Clinical Guidelines

PROMOTING EXCELLENCE IN TRANSFUSION MEDICINE

Toolkit for

The Administration of
Blood Components
and
Blood Products

In

Nova Scotia

January 2011
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Associated Documents:  
The following associated documents can be found on the NSPBCP website link:  

- IVIg administration guidelines
- IVIg Infusion Rate Tables
- Factor product sheets
- Blood and Blood Product Transfusion: A patient guide
- Elements of informed consent for blood and blood products
- Flipchart (A guide to the administration of blood components and blood products)
- Guidelines for Massive Transfusion in Nova Scotia
- *Indications for Transfusions in Nova Scotia (draft document in progress)*

NSPBCP Guideline for the Administration of Blood and Blood Products January 12, 2011  2
1.0 BACKGROUND

The NSPBCP was created in January 2003 by the Department of Health. The NSPBCP provides leadership in collaborating with healthcare providers across the province and Canadian Blood Services (CBS) in order to maximize the safe and appropriate management of blood and blood products for patients in Nova Scotia.

The Provincial Blood Administration Nursing Policy was originally developed in 2005. This document was distributed to the District Health Authorities (DHAs)/IWK Hospital and subsequently, each of the districts adapted their own blood administration policies for their individual hospitals. There was a recognized need for this Provincial Blood Administration Nursing Policy to be revised and updated. The guideline has been revised as a template tool for DHAs/IWK to use in the development of individual district administration guidelines.

2.0 INTRODUCTION

These Guidelines for the Administration of Blood Components and Blood Products in Nova Scotia have been created with the clinical expertise and in collaboration with the Nova Scotia Nurses Transfusion Practice Working Group (NSNTPWG). The Nova Scotia Provincial Blood Coordinating Program (NSPBCP) would like to acknowledge the efforts of the NSNTPWG in the development of these guidelines. The members of the NSNTPWG include:

**Nova Scotia Nurses Transfusion Practice Working Group members:**

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3.0 DEFINITIONS

**Antibody Screen**
Testing the patient’s serum for allo- and/or auto-antibodies usually developed after exposure to foreign red cells.

**Blood**
Defined as whole blood made up of red cells, white cells, platelets and plasma.

**Blood Components**
A therapeutic component of blood intended for transfusion (e.g.: red cells, granulocytes, platelets, plasma) that can be prepared using the equipment and techniques available in a blood centre.

**Note:** Such equipment and techniques can include centrifugation, filtration, or freezing.

**Blood Products**
A therapeutic component derived from human blood or plasma, and produced by a manufacturing process that pools multiple units (usually more than 12) Note: Examples of blood products are human serum albumin, immunoglobulin preparations, and coagulation products such as factors VIII, and IX, fibrinogen, anti-thrombin III, etc.

**BTS**
Blood Transfusion Services.

**Clerical Check**
A clerical check confirms that the identification checks are correct and there are no discrepancies. A clerical check is performed by the healthcare professional to verify that the armband and blood transfusion report or tag match with the patient’s full name and additional unique identifier as per specific DHA/IWK policy (e.g. medical record number, healthcard number, etc.). It also verifies that the patient’s ABO/Rh type is compatible/identical to the unit ABO/Rh type and that the unit is not expired.

**Clerical Discrepancy**
A clerical discrepancy exists when there is less than 100% consistency in the information on the blood, blood component or plasma derivative labels, Blood Transfusion Report or Tag or the patient’s identification band.

**Crossmatch**
Testing compatibility before transfusion between the Red Blood Cells (RBCs) of the donor and the recipient’s serum; determines if the recipient has any antibodies that would destroy the donors RBCs.

**Serologically Incompatible Blood**
Blood which is ABO/Rh compatible but due to the presence of auto-antibodies, high incidence allo-antibodies or multiple allo-antibodies may be serologically incompatible.

**Unmatched Blood**
Blood that has not undergone pre-transfusion testing.
**Substitute Decision Maker**
Is identified by applying the following list in descending order:

(a) a person who has been authorized to give consent under the *Medical Consent Act*;
(b) the patient’s guardian appointed by a court of competent jurisdiction;
(c) the spouse or common-law partner, if the spouse or common-law partner is cohabitating with the patient in a conjugal relationship;
(d) an adult child of the patient;
(e) a parent of the patient or a person who stands in *loco parentis*;
(f) an adult brother or sister of the patient;
(g) any other adult next of kin of the patient; or
(h) the Public Trustee.

### 4.0 GUIDELINE TEMPLATE TOOL

This document provides a guideline template tool for DHAs/IWK to assist in the implementation of policies and procedures in hospital sites related to the administration of blood components and blood products. This guideline document incorporates related blood transfusion standards and supports best practice. *(See Appendix A)*

#### 4.1 POLICY

**4.1.1** The physician must order in writing:

(a) Type of blood component or blood product
(b) Specify product requirements (e.g. CMV negative, irradiated etc.)
(c) Number of units and/or volume of product or apheresis procedure
(d) If a blood warmer and/or pressure device is indicated for use. In the instance of a massive bleed it is recommended to warm all fluids and to infuse via a rapid infuser.

*Please note:* Blood warmer temperature should not exceed 42°C and pressure devices should not exceed 300 mmHg. *Refer to manufacturer’s instructions and DHA/IWK specific policy for the use of blood warmers and rapid infusion devices.*

(e) Use of serologically incompatible blood, unmatched blood (in emergency or life-threatening situations) or expired blood components/blood products. *Note:* The administration of unmatched blood requires the **physician to sign** the blood tag prior to its administration. *Refer to DHA/IWK specific policy.*

**4.1.2** Provide patient education and information to the patient/substitute decision maker prior to the transfusion. *Refer to the education pamphlet entitled “Blood and Blood Product Transfusion: A patient guide”.*

- Preclude special circumstances such as a patient’s religious background in relation to blood transfusion when providing patient education. Contact BTS/consult physician to provide education surrounding blood products that contain no human plasma for consideration for patients with special circumstances (e.g. Jehovah’s Witness).
4.1.3 Written consent **must** be obtained by the physician proposing the treatment unless emergency criteria exist. Consent is required for all blood components and blood products. Refer to DHA/IWK specific policies regarding informed consent.

4.1.3.1 A single consent is sufficient to cover the ongoing blood transfusion requirements that relate to the treatment. For more detailed information on informed consent (E.g. time frame for acceptability of consent form), refer to specific DHA/IWK specific policy.

4.1.3.2 For patients refusing a blood transfusion documentation/written refusal is required. Refer to DHA/IWK specific policy for refusal or limited consent of blood components/blood products.

4.1.3.3 Where a patient in a hospital or a psychiatric facility is found by declaration of capacity to be incapable of consenting to treatment, a consent may be given or refused on behalf of the patient by a substitute decision-maker who has the capacity and is willing to make the decision to give or refuse the consent from the list in descending order as defined in “DEFINITIONS” section under “Substitute decision maker”.

4.1.3.4 When it is not possible to obtain the consent of a patient or substitute decision maker and delay in transfusion would endanger the life of the patient or present a significant risk to their health, the physician is to indicate this in the progress notes and may proceed with the treatment unless there is: Refer to specific DHA/IWK specific policy.
   - An advance directive to refuse transfusion OR
   - Documented refusal (e.g. Jehovah’s Witness)

4.1.4 In specific clinical areas where verbal orders may be accepted (e.g. OR, Emergency, etc); there must be a written policy in place. Refer to DHA/IWK specific policy when accepting verbal or telephone orders in relation to blood transfusion.

4.1.5 For products that are recommended to be administered IV direct as per the product monograph; RNs deemed competent in IV direct administration may administer these products as per specific hospital policy. Refer to specific DHA/IWK hospital policy on direct IV administration of medication.

4.1.6 Medication must not be added to or piggy-backed with any blood component or blood product.

4.1.7 Normal Saline (0.9%) is to be used to prime tubing, improve flow rate or clear lines after the infusion of blood components. For blood products, refer to the manufacturer's enclosed product monograph accompanying the product for compatible solutions.

4.1.8 Verification of blood components or blood products must be performed in the presence of the patient, and must be verified by two healthcare professionals with one of the verifiers being the transfusionist. (e.g., may be verified by the RN, physician, perfusionist, or anesthetists with one of the individuals being the transfusionist. **Note:** It is acceptable in some facilities for the LPN or anesthesia technician to be the verifier, but not the
transfusionist). Refer to DHA/IWK specific policy on verifying blood components/blood products.

4.1.9 The Blood Transfusion Report or Tag must remain attached to the blood component or blood product until the transfusion is complete. Following administration of the blood component or blood product, **the post transfusion information must be completed.** Patient’s chart copy of documents remains with the patient’s chart as applicable. All remaining copies must be returned to BTS.

4.1.10 Observe the patient during and following the transfusion for any signs of adverse reactions. Remain with the patient for the first 5 minutes of the transfusion; assess the patient every 5 minutes times two and every 1 hour thereafter to ensure the blood is infusing appropriately and to assess the patient for signs/symptoms of adverse reactions. Assess vital signs at 15 minutes after start of transfusion. Vital sign monitoring is recommended throughout the transfusion as stated in: Procedure/Administration 4.3.2.4. It is recommended the patient remain on the Nursing unit or be observed by a health care provider during the transfusion. Refer to DHA/IWK specific policy for observation and monitoring a patient during a transfusion.

4.1.11 Unused blood components or blood products must be returned to BTS immediately. In order for blood components or blood products to be re-issued from BTS, unused products must be either stored in a suitable temperature monitoring system indicating that they have been maintained within acceptable temperatures since their release or they have been outside of the controlled environment for less than 30 minutes. **Do not store on unit or place in a non-monitored refrigerator.**

4.1.12 **Blood administration must not exceed four hours from the time it is removed from its controlled-temperature location or removed from a transport crate (time stamped on blood tag).** If a unit is still hanging at the end of four hours it must be discontinued and the remaining product discarded.

4.1.13 In clinical areas where monitored blood refrigerators are used, if blood components or blood products are removed from a blood refrigerator, the tags must be time stamped on removal. If the blood component or blood product is not used, time must be stamped again on return to the blood refrigerator. Refer to DHA/IWK specific policy.

4.1.14 The blood administration set must be changed after four consecutive units have been transfused or after 8 hours of use or if more than 60 minutes has elapsed before another transfusion is initiated. Refer to DHA/IWK specific policy or refer to specific policy in specialty clinical areas (e.g. Apheresis areas).

4.2 GUIDING PRINCIPLES

4.2.1 In the majority of patients Cytomegalovirus (CMV) causes a mild infection. However, in patients that are severely immunocompromised such as transplants recipients and patients with specific hematological disorders, CMV can cause serious morbidity and mortality. CMV may be transmitted to a recipient through the transfusion of either RBCs or platelets. However all blood available in Canada is now leukoreduced and therefore the risk of CMV transmission from blood transfusion is
very low. Refer to DHA/IWK specific policy for administration of CMV negative blood components.

4.2.2 Blood components can be irradiated to prevent transfusion-associated graft-versus-host disease (TA-GvHD). TA-GvHD is a very rare but serious reaction that can occur when T-lymphocytes in the transfused blood component are infused and the transfusion recipient can not recognize or destroy them. It is recommended that patients in specific risk groups, such as blood and marrow transplant patients, receive irradiated RBC, random donor and apheresed platelets. Note: Human Leukocyte Antigen (HLA) matched platelets are always irradiated. Refer to DHA/IWK specific policy for use of irradiated blood components.

4.2.3 Avoid simultaneous administration of blood components/blood products. In emergency situations it may be necessary to administer blood components and blood products concurrently using separate IV access.

4.2.4 When using a needle-less mainline, the lowest y-port on the tubing may be used to attach the blood administration tubing and infuse the blood component/blood product. Avoid "piggy backing" through needles as this increases the likelihood of cell membranes rupturing. "Piggy back" through needles only if IV site is precarious, manipulation would jeopardize access or if needless mainline tubing is not available.

4.2.5 A large bore (18 gauge) cannula is recommended for IV access to prevent hemolysis. In the event of a massively bleeding patient, it is recommended two large bore IV lines be initiated. Smaller gauge needles are used for pediatrics (Red cells can be safely administered through a 25 gauge cannula in pediatrics; however the rate will be slower). Refer to DHA/IWK specific policy.

4.2.6 Questions pertaining to pediatric transfusions should be referred to the hematologist/oncologist on call at IWK Health Centre.

4.3 PROCEDURE

Refer to ABO/Rh compatibility Chart (Appendix E), Transfusion Safety Checklist Tool (Appendix F), and Transfusion Competency Assessment Tool (Appendix G) for further resources that can be utilized prior to transfusion. Refer to DHA/IWK specific policy.

4.3.1 PRE-ADMINISTRATION

4.3.1.1 Ensure a written consent has been obtained by the physician. Refer to DHA/IWK specific consent policy for transfusion.

4.3.1.2 Provide the patient with the education pamphlet entitled “Blood and Blood Product Transfusion: A patient guide” or refer to DHA/IWK specific patient education handout.

- Provide and document patient/substitute decision maker teaching.
4.3.1.3 Review the physician’s order for transfusion and premedication.

4.3.1.4 Pre-medicate only if ordered by a physician ensuring that product is available prior to administering pre-transfusion medications.

4.3.1.5 Ensure the patient’s intravenous site is patent.

4.3.1.6 Obtain clinical assessment and chart baseline vital signs (temperature, pulse, respiration, blood pressure) within 1 hour prior to transfusion.

4.3.1.7 Contact Blood Transfusion Services (BTS) and arrange for product pickup/delivery.

4.3.1.8 If a delay in transfusion greater than 30 minutes is expected upon receipt of blood component or blood product, return to BTS to allow the product to be stored until ready to transfuse.

4.3.1.9 Instruct the patient/substitute decision maker to notify the nurse if any of the following occur:
   - Chills/rigors
   - Urticaria/other skin rash
   - Respiratory distress (shortness of breath)
   - Nausea/Vomiting
   - Pain
   - Dizziness, weakness
   - Bleeding
   - Patient states feeling unwell/any change from pre-transfusion status

4.3.1.10 Verify the specific product requirements (e.g. CMV negative, irradiated).

4.3.1.11 Visually inspect product for clots, clumps, and discoloration. If present, notify BTS and return the product.

4.3.1.12 Gently agitate blood components to mix thoroughly.

4.3.1.13 Prime the appropriate tubing with a compatible solution (normal saline for blood components – for blood products follow manufacturer’s insert/product monograph.)

4.3.1.14 Ensure the patient has an armband on their person. The following must be verified by two healthcare professionals, with one of the verifiers being the transfusionist, and in the presence of the patient (Refer to DHA/IWK specific policy):
   - Verify the patient’s full name and additional unique identifier as per specific DHA/IWK policy (e.g. medical record number, healthcard number, etc.), on the “Blood Transfusion Report or Tag” AND the
patient's identification arm band match.

- Verify the ABO group, Rh type and Blood Serial number on the “Blood Transfusion Report or Tag” matches or are compatible with the ABO group, Rh type and blood serial number on the product label.

- Verify the product has not/will not expire during transfusion.

Note: If any of the above criteria are not met, do not start the transfusion, notify the BTS and return the product.

4.3.2 ADMINISTRATION

4.3.2.1 Sign the “Blood Transfusion Report or Tag” that is attached to the product and fill in the start time. Keep the Blood Transfusion Report or Tag attached to the product until the transfusion is complete.

4.3.2.2 Monitor the patient throughout the transfusion for signs of an adverse reaction. Refer to the “Algorithm for Transfusion Reactions” (Appendix B), for identifying adverse reactions. When more than one unit of RBC or multiple bags of plasma are to be given, with each unit/bag administered, the patient should be monitored as in the initial transfusion. Refer to DHA/IWK specific policy.

4.3.2.3 Monitor infusion rates. Slower infusion rates may be necessary in infants, the elderly or patients that are cardiovascularly compromised or at risk for fluid overload. See “Blood Component and Blood Product Table” (Appendix D) for recommended infusion rates (Refer to DHA/IWK specific policy):

4.3.2.4 Patient vital signs must be checked and documented: Refer to DHA/IWK specific policy. It is recommended that vital signs be monitored:

- Within the hour prior to starting the transfusion
- After the first 15 minutes of the transfusion
- Every hour during the transfusion
- One hour following completion of the transfusion.
- When administering IVIg products, it is recommended that vital signs be monitored when increasing infusion rates and if lot number changes with product infused. It is not necessary to slow down the infusion rate when changing lot numbers. Refer to manufacturer’s instructions and specific DHA/IWK policy.

*EXCEPTION: In ambulatory care settings, the patient should be kept for a minimum of 15 to 30 minutes, to a maximum of one hour post-transfusion. Assessment may vary depending on product administered. Refer to DHA/IWK specific policy.
(Example: Due to the very low risk of immediate reaction, vital signs may be omitted pre and post administration of routine maternal (up to 300 micrograms) doses of WinRho-SDF. If this is done, a mandatory 15 minute observation period is required following the administration).

4.3.2.5 Immediately document on the patient record at the time of transfusion:

- The unit number. (DO NOT affix sticker/label)
- Type of blood component or blood product transfused.
- Date and time of start and finish.
- Identity of individual who administered the transfusion.
- If the patient experienced an adverse transfusion reaction.

4.3.2.6 If a product is still hanging at the end of four hours from dispensing, discontinue and discard the remaining product.

4.3.3 POST ADMINISTRATION

4.3.3.1 In the ABSENCE of a transfusion reaction: Refer to DHA/IWK specific policy.

- Flush IV line with normal saline or compatible solution following transfusion.
- Disconnect the blood product and administration set.
- Remove the Blood Transfusion Report or Tag and complete the required information.
- Document and/or place the chart copy in the appropriate location of the patient’s chart.
- Return the back copy of Blood Transfusion Report or Tag to BTS within 24 hours of the transfusion. Refer to DHA/IWK specific policy.
- Discard empty blood bags, bottles and tubing in the appropriate blood/body fluid equipment container.

4.3.3.2 TRANSFUSION REACTION SUSPECTED. Note: Refer to the Algorithm for Transfusion Reactions (see Appendix B); and the Laboratory Investigation of Adverse Reactions (see Appendix C). Refer to DHA/IWK specific policy for suspected adverse transfusion reactions.

If the patient experiences any signs and symptoms of a transfusion reaction:

- Immediately stop the transfusion.
- If patient is experiencing serious signs and symptoms, disconnect the transfusion.
- Maintain IV patency with appropriate IV solution. (0.9% Normal Saline or if blood products - refer to manufacturers insert/product monograph)
- Notify the physician.
- Check vital signs every 15 minutes until patient is stable.
- Perform Clerical check to ensure there is no clerical discrepancy by verifying that the armband and blood report or tag match with the patient’s name and additional unique identifier as per specific DHA/IWK policy (e.g. medical record number, healthcard number, etc.). Verify the patient’s ABO/Rh type is compatible/identical to the unit ABO/Rh type and the unit is not expired.
- Notify BTS.
  - If mild allergic reaction or mild fever, with the onset of symptoms being greater than 15 minutes from the start of the transfusion, transfusion may resume cautiously ONLY as directed by physician. After resuming the transfusion, remain with the patient for the first 5 minutes of resuming the transfusion, then assess the patient every 5 minutes times two and every hour thereafter to observe for signs and symptoms of adverse reactions. Reassess vital signs after 15 minutes. IMMEDIATELY stop the transfusion if the patient develops any serious signs and symptoms. See Algorithm for Transfusion Reactions (Appendix A). Refer to DHA/IWK specific policy.
  - If transfusion reactions suspected, refer to the Laboratory Investigation of Adverse Reactions (see Appendix C) for recommended testing. Draw samples for laboratory investigation where indicated. Further testing/samples may be requested from BTS to complete adverse investigation. Refer to DHA/IWK specific policy.
  - If suspected transfusion reaction is due to an error, refer to DHA/IWK specific policy for reporting and investigation of transfusion errors.
  - Complete the information requested on the back of the “Blood Transfusion Report or Tag” specific for suspected transfusion reaction. Document the most clinically significant information on the “Blood Transfusion Report or Tag”.
  - Document the reaction, treatment and response in the progress notes of the patient chart and attach copy of the “Blood Transfusion Report or Tag” if applicable. Refer to DHA/IWK specific policy.
  - Return the “Blood Transfusion Report or Tag” to BTS with the suspected blood component, blood product bag/bottles and tubing as appropriate.
  - If a reaction is suspected after blood product bags/vials have been discarded and the back copy of report or tag sent, notify BTS of possible reaction.
  - Send all appropriate (facility specific) documents to BTS.
5.0 DOCUMENTATION

5.1 The following information is vital to document on all transfusions:
- Teaching performed to the patient/substitute decision maker
- Monitoring of the patient throughout the transfusion
- How patient tolerated the transfusion
- Presence or absence of a transfusion reaction
- Date and time (start and finish) of transfusion

5.2 In the event of a transfusion reaction, document these additional items:
- Any clinically significant information
- Signs and symptoms and time of reaction
- Volume infused
- Time/name of physician notified
- Notification of Blood Transfusion Services
- Specimens sent (as applicable)
- Treatment administered and response

Notes:
- It must be documented in the patient’s medical chart the unit number, type of blood, blood component or blood product transfused, the date and time (start and finish) of the transfusion, and the identity of the transfusionist and verifier. If a copy of the Blood Transfusion Report or Tag is affixed to the patient’s chart, this information is included on the report or tag.

- BTS must be notified of all reactions. Each adverse event is investigated and further products are not issued to a patient until the reaction is examined/investigated. Concurrently all companion products are held in blood banks across the country if a serious adverse event is suspected. (This prevents the administration of potentially contaminated products to other patients). The information that is provided on the Blood Transfusion Report or Tag and the comprehensive progress note in the patient’s chart provides a basis for decision-making in the investigation of adverse reactions and is vital in this process.
6.0 REFERENCES


Canadian Patient Safety Institute (Version 1, January 9, 2009), Surgical Safety Checklist and Scorecard, Adapted from the WHO Surgical Safety Checklist, © World Health Organization, 2008


Appendix A  SELECTED CSA STANDARDS APPLICABLE TO THIS GUIDELINE

This document has been developed based on the requirements identified in the CSA Standards Z902-10. The following excerpts from the Standards are described as related and applicable to this document. Please refer to CSA Standards, CAN/CSA-Z902-10, A National Standard of Canada, Blood and Blood Components, February 2010 for further standards related to blood and blood components.

10.3: RECIPIENT BLOOD SAMPLES
10.3.1: The name, initials, or computer identification code of the person drawing the blood sample shall be documented, as well as the date and time of collection. This information shall be retained for one year in a place where it can be readily retrieved if needed (e.g., the patient’s chart or the transfusion record.)

10.7: SELECTION OF BLOOD COMPONENTS
10.7.2: Blood and blood components shall not be used after their expiration date unless such use has been approved in writing by a licensed physician.

10.9: SPECIAL CIRCUMSTANCES
10.9.3.1: In situations where delaying a transfusion may be deleterious to the recipient’s condition, whole blood or blood components may be released without the infectious disease tests and pre-transfusion testing required under Clauses 8.4 and 10.6; nonetheless, Clause 9.3 shall apply. Whole blood or red blood cells should be Rh-negative for:
(a) children; and
(b) women of child-bearing age.

10.9.3.2: Recipients with an undetermined ABO group shall receive group O red blood cells.

10.9.3.4: If pre-transfusion testing has not been completed, a label shall be affixed to the product that clearly indicates that pre-transfusion testing had not been completed at the time of release.

10.9.3.5: Transfusion records shall include a signed declaration by the requesting physician confirming that the clinical situation was sufficiently urgent to justify releasing whole blood and/or blood components before completion of pre-transfusion testing and/or any infectious disease testing. When possible, informed consent should be obtained from the recipient.
11.1 CONDITIONS OF TRANSFUSION

11.1.1: General: The facility shall have operating procedures for the transfusion of blood and blood components. These procedures shall be consistent with the requirements in Clause 11 and shall be maintained as specified in Clause 4.6.1.4. The procedures shall provide for the generation and maintenance of transfusion records, in accordance with Clause 11.1.2.

Note: Clause 11.9 specifically addresses the use of Rh-immune globulin. Although this is not by definition a blood component, the health care facility’s procedures for the use of this product should be consistent with the other relevant requirements in Clause 11.

11.1.2: RECORDS SYSTEM

11.1.2.2: A transfusion label or tag with the following information shall be attached securely to the blood bag:
- recipient’s family and given name(s);
- recipient’s unique identification number;
- recipient’s ABO group (for red cells, plasma, cryoprecipitated AHF, cryoprecipitate, and platelets);
- recipient’s Rh (for red cells, granulocytes, and platelets);
- recipient’s compatibility status (for red cells and granulocytes);
- date and time of issue; and
- unit number or pooled unit number.

11.1.2.3: A blood transfusion record shall be completed for each whole blood, blood component, or pooled or mixed component. It shall contain the information on the transfusion label or tag as specified in Clause 11.1.2.2. In addition, the transfusion record shall indicate the date and time of transfusion, the identity of the individual who administered the blood component, and any adverse reactions to the product transfused.

11.2: INFORMATION TO RECIPIENTS, INCLUDING INFORMED CONSENT

11.2.1: An operating procedure shall be in place for obtaining informed consent of the recipient prior to the transfusion of blood and blood components. Information given to the recipient shall include:
- a description of the blood or blood component;
- the associated risks and benefits, including life-threatening risks; and
- alternatives, if appropriate to clinical circumstances, including benefits and risks.

Note: Policies and procedures for informed consent are usually developed and maintained by the health care facility as a whole. This Clause is intended to ensure that essential information about transfusion is included when blood and blood components are involved.

11.2.2: A procedure shall be in place to ensure that recipients of blood, blood components, and blood products receive notification of the transfusion in writing.

11.2.3: A mechanism shall be in place to ensure that current information concerning risks associated with transfusion is communicated to the physicians, nurses, and other health care professionals who are involved with transfusion in the facility.
11.3: IDENTIFICATION OF A RECIPIENT
11.3.1: There shall be unequivocal identification of the recipient against the information in the written request for blood and blood components, as detailed in Items (a) to (e) in Clause 10.2.1.

11.3.2: There shall be unequivocal identification of the blood component.

11.3.3: Immediately prior to transfusion, the person performing the transfusion shall confirm and document that all information associating the whole blood or blood component with the proposed recipient has been matched and verified in the physical presence of the recipient, as defined in the operating procedures.

Note: Information matching and verification take place in the physical presence of the recipient so that a direct comparison can be made between the request record and the available visual information (e.g., on the recipient’s identification band) or verbal information (from a conscious recipient).

11.3.4: All identifying information attached to the blood bag shall remain attached at least until completion of the transfusion.

11.3.5: If any discrepancy is found in the identifying information, the transfusion shall not be administered until the discrepancy is satisfactorily resolved.

11.4: TRANSFUSION
11.4.1: Operating procedures shall be in place for the administration of blood and blood components and for the operation of infusion devices and associated equipment.

11.4.2: All infusion devices and ancillary equipment for transfusion of blood and blood components shall be approved by the authority having jurisdiction.

Note: In Canada, the manufacture and sale of medical devices is regulated by Health Canada.

11.4.3: Transfusions shall be prescribed by a physician and administered according to operating procedures.

Note: This Standard does not address regulatory differences between jurisdictions regarding the authorization of health care professionals to prescribe blood and blood components.

11.4.4: The rate of infusion should be specified either by a physician or in the standard operating procedures for transfusion.

11.4.6: The transfusion of whole blood or red blood cells shall be completed within 4 h of removing the unit from its controlled-temperature location.

11.4.7: Whole blood and red blood cells should not be returned to usable inventory unless:
(a) a suitable temperature monitoring system indicates that they have been maintained within acceptable temperatures since their release (see Clause 10.10.5); or
(b) they have been outside of a controlled environment for less than 30 min.

11.4.9: Before the infusion of blood or blood components, the administration line and filter shall be primed with the blood component or a compatible solution. A sterile 0.9% sodium chloride (NaCl) solution is recommended.

11.4.11: Drugs or medications, including those intended for intravenous use, shall not be added to blood components. A sterile 0.9% sodium chloride solution may be added to blood components on the order of a physician. Other solutions intended for intravenous use may be used in an administration set, or added to blood components, under either of the following conditions:
(a) they have been approved for this use by the authority having jurisdiction; or
Note: In Canada, therapeutic products are regulated by Health Canada.
(b) there is documentation available to show that addition of the solution to whole blood or the blood component involved is safe.

11.4.12: Administration sets shall be changed at least once every 24 h, or as recommended by the manufacturer of the set or the filter component of the set. The set shall be changed after a maximum of four units of red blood cells have been infused through it or if the set becomes occluded.

11.4.13: Recipient vital signs shall be recorded before, during, and after transfusion.

11.4.14: The recipient shall be observed during the transfusion and for an appropriate time thereafter for suspected adverse events. Instructions concerning possible adverse events shall be provided to the recipient or to a responsible caregiver, when direct medical observation or monitoring of the recipient will not be available after transfusion.
Note: See Clause 17 for information and requirements related to adverse events.

11.5: WARMING

11.5.1: If warming of whole blood or blood components is indicated, this should be accomplished during transfusion using a device that will not cause clinically significant hemolysis to occur.

11.5.2: Blood warmers shall:
(a) be validated;
(b) comply with CAN/CSA-C22.2 No. 60601-1;
(c) meet the applicable requirements for the jurisdiction;
(d) have a temperature alarm system; and
(e) be calibrated and maintained as part of the quality control system for equipment
(see clauses 23.3 and 23.4)

Notes:
(1) The mark of the appropriate certification organization should be on the blood warmer.
(2) In Canada, the Medical Device Regulations also apply.
11.6 CELLULAR BLOOD COMPONENTS SELECTED OR PROCESSED TO REDUCE THE RISK OF CMV TRANSMISSION
The transfusion service shall have a written policy indicating which recipients or categories of recipients are to receive cellular blood components selected or processed to reduce the risk of CMV transmission.

11.7 IRRADIATED BLOOD AND BLOOD COMPONENTS
11.7.1: The transfusion service shall have a written policy indicating which recipients or categories of recipients are to receive irradiated cellular blood components. See Clauses 7.12 and 10.9.1.10.

11.7.2: Cellular blood components should be irradiated in order to reduce the risk of graft-versus-host disease in recipient categories that include, but are not limited to:
(a) intrauterine transfusions;
(b) selected immunocompromised recipients;
(c) recipients of cellular blood components known to be from a blood relative;
(d) recipients who have undergone hematopoietic progenitor cell (stem cell) transplantation; or
(e) recipients of HLA-selected platelets or platelets known to be HLA homozygous.

14 TRANSFUSION SERVICE RESPONSIBILITIES REGARDING BLOOD PRODUCTS USED IN THE FACILITY
If a transfusion service is responsible for blood products, it shall have operating procedures for the receipt, handling, storage, preparation for administration (if applicable), and administration of those products, consistent with its operating procedures for blood components and with Clause 14. The procedures shall be designed to ensure that the blood product manufacturer’s instructions are followed for each of the functions performed in the facility and that the performance of these functions is documented. The procedure shall be maintained as specified in Clause 4.6.1.6. The transfusion service should coordinate its policies and procedures for blood products with the facility’s pharmacy, and with any other departments with which the transfusion service shares responsibility for these products.

Requests
Requests for blood products shall be in writing and shall contain sufficient information to allow for unequivocal identification of the recipient. The request shall include at least the following information:
(a) the first and last names of the recipient,
(b) the identification number of the recipient;
(c) the recipient’s location;
(d) the blood product; and
(e) the required dose of the product.
14.5 Administration
The procedures for administration of blood products shall be consistent with those for blood components in Clauses 11.1 through to 11.4, including the requirements for informed consent. At the time of administration, the recipient’s medical chart shall be updated with the:
(a) lot number or identification number traceable to the lot number;
(b) name of the product administered and volume/dose;
(c) date and time (both start and finish) of administration; and
(d) identity of the person who administered the product

14.8 Adverse Events
The facility’s operating procedures shall include provisions for documenting, reporting, evaluation, and follow-up of all adverse events relating to the blood products it handles, including the necessary notifications of the distributor, manufacturer, provincial authorities, and Health Canada. These procedures should be developed in consultation with the facility’s pharmacy.
Appendix B  Algorithm for Transfusion Reactions

PATIENT EXHIBITS SIGNS AND SYMPTOMS OF A TRANSFUSION REACTION

1. **STOP THE TRANSFUSION!!!!**
2. If patient is experiencing serious signs and symptoms, disconnect the transfusion
3. Maintain IV patency with appropriate IV fluid
4. Contact the physician for medical assessment
5. Check vital signs every 15 minutes until stable
6. Perform Clerical check to ensure there is no clerical discrepancy by verifying that the armband and blood tag match with the patient’s name and medical record number. Verify the patient’s ABO/Rh type is compatible/identical to the unit ABO/Rh type and the unit is not expired.

---

Serious Signs and Symptoms?

IF PATIENT HAS ANY ONE OF THE FOLLOWING:
- Onset of symptoms within the first 15 minutes into transfusion
- Fever
- Hypotension/shock
- Unexplained anxiety
- Back/chest pain
- Dyspnea/respiratory distress
- Tea colored urine
- Bleeding from IV site
- Nausea/vomiting
- Tachycardia/arrhythmias
- Generalized flushing
- Hives/rash covering body greater than ¼ body
- Patient states he/she feels unwell

NOTE: Consider bacterial contamination if the patient exhibits any of the following during or within 4 hours post transfusion:
1. Temperature rise ≥1°C and ≥38°C PLUS any of the following:
   - rigors
   - hypotension
   - shock
   - tachycardia
   - dyspnea
   - nausea/vomiting
2. Temperature rise >39°C and ≥1°C; with or without other signs or symptoms
3. Temperature rise not responding to antipyretics and/or suspicion of sepsis in absence of fever

CONSIDER: ACUTE HEMOLYTIC, SEVERE ALLERGIC, ANAPHYLACTIC/ANAPHYLACTOID, TRANSFUSION ASSOCIATED CIRCULATORY OVERLOAD (TACO), TRANSFUSION RELATED ACUTE LUNG INJURY (TRALI) OR BACTERIAL CONTAMINATION

---

Clerical Discrepancy?

1. DO NOT RESTART THE TRANSFUSION
2. Institute patient management
3. Notify the patient’s physician immediately
4. Notify Blood Transfusion Services (BTS) immediately
5. The following should be sent to BTS:
   - a. Tubes of blood as per BTS reaction investigation policy *
   - b. Completed Blood Transfusion Report/Tag
   - c. Blood product & administration set/fluid
   - d. Additional samples as requested by BTS
6. Include:
   - a. Blood and product cultures if bacterial contamination is suspected as indicated by physician
   - b. Chest x-ray for dyspnea/respiratory distress

---

Minor Symptoms?

- Temperature rise ≥1°C and <38°C AND
- No other symptoms AND
- Onset greater than 15 minutes into transfusion

**BTS MUST BE NOTIFIED OF ALL SUSPECTED TRANSFUSION REACTIONS**
- Consider medicating with antipyretics or analgesics (Ex: Acetaminophen 650 mg po) Note: Requires a physician order
- Document assessment and intervention on patient’s chart and on transfusion tag
- Resume transfusion cautiously ONLY as directed by physician
- Patient should be directly observed for the first 5 minutes after resuming transfusion then every 5 minutes for the next 10 minutes

---

IF REMAINDER OF TRANSFUSION IS UNEVENTFUL, DOCUMENTATION ON BLOOD TRANSFUSION REPORT/TAG AND PATIENT’S CHART

*Note: Possible exception for pediatric patients: lab testing will be performed at discretion of Physician

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http://www.gov.ns.ca/health/nspbcp/
## Appendix C: Investigation of Adverse Transfusion Reactions

<table>
<thead>
<tr>
<th>Suspected Reaction</th>
<th>Signs and Symptoms</th>
<th>Testing Requirements</th>
<th>Laboratory Tier Testing Note: Possible exception for pediatric patients: lab testing will be performed at discretion of Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Allergic</td>
<td>Rash/hives over ≤ 1/4 of body with no other symptoms</td>
<td>None</td>
<td>Tier One Testing</td>
</tr>
<tr>
<td>Severe Allergic/Anaphylactic/Anaphylactoid</td>
<td>Rash/hives with any one or more of the following:</td>
<td>Consider: Tier Testing</td>
<td>• Clerical check for procedural or identification errors</td>
</tr>
<tr>
<td></td>
<td>- Airway compromise (tightness in throat, hoarseness, stridor</td>
<td>• Haptoglobin</td>
<td>• Visual check of post-transfusion plasma for hemolysis</td>
</tr>
<tr>
<td></td>
<td>- Dyspnea, cough, wheezing, hypoxemia</td>
<td>• Chido/Rogers</td>
<td>• Perform ABO/Rh on post-transfusion sample and compare to pre-transfusion sample ABO/Rh</td>
</tr>
<tr>
<td></td>
<td>- Profound hypotension (loss of consciousness, circulatory collapse, death)</td>
<td>• Serum IgA</td>
<td>• Direct Antiglobulin Test (DAT) on post-transfusion sample</td>
</tr>
<tr>
<td>Does Not Meet TTISS</td>
<td>Temperature rise ≥1°C and ≤38°C with no other signs or symptoms and onset greater than 15 minutes into transfusion</td>
<td>None</td>
<td>Tier one is performed on all submitted lab investigations to rule out hemolytic reactions. If a test in Tier one is positive or the condition suggests a Hemolytic Event request a post urine sample. Alert the hematopathologist/attending physician if Tier one testing is positive. Proceed to Tier two testing as required.</td>
</tr>
<tr>
<td>Definition of a Reaction</td>
<td></td>
<td>Testing will only be performed upon request of a Physician</td>
<td>Reports</td>
</tr>
<tr>
<td>Febrile Non-Hemolytic Reaction (FNHR)</td>
<td>Temperature rise ≥1°C and ≥38°C with no other signs or symptoms</td>
<td>Tier Testing</td>
<td>If Tier one testing is negative, generate a preliminary report to support ongoing transfusion. If Tier one testing is positive, investigation must be complete prior to any further transfusion. Further release can only occur with the approval of the hematopathologist/attending physician.</td>
</tr>
<tr>
<td>Acute Hemolytic</td>
<td>Temperature rise ≥1°C and ≥38°C PLUS any of the following:</td>
<td>Tier Testing</td>
<td>Tier Two Testing</td>
</tr>
<tr>
<td>Acute Hemolytic</td>
<td>1. Rigors</td>
<td>• Blood Cultures from a different IV site</td>
<td>• Repeat pre-transfusion sample ABO/Rh</td>
</tr>
<tr>
<td>Bacterial Contamination</td>
<td>2. Hypotension, shock</td>
<td>• Product Cultures (Include a Gram Stain)</td>
<td>• Perform ABO/Rh type &amp; DAT on the unit in question</td>
</tr>
<tr>
<td></td>
<td>3. Dyspnea</td>
<td></td>
<td>• Repeat Antibody Screen on pre/post samples</td>
</tr>
<tr>
<td></td>
<td>4. Nausea/vomiting</td>
<td></td>
<td>• Perform antiglobulin crossmatches on the pre and post blood specimens with the unit(s)</td>
</tr>
<tr>
<td></td>
<td>5. Tachycardia</td>
<td></td>
<td>• Perform urine dipstick for hemoglobin</td>
</tr>
<tr>
<td>Acute Hemolytic IVIG Headache Other</td>
<td>Any one or more of the following:</td>
<td>Tier Testing</td>
<td>When results are indicative of a Hemolytic reaction continue to Tier three Testing or perform Tier three as appropriate, based on findings.</td>
</tr>
<tr>
<td></td>
<td>Chills/Rigors, sensation of cold, back or chest pain, bleeding from IV site, nausea/vomiting, headache, jaundice, tea colored urine, unexplained anxiety, cardiac arrhythmias, tachycardia, generalized flushing, patient states feels unwell</td>
<td></td>
<td>Tier Three Testing</td>
</tr>
<tr>
<td>Hypotensive Reaction</td>
<td>Any one of the following:</td>
<td>Tier Testing</td>
<td>• Antibody Investigation (phenotype unit &amp; pre-transfusion sample)</td>
</tr>
<tr>
<td><strong>(Hypotension in Pediatrics is highly variable)</strong></td>
<td>- Drop in systolic BP greater or equal to 30 mmHg</td>
<td></td>
<td>• Eluate (pre and post samples)</td>
</tr>
<tr>
<td></td>
<td>- Systolic less than 80 mmHg</td>
<td></td>
<td>• Antibody Investigation on donor units</td>
</tr>
<tr>
<td></td>
<td>- Signs of shock</td>
<td></td>
<td>• Investigate transfusion technique and blood component storage conditions</td>
</tr>
<tr>
<td></td>
<td>**In Pediatrics look for any significant change in BP</td>
<td></td>
<td>Other tests that may be considered to categorize the adverse reaction may include:</td>
</tr>
<tr>
<td>Transfusion Associated Circulatory Overload (TACO)</td>
<td>Shortness of breath, dyspnea, cyanosis, hypertension, respiratory distress, tachycardia, congestive heart failure during or within 6 hours of completion of transfusion</td>
<td>Tier Testing AND Chest X-Ray</td>
<td>CBC, coagulation studies, serum urea/creatinine, Haptoglobin, LDH, bilirubin, electrolytes, serology, virology, iron studies, TRALI investigation.</td>
</tr>
<tr>
<td>Transfusion Associated Dyspnea (TAD)</td>
<td>Any one of the following:</td>
<td>Tier Testing AND Chest X-Ray</td>
<td>Samples Required for Tier One Adverse Reaction Investigation</td>
</tr>
<tr>
<td></td>
<td>- Shortness of breath, dyspnea, cyanosis, hypertension, respiratory distress, tachycardia, congestive heart failure during or within 6 hours of completion of transfusion</td>
<td></td>
<td>1 EDTA 1 clotted</td>
</tr>
<tr>
<td>TRALI (Transfusion Related Acute Lung Injury)</td>
<td>Acute onset of respiratory distress, during or within 6 hours of completion of transfusion, O2 Saturation less than 90% on room air, bilateral lung infiltrates confirmed by Chest X-Ray, No evidence of circulatory overload</td>
<td>Tier Testing AND Chest X-Ray Initiate TRALI Investigation</td>
<td>BTS may request additional samples Refer to DHA/IWK hospital policy If applicable, complete lab/facility specific adverse reaction forms. If transfusion reaction is due to an ERROR, follow DHA/IWK policy for reporting and investigation of transfusion errors.</td>
</tr>
<tr>
<td></td>
<td>Key: ≥: Greater than or equal to &lt;: Less than</td>
<td></td>
<td>BTS to notify CBS of all SERIOUS reactions as per The Provincial Standard for Hospitals to Report Adverse Reactions to Blood /Blood Components and Plasma Derivatives in NS located at <a href="http://www.gov.ns.ca/health/nspbcp/">http://www.gov.ns.ca/health/nspbcp/</a></td>
</tr>
<tr>
<td></td>
<td>LDH: Lactate Dehydrogenase &lt;: Canadian Blood Services</td>
<td></td>
<td>Consider signs and symptoms and investigation required for other suspected/delayed transfusion reactions NSPBCP October 8, 2010</td>
</tr>
</tbody>
</table>
### Appendix D  Blood Component and Blood Product Table

<table>
<thead>
<tr>
<th>Blood component/ Blood product</th>
<th>Indication</th>
<th>Compatibility</th>
<th>Administration</th>
</tr>
</thead>
</table>
| **Red blood cells (RBCs)**     | • Promote oxygenation  
• Restore Blood Volume | Must be A, B, O, Rh identical or compatible (See Compatibility chart: Appendix E ) | • Use standard blood tubing 170-260 um.  
• May use infusion device.  
• Start within 30 minutes of being on unit. Rate is 2ml/minute (120ml/hr) for first 15 minutes. May be increased if reaction not suspected. One unit usually takes 1.5-2 hr to infuse, but may be slower for elderly or cardiovascularly compromised patients. Refer to specific DHA/IWK policy.  
• Must be infused within 4 hours from time dispensed from BTS (time stamped on blood bag) or removed from monitored blood refrigerator or transport crate.  
• Change tubing after 4 consecutive units have been transfused and/or every 8 hrs and/or if there is greater than 1 hr between units. |
| **Platelets**                  | • Treatment of bleeding  
• Prevention of bleeding (Platelet count less than 10,000/ul)  
• Not given for ITP,HIT, TTP consumptive disorders unless bleeding/check with Hematologist | Preferred ABO and Rh compatible  
• Must have type and screen, group not specific. Rh must match for women of child-bearing potential, regardless of number of units to be administered. If physician orders Rh mismatched platelets to be given then anti-D Immunoglobulin should be prescribed.  
• Available as pooled from multiple donors, or apheresed (from single donor). An apheresed unit of platelets is equal to one adult dose of | • Standard blood tubing 170-260um or platelet tubing.  
• Administer by gravity flow as rapidly as patient can tolerate (1 adult dose/20 min average). Refer to specific DHA/IWK policy.  
• Must be infused within 4 hours  
• Change tubing after 4 consecutive adult doses and/or every 8 hours and/or if there is greater than 1 hour between units  
• INFUSION DEVICE NOT RECOMMENDED |
## Appendix D  
### Blood Component and Blood Product Table

<table>
<thead>
<tr>
<th>Blood Component</th>
<th>Description</th>
<th>Compatibility</th>
<th>Handling</th>
<th>Note</th>
</tr>
</thead>
</table>
| **Fresh Frozen Plasma Apheresed (FFPA)** | FFPA contains both labile clotting factors V and VIII, plus all non-labile coagulation factors. FP contains all the coagulation factors at levels similar to the levels in FFPA with the exception of the labile factors, V and VIII, which may be slightly reduced in FP. Therefore FFPA may be preferred in the treatment of TTP and HUS in situations when CSP is not available. | Must be A, B, O compatible  
Rh compatibility not required  
Although Factor V and VIII levels are slightly lower than in Fresh Frozen plasma, in most clinical situations where these products are indicated, FP and FFP may be used interchangeably. | Standard blood tubing (170-260um).  
Use immediately as factors breakdown.  
Transfuse as rapidly as can be clinically tolerated.  
Refer to specific DHA/IWK policy.  
Continuous infusions can be infused using an infusion device and tubing to be changed Q8H. | |
| **Cryosupernatant Plasma (CSP)** | Used for treatment in TTP patients  
Hemolytic uremic syndrome (HUS) | Must be A, B O compatible  
Rh compatibility not required | Standard blood tubing (170-260 um).  
Use immediately as factors breakdown.  
Transfuse as rapidly as can be clinically tolerated.  
Refer to specific DHA/IWK policy.  
Continuous infusions can be infused using an infusion device and tubing to be changed Q8H. | |
| **Cryoprecipitate** | Highest concentration of factor VIII. Fibrinogen, Willebrands Factor, and Factor XIII | A, B, O compatible (not required for adult transfusion)  
Rh compatibility not required | Standard blood tubing (170-260 um).  
Use immediately as factors breakdown.  
Transfuse as rapidly as can be clinically tolerated.  
Refer to specific DHA/IWK policy.  
Continuous infusions can be infused using an infusion device and tubing to be changed Q8H. | |
### Appendix D  
**Blood Component and Blood Product Table**

<table>
<thead>
<tr>
<th><strong>Albumin</strong></th>
<th><strong>Group and screen not required</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increases oncotic pressure, leads to fluid shift to intravascular space</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Available in 5% and 25% concentrations</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Requires vented tubing without filter.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>25% - infuse slowly because risk of overload.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Must be infused within 4 hr.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dose and rate determined and ordered by physician.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>See manufacturer’s recommendations for compatible fluids and rate of infusion.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>May use infusion device.</strong></td>
<td></td>
</tr>
</tbody>
</table>

| **Immunoglobulins**  
*this is not a comprehensive list:* | **Group and screen not required** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IGIVnex®, Gamunex®, Gammagard SD®, Gammagard Liquid®, Privigen® Vivaglobin®:</strong></td>
<td><strong>Note: IgA deficient patients should receive IgA deficient Immunoglobulins</strong></td>
</tr>
<tr>
<td><strong>Other hyperimmune globulins:</strong></td>
<td><strong>Anaphylactoid reactions are rare but may occur, physician should be readily available. Epinephrine at bedside.</strong></td>
</tr>
<tr>
<td><strong>Cytogam® (anti-CMV Ig)</strong></td>
<td><strong>Visually inspect for discoloration.</strong></td>
</tr>
<tr>
<td><strong>HyperHEPB™ S/D (anti-HBIG)</strong></td>
<td><strong>Requires vented tubing.</strong></td>
</tr>
<tr>
<td><strong>HepaGam B® (anti-HBIG)</strong></td>
<td><strong>Follow manufacturer’s recommendations for IV fluid compatibility, rate of infusion and use of filters.</strong></td>
</tr>
<tr>
<td><strong>VariZIG™ (anti-VZ IG)</strong></td>
<td><strong>Refer to Provincial IVIG Nursing Administration associated documents for quick reference guidelines for vital sign monitoring, etc.</strong></td>
</tr>
<tr>
<td><strong>GamaSTAN®S/D (IMIG)</strong></td>
<td><strong>If patient develops a reaction, stop infusion, call physician and notify BTS. Patient should be premedicated prior to subsequent doses (requires physician order).</strong></td>
</tr>
<tr>
<td><strong>IMMUNOLOGY:</strong></td>
<td><strong>If patient to receive multiple days of therapy follow same infusion procedure.</strong></td>
</tr>
<tr>
<td><strong>Primary and secondary immune deficiency conditions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>HEMATOLOGY:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ITP, Fetal Alloimmune Thrombocytopenia,</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Hematological Malignancy</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NEUROLOGY:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Guillain Barre Syndrome,</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Acute Disseminated Encephalo-myelitis</strong></td>
<td></td>
</tr>
<tr>
<td><strong>RHEUMATOLOGY:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Juvenile Idiopathic Arthritis,</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Kawasaki Disease</strong></td>
<td></td>
</tr>
</tbody>
</table>

| **Rh Immunoglobulin**  
*Anti D, D Immune Globulin,* | **Type & screen required** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevent Allo-immunization in Rh-neg patients transfused with Rh+ platelets.</strong></td>
<td><strong>Blood Transfusion Services</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Anaphylactoid reactions are rare but may occur, physician should be readily available. Epinephrine at bedside.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Reconstitute and administer according to</strong></td>
</tr>
</tbody>
</table>
## Appendix D  Blood Component and Blood Product Table

| WinRho®SDF, Rhogam® | • Prevent Rh disease in Rh-neg women during pregnancy or other obstetrical conditions.  
|                     | • Increase platelet count in Rh+, non-splenectomized patients with ITP. | monitors the patient’s platelet exposure. | manufacturer’s insert. |
|                     | **IV Direct**  
Use lowest port on normal saline mainline (Clamped) or via injection cap/adaptor.  Flush pre and post (at rate of factor) as per manufacturers instructions. Refer to specific DHA/IWK policy for IV direct administration |
| **Nursing Care**    | Remain with patient during administration, assess patient and obtain vital signs. Refer to Exception statement (page 10). If WinRho®SDF is being administered for ITP patients, close monitoring in a healthcare setting is recommended for at least eight hours after administration. Urine dipstick testing for blood should be conducted before dosing and at 2, 4 and 8 hours after receiving the dose. Refer to specific DHA/IWK policy for patient monitoring. |
|                     | **Type and screen not required** |
| *Clotting factor replacements:* | To replace specific clotting factors |
| Humate-P®          | Increases factor VIII and von Willebrand factor for people with von Willebrand’s disease. |
| Advate®           | Increases factor VIII for people with Hemophilia Type A. Recombinant products but human proteins are used to stabilize product so risk of disease transmission is not totally eliminated. |
| Helixate®FS,      | Note: Some recombinant products contain human proteins to stabilize product, therefore risk of disease transmission is not totally eliminated. Some manufactured products contain no human protein. |
| Kogenate®/FS      | • Reconstitute and administer according to manufacturer’s insert. Anaphylactoid reactions are rare but may occur, physician should be readily available. Epinephrine at bedside. |
| Benefix®          | • Phlebitis at the IV site, tingling to mouth or light headedness may be rate related. Slow infusion/bolus and symptoms should resolve immediately. |
| Niastase®         | • Patients may self-administer at home as arranged by a physician and with the physicians order. |
| **NSPBCP January 12, 2011** | • Brands are not interchangeable. |
| **Brands are not interchangeable.** | • Administer Niastase® IV Direct only over 5 minutes. |
| **Nursing Care**  | Remain with patient during administration, assess |
## Appendix D  Blood Component and Blood Product Table

<table>
<thead>
<tr>
<th><strong>Anticoagulant Factor</strong></th>
<th><strong>Product</strong></th>
<th><strong>Actions</strong></th>
<th><strong>Additional Instructions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANTITHROMBIN III IMMUNO®</strong></td>
<td>Increases antithrombin III levels to prevent thrombotic complications.</td>
<td>Type and screen not required</td>
<td>Follow manufacturer’s recommendations for IV fluid compatibility, rate of infusion and use of filters.</td>
</tr>
<tr>
<td></td>
<td>Acts as a physiological inhibitor of blood coagulation.</td>
<td></td>
<td>IV Direct Use lowest port on normal saline mainline (clamped) or via injection cap/adaptor. Flush pre and post (at rate of factor) infusion as per manufacturers instructions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If unable to administer IV direct the product may be reconstituted according to manufacturer’s insert using filter needles as instructed. This can be injected slowly,</td>
</tr>
</tbody>
</table>

**Appendix D**  

**Blood Component and Blood Product Table**

**Increases factor IX for people with Hemophilia Type B or Christmas Disease.**

Used to replace factors X or II (thrombin) caused by heredity or acquired deficiency.

Factor VII deficiency or inhibitors to factor VIII or IX

patient and obtain vital signs. **Refer to specific DHA/IWK policy for patient monitoring.**

**IV Direct**

Use lowest port on normal saline mainline (clamped) or via injection cap/adaptor. Flush pre and post (at rate of factor) as per manufacturers instructions. **Refer to specific DHA/IWK policy for IV direct administration.**

If unable to administer IV direct the product may be reconstituted according to manufacturer’s insert using filter needles as instructed. Remove filter needle, replace with an 18-21 gauge needle and inject slowly into an emptied normal saline mini-bag. Prime tubing with factor and infuse at correct rate. Flush with normal saline.

**Continuous Intravenous Infusions (CIVI)**

CIVI of factor VIII or IX may be ordered to maintain steady state factor levels perioperatively or to manage a bleeding episode not controlled by boluses. It is critical that the infusion is not interrupted. Follow physician standing orders for administration. **Refer to specific DHA/IWK policy.**

**IV Direct**

Use lowest port on normal saline mainline (clamped) or via injection cap/adaptor. Flush pre and post (at rate of factor) infusion as per manufacturers instructions.

If unable to administer IV direct the product may be reconstituted according to manufacturer’s insert using filter needles as instructed. This can be injected slowly,
### Prothrombin Complex: octaplex®

| Indicated for the reversal of oral vitamin K antagonists (i.e. Coumadin/Warfarin) or vitamin K deficiency in patients who are exhibiting major bleeding manifestations and/or requiring urgent (less than 6 hours) invasive/surgical procedures. |
| Type and screen not required |

- Concurrent vitamin K supplementation is generally indicated for sustained reversal of vitamin K antagonist effect therefore it is recommended that Vitamin K 10mg IV infusion over 30 minutes be administered with the initial dose of octaplex®.
- Octaplex® should only be administered to patients with an INR (International Normalized Ratio) greater than 1.5. It is recommended that the INR be available prior to administering octaplex®, however in emergent situations where the INR is delayed or not available, administration of octaplex® is acceptable.

**Administration:**
- Initial dose: 40 mls
- Administration of Vitamin K 10mg IV over 30 minutes is recommended with the initial dose.
- Reconstitute as per manufacturers directions
- Administer via IV pump or IV push

**Nursing Care:**
- Check the INR 10-15 minutes post infusion.

*Refer to specific DHA/IWK policy for patient monitoring.*
### ABO COMPATIBILITY OF RED CELLS

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Donor</th>
<th>1st option</th>
<th>2nd option</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>1st option</td>
<td>2nd option</td>
</tr>
<tr>
<td></td>
<td>O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>B</td>
<td>1st option</td>
<td>2nd option</td>
</tr>
<tr>
<td></td>
<td>O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>AB</td>
<td>1st option</td>
<td>2nd option</td>
</tr>
<tr>
<td></td>
<td>A,B,O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Rh compatibility of Red cells

<table>
<thead>
<tr>
<th>Rh of Recipient</th>
<th>Rh of Donor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rh positive</td>
<td>Rh positive or negative</td>
</tr>
<tr>
<td>Rh negative</td>
<td>Rh negative</td>
</tr>
</tbody>
</table>

*If platelets are administered to an Rh negative woman with child bearing potential she should receive Rh Immune Globulin (Anti D) to avoid difficulties in future pregnancies.*

### ABO Compatibility of Plasma

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Donor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A, AB</td>
</tr>
<tr>
<td>B</td>
<td>B, AB</td>
</tr>
<tr>
<td>AB</td>
<td>AB</td>
</tr>
<tr>
<td>O</td>
<td>O, A, B, AB</td>
</tr>
</tbody>
</table>
Transfusion Safety Checklist

Pre-Transfusion – Before administration of a blood component or blood product

- Review the indication for the transfusion and consider appropriateness
- Ensure consent is obtained by the physician and is signed by the patient or substitute decision maker as per facility policy
- Provide patient/substitute decision maker with education pamphlet. E.g. “Blood and Blood Products: a patient guide”, prior to transfusion and document teaching
- Check physician/other healthcare professional’s order for transfusion and pre-transfusion medications
- Pre-medicate only if ordered by a physician
- Ensure the patient’s IV line is patent
- Obtain clinical assessment and record baseline vital signs (temperature, pulse, respiration, blood pressure) within one hour prior to transfusion
- Contact Blood Transfusion Services (BTS) and arrange for blood component/blood product delivery
- If the transfusion is going to be delayed, return blood component/blood product to Blood Transfusion Services (BTS) within 30 minutes to ensure product can be returned to inventory
- Review the transfusion with the patient and educate on signs and symptoms of adverse reactions and to advise the nurse if these occur
- Verify the specific product requirements (e.g. CMV, irradiated, etc.)
- Visually inspect product for any clots, clumps, discoloration. If present, notify BTS and return product
- Prime IV line with 0.9% normal saline for blood components. For blood products, refer to manufacturers insert

Transfusion – Administration of a blood component or blood product

- Ensure the patient has an armband on their person
- Verify the following in front of the patient:
  - The patient’s full name and additional unique identifier as per specific DHA/IWK policy (e.g. medical record number, healthcard number, etc.), on the “Blood Transfusion Report or Tag” AND the Patient’s Identification arm band match
  - Check compatibility of product with patient’s blood type. Refer to Table 1 ABO Compatibility Chart
  - The product has not/will not expire during transfusion
- Sign the “Blood transfusion report or tag and indicate the start time. Keep tag attached to the blood component/blood product until transfusion is complete
- Monitor the patient throughout the transfusion for any signs or symptoms of adverse reactions. Obtain and document vital signs as per DHA/IWK specific policy
- In the event that a patient experiences signs and symptoms of an adverse transfusion reaction; STOP THE TRANSFUSION IMMEDIATELY and follow the “Algorithm for Transfusion Reactions”
- Monitor infusion rates. Slower infusion rates may be necessary in infants, the elderly or patients that are cardiovascularly compromised or at risk for fluid overload
- Immediately document the transfusion on the patient record as per DHA/IWK specific policy
- Ensure blood component/blood product is transfused within 4 hours from the time it was removed from its temperature controlled environment

Post-Transfusion – Upon completion or discontinuing a transfusion

- Transfusion Reaction:
  Once the transfusion has been stopped or discontinued, refer to the “Algorithm for Transfusion Reactions” for further nursing actions
  To determine investigation criteria to classify adverse reactions refer to “Investigation of Adverse Transfusion Reactions”
  Document transfusion reaction on Blood Transfusion Report or Tag and in patients chart. Include all clinically significant information. Report transfusion reaction immediately to BTS
  Return Blood Transfusion Report or Tag to BTS as per DHA/IWK specific policy

- NO Transfusion Reaction:
  Flush line with normal saline or compatible solution following transfusion
  Disconnect the blood product and administration set and discard appropriately
  Remove the Blood Transfusion Report or Tag and complete the required information. Document and/or place the chart copy in the appropriate location in the patients chart
  Return Blood Transfusion Report or Tag to BTS as per DHA/IWK specific policy

Table 1: ABO Compatibility Chart

<table>
<thead>
<tr>
<th>Donor ABO Group</th>
<th>Recipient ABO Group</th>
<th>RBCs</th>
<th>Plasma</th>
<th>Platelets</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNKNOWN</td>
<td>O</td>
<td>AB</td>
<td>AB</td>
<td>AB</td>
</tr>
<tr>
<td>O</td>
<td>O</td>
<td>O, A, B, AB</td>
<td>O, A, B, AB</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>A, O</td>
<td>A, AB</td>
<td>A, AB</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>B, O</td>
<td>B, AB</td>
<td>B, AB</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>AB, A, B, O</td>
<td>AB</td>
<td>AB</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix G: Competency Assessment Tool

### BLOOD TRANSFUSION ADMINISTRATION

**COMPETENCY ASSESSMENT TOOL**

#### Clinical Skills Checklist for Blood Transfusion

<table>
<thead>
<tr>
<th>Nurse</th>
<th>YES</th>
<th>NO</th>
<th>Actions</th>
</tr>
</thead>
</table>
| 1. Educates the patient prior to and during the transfusion, including discussion about:  
- clinical indications for transfusion  
- possible side effects | | | - Provides patient education pamphlet  
- Informs the patient of the signs and symptoms of potential adverse reactions and to alert nurse if symptoms develop  
- Ensures patient understands the indication for transfusion |
| 2. Verifies informed consent has been completed by physician | | | - Locates informed consent documentation in the patient’s chart and verifies consent has been obtained |
| 3. Confirms presence of transfusion orders including the administration of pre-medications, medications such as diuretics if indicated for patients at risk for fluid overload, and if there are any special product requirements | | | - Checks physician’s orders to ensure order for blood transfusion is transcribed and if any pre-medications are required or diuretics have been ordered for patients at risk for fluid overload  
- Confirms if patient requires CMV negative or irradiated blood components |
| 4. Prepares IV solution and primes the line | | | - Selects and then completes priming of the line with appropriate/compatible IV fluid |
| 5. Confirms IV patency/perform IV insertion | | | - States correct IV gauge recommended for blood transfusion and performs IV insertion *as per DHA/IWK specific policy* |
### Appendix G: Competency Assessment Tool

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Arranges for product pick-up</td>
<td>- Contacts Blood Transfusion Service (BTS) to obtain blood or blood product</td>
</tr>
<tr>
<td>7.</td>
<td>Verifies the blood component or blood product to be transfused</td>
<td>In the presence of the patient, with verification from another healthcare professional, ensures: - the patient’s full name and additional unique identifier as per DHA/IWK specific policy (e.g. medical record number, health card number, etc.), on the blood transfusion report or tag and the patient armband match - the ABO/Rh group and blood serial number on the blood transfusion report or tag match or is compatible with the product label - the product is not expired</td>
</tr>
<tr>
<td>8.</td>
<td>Understands actions to take if delay in transfusion</td>
<td>- States the need to return blood and blood products to blood transfusion within 30 minutes of dispense if not administered - Demonstrates steps to follow to return product</td>
</tr>
<tr>
<td>9.</td>
<td>Performs patient’s baseline clinical assessment</td>
<td>- States the rationale for obtaining a baseline clinical assessment - Performs clinical assessment (including vital signs) within appropriate time frame (1 hour) prior to transfusion</td>
</tr>
<tr>
<td>10.</td>
<td>Performs a visual inspection of blood component/product</td>
<td>- Visually inspects blood component/product for discoloration, clots, etc - Understands blood component/product is to be returned blood to blood bank if any of the above are observed</td>
</tr>
<tr>
<td>11.</td>
<td>Prepares blood and appropriate tubing for transfusion</td>
<td>- Selects appropriate tubing - Assembles equipment required for</td>
</tr>
</tbody>
</table>

NSPBCP Guideline for the Administration of Blood and Blood Products January 12, 2011
### Appendix G: Competency Assessment Tool

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
</table>
| 12. Identifies appropriate precautions to be taken when handling blood and prepares blood using aseptic technique | - Refers to manufacturer’s instructions and DHA/IWK specific policy for the use of blood warmers and rapid infusion devices  
- Practices universal precautions                                                                                                                                  |
| 13. Commences infusion at prescribed rate, explaining rationale for usual time frame | - Identifies patients at risk for fluid overload (e.g. elderly, infants, cardiovascularly compromised, chronic anemia) and modified treatment options such as:  
  - infusing at a slower rate (1ml/kg/hr is recommended)  
  - rationale for administration of diuretics if prescribed  
- Identifies that if blood is still hanging after 4 hours, discontinue and discard the blood/blood product                                                                |
| 14. Describes and appreciates the potential for serious errors related to blood transfusion and the steps taken in the checking process to prevent these errors | - Identifies examples of transfusion errors (e.g. patient identification errors, lab errors, cross match not labeled correctly, etc) and appropriate reporting mechanisms.                                                                                                           |
| 15. Identifies appropriate monitoring before, during and after the transfusion | - Monitors vital signs as per DHA/IWK specific policy  
- Identifies the types of adverse reactions that may occur and related signs and symptoms                                                                                                                             |
| 16. In the event of an **Adverse Transfusion Reaction:** | - Once the transfusion has been stopped or discontinued, *refers to the “Algorithm for Transfusion Reactions”* for further nursing actions  
- If transfusion reaction suspected, refers to |
### Appendix G: Competency Assessment Tool

<table>
<thead>
<tr>
<th>Task</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents the transfusion reaction</td>
<td>the Laboratory Investigation of Adverse Reactions) for recommended testing and obtains appropriate laboratory samples</td>
</tr>
<tr>
<td></td>
<td>- Documents transfusion reaction including all clinically significant information on Blood Transfusion Report or Tag and in patient’s chart</td>
</tr>
<tr>
<td></td>
<td>- Returns the “Blood Transfusion Report or Tag” to BTS as per DHA/IWK specific policy</td>
</tr>
<tr>
<td>17. If <strong>NO Adverse Transfusion Reaction</strong> present:</td>
<td>- Flushes IV line with normal saline or compatible solution following transfusion</td>
</tr>
<tr>
<td></td>
<td>- Disconnects the blood product and administration set appropriately</td>
</tr>
<tr>
<td></td>
<td>- Places all bags/containers/tubing in appropriate disposal container</td>
</tr>
<tr>
<td></td>
<td>- Removes the Blood Transfusion Report or Tag and completes the required information</td>
</tr>
<tr>
<td></td>
<td>- Documents and/or places the chart copy in the appropriate location in the patients chart</td>
</tr>
<tr>
<td></td>
<td>- Returns Blood Transfusion Report or Tag to BTS as per DHA/IWK specific policy</td>
</tr>
</tbody>
</table>

**Comments:**

________________________________________________________________________

________________________________________________________________________

Preceptor/Educator Signature and Title ................................................................. Date .../.../....

Learner’s Signature ........................................................................................................ Date .../.../....