

## Hamilton Regional Laboratory Medicine Program - HRLMP

(effective at Hamilton Health Sciences, St. Joseph's Healthcare and  
Associated Health Care Facilities)

Initial Issue Date: Revision Date:	<b>Administration Guidelines</b>	Section: <b>Laboratory Medicine</b> Sub-Section: <i>Transfusion Medicine</i>
Title: <b>PLATELETS</b>		Document Number:
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**Purpose:** To Establish the Indications and Administration of Platelets

**Scope:** Applies to all patient care areas across HHS and St. Joseph's Healthcare

**Definitions:** Platelet concentrates are derived from a leukocyte reduced whole blood donation or by a leukoreduced apheresis collection.

Other Names: <b>PLATELETS</b>	Date Approved:	Pages: <b>1 of 4</b>
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### INDICATIONS:

- Treatment of patients with thrombocytopenic bleeding due to severely decreased platelet production or patients bleeding due to functionally abnormal platelets (plt)
- Prophylactic therapy for patients with rapidly falling or low platelet counts (plt < 10 x 10<sup>9</sup>/L) secondary to cancer or chemotherapy especially if fever, bleeding or invasive procedures
- May be used in cases of postoperative or trauma associated bleeding (plt < 50 x 10<sup>9</sup>/L)
- Hematology consult is recommended when platelet transfusions are considered

### DOSAGE:

- All platelet products are leukoreduced
- Adult standard dose is 5 bags (units) of random donor plt or 1 bag of apheresis (single donor) plt
- Dose can be calculated using the formula of 1 random donor bag/10Kg of body weight
- Pediatric dose – 1 random donor plt/5Kg body weight
- Newborn dose – 10 mL/Kg

**SUPPLIED:**

- Platelets prepared from a whole blood collection contain at least  $55 \times 10^9/L$  plts suspended in 40-70 mL plasma
- Prepared from whole blood collected in CP2D anticoagulant solution
- Apheresis platelet collection contains at least  $300 \times 10^9/L$  of platelets with approximately 300 mL of plasma
- Trace amount of red cells may also be present in both products

**RECONSTITUTION AND STABILITY:**

- Stored for up to 5 days between 20°C and 24°C
- Collection and expiry date on label
- Must be gently and continuously agitated during storage
- Random donor platelets are pooled in the laboratory just prior to infusion
- Must be infused within 4 hours of pooling

**ADMINISTRATION:**

- Prior to administration, a recipient and product identification must be made
- For PNH (Paroxysmal Nocturnal Hemoglobinuria) and aplastic anemic patients on treatment, ABO identical platelets must be infused
- ABO compatible platelets will be selected when inventory permits
- RH negative patients should receive RH negative plt
- If RH negative platelets not available for RH negative recipient, may transfuse with RH positive and administer RH Immune Globulin (Rhlg)

METHOD	WHO/WHERE	DILUTION	HOW TO ADMINISTER	INFUSION PUMP	PRECAUTIONS AND MONITORING
IV PUSH	N/A	N/A	N/A	N/A	N/A
MINIBAG/ BURETROL	RN	No	- Administer by infusion using blood administration set with a filter at a rate that is patient dependent	Yes	- Observe and monitor for adverse reaction
PRIMARY IV BAG	RN	No	- Administer by infusion using blood administration set with a filter at a rate that is patient dependent	Yes	- Observe and monitor for adverse reaction
IM or SC	N/A	N/A	N/A	N/A	N/A

**COMPATIBILITIES/INCOMPATIBILITIES:**

- Saline solution is compatible with platelet infusion
- Platelet transfusion not indicated in patients with TTP (Thrombotic Thrombocytopenic Purpura) or chronic ITP (Idiopathic Thrombocytopenic Purpura) or HIT (heparin-induced thrombocytopenia) unless patient has a life threatening hemorrhage

**ADVERSE EFFECTS:**

**Acute Reactions:**

(a) Allergic Reaction:

- Manifested by cutaneous urticaria, wheezing
- If only a cutaneous reaction occurs, product should be stopped, antihistamine administered, and transfusion can usually be resumed
- Subsequent reaction may be prevented by premedication with an antihistamine

(b) Bacterial Contamination:

- Manifested by chills, high fever, hypotension, rigors
- Symptoms usually appear early in the transfusion
- Stop infusion immediately
- Return product to Transfusion Medicine for culture
- Perform blood culture on the patient
- Aggressive, supportive care and antibiotic treatment

(c) Anaphylactic Reaction

- Manifested by bronchospasm, dyspnea, hypotension and shock
- Occurs in IgA deficient recipient, who has antibody to IgA
- Usually occurs after a small volume of blood (10 to 15mL) infused
- Immediate treatment with adrenaline and corticosteroids indicated
- Discontinue product immediately

(d) Transfusion Related Acute Lung Injury (TRALI)

- Fever, pulmonary edema without evidence of cardiac failure, tachycardia, hypotension
- Can occur 2 to 8 hours post transfusion
- Usually caused by a potent white cell antibody in the donor product that reacts with the patient's white cells
- Treat symptoms; Report to Transfusion Medicine as donor must be removed from donor pool

(e) Febrile Reactions

- Manifested by temperature rise  $<1.5^{\circ}\text{C}$  with or without chills
- Usually due to cytokines released by leukocytes during storage

(f) Circulatory Overload

- Manifested by pulmonary edema
- Can occur after transfusion of excess volumes or at excessively rapid rates
- Particular risk in elderly patients with small stature or in patients with chronic severe anemia
- Can be avoided by slowing the rate of infusion or administering diuretic

(g) Passive Alloimmune Thrombocytopenia

- Manifested by abrupt onset of thrombocytopenia within hours after plasma infusion
- Caused by donor plasma alloantibodies that destroy recipient platelet
- Report to Transfusion Medicine (as donor must be removed from donor pool)

(h) Alloimmune Hemolysis

- Hemolytic transfusion reaction may occur when incompatible ABO group plasma is given
- Stop transfusion, manage symptoms
- Treat symptoms

**Delayed Reactions**

- Transmission of infectious agents (Malaria, Chagas)
- Transmission of infectious diseases (HIV, HBC,HCV)
- a) Post transfusion purpura
  - Dramatic sudden thrombocytopenia 5-10 days after blood transfusion
- b) Graft vs Host Disease (GVHD)
  - GVHD is a result of transfused lymphocytes
  - GVHD manifested by fever, diarrhea, liver function abnormalities and rash
  - May occur in patients that receive blood from direct family member(e.g. Parents)

**MANAGEMENT OF ADVERSE EFFECTS:**

- Notify physician
- Notify Transfusion Medicine

**NOTES:**

Distributed by Canadian Blood Services

**Documentation:**

Issue Transfusion sheet or requisition with unit number must be included in patient's chart  
Written Consent for transfusion must be obtained prior to administration.

**References:**

Circular of Information Canadian Blood Services, August, 1999.  
Blood Transfusion Therapy. A Physician's Handbook, 7<sup>th</sup> Edition American Association of Blood Banks, 2002

**Developed By In Consultation With:**

Transfusion Medicine Operations Group  
Pediatric Clinical Nurse Educators  
Adult Clinical Nurse Educators

REVIEW DATES:

REVISION DATES: