ORBCoN
Ontario Regional Blood Coordinating Network

Inspiring and facilitating best transfusion practices in Ontario.

Welcome

ORBCoN Ontario Regional Blood Coordinating Network

TRANSFUSIONISTS TALK

bloody easy

TRANSFUSION MADE BLOODY EASY

June 24, 2026

9:30 to 10:30 a.m. (EDT) and 2:30 to 3:30 p.m. (EDT)

Transfusion Practice Standards:
The How & Why of Blood Administration.

Donna Berta RN, BScN, Clinical Project Coordinator – Nursing, ORBCoN

Land Acknowledgement

As we gather, we begin by acknowledging that this virtual event is hosted from the traditional territories of the Mississauga and Haudenosaunee nations, and within the lands protected by the “Dish with One Spoon” wampum agreement.

Please acknowledge and reflect on the land where you are joining.

Disclosure

This video conferenced event will be recorded, archived, and excerpts may be used for educational purposes.

By participating, you indicate your consent to recording, archiving and use for educational purposes.

Speaker Disclosure

- No commercial product conflicts of interest to declare.

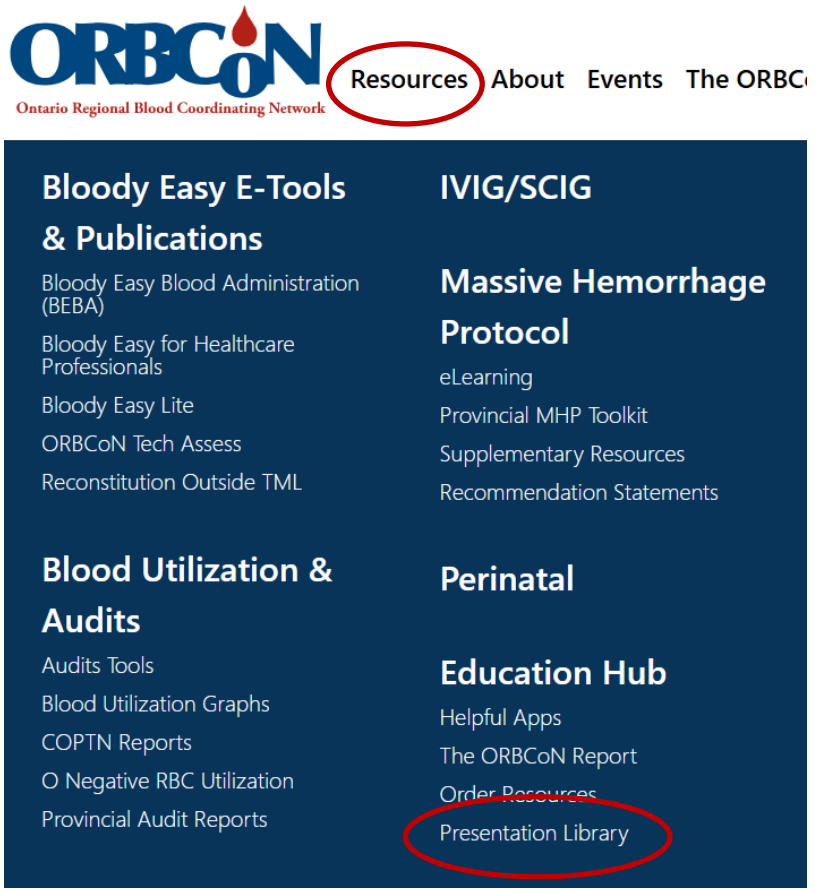
- Canadian Society for Transfusion Medicine, Standards Committee, member.
- Ontario Immune Globulin Advisory Panel, member.
- Ontario Transfusion Transmitted Injuries Surveillance System, Education Committee, member.

- Some information is shared for your interest & reference.
- All patient case information is fictitious, fabricated for this learning opportunity.

Presentation Information

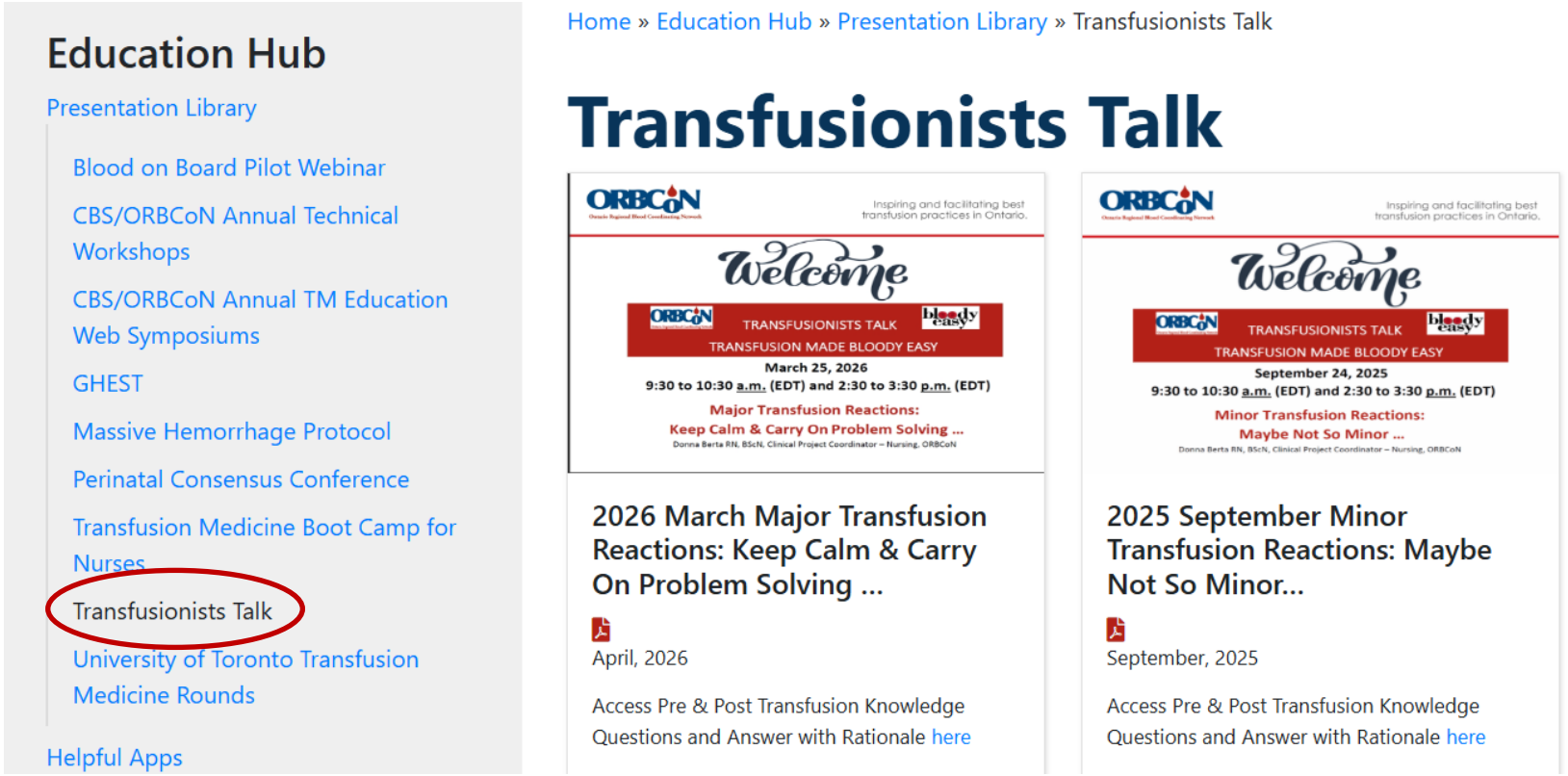
This presentation is being recorded.
As of June 30, 2026, slides & recording will be posted on www.transfusionontario.org.

- Click Resources tab
- Select Presentation Library



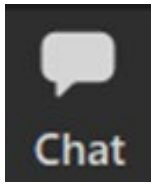
ORBCoN Presentation Library

- Select Transfusionists Talk



Questions for Speaker

During the presentation, enter comments & questions via the Zoom **Chat** function.



If there are more questions than time permits, answers will be posted with the event recording at www.transfusionontario.org

Practice Polling Question

What is your current role?

a) Front Line Nurse (RN, RPN).
b) Nursing Educator.
c) Transfusion Medicine Lab Technologist.
d) Other.

Transfusion Knowledge Question 1 - Pre

You are an RN working in the Emergency Department (ED).
An MHP for an unidentified motor vehicle accident client, a 25-year-old of childbearing potential, seems to be resolving (uncrossmatched blood, 2 units RBC, group O, Rh negative, K negative, remain in the 3rd MHP cooler).
Then a 65-year-old male client with acute GI bleeding (discharged last week after a GI bleed) is admitted to ED. His vital signs are very unstable, he is being intubated, MHP is ordered.

As per ED MD's order, would you transfuse the uncrossmatched blood, 2 units RBC, group O, Rh negative, K negative remaining from the motor vehicle accident client to the GI bleed client?

a) Yes
b) No

Transfusion Knowledge Question 2 - Pre

Blood Component (exception, including solvent detergent [S/D] plasma) transfusion administration to a stable client, not actively bleeding, non-urgent indication, suggested infusion rate information includes:

Component	Rate of Infusion for 1 unit /1 dose
Red Blood Cells	**Over 2 hours**
Platelets	**Over 60 minutes**
Plasma	**Over 30 to 120 minutes**
For clients with TACO risk, slower rate of infusion.	
If tubing primed with 0.9% NaCl, then re-prime with blood so client receives all of test dose.	
Adults: first 15 minutes, infusion rate 50 mL/hour (i.e., test dose volume is 12.5 mL). Neonates/Pediatrics: first 15 minutes infusion rate 1 mL/kg/hour to a maximum of 50 mL/hour.	
Complete transfusion within 6 hours of removal from temperature-controlled environment (time of issue from TML or removal from cooler).	

a) True
b) False

Transfusion Practice Standards: The How & Why of Blood Administration

Event Registration

Enter your questions about nursing actions to safely administer blood – more than 90 questions were submitted!

Learning Objectives

By engaging in this learning, participants will be able to:

1. Identify the pre-transfusion, transfusion, and post-transfusion nursing actions to safely administer blood.

2. Characterize the rationale for these nursing actions.

3. Apply the discussion of transfusionists questions to their practice.

Transfusion Practice Standards: The How & Why of Blood Administration

What are the standards of practice for safety in blood transfusion?

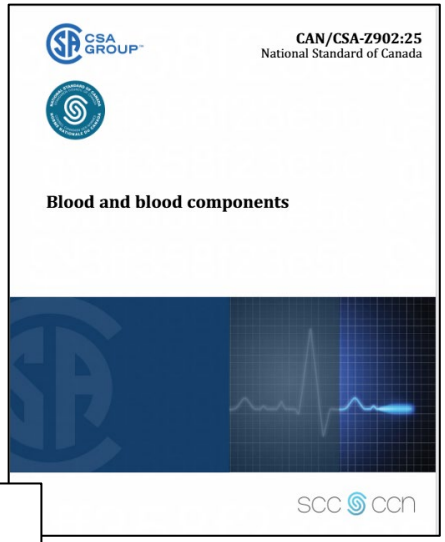
Transfusion Competency

Incorporates transfusion medicine knowledge to implement evidence informed, safe transfusion practice (administration of blood components and blood products).

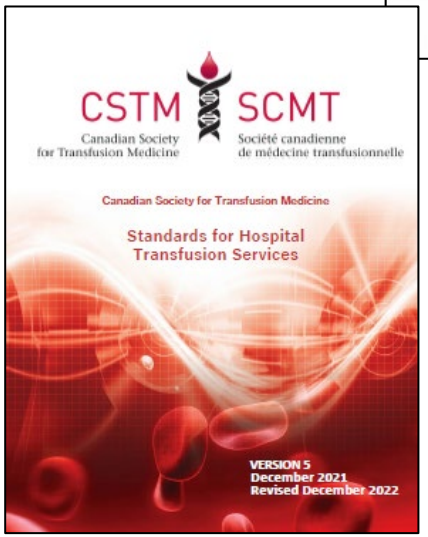
Transfusion Practice Standards (18)

Transfusion Practice Standards: The How & Why of Blood Administration

Canadian Standards Association Blood and blood components CAN/CSA Z902:25



Accreditation Canada Transfusion Services Standard (2018)



Canadian Society for Transfusion Medicine Standards for Hospital Transfusion Services Version 5 (revised December 2022)

Accreditation Canada Diagnostics Medical Laboratory Accreditation Requirements version 9 June 2023

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

1. Confirm **informed consent** has been obtained and documented by the prescriber; the client's questions are addressed. **Advocate** for the client. EXCEPTION: In emergency situations of health threatening or life-threatening bleeding, the health care professional prescribing the transfusion may declare that transfusion proceed without informed consent.

- Is informed consent documented?
- Is the client agreeable to proceed, any outstanding questions?

Case 1 Question 1

Fred is a previously healthy 56-year-old (non-smoker, runs 4 km daily, primarily vegan diet). One week ago, he was admitted with acute coronary syndrome; medical management was provided. Yesterday he re-developed ischemic symptoms, was transferred & is awaiting invasive angiography. The ischemic symptoms are ongoing & the Hb is 84 g/L.
Order: Transfuse 1 unit RBC over 3 hours.

As Fred's nurse your next action is:

a) As ordered, transfuse 1 unit RBC over 3 hours.

b) Discuss with the prescriber, would a more restrictive transfusion strategy be appropriate for Fred's clinical scenario?

c) Discuss with the prescriber, would post-transfusion diuretic be appropriate for Fred?

Shih et al., Canadian Journal of Cardiology. 2025. 41(10):1875–84.

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

2. Verify the **transfusion order** is complete (includes the required elements). Validate the **transfusion indication** is supported by client signs and symptoms as well as laboratory test results; refer to hospital specific transfusion guidelines.

- Order must include
  Two client identifiers & transfusion date;
  Name of component/product;
  Amount, volume, dosage and/or concentration;
  Infusion rate or duration or per SOP;
  If multiple components or products, the sequence in which to transfuse;
  Client special requirements (e.g., irradiated);
  If blood warmer or rapid infusion device required or per SOP
- Indication
  Know how/where to find your hospital specific transfusion guidelines.
  If uncertain, ask Nursing Professional Practice/Educator or TML.

Case 2 Question 1

Anne Shirley, a client who resides in a long-term care (LTC) home was admitted to your hospital with a hip fracture requiring surgical intervention. Anne has a history of anemia (has not required previous transfusion); her admission Hb was 98 g/L. A pre-op group & screen test was ordered.

In the clinical scenario of non-emergency transfusion, a group & screen test is required for transfusion of blood components (exception, including solvent detergent [S/D] plasma) as well as all blood products.

a) True
b) False

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

3. **Blood sample for group and screen** [ABO, Rh(D) blood groups, antibody screen (clinically significant antibodies)], as required for the blood that will be transfused, is collected for TML testing.

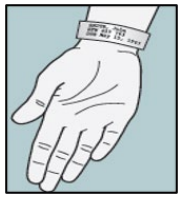
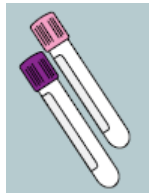
- **Blood component transfusion:**
  a. Sample collection procedure must include unequivocal client identification. The client must be wearing an identification armband; this is best practice for transfusion safety. Refer to hospital specific client identification policy and procedure, approved alternate identification may be noted.

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

3. **Blood sample for group and screen** [ABO, Rh(D) blood groups, antibody screen (clinically significant antibodies)], as required for the blood that will be transfused, is collected for TML testing.

- **Blood component transfusion:**
  Safe sample collection steps include:
  i. In the presence of the client, at the time the sample is being collected, confirm the client's surname, first name and unique identification number on the client's identification armband and the sample label are identical.
  ii. At the client's bedside immediately following blood sample collection, affix the label on the tube of blood.
  iii. Documentation must include identification of the person drawing the blood sample as well as the date and time of collection. The phlebotomist is documenting their accountability for unequivocal client identification.


Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

3. **Blood sample for group and screen** [ABO, Rh(D) blood groups, antibody screen (clinically significant antibodies)], as required for the blood that will be transfused, is collected for TML testing.

- **Blood component transfusion continued:**

  b. To issue non-group O, ABO compatible RBC, two separate determinations of a client's blood group are required.

  The first determination must be from a current blood sample.

  The second blood group determination must be from:

  i. The client's previous/historical records or

  ii. Testing of a separate sample collection or

  iii. Retesting of the same sample if positive client identification technology was used for sample collection procedure.

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

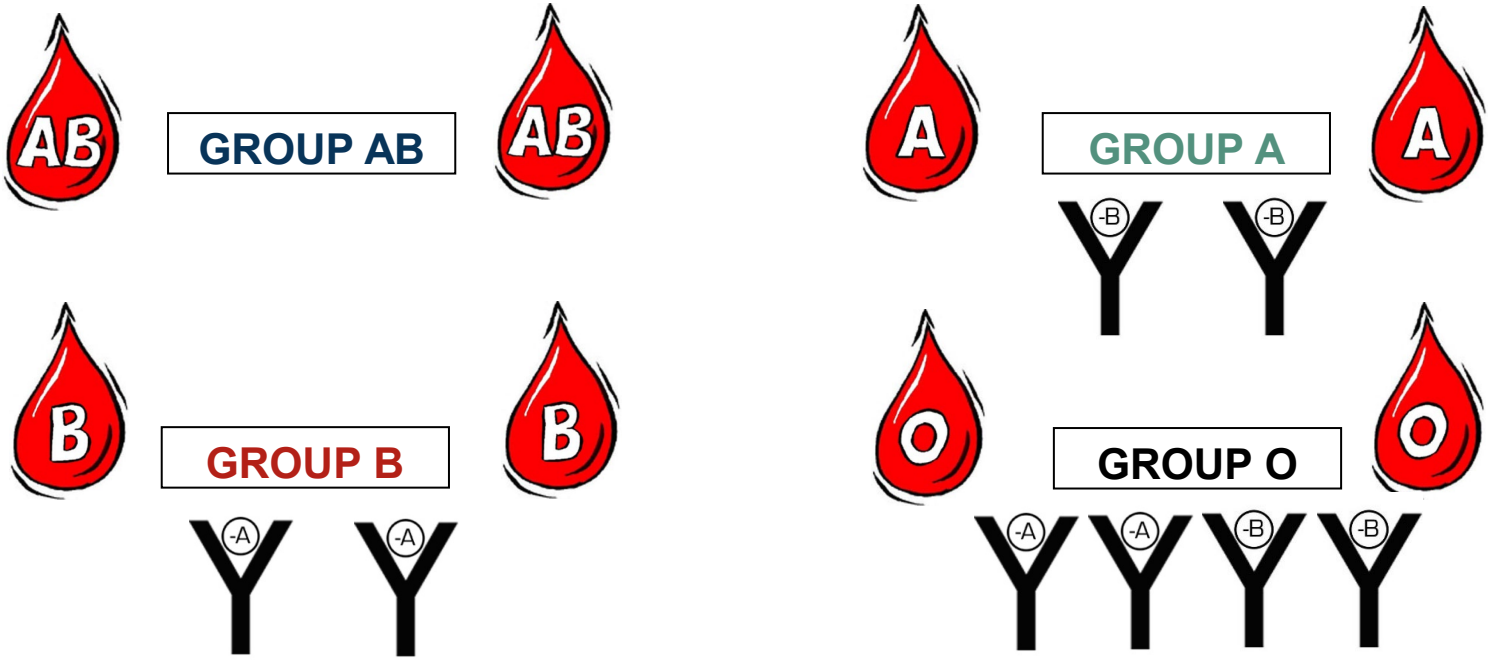
3. **Blood sample for group and screen** [ABO, Rh(D) blood groups, antibody screen (clinically significant antibodies)], as required for the blood that will be transfused, is collected for TML testing.

- **Blood product transfusion:**

  a. Group & screen testing is not required because ABO and Rh(D) blood group compatibility is not relevant (blood products are manufactured in lots, from plasma combined from many donors of diverse ABO blood groups).

  EXCEPTION:
  Blood product solvent detergent plasma (S/D plasma) is manufactured from ABO blood group specific lots of plasma.
  All plasma administration, including S/D plasma, must be ABO blood group compatible.
  Rh(D) blood group is not relevant for plasma administration (plasma is a non-cellular blood component [i.e., no antigens]).

Transfusion Practice Standards: ABO Blood Group System Review (1)



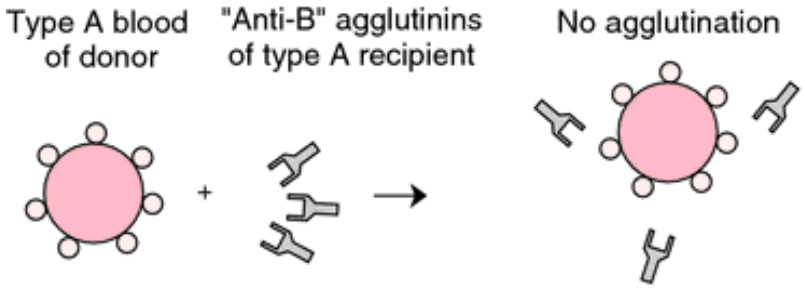
ABO Antibodies (anti-A, anti-B; in plasma)

- are naturally acquired, starting at 4 months of age.

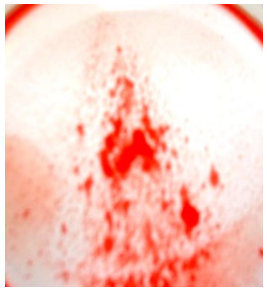
If, the antigen is present on the surface of the red blood cells, then the corresponding antibody will NOT be in the plasma.
If, the antigen is NOT present on the surface of the red blood cells, then the corresponding antibody will be in the plasma.

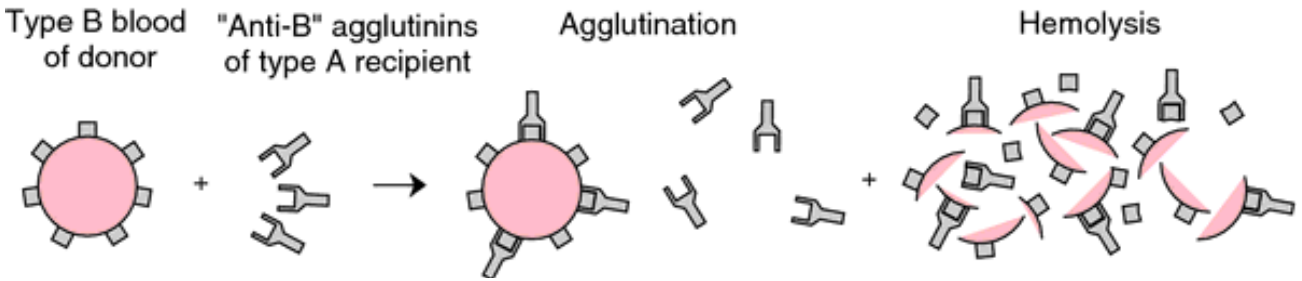
Transfusion Practice Standards: ABO Blood Group System Review (2)

RBC Group A transfused to patient Group A (microscope, schematic)



RBC Group B transfused to patient Group A (microscope, schematic)





Transfusion Practice Standards: Rh Blood Group System Review

Rh(D) antigen is clinically the most important of the 54 antigens in the Rh blood group system.

- **Anti-D antibody** is **NOT** naturally occurring and is **NOT** in the plasma of:
  - Rh(D) positive patients.
  - Rh(D) negative patients ***UNLESS*** exposed to the D antigen, and then anti-D antibody may be produced.
- Rh(D) negative individuals can be exposed to D antigen & then may produce anti-D antibody if:
  - Transfusion of Rh(D) positive RBC.
  - Transfusion of Rh(D) positive platelets (platelets contain small amounts of red blood cells).
  - Pregnancy/delivery of an Rh(D) positive fetus.
- **Anti-D antibody**: clinically significant antibody, can cause severe immediate or delayed hemolysis.

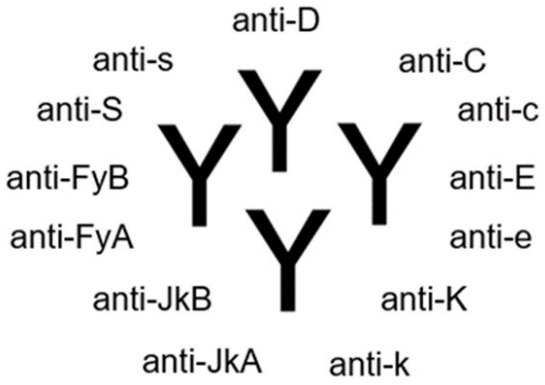
Rh(D) positive blood should not be transfused to a patient with anti-D antibody.

Anti-D antibody: is the most common cause of severe Hemolytic Disease of the Fetus & Newborn (HDFN).
Rh immune globulin (RhIG) prophylaxis, used since late1960's.

Transfusion Practice Standards: Clinically Significant Antibodies Review

- If exposed to “foreign” red blood cell antigens via transfusion or pregnancy, antibodies against these antigens (non-ABO) may be formed. Risk is 1 in 13, though majority of these antibodies are not clinically significant.

- **Clinically Significant Antibodies:** If a patient has formed any of these antibodies, then is transfused an RBC unit that has the corresponding antigen on those red blood cells, hemolysis can occur.



- “Screen” part of Group & Screen test is an antibody screen (detection) test. The screen determines if there any antibodies in this client’s plasma that could cause hemolysis when mixed with red blood cells from a blood donor.
- If clinically significant antibody(ies) are identified, compatible RBC units for transfusion must be negative for corresponding antigen(s) (e.g., anti-c & anti-FyA identified in the plasma of patient blood sample, then RBC units for transfusion must be antigens c- & FyA-).

- If clinically significant antibody identified, patient should be counselled, provided “antibody card” or information; option medical alert bracelet.

Transfusion Practice Standards: Group & Screen Test Summary

Group & Screen Test
Group (time for testing 5-15 minutes)
ABO Blood Group **I**f antigen present, then antibody absent; if antigen absent then antibody present; ABO antibodies are naturally acquired, starting at 4 months of age.
Rh(D) Blood Group Antigen present or absent; Rh(D) antibody is NOT naturally occurring, if exposed to Rh(D) antigen (RBC, platelet transfusion or pregnancy), then anti-D may be produced.
Screen (time for testing minimum of 45 minutes; if positive, an additional 1 hour up to days)
Antibody Screen/Detection test Common clinically significant antibodies are ruled out (negative) or identified (positive). Includes: anti-D, anti-C, anti-c, anti-E, anti-e, anti-K, anti-k, anti-JkA anti-JkB, anti-FyA, anti-FyB, anti-S, anti-s

- A current group & screen test is essential for transfusion of compatible blood components (incompatible [antigen/antibody] transfusion can lead to life-threatening, acute hemolysis).
- TML uses the patient's Group & Screen test results to select compatible blood components for transfusion.

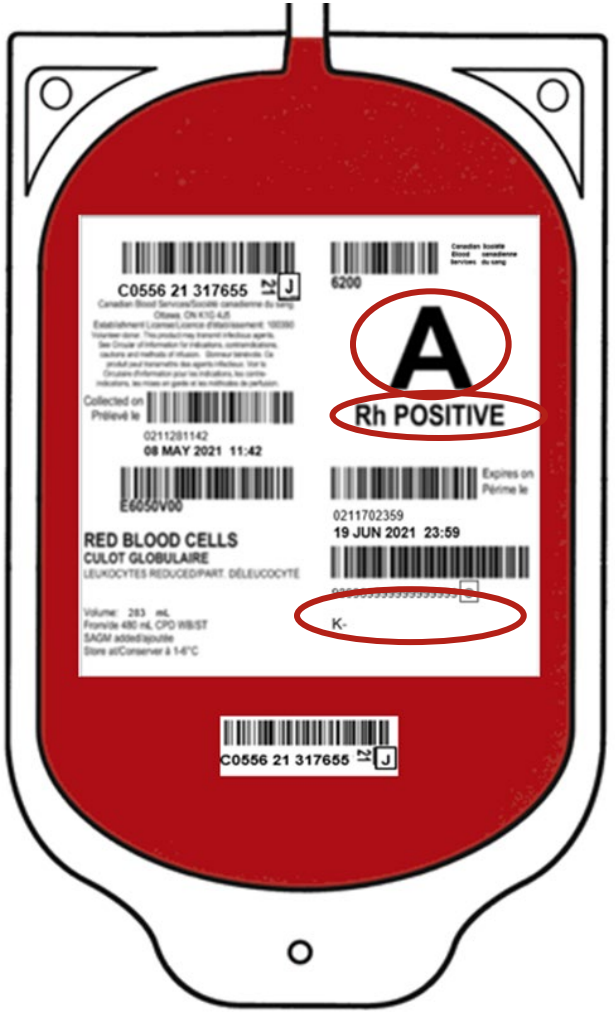
Transfusion Practice Standards: CBS - Antigen Negative RBC

Canadian Blood Services (CBS) performs a group & screen test on each blood donor as part of the donation procedure.

Phenotype:

- Refers to which antigens are detectable on the red blood cells.
- Indicated on the CBS label if the donor is antigen negative (the red blood cells in that unit do not have that antigen on their surface and the unit would be compatible for a client with that antibody).

NOTE: This RBC is Kell negative (K-). For clients with child-bearing potential who require transfusion, providing K- RBCs decreases the incidence of K-immunized pregnancies (and potential HDFN).
In Canada this is established practice, though may not be feasible in emergency transfusion scenarios.



Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

4. The **client is prepared** for the transfusion prior to blood pick up (wearing identification armband, TM special requirements considered, client TACO risk assessment, advised of anticipated client care and to report signs/symptoms of a reaction).

- Verify the client is wearing an identification armband; this is best practice for transfusion safety.
- If client has history of previous transfusion, assess if the client was advised of any "special" transfusion requirements or if any transfusion reactions occurred, follow up as indicated.
- Assess for Transfusion Associated Circulatory Overload (TACO) client risk factors, follow up as indicated.
- As feasible, inform the client of the anticipated client care during transfusion and of the signs/symptoms indicative of a suspected transfusion reaction, if experienced to be reported without delay.

Rotin et al., Can a pop-up stop a TACO? A best practice advisory alert as a clinical decision support tool to mitigate the occurrence of transfusion-associated circulatory overload. Transfusion Medicine. 2026. Available from: https://doi.org/10.1111/tme.70094

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

5. The **required equipment is prepared** for the transfusion prior to blood pick up (IV: site, fluid, tubing/filter, priming, set-up, and infusion devices).

IV gauge: adequate to allow appropriate flow rates & avoid red blood cell damage.

Blood Component/Blood Product	IV Gauge
RBC	
Adults: rapid/emergent transfusion (rapid infuser)	16 to 18
Adults: routine transfusion	20 to 22
Adults: with fragile difficult veins, routine transfusion	24
Pediatrics	22 to 24
Neonates (umbilical vein catheter is an option)	24 to 26
Other blood components/blood products	Any is adequate
OF NOTE: CENTRAL VENOUS ACCESS DEVICE May transfuse all blood components/blood products in adults, pediatrics & neonates	

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

5. The **required equipment is prepared** for the transfusion prior to blood pick up (IV: site, fluid, tubing/filter, priming, set-up, and infusion devices).

IV gauge

- When transfusing RBC via smaller IV gauge (24-26):
  - Recommend the infusion rate be slowed
  - Recommend a constant flow rate using a Health Canada approved infusion device (pump)
  - Consider monitoring for hemolysis
    - 1 to 14 days post transfusion: advise the patient to report jaundice, low grade fever, back pain, tea coloured/dark urine.
    - Assess Hb increment
    - If indicated, hemolysis laboratory investigations.

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

5. The **required equipment is prepared** for the transfusion prior to blood pick up (IV: site, fluid, tubing/filter, priming, set-up, and infusion devices).

- **Blood Components: IV fluid, tubing/filter, priming, set-up**
  - **IV Fluid:** (CBS Circular of Information) 0.9% sodium chloride identified or IV solution approved by Health Canada or available documentation identifies solution as safe.
  - **IV Tubing/Filter:** (CBS Circular of Information) blood administration set 170-260 micron filter, approved by Health Canada; change per manufacturer, generally after 4 units or 4 hours whichever occurs first; Platelets: always NEW/FRESH tubing/filter.
  - **Priming:**
    - use blood component or 0.9% sodium chloride.
    - precisely follow tubing/filter manufacturer's steps for priming (on back of package)
  - **Set-up:**
    - If the transfusion must be stopped abruptly, then IV access can be maintained
      a) 0.9% sodium chloride flush syringes & an IV line with any IV solution are on hand, ready to infuse TKVO **OR**
      b) 0.9% sodium chloride IV line is on hand, ready to infuse TKVO.

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

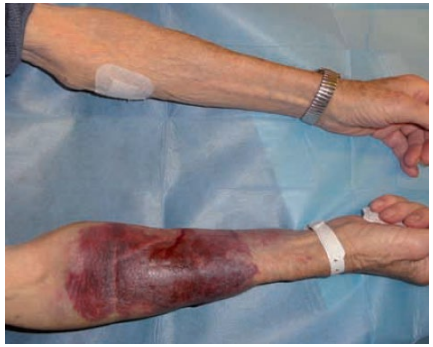
5. The **required equipment is prepared** for the transfusion prior to blood pick up (IV: site, fluid, tubing/filter, priming, set-up, and infusion devices).

- **Blood Products: IV fluid, tubing/filter, priming, set-up**
  - **IV Fluid:** as per manufacturer's monograph.
  - **IV Tubing:** as per manufacturer's monograph standard IV tubing/vented tubing (for glass bottles)/butterfly/IV direct/IM/SC.
  - **If Filter required**: included in the product packaging, follow the manufacturer's monograph.
  - **IV Blood Products: for priming vented IV tubing (glass bottles)** precisely follow tubing manufacturer's steps for priming (on back of package).

- **Infusion Devices**:
  - Health Canada approved devices may be utilized/are encouraged to support consistent infusion rate

Transfusion Practice Standards: Blood Infiltration/Extravasation Events

- Uncommon, paucity of data specific to blood
  - 2013, documented in Belgium
  - Elderly patient, 350 mL RBC antebrachial
  - Treated: early liposuction & saline infiltration
  - Uneventful healing was reported



General Care for Infiltration/Extravasation

- Do not flush, possibly try to aspirate from catheter hub/port access, then remove.
- Avoid application of any pressure.
- Elevate the extremity to promote lymphatic reabsorption (contraindicated if compartment syndrome suspected).
- Outline the area with a skin marker to monitor for progression.
- Estimate extravasated volume; < 50 mL, more likely to resolve with conservative measures.
- Lack of high-quality evidence for use of heat or cold application (cold decreases absorption, keeps infusate localized, decreases inflammation; heat encourages vasodilatation/improved blood flow to disperse the infusate through the tissue).

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

6. **Request blood pick up** from Transfusion Medicine Laboratory (TML).

- Initiate the request only when prepared to begin the transfusion.
- Provide client identification & pick up slip/request as per hospital specific policy and procedure.

Transfusion Practice Standards: The How & Why of Blood Administration

Pre-transfusion

7. **Blood product reconstitution** by clinical location staff may be required per hospital specific policy and procedure.

- TMLs recognizes nurses as skilled in reconstitution; stems from medication administration role.
- FC & PCC “demo kits” are available from manufacturers.
- The blood product manufacturer's stepwise instructions for reconstitution must be followed precisely.
- Reconstitution Documentation:
  Complete documentation on the product label(s) and the transfusion record(s); validate the lot number(s) is identical.
  Document the name/signature/hospital identification number of the individual who prepared the blood product as well as the date and time of reconstitution (to inform the expiry time).
- Resource: Reconstitution Outside TML – ORBCoN

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

8. Verify the **blood component/blood product received from TML matches the transfusion order**.

- As soon as it is transported to the clinical location, confirm the blood received from TML is actually the blood that was ordered for the client.
- If necessary, return to TML should be completed ASAP.

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

9. **All checking blood steps must be performed in the physical presence of the client** (at their bedside).

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

10. **Client identification information (transfusion label/tag)** must remain attached to the blood for the duration of the transfusion.

- If a transfusion reaction is suspected, one of the immediate actions is to verify the client armband identification matches that on the transfusion label/tag.

Case 2 Question 2

Anne Shirley is the client residing in a long-term care (LTC) home. She was admitted and underwent surgery to repair a fractured hip.
Today's Hb is 70 g/L.
Order: Transfuse 1 unit RBC over 3 hours.
The RBC unit has been transported to the clinical location.

To check the RBC unit, you must (select all that apply):

a) Confirm the prescriber's order at the nurse's desk.

b) Check TM identifiers surname, first name, unique identification number.

c) Confirm the RBC's unit number is consecutive on the CBS label, transfusion label/tag, & chart label.

d) Check Anne's ABO and Rh(D) blood groups and antibody screen are identical/compatible to that of the RBC unit.

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

11. **Blood must be checked** just prior to transfusion for client safety (to ensure the ordered blood is administered to the **correct client**; blood **component compatibility, as appropriate**, is verified; **traceability (unit/lot number**) is confirmed; and **expiry (transfusion completed by time)** along with final **visual inspection** are validated.
Hospital specific policy and procedure may require two regulated health care professionals complete the checking steps, may endorse the use of positive client identification technology (e.g., bar-code scanning).

- **Blood Component Checks:**
  EXCEPTION: Blood product S/D plasma is manufactured from ABO blood group specific lots of plasma and must be checked as per blood components.

  1. Client Identification
  2. ABO, Rh(D) Blood Groups (as applicable for the component being transfused) and Client Special Requirements
  3. Unit Number
  4. Expiry & Visual Inspection

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

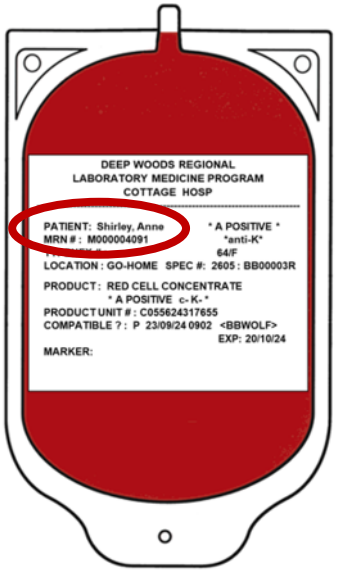
11. **Blood must be checked** just prior to transfusion for client safety (to ensure the ordered blood is administered to the **correct client**; blood **component compatibility, as appropriate**, is verified; **traceability (unit/lot number**) is confirmed; and **expiry (transfusion completed by time)** along with final **visual inspection** are validated.
Hospital specific policy and procedure may require two regulated health care professionals complete the checking steps, endorse the use of positive client identification technology (e.g., bar-code scanning).

- **Blood Product Checks:**
  EXCEPTION: Blood product S/D plasma is manufactured from ABO blood group specific lots of plasma and must be checked as per blood components.

  1. Client Identification
  2. Lot Number
  3. Expiry & Visual Inspection

Transfusion Practice Standards: Checking Blood
1. Client Identification

Check **surname, first name, unique identification number** are <u>identical</u>
on client's identification armband, transfusion order, transfusion label/tag & chart label



COTTAGE HOSPITAL DEEP WOODS REGION

Date: 23/09/24
Run Time: 0700
Printed on: B3-A0-002

PATIENT CARE ORDERS

Date fields on this report are in format DD/MM/YR

PATIENT: Shirley, Anne
ACCT # : MZ000001/21
DOB: 24/04/60
AGE/SX: 64/F
HIN: 9999-999-999
LOC: GO-HOME
ROOM: B-000
BED: 3
STATUS: REG RCR
U #: M000004091
DIS:
REG DR: Bear, Robert A

TRANSFUSION ORDERS

PRODUCT: RBC (RED CELL CONCENTRATE)
DATE OF TRANSFUSION: today ASAP
MEDICATION: per MAR, ALL Induction chemo
ALLERGIES: NKDA
COMMENTS:
AMOUNT: 1 unit
INFUSION RATE: over 3 hours

PRESCRIBER: Dr. Robert Bear pager 1-9876
DATE: 23/09/24

DEEP WOODS REGIONAL LABORATORY MEDICINE PROGRAM
UNIT ISSUE/TRANSFUSION FORM
DATE: 23/09/24

PATIENT: Shirley, Anne
MRN # : M000004091
A POSITIVE anti-K
LOCATION : GO-HOME
SPEC #: 2605 : BB00003R

PRODUCT : RED CELL CONCENTRATE PRODUCT UNIT # : C055624317655 **A POSITIVE**

COMPATIBLE ? P 23/09/24 0902 <BBWOLF>
MESSENGER : Bear, Mama _____
ISSUED : 23/09/24 0921 <BBWOLF>
ISSUE COMMENTS : c- K-

DATE OF TRANSFUSION : _____
TIME TRANSFUSION BEGAN: _____ ENDED: _____
AMOUNT : 300 ML
SIGNATURES :
UNIT ADMINSTERED BY : _____
CHECKED BY : _____
TRANSFUSION COMMENTS :

Transfusion Practice Standards: Checking Blood 2. ABO, Rh(D) Blood Groups; Antibody Screen

Check **ABO, Rh(D) Blood Groups; Antibody Screen** (for blood components & S/D plasma) are identical/compatible on Group & screen test, CBS label, transfusion label/tag & chart label

Deep Woods Regional Laboratory Medicine Program

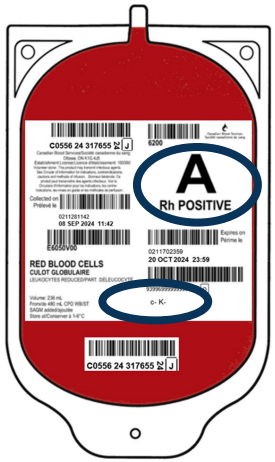
Run Date: 23/09/24 — Specimen Inquiry — Pg. 1
Run Time: 0930
Printed on: B3-A0-001 — Date fields on this report are in format DD/MM/YR

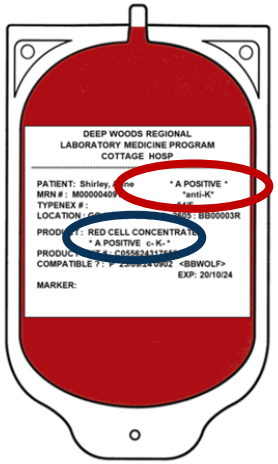
PATIENT: Shirley, Anne
ACCT # : MZ000001/21 **LOC:** GO-HOME **U #:** M000004091
DOB: 24/04/60 **ROOM:** B-000 **REG:** 03/09/24
AGE/SX: 64/F **BED:** 3 **DIS:**
HIN: **STATUS:** REG RCR
REG DR: Bear, Robert A **PT PHONE:**

SPEC #: 2605 : BB00003R **COLL:** 23/09/24-0630 **STATUS:** RES **REQ #:** 0070263
RECD: 23/09/24-0700 **SUB DR:** Bear, Robert A

ENTERED: 26/05/21-0702 **OTHR DR:**
ORD PRODS: RED CELL CONC
ORD TESTS: HIST GRP SOURCE, GROUP & SCREEN, HIST ABO&RH GRP, FULL X-MATCH
QUERIES: PRE-OP SPECIMEN (Y/N): N
PREGNANT NOW (Y/N): N
TRANSFUSION IN LAST 3 MTHS (G): YES

Test	Results	Flag	Site
HISTORICAL BLOOD GROUP	CONFIRMED		COT
GS EXPIRY	Sep 26		COT
GROUP & SCREEN			
ABO GROUP & RH	A POS		COT
AB SCREEN INTERPRETATION	Anti-K		COT





DEEP WOODS REGIONAL LABORATORY MEDICINE PROGRAM
UNIT ISSUE/TRANSFUSION FORM
DATE: 23/09/24
(DATE FORMATS ON THIS REPORT ARE IN THE FORMAT DD/MM/YR)

PATIENT: Shirley, Anne — MRN # : M000004091 — **A POSITIVE anti-K**
TYPENEX #: — 64/F
LOCATION : GO-HOME — SPEC #: 2605 : BB00003R

PRODUCT : RED CELL CONCENTRATE — PRODUCT UNIT # : C055[illegible]24317655 — **A POSITIVE**

COMPATIBLE ? P 23/09/24 0902 <BBWOLF> — MESSENGER : Bear, Mama _____
ISSUED : 23/09/24 09[illegible] <BBWOLF>
ISSUE COMMENTS : c- K-

DATE OF TRANSFUSION : _____
TIME TRANSFUSION BEGAN: _____ ENDED: _____
AMOUNT : 300 ML
SIGNATURES :
UNIT ADMINSTERED BY : _____
CHECKED BY : _____
TRANSFUSION COMMENTS :

Transfusion Practice Standards: Checking Blood Compatibility Table

Patient ABO/Rh(D) Blood Group	Compatible Blood Group for Transfusion			
	RBC	Platelets	Plasma	Cryoprecipitate
O Positive	O Rh(D) positive or negative	O preferred** Rh(D) positive or negative	O, A, B, AB	Any Group Note: Very infrequently used component. Cryoprecipitate is interchangeable with Fibrinogen Concentrate for fibrinogen replacement.
O Negative	O Rh(D) negative*	O preferred** Rh(D) negative*	O, A, B, AB	
A Positive	A, O Rh(D) positive or negative	A preferred** Rh(D) positive or negative	A, AB	
A Negative	A, O Rh(D) negative*	A preferred** Rh(D) negative*	A, AB	
B Positive	B, O Rh(D) positive or negative	B preferred** Rh(D) positive or negative	B, AB	
B Negative	B, O Rh(D) negative*	B preferred** Rh(D) negative*	B, AB	
AB Positive	AB, A, B, O Rh(D) positive or negative	AB preferred** Rh(D) positive or negative	AB	
AB Negative	AB, A, B, O Rh(D) negative*	AB preferred** Rh(D) negative*	AB	

* In urgent bleeding patient situations or during times of short supply, Rh(D) negative patients may need to receive Rh(D) positive RBC and platelets

** Platelets should be ABO compatible with patient's red blood cells (donor platelets are suspended in plasma).
In urgent bleeding patient situations or during times of short supply, TML will follow established policies for ABO group substitution for platelets.

Transfusion Practice Standards: Checking Blood

3. Unit Number

Check the **Unit number** (lot number for blood products) is identical on CBS label (manufacturer label for blood products), transfusion label/tag & chart label

DEEP WOODS REGIONAL LABORATORY MEDICINE PROGRAM
UNIT ISSUE/TRANSFUSION FORM
DATE: 23/09/24

(DATE FORMATS ON THIS REPORT ARE IN THE FORMAT DD/MM/YR)

PATIENT: Shirley, Anne MRN # : M000004091 **A POSITIVE anti-K**
TYPENEX #: 64/F
LOCATION : GO-HOME SPEC #: 2605 : BB00003R

PRODUCT : RED CELL CONCENTRATE PRODUCT UNIT # : C055624317655 **A POSITIVE**

COMPATIBLE ? P 23/09/24 0902 <BBWOLF>
MESSENGER : Bear, Mama _____
ISSUED : 23/09/24 0921 <BBWOLF>
ISSUE COMMENTS : c- K-

DATE OF TRANSFUSION : _____
TIME TRANSFUSION BEGAN: _____ ENDED: _____
AMOUNT : 300 ML
SIGNATURES :
UNIT ADMINSTERED BY : _____
CHECKED BY : _____
TRANSFUSION COMMENTS :

Transfusion Practice Standards: Checking Blood
4. Expiry & Visual Inspection

Expiry

- Check **time of issue** (removal from TML temperature-controlled environment) on chart label.
- Blood expires 4 hours from time of issue; transfusion must be completed or any remainder discarded.

Note: In this example, the issue time is 0921 hours 23/09/24. The RBC unit expires 4 hours later at 1321 hours 23/09/24.
By 1321 hours the transfusion must be completed or any remainder discarded.

DEEP WOODS REGIONAL LABORATORY MEDICINE PROGRAM
UNIT ISSUE/TRANSFUSION FORM
DATE: 23/09/24

(DATE FORMATS ON THIS REPORT ARE IN THE FORMAT DD/MM/YR)

PATIENT: Shirley, Anne MRN # : M000004091 **A POSITIVE anti-K**
TYPENEX #: 64/F
LOCATION : GO-HOME SPEC #: 2605 : BB00003R

PRODUCT : RED CELL CONCENTRATE PRODUCT UNIT # : C055624317655 **A POSITIVE**

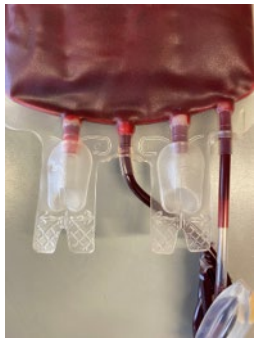
COMPATIBLE ? P 23/09/24 0902 <BBWOLF>
MESSENGER : Bear, Mama _____
ISSUED : 23/09/24 0921 <BBWOLF>
ISSUE COMMENTS : c- K-

DATE OF TRANSFUSION : _____
TIME TRANSFUSION BEGAN: _____ ENDED: _____
AMOUNT : 300 ML
SIGNATURES :
UNIT ADMINSTERED BY : _____
CHECKED BY : _____
TRANSFUSION COMMENTS :

Visual Inspection

Check the **blood bag** for

- Any clots or precipitates
- Unusual colour
- Ports are intact, no leaking



Click to review the CBS Visual Inspection Tool

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

12. Close client monitoring is required for early identification of suspected transfusion reactions. **Monitoring** includes assessing for signs/symptoms indicative of a transfusion reaction and vital sign parameters **temperature, blood pressure, pulse, respiratory rate, and oxygen saturation**. Particularly if the client is **at risk for TACO, chest auscultation** is judicious (refer to slide 28).

- **Blood components:**
  a. Assess & vital signs - at minimum:
    - Within 30 minutes of initiating transfusion (baseline),
    - 15 minutes after initiating transfusion,
    - Upon completion of transfusion, and
    - If a transfusion reaction is suspected (acute reactions may occur during & up to 4 hours post transfusion; dyspnea reactions up to 24 hours post transfusion).

  b. Following transfusion, observe and monitor the client periodically; best practice recommendation is, at minimum 30 minutes post-transfusion.

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

12. Close client monitoring is required for early identification of suspected transfusion reactions. **Monitoring** includes assessing for signs/symptoms indicative of a transfusion reaction and vital sign parameters **temperature, blood pressure, pulse, respiratory rate, and oxygen saturation**. Particularly if the client is **at risk for TACO, chest auscultation** is judicious (refer to slide 28).

- **Blood products:**
  a. IV route administration, monitor as per blood component transfusion as well as per the manufacturer's monograph instructions.

  b. IM or SC route administration, monitor as per the manufacturer's monograph instructions.

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

13. The **infusion rate/duration** proceeds as defined in the transfusion order or as per the hospital specific blood administration policy and procedure and **is appropriate for the client situation** (routine, stable, not bleeding verses emergent, unstable, bleeding client scenario, blood component/ product, **TACO risk assessment** [refer to slide 28]).

Blood Component	Rate of Infusion for 1 unit /1 dose
Red Blood Cells	**Over 2 hours**
Platelets	**Over 60 minutes**
Plasma	**Over 30 to 120 minutes**
For clients with TACO risk, slower rate of infusion.	
If tubing primed with 0.9% NaCl, then re-prime with blood so client receives all of test dose.	
Adults: first 15 minutes, infusion rate 50 mL/hour (i.e., test dose volume is 12.5 mL). Neonates/Pediatrics: first 15 minutes infusion rate 1 mL/kg/hour to a maximum of 50 mL/hour.	
Complete transfusion within 4 hours of removal from temperature-controlled environment (time of issue from TML or removal from cooler).	

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

13. The **infusion rate/duration** proceeds as defined in the transfusion order or as per the hospital specific blood administration policy and procedure and **is appropriate for the client situation** (routine, stable, not bleeding verses emergent, unstable, bleeding client scenario, blood component/ product, **TACO risk assessment** [refer to slide 28]).

Blood Product Transfusion

- IV route administration:
  Follow the manufacturer's monograph instructions regarding rate of infusion or
  Per amendments approved by the TM Medical Director and per the hospital specific blood administration policy and procedure (e.g., IVIG infusion rates for chronically infused clients who tolerate IVIG well).

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

14. Suspected **transfusion reactions** must be identified, managed, and reported to TML to ensure that transfusion is as safe as possible for clients.

- Refer to your hospital specific transfusion reaction policy & procedure.

<u>Transfusion Reaction Signs & Symptoms</u>

- Broad categories include fever, urticaria, dyspnea, and hypotension.

- Additional signs & symptoms include airway or facial edema, anxiety, coughing, diffuse bleeding/oozing, hemoglobinuria, hypertension, itching, nausea/vomiting, pain (back, headache, IV site), rash, shaking chills/rigors, subjective chills, tachycardia, urine colour (dark/red), wheezing.

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

14. Suspected **transfusion reactions** must be identified, managed, and reported to TML to ensure that transfusion is as safe as possible for clients.

Significant Changes from Baseline Vital Signs

a) Temperature (^{O}C): ≥ $38^{0}C$ and increase of at least $1^{0}C$ from pre-transfusion.

b) BP (mmHg), Systolic Blood Pressure (SBP): hypotension: SBP ≤ 80 mmHg and from pre-transfusion SBP ≥ 30 mmHg absolute decrease or 15 to 25% relative decrease.

c) Pulse (per minute): pulse > 100 and from pre-transfusion, 15 to 25% relative increase.

d) Respirations (per minute): respirations > 20 and from pre-transfusion, 15 to 25% relative increase.

e) Oxygen Saturation (SpO_2) (%): ≤ 90% or decrease of at least 5% from pre-transfusion SpO_2.

Transfusion Practice Standards: The How & Why of Blood Administration

Transfusion

14. Suspected **transfusion reactions** must be identified, managed, and reported to TML to ensure that transfusion is as safe as possible for clients.

If a Transfusion Reaction is Suspected

If any (minor or severe) signs/symptoms indicative of a reaction occur:

- **STOP** the transfusion,
- Maintain IV access,
- Check vital signs,
- Verify identifiers on client's identification armband match that on transfusion label/tag,
- Verify component unit number/product lot number matches that on transfusion label/tag,
- Notify the prescriber but remain with the client,
- Provide client care as ordered,
- Report all suspected reactions to TML, and
- Document all details.

Transfusion Practice Standards: The How & Why of Blood Administration

Post-Transfusion

15. Adhere to **blood expiry time**. Outside the expiry time, discard any remainder.

- Blood component expiry:
  4 hours from time of issue from TML
  Know where issue time is documented within your TML system.
  If issued in a temperature validated container, 4 hours after removal from this temperature-controlled environment (also must respect the expiry time of the container).
- Blood product expiry:
  Per the product monograph information.
  If administered IV from its vial/glass bottle, 4 hours from the time that the vial/glass bottle was entered/spiked.
  Generally, all blood products are single use.

Transfusion Practice Standards: The How & Why of Blood Administration

Post-Transfusion

16. **Complete IV administration of blood** by: **flush the tubing** with 0.9 % NaCl (blood components) or compatible IV fluid (blood products), discontinue the tubing in a timely manner (tubing can harbour bacteria). **Dispose** of tubing, bags, vials/bottles in **biohazardous waste**.

- Flushing the tubing ensures the client receives the full dose.

Case 2 Question 3

Anne Shirley, the client who is post-op hip surgery & resides in a long-term care (LTC) home is to be discharged from your hospital to the home following the 1-unit RBC transfusion. The transfusion is just completing; the client transportation service has arrived. The service wants to transport Anne ASAP.

You should (select all applicable):

a) Quickly remove Anne's IV & proceed with the transport.

b) Call the LTC home & advise the RN of Anne's RBC transfusion today & to monitor/observe the client periodically (acute reactions may up to 4 hours post-transfusion; for dyspnea reactions up to 24 hours post transfusion).

c) Check your hospital blood administration policy & procedure for post-transfusion monitoring requirements.

Transfusion Practice Standards: The How & Why of Blood Administration

Post-Transfusion

17. Upon **completion of IV administration of blood, perform client assessment and re-check vital signs**.
Following transfusion, observe and monitor the client periodically; for transfusion safety, best practice recommendation is at minimum, 30 minutes post-transfusion. Also refer to Practice Standard 12.

- Refer to your hospital specific post-transfusion monitoring policy & procedure; may include variances approved by the TM Medical Director.
- Acute reactions may occur during transfusion and up to 4 hours post-transfusion; for dyspnea reactions up to 24 hours post transfusion.

Transfusion Practice Standards: The How & Why of Blood Administration

Post-Transfusion

18. **TML documentation parameters** provide the information necessary for follow up of a transfusion reaction and for traceability.

Client health record documentation mandated per Transfusion Medicine Standards & incorporated by TML (electronic or paper based) includes:

a. recipient's first and last name and unique identification number
b. recipient and donor ABO and RhD group (as appropriate for component)
c. recipient compatibility status (as appropriate for component)
d. unit/lot number of blood component or blood product
e. type of blood component or blood product
f. volume/dose transfused
g. date and time of issue
h. start and finish date and time of transfusion
i. identity of the transfusionist
j. any adverse transfusion reactions.

Transfusion Practice Standards: The How & Why of Blood Administration

Post-Transfusion

18. **TML documentation parameters** provide the information necessary for follow up of a transfusion reaction and for traceability.

Transfusionist must complete documentation by adding:

- Identity of transfusionist (i.e., name, signature, employee identification number)
- Transfusion start and finish date/time
- Client care: assessments, vital signs, volume infused (fluid balance record).
- If a transfusion reaction is suspected, document signs/symptoms, client care.

Transfusion Practice Standards: Summary: Transfusion Checklist

TRANSFUSION CHECKLIST

For references, refer to Bloody Easy Blood Administration Version 4

Unequivocal (unmistakeable) identification of the client is mandatory. Best practice for transfusion safety, client must be wearing a client identification armband. Client identification information must remain attached to the blood for the duration of the transfusion.

PRE-TRANSFUSION

- ✓ **Informed Consent**
  - Prescriber role; advocate questions addressed.
  - Exception: emergent, life-threatening bleed.
- ✓ **Transfusion Order**
  - Complete, required information included.
  - Indication supported: signs & symptoms, labs.
  - Refer to hospital specific transfusion guidelines.
- ✓ **Group & Screen Testing**
  - Required for compatible blood components & including S/D plasma.
  - ABO, Rh(D) blood groups, antibody screen (clinically significant antibodies).
  - Label tube of blood at client's bedside.
- ✓ **Prepare the Client**
  - Educate: client care & symptoms of reaction.
  - Assess: transfusion history & TACO risk factors, follow up as indicated.
- ✓ **Prepare the Equipment**
  - Dedicated, patent IV (peripheral or central).
  - Compatible IV fluid (0.9 % NaCl [sodium chloride] for blood components).
  - Blood components – tubing/filter (170-260 micron); change per manufacturer, generally after 4 units or 4 hours whichever occurs first.
  - 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.
  - Health Canada approved infusion devices; pumps support consistent infusion rate.
- ✓ **Pick Up Blood from TML** [Transfusion Medicine Lab]
  - Only when ready to transfuse; client identification (surname, first name, unique identification number) & pick up slip/request.

TRANSFUSION

- ✓ **Checking Blood Components/Blood Products**
  - Blood received matches transfusion order.
  - **At bedside, in physical presence of client.**
  - **1. Client Identification**: surname, first name, unique identification number identical on armband, order, transfusion & chart label/tag.
  - **2. ABO, Rh(D) Blood Groups, Antibody Screen (Components & S/D plasma):** identical/ compatible on group & screen test, CBS [Canadian Blood Services] label, transfusion & chart label/tag.
  - **3. Unit (Components) / Lot (Products) Number:** identical on CBS label (Components) / manufacturer label (Products), transfusion & chart label/tag.
  - **4. Expiry & Visual Inspection**
    Components: expire 4 hours after TML issue; no clots/precipitates, usual colour, ports intact.
    Products: vials/glass bottles – once entered/ spiked expire after 4 hours, single use; seal/ package intact, colour as per manufacturer.
- ✓ **Client Assessment & Vital Signs** (for each unit)
  - Close monitoring/observation required.
  - Minimum: within 30 minutes of starting, 15 minutes after starting, upon completion, if transfusion reaction suspected.
  - Temperature, BP, pulse, respiratory rate, oxygen saturation; if TACO risk - chest auscultation
- ✓ **Infusion Rate** (for each unit)
  - Adults: 50 mL/hour for first 15 minutes; tubing primed with blood; may defer if acute bleeding.
  - Re-check vital signs after 15 minutes, if no indication of reaction, then rate as ordered.
- ✓ **Suspected Transfusion Reaction**
  - If any adverse/unexpected/serious symptoms, **STOP** transfusion; refer to TTISS Reaction Chart.

POST-TRANSFUSION

- ✓ **Completing the Transfusion**
  - Comply with expiry time specific to the blood component/blood product.
    Outside the expiry time, discard remainder.
  - Component tubing: flush with 0.9 % NaCl.
  - Products given IV: flush (tubing/IV site) with compatible IV fluid.
  - Hospital may require returning the empty blood bag to TML.
    Otherwise, dispose of blood tubing/bags in biohazardous waste.
  - Re-assess client & re-check vital signs at end of transfusion.
    Following transfusion, observe & monitor periodically; best practice recommendation is at minimum, 30 minutes post transfusion (reactions may occur up to 4 hours post transfusion; for dyspnea reactions up to 24 hours post transfusion).
- ✓ **Documentation**
  - Document: identity of transfusionist; transfusion start & stop times; client care: assessments, vital signs, volume transfused.
  - If a transfusion reaction is suspected, document signs & symptoms, client care, report to TML.
  - Per hospital policy & procedure, electronic or paper (completed chart label/tag) documentation for each component or product transfused added to client's health record.
  - Hospital may require a completed "transfusion record" form returned to TML.

ORBCoN — Ontario Regional Blood Coordinating Network

bloody easy

June 2026, version 2 Ontario Regional Blood Coordinating Network

Transfusion Knowledge Question 1 - Post

You are an RN working in the Emergency Department (ED).
An MHP for an unidentified motor vehicle accident client, a 25-year-old of childbearing potential, seems to be resolving (uncrossmatched blood, 2 units RBC, group O, Rh negative, K negative, remain in the 3rd MHP cooler).
Then a 65-year-old male client with acute GI bleeding (discharged last week after a GI bleed) is admitted to ED. His vital signs are very unstable, he is being intubated, MHP is ordered.

As per ED MD's order, would you transfuse the uncrossmatched blood, 2 units RBC, group O, Rh negative, K negative remaining from the motor vehicle accident client to the GI bleed client?

a) Yes
b) No

Transfusion Knowledge Question 2 - Post

Blood Component (exception, including solvent detergent [S/D] plasma) transfusion administration to a stable client, not actively bleeding, non-urgent indication, suggested infusion rate information includes:

Component	Rate of Infusion for 1 unit /1 dose
Red Blood Cells	**Over 2 hours**
Platelets	**Over 60 minutes**
Plasma	**Over 30 to 120 minutes**
For clients with TACO risk, slower rate of infusion.	
If tubing primed with 0.9% NaCl, then re-prime with blood so client receives all of test dose.	
Adults: first 15 minutes, infusion rate 50 mL/hour (i.e., test dose volume is 12.5 mL). Neonates/Pediatrics: first 15 minutes infusion rate 1 mL/kg/hour to a maximum of 50 mL/hour.	
Complete transfusion within 6 hours of removal from temperature-controlled environment (time of issue from TML or removal from cooler).	

a) True
b) False

References [1]

Accreditation Canada [Internet]. North York ON; 2023; cited 2026 Jun 15. 163p. Diagnostic assessment programs: medical laboratory. Available from: https://diagnostics.accreditation.ca/Diagnostic-Assessment-Programs/Medical-Laboratory-and-Diagnostic-Imaging *(Note: click "Contact Us" for information)*

Bulle EB, Klanderman RB, Pendergrast J, Cserti-Gazdewich C, Callum J, Vlaar APJ. The recipe for TACO: A narrative review on the pathophysiology and potential mitigation strategies of transfusion-associated circulatory overload. Blood reviews. March 2022;52.

Callum JL, Pinkerton PH, Lin Y, Cope S, Karkouti K, Lieberman L, Pendergrast JM, Robitaille N, Tinmouth AT, Webert KE. Bloody easy 5.1 blood transfusions, blood alternatives and transfusion reactions a guide to transfusion medicine. 5th ed. Toronto: Ontario Regional Blood Coordinating Network; 2022 [revised 2023; cited 2026 Jun 15]. 145p. Available from: https://transfusionontario.org/en/category/bloody-easy-e-tools-publications/bloody-easy-for-healthcare-professionals/

Canadian Blood Services (CBS). Circular of information [Internet]. Ottawa (CA); CBS; 2026 [cited 2026 Jun 16]. Available from: https://www.blood.ca/en/hospital-services/products/component-types/circular-information

Canadian Blood Services. Visual Inspection Tool [Internet]. Ottawa: Canadian Blood Services; 2023 [cited 2026 Jun 17]. Available from: https://profedu.blood.ca/en/visual-inspection-tool

Canadian Society for Transfusion Medicine (CA). Standards for hospital transfusion services. Markham ON; 2021 Dec; cited 2026 Jun 15. 110 p. Report No.: Version 5. Available from: http://www.transfusion.ca/Resources/Standards

College of Nurses of Ontario (CNO). Standards & learning CNO documents entry-to-practice competencies for registered nurses [Internet]. Toronto (CA): College of Nurses of Ontario; 1999 Mar [revised 2023 Jun; cited 2026 Jun 15]. 16p. Report No: 41037. Available from: https://cno.org/Assets/CNO/Documents/Become-a-Nurse/41037-entry-to-practice-competencies-2020.pdf

References [2]

College of Nurses of Ontario (CNO). Standards & learning CNO documents entry-to-practice competencies for registered practical nurses [Internet]. Toronto (CA): College of Nurses of Ontario; 1999 Sep [revised 2023 Jun; cited 2026 Jun 15]. 12p. Report No: 41042. Available from: https://www.cno.org/globalassets/docs/reg/41042_entrypracrpn-2020.pdf

College of Nurses of Ontario (CNO). Standards & learning CNO documents practice standard medication [Internet]. Toronto (CA): College of Nurses of Ontario; 1996 Nov [revised 2025 Jul; cited 2026 Jun 15]. 8p. Report No: 41007. Available from: https://www.cno.org/globalassets/docs/prac/41007_medication.pdf

Doornaert M, Monstrey S, Roche N. Extravasation Injuries: Current Medical and Surgical Treatment. Acta chirurgica belgica. 2013;113(1):1–7.

Health Standards Organization [Internet]. Ottawa ON; 2018; cited 2026 Jun 17. 53p. Accreditation Canada: transfusion services. Available from: https://store.healthstandards.org *(Note: If you are part of an assessment program such as the Qmentum accreditation program, Accreditation Canada, your assessment body will provide you with the assessment standard prior to the standard being incorporated into your program and used for surveys or assessment purposes).*

Kaufman RM, Dinh A, Cohn CS, Fung MK, Gorlin J, Melanson S, et al. Electronic patient identification for sample labeling reduces wrong blood in tube errors. Transfusion (Philadelphia, Pa). March 2019;59(3):972–80.

Klein HG, Anstee DJ, Mollison PL, R Digital Library. Mollison's blood transfusion in clinical medicine [Internet]. 12E. Chichester, West Sussex, UK: John Wiley and Sons, Inc.; 2014. Available from: http://libaccess.mcmaster.ca/login?url=http://www.r2library.com/Resource/Title/9781405199407

Laureano M, Khandelwal A, Yan M. Transfusion reactions. In: Khandelwal A, Abe T, editors. Clinical Guide to Transfusion [Internet]. Ottawa: Canadian Blood Services, 2022 [cited 2026 Jun 17]. Chapter 10. Available from: https://professionaleducation.blood.ca

Laureano M, Khandelwal A, Zeller, M. Informed consent for blood transfusion [Internet]. Ottawa: Canadian Blood Services; 2024 [cited 2026 Jun 15]. Available from: https://profedu.blood.ca/en/transfusion/best-practices/informed-consent-blood-transfusion

References [3]

National Standard of Canada Canadian Standards Association (CA). Blood and blood components. Toronto ON; 2025 Mar; cited 2026 Jun 17. 166 p. Report No.: CAN/CSA-902:25. Available from: https://community.csagroup.org/docs/DOC-126295 (Note: must create a user account for access)

Nickel B, Gorski L, Kleidon T, Kyes A, DeVries M, Keogh S, Meyer B, Sarver MJ, Crickman R, Ong J, Clare S, Hagle ME. (2024). Infusion Therapy Standards of Practice, 9th Edition. Journal of Infusion Nursing, 47(1S Suppl 1), S1–S285. https://doi.org/10.1097/NAN.0000000000000532

Ontario Transfusion Transmitted Injuries Surveillance System (TTISS-ON). Resources acute transfusion reaction chart [Internet]. Hamilton (CA); TTISS-ON: 2020 [cited 2026 Jun 17]. Available from: https://ttiss.mcmaster.ca/?page_id=506

Ontario Regional Blood Coordinating Network. Bloody easy blood administration. version 3. Toronto: Ontario Regional Blood Coordinating Network; 2020 [cited 2026 Jun 17]. 146p. Available from: https://transfusionontario.org/en/category/bloody-easy-e-tools-publications/bloody-easy-blood-administration/

Ontario Regional Blood Coordinating Network. Reconstitution of fibrinogen concentrate and prothrombin complex concentrate outside of the transfusion medicine laboratory. version 1.1.0 Toronto: Ontario Regional Blood Coordinating Network; 2025 [cited 2026 Jun 17]. Available from: https://transfusionontario.org/en/category/bloody-easy-e-tools-publications/reconstitution-outside-tml/

O'Reilly C. Blood administration. In: Clarke G, Chargé S, editors. Clinical Guide to Transfusion [Internet]. Ottawa: Canadian Blood Services, 2019 [cited 2026 Jun 15]. Chapter 9. Available from: https://professionaleducation.blood.ca

Petrosoniak A, Pavenski K, da Luz LT, Callum J. Massive Hemorrhage Protocol: A Practical Approach to the Bleeding Trauma Patient. Emergency medicine clinics of North America. February 1, 2023;41(1):51.

References [4]

Rotin L, Zhang L, Armali C, Malkin A, Massin S, Meirovich H, et al. How much furosemide should be administered to prevent transfusion-associated circulatory overload? Results of a dose-finding study. Vox sanguinis. July 2025;120(7):683–93.

Rotin L, Tasmin F, Ieshu R, Jamorski M, Cserti-Gazdewich C. Can a pop-up stop a TACO? A best practice advisory alert as a clinical decision support tool to mitigate the occurrence of transfusion-associated circulatory overload. Transfusion medicine (Oxford, England). June 11, 2026. . Available from: https://doi.org/10.1111/tme.70094

Shih AW, Schnell G, Belley-Côté E, Lett R, Peretz-Larochelle M, Tinmouth A. Canadian Cardiovascular Society and National Advisory Committee on Blood and Blood Products Joint Statement on Blood Utilization and Transfusion for Patients With Acute Coronary Syndromes. Canadian journal of cardiology. October 1, 2025;41(10):1875–84.

Skidmore-Roth L. Mosby's 2024 nursing drug reference. Thirty-seventh edition. St. Louis, Missouri: Elsevier Inc.; 2024. *(Note: Furosemide)*

Vossoughi S, Paroder M. Administration of Blood Components and Biotherapies. In: Cohn CS, Delany M, editors. AABB Technical Manual. 21st edition. Bethesda MD: AABB Press; 2023. p. [567-588].

Acknowledgements

The Ontario Regional Blood Coordinating Network (ORBCoN) gratefully acknowledges funding support provided by the Ontario Ministry of Health. The views expressed in this presentation are those of the authors and of ORBCoN and do not necessarily reflect those of the Ontario Ministry of Health or the Government of Ontario.

Many thanks to my ORBCoN and Transfusion Medicine family for their ongoing mentorship and support.

Your participation is appreciated!

Save the Date!

Transfusionists Talk –

Transfusion Made Bloody Easy

Discussion of challenging, unusual, interesting transfusion scenarios.

Dates: **September 23, 2026**
Times: 9:30 – 10:30 a.m. (EDT)
2:30 – 3:30 p.m. (EDT)

To submit topics/cases, email:
bertad@mcmaster.ca

Transfusion Practice Standards: The How & Why of Blood Administration

Email: bertad@mcmaster.ca

Evaluation Survey

Please complete the evaluation survey to provide your feedback/suggestions and receive your certificate of attendance.

Evaluation Survey Options:

1. QR code
2. Link is posted in the Chat
3. Link will be emailed.