OBJECTIVES

- To establish a standard for safe transfusion of blood components and blood products.
- To facilitate compliance with applicable national standards.

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).

Exception: This procedure does not apply to Emergency Medical Services (EMS) or in the case of a patient on an established home infusion program.

ELEMENTS

1. Informed Consent

   1.1 The most responsible health practitioner shall obtain express written informed consent prior to the transfusion of blood components and products. This documentation shall include the signature of the patient, co-decision maker, alternate decision-maker or legal representative on the appropriate Alberta Health Services (AHS) consent form. (Refer to the AHS Consent to Treatment/Procedure(s) Policy suite.) The consent form shall then be attached to the patient’s health record. Teaching materials are available through the AHS Transfusion Medicine / Laboratory Services website.

   Note: In the context of emergency health care, exceptions to the requirement for express written (signed) consent may exist. Refer to the AHS Consent to
Treatment/Procedure(s) Adults with Impaired Capacity and Adults who Lack Capacity Procedure, Consent To Treatment/Procedure(s) Minor / Mature Minors Procedure and the Emergency Health Care: Documentation of Exception to Consent Form for further details.

2. Equipment

2.1 Refer to a specific blood component or product information/monograph (which can be found on the external AHS web page by searching for “Monographs”) for the correct:

a) blood administration infusion set; and
b) compatible intravenous solution requirement.

2.2 Blood component or product.

2.3 An infusion pump, as appropriate to blood component or product and patient condition.

2.4 Locate and confirm the availability of the following emergency equipment, including but not limited to:

a) oxygen source;
b) oxygen tubing;
c) nasal cannula and/or oxygen mask;
d) suction; and
e) additional intravenous solutions.

2.5 Locate and confirm the availability of the following emergency medications, including but not limited to:

a) epiNEPHrine injectable;
   (i) adult or child/infant - one (1) milligram per millilitre (1 mg/mL) (1:1000); or
   (ii) neonate - 0.1 mg/mL (1:10,000);

b) diphenhydRAMINE injectable (50 mg/mL) (not used in neonates); and
c) hydrocortisone, injectable.

**Note:** The administration of these medications requires an **order** from an **authorized prescriber**.

3. **Collection of Pre-transfusion Specimen(s)**

3.1 Prior to collection for pre-transfusion testing, the **health care provider**, in the presence of the patient, shall confirm patient identification (refer to the AHS *Patient Identification Policy*). Perform this in the presence of a witness for confirmation.

**Note:** The preferred witness is a second health care provider, educated and trained to perform patient identity verification for pre-transfusion testing, or an electronic device designed for this purpose (e.g., barcode scanner). In a setting where this is not available, the patient or a patient companion may serve as the witness as per local process.

3.2 Verify that the specimen label and patient identification armband match. If an identity discrepancy is found, stop the collection process until the discrepancy is resolved.

3.3 Collect pre-transfusion specimen(s).

3.4 Attach the **transfusion service identification number (TSIN)** to the ethylene-diamine-tetra-acetic acid (EDTA) purple/pink-topped specimen tube(s) to be used. Label the specimen tube(s) with the TSIN and patient label before leaving the bedside.

3.5 Attach a TSIN band with the same TSIN number used in section 3.4 above to the patient.

**Note:** Fragile neonates or other patients considered high risk for skin breakdown, may have the transfusion service identification band affixed to the incubator or attached to a soft band worn by the patient (see images below). Neonates must be banded directly or via a soft band prior to transport. Once the clinical condition allows for direct patient banding, immediately attach the band to the patient.
3.6 Reinforce to patient and/or family the need to keep the TSIN band in place until an authorized prescriber has confirmed a transfusion is no longer required.

3.7 If the TSIN band is not attached to the patient, or illegible, a new pre-transfusion specimen is required.

3.8 Send pre-transfusion specimens to the Laboratory.

4. Prior to Transfusion

4.1 Confirm written (signed) consent has been obtained and documented on the health record.

4.2 Ensure patient has a patent, healthy intravenous access site.

4.3 Use clinical judgement to determine the most appropriate intravenous catheter size. Best practice per the *Infusion Nursing Standards, 2016* (INS) is to use an 18-24 gauge intravenous catheter, where possible.

   Neonate/pediatric or elderly patients are usually transfused with a 22-24 gauge peripheral intravenous access device. Additional information is available in the AHS *Transfusion of Blood Components and Products Learning Module*.

   **Note:** See individual sections for specific blood component and product administration information in the AHS Laboratory Services *Transfusion Medicine Blood Components and Products Information/Monographs*.

5. Obtain Blood Component or Product

5.1 Obtain the blood component or product from the transfusion service/laboratory. The issuing process will generally require two (2) health care providers, one (1)
of who must be a **health care professional** or an employee of Transfusion Medicine/Laboratory.

**Exceptions:**

a) Blood components or products signed out of a “smart” refrigerator (e.g., Haemonetics system) by a system authorized health care provider.

b) When a single health care professional is available (e.g., nursing staff during off-shift hours).

**Note:** All requirements of section 4 of the AHS *Transfusion of Blood Components and Products* Policy apply.

5.2 **Issue** only one (1) blood component at a time, except when:

a) blood components are issued in an appropriate laboratory cooler for transport;

b) rapid infusion methods are being used; or

c) the patient requires simultaneous transfusions.

**Note:** Multiple vials of some blood products may be issued simultaneously.

6. **Verify Blood Component or Product and Patient**

6.1 Visually inspect blood component and product for abnormalities, such as but not limited to, clots, abnormal colour or leaks.

6.2 Verify and document the following information on the blood component or product has been matched and is correct. This step is completed by the health care professional administering the transfusion of the blood component or product (i.e., transfusionist):

a) the blood component or product received is consistent with the transfusion order;

b) the unit identification number of the transfusion tag matches the unit identification number listed on the blood component or product label;

c) ABO-Rh group on the transfusion tag matches the ABO-Rh group on the blood component label;

**Note:** Plasma and cryoprecipitate labels do not include Rh.

d) ABO-Rh group of the blood component received is compatible with patient’s blood group; and
6.3 In the presence of the patient and immediately prior to initiation of transfusion, the health care professional administering the transfusion shall confirm the following:

   a) patient identification (refer to the AHS Patient Identification Policy);
   b) the patient identification matches the information provided on the transfusion documentation/tag; and
   c) the TSIN on the transfusion documentation/tag matches the TSIN on the patient’s transfusion service identification band where applicable.

   **Note:** The TSIN may be used as a unique identifier.

6.4 As per the AHS Transfusion of Blood Components and Products Policy, in the presence of the patient and immediately prior to transfusion, a second health care professional or Laboratory Assistant who is trained and authorized to perform this task, or an electronic device approved by the Transfusion Service for this purpose, shall also verify the information listed in sections 6.2 and 6.3 above.

6.5 If a discrepancy is found, stop the process, contact the Transfusion Medicine/Laboratory to resolve the discrepancy.

6.6 Sign the transfusion documentation (i.e., health care professional transfusing the blood component and product) and have the health care professional confirming verification also sign (this is not applicable where an approved electronic device is used for verification).

6.7 Document the starting date and time.

6.8 Do not separate the blood component and product tag from the blood component and product until the transfusion is complete.

   **Note:** If transferring to a secondary container (e.g., syringe) the secondary container must be labelled with the following:

   a) patient first and last name;
   b) patient identification number (TSIN if applicable);
   c) blood component or product in the container (include blood group and Rh if applicable);
   d) unit number or lot number of component or product; and
   e) volume of component or product in container.
7. **Administration and Monitoring of Transfusion**

   7.1 Perform **hand hygiene** per the AHS *Hand Hygiene* Procedure.

   7.2 Gather equipment and set up at bedside.

   7.3 Prime the intravenous line with the appropriate intravenous solution.

   7.4 Refer to the AHS *Key Transfusion Activities Matrix* for a listing of health care professionals who may initiate the transfusion or administration of a blood component or product.

   7.5 Explain procedure to patient and/or family when possible, and advise the patient to report if experiencing any side effect, including but not limited to, shortness of breath, fever, itching, chills or feeling very unwell.

   7.6 Perform a baseline assessment of the patient including:

   a) temperature;

   b) blood pressure;

   c) heart rate;

   d) respiration rate; and

   e) oxygen saturation.

   7.7 Attach the blood component or product to the blood tubing, and initiate the flow. The first minutes (e.g., five [5] - 15 minutes) of a transfusion are typically at a slow rate (e.g., one [1] to two [2] millilitres per minute [1 - 2 mL/min]. Refer to component or product monograph for specific details). Continue transfusion at the prescribed rate. In the event of an **adverse reaction**, immediately stop the transfusion and follow the steps set out in section 8 below. If a change in prescribed infusion rate is required for reasons unrelated to an adverse reaction, contact an authorized prescriber for a new rate.

   7.8 All patients receiving blood component transfusions are monitored as per the following table. For transfusion of blood products, refer to the AHS Laboratory Services *Transfusion Medicine Blood Components and Products Information/Monographs* for specific monitoring requirements.
TRANSMISSION OF BLOOD COMPONENTS AND PRODUCTS

PROCEDURE

TITe

EFFECTIVE DATE
January 30, 2017

DOCUMENT #
PS-59-03

Pre Transfusion Vitals? | Stay At Patient Bedside | Vital Signs During Transfusion | Post Transfusion Monitoring
--- | --- | --- | ---
| | First 5 min | First 10 min | First 15 min | After 15 min |
ADULTS (in patients) | Yes | Yes | NO, but must be immediately available* | Yes | q1h | Set of V/S then monitor prn |
ADULTS (out patients) | Yes | Yes | NO, but must be immediately available* | Yes | q1h | Set of V/S. Monitor for minimum of 15 min post** |
PEDIATRICS & NEONATES | YES | YES | YES | 1st hour→q15 min 2nd and 3rd hours→q30 min then q1h until complete | For 30-60 minutes following |

*Defined as performing non-dedicated tasks with the patient in view.
**If patient has had a previous adverse reaction to component transfusion, or this is the first transfusion patient has had for component, monitor for 30-60 minutes.

Note: Vital signs / patient monitoring may be conducted more frequently as determined by clinical condition of patient.

7.9 Administration sets are changed as follows:

a) at least every eight (8) hours or per manufacturer’s direction;
b) when platelets are to be transfused after red cells or plasma; and
c) when switching from one (1) blood product to another.

8. Adverse Reactions

8.1 In the event of an adverse reaction, adhere to the AHS Acute Transfusion Reaction Chart (which can be found on the external AHS web page by searching for “Transfusion Reaction Chart”).

8.2 In situations where an adverse reaction is suspected:

a) immediately stop the transfusion;
b) maintain intravenous access site using a new intravenous infusion set and compatible intravenous solution;
c) assess vital signs;
d) notify an authorized prescriber of suspected adverse reaction; and
e) notify Transfusion Medicine/Laboratory of suspected adverse reaction.
8.3 Ensure all blood components and products, blood tubings, solutions and transfusion tags are not discarded until direction is received from Transfusion Medicine/Laboratory.

9. **Post-transfusion**

9.1 Flush the intravenous line to ensure all blood component and product is visibly clear from the line. When a specific volume of component or product is required, stop the transfusion and flush the catheter.

9.2 If additional blood components or products are required:

   a) maintain intravenous access infusing the appropriate maintenance solution between blood components or products to keep the vein open;

   b) dispose of empty blood containers and tubing sets using routine practices to reduce the risk of exposure to blood and body fluids; and

   c) repeat sections 5 through 7 above, for each component and product to be transfused.

10. **Documentation**

10.1 The transfusion record in the patient’s health record shall contain:

   a) date and time of transfusion (start and end);

   b) type, volume and identification number of blood component or product;

   c) identification of health care professional transfusing the blood component or product;

   d) identification of second health care professional verifying the blood component or product;

   e) vital signs and time;

   f) any reactions detected and subsequent follow-up (including testing);

   g) patient teaching; and

   h) patient outcomes.

10.2 Return completed transfusion documentation to Transfusion Medicine/Laboratory once all information is complete, in accordance with Zone or site-specific reporting mechanisms.

10.3 Provide written notification to the patient and/or legal representative of the transfusion in accordance with Zone or site-specific reporting mechanisms.
DEFINITIONS

Adverse reaction means, for the purpose of this procedure, an undesirable and unintended response to the transfusion of blood components or products that is considered to be definitely, probably or possibly related to the transfusion.

Alternate decision-maker means a person who is authorized to make decisions with or on behalf of the patient. These may include specific decision-maker, a minor’s legal representative, a guardian, a ‘nearest relative’ in accordance with the Mental Health Act (Alberta), an agent in accordance with a Personal Directive, or a person designated in accordance with the Human Tissue and Organ Donation Act (Alberta).

Authorized prescriber means a health care professional who is permitted by Federal and Provincial legislation, her/his regulatory college, Alberta Health Services and practice setting (where applicable) to prescribe medications.

Blood components means, for the purpose of this procedure, the therapeutic parts of blood used for transfusion, namely, packed red blood cells, plasma, platelets and cryoprecipitate.

Blood products means, for the purpose of this procedure, the therapeutic parts of blood derived from plasma by manufacturing companies. Examples include albumin, intravenous immune globulin, and prothrombin complex concentrates.

Co-decision-maker means a person selected by the patient and appointed by the Court to make decisions in partnership with the patient, when the patient has significantly impaired capacity but can still participate in decision-making.

Family 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.

Hand hygiene means practices which remove micro-organisms, with or without soil, from the hands (refers to the application of alcohol-based hand rub or the use of plain/antimicrobial soap and water hand washing).

Health care professional means an individual who is a member of a regulated health discipline, as defined by the Health Disciplines Act (Alberta) or 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 Alberta Health Services legal record of the patient’s diagnostic, treatment and care information.
Informed consent means the agreement of a patient to the patient undergoing a treatment/procedure after being provided with the relevant information about the treatment/procedure(s), its risks and alternatives and the consequences of refusal.

Issue means, for the purpose of this procedure, 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).

Legal representative means the following in relation to a minor, as applicable:

a) guardian; or

b) nearest relative as defined in the Mental Health Act (Alberta),

who has the authority to consent to treatment for a minor formal patient or minor who is subject to a Community Treatment Order.

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 means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by Alberta Health Services to perform the duties required to fulfill the delivery of such a treatment/procedure(s), within the scope of his/her practice.

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.

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

a) a co-decision-maker with the person; or

b) an alternate decision-maker on behalf of the person.

Transfusion service identification number (TSIN) means, for the purpose of this procedure, 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 utilized 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 dependent upon the blood services provider, e.g., RTSIS (Regional Transfusion Service Identification System), BBIN (Blood Bank Identification Number), TMID (Transfusion Medicine Identification).
**Unique identifier** means for the purpose of this procedure the patient’s unique lifetime identifier (ULI), or if ULI is not available, a Personal Healthcare Number (PHN), hospital number, military identification number or valid health insurance number (out-of-province/country patients).

**REFERENCES**

- Alberta Health Services Governance Documents:
  - Consent to Treatment/Procedure(s) Policy suite (#PRR-01)
  - Consent to Treatment/Procedure(s) Adults with Impaired Capacity and Adults Who Lack Capacity Procedure (#PRR-01-02)
  - Consent to Treatment/Procedure(s) Minor/Mature Minors Procedure (#PRR-01-03)
  - Hand Hygiene Procedure (#PS-02-01)
  - Patient Identification Policy (#PS-06)
  - Transfusion of Blood Components and Products Policy (#PS-59)

- Alberta Health Services Forms:
  - Consent to Treatment Plan or Procedure Form (#09741)
  - Emergency Health Care: Documentation of Exception to Consent Form (#18629)

- Alberta Health Services Resources:
  - Acute Transfusion Reaction Chart
  - Key Transfusion Activities Matrix
  - Transfusion Medicine Blood Components and Products Information/Monographs (Laboratory Services)
  - Transfusion of Blood Components and Products Learning Module

- Non-Alberta Health Services Documents:
  - CSA Z902, Blood and Blood Components (CSA Group)
  - Infusion Nursing Standards, 2016 (Infusion Nurses Society)
  - Standards for Hospital Transfusion Services (Canadian Society for Transfusion Medicine)

**VERSION HISTORY**

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<td>January 30, 2017</td>
<td>Replaced PS-59-01 &amp; PS-59-02</td>
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<tr>
<td>February 22, 2019</td>
<td>Non-substantive change</td>
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