

ISHAGE 2001 – TECHNICAL BREAKFAST 1 &16
STORAGE and CRYOPRESERVATION of CELL PRODUCTS

THAW & INFUSION - BEDSIDE

1.0 PRINCIPLE:

There are toxicities associated with hematopoietic cell infusions. Attention should be placed on the length of time required to infuse the cells after they have been thawed and to possible patient reactions. The patient preparation is described at the end of the laboratory procedure. The cells can be administered by directly spiking the freeze bag and then hanging the product bag or the cells can be transferred to a syringe and infused IV "push". If a bag is damaged during storage and cracked the syringe method is preferred, otherwise the cells in the bag can be infused directly.

2.0 SPECIMEN:

2.1 Cryopreserved hematopoietic stem cells

3.0 SUPPLIES AND EQUIPMENT:

- 3.1 sterile water – McGaw R5005-01
- 3.2 60 ml syringes – BD 309663
- 3.3 16 gauge needles – BD 305198
- 3.4 Sampling Site Couplers – Fenwal 4C2405
- 3.5 Y set – COBE 912-647912
- 3.6 Administration set – Abbott 9143
- 3.7 5 ml syringes – BD 309603
- 3.8 2 Forceps (autoclaved)
- 3.9 Alcohol wipes
- 3.9 Towels
- 3.10 37°C water bath
- 3.11 Portable LN₂ tank with Caution Sign
- 3.12 Cart

4.0 PROCEDURE:

- 4.1 Communicate with the individual who will be administering the cells to coordinate the infusion time.
- 4.2 Take the water bath and supplies to the utility room on the floor. Use sterile water to fill the water bath about ½ hour prior to infusion to allow it to reach 37°C.
- 4.3 Use the patient's addressograph to prepare a Stem Cell Product Requisition.
- 4.4 Place the portable LN₂ tank on the cart and fill with liquid nitrogen. Use gloves and goggles when working with nitrogen. Move close to the LN₂ tank.
- 4.5 Use the computer printout and freezing records to locate the product. Double check this paperwork with the processing form to make sure the correct number of bags are located.
- 4.6 Pull up the appropriate rack and position the rack across the top of the others to minimize the warming of the product.
- 4.7 Open the correct canister.
- 4.8 Two people will check the labels. Move the bags to the portable tank.
- 4.9 When all the bags have been placed in the portable tank, close the tank and secure the lid.
- 4.10 The two individuals who identified the bags will initial the freeze card.
- 4.11 Take the product to the patient's room. When the staff member is ready to infuse, identify the bags with that individual. Each person signs the Witness line on the Stem Cell Product Requisition and the Sign-Out Log Book. Thaw bag #1 by quickly removing it from the portable tank and plunging it into the water bath. If a leak occurs, quickly clamp the bag with forceps.
- 4.12 When the cells are thawed, remove the bag from the water bath and dry off the bag. Examine the bag for signs of cell clumping. If clumping is noted, 5 ml of ACD-A should be added to the cells. If the bag is damaged such that it cannot be hung proceed to Step 4.1.13. If the bag can be infused directly proceed to step 4.1.17.
- 4.13 Insert a sampling site coupler into the port of the bag. Fill a 60 ml syringe (labelled with Autologous sticker) with air.
- 4.14 Wipe the sampling site coupler with alcohol and aseptically enter the bag.
- 5.3 Inject the air into the bag. Then withdraw the cells into the syringe.

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- 5.4 Compare the name and history number on the label to the identification arm-band worn by the patient. Hand the syringe to the staff member. The cells will be pushed through the tubing over 3 to 5 minutes.
 - 4.17 Compare the name history number on the bag label with the identification band worn by the patient. Connect the bag to the filter tubing prepared by nursing staff. The nurse will adjust the flow rate to 10-12 ml/minute.
 - 4.18 Thaw the remaining bags. If the infusion is stopped, the bags may stay in the portable tank for one hour. If the wait is longer, the tank may need to be refilled. Any unusual conditions with the patient or the marrow should be documented on the Processing Record.
 - 4.19 The laboratory records listed below should be updates:
 - 4.19.1 computer freezer inventory
 - 4.19.2 freeze index card
 - 4.19.3 processing form
 - 4.20 Perform a nucleated cell count on a thawed specimen and record this on the processing form. Note any clumping observed and if the cells were filtered as well as any transfusion reaction.
- 5.0 PROCEDURE NOTES:**
- PATIENT PREPARATION**
- 5.1 The patient is prepared and monitored in the following manner:
 - 5.1.1 3 hours before the infusion of autologous cells, hydration must be initiated with 0.45% saline to insure urine output of at least 2 ml/kg/hr. NaHCO₃ should be added to IV Hydration to insure an alkaline urine (pH ≥ 7).
 - 5.2 Emergency drugs (Benadryl, Epinephrine, Solu-Medrol or Solu-Cortef) in appropriate doses must be ordered and at bedside with syringes.
 - 5.3 The cells are infused via a catheter. Prime the red blood cell infusion filter with a 50ml bag of normal saline and attach to an unused port of a 3 way stopcock attached to the largest lumen of VAD catheter.
 - 5.4 Baseline vital signs are recorded.
 - 5.5 Fifteen minutes prior to administration, the patient is to receive:
 - 5.5.1 50 ml of 25% mannitol Solution IV (only administered if the urine output is < 2cc/kg/hr within 1 hour prior to transplant).
 - 5.5.2 50 mg of IV diphenhydramine
 - 5.5.3 Anti-emetic drug of choice (optional).
 - 5.6 The physician/physician assistant/nurse will identify the bag(s) with the laboratory technologist before the infusion. The patient's name and history number on the bags are compared to the Stem Cell Product Requisition and the Sign-Out Log Book. If the cells are given by IV push infuse over 3-5 minutes by the staff member. If bag is spiked, adjust drip rate to 10-12 ml/minute.
 - 5.7 A physician MUST be present on the unit for one-hour post transfusion. The nurse must take VITAL SIGNS between each bag infusion.
 - 5.8 The nurse must be familiar with adverse signs of blood transfusion: fever, chills, dyspnea, bronchospasm, hypotension, cyanosis, rash or hives, chest or back pain, and any other change in condition.
 - 5.9 After the infusion vital signs are taken q 30 min x2, q 60 min x2, then as per routine. The patient can be discharged home after 3 hours if asymptomatic with vital signs returned to baseline and a urine output >2cc/kg/hour.
- 6.0 REFERENCES:**
- 6.1 Rowley SD. Hematopoietic stem cell cryopreservation: A review of current techniques. Journal of Hematotherapy 1992, 1:233-250.