLY RESTART THE TRANSFUSION				**DO NOT RESTART THE TRANSFUSION**		
With slower rate +/- medications AND frequent vital signs				Give NS via rescue line		
PATIENT SAMPLES				**PATIENT SAMPLES**		
None				1 EDTA tube, urinalysis and blood cultures		1 EDTA tube and urinalysis
ADDITIONAL INVESTIGATIONS				**ADDITIONAL INVESTIGATIONS**		
None				Return blood product + administration set to TML	CXR BNP, fluid balance	None

COMPLETE TRANSFUSION REACTION FORM FOR ALL SUSPECTED REACTIONS

Appendix C: IVIG Infusion Reaction Management

	Send to Transfusion Medicine Lab			
Clinical Signs & Symptoms (S/S)	**Form**	**Sealed Product Container**	**Patient Samples Required**	**Ongoing Transfusion care**
IVIG related, mild transient s/s – side effects that resolve with reduced flow rate or medication	No	No	None	**Consultation with Physician**. Transfusion may be restarted **after** medication at a slower rate with frequent assessment.
Urticaria or pruritis with any blood component/product	Yes	No	None	
Low Risk Fever: fever of 38.9°C or less with NO other signs or symptoms occurring AFTER 15 minutes of transfusion initiation	Yes	No	None	**Consultation with Physician.** Transfusion MAY be restarted at a **slower rate,** with appropriate medication, and frequent vital sign assessments **IF ordered** by the MRP.
IVIG related s/s that are moderate or severe or unresponsive to clinical intervention – refer to ongoing transfusion care	Yes	No	None	**Do NOT restart the transfusion**
Suspected bacterial contamination (see Appendix A)	Yes	Yes (avoid contamination of product)	• 2 EDTA vials • First voided post-reaction urine sample for routine U/A • Patient blood cultures recommended.	
All other unexpected signs or symptoms with any blood component/product	Yes		• 2 EDTA vials • First voided post-reaction urine sample for routine U/A	

** Adapted from: PBCO Clinical Transfusion Manual: Transfusion reaction chart, Version 3:2*

Persons/Groups Consulted:

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