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: 07-19-2021	Number: PC-0086.03
TITLE: **Ordering and Processing Platelet at Northwest Campus**		

PURPOSE
Provide instructions for ordering, selecting, and allocating platelet components for transfusion

LOCATION
Northwest Transfusion Support Service (TSS)
Montlake Transfusion Service Lab (TSL)

PRINCIPLE & CLINICAL SIGNIFICANCE:
Principle
Platelets are essential for normal hemostasis. The therapeutic goal of platelet transfusion is to provide adequate numbers of normally functioning platelets for the prevention or cessation of bleeding.

Clinical Significance
Platelet transfusions are ordered for both therapeutic and prophylactic use. Patients with thrombocytopenia, dysfunctional platelet disorders, active platelet-related bleeding, or at serious risk of bleeding may receive platelet transfusions. The following medical conditions may require platelet transfusion: leukemia, myelodysplasia, aplastic anemia, solid tumors, congenital or acquired platelet dysfunction and central nervous system trauma. Patients undergoing extracorporeal membrane oxygenation or cardiopulmonary bypass may also need platelet transfusion. Platelets may also be given as part of a massive transfusion protocol.

TABLE 1: Type of Platelets Stocked by UWMC Transfusion Service Laboratory

Platelet Type	Common Terminology	Description
Apheresis Platelet in Plasma	Apheresis Platelet OR Random Apheresis Platelet (RAP)	• Platelets collected by apheresis removing whole blood from the donor, separating the platelets for collection and returned the remaining components to the donor • Adult dose is one unit from single donor
PAS - Platelet Additive Solution Platelet	PAS Platelet	• Collected by apheresis and suspended in variable amounts of plasma and an approve platelet additive solution (PAS). • Some hospitals are reporting a significant decrease in allergic transfusion reactions with the use of PAS as compared to platelet units stored in plasma • Isoagglutinin titers are lower in PAS platelets when compared to platelet units stored in plasma (less plasma, less antibodies) • Adult dose is one unit from single donor

TABLE 2: Attributes and Special Requirements Provided by UWMC Transfusion Service Laboratory

Requirement Process	Description
Leukoreduction	• Platelets are filtered to remove white blood cells. To be considered leukoreduced the residual count of leukocytes must be $<5.0 \times 10^6$. • Leukoreduction is indicated to decrease the frequency of febrile non-hemolytic transfusion reactions, HLA alloimmunization and CMV transmission • Leukoreduced platelets **are considered CMV safe** • **All platelets stored in the NW laboratory are leukoreduced**
Irradiation	• Platelets are exposed to an irradiation source to inactivate T lymphocytes and prevent the risk for TA-GVHD (Graft vs Host Disease) • **All cellular blood components including platelets stored in the NW laboratory are irradiated or pathogen reduced/psoralen treated**
Pathogen Reduced (Psoralen Treated)	• A process performed by the blood manufacturer to inactivate any infectious agents including viruses, bacteria, parasites, and protozoa • The pathogen-reduced process inactivates lymphocytes and prevents transfusion-associated graft-vs-host disease. • Pathogen reduced platelets do not require irradiation

Volume Reduced	• Platelets are centrifuged to allow removal of the supernatant (liquid portion) containing plasma and storage medium
	• Volume reduced platelets are indicated:
	  ○ When the patient has or is at risk to have volume overload (example: congestive cardiac failure)
	  ○ To limit the amount of ABO incompatible plasma for pre and post bone marrow transplant patients
	• It is standard to volume reduce to 100 mL unless otherwise specified on order or by patient blood bank SQ history.
	• Volume reduced platelets expire within 4 hours from the start of processing
	• Platelet orders requiring volume reduction will be processed by UWMC TSL just prior to the schedule transfusion time and sent to NW laboratory for issue.

Washed	• Washing removes plasma and storage medium from the platelets and replaces it with 0.9% sodium chloride or plasmalyte solution • Washing is indicated to reduce exposure to plasma proteins • It is indicated to prevent recurrence of severe transfusion reactions (i.e., patient with anaphylactic reactions) • Washed platelets expire within 4 hours from the start of processing • Platelet orders requiring washing will be processed by UWMC TSL just prior to the schedule transfusion time and sent to NW laboratory for issue.

Requirement Process	Description
HLA- matched or selected	• Indicated for patients who are platelet refractory due to the presence of HLA antibodies • May be either Apheresis platelets in plasma or PAS platelets selected to avoid antigens to HLA antibodies of the intended recipient and/or antigen matched to the recipient's HLA antigens • Usually ordered at least a day in advance of transfusions. UWMCTSL may have a platelet in inventory that meets the patient's requirements or will order a suitable platelet directly from the blood supplier. • Labels of HLA-matched or selected platelets will contain the following "For designated recipient only" under the ABO/Rh and "Directed" next to the Ecode • Adult dose is one unit from single donor

POLICIES:

- **Pre-Transfusion Test Requirements** for allocating platelet components:
  - 1 historical or current ABO/Rh performed at UWMC TSL
- **Platelets stocked at** NW Hospital will meet the following requirements
  - **PAS- Platelet collected in platelet additive solution**– see **TABLE 1** above for description of other platelet types.
    - Non- PAS platelets may be provided when PAS platelets are unavailable such as in a platelet shortage crisis and include apheresis platelet collected in plasma and pre-pooled platelets
  - **Leukocyte-reduced** considered CMV safe
  - **Irradiated and/or Pathogen Reduced**

- **Bleeding Emergencies (Massive Transfusion Protocols (MTP)/OB Bleeds):** During a bleeding emergency, any platelet in stock may be issued regardless of patient's ABO/Rh or special requirements
- **ABO/Rh Compatibility between recipient and donor**
  - In general, full volume PAS platelets of any ABO are acceptable for issue to all patients, except in a few clinical situations – refer to TABLE 3 for complete ABO compatibility considerations
  - Rh negative platelets are provided for
    - IUT transfusion when the mother is Rh negative and to Rh negative neonates
    - BMT patients who are Rh negative or have received a Rh-negative transplant
    - Refer to TABLE 4 or complete Rh compatibility considerations
  - TSL MD on call will evaluate need for prophylaxis on Rh negative patients receiving Rh positive red blood cells

TABLE 3: ABO Platelet Compatibility

ABO Compatibility Table			
Recipient Clinical Profile	**Recipient ABO**	**PAS ABO**	**NON-PAS ABO**
ADULT & NEONATE (pooled platelets are NOT acceptable for neonates) **Excluding those listed below**	A, B, AB	ANY ABO	Full volume A, B, or AB OR Reduced volume O
	O	ANY ABO	ANY ABO
	NTD (No type determined)	Contact UW Montlake TSL for selection of platelet	
Intrauterine Transfusion	A, B, O, AB	AB only	
BMT (pre and post)	Contact UW Montlake TSL for selection of platelet		

TABLE 4: Rh Platelet Compatibility

Rh Compatibility Table		
Recipient Rh	**Patient Clinical Profile**	**Platelet Rh**
Positive	ANY	Positive or Negative
Negative	Females < 50 years old Males < 15 years old	Negative (if not available, TSL MD approval is required to give Rh positive)
	SCCA patients, BMT (pre and post)	
	IUT (mother is Rh negative	
	Females ≥ 50 years old Males ≥ 15 years old	Positive or Negative
No Rh in BAD	ANY	Contact UW Montlake TSL for selection of platelet
Any Rh during Bleeding Emergency	ANY	Positive or Negative

- **Orders with attributes and special requirements** – see **TABLE 2** above
  - Platelets requiring attributes or special requirements other than irradiation and leukoreduction will be allocated and processed at Montlake TSL then sent to NW TSS for issue
  - Additional time will be needed to receive these from Montlake TSL

Attribute/Requirement	Turn-Around-Time (TAT)
Volume reduction	2.5 hours
Washing	3 hours
Delivery of platelet that does not require either of the above	1 hour
HLA –matched or selected	Will be subject to availability but usually at least 24 hours

- **Bone Marrow Transplant (BMT) Recipients**
  - BMT recipients have special requirement unique to this patient population including ABO/Rh compatibility and volume reduction
  - These patients are identified in Sunquest by "BMT" entry in the comment field of their historical record – refer to Appendix 1: Identifying Bone Marrow Transplant Recipients in Sunquest.
    - Information listed immediately after BMT specifies the special platelet requirement of the patient.
  - When allocating platelets to BMT recipients, Montlake MLS will ensure any special requirements are met including providing Rh negative platelet when required
    - Stock PAS platelet will usually match the special requirements for these patients. If the stock platelet is not acceptable, a platelet will be allocated from Montlake stock and sent to NW TSS for issue.
    - For reference, Appendix 2: Bone Marrow Transplant Platelet Compatibility shows the general compatibility requirements for this patient population. Other requirements may apply.

- **Platelet Storage Requirements**

Component	**Storage Requirements**
Platelet	20-24^{0}C Platelet incubator agitator

SPECIMEN REQUIREMENTS: NA

REAGENTS/SUPPLIES/EQUIPMENT: NA

QUALITY CONTROL: NA

TITLE: **Ordering and Processing Platelets at Northwest Campus**	**Number:** PC-0086.03

INSTRUCTIONS:

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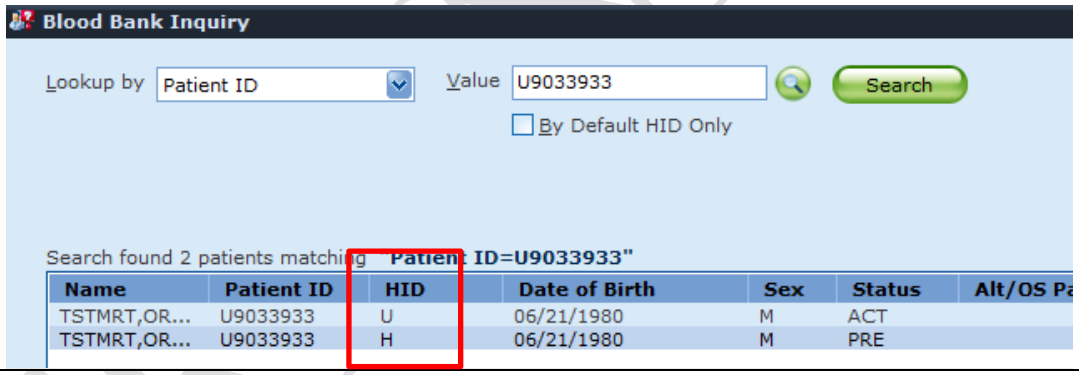
Order Receipt and Allocation of Platelets

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td>1</td><td>Receive platelet order requisition
<table>
<tr><th>If order is placed</th><th>Then</th><th>Then</th></tr>
<tr><td>In EPIC</td><td>Requisition will print at NW TSS and Montlake TSL</td><td rowspan="2">Montlake TSL will receive/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)
Select correct HID location: U
 
</td></tr>
<tr><td>5</td><td>Review the patient record for the following:
• Patient’s ABO /Rh –test result must be from Montlake TSL
• Any attributes, special requirements or restrictions
○ Age: Neonate/Infant < 4 months old
○ Intrauterine transfusion
○ Volume Reduction
○ Washed
○ HLA Matched
• Review SQ BAD file comments for the following
○ BMT – patient is a bone marrow transplant candidate
○ Reduced volume platelet (RV PLT)
○ HLA platelet
○ ABO/Rh requirements for platelets that need to be volume reduced</td></tr>
</table>

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td></td><td>
<table>
<tr><th>If</th><th>Then</th></tr>
<tr><td>Patient has an ABO/Rh performed by Montlake TSL
AND
No special requirements or discrepancies between history and order</td><td>• Go to the next step</td></tr>
<tr><td>No ABO/Rh performed by Montlake TSL</td><td>Notify the clinical team to order ABO/Rh test
<table>
<tr><th>If priority is</th><th>Then</th></tr>
<tr><td>Routine</td><td>• Receive order and specimen in Sunquest and send to Montlake TSL
• Go to next step when testing is complete</td></tr>
<tr><td>STAT</td><td>• Communicate testing TAT and product availability to ordering provider to determine if order needs to be changed to emergency
• Go to next step</td></tr>
<tr><td>Emergency/MTP/ OB Bleed</td><td>• Select platelet in stock regardless of component type and patient ABO/Rh
• Go to next step</td></tr>
</table></td></tr>
<tr><td>Special Process or requirements other than irradiation or leukoreduction</td><td>• Montlake TSL will call NW TSS to verify date and time of transfusion – Special processing is performed just prior to transfusion because of a shorten expiration due to processing – usually 4 hours from the start of processing
• See Table 2 above for special processing TAT
<table>
<tr><th>If</th><th>Then</th></tr>
<tr><td>No delay in availability</td><td>Go to next step</td></tr>
<tr><td>Delay in availability</td><td>• Call and inform the ordering provider of the expected TAT
• Go to next step</td></tr>
</table></td></tr>
<tr><td>Any discrepancies between order and patient historical requirements are found</td><td>• Montlake TSL will resolve discrepancy and notify NW TSS of resolution and platelet availability
• Go to next step</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>STEP</th><th>ACTION</th></tr>
<tr><td>6</td><td>Montlake TSL will allocate the appropriate platelet for the order
<table>
<tr><th>If platelet is</th><th>Then</th></tr>
<tr><td>In NW stock</td><td>• Montlake TSL tech logs into SQ location: NWBB2 to allocate platelet from NWBB inventory
• The Transfusion Record will print at NW TSS when allocation is complete
• Go to next step</td></tr>
<tr><td>Not in NW stock</td><td>• Montlake TSL will prepare and allocate the platelet from Montlake stock, attach the Transfusion Record and ship it to NW Laboratory via UWMC courier
• Follow SOPs Receiving Blood Components from Montlake at Northwest Campus and Issuing Blood Components at Northwest Campus when the platelet arrives at NW TSS</td></tr>
</table></td></tr>
<tr><td>7</td><td>Retrieve Transfusion Record from printer</td></tr>
<tr><td>8</td><td>Attached the Transfusion Record and Unit Compatibility Label to the component following SOP Attaching Sunquest Transfusion Record to Blood Components at Northwest Campus</td></tr>
<tr><td>9</td><td>
<table>
<tr><th>If</th><th>Then</th></tr>
<tr><td>Ready to issue</td><td>Issue following SOP Issuing Blood Components at Northwest Campus</td></tr>
<tr><td>Will issue a later time</td><td>Place on platelet incubator/agitator</td></tr>
</table></td></tr>
</table>

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

INTERPRETATION

None

Results Reporting in Sunquest

None

CALIBRATION:

None

PROCEDURE NOTES AND LIMITATIONS:

None

REFERENCES:

AABB, ARC, ABC, Armed Service Blood Program. *Circular of Information for the use of Human Blood and Blood Components*. Current version

RELATED DOCUMENTS:

SOP *Receiving Blood Components from Montlake at Northwest Campus*
SOP *Issuing Blood Components at Northwest Campus*
SOP *Attaching Sunquest Transfusion Record to Blood Components at Northwest Campus*

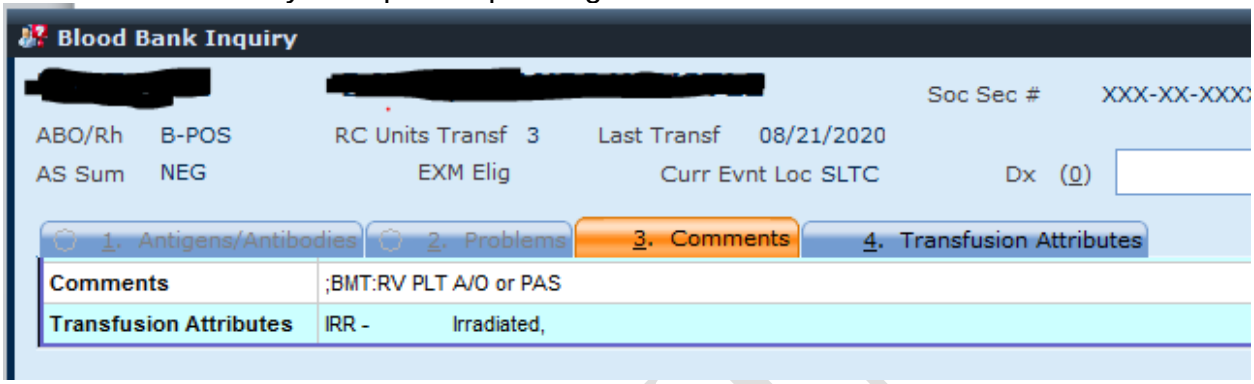
UWMC SOP Approval:			
UWMC CLIA Medical Director	Mark H. Wener, MD	Date	
Transfusion Service Manager	Nina Sen	Date	
Compliance Analyst	Christine Clark	Date	
Transfusion Service Medical Director	Monica Pagano, MD	Date	
UWMC Biennial Review:			
		Date	
		Date	

REVISION HISTORY:
03/01/2021: Updated for conversion from Cerner to Epic eMR on 03/27/2021. Removed pooled platelets as a platelet type and added pathogen reduced as an attribute equivalent to irradiated.

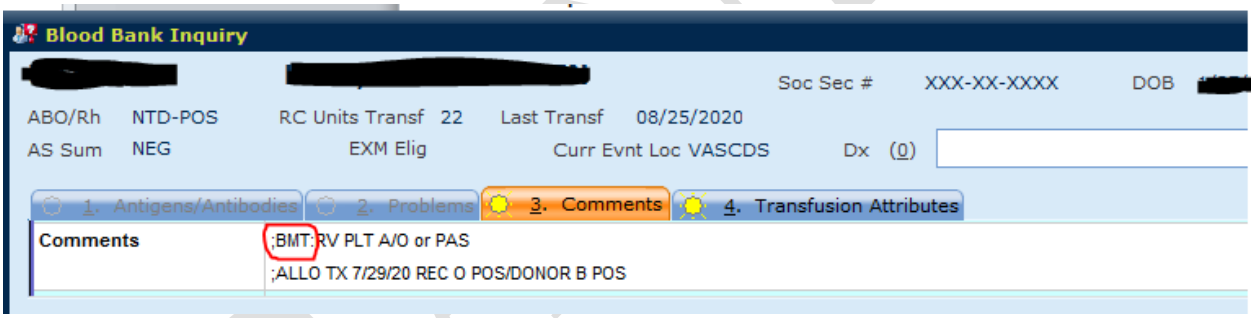
APPENDICES:
Appendix 1: Identifying Bone Marrow Transplant Recipients in Sunquest

Pre bone marrow transplant: "BMT" listed in the patient's SQ "comment" field designates the patient is a bone marrow transplant candidate. The information after BMT indicates the special platelet needs of the patient.

EXAMPLE A: History for a patient pending a BMT



EXAMPLE B: History for a patient who received a transplant on 07/29/20 with the recipient and donor ABO/Rh



Appendix 2: Bone Marrow Transplant Platelet Compatibility

Pre-Bone Marrow Transplant			
Recipient ABO	**PAS ABO**	**NON-PAS**	
		Full Volume ABO	**Reduced Volume ABO**
A	ANY	A, AB	B, O
B		B, AB	A, O
O		O, A, B, AB	None
AB		AB	A, B, O

Post-Bone Marrow Transplant					
Recipient ABO	**Donor ABO**	**SQ BAD ABO**	**PAS ABO**	**NON-PAS**	
				Full Volume	**Reduced Volume**
O	O	O	ANY	O, A, B, AB	none
	A	NTD		A, AB	B, O
	B	NTD		B, AB	A, O
	AB	NTD		AB	A, B, O
A	O	NTD	ANY	A, AB	B, O
	A	A		A, AB	B, O
	B	NTD		AB	A, B, O
	AB	NTD		AB	A, B, O
B	O	NTD	ANY	B, AB	A, O
	A	NTD		AB	A, B, O
	B	B		B, AB	A, O
	AB	NTD		AB	A, B, O
AB	O	NTD	ANY	AB	A, B, O
	A	NTD		AB	A, B, O
	B	NTD		AB	A, B, O
	AB	NTD		AB	A, B, O