Class:	Alternate Product Name:	Company/Supplier:
Blood Component (human)	• Apheresis platelets (single donor platelets) • Buffy-coat platelets (pooled platelets) • Pooled platelets psoralen treated (pathogen inactivated) • PLT • Platelet concentrate (PLC)	Canadian Blood Services

Routes	Intravenous			Other		
	Direct IV	IV Infusion	Continuous Infusion	SC	IM	Other
Acceptable routes*	No	Yes	No	No	No	No

Description	• Standard platelet concentrates are collected and produced by two methods, which are considered equivalent in terms of clinical effectiveness in patients without platelet antibodies:
	  • Buffy-coat (pooled) platelets – a platelet concentrate prepared by separation of the buffy coat layer from approximately 480 mL of whole blood collected into 70 mL CPD (citrate, phosphate, dextrose) anticoagulant from four ABO matched donors, which are pooled in the residual plasma from one of the four donations.
	  • Apheresis (single donor) platelets – a platelet concentrate collected into ACD-A anticoagulant using an automated apheresis technique.
	• Pathogen inactivated platelets are prepared from the buffy coat layer of seven ABO-matched buffy coats from donors and pooled in 280 mL of platelet additive solution E (PAS-E), with pathogen reduction achieved using the Cerus INTERCEPT® DS Blood System for Platelets:
	  • Synthetic psoralen is added, followed by exposure to UVA light;
	  • Residual psoralen and free photoproducts are removed by adorption;
	  • The final volume is split into two single transfusion platelet doses.
	• Platelet concentrates are leukoreduced (LR) during processing at Canadian Blood Services.
	• Platelets are labelled with an Rh POS or NEG designation, as they may contain trace amounts of donor red blood cells (RBC).
	• Approximate volume of 1 unit (adult dose) of platelets:
	  • Standard buffy-coat (pooled) platelets: 315 mL.
	  • Standard apheresis platelets: 225 mL.
	  • Pooled platelets psoralen treated: 180 mL.
	• **Platelet doses are considered equivalent in terms of clinical effectiveness regardless of manufacturing method and will be issued based on inventory availability.**

Availability	

RUH	SCH	SPH	Rural
Yes	No*	Yes**	No

	• *SCH requests will be transported from RUH as requests are received. • **SPH regular transfusion medicine lab stock includes one unit. Additional units will be transported from RUH as requests are received. • Rural: Ordered as needed from Canadian Blood Services. • Requests for platelet transfusion in rural facilities for indications *other than* prophylaxis of bleeding in patients with hypoproliferative thrombocytopenia with a count less than 10 x 10^9 /L are subject to approval by the on-call Transfusion Medicine Physician.

Indications	• Prevention or treatment of bleeding due to platelet deficiency or dysfunction.
	• Thrombocytopenia (low platelet count) and bleeding prophylaxis where platelet count is:
	  • 10 x 10^9/L or less for prophylaxis in non-immune hypoproliferative thrombocytopenia.
	  • Less than 30 x 10^9/L for elective central venous catheter placement of minor elective procedures.
	  • Less than 50 x 10^9/L for lumbar puncture or major elective non-neuraxial surgery.
	  • Less than 100 x 10^9/L for neurosurgery.
	• Bleeding patient to treat clinically significant bleeding in the setting of thrombocytopenia.
	  • Less than 50 x 10^9/L severe, life-threatening bleeding.
	  • Less than 100 x 10^9/L for neurosurgery.
	  • Any level with abnormal platelet function (congenital or medication-induced).
	• Massive hemorrhage protocol with platelet count less than 75 g/L on CBC.
	• Patients with alloimmune refractoriness may require HLA or HPA matched apheresis (single-donor) platelets, preferentially transfused over buffy-coat (pooled) platelets.
	• Consult the Saskatchewan Transfusion Best Practice Recommendations for complete details.

Contraindications	• Bleeding unrelated to decreased platelet number or abnormal platelet function.
	• Relatively contraindicated in patients with destructive/consumptive platelet disorders, such as disseminated intravascular coagulation (DIC), thrombotic thrombocytopenic purpura (TTP), immune thrombocytopenia (ITP), and heparin induced thrombocytopenia (HIT), except for in the setting of life-threatening bleeding.
	• Pathogen inactivated psoralen treated platelets must not be used in:
	  • Individuals with a known hypersensitivity to amotosalen or other psoralens.
	  • Neonatal patients treated with phototherapy devices with a peak energy wavelength less than 425 nm or lower bound emission bandwidth less than 375 nm.
	  • *(Note: Standard neonatal phototherapy for hyperbilirubinemia has a peak energy wavelength of 450-460 nm and is of no concern).*

Warnings	• Informed consent must be obtained by the most responsible practitioner (MRP) prior to transfusion. • Infectious and non-infectious transfusion recipient adverse reactions are possible with each dose of platelets administered. Consult the Canadian Blood Services – Circular of Information, Pooled Platelets LR CPD, Apheresis Platelets document for details. • Pathogen inactivated psoralen treated platelets have a significantly lower infectious risk

	profile; non-infectious transfusion recipient adverse reaction risks are possible with each dose of platelets administered. Consult the Canadian Blood Services – Circular of Information, Pooled Platelets Psoralen Treated document for details. • Transfusion of multiple psoralen treated platelets may lead to hyperkalemia and/or hypermagnesemia; monitoring of electrolytes is recommended in this setting. • Irradiation of psoralen treated platelets is not required as the pathogen inactivation process also inactivates white blood cells, mitigating the risk of transfusion-associated graft vs host disease (TA-GVHD). • Patients with a documented history of allergic reaction or anaphylaxis to blood components should receive platelets under appropriate supervision as per MRP direction. • Platelet units should be ABO compatible with the recipient plasma; however, inventory limitations may result in ABO incompatible platelet unit issue for transfusion. • In the event of Rh POS RBC donor platelet transfusion to an Rh NEG recipient who is undergoing allogeneic bone marrow transplantation, is a female < 50 years old or male < 17 years old, a dose of Rh Immunoglobulin (WinRho®) is recommended to mitigate the risk of anti-D development. • Patients with a pregnancy or transfusion history may develop alloantibodies against platelet surface antigens and become refractory to standard platelet transfusion. Consultation with the on-call Transfusion Medicine Physician is recommended if platelet refractoriness is a concern.
Dosage	• Underlying patient clinical condition, risk of complications due to critical thrombocytopenia and ongoing blood loss need to be considered when determining dose. • Common dosing: • Adult – 1 adult dose (unit) platelets • Pediatric and Neonatal patient – 5-10 mL/kg, up to 1 unit platelets • In an average adult, each 1 unit platelets should raise the platelet count by at least 15 x 10^9/L.
Pre-Transfusion Testing Requirements	• ABO Group and Rh Type on current admission. • Contact Transfusion Medicine or your local laboratory prior to collection to confirm the requirement for testing in chronically transfused patients. • Confirmatory ABO/Rh is not required for platelet transfusion.
Ordering	• A properly written, comprehensive order by the MRP (or their delegate) authorized to prescribe blood and a signed informed consent for blood transfusion are required prior to platelet transfusion initiation. • Platelet doses are considered equivalent in terms of clinical effectiveness regardless of manufacturing method and will be issued based on inventory availability. • **Saskatoon/Humboldt:** • Details required in all transfusion orders to enable product request form completion: • Diagnosis/transfusion indication. • Dose/Number or of units required. • **Adult Transfusion**: Number of adult doses required (1 adult dose = 1 apheresis platelet or 1 buffy-coat platelet).

	• **Pediatric/Neonatal Transfusion**: Total mL volume required until volume equals that of 1 unit platelets (approximately 250 mL), then order 1 adult dose of platelets. • Urgency. • Date and time to be transfused. • For surgery or high-risk invasive procedure, include procedure date. • Indicate any special requirements, if applicable, as directed by the MRP: • Irradiated (see reverse of Blood Component and Tissue Product Request Form #103220 for list). • HLA-matched (with proven platelet refractoriness due to HLA antibodies). • HPA-matched donor (suspected or proven HPA antibodies causing Neonatal Allo-Immune Thrombocytopenia (NAIT) or Post-Transfusion Purpura (PTP)). • Washed (with a history of severe, recurrent allergic reaction resistant to medical therapy; requires Transfusion Medicine Physician approval). • Platelets must be administered at a rate appropriate for the volume status of the patient, as specified by the MRP. • A pre-transfusion platelet count must be available demonstrating thrombocytopenia before platelet issue, with the exception of bleeding or prophylaxis against bleeding in the context of a platelet function defect • Only **1 (one)** unit of platelets will be issued at a time from the Transfusion Medicine Laboratory, unless approval of the on-call Transfusion Medicine Physician is obtained. • A CBC should be drawn within 60 minutes following a platelet transfusion to evaluate the rise in platelet count in thrombocytopenic patients. • A platelet count rise of at least 15 x 10^9/L is expected within 60 minutes of platelet transfusion. If the rise is lower than expected, contact the on-call Transfusion Medicine Physician to discuss platelet refractoriness investigation. • See 'Comments' section for more information about platelet refractoriness. • Post-transfusion CBC is not necessary in patients with a platelet function defect and normal platelet count; clinical response assessment is required.
Forms Required	• Informed Consent for Blood Components and/or Plasma Protein Products #101479. • Transfusion/Infusion Administration and Assessment Record #101059 or Transfusion Administration Record for OR/MHP #103945 • Saskatchewan Transfusion Adverse Event Report Form #103695 (only needed if adverse event occurs). • Notification of Administration of Blood and/or Blood Products Form #103854. • **Saskatoon/Humboldt**: Blood Component and Tissue Product Request Form #103220 • **Transfuse-Only former SHR sites:** Contact your site laboratory.
Supplies Required	• Established IV access site and catheter gauge (refer to Nursing Policy and Procedure Manual #1141 for complete details). • Blood administration tubing with a 170 to 260 micron filter.

	• Alcohol swabs.
	• IV Smart Pump.
	  • Note: Gravity infusion line with associated tubing may be required in a rapidly bleeding patient
	• 0.9% Normal Saline (for priming tubing); Plasmalyte is acceptable
	• Ensure availability and access to IV tubing and 0.9% Normal Saline or Plasmalyte in clinical care area, in case of transfusion reaction.
	• Specific to neonatal/Pediatric transfusion:
	  • If an aliquot is provided for infusion via a syringe on the IV Smart Pump, a label for the syringe will be provided by TML.

Administration	• **Blood consent:** Required prior to blood administration. Confirm informed patient consent for transfusion obtained by the MRP is available.
	
	• **Pre-infusion:** Refer to Nursing Policy and Procedure Manual #1141 for complete details, including review of MRP order, pre-transfusion testing requirements, supplies/equipment preparation, identification confirmation and baseline clinical assessment documentation.
	
	• **Access:** Peripheral or central IV line appropriate to the patient condition and transfusion needs.
	
	• **Compatible Solutions:** 0.9% Normal saline or Plasmalyte ONLY.
	
	Note: Blood components/blood products must not come into contact with any IV medications (i.e., all medications are considered incompatible).
	
	• **Reconstitution:** Not applicable.
	
	• **Administration:** Refer to Nursing Policy and Procedure Manual #1141 for details including priming infusion lines and vital signs monitoring.
	  • Infusion rates:
	  • Adults: Transfuse slowly for the first 15 minutes (50 mL/hour), then as ordered by the MRP.
	  • Neonates/Pediatrics: Transfuse slowly for the first 15 minutes (1 mL/kg/hour, up to 50 mL/hour), then as ordered by the MRP.
	
	  • Transfusion of each dose of platelets **must** be completed a maximum of 4 hours from the time of issue.
	  • A platelet dose is typically infused over a total of 60-90 minutes; however, the rate of transfusion is at the discretion of the MRP and dependent on the clinical condition of the patient.
	  • Platelets must NOT be infused through a blood warmer or pressure device, including a rapid infuser.

	• **Lab testing post administration:**
	  • Post-transfusion CBC is strongly recommended and is required prior to issue of additional platelet units in non-bleeding patients.
	  • Peripheral venipuncture is preferred to avoid specimen dilution by indwelling line flush or locking fluid.
	  • In the setting of multiple blood component transfusion, monitoring of electrolytes, including calcium and magnesium, is recommended to avoid complications.

Nursing Implications	• Patient monitoring: Follow the Nursing Policy and Procedure Blood Components and Blood Product – Administration of #1141.
	  • All patients should have vital signs checked:
	  • Within 30 minutes prior to initiating transfusion.
	  • 15 minutes after start of infusion.
	  • Every 60 minutes (1 hour) until the infusion is complete.
	  • Within 30 minutes of completing the transfusion.
	• Documentation: Administration and vital signs shall be recorded on the Transfusion/Infusion Administration and Assessment Record #101059 (use one side of the form for each unit transfused).

Adverse Events	• Administration of blood components and products during day-time hours is recommended to ensure resources are quickly available to manage adverse recipient transfusion reaction. • Platelet units should be ABO compatible with the recipient plasma; however, inventory limitations may result in ABO incompatible platelet unit issue for transfusion with a rare risk of hemolytic transfusion reaction (approximately 0.1%). • Infectious and non-infectious transfusion recipient adverse reactions ranging in severity from minor to life-threatening are possible with each unit platelets administered. Consult the Canadian Blood Services – Circular of Information, Pooled Platelets LR CPD, Apheresis Platelets document for details. • Pathogen inactivated psoralen treated platelets have significantly lower infectious risk profile; non-infectious transfusion recipient adverse reaction risks are possible with each dose of platelets administered. Consult the Canadian Blood Services – Circular of Information, Pooled Platelets Psoralen Treated document for details. • Patients being transfused with platelets who are receiving large volumes or who have risk factors for volume overload (cardiac dysfunction/heart failure, renal insufficiency, positive fluid balance, age 70) should receive blood slowly, with consideration given to pre-transfusion diuresis • Refer to Blood Components and Blood Product – Administration Nursing Policy and Procedure Manual #1141 for managing of allergic transfusion reaction and call MRP. • Document adverse event on Saskatchewan Transfusion Adverse Event Report Form #103695, whether or not the transfusion was discontinued.
Comments	• Platelet doses will be issued based on available inventory. • Exception: The expressed requirement for designated matched apheresis (single-donor)

	platelets due to HLA/HPA mediated platelet refractoriness or in the setting of suspected proven HPA mediated neonatal alloimmune thrombocytopenia (NAIT) or post-transfusion purpura (PTP) due to HPA antibodies. • Psoralen treated platelets are not irradiated, but can be administered to patients with indications for irradiated blood transfusion, as the Cerus INTERCEPT® process inactivates white blood cells and mitigates the risk of TA-GVHD. • In the pre-procedure setting or if platelet increments are lower than expected, a post-transfusion platelet count is recommended within 1 hour of transfusion following each dose administered to ensure appropriate post-transfusion increment (based on a calculated *corrected count increment* (CCI) **or** increase of at least 15 x 10^9/L). • If platelet alloimmunization is suspected due to poor 1 hour post-transfusion platelet counts on two separate occasions, testing for HLA antibodies should be considered. • Contact the Transfusion Medicine Physician on-call to discuss approval for platelet refractoriness testing for suspected or confirmed NAIT or PTP. • If testing is approved, complete the Platelet Immunology Test Request Form #1143. • Healthcare professionals should not send for product pick-up prior to confirming that the patient informed consent has been obtained and that an intravenous line is in place for blood infusion. • Issued platelets may be accepted back into inventory only if returned to the Transfusion Medicine Laboratory within 60 minutes of issue. • Transfusion of platelets must be completed within 4 hours of unit release from the Transfusion Medicine Laboratory.

References	• Best Transfusion Practice Recommendations:
	  • Transfusion Best Practice Recommendations for Adult Patients – Saskatchewan
	  • Transfusion Best Practice Recommendations for Pediatric Patients – Saskatchewan
	  • Transfusion Best Practice Recommendations for Neonatal Patients - Saskatchewan
	  • Adult Blood Component Order Screening Clinical Decision Algorithm
	
	• Canadian Blood Services – Circular of Information, Pooled Platelets LR CPD, Apheresis Platelets. Accessed April 30, 2023.
	
	• Canadian Blood Services – Circular of Information, Pooled Platelets Psoralen Treated. Accessed April 30, 2023.
	
	• Blais-Normandin, I, Tordon B, Anani W, Ning S. Chapter 19: Pathogen-reduced Platelets. Published October 14, 2022. Accessed April 30, 2023.
	
	• Gupta A, Bingham M. Chapter 2: Blood Components, in the Clinical Guide to Transfusion. Published March 24, 2023. Accessed April 30, 2023.
	
	• Ning S, Tordon B, Zeller M, Anani W. FAQ: Information for health professional on pathogen reduced platelets (PPPT). Published October 14, 2022. Accessed June 5, 2023.

	• O'Reilly C. Chapter 9: Blood Administration, in the Clinical Guide to Transfusion. Published October 6, 2020. Accessed April 30, 2023. • Callum J, et al. (2022) Bloody Easy 5, page 27-33. Ontario Regional Blood Coordinating Network. • Saskatoon Health Region Policies and Procedures Nursing Policy and Procedure Blood Components and Blood Product – Administration of #1141 Nursing Policy and Procedure Manual. Date Revised January 2023. Accessed April 30, 2023. • Bloody Easy Administration Version 3 Handbook. Accessed July 21, 2022.