DEFINITIONS

**ABO Group & Rh Type:** a pre-transfusion test to determine the specific ABO group and Rh type of the patient; if requested alone, does not include an antibody screen.

**Adverse Event:** an undesirable and unintended occurrence before, during, or after the administration of blood components or plasma protein products, whether or not considered to be related to the administration (includes transfusion reactions and transfusion related errors).

**Autologous Component:** a blood component donated by the patient, for use by the patient.

**Blood Components:** packed red blood cells, platelets, plasma, cryoprecipitate, and hematopoietic progenitor cells. This includes autologous red cell or plasma.

**Special Requirements:** attributes or blood component modification from its original state performed by the Transfusion Medicine Laboratory, including irradiation, washing, splitting/dividing units (for more information, refer to: https://www.saskatoonhealthregion.ca/locations_services/Services/Pathology-Laboratory-Med/healthpractitioners/Pages/specialrequirementsforbloodproducts.aspx)

**Crossmatch:** a laboratory test to determine compatibilities between donor and recipient blood prior to transfusion; used to verify ABO compatibility and the presence of antibodies.

**Divided Unit:** blood components divided in smaller portion sizes and administered as a partial unit.

**Emergent/Life-threatening Circumstance:** a situation in which a delay in treatment with blood components and/or plasma protein products may be deleterious or detrimental to the patient.

**Group & Screen (also known as Type & Screen):** required pre-transfusion tests to determine the patient ABO and Rh type, and to check for non-ABO antibodies. Antibodies detected may be auto-antibodies formed against the patient’s own cells, or allo-antibodies which formed after exposure to foreign red blood cells from a previous exposure (ex. blood transfusion, pregnancy, organ transplant). Results must be available before cross matched red blood cell units can be issued.
Incompatible Transfusion: red blood cell units issued for transfusion to a patient that are ABO compatible, but found to be crossmatch incompatible with donor red blood cells due to non-ABO auto-antibodies. Note: Crossmatch incompatible units will be identified with a neon green sticker, and release will have been authorized by the Transfusion Medicine Physician on-call after all testing protocols have been exhausted and fully compatible red blood cell units cannot be found. For more information, refer to: https://www.saskatoonhealthregion.ca/locations_services/Services/Pathology-Laboratory-Med/healthpractitioners/Pages/crossmatchincompatibleredbloodcellstm.aspx

Massive Transfusion Protocol: a defined protocol available for activation, by an MRHP within SHR hospital urban sites, to ensure the safe and expeditious provision of blood components during a situation of massive bleeding (greater than 4.5 L of blood loss in 30 minutes, or greater than 150 mL per minute of ongoing blood loss with blood loss greater than half the blood volume, and ongoing uncontrolled bleeding.) For more information, refer to: https://www.saskatoonhealthregion.ca/locations_services/Services/Pathology-Laboratory-Med/healthpractitioners/Pages/mtpadultstransfusionmedicine.aspx

Plasma Protein Products (PPPs): any product manufactured from human plasma (e.g. albumin, immunoglobulin and clotting factors).

Most Responsible Health Practitioner (MRHP): means the Health Practitioner who has the responsibility and accountability for the specific treatment/procedure(s) provided and prescribed to a patient and who is authorized by Saskatoon Health Region (SHR) to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of their practice.

Priority/Turn Around Time (TAT):

<table>
<thead>
<tr>
<th>Priority</th>
<th>Approximate TAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stat</td>
<td>Less than 1 hour</td>
</tr>
<tr>
<td>Urgent</td>
<td>Within 4 hours</td>
</tr>
<tr>
<td>Routine</td>
<td>Within 24 hours</td>
</tr>
</tbody>
</table>

Saskatoon & Humboldt:

*Stat and Urgent priorities not available in transfusing only sites (rural). Availability for routine transfusions in rural is generally Monday-Friday and TAT can be unpredictable –may be up to 72 hours. Consultation with the on-call Transfusion Medicine Physician is available via ACAL.

TSL: will be used when referring to the Transfusion Service/Laboratory. It is also known as the Transfusion Medicine Laboratory (TML).

Test and Transfuse Sites: sites that can perform crossmatch testing as well as transfuse. This includes: Saskatoon City Hospital (SCH), Royal University Hospital (RUH), St. Paul’s Hospital (SPH) and Humboldt District Hospital (HDH).

Transfuse only sites: sites that do not perform crossmatch testing. They include: Rosthern, Lanigan, Watrous, Wadena and Wynyard.

Transfusionist: will be used when referring to one of the following persons administering a blood product: Registered Nurse (RN), Registered Psychiatric Nurse (RPN), Graduate Nurse (GN), Graduate
Psychiatric Nurse (GPN), Registered Nurse (Nurse Practitioner) (RN(NP)), Physician, Clinical Perfusionist, or Licensed Practical Nurse (LPN)/Graduate Licensed Practical Nurse (GLPN) who has completed the IV Therapy/Blood Product & Components LPN Completer Course or equivalent.

Uncross matched Blood: red blood cell units issued in an emergent/life threatening circumstance to a recipient before all required pre-transfusion testing steps have been completed, including an ABO Group & Rh type, screen and/or crossmatch.

1. **PURPOSE**

1.1 To outline the processes for obtaining and administering blood components and/or plasma protein products in patient care areas capable of initiating and completing transfusion procedures.

1.2 To ensure safe administration of blood components and/or PPPs.

1.3 To ensure a record of each transfusion is maintained in the health record.

1.4 To ensure prompt reporting and management of adverse events related to the administration of blood components and/or PPPs.

1.5 To provide information for patients receiving blood components and/or PPPs.

2. **POLICY**

2.1 **Orders/Requests**

2.1.1 An MRHP order is required to administer blood components and/or PPPs (refer to Appendix H for adult and pediatric PPP order sets). The order shall include:

- Patient label or a minimum of two patient identifiers, e.g. full name and Health Services Number (HSN) or Medical Record Number (MRN)
- Type of blood component or PPP
- Dose (number of units and/or volume)
- Rate of infusion or time over which the blood component or PPP is to be administered
- Date and time of the transfusion
- Clinical indication for transfusion

If applicable:

- Component modifications or special requirements (e.g. irradiated, washed, etc.)
- Use of a blood warmer
- Use of a pressure infusion device
- Pre and post transfusion medication
- Sequence in which multiple products are to be transfused
- Divided unit administration

**Note:** A specific MRHP order is required to approve administration of expired or outdated products, uncross matched blood, or serologically incompatible blood.
2.1.2 Verbal or telephone orders shall be accepted in emergent/life-threatening circumstances only and when consent has been obtained. Verbal or telephone orders must be co-signed within 24 hours (refer to SHR Policy & Procedure #7311-60-004 “Ordering of Medications”).

2.1.3 A requisition shall accompany all requests for pre-transfusion tests, blood components and/or PPPs.

2.2 Consent

2.2.1 Refer to SHR Policy & Procedure #7311-50-004 “Informed Consent for Blood Components and/or Plasma Protein Products, including Tissue Graft Transplantation” for complete information on consent for blood components and/or PPPs.

2.2.2 The patient or person providing consent will be given a copy of the SHR pamphlet “Information for Patient’s about Blood Transfusion and Tissue Transplantation” (available on the InfoNet under Transfusion Essentials).

2.3 Administration

2.3.1 Medications used to treat anaphylaxis (epinephrine, antihistamine(s) and a steroid) shall be immediately available within the patient care area administering the transfusion.

2.3.2 Prior to initiation of the transfusion, verification and documentation of all information associating the blood component and/or PPP with the patient must be confirmed by the transfusionist and a second transfusionist while in the physical presence of the patient. See 3.1.16.

2.3.3 Simultaneous administration of blood components and/or PPPs should be avoided. Separate IV sites or CVC lumens should be used if simultaneous administration of components and/or PPPs is required in emergent situations.

Note: When ordered by an MRHP, 0.9% sodium chloride solution or Plasmalyte may be infused simultaneously with blood components at the most distal Y-site of the administration set.

2.3.4 Medications shall not be added to the blood bag or infused through the same tubing as blood components and/or PPPs; alternate IV sites should be used.

2.3.4.1 Only in emergent/life-threatening circumstances or if there has been a transfusion adverse event, and after attempt has been made to secure a second IV line without success, may the transfusion be stopped, the tubing flushed with a minimum of 10 mL 0.9% sodium chloride, or compatible IV solution, at the most distal port, and the medication administered. The tubing must be flushed again with compatible IV solution after injecting the medication to prevent mixing of the blood product and medication. The transfusion may then be resumed.
Note: Caution should be used when simultaneously administering medications linked to hypersensitivity reactions via another IV line or CVC lumen since distinction between medication-related symptoms and transfusion reactions may be difficult.

2.3.5 Transfusion of blood components and/or PPPs shall be initiated as soon as it is available. The product shall be returned to the TSL if it cannot be initiated within 60 minutes from the time of issue as identified by the time documented on the transfusion slip.

Exception: albumin for continuous infusion under special circumstance.

2.3.6 All blood components must be infused within four hours from the documented time of product issue (or component modification, if applicable) from the TSL, which can be found on the transfusion slip. PPPs must be infused within four hours of accessing the vial unless otherwise specified in the Manufacturer's Product Monograph.

2.3.6.1 If four hours has elapsed and the transfusion is not complete, the transfusion must be discontinued and the remaining product discarded. MRHP shall be notified in the event that this does occur.

2.3.6.2 If a patient is unable to tolerate an entire unit over the four hour period, then an MRHP may order a divided unit to be administered following approval by the on-call Transfusion Medicine Physician.

2.3.7 Blood components shall be administered via a non-vented blood administration set with filter. Plasma protein products shall be administered as per the Manufacturers' Product Monograph. An infusion pump should be used when possible. Refer to Appendix A (and B as required).

2.3.8 Blood administration sets shall be primed with a compatible solution.

2.3.8.1 For blood component administration, prime the administration sets with 0.9% Sodium Chloride or Plasmalyte.

Exception: Neonates/Pediatrics - Prime blood administration set with blood component.

2.3.8.2 For plasma protein products, prime the appropriate tubing with compatible solution as identified by the manufacturer's product insert. Refer to Appendix A (and B as required).

Exception: Neonates/Pediatrics - Prime administration set with PPP.

2.3.9 Blood administration sets must be changed:
- After four consecutive units have been transfused (note: one bag of platelets or pooled bag of cryoprecipitate is equivalent to one unit for transfusion), or
- After 8 hours of use, or
- If more than 60 minutes has elapsed between transfusions, or
- If the filter/administration set becomes occluded, or
- Upon completion of PPPs
2.3.10 Separate administration sets shall be used for different products.

2.3.11 The TSL copy of the transfusion slip/label must remain attached or on the blood component for the duration of the transfusion.

2.3.12 Patients should remain on the nursing unit during administration of all blood components and/or PPPs to ensure appropriate monitoring. If an emergent/urgent diagnostic or interventional investigation/procedure is required, the patient shall be accompanied by staff that is qualified as a transfusionist. Reasons shall be documented in the chart when/if it is not feasible for the patient to remain on the unit.

2.4 Visual Inspection

2.4.1 All blood components and/or PPPs shall be visually inspected by the transfusionist prior to accessing the product with the administration set. If the following is observed, or if the container is not intact, do not access the blood product and notify the TSL:
- Clots
- Clumps
- Discolouration
- Particulate matter
- Foreign objects

Note: For more information refer to the Canadian Blood Services Visual Assessment Guide.

2.4.2 Blood components or PPPs shall be returned to the TSL immediately if a decision is made to not transfuse.

2.4.3 The MRHP must be notified immediately in the case of blood components or plasma protein products that are deemed unsuitable for transfusion if it will result in a delay of transfusion, such as if a replacement product could not be immediately issued for transfusion.

2.5 Pressure Infusion Device

2.5.1 An MRHP’s order is required to use a pressure infusion device with transfusion.

2.5.2 Use of a pressure infusion device to increase the rate of a gravity flow infusion must not exceed 300 mmHg.

Note: Pressures exceeding 300 mmHg may result in leakage or rupture of bag seams.

2.6 Blood Warming Device

2.6.1 An MRHP’s order is required to use a blood warming device with transfusion.
2.6.2 When using a Blood Warmer, follow manufacturer’s instructions for use. Refer to Appendix G.

**Note:** Pressure infusion devices may be used with warming devices when ordered.

2.7 **Coolers**

2.7.1 Coolers should only be issued for use in Saskatoon Hospitals.

2.7.2 Coolers will be sealed upon issue and should only be opened at the time component is to be transfused. Once opened, component that is not transfused must be returned to the TSL as soon as possible.

**Note:** Coolers used in MTPs are not sealed and do not contain cooling packs; therefore, unused component(s) must be returned to the TSL as soon as possible.

2.7.3 Blood components issued in a cooler must be used prior to the expiry of the cooler. The cooler expiry date and time will be indicted on the cooler label.

2.8 **Transport Containers**

2.8.1 Patients may be transferred with a transport container that contains blood components which will be sealed upon issue and should only be opened at the time component is to be transfused.

2.8.1.1 Transport containers are valid for 24 hours from time of issue; however, once opened, any component(s) that are in the transport container must be initiated within 4 hours or returned to the TSL as soon as possible.

2.8.1.2 The label on the transport container will indicate the means of ensuring that the components have been transported safely. Components will be safe to transfuse providing that the transport container label is followed.

2.8.2 The TSL is responsible for documenting the final disposition of all blood components and accordingly must be notified of all blood components that accompany the patient.

2.9 **Infection Control**

2.9.1 Appropriate personal protective equipment shall be worn when administering blood components and/or PPPs and when disposing of components. Ensure proper moments of hand hygiene are followed (see Infection Prevention & Control Policy & Procedure Manual, Policy 20-20: Hand Hygiene). Ensure aseptic technique is adhered to at all times.

2.9.2 Upon completion of the transfusion, empty blood component bags, filters and administration sets shall be placed in biomedical waste. Glass plasma protein product vials and spike from tubing will be disposed of in a sharps waste container. The TSL copy of the transfusion slip should be returned to the TSL.
Note: Patients on Contact Precautions: Place the TSL copy of the transfusion slip in a clear plastic bag and label with a Contact Precaution sticker before returning it to the TSL.

2.10 Monitoring

2.10.1 The patient vital signs (temp, pulse, respiratory rate, blood pressure, SpO2 with O2 source) shall be monitored and documented for transfusion of all components and PPPs accordingly (except IVIG):
- Pre-transfusion - within 30 minutes prior to initiating the transfusion
- 15 minutes after commencing and every one hour until completion
- Upon completion of the transfusion
- At the time of a transfusion adverse event
- More frequently as indicated by the clinical situation or ordering MRHP

IVIG vital sign monitoring and documentation shall occur:
- Pre-transfusion - within 30 minutes prior to initiating the transfusion
- 15 minutes after commencing the transfusion
- Prior to each rate increase
- Every one hour until completion once the maximum rate is reached
- Upon completion of the transfusion
- At the time of a transfusion adverse event
- More frequently as indicated by the clinical situation or ordering MRHP

2.10.2 Vital signs shall be recorded on the “Transfusion/Infusion Administration and Assessment Record” #101059 or as indicated on the “Transfusion Administration Record For Patient’s Receiving Continuous Vital Sign Monitoring” #103945. See Appendix D.

2.11 Transfusion Adverse Events – Refer to Appendix C

2.11.1 The patient shall be observed for signs and symptoms of an adverse event during transfusion, and ideally for a minimum of six hours following the transfusion. When direct monitoring for six hours after transfusion is not feasible (e.g. patients receiving care in outpatient areas &/or those being discharged following transfusion), the patient or responsible caregiver shall receive the “Heading Home After A Transfusion” (Document #: LSM-901) patient handout (found on the “Transfusion Essentials” page under “Pathology and Laboratory Medicine”).

2.11.2 The MRHP shall be notified immediately upon suspecting a transfusion adverse event and management orders shall be obtained.

2.11.3 All transfusion adverse events shall be reported to the TSL using the Saskatchewan Transfusion Adverse Event Report Form #103695 (see Appendix E), whether or not the transfusion was discontinued.

2.12 Patient Notification

2.12.1 The patient shall receive written notification when a blood product has been administered. Nursing will complete the form, “Notification of Administration of Blood and/or Blood Products” #103854. Only one form is required per course of
treatment regardless of type or number of products administered. See Appendix F.

3. **PROCEDURE**

3.1 **Pre-transfusion**

3.1.1 Verify and review the consent on the chart.

3.1.2 Review MRHP orders to ensure completeness; if incomplete, contact MRHP.

3.1.3 Verify that the appropriate pre-transfusion testing has been completed. Refer to Appendix A and if needed, contact the TSL.

3.1.3.1 A Group & Screen must be performed:
- Every 96 hours when administering red blood cells
- Once per hospital stay when administering platelets and plasma
- Infants less than four months old - once during initial hospital admission (unless maternal antibodies are present then per direction from TSL)

*Exception:* With MRHP approval, in emergent/life-threatening circumstances, uncross matched blood may be issued before completion of compatibility testing.

3.1.3.2 A group and screen may or may not be required for certain PPPs – check Appendix A and if needed, contact the TSL (WinRho, for example, does require a group and screen).

3.1.4 Complete the appropriate test request form and identify the appropriate priority:

3.1.4.1 Testing and Transfusing sites: “Test Request Form” #101058


3.1.5 Confirm patient identification. A two-person patient identification process must be done in the physical presence of the patient before collection of a pre-transfusion sample.

3.1.5.1 The person who collects the patient’s sample verifies the patient’s identity. Compare the patient’s full name, date of birth and unique identification number (Health Service Number) on the identification band with the corresponding information on the requisition. Patient information must agree. The collector signs the requisition and records date and time collected on requisition.

3.1.5.2 The person who confirms the identity of the patient must be different from the person who collects the sample. If able to communicate, the patient may self-identify or a second person (e.g., family member, friend, healthcare provider) may identify the patient. The patient or second person identifier must be able to state at least the patient’s full name (first and last name) and date of birth. Patient information must agree. The collector must obtain the signature of the identifier.
3.1.6 Send the form (as identified in 3.1.4) and sample to the TSL. Note: rejection criteria include, but are not limited to: incomplete form, unlabeled/mislabelled forms or specimens.

3.1.7 Provide teaching and/or information to the patient, parent, legal guardian, or substitute health care decision maker regarding the transfusion:
- Explain the purpose of the transfusion and monitoring required
- Instruct the patient to remain on the nursing unit during the transfusion
- Instruct the patient, parent, legal guardian, or substitute health care decision maker to notify nursing staff if any of the following develop during or after the transfusion procedure:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Nausea or vomiting</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>Urticaria, rash, or pruritus</td>
</tr>
<tr>
<td>Diaphoresis</td>
<td>Dizziness or weakness</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Tachycardia</td>
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<tr>
<td></td>
<td>Chills or rigors</td>
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<tr>
<td></td>
<td>Anxiety</td>
</tr>
<tr>
<td></td>
<td>Fever or cold sensation</td>
</tr>
<tr>
<td></td>
<td>Urticaria, rash, or pruritus</td>
</tr>
<tr>
<td></td>
<td>Dizziness or weakness</td>
</tr>
<tr>
<td></td>
<td>Any change in condition</td>
</tr>
</tbody>
</table>

3.1.7.1 Document that patient education is complete on the "Transfusion/Infusion Administration and Assessment Record" #101059 or in the chart if using the "Transfusion Administration Record For Patient’s Receiving Continuous Vital Sign Monitoring" #103945. If unable to provide teaching, document this and the rationale.

3.1.8 To requisition the order for a blood component or PPP from the TSL:

<table>
<thead>
<tr>
<th>For:</th>
<th>Complete this form and send to the TSL:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBCs in Test and Transfuse sites as well as for all sites requesting platelets and plasma</td>
<td>&quot;Blood Product Request Form&quot; #103220</td>
</tr>
<tr>
<td>RBCs in Transfuse Only Sites (for this, the test and the RBCs required can be on one form, so this may be filled out already as identified in 3.1.4)</td>
<td><a href="http://saskblood.ca/download/revised-saskblood-rbc-crossmatch-and-antibody-investigation-referral-requisition-june-12-2017/?wpdmdl=704&amp;ind=0">http://saskblood.ca/download/revised-saskblood-rbc-crossmatch-and-antibody-investigation-referral-requisition-june-12-2017/?wpdmdl=704&amp;ind=0</a></td>
</tr>
<tr>
<td>PPPs for all sites</td>
<td>&quot;Plasma Protein Product Request Form&quot; #103221</td>
</tr>
</tbody>
</table>

The TSL will notify staff when the product is ready to be issued.

3.1.9 Choose an appropriate vascular access device based on patient condition and transfusion needs:

3.1.9.1 Short peripheral catheters: use 20-24 gauge based on vein size and patient preference. When rapid transfusion is required, a larger-sized catheter gauge is recommended (14-18 gauge)

3.1.9.2 Central venous access devices (including PICC lines): acceptable for transfusions; recognize that with centrally inserted catheters, infusion speeds may be faster than with peripheral inserted IV catheters
3.1.9.3 Neonatal/pediatric patients: umbilical venous catheters or small saphenous vein catheters (24 gauge) are commonly used in infants and/or pediatric patients.

3.1.10 Obtain pre-transfusion vital signs within 30 minutes prior to initiating the transfusion. The MRHP must be notified if the patient is febrile or has any other concerning or unexpected findings before proceeding with the transfusion. Document accordingly.

3.1.11 Prime the blood administration set with 0.9% sodium chloride or Plasmalyte unless transfusing a plasma protein product, then refer to the Manufacturer's Product Monograph for compatible IV fluid and appropriate administration set (refer to Appendix A (and B as required)). Clamp the tubing once the line is primed. If the blood administration set is used, the filter should be completely wet and the drip chamber 1/3 to 1/2 full prior to initiating the transfusion. Fluid levels must remain above the filter line at all times.

**Exception:** Neonates/Pediatrics – Prime administration set with blood component or PPP.

3.1.12 Administer pre-transfusion medication as ordered by the MRHP.

3.1.13 Connect the blood administration set directly to the IV hub or to a luer lock extension tubing. If extension tubing is added, the volume must not exceed 2 ml.

3.1.14 Complete the “Blood Product and Component Pickup Slip” #102930 to be provided to the TSL.
- RUH: Page the TSL porter. The TSL porter will write the following on the slip: patient’s full name, HSN or MRN, type and amount of product to be issued. When TSL porter not available, unit staff will take the completed slip to the TSL.
- RUH OR: Phone TSL with request. Place completed Product Request Form in OR blood fridge.
- SPH & SCH, HDH and Transfuse only sites: Unit staff will take the completed slip to the TSL.

**Note:** Blood components or PPPs must not be left without the acknowledgement of the staff at the patient location.

3.1.15 Visually inspect the product as per 2.4.

3.1.16 Verify the following in the presence of the patient, along with a second transfusionist:
- The transfusion slip with the patient identification band - full name with correct spelling and HSN &/or MRN.

**Note:** See SHR regional policy, Verification of Identification #7311-60-017

- The transfusion slip with the MRHP order - patient’s full name with correct spelling, health service number, blood product including amount or dose, special requirements.
- The transfusion slip with the Transfusion Medicine chart report - patient ABO and Rh group (if applicable).
- The transfusion slip with the product to be transfused - unit number, donor ABO and Rh group (if applicable), lot number and volume (if applicable).
3.1.17 Document the following on the transfusion slip:

3.1.17.1 Signature of the transfusionist and the second transfusionist participating with identification and verification of correct patient and product. Initials are not acceptable.

3.1.17.2 Date of transfusion

3.1.17.3 Start time of transfusion.

3.1.18 Affix the chart copy of the transfusion slip to the “Transfusion/Infusion Administration and Assessment Record” #101059 or on the “Transfusion Administration Record For Patient’s Receiving Continuous Vital Sign Monitoring” #103945. Verify and document on the form that all the required checks are completed.

3.1.19 Leave the remaining portion of the transfusion slip attached to the product for the duration of the transfusion.

3.2 **Administration**

3.2.1 Initiate the transfusion. Refer to Appendix A for specific administration guidelines; in addition to this, for IVIG, refer to Appendix B.

3.2.2 Assess vital signs and monitor for adverse events. Refer to 2.10 and 2.11.

3.3 **Transfusion Adverse Event - Refer to Appendix C**

3.3.1 When a transfusion adverse event is suspected/has been identified:

3.3.1.1 **Stop** the transfusion/infusion immediately (don't discard the component - it may be needed for testing)

3.3.1.2 Maintain IV patency. Ensure no further blood is infused, and IV access maintained by infusing 0.9% sodium chloride using new IV tubing.

3.3.1.3 Obtain vital signs (this will need to be done every at least every 15 minutes until the patient is stable)

3.3.1.4 Re-check patient ID band and product label

3.3.1.5 Notify the MRHP immediately and obtain orders for patient management.

3.3.1.5.1 If the transfusion has been discontinued, obtain orders for investigation of transfusion adverse event:

3.3.1.5.1.1 Saskatoon/Humboldt use test request form: **Test Request Form #101058**

3.3.1.6 Notify the TSL and complete the Saskatchewan Transfusion Adverse Event Report Form #103695 (see Appendix E) with any event (whether or not transfusion has been continued or discontinued)

<table>
<thead>
<tr>
<th>Phone</th>
<th>RUH TSL</th>
<th>306-655-2179</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC TSL</td>
<td>306-655-8204</td>
<td></td>
</tr>
<tr>
<td>SPH TSL</td>
<td>306-655-5168</td>
<td></td>
</tr>
<tr>
<td>HDH TSL</td>
<td>306-682-8128</td>
<td></td>
</tr>
<tr>
<td>Transfusion only sites</td>
<td>Local TSL</td>
<td></td>
</tr>
</tbody>
</table>

3.4 **Post Administration**

3.4.1 Following the transfusion, and in the absence of an adverse event, flush the administration set with compatible solution to clear remaining blood product. Disconnect the administration set from the patient.

3.4.2 Document the time of transfusion completion on the transfusion slip and “Transfusion/Infusion Administration and Assessment Record” #101059 or on the "Transfusion Administration Record For Patient’s Receiving Continuous Vital Sign Monitoring” #103945.

3.4.2.1 In the case of IV administration, when the lines are clear of the component or PPP.

3.4.2.2 In the case of subcut or IM administration, when the injection is administered.

3.4.3 Assess post-transfusion vital signs.

3.4.3.1 In the case of IV administration, as soon as possible after the transfusion is complete (see 3.4.2.1).

3.4.3.2 In the case of subcut or IM administration, vital signs should be checked 15 mins after the injection is complete.

3.4.4 Discard the administration set and blood product container as per 2.9.2.

3.4.5 Monitor inpatients for signs and symptoms of a delayed transfusion adverse event for a minimum of six hours. For patients receiving care in outpatient areas &/or those being discharged following transfusion, provide education and this patient handout to the patient or caregiver, “Heading Home After A Transfusion”, on signs and symptoms they need to watch out for and that if they experience these, they should seek further medical attention.

3.4.6 Complete the “Notification of Administration of Blood and/or Blood Products” #103854 and give to the patient. Refer to 2.12.
3.5 Documentation

3.5.1 Ensure the following is documented on the transfusion slip:
- Signature of the transfusionist and the second transfusionist participating with identification and verification of correct patient and product. Initials are not acceptable.
- Date of transfusion
- Start and stop time of the transfusion
- The occurrence of a transfusion adverse event

3.5.2 Document the following on the “Transfusion/Infusion Administration and Assessment Record” #101059 or on the “Transfusion Administration Record For Patient’s Receiving Continuous Vital Sign Monitoring” #103945 (or where applicable if not on this form):
- Valid MRHP order present
- Valid patient consent present
- Patient education complete
- Patient identification performed at bedside
- Visual inspection performed
- Product/Lot number and compatibility checks performed
- Expiry date and time checked
- Infusion rates
- Vital signs
- Any adverse event and action taken
- Total volume infused
- “Notification of Administration of Blood and/or Blood Products” #103854 provided
- Use of pressure infusion device and amount of pressure
- Use of blood warmer and temperature during administration

4. REFERENCES


Callum, J L; Pinkerton, PH; Lima, A; Lin, Y; Karkouti, K; Lieberman, L; Pendergraft, J M; Robitaille, N; Tinmouth, AT; and Webert, KE. (2016). bloody easy 4: Blood Transfusions, Blood alternatives and Transfusion Reactions (4th ed.). Toronto, ON: Ontario Regional Blood Coordinating Network.


## Blood Component and Product Administration Guidelines

<table>
<thead>
<tr>
<th>Blood Component or Plasma Protein Product</th>
<th>Description (volume, indicated on component label or product box)</th>
<th>Pre-transfusion Testing</th>
<th>Administration Method</th>
<th>Administration Rate (unless emergent/ life-threatening situation) Must be included in MRHP order</th>
<th>Indications &amp; Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Red Blood Cells (RBC)</strong></td>
<td>- 1 unit = 250 - 350 ml</td>
<td>- Group &amp; Screen required every 96 hours for crossmatched RBC unit transfusion. <strong>Exception:</strong> - Infants less than four months: required once during admission. - Pre-admission clinic patients: valid for 28 days if not transfused or pregnant in previous 3 months. Contact the TSL to confirm whether a new specimen is necessary. <strong>Note:</strong> - The TSL may request a second sample for ABO group confirmation before ABO group-specific blood is issued for transfusion.</td>
<td>Blood Administration Set (gravity or infusion pump) - change after 4 consecutive units or after 8 hours, when 60 minutes has elapsed between transfusions or filter set occluded. - Compatible with normal saline or Plasmalyte only. - Monitoring Requirements as described in Procedure.</td>
<td>- Adults: Transfuse slowly for first 15 minutes (50 ml/hour) then as ordered. - Pediatric/Neonates: transfuse slowly for first 15 minutes (1 ml/kg/hr, up to 50 ml) then as ordered. - Usually over 2 hours per unit. - Infusion must be completed by a maximum 4 hours from issue. - Pressure Infusion Device: when ordered, set to maximum of 300 mmHg.</td>
<td>- Support of RBC oxygen carrying capacity in acute or chronic blood loss. - Threshold for transfusion in a clinically stable inpatient: o 70 g/L in adult and pediatric patients. o 80-100 g/L in neonates. - Symptomatic anemia and the underlying patient clinical condition may dictate the need for transfusion with hemoglobin thresholds higher than those listed. - RBC replacement in exchange transfusion.</td>
</tr>
</tbody>
</table>

**Plasma**

- Frozen Plasma (FP) = 250-300 mL.
- Fresh Frozen Plasma (FFP) = 250-500 mL.
- FP and FFP are considered **equivalent** in terms of clinical efficacy. Usual dose per transfusion event: 10-15 ml/kg.

**Note:** TSL needs to allow for at least 30 minutes to thaw before issue.

- ABO Group & Rh Type on current admission. Contact TSL prior to collection to confirm whether a new specimen is necessary.
- For administration, ABO compatibility required (Rh is not considered).

**Blood Administration Set (gravity or infusion pump)** - change after 4 consecutive units or after 8 hours, when 60 minutes has elapsed between transfusions or filter set occluded. - Compatible with normal saline or Plasmalyte only. - Monitoring Requirements as described in Procedure.

- Adults: Transfuse slowly for first 15 minutes (50 ml/hour) then as ordered.
- Pediatric/Neonates: transfuse slowly for first 15 minutes (1 ml/kg/hr, up to 50 ml) then as ordered.
- Usually over 2 hours per unit.
- Infusion must be completed by a maximum 4 hours from issue.
- Pressure Infusion Device: when ordered, set to maximum of 300 mmHg.

- Clotting factor replacement in the setting of factor deficiency and, if no factor concentrates or alternative appropriate therapies are available. - Massive transfusion protocol.
- Therapeutic plasma exchange.
- Urgent warfarin reversal if PCC is unavailable or contraindicated.
### Plasma - Solvent Detergent

- 1 unit = 200 mL
- Similar in composition to FP/FPP, with a reduced lipid content and risk of viral transmission

- ABO Group & Rh Type on current admission. Contact TSL prior to collection to confirm whether a new specimen is necessary. For administration, ABO compatibility required (Rh is not considered).

#### Blood Administration Set
- (gravity or infusion pump) - change after 4 consecutive units or after 8 hours, when 60 minutes has elapsed between transfusions or filter set occluded
- Compatible with normal saline or Plasmalyte only
- Monitoring Requirements as described in Procedure

- Adults: transfuse slowly for first 15 minutes (50 ml/hour) then as ordered
- Pediatrics/Neonates: transfuse as ordered
- Usually over 60-120 minutes per unit
- Infusion must be completed by a maximum 4 hours from issue
- Pressure Infusion Device: when ordered, set to maximum of 300 mmHg

#### Indications for ongoing plasma transfusion, and meet the following criteria:
- Have experienced an allergic reaction to frozen plasma, **or**
- Have a pre-existing lung disorder, **or**
- Need frozen plasma but a blood group compatible product is not available in a timely manner

### Platelets

- Pooled platelets (contains buffy coat from 4 donors) = 350 mL
- Apheresis platelets (single donor, may be HLA matched) = 250 mL

A bag of platelets, regardless of pooled or apheresis source, is called 1 adult dose

#### Usual dose per transfusion event:
- Adults: 1 dose
- Pediatrics: 5-10 mL/kg, up to 1 adult dose

- ABO Group & Rh Type on current admission. Contact TSL prior to collection to confirm whether a new specimen is necessary. ABO compatibility is preferred, but not required. ABO Incompatible platelets may be issued for transfusion when compatible platelets are not available.

- If Rh incompatible platelets are transfused to any patient 50 years of age or less, the TSL may recommend an MRHP order for Rh Immune Globulin.

#### Blood Administration Set
- (gravity or infusion pump) - change after 4 consecutive units or after 8 hours or when 60 minutes has elapsed between transfusions or filter set occluded

**Note:**
- 1 adult dose of platelets is considered 1 unit in terms of transfusion through the filter
- Compatible with normal saline or Plasmalyte only
- Monitoring Requirements as described in Procedure

- Adults: Transfuse slowly for first 15 minutes (50 ml/hour) then as ordered
- Pediatrics/Neonates: transfuse as ordered
- Usually over 60 minutes
- Infusion must be completed by a maximum 4 hours from issue
- Must not be infused through a warmer or Pressure Infusion Device

- Thrombocytopenia and bleeding prophylaxis
- Bleeding with platelet dysfunction (congenital or medication induced)
- Massive transfusion protocol
<table>
<thead>
<tr>
<th>Blood Product</th>
<th>Description (approximate volume)</th>
<th>Pre-transfusion Testing</th>
<th>Administration Method</th>
<th>Administration Rate (unless emergent/life-threatening situation) Must be included in MRHP order</th>
<th>Indications &amp; Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cryoprecipitate</strong></td>
<td></td>
<td></td>
<td></td>
<td>Blood Administration Set (gravity or infusion pump) - change after 4 consecutive units or after 8 hours or when 60 minutes has elapsed between transfusions or filter set occluded Note: - ABO compatibility is preferred but not required (Rh is not considered).</td>
<td>- ABO Group &amp; Rh Type on current admission. Contact TSL prior to collection to confirm whether a new specimen is necessary. - For administration, ABO compatibility is preferred but not required (Rh is not considered).</td>
</tr>
<tr>
<td></td>
<td><a href="https://www.saskatoonhealthregion.ca/locations_services/services/pathology-laboratory-med/healthpractitioner/pages/test%20catalogue/cryoprecipitate.aspx">https://www.saskatoonhealthregion.ca/locations_services/services/pathology-laboratory-med/healthpractitioner/pages/test%20catalogue/cryoprecipitate.aspx</a></td>
<td>- ABO Group &amp; Rh Type on current admission. Contact TSL prior to collection to confirm whether a new specimen is necessary. - For administration, ABO compatibility is preferred but not required (Rh is not considered).</td>
<td>Blood Administration Set (gravity or infusion pump) - change after 4 consecutive units or after 8 hours or when 60 minutes has elapsed between transfusions or filter set occluded Note: - 1 pooled bag of cryoprecipitate is the equivalent volume of 1 unit in terms of transfusion through the filter - Compatible with normal saline or Plasmalyte only - Monitoring Requirements as described in Procedure</td>
<td>- Infuse as ordered, usually over 15-30 minutes - Infusion must be completed by a maximum 4 hours from thaw and/or pool</td>
<td></td>
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<tr>
<td></td>
<td>- 1 unit = 10 mL - Each bag contains a pool of up to 10 units, with 10 mL of normal saline (max volume 150 mL) - Contains Factor 8, fibrinogen, &amp; von Willebrand’s factor Usual dose per transfusion event: - Adult: 8-12 units (1 unit/10 kg) - Pediatrics: 1-2 units/10 kg - Allow 20 minutes for thawing and pooling - Pediatric dose dependent on fibrinogen level</td>
<td>- ABO Group &amp; Rh Type on current admission. Contact TSL prior to collection to confirm whether a new specimen is necessary. - For administration, ABO compatibility is preferred but not required (Rh is not considered).</td>
<td>Blood Administration Set (gravity or infusion pump) - change after 4 consecutive units or after 8 hours or when 60 minutes has elapsed between transfusions or filter set occluded Note: - 1 pooled bag of cryoprecipitate is the equivalent volume of 1 unit in terms of transfusion through the filter - Compatible with normal saline or Plasmalyte only - Monitoring Requirements as described in Procedure</td>
<td>- Fibrinogen replacement in congenital hypofibrinogenemia - Acquired hypofibrinogenemia and uncontrolled bleeding in: • Any case, if fibrinogen &lt;1.5 g/L • Obstetrical patients, if fibrinogen &lt;2.0 g/L</td>
<td></td>
</tr>
<tr>
<td><strong>Albumin</strong></td>
<td>- Supplied as a 5% (50, 250, or 500 mL vial) or 25% (50 or 100 mL vial) solution</td>
<td>- Primary IV infusion set for pump with vent open - Filter not required - Compatible with normal saline, dextrose, ringers lactate - Monitoring Requirements as described in Procedure</td>
<td>- 5% solution: transfuse at 5 mL/minute (300 mL/hr) or less - 25% solution: transfuse at 1-2 mL/minute (60-120 mL/hr) or less - Pediatrics: transfuse as ordered - Total dose must be infused within 4 hours of accessing the vial - Refer to package insert for more information</td>
<td>- Spontaneous bacterial peritonitis (SBP) - Large volume paracentesis (greater than 5 litres removed, non-malignant ascites) - Hepatorenal syndrome - Volume replacement in Therapeutic Plasma Exchange (except in Thrombotic Thrombocytopenia Purpura) There is no evidence of benefit for infusion in clinical situations other than those listed.</td>
<td>- None required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- 5% solution: transfuse at 5 mL/minute (300 mL/hr) or less - 25% solution: transfuse at 1-2 mL/minute (60-120 mL/hr) or less - Pediatrics: transfuse as ordered - Total dose must be infused within 4 hours of accessing the vial - Refer to package insert for more information</td>
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<td></td>
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<td>- Spontaneous bacterial peritonitis (SBP) - Large volume paracentesis (greater than 5 litres removed, non-malignant ascites) - Hepatorenal syndrome - Volume replacement in Therapeutic Plasma Exchange (except in Thrombotic Thrombocytopenia Purpura) There is no evidence of benefit for infusion in clinical situations other than those listed.</td>
</tr>
</tbody>
</table>
| Rh Immune Globulin (Rh Ig, anti-D immune globulin, WinRho® SDF) | - Purified anti-D IgG antibody  
- Supplied in a glass vial as a liquid or as a powder (lyophilized) | - ABO Group & Rh Type required:  
- During the current pregnancy  
Or  
- As requested by the TSL | - Administered IV or IM as ordered  
- Lyophilized formulation must be administered within 4 hours of reconstitution. Reconstitute with supplied sterile diluent as per package insert  
- Liquid formulation does not require further reconstitution  
- Filter not required for IV administration  
- Liquid compatible with NS only  
- Lyophilized compatible with NS and D5W  
- Monitoring Requirements as described in Procedure | - IM sites: deltoid muscle or anterolateral aspects of upper thigh preferred  
- IV: 1500 IU (300ug) over 15 seconds  
- If an IV infusion of more than 300 ug is required, consult the package insert  
- Refer to package insert for more information |}

- Pregnancy and other obstetrical conditions in Rh negative patients, who have not previously been sensitized (unless father and/or baby are conclusively tested to be Rh negative)
- Transfusion of Rh positive cellular blood components to an Rh negative patient
- Non-splenectomized Rh positive Idiopathic Thrombocytopenic Purpura (ITP) patients
<table>
<thead>
<tr>
<th>Blood Product</th>
<th>Description (approximate volume)</th>
<th>Pre-transfusion Testing</th>
<th>Administration Method</th>
<th>Administration Rate (unless emergent/life-threatening situation) Must be included in MRHP order</th>
<th>Indications &amp; Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immune Globulin, Pooled</td>
<td>Concentrated immunoglobulins manufactured from pooled plasma</td>
<td>ABO Group and Rh Type is not recommended (but not required) - Obtain patient weight (dose should be based on ideal body weight. <a href="https://www.pbco.ca/IVIG_Dosing_Calculator.htm">Link</a>)</td>
<td>IVIG and SCIG are not interchangeable, and must be administered according to manufacturer recommendations</td>
<td>Intra-venous Administrations: Administration rates vary by brand – refer to product insert. Transfuse slowly for first 30 minutes, gradually increase every 30 minutes, as tolerated, to the maximum rate of 400mL/hr. Each rate increase should be no more than double the previous rate. - A vial must be infused within 4 hours of accessing it. <strong>Note:</strong> - Infusion reactions are more likely with faster rates of infusion - Maximal infusion rates are slower for first-time IVIG recipients - Infusion rates apply for total dose to be administered, not each vial - Refer to product insert for more information</td>
<td>Immunoglobulin replacement in the setting of primary and secondary immunodeficiency - Various autoimmune disorders (See the Product Catalogue document for details)</td>
</tr>
<tr>
<td>Intravenous Immune Globulin (IVIG)</td>
<td>Concentrated immunoglobulins manufactured from pooled plasma</td>
<td>Concentration, volume, and form varies by brand</td>
<td>IV Administration: - Primary IV Infusion set for pump with vent open - Filter not required - Compatibility with IV solutions varies by brand - refer to product insert.</td>
<td>Subcutaneous Infusion: - For the first infusion, the maximum recommended flow rate is 15 mL per hour per site. For subsequent infusions, the flow rate may be increased. Consult the product insert for details.</td>
<td></td>
</tr>
<tr>
<td>Subcutaneous Immune Globulin (SCIG)</td>
<td>Concentrated immunoglobulins manufactured from pooled plasma</td>
<td>Concentration, volume, and form varies by brand</td>
<td>SCIG Administration: - Filter not required - May be injected into subcutaneous tissue of the abdomen, thigh, upper arm, and/or upper leg/hip area</td>
<td>Subcutaneous Infusion: - For the first infusion, the maximum recommended flow rate is 15 mL per hour per site. For subsequent infusions, the flow rate may be increased. Consult the product insert for details.</td>
<td>- Immunoglobulin replacement in the setting of primary and secondary immunodeficiency - Various autoimmune disorders (See the Product Catalogue document for details)</td>
</tr>
</tbody>
</table>
**Prothrombin Complex Concentrates (PCC) (Octaplex® or Beriplex®)**

**NOTE:** This product contains heparin, and is contraindicated in patients with a known allergy to heparin or in suspected or proven Heparin Induced Thrombocytopenia (HIT).

- Each 20 mL volume contains 500 IU of FIX
- Vial sizes of 500 IU and 1000 IU are available
- Supplied as dried FII, FVII, FIX, FX concentrate requiring reconstitution with supplied diluent.
- Dosing is based on INR:
  - INR 1.5-2.9: 1000 IU
  - INR 3.0-4.9: 2000 IU
  - INR 5.0 or higher: 3000 IU
- Does not require a filter or Blood Administration Set.
- Compatible with NS.
- Reconstitute product as directed.
- Once reconstituted use a syringe to withdraw the product.
- Syringe can be placed on an infusion pump.
- Use immediately after reconstitution.
- Monitoring requirements:
  - As described in Procedure
  - INR immediately post-dose, and 6 hours after PCC given, as ordered.

**Note:** Octaplex® & Beriplex® contain vitamin K dependent coagulation factors and may be considered a warfarin antidote.

**Octaplex®:**
- Infusion rate: initially 1 ml/min followed by 2 – 3 ml/min.
- Refer to package insert for more information.

**Beriplex®:**
- Infusion rate should not exceed 8 mL/min.
- Refer to package insert for more information.
- A single dose should not exceed 3000 IU (120 mL).

INR ≥ 1.5 (caused by Warfarin therapy) AND need for immediate reversal of Warfarin due to:
- Serious or life-threatening bleeding,
**AND/OR**
- Requiring unplanned surgical procedures which cannot be delayed a minimum of 6 hours.

- May be considered for management of factor Xa inhibitor (apixaban (Eliquis®) or rivaroxaban (Xarelto®)) associated bleeding.
- Not effective to manage factor IIa inhibitor (dabigatran (Pradaxa®)) associated bleeding.

Refer to the manufacturer’s product monograph (package insert) supplied with the product or contact the TSL for administration information on blood components and/or PPPs not listed in the Administration Guidelines. Contact the Saskatchewan Bleeding Disorders Clinic (RUH) for patients with identified bleeding disorders and/or orders for factor products to determine if administration protocols are in place.

Please see the Product Catalogue on the Saskatoon Health Region website for more information on the above listed components and/or PPPs, or for information on PPPs not included within this appendix: [https://www.saskatoonhealthregion.ca/locations_services/Services/Pathology-Laboratory-Med/healthpractitioners/Pages/productcatalogue.aspx](https://www.saskatoonhealthregion.ca/locations_services/Services/Pathology-Laboratory-Med/healthpractitioners/Pages/productcatalogue.aspx)
Immune Globulin (IVIG) Administration Guidelines

Refer to Nursing Policy #1141: Blood Components & Plasma Protein Products – Administration of

- Obtain Transfusion Record and place on chart prior to beginning infusion.
- Complete the Plasma Protein Product Request Form indicating the number of grams (g) of IVIG required for infusion, rounding up to the nearest 5g. Fax to Transfusion Medicine. A new request form is required each day if multiple infusions are needed.
- Refer to the Saskatchewan Health Authority Adult or Pediatric IVIG Infusion Table for rate increments located on the back of the Adult (#103716) or Pediatric (#104281) IVIG order sets or specific product monograph.

Administration Method:

- **IVIG is compatible with D5W ONLY.** Flush saline lock with normal saline, but ensure primary IV infusion set is primed with D5W.
- Infuse via pump IV tubing - open vent (glass bottles). Standard blood transfusion set not required. Some products may come with a dedicated tubing/filter.

Vital Signs (Temp, Pulse, Respiration & BP) Monitoring:

- **Use Transfusion/Infusion Administration & Assessment Record**
  - Baseline – within 30 minutes of initiating the transfusion
  - 15 minutes after starting the transfusion
  - Prior to each rate increase q 30 minutes
  - Hourly until completion once the maximum rate is reached

- **Transfusion adverse reaction** – headache, chills/rigor, rash, nausea, vomiting, dyspnea, pruritis (itching), fever. Consider decreasing the rate of infusion, or stopping the infusion.

- All adverse transfusion events **MUST** be reported to Transfusion Medicine. Refer to Nursing Policy #1141-Saskatchewan Transfusion Adverse Reaction Reporting Form

Protocol:

- Infuse IVIG at the initial rate listed for first 30 minutes, then increase the rate every 30 minutes to the maximum rate, if tolerated

Notes:

- Infusion rates apply for **total dose** to be administered per day, not each vial.
- Consider starting with smallest vial (initial rates are slower and less volume is used). Once the max rate is reached, subsequent bottles may be hung at the same rate, even if lot numbers differ.
- Vial contents **MUST** be infused within 4 hours of spiking the bottle. Discard remaining IVIG.

Refer to the Saskatchewan Health Authority IVIG
Adult OR Pediatric Infusion Chart for rate increments.
Transfusion Reaction Chart: [Link](http://www.saskblood.ca/uploads/files/saskatchewan-transfusion-resource-manual/appendices/Appendix%2007%20-%20Transfusion%20Reaction%20Chart%202017-12-06.pdf)

### Appendix C

**IMMEDIATE ACTIONS!**

1. **Stop** the transfusion
2. **Maintain IV access**
3. **Check** vital signs
4. **Re-check** patient ID band and product label
5. **Notify** attending physician
6. **Notify** Transfusion Laboratory

<table>
<thead>
<tr>
<th>Signs &amp; Symptoms</th>
<th>Usual Timing</th>
<th>Possible Etiology</th>
<th>Recommended Investigations</th>
<th>Suggested Treatment and Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fever ≥ 38°C</strong> and ↑ of at least ≥ 1°C from baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 38°C to 38.9°C but NO other symptoms | During or up to 4 hours post transfusion | Febrile non-hemolytic transfusion reaction | No testing required | - Antipyretic  
- With physician approval transfusion may be resumed cautiously if product not expired (still <4 hrs from start of original transfusion) |
| 38°C to 38.9°C AND with one or more serious symptoms* | Usually within the first 15 minutes but may be later | Febrile non-hemolytic transfusion reaction | - Blood Group & Antibody Screen, DAT  
- Aerobic and anaerobic blood cultures and gram stain on returned blood product  
- Aerobic and anaerobic blood cultures on patient | Do not restart transfusion  
- Antipyretic to reduce fever symptoms  
- Consider Demerol (Meperidine) for significant rigors  
- Return blood products to Transfusion Laboratory  
- If sepsis is suspected, antibiotics should be started immediately  
- If hemolysis is suspected (e.g. red urine or plasma), monitor for hypotension, renal failure by measuring urine output/hour and DIC (oozing blood from IV line or mucosal sites  
- For additional assistance, contact on-call SK TM Physician |
| 39°C or more | | | | |
| **Urticaria** (hives) | | | | |
| < ¼ body affected but NO other symptoms | During or up to 4 hours post transfusion | Minor allergic | No testing required | - Antihistamine  
- With physician approval transfusion may be resumed cautiously if product not expired (still <4 hrs from start of original transfusion) |
| > ¼ body affected or more but NO other symptoms | Usually early in transfusion | Severe allergic | No testing required | Do not restart transfusion  
- Antihistamine  
- May require IV corticosteroid |
| **Itching or Rash** | | | | |
| Accompanied by one or more serious symptoms* | Usually early in transfusion | Anaphylaxis | - Blood Group & Antibody Screen, DAT  
- Chest X-ray (if dyspneic)  
- Blood gases (if dyspneic)  
- Haptoglobin, IgA level | Do not restart transfusion  
- Mild to moderate reaction with stable V/S: corticosteroids (e.g. hydrocortisone Adults: 500 mg IV, Peds: 10mg/kg IV, to a max of 500 mg IV); antihistamine (e.g. diphenhydramine 25-50 mg IV/po) per MD order |
### Policies and Procedures: Blood Components & Plasma Protein Products

**- Administration of**

<table>
<thead>
<tr>
<th>Dyspnea (shortness of breath) or ↓ in ( \text{SpO}_2 ), %</th>
<th>Typically with <strong>Hypertension</strong></th>
<th>Within several hours of transfusion</th>
<th>Transfusion associated circulatory overload (TACO)</th>
<th>Blood Group &amp; Antibody Screen, DAT - Urinalysis - Chest X-ray - Blood gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically with <strong>Hypotension</strong></td>
<td>Within 6 hours of transfusion</td>
<td>Transfusion related acute lung injury (TRALI)</td>
<td>Aerobic and anaerobic blood cultures and gram stain on returned blood component - Aerobic and anaerobic blood cultures on patient</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Usually within first 15 minutes but may be later</td>
<td>Bacterial contamination</td>
<td>Acute hemolytic transfusion reaction - Urinalysis - CBC, direct and total bilirubin, urea, creatinine, electrolytes, INR, PTT, fibrinogen, D-dimer, haptoglobin - Haptoglobin, IgA level</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Anaphylaxis</td>
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</tbody>
</table>

**Do not restart transfusion**
- Diuretics, oxygen, sit patient upright (bed at 80° to 90° angle)
- Return blood products to Transfusion Laboratory
- Slow transfusion rate with diuretics for future transfusions

**Do not restart transfusion**
- Assess chest x-ray for bilateral pulmonary infiltrates
- If TRALI may require vasopressors and respiratory support
- If sepsis is suspected, antibiotics should be started immediately

- Severe anaphylactoid reaction and/or unstable V/S: IM epinephrine (1:100), Adults: 0.3-0.5 mL, Peds: 0.01 mL/kg, (refer to product insert for max dose), a bolus of Normal Saline (Adult: 500 – 1000 mL, Peds: 20 mL/kg) – per MD order
- Continuous monitoring (pulse, BP, respiratory rate, O2 sats)
- May require washed/depleted blood products pending investigation (consult Transfusion Medicine Physician on call)
- Return blood products to Transfusion Laboratory
- For additional assistance, contact on-call SK TM Physician

- For additional assistance, contact on-call SK TM Physician
Table 1 – Typical Signs/Symptoms of Minor and Serious Adverse Reactions

<table>
<thead>
<tr>
<th>Severity of Adverse Reaction</th>
<th>Signs and Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>- Skin rash or pruritus (itch) only and involving &lt;¼ body with onset &gt;15 minutes from the start of transfusion</td>
</tr>
<tr>
<td></td>
<td>- Temp rise ≥1°C from baseline but ≤38°C and no other symptoms with onset &gt;15 minutes from the start of transfusion</td>
</tr>
<tr>
<td>Serious</td>
<td>- Onset &lt;15 minutes from the start of transfusion</td>
</tr>
<tr>
<td></td>
<td>- Temp rise ≥1°C from baseline and ≥38°C</td>
</tr>
<tr>
<td></td>
<td>- Hypotension/tachycardia/shock</td>
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<tr>
<td></td>
<td>- Hypertension</td>
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<tr>
<td></td>
<td>- Dizziness</td>
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<td></td>
<td>- Rigors/chills/sensation of cold</td>
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<td></td>
<td>- Back/chest pain</td>
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<td></td>
<td>- Headache</td>
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<tr>
<td></td>
<td>- Wheezing</td>
</tr>
<tr>
<td></td>
<td>- Facial/tongue swelling</td>
</tr>
<tr>
<td></td>
<td>- Dyspnea/hypoxemia/tachypnea</td>
</tr>
<tr>
<td></td>
<td>- Heat/pain or bleeding at IV site</td>
</tr>
<tr>
<td></td>
<td>- Nausea/vomiting</td>
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<tr>
<td></td>
<td>- Generalized flushing</td>
</tr>
<tr>
<td></td>
<td>- Hives/rash covering &gt;¼ body or generalized itching</td>
</tr>
<tr>
<td></td>
<td>- Restlessness/anxiety</td>
</tr>
<tr>
<td></td>
<td>- Jaundice</td>
</tr>
<tr>
<td></td>
<td>- Red/brown urine</td>
</tr>
<tr>
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<td>- Oliguria</td>
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</tbody>
</table>
**Bedside Transfusion Reaction Algorithm**

1. **STOP** the transfusion/infusion immediately – DO NOT discard component
2. Maintain IV patency with compatible IV fluid in a new primary line
3. Obtain and document vital signs every 15 minutes until stable
4. Notify physician/authorized health practitioner immediately and obtain management directives
5. Perform clerical check by re-checking patient and product information as per RHA policy
6. Notify the Transfusion Service/Laboratory (TSL) and complete the SK Transfusion Adverse Event Report form. ALL SUSPECTED TRANSFUSION ADVERSE REACTIONS MUST BE REPORTED TO TSL.

---

### Minor Symptoms

- Skin rash or pruritus (itch) only
- Hives/rash over <1/4 body
- Onset >15 minutes into the transfusion

- Physician/authorized health practitioner may order antihistamine (e.g., Benadryl)
- Transfusion may resume cautiously as per physician/authorized health practitioner order
- Patient should be directly observed for the first 15 minutes after resuming transfusion
- **ALL adverse reactions must be reported to TSL**

### Serious Symptoms

- Temp rise ≥1°C from baseline but ≤38°C
- No other symptoms
- Onset >15 minutes into the transfusion

- Physician/authorized health practitioner may order an antipyretic (e.g., Tylenol)
- Transfusion may be resumed cautiously as per physician/authorized health practitioner order
- Patient should be directly observed for the first 15 minutes after resuming transfusion
- **ALL adverse reactions must be reported to TSL**

---

**IF THE PATIENT HAS ANY ONE OF THE FOLLOWING SYMPTOMS**

- Onset <15 minutes
- Temp rise ≥1°C from baseline and ≥38°C
- Hypotension/tachycardia/shock
- Hypertension
- Dizziness
- Rigors/chills/sensation of cold
- Back/chest pain
- Headache
- Wheezing
- Facial/tongue swelling
- Dyspnea/hypoxemia/tachypnea
- Heat/pain or bleeding at IV site
- Nausea/vomiting
- Generalized flushing
- Hives/rash covering >1/4 body or generalized itching
- Restlessness/ anxiety
- Jaundice
- Red/brown urine
- Oliguria

---

**Consider bacterial contamination if the patient exhibits any one of the following:**

1. Temp rise ≥1°C and ≥38°C PLUS any of the following:
   - Rigors
   - Hypotension
   - Shock
   - Tachycardia
   - Dyspnea
   - Nausea/vomiting
2. Temp rise ≥1°C and ≥39°C with or without other signs and symptoms
3. Temp rise not responding to antipyretics and/or suspicion of sepsis in absence of fever

---

**Production of this Bedside Transfusion Reaction Algorithm has been made possible through a financial contribution from the Public Health Agency of Canada.**
## TRANSFUSION/INFUSION ADMINISTRATION AND ASSESSMENT RECORD

**Patient Label**
- NAME: ____________________
- HSN: ____________________
- D.O.B.: ____________________
- MRHP: ____________________

---

### Chart all blood components/PPPs on this record.

- Valid MRHP order: ________________
- Valid patient consent present: ________________
- Patient education complete: ________________
- Patient identification performed at bedside: ________________
- Visual inspection performed: ________________
- Lot #/Product #/clerical checks performed: ________________
- Expiry date/time checked: ________________
- Notification of Administration of Blood and/or Blood Products (form #103854) given: ________________

### Note:
Vital signs are to be monitored and recorded, at minimum, within 30 minutes prior to initiating the transfusion, 15 minutes after commencing, and every 1 hour until completion, then upon completion. For IVIG, in addition to this, monitor and record vital signs prior to each rate increase.

- Transfusion start date and time: ____________________
- Transfusion completion date and time: ____________________

<table>
<thead>
<tr>
<th>Time</th>
<th>Rate of Infusion</th>
<th>Temp.</th>
<th>HR</th>
<th>BP</th>
<th>Resp. Rate</th>
<th>SpO2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Place patient chart label
- FOR BLOOD PRODUCT HERE
- OR
- RECORD UNIT NUMBER/LOT NUMBER BELOW

- Unit number/Lot number: ____________________
- Product type: ____________________
- Signature: ____________________
- Signature: ____________________

PLEASE COMPLETE AND RETURN
TRANSFUSION MEDICINE LABEL
TO LABORATORY

For IVIG, indicate patient weight in kg: ____________________
Total volume infused: ____________________

### If a transfusion reaction is noted:
- MRHP notified: ________________
- Saskatchewan Transfusion Adverse Event Report (form #103695) completed and sent to the TSL: ________________
- MAR faxed to Transfusion Medicine: ________________

### Notes:

---

Form #101059  12/2017  Category: Flow Sheets
Appendix D

Transfusion Administration Record for Patient Receiving Continuous Vital Sign Monitoring

Page 1 of 2

The signature on the label confirms the following verifications have been completed:
- valid practitioner order
- valid patient consent
- patient identification
- visual inspection of blood product
- lot #/product #, expiry date checked
- patient education complete (if unable to provide, a written note is required in the chart)
- Notification of Administration of Blood and/or Blood Products (form #103654) given (one per visit)

Vital signs documentation see:
- Anesthesia Record
- Apheresis Procedural Worksheet
- ICU/CCU Flow Sheet
- NICU Flow Sheet
- PICU Daily Record
- Perfusion Record
- Vital Signs Record

Place Patient Chart Label Here

1

Please complete and return transfusion medicine label to laboratory

Transfusion Reaction: Saskatchewan Transfusion Adverse Event Report Form (form #103695) completed and sent to the TSL:  

- Yes
- Massive Transfusion Protocol

Form #103945  12/2017  Category: Flow Sheets

Place Patient Chart Label Here

2

Place Patient Chart Label Here

3

Please complete and return transfusion medicine label to laboratory
# Saskatchewan Transfusion Adverse Event Report Form

**Patient Demographics**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Legal Last Name</td>
<td></td>
</tr>
<tr>
<td>Patient Legal First Name</td>
<td></td>
</tr>
<tr>
<td>HS/NMRN:</td>
<td></td>
</tr>
<tr>
<td>Date of Birth (dd/mm/yyyy):</td>
<td></td>
</tr>
</tbody>
</table>

- **Gender**: [ ] Male [ ] Female [ ] Unknown

## 1. Patient and Blood Component/Product Unique Identifier Verification (Clerical check)

- Is the information IDENTICAL on all the following: [ ] Patient ID [ ] Issue document [ ] Label? [ ] YES [ ] NO
- IF NO, contact TMS/Lab IMMEDIATELY. Another patient may be at risk.
- Date/TMS/Lab notified: ________________
- Person contacted: ______________________

## 2. Clinical History (Check all that apply)

- Pre-existing fever (T ≥ 38.0°C before transfusion) [ ]
- History or pre-transfusion evidence of hypovolemia [ ]
- Immune-compromised (specify): [ ]
- Transfused under GENERAL anesthesia [ ]
- Transfused under REGIONAL anesthesia [ ]
- Transfusion pre-medication (specify): [ ]
- Patient currently prescribed: [ ]
- ACE inhibitor [ ]
- Diuretic [ ]
- Antibiotic(s) (specify): [ ]
- History of transfusion: [ ]
- No [ ]
- Unknown [ ]
- Yes (within 3 months) [ ]
- Yes (> 3 months) [ ]
- History of pregnancy/miscarriages: [ ]
- No [ ]
- Unknown [ ]
- Yes (within 3 months) [ ]
- Yes (> 3 months) [ ]

## 3. Location, Date and Time of Transfusion Reaction

<table>
<thead>
<tr>
<th>Choice</th>
<th>ICU</th>
<th>ER</th>
<th>Medical Ward</th>
<th>Surgical Ward</th>
<th>OR/Post Anesthesia Care</th>
<th>OB/Gyn</th>
<th>Outpatient</th>
<th>Chronic Care</th>
<th>Lab (Serologic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date (dd/mm/yyyy):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Transfusion Started:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Reaction Occurred:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Transfusion Stopped:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Transfusion Restarted:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only upon medical direction:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Transfusion Completed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 4. Vitals & Clinical Signs and Symptoms

### Pre-transfusion

- Temp: *°C (usual)*
- BP: ___________/
- Pulse: ___________
- Resp: ___________
- SpO₂: ___________
- O₂ Source: ___________

**Clinical Signs and Symptoms (Check all that apply; attach medication record, nursing notes, physician notes, and transfusion administration record, if available)**

- Fever (oral T ≥ 38.0°C and axillary T ≥ 37.5°C above baseline temp) [ ]
- Urticaria (hives) [ ]
- Pruritus (itching) [ ]
- Skin rash other than urticarial [ ]
- Dyspnea (shortness of breath) [ ]
- Headache [ ]
- Chills (sensation of cold) [ ]
- Rigors (voluntary shaking) [ ]
- Flushing [ ]
- Tachycardia (HR rise by > 20mmHg) [ ]
- Hypotension (BP drop by ≥ 10mmHg) [ ]
- Tachycardia (HR rise by > 40bpm) [ ]
- Shock [ ]

**Other relevant clinical information:** __________________________

## 5. Blood Component/Product(s) and Equipment Information (Attach sheet with additional information if needed)

<table>
<thead>
<tr>
<th>Blood Component/Product Type</th>
<th>Product AB/O Rh</th>
<th>Unit Number or Lot Number</th>
<th>Expiry Date (dd/mm/yyyy)</th>
<th>Volume Transfused (mL)</th>
<th>Transfusion Rate (mL/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filters or Equipment Used</td>
<td>Standard blood filter [ ]</td>
<td>Other blood filter [ ]</td>
<td>IV pump [ ]</td>
<td>Blood warmer [ ]</td>
<td>Rapid infusion device [ ]</td>
</tr>
</tbody>
</table>

## 6. Measures Taken and Notifications

### 6a. Transfusion Reaction Treatment Measures Taken (Check all that apply)

- None [ ]
- Analgesics [ ]
- Vasopressors [ ]
- ICU [ ]
- Other Measures Taken: [ ]

### 6b. Notifications

<table>
<thead>
<tr>
<th>Physician Name</th>
<th>Date/Time:</th>
<th>TMS/Lab Name</th>
<th>Date/Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported By:</td>
<td>Signature:</td>
<td>Name (spc):</td>
<td>Designation:</td>
</tr>
<tr>
<td>Facility:</td>
<td>Date/Time:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---


Form #103695 12/2017 Category: Assessments/Historys
Saskatchewan Transfusion
Adverse Event Report Form

TO BE COMPLETED BY THE TRANSFUSION SERVICE/LABORATORY

Patient Demographics
Patient Legal Last Name: ____________________________
Patient Legal First Name: ____________________________
HSNMRN: _______________ Date of Birth (dd/mm/yyyy): _______________
Gender: Male ☐ Female ☐ Unknown ☐

7. Laboratory Investigation and Notifications

7a. History of Previous Transfusion Reactions
☐ None ☐ Unknown ☐ Yes (within 3 months) ☐ Yes (> 3 months)
Type of previous reaction:

7b. Investigation Required
☐ Lab Clinical Check, Visual Plasma Check; NO serological investigation needed
☐ DSTR ☐ Level 1 ☐ Level 2

7c. Lab Results

<table>
<thead>
<tr>
<th>Lab Order #:</th>
<th>Lab Order #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 Investigation</td>
<td>Pre-transfusion Result</td>
</tr>
<tr>
<td>Lab Clinical Check</td>
<td>Post-transfusion Result</td>
</tr>
<tr>
<td>Visual Plasma Check</td>
<td>Level 2 Investigation</td>
</tr>
<tr>
<td>DAT</td>
<td>Post-transfusion Result</td>
</tr>
<tr>
<td>Patient ABO/Rh</td>
<td>Lab Order #:</td>
</tr>
<tr>
<td>IAT Crossmatch</td>
<td>Date taken:</td>
</tr>
</tbody>
</table>

7d. Notifications / Reports (check and provide details for all that apply)

Facility Risk Management ☐ No ☐ Yes ☐ Contact Person: __________________ Date Reported: _______________

Fax SK Adverse Event Report Form to SHR 306-655-0897 or RQHR 306-766-4382

TO BE COMPLETED BY SK TRANSFUSION MEDICINE CONSULTANT OR DESIGNATE

8. Review of Investigation & Conclusion (based on 2007 PHAC definitions)

☐ No transfusion reaction ☐ FNH ☐ Minor allergic ☐ Severe allergy/anaphylactic/anaphylactoid
☐ Incompatible transfusion ☐ Intentional ☐ ABO System Anti- ☐ Other System Anti-
☐ Acute hemolytic reaction ☐ Delayed hemolytic reaction

8a. Delayed serological transfusion reaction (DSTR)
Specify new alloantibody(ies) within 28 days of transfusion: Anti-______

8b. TACO ☐ Diuretics effective ☐ TAD ☐ PTP ☐ TA-GVHD ☐ Hypotensive reaction

8c. Blood-borne infection: ☐ Bacterial ☐ Viral ☐ Other (specify): ______

8d. Recipient
Specify organ(s): ____________________________________________

8e. Donor/product infected ☐ Yes ☐ No ☐ If yes, specify organism: ___________________________

9. Relationship, Severity and Outcome of Adverse Reaction

9a. Relationship of reaction to transfusion
Define: ☐ Defined ☐ Probable ☐ Possible ☐ Doubtful ☐ Rule out ☐ Not determined

9b. Severity (Grade)
1 (non-severe) ☐ 2 (severe) ☐ 3 (life-threatening) ☐ 4 (death) ☐ Not determined

9c. Outcome
Minor or no sequelae ☐ Major or long-term sequelae ☐ Death ☐ Not determined

9d. Status of investigation
In progress ☐ Concluded ☐ Cannot be concluded ⇒ Reason (specify): _______________________

10. Comments and Recommendations

11. Conclusion Sign Off

SK TM Consultant
Signature: __________________________ Name (print): __________________________ Date: _______________

For cases reported to Health Canada:
Local TM Medical Director/Pathologist
Signature: __________________________ Name (print): __________________________ Date: _______________

Reportable to PHAC: ☐ Yes ☐ No
SK TISS Number: ________________ CNPHI Number: ________________

Appendix # 9: Saskatchewan Transfusion Resource Manual • Version November 29, 2017
Form #103695 12/2017 Category: Assessments/Histories
Page 2 of 2
NOTIFICATION OF ADMINISTRATION OF BLOOD AND/OR BLOOD PRODUCTS

Notification Form to be given to patient at discharge or transfer.

(Check only if patient label unavailable)

Patient Name: ____________________________________________

PHN/MRN: _____________________________________________

During your stay with the Saskatoon Health Region
Admission date: ______________, you were given a human blood product.

(Date mm/dd/yyyy)

If you have any questions regarding this product please contact your physician or the
Saskatoon Health Region Transfusion Safety Officer at (306) 655-0988.

(Signature of patient or substitute decision maker) ____________________________

(Date mm/dd/yyyy)

(Provisional date to Patient) ____________________________________________

(Health Care Professional providing discharge/transfer Documentation) _________

(Date mm/dd/yyyy)

Copy provided to patient: ☐ Yes
☐ No: Reason ____________________________
BLOOD WARMING DEVICES

Purpose: Rapid infusions of large volumes of cold blood may decrease the temperature of the sinoatrial node causing arrhythmias. Use of blood warmers may decrease the incidence of arrhythmias and cardiac arrest associated with infusion of large volumes of cold blood components (red blood cells and plasma). Use of blood warmers may also decrease the development of rigors in persons with cold agglutinin disease. This piece of equipment is usually seen in the operating room, intensive care unit, or emergency department. In general, routine warming of blood is not recommended.

Indications:
- Multiple, rapid infusions of cold blood
- Cold agglutinin disease
- Exchange transfusions in infants

Procedure for use of the Ranger® Fluid Warming device:
*Ensure aseptic technique is maintained and hand hygiene is performed at the required moments.*

1. Obtain a warming device and cassette. Packed red blood cells must be warmed to room temperature (over 30 minutes) before infusing through the blood warmer. The TRANSFUSION SERVICE/LABORATORY will ensure the red blood cells are at room temperature prior to issuing.

2. Slide the empty, flat warming cassette into the slot in the warming unit. **Do not prime the warming cassette before sliding it into the warming unit.**

3. Prime a blood administration set with 0.9% sodium chloride or Plasmalyte. Clamp the tubing.

4. Attach IV extension tubing to the distal end of the warming set (red port).

5. Attach the blood administration set to the proximal end of the warming set (blue port – inlet line).

6. Open the clamp on the blood administration set and prime the tubing of the warming unit & IV extension tubing.
   - a. Invert the bubble trap until it is full
   - b. Turn the bubble trap right side up and prime the line going to the patient
   - c. Place the bubble trap into the holder on the warming unit.

7. Close all clamps on the warming set and blood administration set.

8. Turn the warming unit on. When the temperature display reads 41°C the unit is ready for use (takes approximately two minutes to warm up).

9. Attach the tubing to the patient, open all clamps, and begin transfusion as per standard procedure.

10. Upon completion of the transfusion close all clamps prior to disconnecting the tubing from the patient &/or warming unit.

**Note:** If at any time the over-temperature alarm sounds (temperature above 42°C) stop the transfusion. If the temperature does not drop below 42°C within a few minutes discontinue use of the warming device and take to Clinical Engineering. Obtain a new warming device from the OR.
# Intravenous Immune Globulin (IVIG) Infusion Order Set - ADULT

## Infusion Location
- Inpatient Care Area
- Outpatient Care Area

## Clinical Information
- Indication for IVIG
- Physician recommending IVIG
- History of previous IVIG Adverse Reaction: No

## Lab Investigations Pre-Infusion (if applicable)
- ABO Group/Rh Type
- Complete Blood Count (CBC)
- Creatinine
- Immunoglobulins (gA, gM, gS)

## IV Therapy
- IV Fluid: D5W at TKVO (30 mL/h)

## Pre-Medication (if applicable, due to history of documented adverse reaction)

## Medications
- Acetaminophen 325-650 mg PO x 1 PRN for febrile reaction
- Dimenhydrinate 25-50 mg PO or IV x 1 PRN for nausea
- Ondansetron 4 mg PO or IV x 1 PRN for nausea
- Diphenhydramine 25-50 mg PO or IV x 1 PRN for itch or rash. If severe symptoms, call ordering MD

## IVIG Dose (Adjusted body weight calculator: pbco.ca/IVIG_Dosing_Calculator.htm)
- Actual Weight (kg): __________
- Calculated Dosing Weight (kg): __________
- Total IVIG Dose Ordered: __________
- (round up to nearest 5g)
- If actual body weight dose ordered, indicate reason (required)
- Specific IVIG Brand: __________
- Reason (required): __________
- IVIG __________ g IV as a single dose, per protocol
- Maximum rate not to exceed 4 mL/h due to risk of acute renal dysfunction (eg: pre-existing renal dysfunction, age over 65, sepsis, hypotension, paraproteinemia, concurrent nephrotoxic medications)

### Notice of confidentiality: Contains information that is time-sensitive or confidential. Use, disclosure, copying or communication of the contents is prohibited. If you have noticed an error, notify the SHR Pharmacy Manager, Operations (106 655 6695).

**Form #: 1037/16**
**Date: 02/18**
**Category: Orders**

**Page 1 of 1**
# ADULT 10% IVIG INFUSION RATE TABLE

The following table represents maximum infusion rates at specific intervals and should not be exceeded.

<table>
<thead>
<tr>
<th>Patient Dosing Weight (kg)</th>
<th>Initial Rate: 0.5 mL/kg/h</th>
<th>Then: 1 mL/kg/h</th>
<th>Then: 2 mL/kg/h</th>
<th>Then: 4 mL/kg/h</th>
<th>Then: 6 mL/kg/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start at 0 mL/h</td>
<td>After 30 min (mL/h)</td>
<td>After 60 min (mL/h)</td>
<td>After 90 min (mL/h)</td>
<td>After 120 min (mL/h)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>7.5</td>
<td>15</td>
<td>30</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>80</td>
<td>120</td>
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<tr>
<td>25</td>
<td>12.5</td>
<td>25</td>
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<td>30</td>
<td>15</td>
<td>30</td>
<td>60</td>
<td>120</td>
<td>180</td>
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<tr>
<td>35</td>
<td>17.5</td>
<td>35</td>
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<td>140</td>
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<td>160</td>
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<td>60</td>
<td>120</td>
<td>240</td>
<td>480</td>
<td>700</td>
</tr>
</tbody>
</table>

**Caution:**

- For patients below, at, or near their ideal body weight, the "dosing weight" is the patient’s actual weight. For obese patients (i.e. actual weight more than 20% above ideal weight or BMI over 30 kg/m²), the dosing weight is a calculated weight that is the mathematical average of the actual and the ideal body weight. See [http://phro.ca/IVIG_Dosing_Calculator.htm](http://phro.ca/IVIG_Dosing_Calculator.htm)
- Patients with a history of hypertension, cardiovascular disease, previous thrombotic events or dehydration are at increased risk of thrombus formation.
- Patients predisposed to acute renal failure or over 65 years of age should have IVIG products administered at a slower rate. Recommended maximum 4mL/kg/h.
- Infusion rates may be ordered at a reduced rate at the discretion of the ordering physician.
- Slower rates may diminish the frequency or severity of rate-related symptoms/side effects such as headache, shivering, HR and BP changes.
- Patients should be clinically reassessed with each rate change according to protocol.
- This table represents a guideline only!

2017-12-20
**Pediatric Intravenous Immune Globulin (IVIG) Infusion Order Set**

### Clinical Data
- Actual Weight (kg) ____________
- Height (cm) ____________

### Infusion Location
- Inpatient Care Area: ____________
- Outpatient Care Area: ____________

### Clinical Information
- Indication for IVIG: ____________
- Physician recommending IVIG: ____________ Specialty: ____________
- History of previous IVIG Adverse Reaction: No ☐ Yes ☐ (describe below)

### Lab Investigations Pre-Infusion (if applicable)
- ABO Group/Rh Type: ____________
- Prior to first infusion only (complete Transfusion Medicine Test Request Form)
- CBC: ____________
- Creatinine: ____________
- Immunoglobulins (IgA, IgM, IgG): ____________
- Additional Labs: ____________

### IV Therapy
- IV Fluid: D5W at TKVO

### Pre – Medication (if applicable, due to history of documented adverse reaction)
- ____________

### Medications
- Acetaminophen ____________ mg PO x 1 PRN for febrile reaction (10-15 mg/kg/dose; maximum 550 mg/dose)
- Ondansetron ____________ mg IV x 1 PRN for nausea (0.1 mg/kg/dose; maximum 4 mg/dose)
- Diphenhydramine ____________ mg PO or IV x 1 PRN for itch or rash and call ordering MD (0.5-1 mg/kg/dose; maximum 50 mg/dose)

### IVIG Dose
- IVIG dose per kg: ____________ g/kg
- Total IVIG Dose Ordered ____________ g (round up to nearest 5g)

**NOTE:** If the patient is at least 153 cm tall and clinically obese, consider a calculated Adjusted Body Weight IVIG dose
- Specific IVIG Brand ____________
- Reason (required): ____________
- IVIG ____________ g IV as a single dose, per protocol
- IVIG ____________ g IV per day X ____________ days, per protocol. Repeat every ____________ weeks X ____________

**NOTE:** This order expires 6 months from the date of completion.

Complete Plasma Protein Product Request Form (#10221) and fax to TML each time IVIG is requested.

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**Practitioner Printed Name:**

**Practitioner Signature:**

**Date:**

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Notice of confidentiality: Contains information that is time sensitive or confidential. Use, disclosure, copying or communication of the contents is prohibited, if you have received it in error, notify the Site Pharmacy Manager, Operations (905-555-6995).
PEDIATRIC 10% IVIG INFUSION RATE TABLE

The following table represents maximum infusion rates at specific intervals and should not be exceeded.

<table>
<thead>
<tr>
<th>Patient Weight (kg)</th>
<th>Initial Rate: 0.5 mL/kg/h</th>
<th>Then: 1 mL/kg/h</th>
<th>Then: 2 mL/kg/h</th>
<th>Then: 4 mL/kg/h</th>
<th>Then: 6 mL/kg/h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Start at (mL/h)</td>
<td>After 30 min (mL/h)</td>
<td>After 60 min (mL/h)</td>
<td>After 90 min (mL/h)</td>
<td>After 120 min (mL/h)</td>
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<tr>
<td>5</td>
<td>0.5</td>
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<td>2</td>
<td>4</td>
<td>6</td>
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</table>

Caution: This table represents a guideline only.

- Patients with a history of hypertension, cardiovascular disease, previous thrombotic events or dehydration are at increased risk of thrombus formation.
- Infusion may be ordered at a reduced rate at the discretion of the ordering physician.
- Slower rates may diminish the frequency or severity of rate-related symptoms and signs such as headache, shivering, HR and BP changes.
- Patients should be clinically reassessed with each rate change, according to protocol.
- If the patient is at least 153 cm tall and clinically obese, physicians should consider calculating the dose of IVIG on the basis of an adjusted dosing weight, which is the mathematical average of the actual and the ideal body weight.

See [http://phco.ca/IVIG_Dosing_Calculator.htm](http://phco.ca/IVIG_Dosing_Calculator.htm)