University of Washington Medical Center 1959 NE Pacific Street. Seattle, WA 98195 Transfusion Services Laboratory Policies and Procedures Manual	Original Effective Date: 03-11-16 Revision Effective Date:	Number: PC-0011.01

TITLE: Blood Storage and Inventory Management

PURPOSE:
To describe the policies and process for storing and managing blood inventory

PRINCIPLE & CLINICAL SIGNIFICANCE:
Principle
Storage of blood and blood components at University of Washington Medical Center Transfusion Services Laboratory (UWMC TSL) and Seattle Cancer Care Alliance Transfusion Support Service (SCCA TSS) must meet the standards mandated by the Food and Drug Administration (FDA), AABB, and any applicable blood supplier requirements related to products that are eligible for return

Inventory quantities must be sufficient to meet the routine patient needs, allow for unanticipated increases in utilization due to emergencies and minimize component outdating

Clinical Significance
Strict storage requirements are in place to assure the safety, purity, and potency of all blood components are maintained

POLICIES:
Storage of Blood Components
- Only trained UWMC TSL and SCCA Alliance Lab staff are allowed access to blood components prior to components being issued for transfusion. Access is controlled through badge access or 24/7 staff monitoring
- Blood components are stored as specified in **Table 1:** *Blood Component Storage Conditions*. Components not maintained in these storage conditions will be evaluated by the transfusion staff and disposed of as necessary.

Table 1: Blood Component Storage Conditions

Type of Component	Storage Equipment	Storage Temperature
• Red blood cells • Thawed plasma	Refrigerator	1° to 6°C
• Frozen plasma • Frozen cryoprecipitate	Freezer	≤ -18°C
• Platelets	Platelet Incubator with agitator	20° to 24°C with gentle agitation
• Granulocytes • Thawed cryoprecipitate	Platelet Incubator	20° to 24°C no agitation

- Storage equipment temperatures are monitored 24/7 using a wireless electronic monitoring system that alarms if temperatures exceed the acceptable range. Additionally, integral equipment alarms are validated, maintained, and operated as a backup system to the wireless system.
- TSL medical director approval is required prior to placing blood components back into inventory when it is determined that required storage conditions were not maintained. When this occurs, the deviation from SOP must be documented including the reason for the deviation
- Inventory is monitored to ensure units are segregated appropriately in storage in the following manner:
  - Units are segregated by blood type and component type and may also be stored in numerical order (last 6 digits of unit number) to facilitate location of units in inventory
  - Quarantined, autologous and directed units must be physically segregated from other stock
  - Units may additionally be segregated prior to issue, transport, irradiation, or while testing is in progress

Inventory Management

- Inventory levels are maintained between the minimum and par levels in order to provide prompt patient care and reduce wastage (see Appendix: Tables 1 thru 4). These levels are defined at each inventory location/facility and should be considered guidelines that can be adjusted as necessary in response to patient needs
- Inventory levels are monitored by each shift, with orders placed daily with additional orders as needed to ensure the laboratory is able to respond to patient needs in a timely manner
- Inventory quantities are reconciled daily at each site

SPECIMEN REQUIREMENTS:

NA

REAGENTS/SUPPLIES/EQUIPMENT:

Reagents:	Supplies:	Equipment:
NA	NA	NA

QUALITY CONTROL:

NA

INSTRUCTIONS:

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Daily Inventory Reconciliation (UW TSL and SCCA Staff)

STEP	ACTION
1	Access BBR13: Blood Bank Inventory Summary from SmarTerm and enter the following in the corresponding fields:

	Field	**Enter**
	Hospital	U
	Area	• No area (for UW TSL Only) • SA1 (for SCCA only) • BB2 (for UW 2nd OR only) • <enter> (for all area)
	Component type	RBCG
2	Repeat step one entering the component type for platelets: PLG	
3	Repeat step one entering the following plasma component types: PLSG, CRYG	
4	Count the number of red blood cell and platelet units by blood type and record the count on the Blood Bank Inventory Summary Report	
5	Count the number of plasma and cryoprecipitate units by blood type and record the count on the Blood Bank Inventory Summary Report	
6	Compare the physical count to the count on the SQ report, investigate and resolve any discrepancies:	

Discrepancy	**Then**
None or resolved	Go to next step

Unresolved	Print a BBR2: Product File List for the component type with the discrepancy:
	• Press the <Enter> key for all options until Component Type/Group
	• Enter the code for the component group with the discrepancy
	  ○ RBCG for red blood cells
	  ○ PLG for platelets
	  ○ PLSG for plasma
	  ○ CRYG for cryoprecipitate
	• Enter the status
	  ○ INV to get all available, unprocessed and allocated units
	• Enter the ABO/Rh: (ex: O-POS)
	• Press <Enter> for all other options
	• Compare all units listed on report to the units physically in inventory.

If discrepancy is	**Then**
Resolved	Go to next step
Unresolved	• Document discrepancy on a QIM and notify the TSL Lead • Go to next step

7	Initial and date Blood Bank Inventory Summary reports	
8	**If**	**Then**
	SCCA	Send reports and discrepancy paperwork to UW TSL

	UW TSL	File reports and discrepancy paperwork in the appropriate location

Restocking SCCA and 2nd Floor OR Locations (UW TSL staff only)

STEP	ACTION
1	Send blood components to the SCCA and 2nd Floor OR to meet par levels and patient needs (see *Appendix: Tables 1-3*)
2	Irradiate additional red blood cell and platelet units to maintain acceptable inventory levels (see *Appendix: Tables 1-3*)

CALCULATIONS/INTERPRETATIONS/RESULTS REPORTING/NORMAL VALUES/CRITICAL VALUES

NA

CALIBRATION:

NA

PROCEDURE NOTES AND LIMITATIONS:

- Due to inventory shortages, it may not be possible to completely fill orders and adjustments may be necessary to optimize product distribution at remote storage locations
- Consult with MLS staff as necessary when short-dated and/or alternate products are offered as a substitution prior to accepting
- Special precautions may be required to prevent burns when handling dry ice. Insulated gloves must be worn when there is a risk of contact with skin. Dry ice should always be handled in a well-ventilated area and must be packaged in a manner that would allow the gas to escape as the dry ice dissipates. See the Clinical Laboratory Safety Policy for additional information and precautions regarding handling dry ice.

REFERENCES:

- Technical Manual. Bethesda, MD: AABB, current edition
- Standards for Blood Banks and Transfusion Services. Bethesda, MD; AABB, current edition

RELATED DOCUMENTS:

NA

APPENDICES:

Table 1: UWMC TSL Inventory Par Levels

Leukoreduced RBC Components (~ 10% irradiated)															
O POS		***O NEG**		**A POS**		**A NEG**		**B POS**		**B NEG**		**AB POS**		**AB NEG**	
Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par
70	100	10	15	50	85	8	15	10	15	2	6				
***1 O NEG RBC, Leukoreduced unit for neonates**															

Plasma (Includes frozen & thawed, Jumbo plasma counts as two units)							
O		**A**		**B**		**AB**	
Min	Par	Min	Par	Min	Par	Min	Par
50	100	50	100	25	50	10	20

Pooled Cryoprecipitate	**Single Cryoprecipitate**
Any Type	**AB only**
30	2
Minimum inventory = 10 pools & 1 single AB units for neonates	

Leukoreduced Platelet Inventory (~ 50% irradiated)						
O POS	**O NEG**	**A POS**	**A NEG**	**B POS**	**B NEG**	**AB POS or NEG**
8	3	8	4	4	2	2
Minimum inventory = 10 adult units						

Table 2: UWMC 2nd Floor Inventory Par Levels

Leukoreduced RBC Components (~ 10% irradiated)															
O POS		**O NEG**		**A POS**		**A NEG**		**B POS**		**B NEG**		**AB POS**		**AB NEG**	
Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par
10	20	5	10	10	25	2	5	0	5	0	2				

Plasma (Thawed)							
O		**A**		**B**		**AB**	
Min	Par	Min	Par	Min	Par	Min	Par
0	2	0	2	0	0	2	4

Table 3: SCCA Inventory Par Levels (100% Irradiated)

Leukoreduced RBC Components (100% Irradiated)															
O POS		**O NEG**		**A POS**		**A NEG**		**B POS**		**B NEG**		**AB POS**		**AB NEG**	
Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par
8	18	4	8	8	15	4	8	2	6	2	4				

Leukoreduced Platelet Inventory (100% Irradiated)						
O POS	**O NEG**	**A POS**	**A NEG**	**B POS**	**B NEG**	**AB/ B NEG**
2	1	2	2	1	1	1
Minimum inventory = 5 adult units						

Table 4: Total Par Inventory

Leukoreduced RBC Components															
O POS		**O NEG**		**A POS**		**A NEG**		**B POS**		**B NEG**		**AB POS**		**AB NEG**	
Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par	Min	Par
88	138	19	33	68	125	14	28	12	26	4	12				

Plasma (FFP + FP24 + thawed)							
O		**A**		**B**		**AB**	
Min	Par	Min	Par	Min	Par	Min	Par
50	102	50	102	25	50	12	24

Pooled Cryoprecipitate	**Single Cryoprecipitate**
Any Type	**AB**
30	2
Minimum inventory = 10 pools & 1single AB units for neonates	

Leukoreduced Platelet Inventory (~ 50% irradiated)						
O POS	**O NEG**	**A POS**	**A NEG**	**B POS**	**B NEG**	**AB POS or NEG**
10	4	10	6	5	4	3
Minimum inventory = 20 adult units						

UWMC SOP Approval:

UWMC CLIA Medical Director _____ Date _____
Mark H. Wener, MD

Transfusion Service Manager _____ Date _____
Deanne Stephens

Compliance Analyst _____ Date _____
Christine Clark

Transfusion Service Medical Director _____ Date _____
John R. Hess, MD

UWMC Biennial Review:

_____ Date _____

_____ Date _____

SCCA SOP Approval:

SCCA CLIA Medical Director _____ Date _____
Brent L. Wood, MD

Director, Transfusion Services _____ Date _____
Terry Gernsheimer, MD

Alliance Lab Manager _____ Date _____
Doug Howlett

SCCA Biennial Review:

_____ Date _____

_____ Date _____