Guideline SK 15

Administration of Blood Components and Blood Products

1.0 Principle

1.1. To provide guidelines for the preparation, initiation, administration, monitoring and termination of transfusion of blood components and blood products.

2.0 Definitions

2.1. Blood component – a therapeutic component of blood intended for transfusion, namely red cells, platelets and plasma. [15.9]

2.2. Blood product – any therapeutic product, derived from blood or plasma, and produced by a manufacturing process that pools multiple units (usually more than 12). [15.9]

Note: Examples of blood products are human serum albumin, immunoglobulin preparations, and coagulation products (factors VIII and IX, fibrinogen, anti-thrombin III, etc.).

2.3. Females of child bearing age – for the purposes of transfusion medicine in Saskatchewan, a female of child bearing age is defined as 45 years of age or younger.

2.4. Informed Consent – is a discussion within a shared decision-making process between the patient or substitute decision maker and the Most Responsible Practitioner (MRP), resulting in the patient or substitute decision maker's decision regarding the proposed health care. [15.17]

2.5. Issue – release of blood components or blood products from the transfusion medicine laboratory (TML) or a temperature controlled environment.

2.6. Most Responsible Practitioner – the physician/practitioner/nurse practitioner with the overall responsibility for directing and coordinating the care of a patient at the specific point in time. [15.17]

2.7. Pickup slip – a written record or form containing key identification elements that is presented when a blood component or blood product is released (issued) for transfusion.

2.8. Patient identity verification – the process by which a patient's identity is confirmed. The process requires engaging the patient in identifying themselves whenever possible and using at least two (2) person-specific identifiers to confirm the patient receives the service or procedure intended for them. [AC 22.2.1]

2.9. Pre-transfusion Independent Double Check – process whereby two (2) regulated health care professionals with required competencies **independently** check the blood component or blood product and verify the patient identification on the product to the patient prior to blood administration. All identifying information linking the patient to the blood component or blood product must be matched.

2.9.1. Verification of patient and product identification shall be completed in the physical presence of the patient immediately before transfusion using the patient's identification band or using other means of patient identity

verification (e.g. government-issued proof of identification, resident photo ID, etc.). [AC 22.3]

2.10. Qualified Transfusionist – regulated health professionals authorized to initiate transfusion of a blood components and/or blood products within their respective scope of practice under applicable provincial legislation, regulations, and/or bylaws, and who have successfully completed outlined training that includes transfusion administration, recognition, and management of adverse transfusion reactions.

2.11. Regulated Health Care Professional – a health professional who is a member of a regulated health profession and is licensed or registered to provide health care under provincial legislation specific to his or her profession.

2.12. Special Transfusion Requirements – blood components which have undergone modifications or with attributes necessary to meet unique patient needs.

- Blood component modifications include irradiation, washing, pooling or dividing.
- Blood component attributes include, but are not limited to, autologous red blood cells, phenotypically-matched red blood cells, IgA deficient plasma, and HLA or HPA matched apheresis platelets.

2.13. Transfusion label/tag – a laboratory generated label or tag attached to the blood component/blood product that contains key identifiers and links the intended patient to the blood component or blood product.

2.14. Transfusion-associated circulatory overload (TACO) – an adverse transfusion reaction characterized by acute or worsening respiratory compromise and/or evidence of pulmonary edema during or up to 12 hours after transfusion. [15.5]

2.15. Transfusion-related acute lung injury (TRALI) – development of new, acute hypoxemia with a chest x-ray showing bilateral infiltrates in the absence of circulatory overload, occurring during or within six hours from the time the blood transfusion is discontinued or completed. [15.1]

2.16. Transporter (also known as a blood porter) – a health care worker qualified by training and competency assessments to pick up and transport blood components and/or blood products internally within a facility. Transporters may include regulated health care professionals or unregulated health care workers such as porters, nursing students, health care aides and unit clerks.

2.17. Two-person check – a cooperative process whereby two (2) health care professionals or a health care professional and health care provider verify patient/product/documentation identification details during collection of pre-transfusion samples and blood component or product issue/sign out from the blood storage location. The first person leads and verbalizes all of the necessary elements and the second person verbally confirms after each element is checked, utilizing at least two (2) unique person-specific identifiers.

3.0 Acronyms

3.1. CBS – Canadian Blood Services

3.2. HSN – Health Service Number

3.3. MRN – Medical Record Number

3.4. MRP – most responsible practitioner

3.5. TACO – transfusion-associated circulatory overload

3.6. TML – transfusion medicine laboratory

3.7. TRALI – transfusion-related acute lung injury

3.8. TSIN – transfusion service identification number

4.0 Scope and Related Policies

Transfusion Guidelines

4.1. The most responsible practitioner (MRP) making the decision to transfuse a patient must ensure that the potential benefits of transfusion outweigh the risks, promote optimal patient outcomes and support appropriate utilization of blood as a scarce resource.

4.2. Choosing Wisely Canada transfusion recommendations, clinical practice transfusion guidelines based on evidence-based data, and patient blood management initiatives are transfusion strategies that focus on avoiding or minimizing transfusion of blood and improving patient outcomes by reducing unnecessary transfusion.

4.3. Refer to Saskatchewan's Transfusion Best Practice Recommendations for adult, pediatric and neonate patients available on SaskBlood's website.

Informed Consent and Refusal of Consent

4.4. Written (signed) consent shall be obtained by the MRP prior to transfusion of a blood component and a plasma-derived blood product. WCAA TM.7.0.1; CSA 11.2.1; AC 21.2, 21.4

4.4.1. Informed consent is not required for recombinant clotting factor concentrates because these products do not contain human plasma and are not classified as blood products.

4.5. In emergency situations of health threatening or life threatening bleeding, the MRP prescribing the transfusion may declare that the transfusion proceed without informed consent. WCAA TM.8.1.7; CSA 10.9.3; AC 20.10

4.5.1. Transfusion records shall include a signed declaration (electronic or written) by the MRP 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. When possible, informed consent should be obtained from the recipient. WCAA TM.8.1.7; CSA 10.9.3.5

4.5.2. Healthcare practitioners shall consult local policies to ensure compliance with emergency treatment protocols.

4.6. For the purposes of Transfusion Medicine in Saskatchewan, the duration of consent is for either one admission or, if a patient suffers from a chronic condition, for one course of treatment within 12 months, so long as the patient's condition or medical knowledge in general about the condition has not significantly changed. Approved by the Senior Medical Officer Committee on May 11, 2011

4.7. Evidence of acceptance or refusal of informed consent for the transfusion of blood components or blood products shall be clearly documented on the patient's health record in accordance with facility-specific policies.

4.8. For additional information, refer to Guideline SK 1 Informed Consent or Refusal of Consent.

Special Transfusion Requirements

4.9. Consideration should be given to whether the patient requires any special blood requirements. Refer to Special Requirements for Blood Components available on SaskBlood website.

4.10. It is the responsibility of the MRP requesting blood components to check the patient's transfusion history and to ensure any special requirements are communicated to the TML on the transfusion order.

Transfusion Order

4.11. A comprehensive transfusion order from a MRP is required for the transfusion of blood components and blood products. WCAA TM.11.1.2; CSA 10.2, 11.4.3, 11.4.4, 14.3; AC 19.2

4.12. The transfusion order for blood components and blood products must include: WCAA TM.11.1.2; CSA 10.2, 11.4.3, 11.4.4, 14.3; AC 19.2

a) patient's first and last name and unique identification number;

b) the indication for the transfusion;

c) the type and amount of blood component and/or blood product;

d) the rate or duration of the unit or dose;

e) any special requirements (e.g., use of a rapid infuser and/or blood warmer, irradiation of blood components);

f) the sequence of infusion if more than one type of blood component and/or blood product is to be transfused;

g) any pre- and post-medication orders or pre- and post-laboratory tests, as required; and

h) authorization to collect a transfusion reaction investigation if symptoms occur during or post-transfusion.

4.13. Only complete, accurate and legible requisitions shall be accepted by the TML. WCAA TM.7.0.2; CSA 10.2.2

4.14. All transfusion orders, including electronic, verbal, telephone, printed or handwritten, shall be documented as a permanent part of the patient's health record.

4.15. Refer to Guideline SK 2 Transfusion Orders for Pre-transfusion Tests and Blood Components/Products.

Verification of Patient Identity

4.16. Patient identification is essential at all stages of the transfusion process. WCAA TM.11.2.1; CSA 11.3.1, 11.3.2, 11.3.3, 12.4.3

4.17. The facility shall have written procedures for establishing patient identification in situations where the patient's identity and/or unique identification number is not available. WCAA TM.7.0.3; CSA 10.2.5, 10.2.7

4.18. Whenever possible and immediately prior to transfusion, patients shall be asked to state their full name and date of birth to verify they are wearing the correct identification band. For patients who are unable to identify themselves (pediatric, unconscious, confused or language barrier) verification of identity shall be obtained from a parent or responsible caregiver at the bedside. WCAA TM.11.2.1; AC 22.2

4.19. A temporary identification number (i.e. trauma number), estimated date of birth and sex shall be used in emergencies until the patient's identity and/or unique identification number can be verified.

Collection of Pre-transfusion Samples

4.20. Unless there are qualifying exemptions (e.g. long-term care facilities which use resident photo IDs for patient identity verification), all facility-registered patients shall be wearing a patient identification band at the time of sample collection.

4.20.1. In the absence of an identification band there must be some other means of patient identity verification (e.g. government-issued photo ID, resident photo ID, etc.).

4.21. Patients with unknown identity and/or absent unique identification number who need to be treated in life-threatening emergency situations shall be assigned a temporary identification band including a first and last name and unique identifier at the time of sample collection. WCAA TM.7.0.3; CSA 10.2.5

4.22. At facilities where implemented, a TSIN band shall be applied when a transfusion order for a blood component (i.e. RBCs, platelets, plasma) requires a valid group and screen.

4.23. A two-person check to complete patient identity verification (or a one-person patient identity verification accompanied by an electronic positive patient identification system, e.g. bar-coding) shall be done at the patient's bedside before collection of a pre-transfusion sample. WCAA TM.7.0.3; CSA 10.2.5, 10.2.6, 10.2.7, 10.3.1, 10.3.2

4.23.1. The person who draws the patient's pre-transfusion sample verifies the patient's identity.

4.23.2. If able, the patient can confirm their identity by stating their first and last name along their date of birth. In situations where the patient is too young, is not competent, is unable to communicate or has no identification, a family member, caregiver or a qualified health care professional familiar with the patient may provide verification of the patient's identity.

4.23.3. If inaccuracies or discrepancies are discovered during the identification process, blood samples shall not be collected until the discordances have been satisfactorily resolved.

4.24. The two-person check shall be documented on the pre-transfusion test requisition. One signature from the phlebotomist (collected by) and a second signature from the identifier of the patient (identified by) shall be completed at the patient's side. WCAA TM.7.0.3

4.25. Pre-transfusion samples shall be labelled in the presence of the patient at the time of collection with the patient's full name and unique identification number. WCAA TM.7.0.3; CSA 10.3.2

4.26. Refer to Guideline SK 3 Patient Identification and Labelling of Pre-transfusion Samples including use of the SK TSIN System.

Sample Validity for Pre-transfusion Testing

4.27. Samples for pre-transfusion compatibility testing shall be collected and used within the appropriate timeframe. WCAA TM.7.0.5; CSA 10.4.2, 10.4.3

4.27.1. Group and screen samples shall be collected within 96 hours prior to scheduled transfusion. WCAA TM.7.0.5; CSA 10.4.2

4.27.2. Following transfusion of the first unit of blood, the original blood sample may be used to crossmatch additional units within 96 hours.

4.27.3. For in-patient neonates (infants less than 4 months (120 days) old), the group and screen is valid for 4 months post-gestation as long as the neonate has never been discharged home or to an outpatient setting. At 4 months of age, pre-transfusion testing must be repeated every 96 hours as indicated. WCAA TM.12.2.1; CSA 10.9.1.4

4.28. For pre-operative patients who have not been transfused or have been pregnant within the preceding three months and who do not have an ABO discrepancy, positive antibody screen or previously identified antibodies, the sample outdate may be extended up to a maximum of 28 days from the sample collection date. Refer to facility-specific TML protocols. WCAA TM.7.0.5; CSTM 5.2.3.5

4.29. Refer to Guideline SK 4 Acceptance Criteria and Sample Suitability for Pre-transfusion Testing.

Pre-transfusion Testing

4.30. Pre-transfusion testing shall be performed to ensure blood components transfused are compatible with the patient's blood. WCAA TM.8.1.5; CSA 10.6.1, 10.6.2

4.31. Confirmation of the patient's blood type by testing of a second, independently collected sample (drawn at a different time and, preferably, by a different person) is required prior to issue of ABO-group specific red blood cells when there is no historical ABO/Rh on file. The purpose of this standard is to prevent ABO-incompatible transfusion errors. WCAA TM.8.1.5; CSA 10.6.1.3

4.32. Females 45 years of age or younger shall receive Kell (K) negative red blood cells whenever possible to minimize the risk of alloimmunization. WCAA TM.8.2.3, CSA 10.7.4

4.32.1. Providing Kell negative units may not be possible in urgent, massive transfusion situations, or when the patient requires special donor unit attributes or red cells negative for other red cell antigens. In these circumstances, Kell positive or Kell status unknown red blood cells may be administered. Transfusion Medicine Physician consultation is recommended.

4.33. Refer to Guideline SK 9 Selection of Blood Components for Transfusion and Special Transfusion Requirements.

Emergency Release of Uncrossmatched Blood

4.34. In the absence of written consent, release of uncrossmatched blood should not be withheld in emergencies. See step 4.5.

4.35. Pre-transfusion testing (i.e. ABO/Rh, group and screen, crossmatch) should be completed as soon as possible and blood components of the appropriate group issued.

4.36. If any incompatibility is detected, the TML shall inform the MRP.

4.37. Refer to Guideline SK 10 Emergency Release of RBCs and Plasma and Guideline SK 20 Emergency Neonatal RBC Transfusion.

IV Access

4.38. A dedicated line is required for the administration of blood components or blood products.

4.39. Blood components and blood products may be administered through a variety of venous access devices.

4.39.1. Peripheral Intravenous Catheter (PIVC):

- Adults: Use 20- to 22-gauge based on vein size and patient preference. Use a large-size catheter gauge when rapid transfusion is required (e.g. 14- to 18-gauge).
- Infants/children: Options include the umbilical vein (neonates) or a vein large enough to accommodate a 22- to 25-gauge catheter.
- Transfuse RBCs at a slower rate when using small-gauge catheters; the pressure with rapid transfusion via a small-gauge catheter may cause hemolysis.

4.39.2. Central Venous Access Device (CVAD):

- Medications or other IV fluids can be infused through other lumens without affecting the blood component or blood product.

4.39.3. Intraosseous (IO) Vascular Access:

- IO vascular access is used in medical emergencies requiring immediate access when peripheral IV access is either not possible or time prohibiting, such as cardiac arrest, shock and trauma.

Administration Sets

4.40. Administration set requirements vary for blood components and blood products. These requirements shall be outlined in a facility-specific policy, which should be developed in consultation with the TML.

4.41. Blood components shall be transfused through a standard blood transfusion set (170 – 260 micron filter). The blood administration set shall be changed in the following settings: WCAA TM.11.3.1; TM.11.3.2; CSA 11.4.2, 11.4.8, 11.4.9, 11.4.10, 11.4.11, 11.4.12, 11.4.13, 11.4.14, 11.8

- Four (4) consecutive units of identical blood components have been transfused through it; or

- Four (4) hours of time; or
- More than sixty (60) minutes has elapsed between transfusions, or
- When switching from one blood component to another blood component (RBCs to platelets); or
- The filter / administration set becomes occluded.

4.42. Blood products shall be administered as per manufacturer's instructions. [WCAA TM.11.3.1; CSA 11.4.2, 11.4.8, 11.4.12, 11.8]

4.42.1. A standard vented IV administration set should be used for administration of product in glass bottles such as albumin and IVIG. Use of a needle to vent these bottles is not appropriate.

4.42.2. Many of the manufactured blood products are supplied with specific ancillary devices to aid in both the reconstitution and infusion of the product. If a blood product is without accompanying tubing, refer to the blood product monograph to determine what, if any filtration is required.

4.43. Gravity administration sets should only be used when rapid administration is required with diligent monitoring of volume (i.e. massively bleeding patient).

Connecting the Blood Administration Set

4.44. All connections are to be secured and directly luer locked to the insertion site or add-on extension tubing. Air shall not be introduced into the blood component bag or administration set. [WCAA TM.11.3.2]

4.45. The use of add-on devices (e.g. stopcocks, extension sets, y-connectors and needleless connectors) shall be limited whenever possible to decrease excessive manipulations, accidental disconnections or misconnections, and risk of contamination and subsequent infection. [15.11]

Compatible IV Solutions

4.46. Blood components and blood products shall be administered with compatible IV solutions. [WCAA TM.11.3.2; CSA 11.4.9]

- Blood components: 0.9% sodium chloride (normal saline) and Plasma-Lyte A® (crystalloid solution) are equally compatible with blood components.
- Blood products: refer to manufacturer's product monograph for specific compatible IV solution.
- IVIG: 5% Dextrose in water (D5W) or specific compatible IV solution as indicated by manufacturer's product monograph
- Neonate and pediatric patients weighing less than 20 kg: prime the administration set and line with the prescribed blood component or blood product. [15.21]

Pre-medications

4.47. Routine pre-medication is not advised unless the patient has a documented history of previous moderate or severe transfusion reactions.

4.48. The patient's medication regimen should be reviewed before transfusion.

4.49. Administration of pre-medications requires an order from the treating MRP.

Emergency Medications

4.50. Emergency medications shall be readily available wherever transfusion is carried out (e.g. epinephrine, antihistamine(s), steroid(s), and albuterol).

4.51. Refer to Clinical Procedure (with Medical Directive): CS-CP-0014 Anaphylaxis – Identification and Initial Treatment – Acute and Continuing Care Settings AND SHA 0232 Anaphylaxis Treatment Worksheet for management of anaphylactic transfusion reactions.

Co-administration of Intravenous Medications and Blood

4.52. Medications shall NOT be added to the blood bag or infused through the same tubing as blood components and/or blood products. WCAA TM.11.3.2; CSA 11.4.11

4.52.1. Caution should be used when simultaneously administering medications linked to hypersensitivity reactions via another IV line or CVAD lumen since distinction between medication-related symptoms and transfusion reactions may be difficult.

4.53. Only in emergent/life-threatening circumstances, or if there has been an adverse transfusion reaction, and after attempt has been made to secure a second IV line without success: the transfusion may be stopped, the tubing flushed with a minimum of 10 mL 0.9% sodium chloride (or compatible IV solution) at the most distal port, and a medication may be administered. The tubing must be flushed again with compatible IV solution after injecting the medication to prevent mixing of the blood product and medication. The transfusion may then be resumed.

Infusion Devices

4.54. All infusion devices used in the transfusion process must be approved by Health Canada and the manufacturer and be maintained in accordance with the manufacturer's specifications for continued safety. Health-care facilities must have an approved process for ongoing inspection and validation for all infusion devices. WCAA TM.4.4.1; CSA 11.4.1, 11.4.2, 11.5.1, 11.5.2, 23.1.1, 23.1.2, 23.4.1, 23.4.2

4.55. Prior to implementing the use of an infusion device, confirmation should be obtained from the manufacturer that the device has been approved for use in transfusing blood components and blood products.

4.56. The use of specialized infusion devices other than a standard infusion pump requires a physician order and shall be recorded in the patient's health record. WCAA TM.11.1.2; CSA 11.4.3

4.57. All infusion devices are medical devices. Any errors or malfunctions of these devices which pose a risk to patient safety shall be reported as Medical Device Incidents to Health Canada – Canada Vigilance. Contact the Transfusion Medicine Physician on-call should there be any concern related to a blood infusion device.

a) Infusion Pumps

4.58. Infusion pumps deliver solutions at a controlled rate and measurement and should be used during routine transfusions to enhance patient safety.

4.59. Only infusion pumps approved for blood administration can be used with transfusions, since other pumps may cause hemolysis.

4.60. Periodic assessment must be performed during the administration of blood components or products to ensure safe and accurate delivery of the prescribed infusion rate and volume.

b) Pressure Bags

4.61. Pressure bags may be used when a critically ill or injured patient requires a rapid administration of blood components or products because of an emergency situation, such as massive bleeding.

4.62. Pressure bags must be equipped with a pressure gauge and pressure should not exceed 300mm Hg.

4.63. Pressure bags must be continually monitored during use because excess pressure may cause red cell hemolysis and/or rupture the seams of the blood bag.

4.64. Blood pressure cuffs are not suitable because they do not exert uniform pressure against all parts of bag, possibly causing the bag to leak.

c) Blood Warmers

4.65. Blood warmers may be used by healthcare professionals trained to use this equipment in settings to reduce hypothermia risk attributable to rapid infusion of large volumes of refrigerated blood in the operating room or trauma setting.

Note: A blood warmer device is <u>not</u> generally recommended for routine transfusion for a patient with cold agglutinin disease; use of extension tubing tucked alongside the patient is preferred.

4.66. Routine warming of blood on a patient care unit is **NOT** recommended.

4.67. Blood warmer devices should have a temperature alarm system if the temperature exceeds 42°C.

4.68. A MRP order is required for the use of a blood warmer except in clinical areas where there are established facility-specific policies and procedures. WCAA TM 11.1.2

4.69. When a blood warmer is used, the temperature upon initiation and the unique identifier of the device (e.g., serial number) should be documented in the patient's health record.

d) Rapid Infusion Devices

4.70. Rapid infusion devices are designed to warm and actively administer large fluid volumes quickly and may be lifesaving in the patient with rapid and uncontrolled hemorrhage.

4.71. All of the principles related to infusion pumps, pressure bags and blood warmers apply to use of rapid infusion devices (e.g. Level 1 Rapid Infuser or Belmont) in acute care settings.

4.72. A MRP order is required for the use of a rapid infuser except in clinical areas where there are established facility-specific policies and procedures. WCAA TM 11.1.2

Rate of Infusion

4.73. The rate of infusion shall be specified either by a MRP, or in the facility standard operating procedures for transfusion.

4.74. Infusion rates depend on the patient's blood volume, cardiac status and hemodynamic condition and are predetermined by the patient's MRP.

Patient/Responsible Caregiver Education

4.75. The qualified transfusionist shall explain the procedure to the patient or responsible caregiver 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.

4.76. Specific written instructions concerning possible adverse events shall be provided to the patient or responsible caregiver when direct medical observation or monitoring of the patient will not be available after transfusion. TM.11.3.4; CSA 11.4.16

Pre-transfusion Patient Assessment

4.77. Pre-transfusion patient assessment and a measurement of baseline vital signs shall be obtained and documented within 30 minutes prior to transfusion, including temperature, blood pressure, pulse rate, respiration rate, oxygenation saturation (SpO2) and oxygen source.

4.78. Pre-transfusion patient assessment shall include:

4.78.1. Identification of any pre-existing symptoms (e.g. fever, rash, shortness of breath and lower back pain).

4.78.2. Review of patient's transfusion history to determine if the patient has any red cell antibodies, previous transfusion reactions or special patient requirements.

4.78.3. Assess patients at increased risk for developing serious adverse transfusion events:

- Screen patients for transfusion-associated circulatory overload (TACO) risk factors. If indicated, follow up with the MRP for prevention strategies. See 11.0 Job Aid: Pre-transfusion Risk Assessment for TACO.
- Screen patients receiving IVIG for increased risk of developing thrombosis, renal dysfunction or acute renal failure. If pre-existing risk factors are evident, administer IVIG at the minimum dose and infusion rate practicable.

4.78.4. Confirm the following pre-transfusion testing is complete and in-date:

- RBC Orders: ABO/Rh Group and Antibody Screen (Type and Screen)
- Platelet, Plasma, IVIG Orders: ABO/Rh Group (only)

4.78.5. Presence of an appropriate and patent venous access device (VAD).

4.79. Findings of the pre-transfusion assessment shall be documented on the patient's record of transfusion or health record as per facility-specific policy.

Obtaining Blood Components and Blood Products

4.80. Only health care providers who have completed appropriate training and competency assessments are allowed to obtain and/or transport blood components and blood products. Valid institutional identification is required. WCAA TM.1.2.3, T.M.1.2.4; CSA 4.3.2.1, 4.3.2.2, 4.3.4, 4.3.6.2, 14.4.2

4.81. Blood components and blood products should be obtained from the TML or temperature controlled storage device/location immediately prior to the transfusion in order to maintain proper storage conditions. WCAA TM.6.3.1; CSA 11.4.5

4.82. A pickup slip shall be provided to the TML when blood components or blood products are requested to be issued. The pickup slip shall include at least the following information: WCAA TM.10.2.8; CSA 10.2.4, 14.3

a) patient's first and last name(s);

b) patient's unique identification number;

c) patient's location;

d) type of blood component or blood product; and

e) required quantity of blood component or blood product being issued.

4.83. Verification of the information above must be done at the time the blood TML approved pneumatic tube system (if available) for blood component or blood product delivery is in use.

4.83.1. Refer to Guideline SK 12 Transporting Blood Components and Blood Products within a Facility for Pneumatic Tube Transport requirements.

4.84. All blood components and blood products shall have a transfusion label/tag attached when removed from TML.

4.85. The issue or sign-out of blood components and products from the TML shall be performed by two (2) health care providers, at least one of whom must be a trained TML employee (e.g. MLT, CLXT) or a trained regulated health care professional (e.g. RN, RN(NP), RPN, LPN).

4.85.1. The second health care provider may be a transporter who is trained and authorized to perform this task. See step 2.16 for definition of transporter.

4.85.2. The signature of each health care provider must be documented on a manual issue record or in a laboratory information system.

4.86. Exceptions to the two-person issue or sign-out requirement are:

- blood components or blood products signed out of a 'smart' refrigerator (e.g., Haemonetics system) by a system-authorized health care provider; or
- when only one health care professional is available in the facility (e.g., remote nursing station).

4.87. Refer to Guideline SK 12 Transporting Blood Components and Blood Products within a Facility.

Handling Blood Components and Blood Products

4.88. Transfusion of blood components and/or blood products shall be initiated as soon as the blood component and/or blood product is available in the patient care area. The blood component or blood product shall be returned to the TML if it cannot be initiated within 60 minutes from the time of issue as identified by the time documented on the transfusion label/tag. WCAA TM.10.2.11; CSA 10.10.5.2

4.88.1. Refer to Guideline SK 8 Issue and Return of Blood Components and Blood Products.

4.89. Blood components must be transfused within 4 hours of issue from the TML (or component modification, if applicable). Blood products must be infused within 4 hours of accessing the vial. WCAA TM.11.3.5; CSA 11.4.6

4.89.1. If 4 hours has elapsed and the transfusion is not complete, the transfusion must be discontinued and the remaining blood component or blood product discarded. The MRP shall be notified by the transfusionist if the transfusion is not completed.

4.90. Blood components or blood products may be transported to patient care area in a transport container that is temperature validated for a specific timeframe outside of the TML. Refer to facility-specific time limits for the individual type of transport container in use.

4.90.1. Once opened, any blood component/product in the transport container must be administered immediately or returned to the TML within sixty (60) minutes.

4.91. In non-urgent/non-bleeding/in-patient settings, blood components should be transfused during daytime hours (for patient safety) and transfused one unit at a time.

Health Care Professionals Qualified to Initiate a Transfusion

4.92. The facility shall provide appropriate training and competency assessments for all regulated health care professionals involved in the administration of blood components and blood products. WCAA TM.1.2.3, TM 1.2.4; CSA 4.3.2.1, 4.3.2.2, 4.3.3.1, 4.3.3.2, 4.3.4, 4.3.6.2, 14.4.2

4.93. Practitioners and regulated health professionals authorized to initiate transfusion of a blood component and/or blood product within their respective scope of practice under applicable provincial legislation, regulations and/or bylaws includes:

- Physician (within their training, expertise and scope of practice)
- Physician Trainee (within their training, expertise and scope of practice)
- Registered Midwife (in accordance with his/her granted facility privileges)
- Nurse Practitioner (NP)
- Registered Nurse (RN)
- Registered Psychiatric Nurse (RPN)
- Licensed Practical Nurse (LPN) with entry-level education and competencies. LPNs without education specific to the administration of blood components or

blood products are required to take additional training or education prior to administering blood components or blood products.

- Certified Clinical Perfusionist
- Critical Care Paramedics (CCPs) following applicable clinical protocols (e.g. STARS and SAA critical care paramedics)

4.93.1. Registered Nurse (Graduate Nurse Practitioner) (RN(GNP)), Graduate Nurse (GN), Graduate Psychiatric Nurse (GPN) and Graduate Licensed Practical Nurse (GLPN) must be supervised by the appropriate licensed professional.

4.93.2. Interpretation of the scope of practice of regulated health professionals can be accessed at each applicable licensing and regulating health professional organization's website.

Pre-transfusion Independent Double Check

4.94. Immediately before initiating transfusion of a blood component and/or blood product, two (2) regulated health care professionals with required competencies (e.g. qualified transfusionists), shall complete a **pre-transfusion independent double check** in the physical presence of the patient. WCAA TM.11.2.1; CSA 11.3.1

4.94.1. A one-person pre-transfusion check can only be conducted if the first check is completed by a qualified transfusionist and the second check is done by an approved electronic positive patient identification system (e.g. bar-coding) designed for this purpose.

4.95. The pre-transfusion independent double check shall be led by the qualified transfusionist who is responsible for administering the transfusion and the verifier shall be a second healthcare professional, or a health care provider who is authorized and competent to perform this task.

4.96. The pre-transfusion independent double check shall include the following verifications:

- Verification of patient identity (see step 2.8)
- ABO/Rh compatibility verification of patient and blood component
- Unit number (blood components) or lot number (blood products) verification
- Visual inspection and expiry date/time verification

4.97. All identifying information linking the patient to the blood component or blood product shall be identical. If any discrepancy is detected in the identifying information, the transfusion shall not be initiated until the discrepancy is resolved. WCAA TM.11.2.1; CSA 11.3.2, AC 22.3

4.98. Each regulated health care professional must co-sign the required transfusion documentation (this is not applicable where an approved electronic positive patient identification system is used for verification).

4.99. Refer to Guideline SK 14 Pre-transfusion Independent Double Check.

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

- patient first and last name;

- patient identification number (i.e. HSN, MRN or other unique identification number);
- the TSIN if applicable;
- blood component or blood product in the container (include blood group and Rh if applicable);
- unit number or lot number of component or product; and
- volume of component or product in container.
- the initials or signature of the regulated health care professional who is preparing the transfer to the secondary container.

4.101. The transfusion label/tag shall remain attached to the blood component or blood product at least until completion of the transfusion. WCAA TM.11.2.1; CSA 11.3.3

Patient Monitoring

4.102. The patient shall be observed during the transfusion and for an appropriate time after the transfusion for signs and symptoms of a transfusion reaction. TM.11.3.4; CSA 11.4.15, 11.4.16, 18.1.1

4.103. The transfusionist should remain with, or be in a position, to closely observe the patient for the first 5 to 15 minutes following the start of each unit.

4.104. Vital signs shall be assessed and recorded at:

- Within 30 minutes before starting the transfusion
- 15 minutes after the transfusion has started
- Every hour during the transfusion
- At the end of transfusion of each unit
- As clinically indicated

4.105. For IVIG, in addition to above frequency for monitoring vital signs, vital signs shall also be assessed and recorded at:

- 30 minutes after any changes in infusion rate
- 30 minutes after introduction of a new lot number

Note**:** Subsequent vials with different lot numbers do not have to be restarted at initial rate.

4.106. More frequent assessment is recommended for patients:

- Who are clinically unstable prior to transfusion
- With a history of previous transfusion reaction(s)
- Who appear to be experiencing a transfusion reaction
- With increased risk of developing serious adverse transfusion events (e.g. TACO, TRALI, thromboembolic event)

4.107. Unconscious patients require continuous observation and monitoring. An adverse transfusion reaction should be considered in the event of any deterioration in the patient's condition during or immediately following a transfusion.

4.108. For blood products administered via subcutaneous or intra-muscular route over less than 5 minutes, vital signs shall be assessed prior to administration and at least 15 minutes post-dose for any adverse effects. Refer to the manufacturer's instructions for monitoring requirements.

Completing the Transfusion

4.109. Post-transfusion vital signs shall be obtained prior to removal of direct venous access and at completion of the transfusion.

4.110. Inpatients should be periodically monitored for signs and symptoms of an acute transfusion adverse reaction for a minimum of 4 hours after transfusion completion.

4.111. In an ambulatory or outpatient setting, patient vitals should be obtained at least 15 minutes post-transfusion.

4.112. Following the transfusion, the record of transfusion (or a copy) shall be added to the patient's health record. WCAA TM.11.3.6; CSA 11.1.2.3, 11.1.2.4, 11.4.17, 18.2.3

4.113. Disposal of all blood components and blood product containers and administration sets must meet routine practice standards according to facility-specific policy.

Patient Notification

4.114. Inpatients receiving blood components or blood products shall receive written notification of the transfusion as per facility-specific mechanisms. WCAA TM.10.1.2; CSA 11.2.2

Documenting the Transfusion

4.115. Document the transfusion event according to facility-specific policy.

4.116. Documentation shall include date, start and finish times, blood component or blood product transfused, unit or lot number, names or persons starting and monitoring the transfusion, vital signs, volume transfused, and all interventions related to the transfusion. WCAA TM.11.3.6; CSA 11.1.2.3, 11.1.2.4, 11.4.17, 18.2.3

Transfusion Checklist

4.117. The administration of blood components and blood products involves many steps and each of these may be subject to error. The application of a transfusion checklist can help improve the quality of patient care and promote transfusion safety. See step 14.0 Job Aid: Transfusion Checklist Poster.

Medical Transfer of Patient with Ongoing Transfusion of Blood Components or Blood Products

4.118. Patients should NOT be transported while receiving blood transfusion unless the situation is critical and transport staff have been trained to monitor the patient for development of adverse transfusion reactions. Consultation with the Transfusion Medicine Physician on call is recommended in these scenarios.

4.119. If medical transfer is critically required, then pre-transfusion and 15-minute vital signs should be taken and documented on the patient's health record before the patient leaves the sending facility. A copy of this documentation shall accompany

the patient during transport. Clinical documentation on the patient's health record should clearly indicate:

- Transfusion orders;
- Status of the transfusion; and
- Vital signs.

4.120. The patient assessment completed by the MRP arranging transport will determine whether the patient needs to be accompanied by an escort (e.g. nurse, physician, paramedic) and the category of care provider needed. The escort must have the knowledge, skill and expertise to deliver the anticipated care during transport.

4.121. The scope of practice of paramedics in Saskatchewan is set by the Saskatchewan College of Paramedics (SCOP), through The Paramedics Act, the Regulatory Bylaws pursuant to The Paramedics Act, related policies, as well as the Saskatchewan Paramedic Clinical Practice Protocols that have been approved by the College of Physicians and Surgeons of Saskatchewan.

- Under the direction of a Transport Physician, STARS and SAA Critical Care Paramedics (CCPs) are authorized to initiate administration of blood components and blood products following applicable clinical protocols.
- Primary Care Paramedics (PCPs), Intermediate Care Paramedics (ICPs) and Advanced Care Paramedics (ACPs) may only monitor transfusions that have already been initiated.

4.122. If a critical care nurse or a critical care paramedic is not present during emergency medical transfer of a patient and there is a potential need for transfusion en route, then a regulated health care professional authorized and trained to initiate administration of blood components and blood products must escort the patient.

4.123. The sending facility shall obtain authorization from the Transfusion Medicine Physician on call to send blood components with a patient when escorted by a qualified regulated health care professional via air medevac or ground ambulance. This authorization shall be documented by the sending facility.

4.124. See step 4.94 for the complete list of practitioners and regulated health professionals authorized to initiate transfusion/infusion of a blood component and/or blood product within their respective scope of practice.

5.0 Materials

5.1. Materials required include:

- Transfusion order
- Facility-specific request form for blood component and/or blood product
- Patient record of transfusion
- Patient health care record
- Specific blood component or product monograph
- Blood components or blood products

- Equipment for starting IV access
- Appropriate administration set specific to blood component or blood product
- Compatible IV solution
- Infusion pump, as appropriate to blood component or product and patient condition
- Blood warmer (when indicated)
- Equipment for assessing vital signs
- Emergency equipment – oxygen source, oxygen tubing, nasal cannula and/or oxygen mask, suction and additional intravenous solutions
- Emergency medications
- Personal protective equipment
- Appropriate disposal container, as per facility-specific protocol

5.2. Related documents:

- Appendix 6 Pre-transfusion Risk Assessment for TACO Job Aid for Transfusionist
- Appendix 7 Acute Transfusion Reaction Chart
- Appendix 8 Bedside Transfusion Reaction Algorithm
- Appendix 9 Saskatchewan Transfusion Adverse Event Report Form
- Guideline SK 1 Informed Consent or Refusal of Consent for the Administration of Blood Components and Blood Products
- Guideline SK 2 Transfusion Orders for Pre-transfusion Tests and Blood Components/Products
- Guideline SK 3 Patient Identification and Labelling of Pre-transfusion Samples including use of the SK TSIN System
- Guideline SK 7 Visual Inspection of Blood Components and Blood Products
- Guideline SK 8 Issue and Return of Blood Components and Blood Products
- Guideline SK 10 Emergency Release of Red Blood Cells and Plasma
- Guideline SK 12 Transporting Blood Components and Blood Products within a Facility
- Guideline SK 14 Pre-Transfusion Independent Double Check
- Guideline SK 16 Recognition and Management of Suspected Adverse Transfusion Events
- Guideline SK 17 Transfusion Associated Adverse Reaction Investigation and Reporting
- Guideline SK 18 Instructions to Complete the Saskatchewan Transfusion Adverse Event Report Form

- Guideline SK 19 Transfusion Associated Error and Accident Investigation and Reporting
- Guideline SK 20 Emergency Neonatal Red Blood Cell Transfusion

5.3. Additional supporting documents:

- Applicable Patient Information and Education Resources (PIER)
- Clinical Procedure (with Medical Directive): CS-CP-0014 Anaphylaxis – Identification and Initial Treatment – Acute and Continuing Care Settings AND SHA 0232 Anaphylaxis Treatment Worksheet
- Best Practice Recommendations for the Assessment & Management of Neonates Born to Alloimmunized Mothers at Risk of HDFN – Saskatchewan
- Clinical Practice Recommendations for Requesting Pre-Transfusion Testing for Adult Elective Surgical Patients (SK)
- Special Requirements for Blood Components
- Transfusion Best Practice Recommendations in Adult Patients – Saskatchewan
- Transfusion Best Practice Recommendations for Pediatric Patients – Saskatchewan
- Transfusion Best Practice Recommendations for Neonatal Patients – Saskatchewan
- Transfuse Wisely Poster

6.0 Quality Management

6.1. A quality improvement system shall be in place to monitor positive compliance with the policies, processes and procedures for the administration of blood components and blood products, operation/quality control of infusion devices and associated equipment, and maintenance of record keeping systems. This may be through audits of random patient transfusion and health records, maintenance, validation and calibration records of administration/processing equipment used for transfusion and/or other such mechanisms in place in the quality improvement program. CSA 4.6.1.1, 4.6.3.1

6.2. A formal, documented training program that includes both initial and ongoing training of personnel in the necessary skills related to their responsibilities in the administration of blood components and blood products shall be in place. A system shall be in place to assess the effectiveness of their training programs and the frequency of this assessment shall be defined. WCAA TM.1.2.3; CSA 4.3.2.1, 4.3.2.2, 4.3.4, 4.3.6.2, 14.4.2

6.3. A formal competency assessment program shall be in place for all personnel involved in the administration of blood components and blood products. Competency shall be assessed and documented following training and at regular and routine intervals thereafter. The effectiveness of the competency assessment program shall be evaluated periodically as needed and this evaluation shall be documented. WCAA TM 1.2.4; CSA 4.3.3.1, 4.3.3.2, 4.3.4, 4.3.6.2, 14.4.2

7.0 Procedure

7.1. **Pre-Transfusion:**

7.1.1. Verify signed consent has been obtained and is documented on the patient's health record.

7.1.2. Verify the MRP's transfusion order for the specific blood component or blood product.

- Order must be verified for the type of product; the amount, date, time, and rate and duration of infusion; any modifications to a blood component (e.g., irradiation); special transfusion requirements; and possible sequence in which multiple components are to be transfused.
- Check the transfusion order for any pre- or post-transfusion medications to be administered.

7.1.3. Determine if the patient's group and screen is valid within the time limits defined by the TML. Order new group and screen if expired.

7.1.4. Verify patient identification band is in place, and where applicable, a SK TSIN band.

7.1.5. Provide patient/responsible caregiver education.

7.1.6. Perform a pre-transfusion patient assessment and obtain baseline vital signs within 30 minutes of starting the transfusion. If indicated by findings, follow up with the MRP.

- Refer to step 11.0 Job Aid: Pre-transfusion Risk Assessment for TACO.

7.1.7. Administer pre-medication if ordered and flush access line.

7.1.8. Document findings of the pre-transfusion patient assessment, baseline vital signs and administration of pre-medications related to transfusion preparation (e.g. diuretics, antihistamines).

7.1.9. Assemble equipment and supplies.

7.1.10. Confirm emergency medications to treat anaphylaxis (e.g. epinephrine, antihistamine(s), steroid(s), and albuterol) are available in the patient's care area and emergency equipment (e.g. oxygen, suction) is available at the bedside.

7.1.11. Confirm blood component or blood product availability with the TML.

7.1.12. Arrange for the transport of the blood component or blood product from TML.

- If blood is in a transport container, do not open until the blood component or blood product is required for transfusion.
- Document the time the blood component or blood product is removed.

7.2. **Transfusion:**

Note: For neonate patients in an intensive care unit, refer to facility-specific policies and procedures.

7.2.1. Immediately before transfusion, conduct a pre-transfusion independent double check in the presence of the patient.

Perform the following verifications:

- Ask the patient/guardian, where possible, to state their full name and date of birth and compare to patient details on the patient's identification band/card.
- Verify that the patient's surname, first name and unique identification number are identical on the patient's identification band/card, transfusion order, transfusion label/tag and patient record of transfusion.
- Check that the ABO/Rh (only for blood components, not relevant for blood products) are identical/compatible on the Group & Screen test, CBS label, transfusion label/tag and patient record of transfusion.

  Confirm that the ABO/Rh of the blood component and patient are identical/compatible.
- Verify that the unit number (blood components) or lot number (blood products) are identical on the CBS label (blood components) or manufacturer label (blood products), transfusion label/tag and patient record of transfusion.
- Check visual appearance of blood components or blood products and inspect for defects.
- Check expiry date/time of blood component or blood product. Ensure blood component/product will not expire during administration.
- Refer to step 12.0 Job Aid: Pre-transfusion Independent Double Check.

7.2.2. If any discrepancies are found, do NOT proceed with the transfusion and contact the TML immediately.

7.2.3. Co-sign completed pre-transfusion independent double check on facility-specific form.

7.2.4. Prepare to initiate the blood component or blood product.

Note: Review of the SHA Blood Component and Blood Product Monographs with detailed administration information is encouraged.

Documents are available on the SHA website at: https://www.saskhealthauthority.ca/intranet/departments-programs/provincial-clinical-and-support-services/laboratory-medicine/transfusion-medicine.

- Prime the administration line and filter with a compatible IV fluid or with the blood component or blood product. See step 4.47.
- Filters must be completely covered with the IV solution or blood component to remove blood clots, cellular debris and coagulated protein.

7.2.5. Attach the blood component or blood product to the administration set and initiate the flow.

- Document date and time the transfusion was started.

7.2.6. Transfuse slowly 50 ml/hour for the first 15 minutes, where possible.

- For neonatal and pediatric patients, transfuse slowly (1 mL/kg/h, up to 50 mL/h) for the first 15 minutes. [15.5]
- Refer to component or product monograph for specific details.

7.2.7. Obtain and document the patient's 15-minute vital signs and assess for signs of an adverse transfusion reaction.

- Timing for the beginning of the 15-minute vital check starts when the blood component or blood product reaches the IV site.

7.2.8. **STOP** the transfusion immediately if any error/accident or suspected adverse transfusion reaction occurs.

- Proceed to step 13.0 and follow Job Aid: Bedside Transfusion Reaction Algorithm.
- Notify the MRP immediately and obtain management directives.
- Notify the TML immediately of any errors/accidents or suspected adverse transfusion reactions. See procedural note 8.4.
- Refer to Guideline SK 16 Recognition and Management of a Transfusion Associated Adverse Event.

7.2.9. Adjust/increase the flow rate to the prescribed rate if there are no signs of a transfusion reaction during the 15 minutes. Document increase in rate.

Note: If a rate is not specified in the order, contact the MRP to clarify the infusion rate.

7.2.10. Continue to monitor the patient throughout the transfusion and check the IV site and flow rate. Document repeat vital signs.

7.2.11. Blood components must be transfused within 4 hours of issue from the TML (or component modification, if applicable). Blood products must be infused within 4 hours of accessing the vial unless otherwise specified in the manufacturer's product monograph.

7.2.12. If the transfusion is not completed at 4 hours, discontinue the infusion and see step 7.3.

7.3. **Post-Transfusion:**

7.3.1. Upon completion of the transfusion (and in the absence of a transfusion reaction), flush the administration set with the compatible IV solution; use minimal volumes for fluid-restricted patients.

7.3.2. Disconnect the administration set from the patient.

7.3.3. Document date and time the transfusion was completed.

7.3.4. Obtain and document the patient's post-transfusion vital signs within 1 hour of completion of the transfusion.

7.3.5. Continue to monitor post-transfusion as follows:

- Inpatients should be monitored for delayed reactions for a minimum of 4 hours post-transfusion.
- Outpatients should be monitored for at least 15 minutes post-transfusion.

7.3.6. For outpatients, review post-transfusion care with the patient or responsible caregiver. Provide the patient with written information outlining the signs and symptoms of transfusion reactions, what to do in case of a transfusion reaction, and contact information for reporting a transfusion reaction.

7.3.7. Dispose of blood component or blood product containers and administration sets following facility-specific policy and procedure.

7.3.8. Complete required information on the transfusion label/tag attached to the unit/vial. Return completed transfusion label/tag to TML as per local practice.

7.3.9. If applicable, place the completed record of transfusion (or a copy) in patient's health care record.

7.4. Complete and provide to the patient, written notification of the administration of blood components or blood products. Document action in patient's health record.

8.0 Procedural Notes

8.1. All patients should be transfused in clinical areas where they can be appropriately observed and monitored, and where staffs are trained in the administration of blood components/products and the management of transfused patients, including the emergency treatment of anaphylaxis.

8.2. If additional blood components or products are required, maintain intravenous access infusing the appropriate compatible IV solution between blood components or products to keep the vein open.

8.3. When administering multiple units of blood components and blood products restart the vital signs and decrease rates as per facility-specific policies procedures.

8.4. The nursing staff in the clinical area shall **immediately** phone the TML to report identified errors or suspected adverse transfusion reactions when:

8.4.1. A patient or component/product identity check error is found.

8.4.2. A transfused patient shows any of the following serious symptoms:

- New onset of red/brown urine
- Temperature greater than or equal to 39°C OR temperature rise greater than 1°C from pre-transfusion baseline with or without other symptoms
- Sudden onset of hypoxemia (oxygen saturation (SpO2) of 90% or less and a decrease of at least 5% from pre-transfusion)
- Sudden onset of hypotension (systolic blood pressure drop of greater than or equal to 30 mmHg below the pre-transfusion baseline)

8.4.3. There is a patient safety concern related to the infusion device during blood component or product transfusion.

8.4.4. The TML staff shall immediately notify the Transfusion Medicine Physician on call if they receive a report of a patient or component/product identity check error or any of the above listed serious symptoms.

8.4.5. Refer to Appendix 7 Acute Transfusion Reaction Chart for serious adverse transfusion reactions.

9.0 Reporting

9.1. Report any suspected adverse transfusion reactions, transfusion associated error/accident, or patient safety risk attributable to blood infusion devices to the requesting MRP and the TML.

9.2. Adverse transfusion events shall be additionally reported to the local safety reporting system as required by facility-specific policies.

10.0 Documentation

10.1. Complete the record of transfusion and place in the patient's health record.

10.2. Complete and return the lab portion of the transfusion label/tag to the TML.

11.0 Job Aid: Pre-transfusion Risk Assessment for TACO

TACO: TRANSFUSION CIRCULATORY OVERLOAD

Transfusion-associated circulatory overload (TACO) is the most commonly reported cause of transfusion-related mortality and major morbidity[1]

PERFORM *a pre-transfusion risk assessment for TACO*

Pre-transfusion Risk Assessment:

- **Does the patient have pre-existing cardiac dysfunction?**
- **Is the patient on a regular diuretic?**

- **Is the patient known to have a pulmonary edema?**
- **Does the patient have any respiratory symptoms of unknown cause?**

- **Is the fluid balance positive?**
- **Is the patient receiving continuous IV fluids (current or within last 24 hours)?**
- **Is there any peripheral edema?**

Prevention:

If **YES** to any of these questions:

- Review the need for transfusion, should/can it be deferred?
- Transfuse one unit and review
- Administer at a slow rate
- Measure the fluid balance
- Consider a prophylactic diuretic
- Monitor the vital signs closely, including oxygen saturation
- Monitor the patient closely

Risk Factors for TACO:

- Age over 70 years
- History of heart failure
- Left ventricular dysfunction
- History of myocardial infarction
- Renal dysfunction
- Positive fluid balance

Monitoring:

Signs and Symptoms—what to watch for

- Dyspnea, orthopnea, cyanosis, tachycardia, increased venous pressure, and hypertension
- May present with fever which should be investigated

Management:

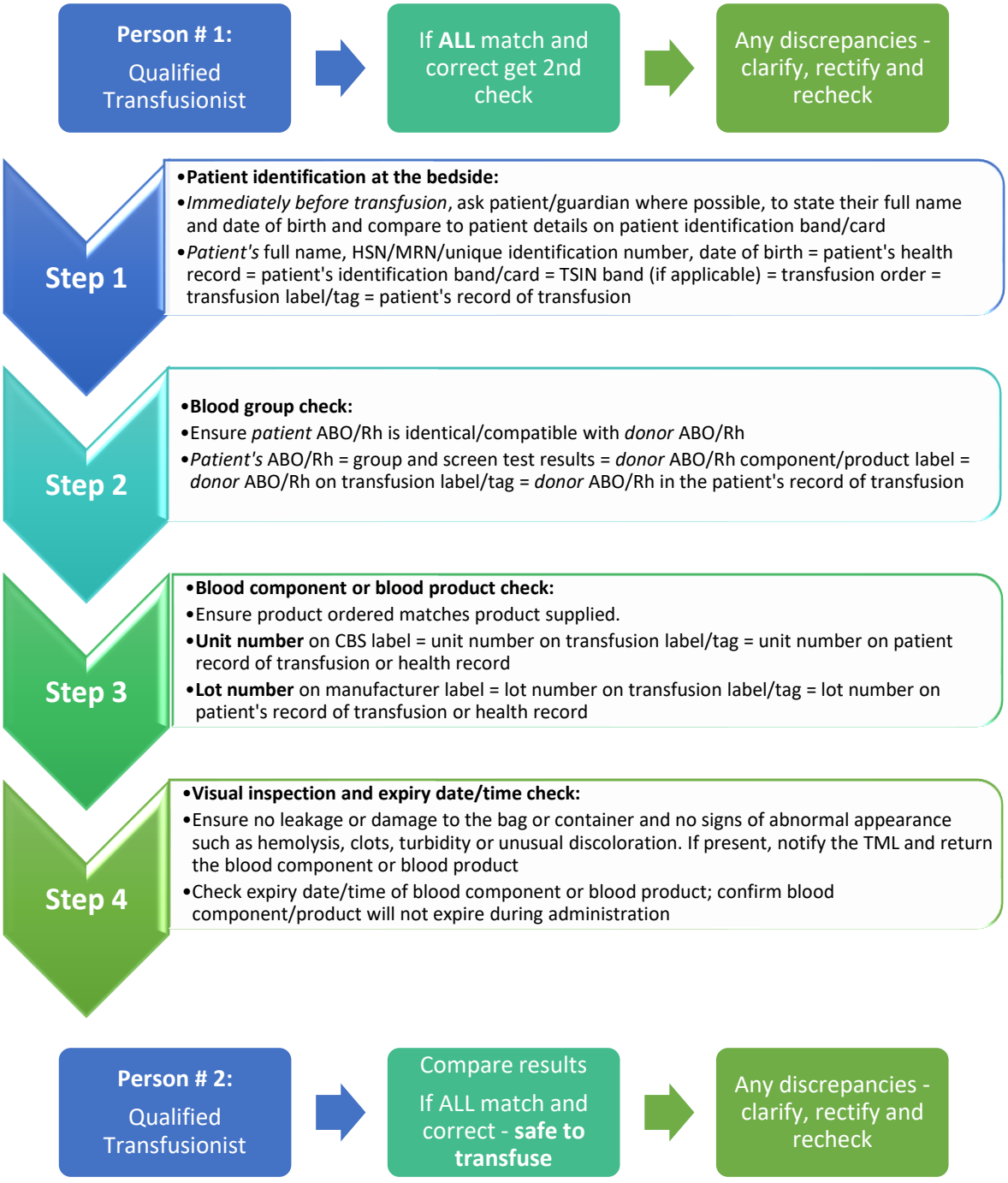
- **STOP** the transfusion
- Administer oxygen and diuretics as needed
- Measure cardiac biomarkers (NT-pro-BNP or BNP)
- Perform a chest x-ray
- Consider restarting transfusion at a reduced infusion rate if clinical status allows and product still viable

Saskatchewan Health Authority

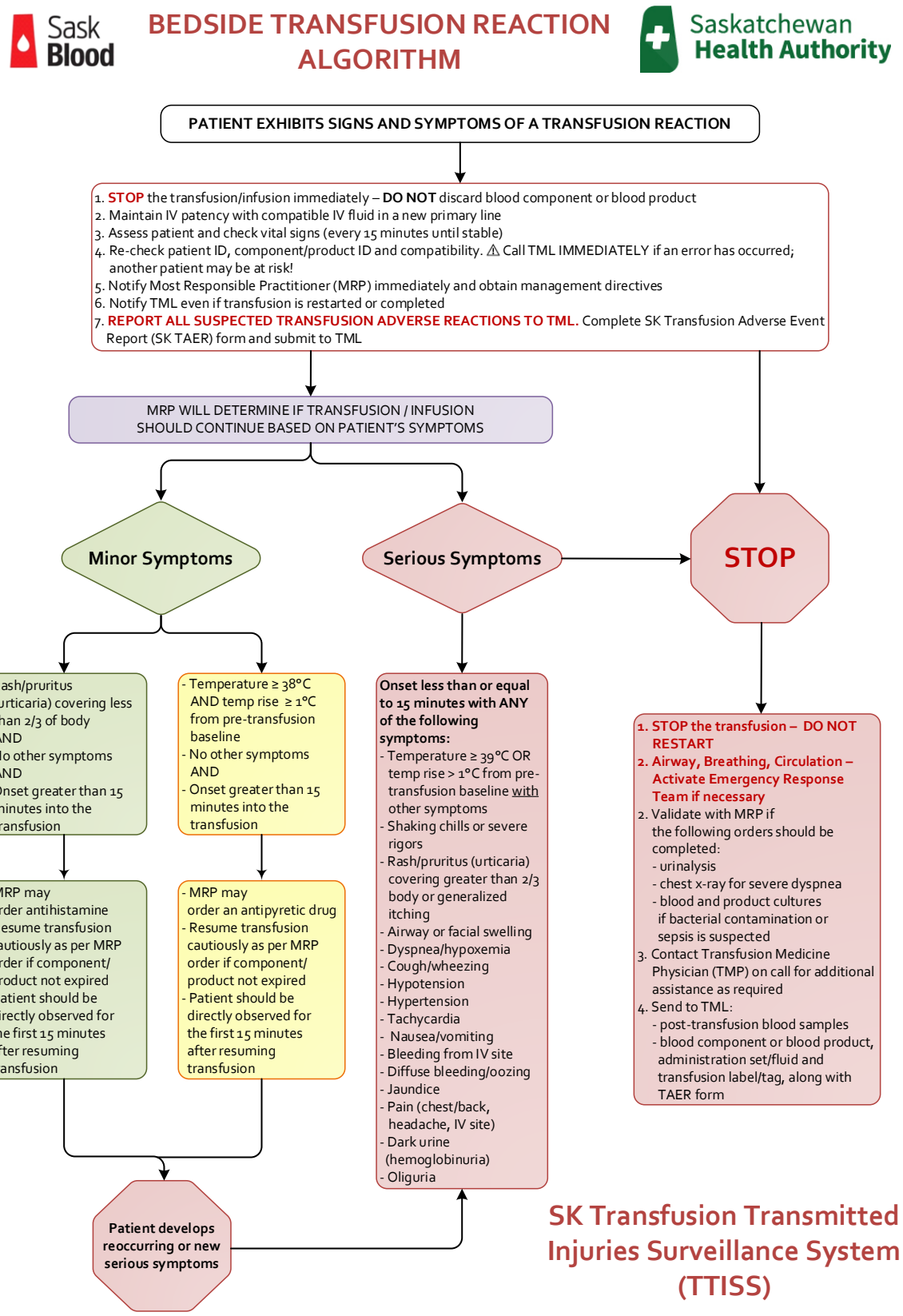
[1] *Bloody Easy 5: Blood Transfusions, Blood Alternatives and Transfusion Reactions. A Guide to Transfusion Medicine, fifth Edition Handbook*

Appendix 6—Pre-transfusion Risk Assessment for TACO: Job aid for Transfusionists, SK Transfusion Resource Manual, Version December 14, 2022

12.0 Job Aid: Pre-transfusion Independent Double Check



13.0 Job Aid: Bedside Transfusion Reaction Algorithm



14.0 Job Aid: Transfusion Checklist Poster

Transfusion Checklist Poster

Pre-Transfusion

- ✓ **Informed Consent**
  - ☐ Written (signed) consent obtained
  - ☐ Exception: emergent, life-threatening bleed
- ✓ **Transfusion Order**
  - ☐ Complete; required information included
  - ☐ Indication supported: labs, signs, symptoms
- ✓ **Pre-transfusion Testing**
  - ☐ Confirm group and screen is valid within the time limits defined by the TML
  - ☐ Order new group & screen/crossmatch if patient's group & screen/crossmatch has expired
- ✓ **Prepare Patient**
  - ☐ Verify patient ID band is in place
  - ☐ Educate: symptoms indicative of reaction
  - ☐ Perform pre-transfusion patient assessment:
    - Transfusion history, cardiovascular assessment for TACO, pre-existing symptoms (e.g. fever, rash, shortness of breath, lower back pain)
    - Baseline vital signs
    - Dedicated, patent IV access (peripheral or central)
  - ☐ Confirm pre/post medications, pre-transfusion labs, and any special requirements for blood (e.g. irradiated)
  - ☐ Administer pre-medication if ordered and flush access line
- ✓ **Prepare Equipment**
  - ☐ Compatible IV fluid
  - ☐ Blood components – tubing/filter (170-260 microns); change after 4 units or 4 hours
  - ☐ Platelets – always NEW/FRESH tubing/filter
  - ☐ Prime tubing/filter: blood or compatible IV fluid
  - ☐ IV setup to stop abruptly & maintain TKVO: 0.9% NaCl flush syringes + any fluid IV line or 0.9% NaCl IV line
  - ☐ Infusion Devices: Health Canada approved
- ✓ **Pick up blood from TML**
  - ☐ A pickup slip with patient identification (surname, first name, unique identification number) is required by TML

Transfusion

- ✓ **Pre-Transfusion Independent Double Check**

Complete pre-transfusion independent double check immediately before transfusion at the patient's bedside:

1. Patient surname, first name, unique identification number and date of birth is **identical** on patient ID band/card, TSIN band (if applicable), transfusion order, transfusion label/tag, patient's record of transfusion/health record
2. ABO/Rh is **identical/compatible** with group & screen test, CBS label, transfusion tag/label, patient's record of transfusion/health record
3. Unit (blood components) / Lot (blood products) number is **identical** on CBS label (components) / manufacturer label (products), transfusion label/tag, patient's record of transfusion/health record
4. Visual Inspection & Expiry Check:
   - ☐ **Blood Components:** no clots, usual colour, ports intact, expires 4 hours after issue from TML
   - ☐ **Blood Products:** packaging/seal intact, colour as per manufacturer, vials/glass bottles – once entered/spiked, expires after 4 hour

- ✓ **Patient Assessment and Vital Signs**
  - ☐ Vital signs: Temp, BP, HR, RR, SpO2 and supplemental oxygen source if required
  - ☐ Frequency: within 30 minutes of starting, 15 minutes after starting, every 1 hour, upon completion and as clinically indicated
- ✓ **Infusion Rate (for each unit)**
  - ☐ 50 mL/hour for first 15 minutes; can be deferred if acute bleeding
  - ☐ Re-check after 15 minutes, if no indication of reaction then increase to rate as ordered
- ✓ **Possible Transfusion Reaction**
  - ☐ If any adverse/unexpected/serious symptom(s), **STOP** transfusion.
  - ☐ Refer to *Appendix 8 Bedside Transfusion Reaction Algorithm*

Post-Transfusion

- ✓ **Comply with expiry time specific for blood component or blood product**
  - ☐ Blood components: 4 hours from time of issue from TML (removal from the temperature controlled environment)
  - ☐ Blood products: 4 hours from the time vial/bottle was entered/spiked
  - ☐ Outside the expiry time, discard remainder.
- ✓ **Flush administration set with compatible IV solution**
  - ☐ Blood component tubing: flush with 0.9 % NaCl
  - ☐ Blood products given IV: flush (tubing/IV site) with compatible IV fluid
- ✓ **Return empty blood bag to TML if required.** Otherwise dispose of blood tubing/bags in biohazardous waste
- ✓ **Re-assess patient and re-check vital signs:**
  - ☐ At end of transfusion
  - ☐ Inpatients: monitor for a minimum of 4 hours post-transfusion for a delayed reaction
  - ☐ Outpatients: monitor for a minimum of 15 minutes post-transfusion
- ✓ **Patient Education/Notification**
  - ☐ Provide inpatients with written notification of transfusion
  - ☐ Provide outpatients or their responsible caregiver with instructions concerning possible transfusion reaction
- ✓ **Documentation**
  - ☐ Ensure all required documentation is completed in patient's health record
  - ☐ Complete and return the lab portion of the transfusion label/tag to the TML
- ✓ **If patient experiences a possible transfusion reaction:**
  - ☐ Follow steps in *Appendix 8 Bedside Transfusion Reaction Algorithm*
  - ☐ Complete and send *Appendix 9 Saskatchewan Transfusion Adverse Event Report* form to TML
  - ☐ If patient experiences **serious** symptoms of an adverse reaction, return all blood component/product containers, tubing, solutions and tags to the TML
  - ☐ Refer to *Appendix 7 Acute Transfusion Reaction Chart* for details

15.0 References

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16.0 Revision History

Date Revised: November 5, 2024	
Section Number	**Summary of Revisions**
2.3	• Definition of females of child bearing age changed from less than 50 years of age to 45 years of age or younger

4.23.2	• Changed wording to clarify that patient can self-verify identity if capable
4.23.3	• NEW CONTENT. If inaccuracies or discrepancies are discovered during the identification process, blood samples shall not be collected until the discordances have been satisfactorily resolved.
4.24	• Changed witness to ‘identifier of the patient’
4.32	• Changed ‘females less than 50 years of age’ to ‘females 45 years of age or younger’
4.42	• Revised content to state: o Four (4) consecutive units of identical blood components have been transfused through it; or o Four (4) hours of time; or o More than sixty (60) minutes has elapsed between transfusions, or o When switching from one blood component to another blood component (RBCs to platelets); or o The filter / administration set becomes occluded.
4.45	• Deleted step 4.45 from version May 16, 2024. Deleted content is included in revised step 4.42
4.125	• Changed step 4.95 to step 4.94
7.24	• Changed step 4.48 to step 4.47
13.0	• Revised ‘Job Aid: Bedside Transfusion Reaction Algorithm’ to align with CS-A-0019 Beside Transfusion Reaction Algorithm
15.23	• Added reference SHA Memo: Optimizing Group O Negative Red Blood Cell Utilization and Transfusion Medicine Lab Inventories