University of Washington Medical Center 1959 NE Pacific Street. Seattle, WA 98195 Transfusion Services Laboratory Policies and Procedures Manual	Original Effective Date: 10-28-2020 Revision Effective Date:	Number: PC-0085.01

TITLE: Ordering and Processing Plasma and Cryoprecipitate at Northwest Campus

PURPOSE

Provide instructions for ordering, selecting, thawing and allocation of plasma and cryoprecipitate components for transfusion. Includes use of the QuickThaw plasma thawing system and modification of components in the Laboratory Information System (LIS) or on the Downtime Component Prep Log when LIS is unavailable

LOCATION

Northwest Transfusion Support Service (TSS)
Montlake Transfusion Service Laboratory (TSL)

PRINCIPLE & CLINICAL SIGNIFICANCE

Principle

Plasma is prepared from whole blood or apheresis collection and frozen at -18°C or colder within 24 hours of collection. On average, each container contains 200 to 250 mL of plasma when prepared from whole blood and as much as 400 to 600 mL when apheresis derived. Plasma is a source of proteins including albumin, fibrinogen, ADAMTS13 and clotting factors I, VII, IX, X and XI. Levels of labile coagulation factor (Factors V and VIII) and stable factors are well above 50% of immediate post-thaw levels in Thawed Plasma stored for up to 5 days. Thawed Plasma contains reduced concentrations of Factor V, VII, and VIII and is not suitable for single-factor replacement when factor concentrates are available

Cryoprecipitate is a crude concentrate of hemostatic proteins prepared from whole blood donation. Cryoprecipitate contains fibrinogen, factor VIII, von Willebrand factor, fibrinogen and factor XIII. Cryoprecipitate is manufactured as single and pooled containers. Pooled cryoprecipitate typically contains 5 single units.

Both plasma and cryoprecipitate components are stored frozen to help maintain factor activity and provide an extended shelf life. Frozen components are thawed at 30-37°C in an FDA approved plasma thawer prior to issue. The thawer gently agitates the component to transfer direct heat into the core of the component for a preset time. At the end of the thawing cycle, agitating stops and the basket will lift and open to retrieve the component. Audio and visual signals indicate when the cycle is complete to prevent leaving the component in the warm bath for an extended amount of time.

Once thawed, plasma is acceptable for transfusion up to 5 days after thawing when stored at 1ºC to 6ºC. Thawed cryoprecipitate expires 6 hours after thawing and must be stored at 20^{0}C to 24ºC.

Clinical Significance

Prophylactic and therapeutic plasma transfusions are commonly indicated to replace missing coagulation factors on patients with an elevated INR before an interventional procedure or during bleeding, respectively. Plasma can be used alone or in combination with albumin as replacement fluid during therapeutic apheresis procedures.

Plasma is indicated in the following conditions:

- Management of preoperative or bleeding patients who require replacement of multiple plasma coagulation factors (e.g. liver disease or DIC)
- Patients undergoing massive transfusion who have clinically significant coagulation deficiencies (i.e. high INR and /or low fibrinogen levels)
- Patients taking warfarin who are bleeding or need to undergo an invasive procedure and prothrombin complex concentrate is not available or is contraindicated
- Transfusion or plasma exchange in patients with thrombotic thrombocytopenic purpura (TTP)
- Management of patients with selected coagulation deficiencies, congenital or acquired or C1 inhibitor, for which no specific coagulation concentrates are available

Cryoprecipitate transfusions are usually indicated for patients with low fibrinogen levels as observed on patients with liver disease, disseminated intravascular coagulation, massive bleeding, and obstetric bleeding. Typically, 2 pooled containers provide enough fibrinogen to raise the fibrinogen level 60-70 mg/dl in an adult

POLICIES

- The following instructions provide the steps for order receipt, thawing, relabeling, and allocation of plasma component for transfusion.
- FDA requires documentation of blood component modifications including date and time of processing and person(s) performing each step. Depending on the process performed, the component type/code, volume, division and/or expiration date/time may be modified.
    - Modifications are documented in the laboratory information system (LIS) and the component relabeled to reflect the modifications prior to issue.
    - In the event, the LIS is unavailable the modifications are documented on a *Component Prep Downtime Log* at the time concurrent with the modification and later entered in the LIS once recovered.

Component Storage Requirements

Component	Storage Requirements
Frozen Plasma & Cryoprecipitate	≤-18ºC
Thawed Plasma	1ºC to 6ºC
Thawed Cryoprecipitate	20ºC to 24ºC without agitation

Plasma Policies

- **Pre-transfusion test requirements**
  - A historical or current ABO/Rh performed by Montlake TSL is required to issue ABO compatible plasma with the recipient's ABO other than group AB plasma
- Fresh frozen plasma, plasma frozen within 24 hours and apheresis plasma are used interchangeably and relabeled as Thawed Plasma expiring 5 days from the time of thaw
  - Jumbo plasma comes in volumes of 400-600 mL and may be provided for therapeutic plasma exchange procedures. Each jumbo plasma is equivalent to 2 standard plasma (<400 mL) components.
- Select and issue any available compatible thawed plasma before thawing additional components
- Physical modification of blood components is performed prior to documentation of the process in Sunquest or on the Downtime Component Prep Log
- Plasma for plasma exchange orders will be thawed at Montlake TSL and shipped to NW TSS for the scheduled date and time of the procedure.

- **Plasma Compatibility:**
  - **ABO compatible** plasma is always provided
  - **ABO identical** plasma is provided when inventory levels, testing and clinical status allow (see Universal Donor Plasma below)
  - **Rh type** is not a consideration in the selection of plasma

Plasma Compatibility Table				
Recipient Type	**Plasma ABO**			
	O	**A**	**B**	**AB**
O	✓	✓	✓	✓
A		✓		✓
B			✓	✓
AB				✓
unknown ABO, NTD, or patient <4 months of age				✓
✓ = compatibility between patient ABO and plasma ABO				

- **Universal Donor Plasma** (Group AB plasma) is issued in the following circumstances:
  - No ABO/Rh from Montlake Transfusion Service Laboratory (TSL) on file
  - During a bleeding emergency, Massive Transfusion Protocol, or OB bleed when issue of ABO identical will cause delay
  - Patient is a neonate/infant (< 4 months old). Approval from a UWMC BB MD is required to issue ABO groups other than AB plasma.
  - Intrauterine Transfusions

Cryoprecipitate Policies

- **Pre-transfusion test requirements**
  - Adults: No testing is required
  - Neonate/Infant <4 months of age: No testing to provide group AB cryoprecipitate. ABO typing required to provide ABO identical cryoprecipitate
- **Cryoprecipitate Compatibility**

Cryoprecipitate Compatibility Table	
Recipient	**Then**
Adult	Any ABO/Rh type may be provided
Neonate/Infant < 4months of age	• Group AB cryoprecipitate should be provided • If ABO typing is available, ABO identical cryoprecipitate can be provided • Rh type is not a consideration

- Frozen pooled cryoprecipitate is relabeled Thawed Pooled Cryoprecipitate and expires 6 hours from the start of the thaw process

SPECIMEN REQUIREMENTS

NA

REAGENTS/SUPPLIES/EQUIPMENT:

Reagents	Supplies	Equipment
NA	• Helmer plasma overwrap bag	• BB LIS • Bar-code scanner • Helmer Quick Thaw Plasma Thawer • NIST Thermometer

QUALITY CONTROL:

- Plasma thawer water temperatures are checked and recorded daily
- Components are placed into plasma overwrap bags before placing in the thawer basket to protect the plasma bag from water-borne contaminants and the water bath from contaminants if the component bag breaks

INSTRUCTIONS

TABLE of CONTENTS:

Order Receipt

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td>1</td><td>Receive product order requisition
<table>
<tr><th>If order is placed</th><th>Then</th><th>Then</th></tr>
<tr><td>In Soarian</td><td>Requisition will print at NW TSS and Montlake TSL</td><td rowspan="2">Montlake TSL will place the order in the LIS</td></tr>
<tr><td>On manual requisition</td><td>NW TSS faxes a copy of requisition to Montlake TSL</td></tr>
</table></td></tr>
<tr><td>2</td><td>Log into SQ using Lab Location: NW</td></tr>
<tr><td>3</td><td>Click on Sunquest, Blood Bank Inquiry (BBI )</td></tr>
<tr><td>4</td><td>Select Lookup by ‘PatientID’ and enter the patient medical record number (MRN)</td></tr>
<tr><td>5</td><td>Review the patient historical record for the following:

Patient’s ABO /Rh –test result must be from Montlake TSL
Any restrictions or special requirements

Age: Neonate/Infant < 4 months old
Some patients may receive plasma components only after UWMC Blood Bank (TSL) MD approval due to their clinical status (i.e. IgA deficiency, severe transfusion reaction).

<table>
<tr><th>If</th><th>Then</th></tr>
<tr><td>Any discrepancies between order and patient historical requirements found
OR
TSL MD approval is required</td><td>Contact Montlake TSL for resolution
Go to next step when discrepancy is resolved</td></tr>
<tr><td>No discrepancies found</td><td>Go to next step</td></tr>
</table></td></tr>
<tr><td>6</td><td>
<table>
<tr><th>If order for</th><th>Then</th></tr>
<tr><td>Plasma</td><td>Go to next step</td></tr>
<tr><td>Cryoprecipitate</td><td>Go to step 9</td></tr>
</table></td></tr>
<tr><td>7</td><td>Verify patient has an ABO/Rh performed by Montlake TSL
<table>
<tr><th>If patient has</th><th>Then</th></tr>
<tr><td>Valid ABO</td><td>Go to next step</td></tr>
<tr><td>No ABO performed by Montlake TSL</td><td>Notify the clinical team to order ABO/Rh test or Type and Screen

NOTE: Both are recommended if the patient is bleeding and likely to need additional blood components_
<table>
<tr><th>If priority is</th><th>Then</th></tr>
<tr><td>Routine</td><td>Go to next step when the ABO/Rh is complete</td></tr>
</table></td></tr>
</table></td></tr>
</table>

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>STAT</td><td>Communicate testing TAT and product availability to ordering provider to determine if order needs to be changed to emergency.</td></tr>
<tr><td></td><td>Emergency/MTP/ OB Bleed</td><td>• Select Group AB plasma
• Go to Step 8</td></tr>
</table>
</td></tr>
<tr><td>8</td><td>
• Select plasma according to the Plasma Compatibility Table in the following order
○ 1st option: ABO identical
○ 2nd option: ABO compatible
○ 3rd option: Group AB

NOTE: To look for available inventory in Sunquest:

○ Click on Sunquest, Blood Inv/Supplier Search  and enter the following:
<table>
<tr><th>Field</th><th>Enter</th></tr>
<tr><td>HID</td><td>U</td></tr>
<tr><td>Component Type</td><td>PLSG</td></tr>
<tr><td>Unit Location</td><td>NWBB</td></tr>
<tr><td>Search Mode</td><td>Default: Available, Allocated, Unprocessed</td></tr>
</table>
○ Click <Search>
</td></tr>
<tr><td>9</td><td>Select appropriate pooled cryoprecipitate– refer to Cryoprecipitate Compatibility Table above</td></tr>
<tr><td>10</td><td>
<table>
<tr><th>If component is</th><th>Then</th></tr>
<tr><td>Thawed</td><td>Go to section Allocating Component to Patient</td></tr>
<tr><td>Frozen</td><td>Go to section Thawing Components</td></tr>
</table>
</td></tr>
</table>

Thawing Components

STEP	ACTION
1	Remove the frozen component from protective packaging and verify the following: • Unit is not expired • Ports are intact • Container has no visible cracks or leaks • No evidence of previous thaw (i.e. plasma is frozen with a visible bubble in the back center – shifting of the bubble location or unexpected denting may be an indication of thawing and refreezing **NOTE:** Do not discard the protective packaging. Packaging should be returned to Montlake TSL for return to the blood supplier.

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td>2</td><td>
<table>
<tr><th>If component is</th><th>Then</th></tr>
<tr><td>Acceptable</td><td>Go to next step</td></tr>
<tr><td>Unacceptable</td><td>• Select a replacement component
• Physically quarantine the unacceptable component and initiate a QI form – refer to SOP Returning Blood Components to Montlake from Northwest Campus</td></tr>
</table>
</td></tr>
<tr><td>3</td><td>Place the frozen component into an overwrap plastic bag

NOTE: Components is placed in an overwrap bag to prevent contamination</td></tr>
<tr><td>4</td><td>Push the LIFT OUT button  to raise and open the basket(s)</td></tr>
<tr><td>5</td><td>Hang the product in the overwrap bag on the tabs at the top of the basket</td></tr>
<tr><td>6</td><td>Document the time the components were placed in the thawer on the requisition

NOTE: This time will be the time of processing entered in the LIS when performing the electronic thaw process in the Blood Component Preparation Module</td></tr>
<tr><td>7</td><td>Set the thaw time based on the table below by pressing the CYCLE TIME button  until the correct time is shown. (‘HO” means “hold” and the thawing cycle will not end automatically)
<table>
<tr><th>Component</th><th>Median Thaw Time (minutes)</th></tr>
<tr><td>Plasma</td><td>16</td></tr>
<tr><td>Cryoprecipitate</td><td>8</td></tr>
</table>
</td></tr>
<tr><td>8</td><td>Press the CYCLE START  button to lower the basket and start the thaw cycle</td></tr>
<tr><td>9</td><td>
<table>
<tr><th>If</th><th>Then</th></tr>
<tr><td>Cycle needs to be paused or stopped</td><td>• Press the LIFT OUT button to raise the basket temporarily.
• Press LIFT OUT again to resume the thaw cycle</td></tr>
</table>
</td></tr>
<tr><td>10</td><td>Unload component(s) from the basket when the cycle is complete or stopped</td></tr>
<tr><td>11</td><td>Remove the product from the overwrap bag and visually inspect the component (refer to SOP Visual Inspection of Blood Components at Northwest Campus
<table>
<tr><th>If component is</th><th>Then</th></tr>
<tr><td>Acceptable</td><td>Go to next step</td></tr>
<tr><td>Unacceptable</td><td>• Physically quarantine the component
• Initiate a QI form
• Return the component with the QI form to Montlake TSL according to SOP: Quarantine and Final Disposition of</td></tr>
</table>
</td></tr>
</table>

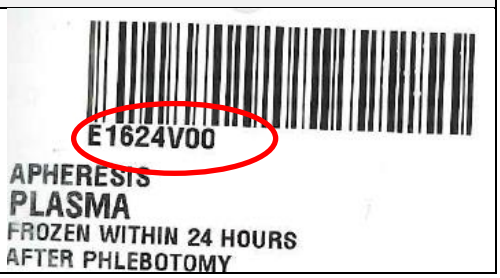
STEP	ACTION

	Blood Components at Northwest Campus
Leaking or broken container	• Discard the component according to SOP ***Quarantine and Final Disposition of Blood Component****s at Northwest Campus* • Notify Montlake TSL and fax a copy of the QI form • Place QI form in NW Transfusion Medicine Supervisor's Mailbox
Component is not completely thawed	Return to step 5 and thaw in 3 MINUTE increments until completely thawed

12	Go to section Blood Component Preparation to modify the component to thawed in Sunquest

Blood Component Preparation (LIS)

STEP	ACTION
1	Click on Sunquest, **Blood Component Preparation** (BCP) 
2	Enter component prep code in the 'Value Field' and press the <Tab> key

Enter code	Example	
T + E code	TE1624	

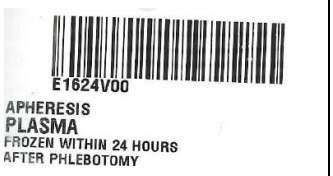
NOTE: The Ecode is found on the front of the component label

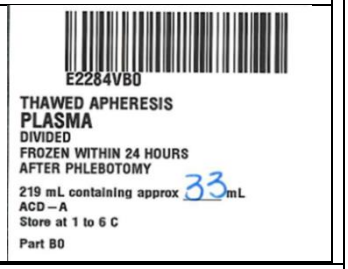
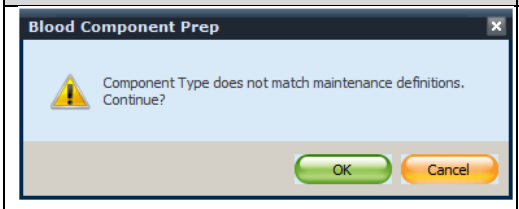
3	Enter the Date in the 'Date field'

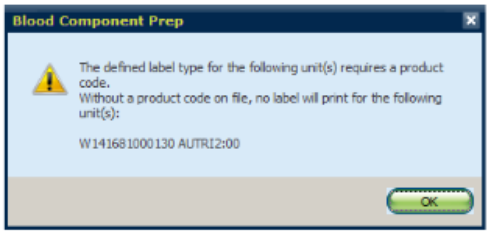
If component was placed in thawer	Then
Today	Press the <Tab> key to default today's date
Yesterday **NOTE:** This may occur when thawing starts before midnight	Enter yesterday's date

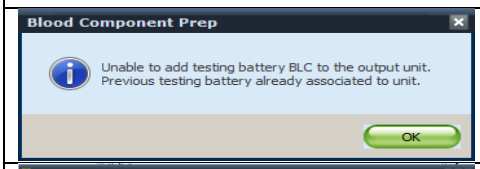
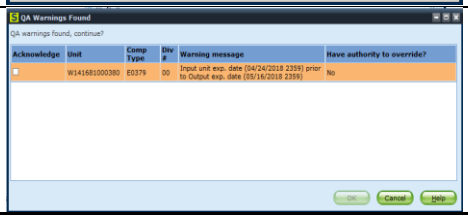
4	Enter the time the component was loaded in the thawer in the 'Time' filed **NOTE:** This is the time documented in step 6, section Thawing Components
5	Select the current work shift using the 'Shift field' dropdown arrow

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td>6</td><td>
<table>
<tr><th>If additional techs</th><th>Then</th></tr>
<tr><td>Did not participated in the thaw process</td><td>Go to next step</td></tr>
<tr><td>Participated in the thaw process</td><td>Enter the 4-digit tech code of participants in the ‘Tech code’
Click the <Add> button</td></tr>
</table>
</td></tr>
<tr><td>7</td><td>Click the <Continue> button at the bottom right of screen</td></tr>
<tr><td>8</td><td>Scan the following barcodes in the associated field
<table>
<tr><th>Field</th><th>Barcode</th></tr>
<tr><td>Unit #</td><td>Donor Identification Number
 
</td></tr>
<tr><td>Component</td><td>Product Ecode

IMPORTANT: Although the component code may prefill after scanning the unit #, scanning of the component code is required to ensure the correct component is selected
 
</td></tr>
<tr><td>Division</td><td>This field should auto populate when the ecode is scanned, when applicable. Enter manually if processing a divided product and the division does not auto populate

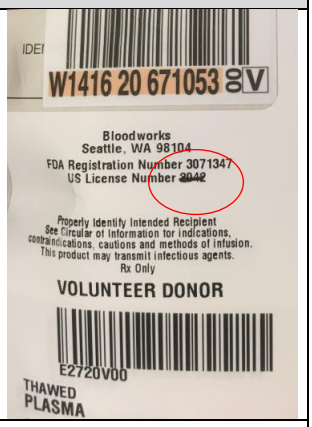
NOTE: The same unit# may have multiple divisions (AO,BO,CO,DO) of a unit
 
</td></tr>
</table>
</td></tr>
<tr><td>9</td><td>Respond to any messages that appear such as the following:
<table>
<tr><th>Message</th><th>Then</th></tr>
<tr><td> 
</td><td>Review the input and process codes to verify both are correct
<table>
<tr><th>If information is</th><th>Then</th></tr>
<tr><td>Incorrect</td><td>Click <Cancel> and correct the error</td></tr>
<tr><td>Component type is not found SQ and needs to be added</td><td>• Click <Cancel>
• Call UW TSL & ask for Lead MLS for resolution
• Complete a QI form and fax copy to Montlake TSL</td></tr>
</table>
</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>• Place QI form in NW Transfusion Medicine Supervisor's Mailbox</td></tr>
<tr><td> 
</td><td>• Click <OK>
• Click on SunQuest, BB Label Print 

to reprint the label and perform the Blood Label Check following modification of the component</td></tr>
<tr><td> 
</td><td>• Click 'OK'
• This is a reminder to perform the blood label check following the product modification</td></tr>
<tr><td> 
</td><td>Acknowledge the warning and update the output expiration date/time to be no later than the input expiration date/time and in accordance with the processing expiration limits listed below in step 8.</td></tr>
</table>
</td></tr>
<tr><td>10</td><td>Fill in all yellow highlighted fields that are blank in the 'Unit Data' section prior</td></tr>
<tr><td>11</td><td>Verify the expiration date and time are accurate even if auto filled by the system
<table>
<tr><th>Process</th><th>Component</th><th>System Type</th><th>Expiration Date/time Limits</th></tr>
<tr><td>Thawing</td><td>Plasma</td><td>Closed</td><td>5 days from thawing</td></tr>
<tr><td>Thawing</td><td>Cryoprecipitate</td><td>Closed</td><td>6 hours from thawing</td></tr>
</table>
NOTE: Expiration dates/times <u>MUST</u> <u>ALWAYS</u> be the shortest outdate of the original or modified component</td></tr>
<tr><td>12</td><td>Click <Save> when all entries are entered and verified</td></tr>
<tr><td>13</td><td>Click <Finish> when the preview output/new units box appear and the new component ISBT label will print</td></tr>
<tr><td>14</td><td>Retrieve the new label from the label printer

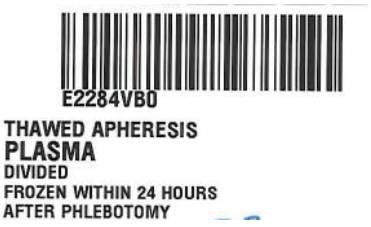
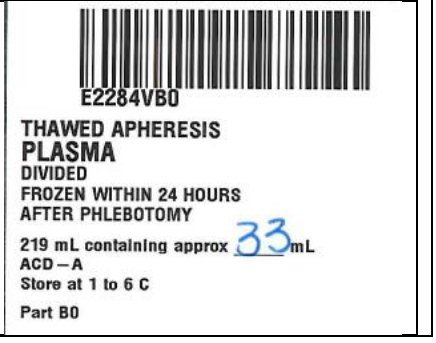
NOTE: If no label printed, go to section Blood Label Reprint to reprint labels</td></tr>
<tr><td>15</td><td>Verify all information on the label is accurate</td></tr>
<tr><td>16</td><td>Place the new label on the component over the top of the original

NOTE: The original donor identification number on the container should never be removed or covered over with a new label</td></tr>
</table>

STEP	ACTION
17	Draw one line through the supplier license # 
18	Go to section Blood Label Check

Blood Label Check (LIS)

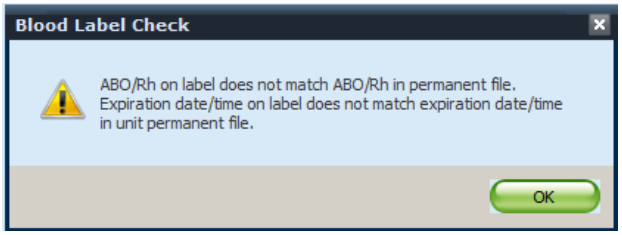
STEP	ACTION
1	Click on Sunquest Blood Label Check 
2	Scan the following barcodes in the associated field

Field	Barcode
Unit #	Donor Identification Number 
Component	Product Ecode **IMPORTANT**: Although the component code may prefill after scanning the unit #, scanning of the component code is required to ensure the correct component is selected 
Division	This field should auto populate when the ecode is scanned, when applicable. Enter manually if processing a divided product and the division does not auto populate **NOTE:** The same donation (unit #) may be split into multiple containers or parts (AO,BO,CO,DO) 

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td>3</td><td>Click <Search>

NOTE: Unit information will populate the middle section of the screen. Mandatory fields will be highlighted in yellow.</td></tr>
<tr><td>4</td><td>Click in the ‘ABO on Label’ field and scan the ABO/Rh barcode on the unit label

NOTE: Both the ABO and Rh fields will populate</td></tr>
<tr><td>5</td><td>Click in the ‘Expiration Date’ field and scan the expiration date/time barcode from the unit label

NOTE: Both the Date and Time will populate</td></tr>
<tr><td>6</td><td>Click <Check Label>
<table>
<tr><th>If</th><th>Then</th></tr>
<tr><td>Label is correct</td><td>• The screen will refresh to a new Blood Label Check screen with unit #, component and division # retained
• Go to the next step</td></tr>
<tr><td>A discrepancy occurred during the check.
EXAMPLE:
 
</td><td>• A warning will appear explaining the discrepancy and the label will not be checked.
• Click OK, resolve the discrepancy and repeat steps 3-6 verifying all information.
• Do not issue the component until the label change correct</td></tr>
</table></td></tr>
<tr><td>7</td><td>Go to section Allocating Component to Patient</td></tr>
</table>

Allocating Component to Patient

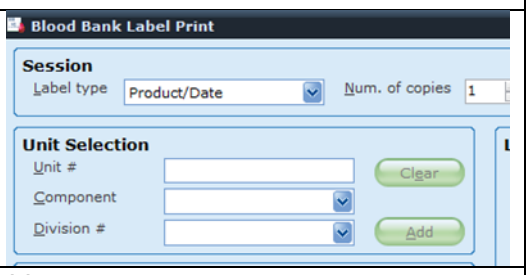
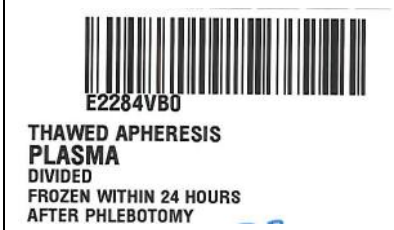
STEP	ACTION
1	Contact a Montlake MLS to allocate the component to the recipient in Sunquest

2	• Read the following information to the Montlake MLS request they perform a verbal read back
	  ○ Patient Medical Record Number
	  ○ Full Patient Name as it appears on the order
	  ○ Type of component
	  ○ Unit number of the component
	• Montlake MLS will perform a verbal read back by the of all 4 items – verify information is correct

3	• Montlake TSL logs into SQ location: **NWBB2** to allocate the thawed plasma components • The Transfusion Record will print at NW TSS when allocation is complete

STEP	ACTION
4	Retrieve the Transfusion Record from printer **NOTE:** Printing occurs immediately after allocation
5	Attached the Transfusion Record and Unit Compatibility Label to the component following SOP ***Attaching Sunquest Transfusion Record to Blood Components at Northwest Campus***
6	**If product** / **Then** Ready to issue / Issue following SOP ***Issuing Blood Components at Northwest Campus*** Will issue a later time / Place in backup blood refrigerator

Blood Label Reprint (only perform if label does not print at the end of Blood Component Prep):

STEP	ACTION
1	Click on Sunquest, BB Label Print 
2	Select the 'Product/Date' option from the Label type dropdown box at the top left of the screen 
3	Scan the following barcodes in the associated field **Field** / **Barcode** Unit # / Donor Identification Number  Component / Product Ecode **IMPORTANT**: Although the component code may prefill after scanning the unit #, scanning of the component code is required to ensure the correct component is selected  Division / When applicable, the field will automatically populate when the ecode is scanned. Enter manually if not. **NOTE:** The same donation (unit #) may be split into multiple containers (AO,BO,CO,DO) or parts

STEP	ACTION
4	Click <Add>
5	Repeat steps 3-6 if additional labels of the same type need to be printed.
6	Click <Print> when all units are entered to print the labels
7	Click <Exit> to close Blood Bank Label Print

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

NA

PROCEDURE NOTES AND LIMITATIONS:

- A label check must be performed and entered in Sunquest after any modification. Sunquest programming does not have a mandatory setting for performing this check, but a label check **MUST** be performed.
- Any deviation from this procedure should be approved by the Montlake TSL MD-On -Call and the deviation documented on a QI form (include the name of the MD approving the deviation)
- Use only tap or distilled water to fill the thaw bath. Do not use deionized water as it may be corrosive to the chamber and baskets

REFERENCES:

- Standards for Blood Banks and Transfusion Services, American Association of Blood Banks, Bethesda, MD. Current Edition.
- Sunquest Blood Bank Users' Guide Version 8.1

RELATED DOCUMENTS:

FORM *Component Prep Downtime Log*
SOP *Returning Blood Components to Montlake from Northwest Campus*
SOP *Visual Inspection of Blood Components at Northwest Campus*
SOP *Quarantine and Final Disposition of Blood Components at Northwest Campus*
SOP *Attaching Sunquest Transfusion Record to Blood Components at Northwest Campus*
SOP *Issuing Blood Components at Northwest Campus*

UWMC SOP Approval:

UWMC CLIA Medical Director	Mark H. Wener, MD	Date 10/20/20
Transfusion Service Manager	Nina Sen	Date 10/16/20
QARA Manager	Christine Clark	Date 10-16-2020
Transfusion Service Medical Director	Monica B. Pagano, MD	Date 10-19-2020

UWMC Biennial Review:

	Date
	Date