TRAINING UPDATE

Lab Location:	SGMC and WAH	**Date Implemented:**	5.31.2017
Department:	Blood Bank	**Due Date:**	6.15.2017

DESCRIPTION OF PROCEDURE REVISION

Name of procedure:
Crossmatch
Description of change(s):
1. Added critical steps into the procedure. 2. Added reference to the transfuse orders that print in blood bank.

Non-Technical SOP

Title	**Crossmatch**	
Prepared by	Stephanie Codina	Date: 5/4/2017
Owner	Stephanie Codina	Date: 5/4/2017

Laboratory Approval		
Print Name and Title	**Signature**	**Date**
Refer to the electronic signature page for approval and approval dates.		
Local Issue Date:	Local Effective Date:	

Review:		
Print Name	**Signature**	**Date**

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TABLE OF CONTENTS

1. PURPOSE

A test that uses recipient's plasma and donor red cells is included in pre-transfusion testing to aid in the selection of blood components that, when transfused, will have acceptable survival and will not cause clinically significant destruction of the recipient's own red cells.

2. SCOPE

This procedure applies to any blood product that requires crossmatch prior to dispensing. This procedure is generally used for red cell and whole blood transfusions but could also apply to platelet and leukocyte transfusions.

3. RESPONSIBILITY

All blood bank staff members must understand and adhere to this procedure for performing crossmatch procedures for transfusion.

4. DEFINITIONS

NA

5. SPECIMEN REQUIREMENTS

Criteria	
Type -Preferred **-Other Acceptable**	Plasma (EDTA) Clotted sample in tube w/out serum separator gel
Collection Container	Lavender top tube or red top tube (without serum separator).
Volume - Optimum **- Minimum**	10ml 2ml
Transport Container and Temperature	Same as above, at room temperature
Stability & Storage	Room Temperature: 24 hours

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Criteria		
Requirements	Refrigerated:	EDTA samples ≤7 days unless approved by pathologist Clotted samples <7 days unless approved by pathologist
	Frozen:	Unacceptable
Timing Considerations	Test as soon as possible following collection	
Unacceptable Specimens & Actions to Take	Frozen, Incomplete or incorrect labeling – refer to procedure "Sample Specifications for Blood Bank Testing" for details.	
Compromising Physical Characteristics	Refer to section 14.	
Other Considerations	None	

NOTE: Labeling requirements for all reagents, calibrators and controls include: (1) Open date, (2) Substance name, (3) Lot number, (4) Date of preparation, (5) Expiration date, (6) Initials of tech, and (7) Any special storage instructions. Check all for visible signs of degradation.

6. REAGENTS

The package insert for a new lot of kits must be reviewed for any changes before the kit is used.

6.1 Reagent Summary

Reagents / Kits	Supplier & Catalog Number
Capture-R Select plates	Immucor, 6446 or equivalent
Capture LISS	Immucor, 6420 or equivalent
Capture-R Indicator Cells	Immucor, 6428 or equivalent
pHix	Immucor, 5070 or equivalent
Isotonic Saline, certified blood bank	Fisher, 23535435 or 23062125 or equivalent
ImmuAdd (LISS)	Immucor, 2008 or equivalent
Anti-IgG	Immucor, 409210 or equivalent
Coombs Control Cells	Immucor, 2225 or equivalent

6.2 Reagent Preparation and Storage

Reagent	Capture-R Select Plates
Container	Pack containing a tray of strips
Storage	1-30°C
Stability	Stable until manufacturer's expiration date as long as humidity indicator is acceptable.
Preparation	Ready to use.

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Reagent	Capture-R Indicator Cells
Container	11.5 mL bottle
Storage	1-10°C
Stability	Stable for 24 hours after the addition of a stir ball or for manufacturer's expiration date (whichever is sooner).
Preparation	Add a stirball prior to loading on the Galileo Echo.

Reagent	Capture LISS
Container	11.5 mL
Storage	1-10°C
Stability	Stable until manufacturer's expiration date.
Preparation	Ready to use as supplied.

Reagent	ImmuAdd, Anti-IgG
Container	10 mL
Storage	1-10°C
Stability	Stable until manufacturer's expiration date.
Preparation	Ready to use as supplied.

Reagent	Coombs Control Cells
Container	10 mL
Storage	1-10°C
Stability	Stable until manufacturer's expiration date.
Preparation	Ready to use as supplied.

Reagent	pHix
Container	200 mL bottle
Storage	18-30°C
Stability	Stable until expiration date on bottle.
Preparation	Ready to use. Concentrate is added to saline to create PBS.

Reagent	Isontonic Saline
Container	20L or 10L container
Storage	18-30°C
Stability	Stable until expiration date on container until opened. Stable for 30 days once opened and after pHix is added.
Preparation	pHix is added prior to use. pH must be between 6.5-7.5 after pHix is added.

7. PROCEDURE

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NOTE: For all procedures involving specimens, buttoned lab coats, gloves, and face protection are required minimum personal protective equipment. Report all accidents to your supervisor.

7.1 Preparation for Testing

Step	Action
1	Transfuse orders are placed in the patient's electronic medical record and cross into Sunquest. Transfusion orders will dynamically print in the blood bank. A. The indication for transfusion will cross with the order. B. Transfusion attributes (irradiated, CMV-negative, and HbS-negative) and indications for the attribute order will cross as part of the order. C. Red cells orders will cross with the following mnemonics: a. TRRC = Transfuse red cell (for all patients except neonates) b. TRCNEO = Transfuse neonatal red cell c. TWBNEO = Transfusion neonatal reconstituted whole blood D. The "Transfusion orders" form will be used during periods of computer downtime. BB staff members will review the forms for completion. E. Verbal/telephone orders will be accepted in some situations. a. Verbal/telephone orders are documented on the "Telephone order log." b. Verbal orders are accepted from the operating room (this does not include pre-op or PACU). c. Verbal orders are accepted when the patient's condition is unstable and patient care may be compromised without a verbal order. d. Blood bank staff members will enter all telephone orders into Sunquest per procedure.
2	Receive the transfuse order in the LIS per departmental procedure.
3	Review the order for the following: A. Free text physician instructions. B. Number of units ordered. C. Indications for transfusion (note: If hemoglobin >7 and <10 is selected, a symptom or risk must also be included). D. Transfusion attributes a. If a provider is requesting an attribute, the reason for the attribute will be displayed. b. If the provider is not requesting an attribute, "Do not report" will be displayed.

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Step	Action
4	If a transfusion attribute is requested, review the patient's blood bank administration data file to ensure the attribute is listed. A. Add the transfusion requirement if not present. B. If HbS-negative units are requested for sickle cell disease, follow departmental procedures to antigen type the patient for partial phenotypically-matched units.
5	Initial the transfuse order to indicate you reviewed the order.
6	Verify that the patient has had the appropriate testing performed. A. The patient must have a current T&S specimen. Order a T&S if indicated (T&S is reflexed if a transfuse order is placed). B. The patient must have at least 2 ABO determinations on file. a. Order an ABO retype specimen per procedure if the patient does not have 2 independent blood types on file. b. Crossmatch and issue group O red cells if the patient requires transfusion before completion of the ABO retype specimen. An emergency release form is not necessary.
7	Determine whether the patient has autologous or directed-donor blood products available per procedure. Units are always crossmatched and issued in the following order: A. Autologous B. Directed donor C. Homologous inventory
8	Retrieve the patient's T&S specimen. Verify that the specimen is labeled for transfusion per procedure. Compare the specimen label to the data entry fields of the T&S specimen to ensure the following match exactly. A. Name B. Medical record number C. Blood bank number
9	Obtain units that meet the patient's transfusion criteria. The following should be considered: A. Blood type (refer to appendix A) B. Special transfusion attributes (irradiated, CMV-seronegative, etc) C. Antigen-negative units, if applicable (refer to appendix B) Units with shorter expirations dates should be used first.
10	Result the TRRC order by entering "ADTS" in the "BCOM" field. This will translate to "added to type and screen."

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Step	Action
11	Allocate each unit to be crossmatched to the patient specimen in the LIS. Non-neonatal red cell transfusions are allocated to the T&S specimen. Refer to appendix C. During periods of computer downtime, prepare a downtime sheet for testing and document the full unit number of each unit to be tested.
⚠ **Start Critical Step**	
12	Prepare the donor red cells for testing. A. Label a clean test tube with the full unit number. Use of a unit label from the back of the unit is preferred. B. Remove an integrally attached segment from the unit. C. Place a segment piercing device on top of the properly labeled tube. D. Cut the segment and drain some of the red cells into the correctly labeled test tube. E. Add saline to make a 2-4% red cell suspension per procedure. F. Return the blood products to the refrigerator.
13	Organize the red cell suspensions in the order in which they appear in Sunquest.
⚠ **End Critical Step**	

7.2 Immediate Spin Crossmatch

Note: A tech may only crossmatch one patient sample at a time. In extreme circumstances or when staffed with a single tech, multiple patient samples may be crossmatched provided each specimen is placed in a separate rack during testing.

Step	Action
1	Label 1 test tube per unit to be crossmatched. At a minimum, each tube should contain: A. The recipient's first and last initial or the first 3 letters of the recipient's last name. B. The last 3 digits of the unit number. Place each labeled tube in the crossmatch rack directly in line with the corresponding cell suspension.
2	Place 2 drops of patient plasma into each labeled crossmatch tube.
⚠ **Start Critical Step**	
3	Add 1 drop of each donor cell suspension to the corresponding crossmatch tube.
4	Gently mix each tube.

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Step	Action
5	Visually observe each tube for appearance and volume.
6	Immediately serofuge each tube for the saline time listed on the serofuge (generally 15 seconds).
7	Remove tubes from the serofuge one at a time and: A. Check for hemolysis. B. Resuspend gently using an agglutination viewer. C. Read macroscopically for agglutination. D. Verify that the patient and unit identification on each tube matches the patient and unit identifiers in Sunquest. Discard tubes and start over if a discrepancy exists. E. Immediately record results in Sunquest or document on a downtime form.
8	A. If a LISS crossmatch will be performed, proceed to the LISS crossmatch section of the procedure. B. Discard tubes if ONLY an immediate spin crossmatch is needed or if an Echo crossmatch will be performed.
⚠ **End Critical Step**	

7.3 LISS AHG Crossmatch

Step	Action
1	Perform an immediate spin crossmatch, but do not discard tubes.
2	Add 2 drops of LISS reagent to each tube and gently mix.
3	Incubate each tube at 37±2°C for 15 minutes. Incubation time may be extended for a maximum of 30 minutes.
4	Examine tubes macroscopically for hemolysis. Record if hemolysis present.
5	Serofuge tubes for the posted time in a calibrated serofuge (generally 15 seconds).
6	Read macroscopically for agglutination using an agglutination viewer.
7	Record results immediately in Sunquest or on a downtime form.
8	Wash tubes a minimum of 4 times using saline. Use of an automated cell washer is preferred.

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Step	Action
9	Add 2 drops of anti-IgG to each tube. Note: Anti-IgG is preferred when LISS enhancement is used, but polyspecific AHG may be substituted.
10	Gently mix the tubes and **immediately** serofuge for the time posted on the calibrated serofuge (generally 15 seconds).
11	Read macroscopically for agglutination using an agglutination viewer. Reocrd results immediately in Sunquest or on a downtime form.
12	Confirm the validity of negative reactions with check cells. A. Add one drop of Coombs Control Cells (check cells) to each negative tube. B. Mix thoroughly. C. Serofuge for the time listed on the serofuge (generally 15 seconds). D. Read macroscopically for agglutination with the aid of an agglutination viewer. E. Record results immediately in Sunquest or on a downtime form. F. Agglutionation **must** be present at a strength of 2+ or greater or test results are invalid and must be repeated.
13	A. No agglutination at the AHG phase represents a compatible crossmatch (as long as the check cells are ≥2+ positive and the donor unit is negative for antigens, if applicable). B. Agglutination of any type in the AHG phase represents an incompatible crossmatch. DO NOT tag units for issue until resolved.

7.4 AHG Crossmatch on the Galileo Echo

Note: You must perform an immediate spin crossmatch in addition to an Echo crossmatch to rule out ABO incompatibility.

Echo crossmatching is used as the primary method for AHG crossmatching. LISS crossmatching is used when the Echo is out of service or when a patient has antibody issues that are exacerbated on the Echo.

Step	Action
1	Bring the recipient specimen to room temperature (18-30°C).
⚠ **Start Critical Step**	

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Step	Action
2	Prepare the donor red cells for testing. A. Label a clean test tube with the full unit number. Use of a barcoded unit label from the back of the unit is preferred. B. Remove 1-2 integrally attached segments from the unit. C. Place a segment piercing device on the top of the properly labeled tube. D. Cut the segment and drain some of the red cells into the correctly labeled test tube. E. Serofuge the red cells 1-2 minutes to pack them. A minimum of 250 µL is needed for crossmatch. F. Return the blood products to the refrigerator.
⚠ **End Critical Step**	
3	Perform crossmatch testing as outlined in procedure, "Galileo Echo Testing Patient Samples."

7.5 Tagging the Units for Issue

Step	Action
1	A "patient/unit" label will print for each crossmatched unit.
2	Remove the label from the printer.
⚠ **Start Critical Step**	
3	Match each label with the appropriate unit. Adhere the label directly to the back of the unit. Place the unit on the designated shelf of the crossmatch refrigerator.
4	A. During periods of computer downtime where Cerner is down and Sunquest is up: a. Print an extra patient/unit label and adhere it to the top of the downtime blood administration form. b. Issue the blood product with the downtime form for nursing documentation. B. During periods of Sunquest computer downtime: a. Handwrite the patient label for the blood product. Document the following items in the appropriate spaces on the label: i. Patient name, medical record number, blood bank number, date of birth, and ABO/Rh. ii. Check the box indicating the crossmatch test results. 1. Compatible 2. Not applicable (non-red cell products) 3. Least incompatible iii. Donor identification number (DIN), expiration date and time (if applicable), volume, and ABO/Rh

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Step	Acton
4 Cont	b. Handwrite the downtime blood administration form (SGAH 5200-300, WAH 520-300). Document the following: i. Patient name, medical record number, blood bank number, date of birth, and ABO/Rh. ii. Check the box indicating the results of the crossmatch test. 1. Compatible 2. N/A (non-red cell products) 3. Least Incompatible iii. Donor identification number (DIN), expiration date and time (if applicable), ABO/Rh, special unit attributes, and antigen typing.
5	If the crossmatch was performed before ABO confirmation testing has been completed, add a card indicating that the unit should not be issued until ABO confirmation testing is complete.
⚠ **End Critical Step**	

7.6 Resolving Unexpected Red Cell Crossmatch Incompatibility

This procedure is used when the crossmatch is incompatible without obvious cause.

Step	Action
1	Verify that red cells of the appropriate ABO group have been selected for crossmatch. A. If the units are an incorrect ABO group, re-crossmatch with red cells of the appropriate ABO group. B. If the units are the correct ABO group, proceed to step 2.
2	Verify the patient's blood bank historical data per procedure. Ensure that you have accurately reviewed the patient's history and did not miss any historical antibodies or testing problems.
3	Perform a careful visual inspection of the donor unit. Ensure there are not clots, clumps, or discolorations. Discard a unit that does not pass the visual inspection.

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Step	Action
4	Hints for resolving incompatibility: A. Negative antibody screen, incompatible immediate spin crossmatch a. Rouleaux—examine the tube(s) under the microscope and perform a saline replacement per procedure. b. Polyagglutination--mix 1 drop of donor red cells and 2 drops of saline, serofuge, and read for agglutination. If agglutination is present, the problem is with the unit. Notify the blood supplier and complete a PI/variance form. Do not transfuse the unit. c. Cold antibodies— i. Allow donor cells and patient plasma to warm to room temperature and repeat testing through AHG phase using LISS tube methodology. ii. Perform an immediate spin screen to determine if a cold antibody is present (perform an immediate spin panel if indicated). iii. The crossmatch can be interpreted as compatible if all of the following conditions are met. 1. A cold antibody is identified. 2. The AHG crossmatch in LISS tube is negative. 3. The ABO and Rh of the patient and each unit is verified for compatibility. d. Passively acquired antibodies—verify the patient's transfusion history. The patient may have received passive anti-A or anti-B from a platelet or plasma product transfusion. B. Incompatible AHG Crossmatch a. Verify that the blood product is negative for the appropriate antigen, if applicable. b. Perform a DAT on the donor unit. If positive, notify the blood supplier and complete a PI/variance form. Do not transfuse the unit. c. A possible antibody to a low frequency antigen may be present in the recipient plasma. Crossmatch a different unit to the patient. Repeat the antibody screen if the next crossmatch is also incompatible.

8. RELATED DOCUMENTS

Form: Transfusion Orders Form
Form: Telephone Order Log (AG.F68)
SOP: Blood Bank Verbal Product Orders
SOP: Order Entry, Receiving Orders in the GUI System
SOP: Entering Special Attributes into the LIS
SOP: Transfuse Orders
SOP: Confirmation of Patient's Blood Type (ABO Recheck)
SOP: Patient History Check
SOP: Preparation of a 2-4% Cell Suspension for Patient Testing

SOP: Sample Specifications for Blood Bank Testing
SOP: Blood Bank Reaction Grading
SOP: Echo Quality Control
SOP: Daily Reagent Quality Control
SOP: Galileo Echo Testing Patient Samples
Form: Pathologist Consultation Form (AG.F242)
Form: Downtime Blood Administration (SGMC 5200-300 and WAH 520-300)
Label: Downtime Patient/Unit Label

9. REFERENCES

A. Fung, MK, Grossman, BJ, Hillyer, CD, and Westhoff, CM. 2014. Technical Manual of the AABB, 18th ed. AABB Publishing, Bethesda, Maryland.
B. Standards for Blood Banks and Transfusion Services, 30th ed. AABB Publishing, Bethesda, Maryland.
C. Berte, L.M. 2007. Transfusion service manual of standard operating procedures, training guides, and competency assessment tools, 2nd ed. AABB Publishing, Bethesda, Maryland.
D. Petrides, M, Stack, G, Cooling, L, Maes, L. 2007. Practical Guide to Transfusion Medicine, 2nd ed. AABB Publishing, Bethesda, Maryland.
E. Manufacturer's instructions for anti-human globulin anti-IgG (murine monoclonal), Insert 3001-3, Rev 2/13, Immucor: Norcross, GA.
F. Manufacturer's instructions for ImmuAdd low ionic strength medium for antibody detection tests, Insert 321-13, Rev 2/13, Immucor: Norcross, GA.
G. Manufacturer's instructions for Checkcell (weak) antiglobulin control IgG-coated pooled red blood cells, Insert 307-17, Rev 7/15, Immucor: Norcross, GA.
H. Manufacturer's instructions for Capture-R select solid phase system for the immobilization of human erythrocytes, Insert 343-7, Rev 2/13, Immucor: Norcross, GA.

10. REVISION HISTORY

Version	Date	Reason for Revision	Revised By	Approved By
		Supersedes SGAH.BB133.4, WAH.BB123.4		

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11. ADDENDA AND APPENDICES

Addendum	Title
A	Selection of Red Blood Cells and Whole Blood for Crossmatch
B	Flow chart for second sample for ABO confirmation
C	Allocation of Units in the LIS
D	LIS Entry of Immediate Spin Crossmatch
E	LIS Order and Entry of a Crossmatch Performed On Echo
F	LIS Order and Entry of a manual tube AHG Crossmatch
G	Resulting an Incompatible Crossmatch Due to Warm Autoantibodies

Appendix A

Selection of PACKED RED BLOOD CELLS For Crossmatch						
Patient Group & Rh	**(choices in order of preference)**					
O+	O+	O=				
O=	O=					
A+	A+	A=	O+	O=		
A=	A=	O=				
B+	B+	B=	O+	O=		
B=	B=	O=				
AB+ *	A+	A=	B+	B=	O+	O=
AB= *	A=	B=	O=			

* AB, Rh-compatible blood is selected first if inventory is available.

Selection of WHOLE BLOOD For Crossmatch						
Patient Group & Rh	**(choices in order of preference)**					
O+	O+	O=				
O=	O=					
A+	A+	A=				
A=	A=					
B+	B+	B=				
B=	B=					
AB+	AB+	AB=				
AB=	AB=					

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Appendix B
Clinical Significance of Antibodies and the Provision of Red Cells

	Antibody Specificities	Is Antigen Negative Blood Required?	Is An AHG Crossmatch Required?
Clinically Significant Antibodies	D, C, E, c, e K, k S, s Jk^a, Jk^b Fy^a, Fy^b	Yes, for both current and historical antibodies	Yes, for both current and historical antibodies
Clinically Insignificant Antibodies	N P_1 Le^a, Le^b Lu^a Clinically Insignificant Antibodies to Low-Frequency Antigens	No	Yes, if the antibody is currently demonstrating No, if the antibody is no longer showing
Anti-M	Anti-M only	No	Yes, for both current and historical antibodies
	Anti-M plus a warm autoantibody with broad, undetermined specificity	Yes	
Clinically Significant Antibodies to Low Frequency Antigens	Kp^a Wr^a Js^a Di^a Co^b C_w	Yes—When the antibody demonstrates at <1+ in strength No—When the antibody demonstrates at strengths of ≥1+ (Do NOT transfuse incompatible units)	Yes, for both current and historical antibodies
Anti-A_1 Antibody	A_1	Yes—If group A or AB units are used No—If non-group A units are used • O for A patients • B or O for AB patients	Yes, if the antibody is currently demonstrating No, if the antibody is no longer showing
Passive Antibodies	Passive Anti-D (Administration of anti-D, RhIG, or WinRho within the previous 3 months must be documented)	Yes NOTE: The pathologist may decide to give Rh-positive blood products to patients undergoing WinRho treatment for ITP.	Yes—When antibody showing No—When antibody screen is negative
Warm Autoantibodies	All Major Blood Group Antibodies Excluded	No	Yes, if antibody is currently demonstrating No, if antibody is no longer showing
Unidentified/Inconclusive Antibodies	All Major Blood Group Antibodies Excluded	Not Applicable	Yes—When antibody showing No—When antibody screen is negative

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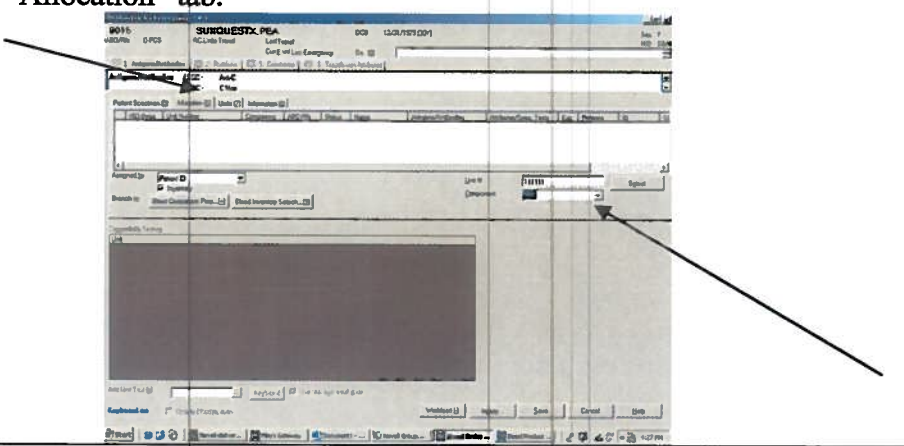
Appendix C
Allocation of Units in the LIS

Step	Action
1	Access Sunquest function "Blood Order Processing."
2	In the "Lookup by" field, select "Patient ID" from the dropdown menu.
3	In the "Value" field, type the patient's medical record number and click on the "search" button.
4	All patients for whom that medical record number is assigned will appear. Select the correct patient by double-clicking on the correct row.
5	The patient's historical blood bank data will appear. Review the data to ensure the unit(s) selected meet all patient criteria.
6	Click on the "Order Selection" tab.
7	Select the T&S specimen on which the red cells will be crossmatched by highlighting the specimen and clicking on the "Select" button.
8	Review the patient's T&S data to ensure: A. All testing has been performed. B. All testing is resulted. C. Positive antibody screen tests have been resolved.
9	Click on the "Allocation" tab. 
10	Barcode the unit number in the "Unit #" field. Only type the unit number into this field when the barcode is damaged or unreadable. A. If the unit number is barcoded, the computer will prompt you to enter the supplier. B. Barcode the supplier from the unit.
11	The computer will prompt you to enter the component type if more than one component with the same unit number has been in inventory. Barcode the product type into the LIS or select the correct product type from the drop-down menu.
12	Click on the "Select" button.
13	Continue steps 10-12 for each additonal unit to be crossmatched.
14	Click the "Save" button.

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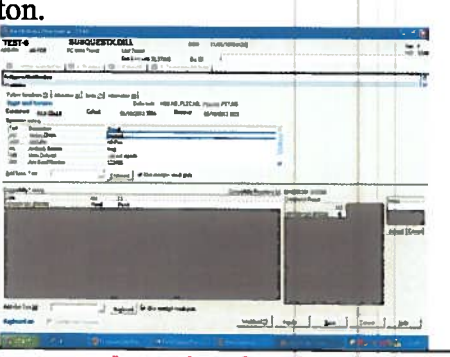
Appendix D
LIS Entry of Immediate Spin Crossmatch

Step	Action
1	Access the T&S specimen using Sunquest function "Blood Order Processing." Click on the "Allocation" tab.
2	Enter the results of the immediate spin reactions in the "Crossmatch Results" grid.
3	If all crossmatch testing is complete for the unit, proceed to step 4. If additional testing (including AHG crossmatch testing) needs to be performed, A. Click the "Accept" button. B. Click the "Save" button. 
	Do not proceed to step 4 until crossmatch testing for the unit has been completed. This includes AHG crossmatches performed on the Echo or in tube.
4	Interpret the crossmatch in the "interp" area. **This field interprets the entire crossmatch, including the AHG crossmatch.** A. Type "[" for compatible B. Type "{" for incompatible In situations where a patient has a strong cold antibody that interferes with immediate spin typing: A. Carry the reactions through AHG phase. B. If the AHG phase is negative (compatible), verify the units are compatible with the patients ABO/Rh and any current or historical clinically-significant antibodies. C. Result the crossmatch as compatible if you are sure immediate spin results are due to interference of the cold antibody.
5	Complete the "TS" field. **This field interprets the entire crossmatch, including the AHG crossmatch.** A. Type "]" for "OK to transfuse" B. Type "}" for not "OK to transfuse"
6	Click on the "Save" button.

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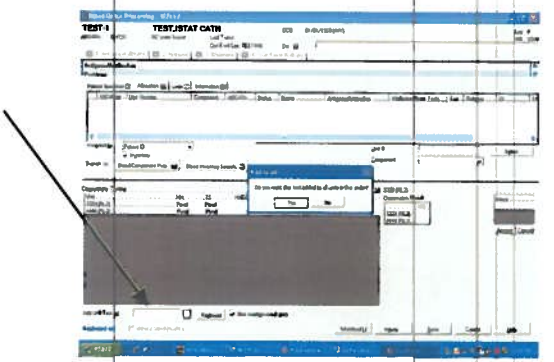
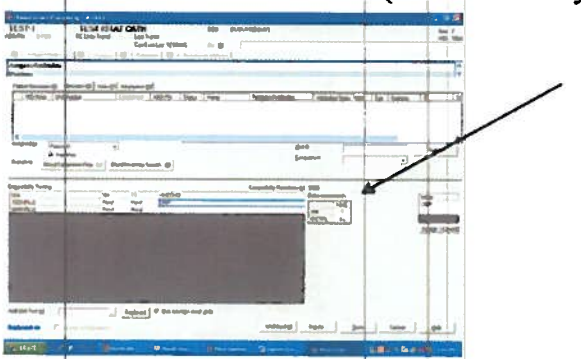
Appendix E

LIS Order and Entry of a Crossmatch Performed On Echo

Step	Action
1	Units must be allocated to the patient per Appendix C prior to adding on the Echo/Capture crossmatch.
2	Order the crossmatch. A. Access the recipient's T&S specimen in Sunquest. B. In the "Add Unit Test" field, order the crossmatch to be performed. Order "XMECHO" if the crossmatch was performed on the Echo. C. The LIS will prompt, "Do you want this test added to all units in this order?" Click on the "YES" button. D. The test(s) will add to each unit allocated. 
3	Type the reaction result of the crossmatch in the "Echo crossmatch" grid. Then click the "Accept" and "Save" buttons. A. XM is the crossmatch reaction result B. IDCTRL is the DAT Positive Control Result (Echo XM Only) 
4	Proceed to step 4 of appendix A after all testing has been performed.

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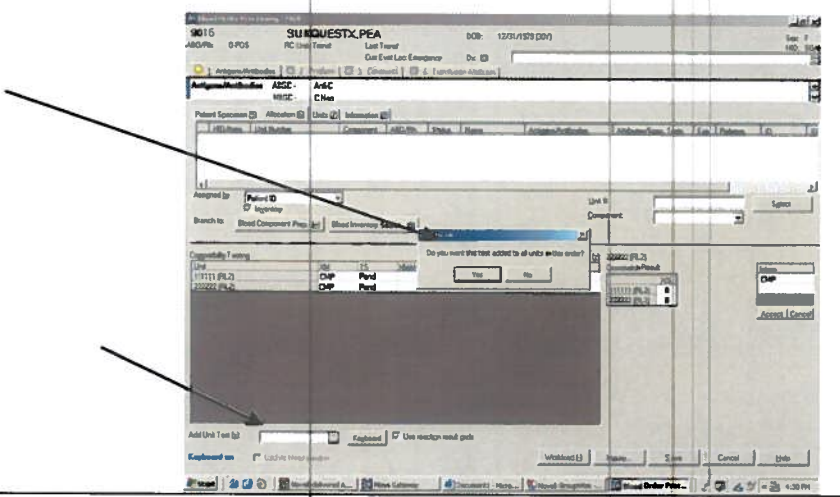
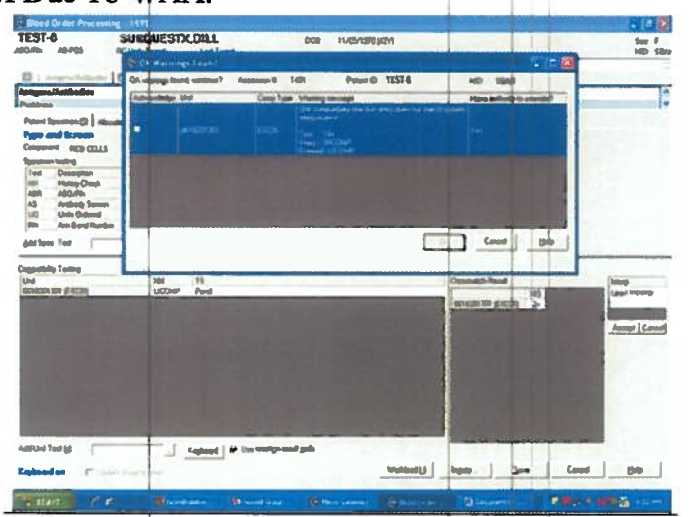
Appendix F
LIS Order and Entry of a Manual Tube AHG Crossmatch

Step	Action
1	To add a tube AHG crossmatch: A. Access the T&S specimen in "Blood Order Processing." B. In the "Add Unit Test" field, type "t" (shift + T) or ";XMAHG" and press the tab key. C. The computer will prompt, "Do you want this test added to all units in this order?" a. Click on the "yes" key to add the AHG crossmatch to all units. b. Click on the "no" key if you want to add the AHG crossmatch only to selected units. 
2	Enter the results of the crossmatch in the "Coombs Crossmatch" grid. Click the "Accept" and "Save" buttons. A. XLISS is for the 37°C LISS reading. B. XIGG is for the reading after addition of anti-IgG. C. XCC is for the results of the check cells. Keypad Map for Result Reactions 7 H | 8 RL | 9 NT 4 4+ | 5 M+ | 6 MF 1 1+ | 2 2+ | 3 3+ 0 0 | . NE H = Hemolysis RL = Rouleaux NT = Not tested M+ = Microscopic MF = Mixed field NE = Neonatal backtype
3	Proceed to step 4 of appendix A after all testing has been performed.

Form revised 3/31/00

Appendix G
Resulting an Incompatible Crossmatch Due to Warm Autoantibodies

Step	Action
1	The blood bank may not be able to find crossmatch compatible blood products when the recipient has a warm autoantibody. In this situation, least incompatible blood products are issued with an emergency release form provided the following conditions are met: A. Auto- or allogeneic adsorptions have been performed by a reference laboratory. Subsequent adsorptions do not need to be performed during the same admission if the patient has not been transfused or pregnant within the previous 90 days. B. The units are compatible with the recipient's clinically-significant antibodies (current or historic).
2	Perform crossmatch testing as outlined in the appendices above. Enter results for each type of crossmatch performed (Echo, AHG, Prewarm, etc).
3	Interpret the crossmatch by typing a plus sign "+" in the "interp" field. The "+" sign will expand to "Least Incompatible."
4	Complete the "TS" field. **This field interprets the entire crossmatch, including the AHG crossmatch.** A. Type "]" for "OK to transfuse" B. Type "}" for not "OK to transfuse"
5	Click on the "Save" button.
6	Interpretation of a "least incompatible" crossmatch will generate a QA failure. Ensure the QA failure(s) generated are all due to an interpretation of "least incompatible" then override using mnemonic "LIWAA." This expands to, "Least Incompatible XM Due To WAA." 

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