



TITLE

TRANSFUSION OF BLOOD COMPONENTS AND BLOOD PRODUCTS

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NOTE: The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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OBJECTIVES

- To provide a standard practice for the transfusion of **blood components** and **blood products** for **patients** in Alberta Health Services (AHS), in compliance with applicable Health Canada blood regulations and standards (i.e., CSA, Canadian Society for Transfusion Medicine [CSTM], College of Physicians & Surgeons of Alberta [CPSA], and Accreditation Canada).
- To outline the required processes for safe handling and administration of blood components and blood products in the following sections of this Policy:

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PRINCIPLES

AHS is committed to providing a safe, effective process for all patients requiring blood components and blood products.

APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

ELEMENTS

1. Points of Emphasis

- 1.1 This Policy incorporates current federal and provincial legislation, Accreditation Canada, and CPSA standards for activities related to administering blood components and blood products. This includes standards related to mandatory education and documentation of competency at regular intervals.
- 1.2 This Policy applies to the clinical practices involved in blood component and blood product administration. This Policy does not apply to internal laboratory or blood supplier testing processes.
- 1.3 Refer to the *Blood Components & Products Information/Monographs* page (found on the AHS Transfusion Medicine external webpage) for information about transfusion of blood components and blood products.
- 1.4 If there is an activation of a massive hemorrhage / massive transfusion protocol, all of the requirements outlined in this Policy still apply.
- 1.5 Clinical programs must follow the established and validated processes for circuits that deliver blood components.

2. Competency

- 2.1 Prescribing, **compounding**, and administering blood components and/or blood products are restricted activities as per the *Government Organization Act* (Alberta). Only **health care professionals** who are authorized by their profession-specific regulations under the *Health Professions Act* (Alberta) are permitted to perform these restricted activities.
- 2.2 **Health care providers** are required to successfully complete the following at least every two (2) years:
 - a) AHS provincial education specific to their role in transporting, receiving, prescribing, compounding, and/or administering blood components and blood products; and
 - b) a documented competency assessment.

Note: It is the duty and responsibility of all health care providers to self-identify additional learning needs and undertake appropriate measures to ensure ongoing and continual competency, as determined by their governing bodies and/or specific work settings.

- 2.3 Health care professionals are responsible and accountable to provide safe patient care and to only perform the restricted activities of compounding, prescribing, and/or administering blood components or blood products if they are competent to do so. Restricted activities must be appropriate to the clinical setting in which the health care professional works.

3. Informed Consent

- 3.1 Written (signed) consent must be obtained for the transfusion of blood components and blood products. Refer to the AHS *Consent to Treatment/Procedure(s)* Policy Suite for direction about **informed consent**.

4. Collection of Type and Screen Specimens

- 4.1 An **order** from an **authorized prescriber** is required for the collection of **type and screen** specimens.
- 4.2 Not all orders for blood components require a valid type and screen and **transfusion service identification number (TSIN)**. Refer to the Transfusion Medicine monographs (found on the AHS Transfusion Medicine external webpage) for specific blood components' pre-transfusion testing requirements.
- 4.3 If the patient is already wearing a TSIN band, the health care provider must confirm that the associated testing is expired before removing the band. This may be done by checking the testing report or contacting Transfusion Medicine directly.
- 4.4 Transfusion Medicine must reject any type and screen specimens not meeting the requirements outlined in Section 4.5 below. No exceptions will be considered.
- 4.5 When collecting type and screen specimens, health care providers must:
- a) confirm patient identification (refer to the AHS *Patient Identification Policy*) in the presence of the patient and a witness. If possible, this should be done with the participation of the patient. The preferred witness is a second health care provider, educated and trained to perform patient identity verification for type and screen specimen collection, or an electronic device designed for this purpose (e.g., a barcode scanner). In settings where this is not available, the patient or their **designated family / support person** may serve as the witness;

- (i) At minimum, the health care provider must use the following two (2) identifiers:
 - the patient's first and last name (considered one [1] identifier); and
 - a unique identifier, such as a **unique lifetime identifier (ULI)**, medical record number (MRN), or personal healthcare number (PHN).
 - (ii) It is recommended that health care providers also confirm the patient's full date of birth (inclusive of day, month, and year) as a third identifier to confirm patient identification for type and screen specimens.
- b) verify that the specimen label and patient identification match. If an identity discrepancy is found, stop the collection process until the discrepancy is resolved;
 - c) explain to the patient and/or their designated family / support person that the TSIN band must be worn until it expires or an authorized prescriber has confirmed a transfusion is no longer needed. The removal of the TSIN band invalidates the type and screen;
 - (i) If this cannot be accommodated, arrange for type and screen specimen collection closer to the surgery or transfusion date.
 - (ii) If the TSIN band is not physically attached to the patient, or is illegible, a new type and screen specimen collection is required.
 - d) collect the type and screen specimen;
 - (i) Type and screen specimens are valid for 96 hours, except for:
 - inpatient neonates, whose type and screen specimens may be valid for 120 days (i.e., four [4] months) post-gestation as long as the neonate has never been discharged home or to an outpatient setting; or
 - if there is a surgical patient being seen in a pre-admission setting, with the applicable clinical history/information questions answered, then the type and screen specimen validity may be extended for up to 30 days. It is critical to patient safety to ensure that the history is accurate at the time of collection.
- Note:** If any part of the clinical history/information is indicated as 'unknown' with the Connect Care order and there is confirmation with the patient, the Nurse may use the modify

order functionality as per this Policy to appropriately capture the correct history.

- (ii) For order of draw information, refer to the Alberta Precision Laboratories (APL) *Order of Draw and Order of Transfer* Resource. This may be found on the APL external webpage.
- e) label the type and screen specimen(s) and document the collection on the TSIN form/requisition and in the clinical information system (e.g., Epic) where required;
- (i) type and screen specimen label(s) must include:
 - the patient's full first and last name;
 - at least one (1) other unique identifier (this must be the same unique identifier as the TSIN form/requisition);
 - the TSIN;
 - the date and time of collection (this may not be necessary if captured in the clinical information system and is part of the barcode); and
 - the identification of the health care provider collecting the type and screen specimen (this may not be necessary if captured in the clinical information system and is part of the barcode).
 - (ii) the TSIN form/requisition must include:
 - the patient's full first and last name;
 - at least one (1) other unique identifier (this must be the same unique identifier as the type and screen specimen label);
 - the TSIN;
 - the date and time of collection;
 - the identification of the health care provider collecting the type and screen specimen; and
 - the identification of the witness of the type and screen specimen collection.
- f) immediately attach a TSIN band to the patient;

- (i) If the patient's clinical condition does not allow for direct banding, the TSIN band may be indirectly attached to the patient (e.g., daisy-chained through a soft-band as demonstrated in Figure 1 and Figure 2 below). Once the clinical condition allows for direct patient banding, immediately attach the band to the patient.



Figure 1: Example of a Daisy Chain

Figure 2: Example of a Daisy Chain

- g) send the type and screen specimen(s) to the laboratory.
- 4.6 If a health care professional removes and re-applies the TSIN band for a medical procedure or due to the patient's clinical condition, the removal and re-application must be witnessed by another health care professional.
- a) If this is carried out in an operating room / procedure room, the re-applied TSIN band must occur prior to the patient leaving the operating room / procedure room.
- b) When the TSIN band is removed and re-applied, the health care professional must document the following in the patient's **health record**:
- (i) the date and time the TSIN band was removed;
 - (ii) the TSIN;
 - (iii) the identification of the health care professionals involved; and
 - (iv) the date and time the TSIN band was re-applied.

5. Authorized Prescriber Orders for Blood Components and Blood Products

- 5.1 An order from an authorized prescriber is required for the transfusion of blood components and blood products. If an approved protocol is activated (e.g., a massive hemorrhage / massive transfusion protocol approved by Transfusion and/or Trauma committees), then the elements set out in Section 5.2 below are not required as new orders, as long as they are part of the protocol.

Note: An order for red blood cells may occur with an order for type and screen or at a later time.

- 5.2 The order / approved protocol for blood components and blood products must include:
- a) the indication for the transfusion;
 - b) the type and amount of blood component and/or blood product;
 - c) the rate or duration of the unit or dose;
 - d) any special requirements (e.g., use of a rapid infuser and/or blood warmer, irradiation of blood components);
 - e) the sequence of infusion if more than one (1) type of blood component and/or blood product is to be transfused;
 - f) any pre- and post-**medication** orders or pre- and post-laboratory tests, as required; and
 - g) authorization to collect a **transfusion reaction investigation** if symptoms occur during or post-transfusion.

6. Equipment, Supplies, and Medications

- 6.1 The **most responsible health practitioner (MRHP)** or Transfusion Medicine Physician or designate may waive some of the elements in Sections 6.2 and 6.3 below for patients enrolled in **Home Transfusion programs**, as part of the home eligibility assessment.
- 6.2 If infusion or ancillary equipment devices (e.g., blood warmers, rapid infusers, syringe pumps) are to be used, they must be approved for the purposes of transfusion and have gone through the appropriate equipment qualification and preventative maintenance by the facility/program.
- a) For pressure infusion devices, the pressure applied to the blood component must not exceed 300 millimetres of mercury (mmHg) as this may result in hemolysis or bag breakage.
 - b) For rapid infusers and blood warming equipment:
 - (i) an authorized prescriber order is required unless an approved protocol containing this order is activated;
 - (ii) use only blood warmers specifically designed for the purpose of warming blood components for transfusions;
 - (iii) the equipment must be equipped with a visible temperature display and an audible warning system;

- (iv) use for approved blood components as indicated in the Transfusion Medicine monographs (found on the AHS Transfusion Medicine external webpage); and
 - (v) if a blood bag is warmed and not transfused, note this on the blood tag and return blood bag to the laboratory.
- 6.3 The health care provider must confirm the availability of the following supplies, equipment, and medications in the clinical care setting necessary to undertake the transfusion:
 - a) the correct blood administration infusion set and compatible intravenous (IV) solution, as per the Transfusion Medicine monograph (found on the AHS Transfusion Medicine external webpage);
 - (i) Certain manufacturers' blood products are supplied in a syringe that may not be compatible with all needleless connectors for IV catheters. If the supplied syringe is not compatible, follow the instructions in the Transfusion Medicine monograph and/or reconstitution instructions.
 - b) access to the blood component or blood product;
 - c) an infusion pump, if appropriate for the patient's condition, provided it is not contraindicated for the blood component or blood product;
 - d) equipment, including but not limited to:
 - (i) an oxygen source;
 - (ii) oxygen tubing;
 - (iii) a nasal cannula and/or oxygen mask;
 - (iv) suction;
 - (v) sodium chloride 0.9% intravenous solution; and
 - (vi) an infusion set.
 - e) medications in the transfusion area, including but not limited to:
 - (i) acetaminophen;
 - (ii) diphenhydramine (not applicable to NICU settings);
 - (iii) epinephrine (may be found in an anaphylaxis kit);
 - (iv) furosemide; and
 - (v) hydrocortisone.

7. Obtaining Blood Components and Blood Products

- 7.1 Blood components and blood products stored outside of Transfusion Medicine / Laboratory must be stored in a storage device / location that has been approved for that specific blood component or blood product by Transfusion Medicine / Laboratory.
- 7.2 To obtain blood components and blood products from Transfusion Medicine / Laboratory or an approved storage device / location, a computer-generated or handwritten hard copy document (e.g., dispense form, pick-up slip) with the following patient identification information is required:
- the patient's full first and last name;
 - the patient's location where the transfusion will occur;
 - at least one (1) other unique identifier;
 - the type of requested blood component or product; and
 - the amount/dose of requested blood component or blood product.
- 7.3 Verification of the information in Section 7.2 above must be done at the time the blood component or blood product is **issued**, including when a validated and Transfusion Medicine approved pneumatic tube system (if available) for blood component or blood product delivery is in use.
- 7.4 To issue blood components and blood products from Transfusion Medicine / Laboratory requires two (2) health care providers: one (1) must be either a health care professional or an employee of Transfusion Medicine / Laboratory. Exceptions are:
- blood components or products signed out of a 'smart' refrigerator (e.g., Haemonetics system) by a system-authorized health care provider; or
 - when only one (1) health care professional is available (e.g., nursing staff during off-shift hours).
- 7.5 Transfusion Medicine / Laboratory must issue only one (1) blood component at a time, except when:
- blood components are issued in an appropriate laboratory cooler for transport;
 - rapid infusion methods are being used; or
 - the patient requires simultaneous transfusions.

Note: For blood products, multiple vials may be issued simultaneously.

- 7.6 The health care provider who is removing the blood component or blood product from Transfusion Medicine / Laboratory or an approved storage device / location must inspect the blood component or blood product for abnormalities. When an abnormality is detected, the blood component or blood product must not be used. Return blood components or blood products with abnormalities to Transfusion Medicine / Laboratory.
- 7.7 All blood components and blood products must have a transfusion tag attached in order to be issued from Transfusion Medicine / Laboratory. Blood components and blood products that do not have a transfusion tag attached must not be removed from Transfusion Medicine / Laboratory.
- a) The health care provider who is removing the blood components or blood products from a 'smart' refrigerator (e.g., Haemonetics system) must confirm that they have a transfusion tag pre-attached, or attach a tag immediately upon removal from the refrigerator after remote assignment, whichever is applicable to the situation.
- 7.8 Only health care providers who have completed training in visual inspection are permitted to issue and document the issue of blood components and blood products. When blood components and blood products are issued from Transfusion Medicine / Laboratory or an approved storage device / location, the information listed in Sections 7.2, 7.4, and 7.6 above must be documented in a manner that links the blood component or blood product with the request and the intended recipient. This documentation must occur through one (1) of the following means:
- a) an automatic electronic capture (i.e., scanning of personnel identification);
- b) a manual data entry in an Information System; or
- c) a paper issue log.
- 7.9 Only health care providers who have completed appropriate training are permitted to receive and/or transport blood components and blood products. Valid institutional identification is required.

8. Emergency Unmatched Transfusion

- 8.1 The release and transfusion of unmatched blood components prior to completion of required compatibility testing must only be done if the clinical situation is life threatening. This risk/benefit assessment must be performed by the authorized prescriber.
- a) Red blood cells should be Rh-negative for patients of childbearing potential less than or equal to 45 years of age.
- b) Patients with an undetermined and/or unconfirmed ABO group must receive group O red blood cells.

- (i) ABO group-compatible red blood cells may be transfused prior to completion of other tests for compatibility if:
 - the recipient's ABO group has been tested on the current type and screen specimen; and
 - at least one (1) other matching historical record exists.
- 8.2 When possible, informed consent for the use of unmatched blood components must be obtained. Refer to the AHS *Consent to Treatment/Procedure(s)* Policy Suite for direction about informed consent.
- 8.3 When possible, type and screen specimens should be collected prior to the administration of unmatched blood components.
- 8.4 Transfusion records must include a signed declaration/attestation by the authorized prescriber confirming that the clinical situation was sufficiently urgent to justify releasing blood components before completion of pre-transfusion testing and/or any infectious disease testing.
- 8.5 If pre-transfusion testing has not been completed, the Transfusion Medicine / Laboratory service must affix a label to the blood component that clearly indicates that pre-transfusion testing had not been completed at the time of release.
- a) Note that the TSIN may not be available on unmatched units.
- 8.6 Transfusion Medicine / Laboratory must complete compatibility tests promptly and any incompatibility and/or follow-up requirements must be immediately communicated according to laboratory processes.
- 9. Pre-transfusion Verification of the Patient and Blood Component or Blood Product**
- 9.1 The pre-transfusion verification of the patient and blood component or blood product, as outlined in Section 9.3 below, must be confirmed together by the health care professional administering the transfusion and a second health care professional, or a health care provider who is trained and authorized to do so.
- 9.2 Each individual blood component unit must be checked immediately prior to the transfusion.
- 9.3 The pre-transfusion verification process is as follows:
- a) the health care professional who is administering the transfusion must verify that:
 - (i) the blood component or blood product received is consistent with the transfusion order; and
 - (ii) the blood component or blood product is not expired.

- b) for the two (2) person **verbal check**, the health care professional who is administering the transfusion must read aloud and spell out the following while the second health care professional or health care provider visually confirms that the information is correct and matches the patient identification documentation and the transfusion tag, in the presence of the patient, and if possible, with the participation of the patient:
- (i) the patient's first and last name;
 - (ii) the patient's unique identifier (e.g., ULI, MRN, or PHN);
 - (iii) the TSIN band matches the TSIN on the transfusion tag, if present;
 - The TSIN is not required for plasma, platelets, cryoprecipitate, or blood products. However, if the TSIN is present on the transfusion tag, then it must match the TSIN band.
 - The TSIN may not be available on unmatched units.
 - (iv) the unit identification number or lot number on the blood component or blood product label matches the unit identification number or lot number on the transfusion tag;
 - (v) the ABORh group on the blood component transfusion tag matches the ABORh group on the blood component label; and

Note: Plasma and cryoprecipitate labels do not include Rh.
 - (vi) the ABORh group of the blood component is compatible with the patient's ABORh group.

Note: The Connect Care barcode scanner does not meet all of the verification requirements outlined in Section 9.3 that are covered by the two (2) person verbal check.

- 9.4 If a discrepancy is found at any time during the verification process, stop the process and contact Transfusion Medicine / Laboratory to resolve the discrepancy.
- 9.5 Following the verification process, the health care professional who is administering the transfusion must sign the transfusion documentation and have the second health care professional or health care provider confirming verification also sign the transfusion documentation.

- 9.6 If transferring to a secondary container (e.g., a syringe), the health care professional must label the secondary container with the following:
- a) the patient's first and last name;
 - b) the patient identification number;
 - c) the TSIN, if applicable;
 - d) the blood component or blood product in the secondary container (include ABO group and Rh, if applicable);
 - e) the unit number or lot number of the blood component or blood product;
 - f) the date and time;
 - g) the volume of blood component or blood product in the secondary container; and
 - h) the initials or signature of the health care professional who is preparing the transfer to the secondary container.
- 9.7 Do not separate the blood component or blood product tag from the blood component or blood product until the transfusion is complete.

10. Administration and Monitoring of Blood Components and Blood Products

- 10.1 Blood components must be transfused over a maximum of four (4) hours from the time of issue or removal from a temperature-controlled environment (e.g., approved satellite refrigerator / approved coolers / transport boxes).
- a) Although it is not acceptable practice to pre-check units, if blood component units are being removed from approved coolers / transport boxes for the purposes of verification before transfusion is required, the health care professional must have documented training in the packing of approved coolers / transport boxes and follow the provided re-packing criteria to avoid compromising the quality of the units, and discard any units returned to Transfusion Medicine / Laboratory.
- 10.2 The health care provider must return blood components immediately to Transfusion Medicine / Laboratory or an approved storage device / location when:
- a) the transfusion is cancelled; and/or
 - b) the transfusion has not been initiated and cannot be completed within four (4) hours from the time of issue.

- 10.3 Transfusion Medicine / Laboratory must not enter blood components back into inventory that have been out of the approved temperature-controlled environment for longer than 60 minutes. Blood components must not be discarded on the unit without prior consultation with Transfusion Medicine / Laboratory.
- 10.4 Medications must not be added to a blood component or blood product.
- 10.5 If administration of medication is required at the same time as the transfusion of a blood component or blood product, a second venous access site or a different lumen of a central venous access device (CVAD) should be used for medication administration, where possible.
- a) If there is an absolute need to administer a medication while the blood is transfusing and there is limited IV access, consultation with Transfusion Medicine is recommended for options and compatibility.
- 10.6 Two (2) health care professionals must be available during the transfusion as follows, unless approved by Transfusion Medicine (e.g., approved Home Transfusion programs):
- a) One (1) health care professional must remain at the patient's bedside for the first five (5) minutes, and remain **immediately available** (i.e., performing non-dedicated tasks with the patient in view) for the first 15 minutes of the transfusion (refer to Section 10.7 k) below). The second health care professional must be **readily available** (i.e., in the building and nearby).
- b) After the first 15 minutes, one (1) health care professional must remain within the patient's care area (i.e., the health care professional is able to respond to a call bell or request for assistance from the patient).
- 10.7 As part of the administration process, the health care professional must:
- a) confirm that the patient has provided written (signed) consent and it is documented in the patient's health record;
- b) explain the procedure to the patient and/or **family** when possible, and advise the patient to report if experiencing any signs/symptoms of a **transfusion reaction**, including but not limited to, shortness of breath, fever, itching, chills, or any new symptoms;
- c) ensure the patient has a patent peripheral or CVAD, or where applicable, an intraosseous line;
- (i) Refer to the AHS *Vascular Access Device Infusion Therapy: Adult & Pediatric – All Locations* and the AHS *Vascular Access Device Infusion Therapy: Neonatal – All Locations* Clinical Care Topics for information about vascular access.

- (ii) Refer to the Transfusion Medicine monographs for blood component and blood product administration information (found on the AHS Transfusion Medicine external webpage).
- d) gather equipment and set up at the patient's bedside;
Note: Air-eliminating micron filters are not compatible with blood component and some blood product transfusions.
- e) prime the IV line with the appropriate IV solution (refer to the Transfusion Medicine monographs, found on the Transfusion Medicine external webpage, for compatible solutions for the specific blood component or blood product);
Note: It may be appropriate to prime the IV line with the blood component or blood product.
- f) perform a baseline assessment of the patient as close as possible to and not exceeding 15 minutes prior to initiating the transfusion, including:
 - (i) temperature;
 - (ii) blood pressure;
 - (iii) heart rate;
 - (iv) respiration rate; and
 - (v) oxygen saturation.
- g) visually inspect the blood component or blood product for abnormalities, such as but not limited to, clots, abnormal colour, or leaks;
- h) attach the blood component or blood product to the blood tubing and initiate the flow;
- i) infuse blood components as per Table 1 below for routine transfusions (if a change in prescribed infusion rate is required for reasons unrelated to a transfusion reaction, contact an authorized prescriber for a new rate);

Patient Weight	Infusion Rate: For the <u>First 15 Minutes</u>	Infusion Rate: <u>After</u> the First 15 Minutes
Greater than 25 kilograms (kg)	50 millilitres per hour (mL/h), if possible	For all patient weights: Continue transfusion at the prescribed rate as per the authorized prescriber's order, as long as it does not exceed four (4) hours from the time of blood component removal from the approved storage device / location.
Less than or equal to 25 kilograms(kg)	1 millilitre per kilogram per hour (mL/kg/h) or slower for the first 15 minutes, if possible	Refer to the Transfusion Medicine monographs for specific details (found on the AHS Transfusion Medicine external webpage).

Table 1: Infusion Rates

- j) monitor the patient as per Table 2 below for blood components;
- (i) For transfusion of blood products, refer to the Transfusion Medicine monographs for specific monitoring requirements (found on the AHS Transfusion Medicine external webpage).
- (ii) Vital signs / patient monitoring may be conducted more frequently or continuously as determined by the clinical condition of the patient.

	Pre-Transfusion Vitals	Stay at Patient Bedside			Vital Signs During Transfusion		Post-Transfusion Monitoring
		First 5 minutes	First 10 minutes	First 15 minutes	After 15 minutes		
All Patients	Yes	Yes	No, but must be immediately available*		Yes	q1h	Set of vital signs. Monitor for minimum of 15 minutes post-transfusion**

Table 2: Monitoring the Patient

*Defined as performing non-dedicated tasks with the patient in view.

**If the patient has had a previous transfusion reaction to a blood component transfusion, or this is the first time the patient is receiving that blood component type, monitor for 30 to 60 minutes. For patients enrolled in Home Transfusion programs, after the post-transfusion vital signs, the additional monitoring for signs of a reaction may be completed by a competent adult rather than a health care professional.

- k) monitor the patient throughout the blood component and blood product transfusion for transfusion reactions;
- (i) The patient should remain in the treatment area unless there is a medical indication to continue the transfusion in another treatment area.
- In situations where it is necessary for the patient to continue the transfusion away from the initial patient care area, a **clinical handover** of the patient's transfusion care must occur.
- (ii) In the event of a transfusion reaction, immediately stop the transfusion and refer to Section 11 below.

Exception: Patients enrolled in a Home Transfusion program for a blood product and are educated in the recognition and follow-up of transfusion reactions.

- l) flush the IV line to ensure all of the blood component unit or blood product dose is visibly clear from the IV line at the end of the transfusion (i.e., during a non-emergency transfusion). When a specific volume of blood component or blood product is required, stop the transfusion after the specific volume is completed and flush the catheter.

10.8 If additional blood components or blood products are required:

- a) maintain site patency;
- b) dispose of empty blood containers and tubing sets as stated in the AHS *Biomedical Waste Procedure*; and
- c) repeat Section 10.7 above, for each blood component and blood product to be transfused.

10.9 Administration sets are changed:

- a) as needed, but at least every eight (8) hours or as per manufacturer's direction;
- b) when platelets are to be transfused after other blood components (refer to the Transfusion Medicine platelet monograph); and
- c) when switching from one blood product to another blood product.

Note: For Sections 10.9 b) and c), this may not be applicable in the resuscitation of an exsanguinating patient.

10.10 Transfusion Medicine / Laboratory must be notified of all blood components and blood products not transfused.

- 10.11 In community and mobile settings, Paramedics must contact the MRHP as outlined in the AHS *EMS Medical Control Protocols* (e.g., contacting the **online medical consultation [OLMC] Physician or Transport Physician**) or as outlined in EMS program-specific guidance for any associated emergent or non-emergent changes in the patient's condition.

11. Transfusion Reactions

- 11.1 In situations where a transfusion reaction is suspected, a transfusion reaction investigation is required.
- 11.2 In situations where a transfusion reaction is suspected, the health care professional must:
- immediately stop the transfusion;
 - maintain the vascular access site using a new infusion set and compatible IV solution;
 - assess vital signs;
 - notify the authorized prescriber and Transfusion Medicine / Laboratory of the suspected transfusion reaction; and
 - ensure all blood components and blood products, blood tubing, solutions, and transfusion tags are retained until direction is received from Transfusion Medicine / Laboratory.

Note: Refer to the APL *Acute Transfusion Reaction Chart* Resource (found on the AHS Transfusion Medicine external webpage) for transfusion reaction information.

- 11.3 The administration of emergency medications to manage a suspected transfusion reaction requires an order from an authorized prescriber.
- If the patient experiences suspected anaphylaxis, health care professionals must refer to the AHS *Anaphylaxis Management: Administration of Intramuscular Epinephrine* Policy, and Registered Nurses must refer to the AHS *Anaphylaxis Management: Registered Nurse Prescribing and Administering Intramuscular Epinephrine* Clinical Support Tool Protocol.
 - Paramedics must follow the AHS *EMS Medical Control Protocols* for the administration of emergency medications.
- 11.4 Prior to resuming a transfusion following an acute transfusion reaction, the health care professional must ensure it is appropriate to do so by referring to the APL *Acute Transfusion Reaction Chart* Resource or as directed by Transfusion Medicine.

- 11.5 For information about disclosure of transfusion reactions or **clinical adverse events**, health care providers must refer to the AHS *Recognizing and Responding to Hazards, Close Calls and Clinical Adverse Events* Policy Suite.

12. Patient Education and Notification of Transfusion

- 12.1 Patients must be provided with written notification that the patient has received a blood component and/or blood product transfusion.
- 12.2 Health care professionals must provide education to patients about signs and symptoms of a transfusion reaction.
- 12.3 For patients who are discharged following a transfusion or are part of a Home Transfusion program, the health care professional must provide additional education, including but not limited to, on when to seek medical attention and with whom to report a transfusion reaction.

13. Documentation

- 13.1 The health care professional must document the following in the patient's health record for each transfused unit:
- a) the transfusion date and infusion start and stop times;
 - b) the type, volume transfused, and identification number of the blood component or blood product;
 - c) the identification of the health care professional administering the blood component or blood product;
 - d) the identification of the second health care professional or health care provider verifying the blood component or blood product;
 - e) vital signs and time taken;
 - f) any transfusion reactions detected and subsequent follow-up (including testing);
 - g) patient teaching provided; and
 - h) patient tolerance of the transfusion.
- 13.2 If not captured electronically, return documentation of completed transfusions as per Zone/site/program reporting mechanisms.
- a) EMS / Shock Trauma Air Rescue Service (STARS) must document each transfusion in the **electronic patient care record (ePCR)** according to the AHS *Final Disposition of Transported Blood Components Record* Form.

- 13.3 In the event of a transfusion reaction, complete a transfusion reaction notification as per Zone-specific mechanisms.

DEFINITIONS

Authorized prescriber means a health care professional who is permitted by federal and provincial legislation, their regulatory college, Alberta Health Services, and practice setting (where applicable) to prescribe medications. For the purposes of this Policy, this definition also applies to health care professionals who are permitted to order blood products and blood components.

Blood components means the therapeutic parts of blood used for transfusion, namely, packed red blood cells, plasma, platelets, and cryoprecipitate. Connect Care may refer to these as products.

Blood products means the therapeutic parts of blood derived from plasma by manufacturing companies. Some sources may refer to these as plasma protein products. Examples include albumin, intravenous immune globulin, and prothrombin complex concentrates. Connect Care may refer to these as derivatives.

Clinical adverse event means an event that reasonably could or does result in an unintended injury or complications arising from health care management, with outcomes that may range from (but are not limited to) death or disability to dissatisfaction with health care management, or require a change in patient care.

Clinical handover means the transfer of professional responsibility and accountability for some or all aspects of care for a patient to another person or professional group on a temporary or permanent basis.

Compounding means the combining or mixing together of two (2) or more ingredients (of which at least one is a drug or pharmacologically active component) to create a final product in an appropriate form for dosing. This would be pertinent to reconstitution and/or mixing of plasma protein products with other agents.

Designated family / support person(s) means one or more individuals identified by the patient as an essential support, and who the patient wishes to be included in any encounters with the health care system, including, but not limited to, family, relatives, friends, and informal or hired caregivers.

Electronic patient care record (ePCR) means the software version of a patient care record.

Family(-ies) means one or more individuals identified by the patient as an important support, and who the patient wishes to be included in any encounters with the health care system, including but not limited to, family members, legal guardians, friends, and informal caregivers.

Health care professional means an individual who is a member of a regulated health discipline, as defined by the *Health Professions Act* (Alberta), and who practises within scope and role.

Health care provider means any person who provides goods or services to a patient, inclusive of health care professionals, staff, students, volunteers and other persons acting on behalf of or in conjunction with Alberta Health Services.

Health record means the collection of all records documenting individually identifying health information in relation to a single person.

Home Transfusion program means a formally established and authorized program where Nurses, Paramedics, or other qualified health care professionals transfuse blood components and/or blood products to eligible patients in their home.

Immediately available means performing non-dedicated tasks with the patient in view.

Informed consent means the patient's agreement (or alternate decision-maker) to undergo a treatment/procedure after being provided, in a manner the patient can understand, with the relevant information about the nature of the treatment/procedure(s), its benefits, potential risks and alternatives, and the potential consequences of refusal.

Issue means the process of signing out blood components or blood products from the Transfusion Service or a Transfusion Service approved temperature-controlled environment (e.g., refrigerator located outside of the laboratory).

Medication means any substance or mixture of substances manufactured, sold, or represented for use in the diagnosis, treatment, mitigation, or prevention of a disease, disorder, or abnormal physical state, or its symptoms in human beings, and restoring, correcting, or modifying organic functions in human beings.

Most responsible health practitioner (MRHP) means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by AHS to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of their practice.

Online medical consultation (OLMC) means a Physician providing consultation and medical control over a radio, by phone, or through some other form of instant communication to Emergency Medical Services.

Order means a direction given by a regulated health care professional to carry out specific activity(-ies) as part of the diagnostic and/or therapeutic care and treatment to the benefit of a patient. An order may be written (including handwritten and/or electronic), verbal, by telephone, or facsimile. For the purposes of this Policy, some of the orders described are already incorporated into clinical protocols (e.g., massive hemorrhage / massive transfusion protocols).

Patient means all persons, inclusive of residents and clients, who receive or have requested health care or services from Alberta Health Services and its health care providers. Patient also means, where applicable:

- a) a co-decision-maker with the person; or
- b) an alternate decision-maker on behalf of the person.

Readily available means in the building and nearby.

Transfusion reaction means an undesirable and unintended response to the transfusion of blood components or blood products that is considered to be definitely, probably, or possibly related to the transfusion. Transfusion reactions can be acute (e.g., up to 24 hours) or delayed (e.g., months to years).

Transfusion reaction investigation means an investigation consisting of a review of patient symptoms, blood component or blood product compatibility, pre- and post-transfusion laboratory testing, and other diagnostic tests as required to determine the cause of a transfusion reaction.

Transfusion service identification number (TSIN) means the unique number assigned to the patient for the purpose of blood component transfusion. It assists in the unequivocal identification of patient and blood component as this number is used throughout the transfusion process, from collection to transfusion. It is displayed on the patient armband, requisition, collected samples and blood components to be transfused. This number is referred to differently, depending upon the blood services provider (e.g., Regional Transfusion Service Identification System [RTSIS], Blood Bank Identification Number [BBIN], Transfusion Medicine Identification [TMID]).

Transport Physician means the Physician who supports red/critical patient processes and all medical consultation needs for Air Ambulance.

Type and screen means an ABORh, antibody screen (plus associated investigations), and cross-matching (electronic or serologic) performed on a specimen collected using the transfusion service identification number (TSIN) for the purpose of transfusing red blood cells, whole blood, or granulocyte containing blood components.

Unique lifetime identifier (ULI) means a unique and permanent number assigned to all persons who receive health services in Alberta. ULIs are assigned to all Alberta residents, residents of other provinces/territories or other countries.

Verbal check means a cooperative process where two (2) health care professionals, or a health care professional and health care provider, while in the physical presence of the patient and if possible, with the participation of the patient or alternate decision-maker, read aloud and verify the patient identification against all information associating a blood component or blood product, to ensure the right blood component or blood product is given to the right patient.

REFERENCES

- Alberta Health Services Governance Documents:
 - *Anaphylaxis Management: Administration of Intramuscular Epinephrine* Policy (#HCS-223)
 - *Anaphylaxis Management: Registered Nurse Prescribing and Administering Intramuscular Epinephrine* Clinical Support Tool Protocol (#HCS-223-01)
 - *Biomedical Waste* Procedure (#ESM-01-01)
 - *Consent to Treatment/Procedure(s)* Policy Suite (#PRR-01)
 - *EMS Medical Control Protocols*
 - *Patient Identification* Policy (#PS-06)
 - *Recognizing and Responding to Hazards, Close Calls and Clinical Adverse Events* Policy Suite (#PS-95)

- Alberta Health Services Forms:
 - *Final Disposition of Transported Blood Components Record Form (#09624)*
- Alberta Health Services Resources:
 - *Acute Transfusion Reaction Chart* (Alberta Precision Laboratories)
 - *Blood Components & Products Information/Monographs* (Transfusion Medicine external webpage)
 - *Order of Draw and Order of Transfer* (Alberta Precision Laboratories)
 - *Vascular Access Device Infusion Therapy: Adult & Pediatric – All Locations* Clinical Care Topic
 - *Vascular Access Device Infusion Therapy: Neonatal – All Locations* Clinical Care Topic
- Non-Alberta Health Services Documents:
 - *CAN/CSA-Z902:20 Blood and Blood Components* (CSA Group)
 - *Government Organization Act* (Alberta)
 - *Health Professions Act* (Alberta)
 - *Standards for Hospital Transfusion Services* (Canadian Society for Transfusion Medicine)

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