DEGLYCEROLIZED FROZEN RED BLOOD CELLS

DISCUSSION: Frozen and deglycerolized red blood cells (F/DRBCs) are derived from 450 mL of blood collected in citrate/phosphate/dextrose/adenine (CPDA-1) collection bags. The RBCs are stored for 3-6 days at 1-6^0 C before being frozen in a cryoprotectant (40% m/v glycerol) and stored in the frozen state at minus 65^o C or colder. The frozen RBC is thawed, deglycerolized by sequential washing with hypertonic (12%) saline, normal (0.9%) saline mixed with 0.2% glucose, re-suspended in AS-3 additive solution and stored at 1-6^0 C, ready for infusion. Deglycerolized RBCs w/ AS-3 are FDA-approved for transfusion up to 14 days when processed on the Haemonetics Automated Cell Processor ACP215, an FDA 510(k)-cleared closed processing system device.

The first working frozen blood bank was established at Chelsea Naval Hospital in Boston in 1956, in part to determine the practicality of frozen blood usage on US Naval ships. In January 1966, The Navy Bureau of Medicine and Surgery (BUMED), under direction from DoD, established the first frozen blood bank in a combat zone at Navy Station Hospital, DaNang, Republic of South Vietnam. Over seven months, 465 units of frozen blood were transfused to severely injured casualties, both solo and in combination with liquid RBCs. In 1985, the DoD, under the respective Services' Surgeons General FDA licenses, began freezing 68,000 RBCs and prepositioned them throughout several geographic Combatant Commands (COCOMs) in direct support of current and future military expeditionary/contingency medical readiness operations. Per DoD Emergency War Surgery Handbook 2004, FDA-approved frozen red blood cells and deglycerolized red blood cells can be used at level III/IV Medical Treatment Facilities within a COCOM theater of operations.

INDICATIONS: Each unit of deglycerolized RBCs contain more than 80% of the red cells present in the original unit of blood, have the same expected post-transfusion survival and provide the same physiological benefits as liquid RBCs. Primary intended use of deglycerolized RBCs will be as a supplement to liquid RBCs during inadvertent surge periods of use, as part of standard transfusion medical therapy, along with other blood products, in support of combat casualty care to decrease hemorrhagic morbidity and mortality. Deglycerolized red blood cells may be used instead of liquid red blood cells for all red cell transfusion requirements.

Do **NOT** use DRBCs for emergency release blood

Do **NOT** use DRBCs for patients requiring massive transfusion (>10 units RBCs in 24 hours) unless adequate RBCs or FWB is unavailable.

Do **NOT** transfuse more than 4 units DRBCs within 24 hours in any patient unless adequate RBCs are not available to meet the patient's transfusion requirement.

MONITORING: Clinical: Obtain pre and post transfusion vital signs: T, BP, P, RR. Use standard guidelines for packed red blood cell transfusion for any adverse transfusion events.

Laboratory: Obtain pre- and post- transfusion Hgb/Hct and Base Excess/Base Deficit.

DOCUMENTATION: Document in the electronic record (and/or paper record if electronic record is unavailable) physician order for red blood cells, product used (deglycerolized RBCs) indications, vital signs, labs, amount transfused, adverse transfusion events.

Document deglycerolized red blood cell transfusions to follow-up with patient final outcomes. Laboratory personnel must have a process to identify all patients and units of deglycerolized red blood cells and quantities of all blood products transfused. A disposition report/log should include blood unit number, date received, date transfused, recipient identification number, patient ABO/Rh, patient nationality, transfusion indication, transfusion reaction (yes/no) and nature of reaction, patient survived (yes/no) and disposition date if not transfused.

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