DIAGNOSTIC SERVICES MANITOBA SERVICES DIAGNOSTIC MANITOBA	***Red Blood Cells - Leukoreduced***		**Document #** 160-65-01
			Version # 01
	Approved by:	**Effective Date:**	**Source Document:**
	Dr. Charles Musuka	22-JUN-2016	**Blood Product Administration Guidelines from Manufactures Monographs**

Other Names	• RBC -LR
Description	• Human blood component derived from whole blood • The unit is plasma reduced by centrifugation, platelet reduced by either centrifugation or filtration and leukoreduced by filtration • One unit of RBCs will increase hemoglobin approximately 10 g/L in a hemodynamically stable 70 kg adult • It is not a significant source of coagulation factors or platelets • May be further modified by washing, deglycerolizing, irradiation and cytomegalovirus (CMV) testing

Special Approvals/authorizations	• **An independent 2-person check is required for all doses, as per Canadian standards.**
	• CMV negative units recommended for:
	  ○ Intrauterine transfusion
	  ○ CMV seronegative recipients of allogeneic hematopoietic stem cell transplant
	  ○ CMV seronegative pregnant women (prior to the onset of labour)
	• CMV negative units could be recommended for:
	  ○ CMV seronegative solid organ transplant recipients
	  ○ CMB seronegative patients with human immunodeficiency virus (HIV) infection
	  ○ CMV seronegative patients with conditions likely to require an allogeneic hematopoietic stem cell transplantation
	• Irradiated red cell units recommended for:
	  ○ Prevention of transfusion-associated graft-versus-host-disease
	  ○ Fetuses undergoing intrauterine transfusion
	  ○ Newborns who have previously undergone intrauterine transfusion
	  ○ Patient with congenital cellular immunodeficiency
	  ○ Selected patients with acquired immunodeficiency
	  ○ Hematopoietic stem cell transplant recipients
	  ○ Pre-term infants birth weight less than 1200g
	• Washed red cells may be recommended for:
	  ○ Neonatal exchange transfusion
	  ○ Patients with repeated febrile or allergic transfusion reactions not ameliorated by pre-transfusion medications
	  ○ Patients with anti-IgA
	  ○ Patient with a history of anaphylactic transfusion reactions of unknown etiology

Classification	Red Blood Cells LR SAGM added
Indications	• Patients with anemia who have evidence of impaired oxygen delivery ○ Acute blood loss, chronic anemia and cardiopulmonary compromise, or disease or medication effects associated with bone marrow suppression • Patients with acute blood loss, volume replacement is often more critical than the composition of the replacing fluid. • There is no single value of hemoglobin concentration that justifies or requires transfusion. An evaluation of the patient's clinical situation should be the major factor in the decision to transfuse.
Contraindications	• Red blood cells are not suitable for clinical situations where limited oxygen-carrying capacity is not due to red blood cell deficiency or dysfunction. • Red blood cells should not be given for volume replacement or any other reason other than correction of acute or chronic anemia when non-transfusion alternatives have been assessed and excluded.

<table>
<tr><td></td><td></td></tr>
<tr><td>Supplied</td><td>

ABO compatible (as opposed to identical) may be required if the transfusion service cannot provide sufficient quantities of the patient's blood group:
<table>
<tr><td>Patient's ABO Group</td><td>Compatible Red Blood Cells</td></tr>
<tr><td>O</td><td>O</td></tr>
<tr><td>A</td><td>A or O</td></tr>
<tr><td>B</td><td>B or O</td></tr>
<tr><td>AB</td><td>AB or A or B or O</td></tr>
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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 greater than 50 years of age and males may receive Rh-positive red cells.

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<tr><td>Dosage</td><td>

Clinical signs and symptoms of hypoxia, ongoing blood loss and risk of anemia to the patient need to be considered when determining dose

PEDIATRIC:
Neonate (up to 6 weeks corrected) or less than 10kg body weight (or fluid volume is a concern):

Prime the Blood administration set with the RBCs.
10-20 mL per kg body weight infused over 3-4 hours.
Flush access device with 1-5 mLs of 0.9% saline upon completion of transfusion.

Pediatric or greater than15 kg body weight:

Prime the Blood administration set with 0.9% saline.
10-20 mL per kg/dose rounded to the closest full unit over 3-4 hours
Flush access device with 10-20 mLs of 0.9% saline upon completion of transfusion

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<tr><td>Reconstitution/Stability</td><td>

Storage in monitored storage equipment between 1-6 degrees celsius.
Red blood cell units containing additive (i.e. SAGM) have a shelf life of 42 days from date of collection. Product manipulation may alter shelf life (i.e. irradiation, washing)
Do not place in a medication or other unmonitored fridge.
Product must be returned to a monitored blood bank fridge within 30 minutes of issue if not used or it will be discarded.
Freezing or heating blood may cause hemolysis and may harm the patient

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<tr><td>Compatibilities/ Incompatibilities</td><td>
Compatible Solutions:
Only isotonic, calcium-free intravenous solutions may be added to, or come in contact with blood products. Calcium will bind with the citrate anticoagulant and promote clotting in the tubing. Excess glucose and/or dextrose cause hemolysis and shorten red cell survival. The following solutions are acceptable:

0.9% NaCl (normal saline) is the fluid of choice.
MEDICATIONS MUST NOT BE ADDED TO BLOOD PRODUCTS. If it is necessary to administer medications simultaneously with blood, it is safest to use an alternate site for the drug.

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Administration, Identification and ABO Compatibility	Refer to **Manitoba Best Practice Guidelines** • section 2.2 Standards- Identification and Administration • section 1.4 for ABO Compatibility

Administration, Method	**Administration Set:**
	• Administer through a standard blood transfusion set with a filter to remove gross fibrin clots and aggregates:
	  ○ Adults: 170-260 micron filter
	  ○ Pediatrics: 80-260 micron filter
	• Set should be changed:
	  ○ A maximum of every 4 hours, or
	  ○ Four consecutive units of red cells have been infused through it, or
	  ○ More than 30 minutes has elapsed between transfusion/infusion, or
	  ○ Administering a different component, or
	  ○ The set has become occluded.
	• Normal saline should be used to prime the administration set for adult administration.
	Infusion Rate:
	• The initial rate of infusion should be slow **(less than 1 mL/minute)(50ml/hr)** for the first 15 minutes of the infusion, unless urgent replacement is required. If the patient exhibits no signs of reaction and is tolerating the transfusion, the rate may be increased as per the physician order.
	• Infusion rates depend on the patient's blood volume, cardiac status and hemodynamic condition and are predetermined by the patient's physician. Typically infused over 2 hours in an adult, but always within 4 hours.
	• A blood warmer or infusion device licensed by Health Canada for that purpose may be used at the discretion of the attending physician.
	• In **non-urgent/non-bleeding/inpatient settings**, red blood cells should be transfused during **daytime hours** (for patient safety) and transfused **one unit at a time**.

Monitoring	Refer to regional policy for monitoring of patients during transfusion of red blood cells. Patients should be under direct observation during transfusion. Nurse should remain with patient for the first 15 minutes. Vital signs are to be monitored 15 minutes after start of transfusion, every hour during and at the end of the transfusion. Vital signs should be recorded one hour after the completion of the transfusion.
Adverse Events	Refer to **Manitoba Best Practice Guidelines** section 2.7 for transfusion reactions. Red blood cells pose a risk for transfusion reactions.
Resources:	Manitoba Transfusion Medicine Best Practice Resource Manual for Nursing http://www.transfusionmedicine.ca/resources/clinical-guide-transfusion Canadian Blood Services https://www.blood.ca/sites/default/files/RedBloodCellsLeukocytesReduced.pdf