




**Kaiser Permanente Medical Center, San Francisco
Northern California Region**

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 Work Instruction		
Title: TS-Processing Blood Units for CVS and OR	WI Number SFOWI-0112 Revision: 15	
Department: Immunohematology	Document is in the Final Approval Process. 2 - approvals are required	
Area: 2425 Geary Blvd SFO Hospital Lab		
Type of Document: Work Instruction		Review Period - 340 Days

PURPOSE

To describe the process for handling surgery cases. The process includes review of the Surgery and CVOR schedule on the night prior to the surgical procedures for the most up-to-date testing information and/or blood products availability. This process allows the Transfusion Service to manage blood products inventory more efficiently and to ensure that physicians' blood bank orders are filled. It also keeps track of blood product orders, dispense and return during and after surgery.

EQUIPMENT

- A. Computer systems
- B. Bins or baskets
- C. Coolers
- D. Temperature indicators
- E. Refrigerators

SPECIMEN

Refer to Blood Bank Specimen and Requisition SOP.

PROCEDURE

- A. **Sample Processing for CVS/OR**
 - 1. **Sample Expiration**
Refer to Blood Bank Specimen and Requisition SOP. NOTE: DBCK sample must be flexed to the same expiration date of the initial 30 day PreOp sample.
 - 2. **Processing Different Kinds of PreOp Orders**
 - I. **PreOp Type and Screen**
 - a. Both Ambulatory and Inpatient (PeriOp) Orders consist of TYSC Requisition + RILIS label.
 - b. TYSC crosses over to ORV.
 - c. Log-in TYSC with draw date and time when sample is received.

II. PreOp Type and Crossmatch (TYXM)

a. Ambulatory PreOp TYXM

- i. **Order consists of TYXM + Prepare RBC (IP PR RBC)**
 - TYXM Requisition + TYXM RILIS label.
 - No IP PR RBC printout or RILIS Label.
 - TYXM + IP PR RBC cross over to ORV.
- ii. **Sample Receipt**
 - Log-in TYXM only with draw date and time. Make sure there is a corresponding dispatched IP PR RBC in ORV.
- iii. **At time of Crossmatch**
 - Log-in the IP PR RBC with current date and time.
 - Print one IP PR RBC Acc# label and attach the long Acc# label on the TYXM requisition. Discard the remaining aliquot labels.
 - Do not place IP PR RBC Acc# aliquot label on yellow Crossmatch chart copy.

b. Inpatient PreOp TYXM (also called PeriOp TYXM)

- i. **Order consists of TYSC + Prepare RBC (IP PR RBC)**
 - TYSC Requisition + TYSC RILIS label.
 - IP PR RBC prints on BB printer.
 - TYSC + IP PR RBC cross over to ORV.
- ii. **Prepare RBC printout from BB printer**
 - Timestamp upon receipt.
 - Comment section indicates order is for surgery.
 - Check history and document on printout.
 - Make sure there is a corresponding dispatched IP PR RBC in ORV.
 - Stamp or write DBCK if needed.
 - Place printout after history check on Pending tray while waiting for sample.
 - If there is a current TYSC, notify RN not to draw and cancel the dispatched TYSC in ORV with reason 'Duplicate Reconciliation'.
- iii. **Sample Receipt**
 - Log-in TYSC with draw date and time.
 - Retrieve the Prepare RBC printout from Pending tray and attach with TYSC.
- iv. **At time of Crossmatch**
 - Add-on Crossmatch Flex to TYSC Acc#.
 - Log-in the IP PR RBC with current date and time.
 - Print one IP PR RBC Acc# label and attach the long Acc# label on the TYXM requisition. Discard the remaining aliquot labels.
 - Do not place IP PR RBC Acc# aliquot label on yellow Crossmatch chart copy.
- v. **PeriOp Prepare Orders for FFP/Plt/Cryo**
 - Do not log-in these Prepare Orders until processing time.

- Process Prepare Platelet order on the day before surgery.
- Process Prepare FFP and Cryoprecipitate Orders when requested during surgery. Log-in with current date and time.
- Print one IP PR Acc# label and attach the long Acc# label on the TYXM requisition. Discard the remaining aliquot labels.
- Do not place IP PR Acc# aliquot label on yellow chart copy.
- Prepare FFP and Cryo Orders can be cancelled after surgery if no product was requested.

3. Testing

- Perform ABORh and antibody screen. **NOTE:** Crossmatch is to be performed on the day before surgery.
- When testing is completed, file the future CVS or OR requisitions in their respective slots according to surgery day. CVS/OR requisitions without surgery date should be filed in the CV Pre/Op bin.
- For SDA (same day admit) patients with antibody, expedite TYSC, ABID and XM when sample is received by performing tests simultaneously.

4. Patient with Antibody Crossmatch

- Crossmatch 2 units of antigen negative RBCs if the order is for TYSC. The crossmatch is a reflex test in this case and does not need an order.
- For major surgery e.g. CVOR or aneurysm, crossmatch additional 2-4 antigen negative units. Need order to dispense these additional units.
- Order additional 2-4 antigen negative units to have available for add-on crossmatch request during the surgery.
- Order 4-6 antigen negative units to have available for expired pre-op TYSC or SDA (same day admit).

5. Redo CVOR or Redo Aneurysm Crossmatch

- Crossmatch 4 units of RBCs for all redo cases. This crossmatch is a reflex test and does not need an order.
- Crossmatch additional 4 units if patient has antibody. For antigen difficult to screen e.g. e or Jka, order extra antigen negative units to have available in case of add-on crossmatch request during surgery. Need order to dispense these additional units.

6. PreOp Rescreen Email Notification

Send email ASAP to providers requesting new sample to be drawn 2 days prior to surgery

when the surgery date is scheduled after the TS expiration date

AND

- Patient has current positive ABSC or current antibody
- OR**
- Patient requires full/extended crossmatch (does not qualify for EXM)

NOTE: Refer to PreOp Rescreen Email Template Instructions.

7. Day before Surgery

Day Shift Performs the following:

- a. Pull all the requisitions from the slot for next day's surgery. Check the CV Pre/Op bin for patients who are on the next day's CVOR schedule.
- b. Transcribe the next day's CVOR patients' information (based on the faxed CVOR schedule or printout from the CVOR scheduler) onto the 'CVS Patients for the next day's form.
- c. Call RN for new specimen or DBCK if needed for in-house patients and document on the form.
- d. Order 1-2 units of Rh Negative platelets pheresis for Rh Negative female 50 years old or younger.
- e. Crossmatch the number of RBCs requested on the requisitions. See sections above for patient with antibody or Redo cases. Process the Prepare RBC Order also.
- f. Attach a temperature indicator on the back of each RBC unit.
 - i) Use temperature indicators that have been appropriately preconditioned. Refer to *Temperature Indicator* SOP for instructions.
- g. File the Transfusion Service Crossmatch Report with the requisition in the crossmatch slots according to the last 2 digits of MR#.
- h. Place the patient's RBCs in a bin/basket and store them on the top shelf of refrigerators 1 & 2, according to the last two digits of the medical record number.

B. Swing Shift Checks CV Surgery schedule and Operating Room Schedule

1. **Print the latest CVOR schedule for the next day.**
 - a. Go to Internet Explorer and enter <http://NCALHeart.ca.kp.org>.
 - b. Log in using NUID and Windows Password.
 - c. Click SFO CVOR on the top of the page.
 - d. Select the next day's date from the calendar.
 - e. Print the CVOR schedule.
2. **On Thursday, print the CVOR schedule for the entire of next week.**
 - a. Print CVOR schedule for next week's Monday - Friday.
 - b. Check history of next week's TAVR patients.
 - c. Send out the **PreOp Rescreen Email** to the **CV group** for any patient who has antibody or who does not qualify for EXM.
 - d. Order antigen negative RBCs to be delivered the day before procedure.
3. **Print the Master Daily Schedule for next day's OR after 8 PM each day from HealthConnect.**
 - a. Log in to HealthConnect.
 - b. Click on EPIC - Reports - OR Reports - Master Daily Schedule (MDS). Change the date to next day if it is not the default.
 - c. Make sure the OR schedule layout is formatted with 8 columns from left to right: Date, Time, Room#, Patient Loc, Patient Info, Blood, Case Procedures and Lead Surgeon. Make sure the Patient Loc is sorted in ascending room number.
 - d. Click Print on the top right corner.
 - e. Select Landscape and Fit Width to Page. Then click Print.
 - f. Transcribe CCL patients from the CVOR schedule onto the MDS.
4. Pull all requisitions from the next day's surgery slot and from the CV Pre/Op bin.

5. **Transfusion History and Blood Products Availability Inquiry**

a. Inquire in **CIPS** and **RILIS Millennium** using the Master Daily Schedule (OR schedule). **Check CIPS first.** Patient: MR#, Category: Lab, View: Menu, Fr Date: 01/01/92, To Date: <enter>, Test Mnemonics: BB.

i) **Is there a Hold BB that is still valid (3 day expiration) by surgery date?**

Yes -write '**Hold Specimen**' on the OR schedule.

ii) **Is there a current Type & Screen?**

Yes - Check CIPS/PPI for DBCK and PPI for sample expiration. Check PPI for crossmatched RBCs. Check PPI for additional information if patient has antibody(ies) or special requirements. Confirm that the number of units crossmatched matches what the physician ordered on the requisition. Make sure autologous units are crossmatched.

- Write **T/S** if there is a current Type & Screen **with** 2nd ABORh.
- Write **NO DBCK** if there is a current Type & Screen with **no** 2nd ABORh.
- Write **NEED DBCK** and the **number of RBC units pending** if the order is **Type & Cross** but **no** 2nd ABORh e.g. **NEED DBCK, 2 RBCs pending.**
- Write the **number of RBCs units** if there is a current Type & Cross **with** 2nd ABORh ie. 2 RBCs / 2 Auto RBCs etc.
- **Modify 30 Day Pre-Op Specimens to expire 3 days after surgery unless the original expiration is sooner.**

No - For all expired Type & Screen or Type & Cross, locate the requisition, write 'Need Rescreen' on it and place it in the slot labeled '**OR Today DBCK/ReSCRN**'. If patient has Special Needs (CMV-, IRR, SIC- or Ag negative), order RBCs to have available in case needed. Write or stamp '**NO Specimen**' on the OR schedule.

iii) **Patient has antibody or a history of antibody**

Write '**Patient has antibody(ies). Please allow 1-2 (3-4 for difficult cases e.g. anti-e) hours for (additional) crossmatched RBCs.**' **Make sure minimum of 2 RBCs are crossmatched (reflex test) for Type & Screen order. Do not include the non-reflex additional crossmatched units.**

Patient undergoing major surgery:

- **Hold BB available** - contact the RN for in-house patient or the surgeon/oncall for SDA to inquire if the order should be changed to Type & Cross.
- **No Specimen** - contact the RN for in-house patient or the surgeon/oncall for SDA to request for Type & Cross order with specimens.
- See sections '**Patient with Antibody**' and '**Redo CVOR or Redo Aneurysm**' for details.

iv) If there is no current sample, write or stamp '**NO Specimen**' on the OR

schedule.

- b. Initial the first page of the surgery schedule.
 - c. Place the requisitions for patients who need Rescreen or DBCK in the slot labeled '**OR TODAY DBCK/ReSCRN**'.
 - d. **Order Platelets for next day Surgery**
 - i) Order 1 platelet pheresis for each CVOR patient up to a maximum of 4 platelets pheresis plus 2 extra unit, e.g. 6 CVOR patients - order a total of 4+2 platelets pheresis.
 - ii) Order additional units if needed or if a requisition is received for specific pre-op patient.
 - iii) Order 2 units of Rh Neg platelets for any surgery patient who is a Rh Neg female less than 50 years old.
 - iv) Instruct BCP to send the platelets after midnight.
6. **FAX completed Master Daily Schedule**
- a. After documenting the above information on the schedule, fax the completed schedule to the following Nursing units and save the faxed confirmation printouts:
 - i) OR at ext. 33222
 - ii) ASU at ext. 32787
 - iii) PACU at ext. 32960
 - iv) 7 FLR ext. 33330
7. **Phone Inquiries**
- a. Inquire in CIPS for a Hold BB, current TYSC and DBCK.
 - b. Inquire in LIS for sample expiration, DBCK and blood products that are reserved or crossmatched including autologous or DD.
8. **Dispensing multiple units to the OR for a patient**
- a. Patient must have a second ABORh before blood products can be released.
 - b. OR nursing staff completes a pink Blood Bank Product Pickup form with the patient's name & MRN, OR#, number of units, type of component, and initial of the licensed personnel completing the form.
 - c. The OR runner brings the manual pink Blood Bank Product Pickup slip to Transfusion Service.
 - d. The Transfusion Service Issuer performs the following:
 - i) Timestamp the pick-up slip
 - ii) Retrieve the units from the refrigerator.
 - iii) Check the temperature indicator on each RBC unit to ensure unit is within 10^oC.
 - iv) Dispense the units according to the **Releasing Blood and Blood Components** SOP.
 - v) For CVOR, place RBCs and FFP in bins.
 - vi) For all other surgery rooms, place RBCs and FFP in a cooler up to a maximum of 8 units. **NOTE:** Additional cooler need not be dispensed with subsequent units. Record on **Cooler Dispense Log** to track expiration, ice-packs exchange and return.
 - vii) Place cryoprecipitate and platelets in plastic bags.
 - e. The runner transports the units to the OR.
 - f. Transfusion Service staff will file the retained yellow chart copies, the pickup slip, and the requisitions in the OR file sorter.

C. **Blood Product Request during Surgery**

1. Surgery faxes orders.
2. When the first fax request is received for a blood product, order the appropriate IP PR e.g. IP PR FFP for FFP order, using **current date and time** for sample.
3. Print one IP PR Acc# label and verify result (**must enter Amt Requested to close order**). Place the long Acc# on the original TYXM or TYSC requisition.
4. Do not place IP PR Acc# aliquot label on yellow chart copy.
5. There is no need to order additional IP PR for subsequent requests from the OR for the same component type.
6. Scan the matching component type IP PR Acc# at Dispense to OR.

D. **Transfusion Request after Surgery**

1. BB generated Prepare Order (IP PR) is not a 'legitimate' order.
2. When patient is transferred to a nursing unit, provider will have to place a Transfuse Order so there will be a 'valid' Prepare Order for BB to link products at Dispense allowing RN to use BPAM.

E. **Units Returned from OR**

1. OR staff will return any unused blood products to the Transfusion Service immediately following the end of surgery. **Refer to *Releasing Blood and Blood Components SOP* for details.**
2. Transfusion Service staff will verify that the temperature indicator is within 10⁰C.
3. Return units to BB and document acceptability in the LIS.
 - a. **Remove** the appropriate patient **paperwork** from the **OR file sorter**. Match the white copies of the returned units with the retained yellow copies. Write the number of units returned on the pink pick-up slip i.e. 2R (for 2 units returned) next to the quantity for each component respectively.
 - b. For **non-CVOR patients** without transfusion requirements and who qualify for electronic crossmatch, return and release units simultaneously to inventory.
 - c. For **CVOR patients**, return the blood products but do not release. **Hold** the blood products for patients **until 3pm** for **surgeries that end in the morning**. **Hold** blood products for patients **until 9pm** for **surgeries that end later**.
 - d. For the **transfused units**, staple the pick-up form with the yellow copies and file them in the 'Issued Units' file box.
 - e. It is not necessary to fill out the 'RETURN RECORD' section on the Transfusion Service Crossmatch/Component Report unless it is during computer downtime.
 - f. **Return Crossmatch/Component reports** to the appropriate slots/tray and file cancelled reports in the 'Cancelled Product Chart Copies' tray.
 - g. **Return blood products** to the appropriate storage areas.
4. If the temperature indicator shows breach of 10⁰C, the RBC unit cannot be re-issued or used. Release unit to inventory and destroy. Document on the Variance Log and Wastage Log.

F. **Reissue of Units**

(Note: **Computer Crossmatch Dispense can be performed for patients who qualify**).

1. Select the Transfusion Service Crossmatch/Component Report of the unit with the shortest expiration date.
2. Reprint a new Crossmatch/Component Report.
3. Write '1st issue' on the used Transfusion Service Crossmatch/Component Report, then file in the cancelled Transfusion Service Crossmatch/Component Report bin.
4. Retrieve the appropriate unit from the refrigerator.

- Using the reprinted Transfusion Service Crossmatch/Component Report, issue unit according to 'Releasing Blood and Blood Component' SOP.

G. Issue and Return of FFP, Cryoprecipitate and Platelets

- It is not necessary to attach a temperature indicator on FFP, cryoprecipitate or platelet pheresis.
- If an unused FFP is returned **warm** to the Transfusion Service, take its temperature with the infrared thermometer. **Refer to Traceable Infrared Thermometer SOP for usage.**
 - If the temperature is $> 10^{\circ}\text{C}$, release to inventory and destroy the unit. Document on the Variance Log and Wastage Log.
 - If the temperature is $< 10^{\circ}\text{C}$, return the unit and store in the appropriate refrigerator shelves.
- Platelets and Cryoprecipitate should be at room temperature when returned. Discard if unit has been refrigerated.
- Record wasted products on the Blood Product Wastage Tracking Log.

PROCEDURE NOTE(S)

- Plateletpheresis and cryoprecipitate should be kept at room temperature and picked up as soon as possible.
- When the refrigerator and/or the wireless temperature monitoring system is down, blood products will be dispensed in coolers (**refer to Transport and Storage of Blood Product SOP**).
Alternatively, if the refrigerator is still working but the Checkpoint system is down, the RN in the OR can manually record the temperature of the refrigerator every 4 hours until the completion of the case.

REFERENCE

- AABB, Standards for Blood Banks and Transfusion Services, current edition, Bethesda, MD.

Associated Documents:

External Documents



3 Samples Preop Repanel Email Template_instructions to create draft_7-28-17.docx



1 Sample Preop Repanel Email Template_instructions to create draft in Outlook_7-28-17.docx

Associated Documents:

SFOWI-0111 -- TS-Dispensing Blood and Blood Components
SFOWI-0079 -- TS-Blood Bank Specimen and Requisition
SFOWI-0060 -- TS-Work Priority for Technologists
SFOWI-0022 -- TS Blood and Blood Products Daily Inventory
SFOWI-0054 -- TS-Double Check
SFOWI-0069 -- TS-Transport and Storage of Blood Products
SFOWI-1266 -- TC Temperature Indicator
SFOFCD-0208 -- TF0011 Swing Shift Daily Duties Checklist
SFOFCD-0216 -- BF0012 Daily Inventory Control
SFOFCD-0277 -- BF0019 CVS Patients for the Next Day

Click to Open an Associated Document

Documents Generated:

SFOWI-0112; Rev: 15 - TS-Processing Blood Units for CVS and OR

Check As Applicable (X or NA)	Format History	New Format Requirements
	A document created before September 1, 2005 was written before the new document format template and electronic approving process were implemented. Documents were copied from another document database and pasted on the QSI Quality Management System in order to be included in the Kaiser Permanente San Francisco Laboratory electronic document control database.	This document will be re-written to conform to the new Kaiser Permanente San Francisco Laboratory document format template whenever this document is revised.
Comments:	Documents created after QSI implementation have been directly entered in the QSI environment.	

Document Revision History:

Revision: 15	Date Created: 09/22/2005 Date of Last Revision: 05/01/2018	Last Approval Date: 10/05/2016
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Document Author: Cara H Lim/CA/KAIPERM	Document Manager: Richard Chui/CA/KAIPERM
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Reason for Change:

Revision:	Sec/Para Changed	Change Made:	Date
1	N/A	Initial Issue of Document	
1	Approver	New Lab Director	1/12/07
2	Procedure	Change Lifeline to RILIS functions and reports	5/12/07
3	Approver	New Lab Director	7/20/07
4	Procedure	Each OR room has a refrigerator and CheckPoint Temp monitor. Print OR schedule from internet 10.236.145.31. Fax OR schedule to additional location PACU, 7 FL, TCU A & B.	7/18/08
5	Procedure	Print OR schedule from Health Connect. Add OR cooler configuration	9/5/09
6	Procedure Notes Procedure A.1.2. A.4. B.1. B.2. B.2.3.4. C.3.c E. Approver	Added alternative option of taking manual temperature in the OR. Reformatted paragraphs and organized into sections. Deleted procedure that referenced RILIS Classic. Added sections and revised the information for sample expiration. Added 'If the antigen is of high frequency, i.e. e antigen, more than two units may be needed especially for major surgery. Consult with supervisor. The crossmatch should be performed as early as possible before the surgery date.' Changed from http://10.236.145.31 to http://10.236.145.36 Changed instructions to print from HC. Revised to match current practice. Added 'unless it is during computer downtime.' Added cryoprecipitate and platelets. Added take temperature, acceptable temperature and refer to Traceable Infrared Thermometer SOP. Changed Medical Director.	6/2/11
7	Procedure C.3.b & e. Procedure D.	Added instructions to release products from patients without special needs. Added 'Perform EXM Dispense for patients who qualify'.	9/12/11
8	Procedure A.4. Procedure A.5. Procedure A.6. Procedure A.6.b,c,d. Procedure B. Procedure B.4.a.(iii).II. Procedure B.5.a.	Add instructions to crossmatch additional units for major SX and to order extra antigen negative units to have available during SX. New section. Added instructions to crossmatch 4 RBCs for Redo cases. Specified as Day Shift's tasks. Added instructions that are already in practice. Specified OR Schedule review as Swing shift's tasks. Added instructions to refer to other sections for antibody and redo cases. Added instructions to save faxed confirmation printouts.	7/9/12
9	Procedure B.4.d. Associated Documents Procedural Note(s).B.	Added instructions to order platelets for next day surgery. Added flowcharts for Day and Swing shift tasks. Modified packing instructions and image for new coolers.	8/6/12
10	Approver Procedure A.5. Title Procedure B.4.a.ii). Procedure Notes B.	New Lab Director. New. Added 'and OR'. Added to write number of RBCs pending for TC order without DBCK. Deleted packing cooler instructions and added reference to SFOWI-0069.	8/1/13

	Procedure A. Procedure C.3.b. Procedure E. Procedure E.4.	Deleted criteria for 3 day and 14 day samples and added reference to SFOWI-0079. Deleted 'Stamp Cancelled'. Added 'and return of' to section title. New. Added wastage tracking.	
11	Purpose Procedure B.1.a. Procedure B.2.c	Revised. Changed to the new CVOR Schedule intranet site. Added sort format for Patient Loc.	6/23/14
12	Procedure A.6. Procedure B.4. Procedure B.7. & E. Procedure B.7.d.	Deleted instructions to attach Crossmatch label to back of unit. Changed 'Need DBCK' to 'NO DBCK'. Deleted that RN stores blood products in the OR refrigerator. Deleted repetitious instructions for dispense. Added instructions how to pack blood products for transport to OR.	10/14/15
13	Procedure B.4.a.ii.I Procedure C.3.c	New. Added instructions to expire 30 Day Pre-Op Specimens 3 days after surgery unless the original expiration is sooner. Hold blood products returned from CVOR till 3pm and 9pm. Added per current practice based on agreement with CVOR.	5/3/16
14	Approver Procedure A.3.b. and 4.b. Procedure B.4.a.iii).I. Procedure B.4.d.i)	New CLIA Director. Added 'Need order to dispense these additional units.' Added 'Do not include the non-reflex additional crossmatched units.' Changed from plus 1 to plus 2 extra platelets per current practice.	9/28/16
15	Whole document Procedure A.3. Testing Procedure B.2.	Revised due to BPAM implementation on 3/20/18. Added instructions for handling samples of SDA patients with antibody. New. Added new process for checking TAVR patients due to implementation of new patient management workflow on 5/7/18 by CV dept.	3/14/18

Notification List:

Approvals:

First Approver's Signature

Name: Maria F Serrano/CA/KAIPERM
Title: Transfusion Service Medical Director

Second Approver's Signature

Name: Eric Suba/CA/KAIPERM
Title: Chief of Pathology; CLIA Director

Document History Section



CVS Patients for the next day

CV Sx Date:		Name	MR #	ABO/Rh	Antibody Screen	Units order	Need DBCK (Y/N)	F <= 50yrs need Rh Neg Pit (Y/N)	IN/OUT Patient Ext / Rm#	Comment Special Needs, Rescreen, Ag neg, etc
1										
2										
3										
4										
5										

Please refer to Technical SOP binder tab # 40 for instructions (WI-112 Processing Blood Units for CVS)