Centre universitaire de santé McGill | McGill University Health Centre

CLINICAL PROTOCOL – MUHC

(PROTOCOLE CLINIQUE - CUSM)

☐ Medication included ☒ No Medication included

☒ MCH ☒ MGH ☒ RVH ☒ MNH ☒ MCI ☒ LACHINE

THIS IS NOT A MEDICAL ORDER

Title:	Procedure for Transfusion Reaction – Adult, Pediatric and Neonatal
This document is attached to:	1. Administration of Labile and Stable Blood Products Clinical Guideline 2. Administration of Labile Blood Products 3. Administration of IVIG adult 4. Infusion of Intravenous Immunoglobulin (gamma globulin-IVIg) in the neonatal and pediatric population 5. Administration of Albumin 5% and 25% 6. Administration of Stable Blood Products 7. Blood Cultures & Type and Screen - Collective Order 8. MUHC Patient Double Identification Policy 9. MUHC Nursing Documentation Guidelines Adult 10. MUHC Hand Hygiene 11. Blood Transfusion: Answers to your Questions 12. Maintaining the patency of Central Venous Access Devices (CVAD) in Neonatal and Pediatric Patients. 13. Maintaining the Patency of Peripheral Intravenous (PIV) Catheters in Pediatric and Neonatal Patients

1. PURPOSE

To provide standard procedures for professionals whose patients may be experiencing symptoms suspected as reaction to transfusion of all blood products

Blood products are classified under two categories – labile and stable.

Some examples of products are:

Labile = fresh products, i.e. short shelf life	Stable = bottled products, i.e. long shelf life
Red Blood Cells (RBCs)	Albumin
Platelets	IVIg
Plasma	PCC (i.e. Beriplex) – may be reconstituted in Blood Bank
Cryoprecipitate	Factors

All actions taken following a transfusion reaction must be carried out according to this protocol.

2. PROFESSIONALS

This protocol is intended for professionals treating a patient (neonate, pediatric or adult) who presents with a transfusion reaction during or following a blood product administration. These professionals are: Registered Nurses (RN), Nurse practitioners (NP) – including candidates to the nursing profession (CPN), Physicians, Anesthetists, Perfusionists, and Respiratory Therapists working in Anesthesia.

Licensed Practical Nurses (LPNs), nursing externs and students cannot stop the transfusion.

3. PATIENT POPULATION

This protocol applies to all patients (neonate, pediatric or adult) inpatients and/or outpatients who present with a transfusion reaction during or post transfusion of blood products. An immediate transfusion reaction is defined as all new symptoms (absent before the start of the transfusion) which manifest during or up to 24 hours post transfusion, see Table 1, and a delayed transfusion reaction is defined as symptoms occurring greater than 3 days post transfusion, see Table 2.

4. ELEMENTS OF CLINICAL ACTIVITY

Professionals are responsible to know the limits and extent of their practice as related to the particular protocol.

Equipment needed:

- Implicated transfused product and tubing (include all products transfused within the previous 24 hours), in supplied plastic bag
- Confirmation slip (bottom part of distribution voucher) if available
- Photocopy of distribution voucher, including reverse side completed with all information about the transfusion reaction (Photocopy necessary because original distribution voucher must stay in the patient's chart)
- Witness attestation form (DM-2095), or the version from the Transfusion Services' requisition or OACIS.
- An EDTA lavender tube (or micro pink tube for neonates/pediatric only) for Type and Screen blood sample – post transfusion sample
- Blood culture sample (if applicable)

Procedure:

4.1 Assess for signs and symptoms of transfusion

Professionals administering blood products must assess for signs and symptoms of transfusion reaction.

Warning

If airway, breathing and/or circulation is compromised,

initiate a CODE BLUE (adult or pediatric as appropriate) or **CODE PINK for NICU only**

Refer to the algorithm to support clinical decision making and interventions, found on Annex 1.

Table 1 Signs/symptoms of immediate transfusion reactions (not an exhaustive list)	
Signs/symptoms	**Details**
Hives, rash, itchiness	Patient may be scratching Red, raised bumps will be visible ** MUST not have any respiratory distress
Chills or rigors	May or may not be accompanied by fever
Fever	38.5ºC and above **and** an increase of 1ºC from baseline
Hypertension/hypotension	Plus/minus 30 mmHg systolic for adults; Plus/minus 20 mmHg systolic for pediatric and neonatal patients
Tachycardia	Plus 30 beats per minute (bpm) for adults as per patient's baseline; Plus 20 bpm for pediatric and neonatal patients as per patient's baseline
Nausea, vomiting, general malaise, anxiety	subjective symptoms
Dyspnea, cough, agitation, crying, irritability	
Pain	At injection site, chest, back, any new manifestation
Any new clinical manifestation	Since start of transfusion
Physical or mental status changes	Any change should be considered a transfusion reaction
Anaphylactic: hypotension, tachycardia (pulse may also be weak), difficulty breathing, N/V	Life threatening event
Severe hemolytic: back and/or flank pain, blood in urine, dizziness, chills, fever, loss of consciousness	Life threatening event. Patient's immune system is destroying the transfused red blood cells

NOTE:

Other symptoms, which may not be listed, can be considered as a transfusion reaction if they were not present prior to the transfusion. If in doubt, declare a transfusion reaction.

Delayed transfusion reaction

Description of possible delayed transfusion reactions – symptoms may occur 3 – 14 days post transfusion:

Table 2

Delayed transfusion reaction

REACTION	SIGNS/SYMPTOMS	LABORATORY ABNORMALITIES
Delayed hemolytic reaction	• Symptoms of anemia • Jaundice • Dark urine	• Decreased Hgb increased LDH, decreased bilirubin • Positive antibody screen • Positive direct anti-globulin (Coombs) test
Post transfusion purpura (PTP)	• Bleeding • Ecchymoses • Petechiae	Decreased platelet count
Transfusion associated graft-vs-host disease (GVHD)	• Fever • Rash • Diarrhea	Pancytopenia Abnormal liver tests (LFTs)

These symptoms (table 2) ***may*** present many days post transfusion. Unless the patient is hospitalized, the symptoms may not be recognized as transfusion reactions. The leaflet "Blood Transfusion: Answers to your Questions" may help the patient recognize some these reactions or symptoms.

4.2 Intervention refer to the algorithm annex1

4.2 Allergic reaction

Defined as: hives, rash, itchiness affecting less than 1/3 of patient's body AND no respiratory distress.

Allergic reaction	
Action	**Details/rational**
1. Stay with the patient	
2. STOP transfusion	Do not disconnect*
3. **Adult:** Infuse Normal Saline 0.9% via primary line at KVO (10ml/hr) **Peds:** As per maintaining patency protocol in neonatal and Pediatric patient	NaCl is not infused from secondary Y line
4. Repeat vital signs	
5. Contact physician	Using SBAR, communicate findings to physician and carry out any orders as required
6. Provide any ordered care and monitor symptoms	To assess for improvement or deterioration
7. Review with physician if product can be restarted	See below

* **For allergic reaction only**, transfusion may be restarted (with physician approval) if symptoms subside (with or without intervention), providing it was never disconnected from patient.

- The four (4) hour infusion time must be respected, i.e. 4 hours from distribution time (see voucher) for labile products or 4 hours from piercing the bottle for stable products.
- Restart transfusion at slower rate than before reaction and monitor patient more frequently to ensure no repeat reaction.

4.2.2 Immediate transfusion reaction (during or up to four hours post transfusion):

- Defined as in Table 1

Transfusion reaction	
Action	**Details/rational**
1. Stay with the patient and call for help if needed	May need medical or nursing assistance
2. Stop the transfusion immediately	
3. Disconnect the transfusion from the main line and infusion of NS at KVO (until further physician orders) **Note**: If patient was receiving IVIg, flush line with D5W then change to NS	Note: The small amount of blood product that will be present below the lowest port is about 2 mL; this is not considered significant according to Canadian Transfusion Safety Network.
4. Repeat vital signs	
5. Notify physician	Using SBAR, communicate findings to physician and carry out any orders as required
6. Repeat all verification checks (Voucher/Product/Patient ID)	To double check if there were any discrepancies that were missed
7. Obtain a new Type & Screen sample (lavender tube for adult, micro pink tube for pediatrics) if clinically applicable	See collective order – blood cultures and type & screen post transfusion reaction
8. Obtain blood cultures (aerobic and anaerobic) if clinically applicable	May need a MD prescription, if the collective order is not applicable
9. Administer appropriate prescribed medications (example: Antipyretic, Antihistamine)	To treat patient symptoms

4.3 Reporting

All serious adverse reactions shall be immediately reported to the Transfusion Service (Blood Bank, ext Glen: 34078 or 22366, MGH/Neuro: 42450 or 42451, Lachine: 77377or 77378) and Transfusion Safety Service (ext: 34055).

Serious adverse reactions include, but are not limited to:

- Immediate hemolytic reaction
- Delayed hemolysis
- Systemic allergic reaction, including anaphylaxis
- Bacterial sepsis
- Other transfusion transmissible infections
- Transfusion associated graft vs host disease (GVHD)
- Post transfusion purpura (severe thrombocytopenia post transfusion)
- Death occurring during or post transfusion (48 hours) where the blood product may be implicated
- Transfusion-related acute lung injury (TRALI*)

*TRALI:

Symptoms of TRALI typically develop during, or within six (6) hours of, a transfusion. Patients present with the rapid onset of dyspnea and tachypnea. There may be associated fever, cyanosis, and hypotension.

Clinical exam reveals respiratory distress and pulmonary crackles and may be present with no signs of congestive heart failure or volume overload. Chest x-ray (CXR) shows evidence of bilateral pulmonary edema unassociated with heart failure (non-cardiogenic pulmonary edema), with bilateral patchy infiltrates, which may rapidly progress to complete “white out” indistinguishable from Acute Respiratory Distress Syndrome (ARDS).

4.4 Monitoring

a) Monitor the patient’s symptoms post intervention, including vital signs. If symptoms worsen, notify physician immediately, as well as Transfusion Services (Blood Bank) and Transfusion Safety Service. Additional interventions may be needed.

b) Additional laboratory tests may be needed depending on the reaction and the medical order.

4.5 Documentation

a) The distribution voucher (bordereau d'émission) must be completely filled out.

b) The reverse side of this voucher must also be completely filled out; this is the reaction information.

c) Photocopy both sides of this voucher

d) **Adult**: Refer MUHC Nursing Documentation Guidelines Adult for DARP method of charting and include a follow-up, i.e. were interventions successful

Peds: Document in nursing documentation

e) Document in the progress notes the outcome of the interventions

f) The completed upper portion of the Transfusion Services distribution voucher must be kept in the patient's medical record indefinitely. Photocopy is sent to Blood Bank.

4.6 Send the following to Transfusion Services (Blood Bank) <u>via a staff person</u> (<u>DO NOT use the pneumatic tube</u>):

a) Implicated product(s), including all products transfused within the previous 24 hours. ***Note: make sure all open ports are plugged to avoid leakage and/or contamination*** (Microbiology will not test if there is leakage).

b) Use the plastic bag that the product came in.

c) Administration set tubing (must remain connected to the blood product at all times and returned along with the blood product)

d) Blood samples (Type & Screen +/- blood cultures), including a Witness Attestation form completely filled out[1] (if applicable – no specimens needed for allergic reaction)

e) Photocopy of completed distribution voucher (recto-verso)

f) Completed detached bottom portion of the Transfusion Services distribution voucher

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7. APPROVAL PROCESS

Institutional and professional approval

Committees	Date approved [yyyy-mm-dd]
☒ Clinical Practice Review Committee (CPRC) (if applicable)	2021/02/04
☐ Adult Pharmacy and Therapeutics (P&T) (if applicable)	NA
☐ Pediatric Medication Administration Policy (PMAP) (if applicable)	NA
☐ Pediatric Pharmacy and Therapeutics (Peds P&T) (if applicable)	NA
☐ Multidisciplinary Council (MDC) (if applicable)	Na

8. REVIEW DATE

To be updated in maximum of 4 years or sooner if presence of new evidence or need for practice change.

9. REFERENCES

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http://www.transfusionmedicine.ca/articles/transfusion-related-acute-lung-injury-trali

Practical Guide to Transfusion Medicine, AABB press, 2001

Version History (for Administrative use only)			
Version	**Description**	**Author/responsable**	**Date**
No 1	Development and approval	Monica Howard	2019-07-2
No 2	Description (Revision with modifications	Monica Howard	2021/02/03
No	Description (Creation, Approval, Revision with modifications, Revision without modifications, etc.)	Management Acronym, Function	
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Annex 1 Transfusion Reaction Algorithm