

## Section S: Blood Product Overview - Platelets

DESCRIPTION of PRODUCT .....	1
AVAILABILITY of PRODUCT .....	2
STORAGE of PRODUCT .....	2
CLINICAL INDICATIONS .....	2
REQUESTS for PLATELETS .....	3
PLATELET DOSAGE for PEDIATRICS and NEONATES.....	3
ADMINISTRATION of PRODUCT .....	3
ADDITIONAL COMMENTS .....	4
ADDITIONAL RESOURCES .....	4

### DESCRIPTION of PRODUCT

- Collected from volunteer donors by the Canadian Blood Services (CBS).
- Donor is screened and blood is tested for:
  - Hepatitis B Surface Antigen (HBsAg)
  - Syphilis
  - Antibodies to Hepatitis B core antigen (HBcore), Hepatitis C Virus (HCV), Human T-cell Lymphotropic Virus (HTLV-1 and 2), Human Immune Deficiency Virus (HIV-1 and 2)
  - Presence of viral RNA: HIV-1, HCV and West Nile Virus (WNV)
  - Presence of viral DNA: Hepatitis B virus (HBV)
- CBS reduces the risk of bacterial contamination with the use of a diversion pouch when collecting blood, and cultures all platelets products prior to issue
- There are 2 types of platelets that are available:

	Platelet Pool	Single Donor Platelet
Description	Produced from a CPD whole blood collection from which the buffy coat layer is separated.  4 donors' buffy coat layers (ABO identical) are combined by the CBS using plasma from one of the donors, then filtered to reduce the number of leukocytes.	Collected from <u>single</u> donors using automated apheresis techniques which include steps to separate leukocytes.  Donor may be selected to match HLA typing of recipient, if recipient is refractory to platelet transfusions.
Volume	Approx 300mL	Range from ~200 to ~350mL

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## Section S: Blood Product Overview - Platelets

	Platelet Pool	Single Donor Platelet
Platelet count	>240 X 10 <sup>9</sup> = 1 adult dose	> 300 X 10 <sup>9</sup> = 1 adult dose
Availability	Type of platelet most often available	If available, will be issued in place of a platelet pool. HLA matched platelets must be requested in advance and should only be used when 1 hour post platelet counts show that the patient is refractory to regular platelets.

### AVAILABILITY of PRODUCT

- PLTs are not always available at each LHSC/SJHC site, but the BTL can order PLTs from the CBS as required. Check with the BTL as to availability
- If an adult dose is requested, the BTL will issue either a Platelet Pool or a Single Donor Platelet.
- ABO identical or compatible platelets may not always be available. If the patient is less than 12 years of age and ABO compatible PLTs are not available, the BTL will remove most of the incompatible plasma (also referred to as volume reduced platelets)
- Rh Immune Globulin (Rhlg) will be recommended for all Rh Negative female patients <50 years of age that receive Rh Positive PLTs.
- On rare occasion the CBS will not be able to provide PLTs until later in the day when testing is complete. If this occasion arises, the BTL will delay prophylactic PLT transfusions, in order to keep any PLTs available for urgent cases.

### STORAGE of PRODUCT

- PLTs are stored at Room Temperature (20-24°C) and must be agitated continuously during storage.
- PLTs have an expiry date of 5 days.
- Issued PLTs MUST be infused immediately and must be maintained at Room Temperature (20°-24°C). Cold temperatures and lack of agitation decrease the viability of the PLTs.

### CLINICAL INDICATIONS

- Bleeding patients related to either thrombocytopenia (<50 X 10<sup>9</sup>/L) or platelet dysfunction.
- Prophylactic use in non-bleeding patients with platelet counts <10 X 10<sup>9</sup>/L due to acute marrow failure secondary to chemotherapy and/or Bone Marrow Transplant.
- Prophylactic use in patients with chronic marrow failure is not always indicated (consult hematologist).
- Patients with counts <50 X 10<sup>9</sup>/L may require platelets before an invasive procedure.

## Section S: Blood Product Overview - Platelets

Page 3 of 4

- Patients that require neurosurgery or are a CNS trauma should have platelet count maintained above  $100 \times 10^9/L$ .
- Relative **CONTRAINDICATIONS** (unless there is life or limb-threatening hemorrhage):
  - Idiopathic Thrombocytopenic Purpura (ITP): Platelet transfusion alone is often ineffective
  - Transfused platelets may exacerbate underlying process in:
    - Thrombotic Thrombocytopenic Purpura (TTP)
    - Heparin Induced Thrombocytopenia (HIT)
    - Post-Transfusion Purpura (PTP)

### REQUESTS for PLATELETS

- Platelets should be requested as an “adult dose” or by volume (mL) for pediatric patients (see [next section](#))
- At minimum, a previous record of the patients ABO and Rh must be available before PLTs are issued
- If the BTL has PLTs available on site they can be issued immediately unless volume reduction, splitting of product or washing is required.
- If no PLTs are on site, PLTs will be ordered from the CBS. Urgent requests should be available in less than 90 minutes.
- The BTL should be notified if PLTs may be required for a surgery, but the PLTs should NOT be issued until just before administration.

### PLATELET DOSAGE for PEDIATRICS and NEONATES

1. Pediatric/neonate patient <30kg, dose of 10 – 20mL / kg should be calculated to a maximum of 300mL. If calculated dose is >300mL, 1 adult dose should be requested.
2. Pediatric patient >30kg, order 1 adult dose.
3. If <1 adult dose is ordered, the type of platelet that is chosen is based on minimal donor exposure and availability of platelet.
4. The Blood Transfusion Lab (BTL) should provide ABO compatible platelet concentrates for the pediatric/neonate patient. If unavailable, platelet product will be volume reduced to remove most of the incompatible plasma.
5. Volume reduced platelets are not recommended and will NOT be issued unless ABO compatible platelets are not available.

### ADMINISTRATION of PRODUCT

- Administer through a standard blood transfusion set (170 – 260 $\mu$  filter). A new filter **MUST** be used for PLTs, since the PLTs can get caught in the trapped debris of a used filter.
- **ONLY** 0.9% sodium chloride is compatible with PLTs.

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## Section S: Blood Product Overview - Platelets

Page 4 of 4

- Can be administered as fast as the patient can tolerate, usually within 1 hour. Rate should be specified by ordering physician, and should include an initial rate of 50mL/hr for the first 15 minutes for non-urgent transfusions.
- ALL blood products including PLTs must be transfused within 4 hours of issue. Do NOT refrigerate or place in cooler with ice.
- Monitor the patient during the transfusion. Patient should be monitored closely for the first 15 minutes.
- Check and record patient's vital signs before infusing, within the first 15 minutes, and at minimum once again at the end of the transfusion.
- There is an increase risk of bacterial contamination with platelet transfusion due to product storage temperature. This may be as high as 1 in 5-10,000 transfusions.

### ADDITIONAL COMMENTS

- Platelet count should be checked 15-60 minutes post-transfusion to determine effectiveness of platelet transfusion.
- Poor platelet count increments may be due to bleeding, fever, sepsis, splenomegaly or autoimmune thrombocytopenia. In the absence of these, the patient would be considered refractory to random platelets if two successive platelet transfusions have failed to increase the platelet count by approximately  $10 \times 10^9/L$ .

### ADDITIONAL RESOURCES

For additional information, see the [British Columbia Transfusion Medicine Advisory Group Guidelines for Platelet Transfusion.](#)