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Kaiser Permanente Medical Center, San Francisco
Northern California Region
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Work Instruction

Title:	**TS- Platelet Transfusion**	**WI Number** SFOWI-0078 **Revision:** 19
Department: Immunohematology **Area:** 2425 Geary Blvd SFO Hospital Lab	***Document is in the Final Approval Process. 2 - approvals are required***	
Type of Document:		**Review Period -** 340 **Days**

PURPOSE

A. To process request for platelet transfusion.
B. Platelets are indicated for treatment of bleeding caused by thrombocytopenia or for patients with functionally abnormal platelets (congenital or acquired).
C. They are also indicated during surgery or before certain invasive procedures for in-patients who have platelet counts of <50,000/ul.
D. Prophylactic transfusion of platelets may be indicated for patients who have platelet counts below 5000 to 10,000/ul associated with marrow hypoplasia resulting from chemotherapy, tumor invasion, or primary aplasia. This range may be higher for patients with complicated clinical factors such as uremia.
E. Platelet transfusion may not be effective in patients with rapid platelet destruction, including idiopathic autoimmune thrombocytopenic purpura (ITP), and untreated disseminated intravascular coagulation (DIC), thrombotic thrombocytopenic purpura (TTP), heparin-induced thrombocytopenia (HIT), and thrombocytopenia caused by septicemia or hypersplenism.

EQUIPMENT

A. Platelet Agitator/Incubator

CONTROL

A. Blood supplier performs bacterial detection testing on all platelet products supplied to hospitals.

SPECIMEN and REQUISITION

A. Refer to Blood Bank Specimen and Requisition SOP.
B. Platelet requisition does not need to be signed, dated or timed unless it is accompanied by a specimen.
C. The appropriate KPHC order is the one with the heading 'Prepare Platelets'.
D. A manual Transfusion Service requisition is also acceptable if properly completed with information when KPHC is unavailable.

PROCEDURE

A. **Processing Platelet Order**

1. Patient must have **two ABORh typings** before platelet can be dispensed.
2. Compatibility testing is not necessary unless there is 2 ml or greater of red cells. **NOTE:** ***Refer to Compatibility Testing SOP for crossmatch instructions*****.**
3. Directed donor platelets should be given before random units unless the DD unit does not meet special requirements. In such case, notify attending physician to get approval before releasing platelets from patient.
4. Platelets order for patients with **TTP or HIT** must be first approved by Medical Director.
5. Check patient's history in the LIS for **ABORh**, **Special Needs**, **Gender** and **Age**.
6. Refer to ***Unusual Product Request Policy*** for **quantity and Special Needs restrictions** prior to filling the order.
7. Effective 4-26-2012, a Warning message will pop up in Millennium whenever Rh Pos platelet or Rh pooled platelet is set up on any Rh Negative recipient, regardless of age and gender.

   NOTE: This warning message serves as a reminder that Rh Neg platelets should be provided as first preference to Rh Neg female 50 years old or younger and all infants 1 year old or younger.

   Refer to 'Selection of Platelets' section below for details on assignment of platelets with the appropriate Rh type to patients.

8. **Selection of Platelets**

   Transfuse with ABO plasma compatible platelets whenever possible. Neonates and Infants both male and female who are 1 year old or younger must receive ABO plasma compatible platelets.

   a. **Adults:**
      i. An adult dose is 1 platelet pheresis which is equivalent to 6 platelet concentrates.
      ii. ABO incompatible platelets may be used.
      iii. Select Rh Negative platelets for Rh Negative females 50 years old or younger.
      iv. Honor any special requirement already entered in LIS or newly requested if patient qualifies.

   b. **Neonates and, Male and Female Infants 1 year old or younger:**
      i. Physician should determine the appropriate dosage for pediatric patients to prevent unnecessary or inadequate transfusions.
      ii. Give **CMV Negative** and **Irradiated, Leukoreduced** platelets to **Neonates**. **NOTE:** ***Refer to Neonatal Transfusion SOP for details.***
      iii. If AB or ABO plasma compatible platelets are not available, order **Dried/Plasma Reduced Platelets**. **NOTE:** ***Refer to Neonatal Transfusion SOP for details on risks and volume adjustment.***
      iv. Give Rh negative platelets to Rh negative male and female Infants. If unavailable, notify ordering provider and Medical Director for approval to give Rh positive platelets and advise RhIg administration. RhIg is not indicated for **neonates**, however, advise the physician to consult with pharmacy for more information.

9. When Rh negative platelets are not available for **female 50 years old or younger**, Rh positive platelets may be used.
    a. **Notify ordering provider and Medical Director for approval and advise RhIg administration to prevent D antigen sensitization. If needed, request pathologist to follow up with provider.**
    b. A full dose (300ug) of RhIg or IV RhIg (both are obtained from pharmacy) would provide protection against red cells in 30 units of Rh positive platelet concentrates or 5 units of platelet pheresis.
    c. Consider giving IV RhIg to prevent hematoma for patients who has very low platelets.

B. **Platelets Pheresis**

One unit of Platelets Pheresis contains at least 3 x 10e11 platelets, and will usually increase the platelet count of a 70-kg adult by 30,000 to 60,000/ul.

1. **Leukocytes Reduced platelets** contains less than or equal to 5 x 10e6 leukocytes, are indicated as prophylaxis against HLA alloimmunization in selected patients who are destined to receive long-term hemotherapy.
2. **HLA-matched or HPA negative or Crossmatched-compatible platelet pheresis:**
    a. Are indicated for patients who are unresponsive to random platelets.
    b. Requires Medical Director's consultation and approval. ***Refer to Unusual Product Request Policy SOP.***
    c. **HLA-matched and Crossmatched-compatible platelet pheresis** must be **irradiated**.
    d. Send out to Reference Lab for HLA matched / HPA negative / crossmatched platelets:
        i. Send two freshly drawn 7 ml EDTA whole blood before noon on M-F. Ideally, samples should be sent every 3 days for platelets crossmatch.
        ii. Keep specimen at room temperature.
        iii. Fill out a Platelet Studies Request/Billing form and send with specimens.
3. **Dried/Plasma Reduced Platelets**
    a. Requires Medical Director's approval except for neonates and infants less than one year old. ***Refer to Unusual Product Request Policy SOP.***
    b. Dried platelets are prepared by removing 75% of the original plasma volume. Plasma reduced platelets from BCP will have a residual plasma volume of approximately 65 ml.
    c. Dried platelets are beneficial for patients who need platelets but are unable to tolerate the usual volume of plasma in platelet products. Plasma reduced platelets from BCP is approximately 4x more concentrated than the original product.

        NOTE: Concentration factor can be calculated by dividing starting volume y (on tag) by final volume z (on bag) = y ÷ z. Example: (300 ÷ 65) is approximately 4.6 times more concentrated. Approximately 10-15% of platelets are lost during the volume reduction process.
    d. For neonates, ***refer to Neonatal Transfusion SOP for details on risks and volume adjustment.***
    e. Dried platelets expires 4 hours after the start of processing.

All plasma reduced platelets will have the following tag:

Plasma Reduced Platelet
(More Concentrated)
Starting Volume: _____
Final Volume: See volume on bag label

4. **Washed platelets**
   a. Washed platelets are given to patients who have suffered anaphylactic reaction to plasma.
   b. Requires Medical Director's approval. **NOTE:** ***Refer to Unusual Product Request Policy.***
   c. Washed platelets or IgA-deficient platelets should be given to IgA-deficient patients.
   d. Washed platelets expires 4 hours after the start of processing.

C. **Platelet Storage**
1. Store platelets at room temperature with constant agitation. Platelets expire 5 days after collection.
2. Maximum time without agitation allowed for platelets is 24 hours at room temperature.

D. **Platelet Aliquot**
1. **Preparation of platelet pheresis aliquot:**
   a. Order platelets pheresis from blood supplier with aliquot bags attached by sterile docking.
   b. Check the Daily Equipment Quality Control form in the Daily QC Binder to see if the scale has been QC'd for that day. If not, perform QC using the 50g, 100g and 300g weights.
   c. Place an empty satellite bag on the scale. Tare the scale to zero.
   d. Use hemostats to clamp the tubings.
   e. Remove any metal clips.
   f. Mix the platelets gently.
   g. Break the seal between the platelets bag and the satellite bags if necessary.
   h. Remove the hemostat from the tubing that leads to the selected satellite bag.
   i. Mix and invert the unit of platelets and allow it to flow into the satellite bag.
   j. When the desire weight (the requested volume plus 20mL) is achieved, clamp the tubing off with a hemostat.
   k. Seal the tubing three times at different places with a heat sealer.
   l. Write the weight on the label of each aliquot.
   m. If platelets are aliquoted into satellite bags that are not for storage, the expiration time will be 4 hours.

   NOTE: If seal breaks causing the mother bag to become an open system, the new expiration time for the mother bag is 4 hours (after opening) unless the original expiration time is sooner.
2. **Product Modification in LIS**
   a. Use Modify Product application and select Split Closed Transfer Bag (original mother unit retains its expiration date/time) or Split Open Transfer Bag if open system (original mother unit expires 24 hours after modification).
   b. Refer to Computer SOP for details.
   c. When modification is completed, an ISBT aliquot label will be generated.

d. Match the aliquot label with the mother bag's unit number before applying the label on the aliquot bag.
e. Separate the aliquot from the mother bag by cutting the middle of the three seals, leaving a segment of integrally connected tubing with the aliquot for subsequent compatibility testing if needed.
f. Attach a DD luggage tag with recipient's information on each aliquot of a split directed unit to indicate the unit is donor designated.

3. **Label check**
   a. Verify the following information on aliquot label using Label Verification function in LIS.
      i. Unit number
      ii. Group/Type
      iii. Product code
      iv. Expiration date and time
   b. Visually verify the following information on the aliquot label:
      i. Special attributes CMV negative, irradiated, leukocytes reduced, crossmatched, HLA matched, should match the mother bag's face label and with the LIS.
      ii. Volume should match the LIS component tag/label.
   c. **Computer downtime (refer to Computer Downtime for more instructions)**
      i. Use ABORh, component, DIN and special need stickers to label the aliquot.
      ii. Handwrite the expiration date, time and volume.
      iii. Visually verify the aliquot label information specified in D.1. and D.2. above, by comparing with the mother bag's face label.
      iv. Complete pages 1 and 2 of the 'Aliquot Label Check'.
      v. Aliquot face label and component tag/label must be visually verified by a 2nd CLS.
   d. Unit that fails verification must not be dispensed until after the problem is resolved.

E. Assign Platelet

1. After assigning platelets to patient in LIS, Component Tags will print.
2. Initial and date on the LIS generated Component Tag. Affix the Component Label to the back of the unit.
3. Affix one Prepare Platelet Accession# aliquot label on the top right quadrant of each yellow chart copy of the Component Tag.

PROCEDURE NOTE(S)

A. Expired platelets are wasted. Dispose in the LIS.
B. Platelets expiring midnight of the next day are returned to blood supplier before 11 PM.
   1. Obtain a taxi voucher from the specimen processing area.
   2. Complete the voucher: date, issued by, transportation for, start from KP-SFO and then to blood supplier. Keep the pink copy in the envelope.
   3. Complete the Taxi Voucher Log outside the envelope.
   4. Dispose the platelets in the LIS with the appropriate reason and print a packing list.
   5. Complete the appropriate blood supplier form, indicating for credit, and that the platelets were stored and handled properly.
   6. Pack platelets with the form inside the blood supplier platelet shipping cooler. ***Refer to Interfacility Transfer of Blood Components for packing instructions*.**

7. Tape the cooler lid shut to prevent platelets from falling out.
8. Attach the Taxi Voucher on the cooler and call a cab to deliver the cooler to blood supplier.

C. Platelet pheresis that contains platelet close to 6 x 10e11 is considered as two doses of platelets and can be transfused to a patient who requires two platelet pheresis.

REFERENCE

A. AABB, Standards for Blood Banks and Transfusion Service, current edition, Bethesda, MD.

B. AABB, Blood Transfusion Therapy, a Physician's Handbook, current edition, Bethesda, MD.

Associated Documents:

External Documents

Blood supplier forms

Associated Documents:

SFOWI-0107 -- TS-Unusual Product Request Policy
SFOWI-0140 -- TQ - Computer Downtime
SFOWI-0105 -- TS-Neonatal Transfusion
SFOWI-0070 -- TS-Interfacility Transfer of Blood Components
SFOWI-0089 -- TS-Compatibility Testing
SFOWI-0079 -- TS-Blood Bank Specimen and Requisition
SFOWI-0111 -- TS-Dispensing Blood and Blood Components
SFOWI-0112 -- TS-Processing Blood Units for CVS and OR
SFOWI-0022 -- TS Blood and Blood Products Daily Inventory
SFOWI-0054 -- TS-Double Check

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Documents Generated:

Document Revision History:

Revision: 19	**Date Created:** 09/21/2005 **Date of Last Revision:** 05/01/2018	**Last Approval Date:** 09/29/2016

Document Author: Cara H Lim/CA/KAIPERM	**Document Manager:** Richard Chui/CA/KAIPERM

Reason for Change:

Revision:	Sec/Para Changed	Change Made:	Date
1	Approver	New Lab Director	1/01/2007
2	Procedure	Change to RILIS product codes and label check process.	4/28/07
3	Approver	New Lab Director	7/1/07
4	Procedure-A-5-b & B-3	Do not require Dr approval for infant < 1yr if plasma compatible platelets are not available give dried platelets.	11/30/07
5	Procedure	Change FEI# to 1000135033 and add ISBT product codes	4/4/08
6	Procedure notes	Pltpheresis contains plts close to 6x10e11 is considered as 2 doses.	10/3/10
7	Procedure	Replace RILIS Classic instruction. New label verification instructions. Add return PLT to BCP instructions.	5/5/11
	Approver	Change Lab Director	
8	Procedure A.6.b. D.	Corrected spelling errors. Deleted 'Issue Rhlg' and added 'both are'. Deleted references to RILIS Classic processes.	6/20/11

9	Procedure A.6.a.	Simplified notification process.	9/8/11
10	Requisition Procedure A. Procedure A.5. Procedure A.6. Procedure A.2. Procedure A.3. Procedure A.4. Procedure A.7.b.ii.iii. Procedure A.7.iv. Procedure A.8.a. Procedure B. Procedure B.3.d and 4.d. Procedure D.8.c. Procedure B.2. Procedure Notes	New section for requisition requirements. Reformatted paragraphs. Added to check gender and age of patients. Added instructions to use Rh Neg Platelet Requirement Label. Added reference for crossmatch instructions. Added approval of MD needed to release DD platelets. Added approval of Medical Director required for TTP and HIT patients. Added reference to Neonatal Transfusion SOP. Added instructions for unavailable Rh Neg platelets for infants. Reinstated the requirement for pathologist approval prior to switching from Rh Neg to Rh Pos platelets Added references to associated SOPs. Changed expiration from 'in 4 hours' to '4 hours after the start of processing'. Added 2nd CLS reviewer for downtime aliquot ISBT face Label Verify. Updated BCP sample requirements. Deleted reference to platelet inventory.	11/7/11
11	Procedure A.6.	Deleted instructions to attach the Rh Neg Platelet Requirement Label and added information regarding warning message in Millennium that was implemented on 4/26/12 which pop ups whenever Rh Pos platelets is being assigned to any Rh Neg patients.	7/17/12
12	Approver Procedure D.	New Lab Director. Revised.	3/11/13
13	Approver Procedure D.3.d. Procedure D.1.	New BB Medical Director. Added instructions when unit fails verification. Added NOTE for broken seal and open system.	8/28/13
14	Procedure A.7.b.iii. and B.3.d.	Added reference to Neonatal Transfusion SOP for details on risks and volume adjustment for plasma reduced platelets. Added plasma reduced platelets tag information.	3/4/14
15	Procedure A.7. & 8. Procedure B.2.	Clarified patients' ages for selection of Rh Negative platelets. Added request for HPA negative platelets require Medical Director consultation and approval..	8/21/14
16	Procedure D.1.Note	Changed expiration time from 24 hours to 4 hours for open system.	8/12/15
17	Procedure A.6. Procedure A.8.a.iv. Procedure C. Procedure Note(s) B.	Added reference to SFOWI-0107 for restrictions prior to filling order. Added to honor any special requirement newly requested if patient qualifies or already in LIS. Deleted outdated platelet component codes table. Changed section to platelet storage requirements. Revised instructions for returning platelets.	8/20/15
18	Approver	New CLIA Director.	9/28/16
19	Specimen & Requisition Procedure E.	Updated requisition requirements. New. Added due to BPAM implementation scheduled 3/20/18.	3/14/18

Notification List:

Approvals:

First Approver's Signature

Name: Maria F Serrano/CA/KAIPERM
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Second Approver's Signature

Name: Eric Suba/CA/KAIPERM
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Document History Section