

Section S: Blood Product Overview – Packed Cells (RBC)

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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)
- All products are leukoreduced at source.
- CBS also tests blood for ABO and Rh and clinically significant antibodies.
- Some donors are tested for CMV status.
- Since October 2008, all donor blood is taken in Citrate Phosphate Dextrose (CPD) anticoagulant. The CPD anticoagulated whole blood is spun down and the plasma is removed; 100mL of Saline Adenine Glucose Mannitol (SAGM) preservative solution is added; hematocrit of product is approximately 60%. Shelf life is 42 days.
- One unit of RBCs will increase hemoglobin approximately 10g/L in a non-bleeding 70kg man.
- RBCs do *NOT* contain any coagulation factors or platelets.

Date effective: January 2005

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AVAILABILITY of PRODUCT

- Group O, A, B and AB and both Rh Positive and Rh Negative RBCs are stocked at all LHSC/SJHC sites.
- ABO compatible (not always identical) may be required if the CBS cannot provide sufficient quantities of the patient's blood group (See [ABO compatibility chart](#)).
- Rh positive patients may receive Rh positive or Rh negative blood.
- Rh negative patients should receive only Rh negative red cells if available. If necessary, Rh negative females >50 years of age and males may receive Rh positive red cells.

REQUESTS for RBCs

- An in-date group and screen must be available in order to issue crossmatch compatible RBCs.
- Call the BTL to request that RBCs be crossmatched (<5 minutes if group and antibody screen already completed, and no antibodies are present).
- RBCs should be issued and transfused one unit at a time in a non-urgent/non-bleeding patient, and the patient should be assessed prior to transfusing additional units.

STORAGE of PRODUCT

- RBCs must be stored at 1-6°C in a carefully monitored fridge.
- Do *NOT* place in medication fridges or any other unmonitored fridge.
- When RBCs are issued, they must be returned to the BTL **immediately** if transfusion is canceled or delayed.

CLINICAL INDICATIONS

- Increase oxygen carrying capacity in patients that are bleeding, have surgical anemia, and/or non-pharmacologically treatable chronic anemia.
- If patient's hemoglobin is:
 - > 100g/L: transfusion of RBCs likely not required unless patient is bleeding.
 - 70 – 100g/L: transfusion only indicated if patient bleeding or symptomatic.
 - < 70: transfusion most likely warranted.

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ADMINISTRATION of PRODUCT

- Administer through a standard blood transfusion set (170 – 260 μ filter). Filter should be changed every 2-4 units, but should not be used longer than 4-6 hours
- RBC's should not be run together with anything but 0.9% sodium chloride, plasma or 5% albumin. D5W will hemolyse or cause blood to clot; Ringer's will cause clotting of blood.
- It is not usually necessary to add anything to the SAGM RBC since the hematocrit is about 60%. If the unit is not running well, do NOT add anything but 0.9% sodium chloride to RBC.
- Do NOT add medications to the RBCs.
- Can be administered as fast as the patient can tolerate, usually within 2 hours. 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 RBCs must be transfused within 4 hours of issue.
- Do NOT store in unmonitored fridges outside of the BTL.
- 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.

ADDITIONAL COMMENTS

See [Section D - Request for Blood Products](#) for special indications for requesting:

- washed RBCs
- anti-CMV negative RBCs
- Irradiated RBCs

ADDITIONAL RESOURCES

Canadian Medical Association [Guidelines for Red Blood Cell and Plasma Transfusion for Adults and Children](#)

For additional information, see the [Physician's Guide \(2004\) for Blood and Blood Product Utilization](#) published by the British Columbia Provincial Blood Coordinating Office.