UnityPoint Health Pekin
Department of Pathology
Pekin, IL 61554

Effective Date: 11/29/18
Date Reviewed/ Date Revised: 05/16/19

CRYOPRECIPITATE

Test Code: TXCRY

I. PRINCIPLE:

Each unit of cryoprecipitate is prepared by thawing a unit of FFP at 1 – 6° C. During the slow thaw, a white precipitate forms. This is the cryoprecipitate (cryo). The supernatant plasma is removed, leaving the cryo plus 10-15 ml of plasma in the bag. This material is then refrozen at -18° C within 1 hour and has a shelf life of 1 year. Cryo contains approximately 80-120 units of Factor VIII:C (the procoagulant activity), 40-70% of Factor VIII:vWF (von Willebrand factor) from the original unit, 250 mg/dl of fibrinogen and 20-30% of the Factor XIII from the original unit. Cryo may be indicated for the treatment of hemophilia A, von Willebrand's disease, congenital or acquired fibrinogen deficiency, Factor XIII deficiency and obstetric complications or other situations associated with consumption of fibrinogen, such as DIC.

II. POLICY STATEMENT:

A. Cryo is ordered from ARC and thawed upon a doctor's order to transfuse. It is also included to be ordered and transfused during a Massive Transfusion Protocol. American Red Cross offers single units and a (pre)pooled (5 singles pooled) unit of cryo. A minimum of 4 units per order is required for infusion. A single unit may be ordered in surgery if the product is to be used for a patch. Consult a pathologist with orders (for infusion) of less than 4. ABO compatible should be given whenever possible. In the case of an emergency, ABO incompatible may be given if ABO compatible units are not immediately available.

B. We are to keep 2 units of type AB (pre)pooled (5 singles pooled) cryo in stock at for Massive Transfusion Protocol

C. Thawed cryo has an expiration time of 6 hours. Cryo should never be thawed unless there is an order to give/use, or part of the Massive Transfusion Protocol set.

D. Pooled cryo has a 1 year expiration like plasma and cannot be returned to the ARC. UPH Methodist will be willing to take a transfer from us if we have some that are getting close to expiring. Check with them and transfer when the units have about 4 months left before expiring. Then order 2 new units to replace those transferred.

III. SPECIMEN:

A. 1 large (10ml) EDTA tube. Patient must have a Blood Bank ID band. If patient has a current BB ID band with the blood type tested and reported, a new specimen need not be drawn.

IV. INSTRUMENTATION/EQUIPMENT:

A. Helmer QuickThaw Plasma Thawer
B. Helmer Plasma Overwraps (standard size)
C. Plastic Security Snaps

V. PROCEDURE:

A. Thawing cryoprecipitate:

1. Place one cryo bag into a Helmer Plasma Overwrap bag (located on the side of the plasma thawer). **When thawing a plasma bag (of any type or size), a plasma overwrap bag must be used.*
2. Press the LIFT OUT button on the side of the plasma thawer that you are going to use, to raise and open the basket. Do not try to manually lift the baskets out of the chamber. Manually lifting baskets will damage the system. Only press the LIFT OUT button if the baskets are installed. The basket must be installed for the lift out system to operate correctly.
3. After the basket is raised, hook the slot at the top of the overwrap bag over the tab on the basket.
4. Insert a security snap through the top set of holes on the basket compartment. Push the snap toward the basket until it snaps against the overwrap bag.
5. Set the timer for the proper thaw cycle time for the size bag being thawed by pressing the CYLE TIME button (press repeatedly to toggle through the time settings). There are pre-programmed time settings of 0, 3, 5, 8, 10, 12, 14, 16, 18, 20, 25, 35, 45, and 55 minutes, as well as a hold ("HO") setting. The average time for a cryo bag is 16 minutes.
6. After choosing a time, press the CYCLE START button. The lift out system closes the basket and lowers it into the chamber. The basket begins to agitate after it reaches the bottom of its travel.
7. The remaining cycle time (in minutes) is displayed on the cycle time indicator (located on the control panel).
8. To indefinitely extend a thaw cycle that is already in progress, press the TIME SET button until the display reads "HO". Press the TIME SET button again and the cycle will finish its initial programmed time.
9. To stop or pause a thaw cycle before the cycle is complete, press the LIFT OUT button to raise the basket. The remaining time is displayed on the cycle time indicator. Press the LIFT OUT button again to resume the thaw cycle. The basket is lowered into the chamber and the agitation resumes. The hold ("HO") setting may be selected while the thaw cycle is paused.
10. When a thaw cycle reaches the end of its programmed time setting, the basket stops agitating, lifts out, and opens. An audible alarm sounds to

indicate the thaw cycle has completed, and the cycle time indicator resets to the previously selected time setting.

11. If the unit is not completely thawed, break up remaining frozen cryo with your fingers, replace the cryo back in the basket with the overwrap bag attached to the basket tab and security snap back in place. Set the timer for a few more minutes. Press the CYCLE START button.
12. At the end of the thaw cycle, remove security snap and unhook overwrap bag from basket. If the bag of cryo is wet, determine if the cryo bag broke or the overwrap bag leaked. If the overwrap bag leaked, remove it and replace with a new one if thaw cycle is not complete. Thoroughly dry the cryo bag before administration. Check ports for possible contamination (clean with alcohol wipe if necessary).
13. If the bag of cryo has broken, place it into a bag for disposal using Universal Precautions. Check water in the chamber for any contamination evident. If water was contaminated, empty and clean the chamber and baskets, refill with fresh distilled water and Bacteriostatic Water Treatment Solution as soon as possible.

B. Thaw unit in Sunquest by opening up the patient's order in Blood Order Processing (BOP). Click on the Allocation Tab. Then branch into Blood Component Prep (BCP) by clicking the green BCP button. Enter Thaw Code (Product Code for Cryo-5 pack is THCRYP and the Product Code for Cryo-single is THCRY). Hit Tab. Enter time and date thawed. Hit Tab. Click the green Continue button in the lower right hand corner of screen. Scan or type in unit number (the Component and Division# fields will fill in automatically). Hit Tab. Your new expiration date and time will be displayed at the bottom of the screen. Click the green Save button in the lower right hand corner of screen. A Preview Output/New Units box will pop up, click the Finish button. The unit will then automatically be allocated to that patient. Use the ( ]) key to place an "OK" in the Transfuse Status (TS) box.
C. Add on ABO/Rh testing if needed – no type and screen done (T key) and the BBID# (R key).
D. Phone nursing unit and document by free texting, in the "Note" line in Sunquest (BOP), the time and the name of the person notified.
E. Cryo should be used as soon as possible, but no more than 6 hours after thawing.
F. Cryo is stored at room temperature.
G. Note new expiration date and time (6 hours after thawing) on label of cryo bag.
H. Write "Thawed" on the label.
I. Do not refreeze.
J. If cryo is not used before new expiration date, it is to be discarded in an approved biohazard waste container.
K. After checking over all your work, click Save, and the unit tag(s) will print to attach to the unit(s).

VI. TECHNICAL NOTES:

A. Leaking or damaged units are to be double bagged and placed on the bottom shelf of the blood refrigerator for destruction. The unit must have a note attached to it describing the problem and a note is to be left for the supervisor.
B. Expired units are to be discarded by the receiving facility. Credit will not be given for expired units. Update any units discarded in Sunquest BSU. Refer to BSU procedure in the SQ BB Guide. Units discarded at UnityPoint Pekin are destroyed by autoclaving.
C. All units shipped out (transferred) must be updated in the computer. Refer to BSU procedure in the SQ BB Guide.

VII. DOSAGE CALCULATIONS:

If an order is placed to give cryo in an amount appropriate to the patient's size, the following formula is to be used. The patient must have had a recent fibrinogen assay performed and the physician must stipulate the desired rise in fibrinogen in milligrams (mg).

An average bag of cryo contains 250mg of fibrinogen.
Kg = 2.2 lbs
Obtain patient weight from nursing floor. Look in IQ for most recent fibrinogen and hematocrit (HCT) result.

Blood Volume = weight in Kg x 70ml/Kg

Plasma volume (PV) = blood volume x (1.0 – HCT)

$$\text{mg of fibrinogen required} = \frac{(\text{Desired fibrinogen level} - \text{Initial fibrinogen level}) \times \text{PV}}{100}$$

$$\text{Bags of cryo required} = \frac{\text{mg of fibrinogen required}}{250 \text{ (mg/bag of cryo)}}$$

Example: patient weight 200 lbs
HCT = 30%
Desired fibrinogen level = 300
Initial fibrinogen level = 100

$\frac{200}{2.2} = 91\text{Kg}$ 91Kg x 70ml/Kg = blood volume of 6370

6370 x (1.0 – 0.3) = 4459 (Plasma volume)

$\frac{(300-100) \times 4459}{100}$ = 8918 mg fibrinogen required

$\frac{8918}{250}$ = 35.7 (36) bags of cryo needed.

VIII. REFERENCES:

A. *AABB TECHNICAL MANUAL*, current edition, American Association of Blood Banks
B. *STANDARDS FOR BLOOD BANKS AND TRANSFUSION SERVICES*, current edition, American Association of Blood Banks
C. *BLOOD TRANSFUSION THERAPY - A Physicians Handbook*, current edition, American Association of Blood Banks
D. *CIRCULAR OF INFORMATION For the Use of Human Blood and Blood Components*, current edition, American Red Cross
E. *Nascimento, et al. Cryoprecipitate Therapy.2014 113 (6):922-934. (UPPK-0637.01)*
F. Helmer Scientific QuickThaw™ *Plasma Thawing System Operation Manual*, 14400 Bergen Boulevard, Noblesville, IN 46060, 360094-1/M.
G. Helmer Scientific QuickThaw™ *Plasma Thawing System Service Manual*, 14400 Bergen Boulevard, Noblesville, IN 46060, 360097-1/J.

POLICY CREATION :	***Date***
Author: ***Jenny Turner, MLT (ASCP)***	***11/29/18***
Medical Director: ***Kathryn Kramer, MD***	***11/29/18***

MEDICAL DIRECTOR		
DATE	NAME	SIGNATURE
6/04/19	Lori Racsa	LHDO
SECTION MEDICAL DIRECTOR		

REVISION HISTORY (began tracking 2011)			
Rev	Description of Change	Author	Effective Date
1	Added transfer to Methodist when 4 months left, added to keep 2 prepooled in stock, added to update any units discarded in SQ BSU. Add attachment.	Jenny Turner	02/26/19
2	Deleted Thermogenesis Plasma Thawer. Added Helmer QuickThaw Plasma Thawer. Added Sunquest add on testing instructions.	Jenny Turner	5/16/19

Reviewed by

Lead	Date	Coordinator/ Manager	Date	Medical Director	Date
Jenny Turner	5-23-19				