TRAINING UPDATE

Lab Location:	SGAH and WAH	**Date Implemented:**	6.3.2014
Department:	Blood Bank	**Due Date:**	6.8.2014

DESCRIPTION OF PROCEDURE REVISION

Name of procedure:

Volume-Reduced and Saline-Replaced Platelet Products

Description of change(s):

1. Volume-reduced platelets can be made using a whole apheresis platelet or a platelet aliquot.
    a. The aliquot MUST be prepared BEFORE beginning this procedure.
    b. If an aliquot is used, the component prep function will use the aliquot product code "CA####" instead of "CE####."

2. When a whole apheresis platelet is concentrated,
    a. You will get the screen that asks how many output products you are preparing.
    b. You will need to discard the salvaged plasma.

    You WILL NOT need to do this for concentrated platelets prepared from platelet aliquots.

3. To help guide you, we have added wording for how much volume to put in your aliquot for volume-reduction:

    2x the volume of the final product + 5mL for tubing
    OR
    25mL
    WHICHEVER IS GREATER

Non-Technical SOP

Title	**Volume-Reduced and Saline-Replaced Platelet Products**
Prepared by	Stephanie Codina Date: 3/16/2011
Owner	Stephanie Codina Date: 3/16/2011

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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1. PURPOSE

This procedure describes the process for preparing volume-reduced (plasma-removed) and saline-replaced platelet products. Volume-reduced and saline-replaced platelets are generally prepared for infant and pediatric patients. However, they may also be prepared for adult patients in certain situations. Volume-reduction of platelets is achieved by centrifugation and subsequent removal of a portion of the plasma. Saline-replacement is achieved by adding saline to the volume-reduced platelet product.

2. SCOPE

Volume-reduced platelets may be necessary for patients at risk of volume overload or for neonatal or pediatric patients who cannot tolerate incompatible plasma in out-of-group platelet products.

Saline-replaced platelets are indicated for patients who have experienced multiple progressive allergic reactions to plasma products.

3. RESPONSIBILITY

All blood bank staff must understand and adhere to this procedure for preparing volume-reduced and saline-replaced platelet products.

4. DEFINITIONS

N/A

5. PROCEDURE

Volume-Reduced Platelets

Step	Action
1	The patient care area will order a volume-reduced or saline-replaced platelet product by typing the attribute request into the physician instructions area of the "TPP" or "TPLTNE" order. Blood bank staff members will automatically perform the volume-reduction procedure when giving out-of-group platelets to a neonate.
2	Turn on the RC-4 centrifuge and set the temperature dial between $20^{\circ} - 24^{\circ}$ C. Allow the temperature to reach the appropriate temperature range prior to centrifugation. A. Assure the internal temperature is at least 20°C prior to centrifugation. B. Document the temperature on the temperature QC record. C. If the temperature is below the acceptable range, run the centrifuge through one spin cycle can increase the temperature.
3	Obtain the supplies necessary to perform a volume-reduction: A. RC-4 centrifuge B. Sterile Welding Device C. Hematron heat sealer or metal clips and a hand sealer D. Scale E. Sterile transfer pack F. Hemostats or clamps G. Plasma Expresser
4	Perform daily QC of the scale if needed.
5	Select a platelet product that meets the recipient's specifications. Apheresis platelet products intended for transfusion in neonates and pediatric patients must meet the following criteria: A. Group specific or group AB. a. Do not transfuse any AB platelet product that is visually contaminated with red cells. b. Any group of platelets may be transfused to a neonate/pediatric patient if the volume-reduction procedure has been performed. B. Rh-negative females of child-bearing age or younger (<50 years old), should receive Rh-negative platelets. In emergency situations where Rh-negative platelets are not available, these patients may receive Rh-positive platelets with pathology approval. C. CMV-seronegative (only required for infants less than 4 months in age and patients with CMV attribute markers in their blood bank files) D. Irradiated (only required for infants less than 4 months in age and patients with irradiated attribute markers in their blood bank files)

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Step	Action
6	This procedure can be performed on an entire apheresis platelet (adult or large child) or on a platelet aliquot (neonate or small child). **Prepare the platelet aliquot prior to beginning the next step.** A. You must prepare the platelet aliquot in a pediatric bag (**do not use a syringe**) prior to performing the volume reduction process. B. **You must complete preparation of the aliquot physically and in the computer prior to beginning the volume-reduction process.** C. When preparing an aliquot for volume-reduction, the volume of the aliquot should be: • Twice the requested amount plus 5 mL for tubing **OR** • 25 mL Whichever is **GREATER** D. Refer to procedure, "Platelet Aliquot Preparation." E. If irradiation is required, irradiate the product per procedure, "Blood Component Irradiation." a. **You must complete the irradiation process physically and in the computer before beginning the volume-reduction process.** b. Sunquest will automatically update an aliquotted platelet to an irradiated product. F. Perform the blood label check of all units prior to proceeding.
7	Document the following on the "Product Modification Log." A. Tech identification B. Date of modification C. Unit number of original and final units D. Division E. Lot number of bag F. Wafer lot number
8	Connect a transfer bag to the platelet product to be volume-reduced (platelet or aliquot bag). A. **Do not** break the weld seal at this time. B. The attached bag will be used to collect the salvage plasma after centrifugation.
9	Tare the scale using an empty 150mL transfer bag.
10	Obtain the initial weight of the platelet product.
11	Prepare a centrifuge balance for the platelet product. A. Place the platelet product in a plastic centrifuge bag and weigh. B. Assemble a centrifuge balance bag for the platelet unit.

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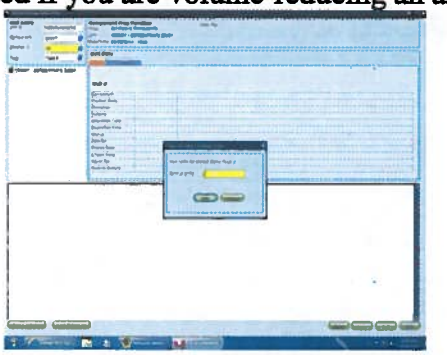
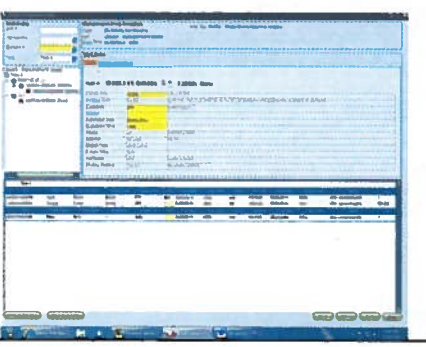
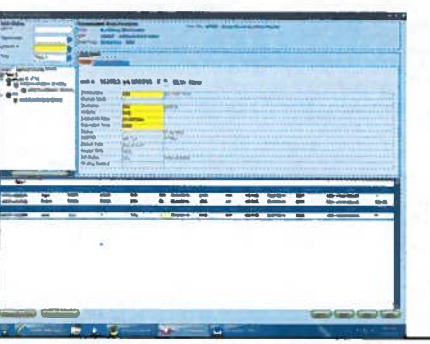
Step	Action
12	Place the unit with the satellite bag in an upright position in a centrifuge bucket. Balance the centrifuge with the balance bag.
13	Centrifuge the platelets at 20° –24° C at 2000 RPM's for 10 minutes.
14	Remove the platelet bag from the centrifuge, being careful not to disturb the contents of the bag. Then place the bag with the platelets onto the plasma expresser.
15	Calculate the volume of plasma to be removed based on the volume of platelets requested. Be sure to add 5mL for tubing. A. Volume Removed (mL) = Initial Volume – Desired Volume + 5 (for tubing) B. Desired volume = the volume requested by the physician. If the physician does not designate the volume, remove approximately 70% of the plasma.
16	Place the salvage plasma bag onto the scale and tare the scale with the bag in place.
17	Break the weld seal and express the calculated amount of plasma. Clamp the line when the appropriate amount of plasma has been transferred. Seal the line between the hemostat clamps using a tube sealer at least twice. A. Always ensure the hemostat is clamped between the primary unit and the location at which the tubing will be sealed. B. This will protect sterility of the unit should the heat seal fail.
18	Document the weld inspection on the "Product Modification Log."
19	Disconnect the plasma from the platelet product. Discard the plasma. The product for transfusion will be the bag with the platelet pellet.
20	Calculate the volume of the new product by subtracting the weight of plasma removed from the initial weight. Final volume (mL) = Initial volume (mL) – Volume of plasma removed (mL)
21	Access Sunquest function, "Blood Component Preparation."
22	At the "Value" prompt, type the aliquot function that corresponds to the platelet unit to be volume-reduced (concentrated) then press the "Tab" key. The concentrate function is C + the E code of the concentrated product (or A code if applicable). Refer to appendix A for additional information.
23	Press the tab key twice to default the current date and time as the concentration time. Enter the date and time on which the concentration was performed if prepared at an earlier time (such as during computer downtime).
24	Click the "continue" button.

Step	Action
25	A second "Blood Component Prep" screen will appear. A. At the "Unit #" prompt, scan the unit number DIN of the platelet that was concentrated. B. At the "Component" prompt, scan the product code of the parent platelet to be concentrated. This will autofill both the product code and division fields.
26	For full units, a pop-up screen will appear asking the user to indicate the number of units that will be prepared (ie the number of concentrated platelets being prepared at one time). A. Enter "1" in the field. B. Click the "OK" button. This step may be omitted if you are volume-reducing an aliquot product. 
27	On the next screen, enter the volume of the new units. A. For all volume-reduced/concentrated products, click on the yellow circle containing the "O" (output unit). Enter the volume of the **concentrated platelet** then press the "tab" key. B. For volume-reduced/concentrated apheresis platelets (this step does not apply to volume-reduced/concentrated platelet aliquots), a. Click on the yellow circle containing the "N" (new unit). Enter the volume of the **salvaged plasma** then press the "tab" key. b. The combined volumes of the concentrated platelet and salvage plasma must equal the volume of the original product. Volume of concentrated platelet (mL) + volume of salvaged plasma (mL) = Original volume  

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Step	Action
28	Verify the expiration date and time of the concentrated platelet product. Document the expiration date and time on the log. A. Concentrated apheresis platelets expire 4 hours after preparation. B. Concentrated platelet aliquots expire 4 hours from the time the platelet aliquot was prepared (this is the original expiration date).
29	Click the "save" button.
30	A "Preview Output/New Units" screen will appear. Review the information to ensure accuracy, then click on the "finish" button to generate new labels for the concentrated product.
31	Adhere the label to the concentrated product directly over the original label.
32	Perform a label check of the unit in Sunquest per procedure.
33	Discard the salvaged plasma. A. Update the salvaged plasma unit (product SLV) to discard status with reason "NEO (Neonatal unit, outdated)" per procedure. B. Physically discard the salvaged plasma in the biohazardous trash. Note: This step ONLY applies to volume-reduced/concentrated platelets prepared from apheresis units. This step may be omitted for volume-reduced/concentrated aliquots as no salvaged plasma is created during blood component preparation.
34	Allow the platelets to rest without agitation at room temp. (20^{o} –24^{o}C) for a minimum of 1 hour.
35	After the 1 hour rest, gently resuspend the platelets by mixing gently by hand to attain a uniform suspension.
36	Allocate the volume-reduced/concentrated platelet per procedure.
37	Place the platelets on the platelet rotator (20 – 24^{o}C) with continuous agitation until the product is issued. A. Volume-reduced/concentrated platelets should be issued as soon as possible after preparation. B. Visually inspect the platelets to ensure all platelet aggregates have been resuspended prior to issue. Gently knead the platelet to resuspend aggregates if present. C. Volume-reduced/concentrated platelets are transfused via the component recipient set.

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Saline-Replaced Platelets

Step	Action
1	Do not perform these steps if volume-reduced or concentrated platelets have been requested. These steps **ONLY** pertain to saline-replaced platelets.
2	Aseptically attach a double-cannula transfer tubing to the platelet bag via a port.
3	Aseptically spike a bag of **pharmaceutical-quality** sterile 0.9% saline with the other end of the transfer tubing. Allow an appropriate amount of saline to flow into the platelet bag. A. Add 10-15mL of 0.9% saline to a neonate/pediatric aliquot. B. Add 100mL of 0.9% saline to an adult platelet. C. You may need to obtain saline from pharmacy.
4	Temporary clamp the line using a hemostat. Attach a metal hand sealer clamp to the tubing near the platelet bag. Heat seal the tubing using the heat sealer. Discard any remaining saline.
5	Document the manufacturer, lot number, and expiration date of the saline used in the LIS. A. Access Sunquest function, "Blood Product Entry." B. Click on the "Modify Unit" button. C. Scan or type the unit number at the "Unit #" prompt. D. Scan or type the collecting facility if prompted to do so. E. At the "Component" prompt, select the correct component from the dropdown menu. F. Click the "OK" button. G. Click on the "Comments" folder. H. In the "freetext" area, type in the saline manufacturer, lot number, and expiration date. Example: "Baxter saline lot P256305 expires 08/2016" I. Click the "Add" button. J. Click the "Save" button.
6	Attach a tie-tag to the unit indicating it is a "Volume-Reduced Saline-Replaced Platelet Product."

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6. RELATED DOCUMENTS

SOP: Refrigerated Centrifuge Maintenance (Sorvall RC-4)
SOP: Scale Quality Control
SOP: Platelets for Transfusion
SOP: Platelet Aliquot Preparation
SOP: Sterile Tubing Welder
SOP: Blood Label Check
SOP: Disposal of Blood and Blood Products
Form: Blood Bank Scale Calibration and QC Form
Form: Refrigerated Centrifuge QC Form
Form: Product Modification Log

7. REFERENCES

1. Roback, J.D., Grossman, B.J., Harris, T., and Hillyer, C.D. 2011. Technical Manual of the AABB, 17th ed. AABB Publishing, Bethesda, Maryland.
2. Standards for Blood Banks and Transfusion Services, 2014. AABB, 29th ed. AABB Publishing, Bethesda, Maryland.

8. REVISION HISTORY

Version	Date	Reason for Revision	Revised By	Approved By
		Supersedes SGAH.B13.001, SGAH B406.01		
000	5.16.12	Section 5: Updated wording of procedural steps 1, 2, 5, and 9 for clarity.	SCodina	NCacciabeve
001	5.9.13	Section 5: Added ISBT-128 Information Section 9: Added appendix A	SCodina	NCacciabeve
002			SCodina	NCacciabeve
		Footer: version # leading zero's dropped due to new EDCS in use as of 10/7/13.		
	5.28.14	Updated instructions for Sunquest v6.4 upgrade. Added clarification for when salvaged plasma is created and needs to be discarded. Updated wording for clarity.	SCodina	NCacciabeve

9. ADDENDA AND APPENDICES

Appendix A: Volume-Reduced Platelet Blood Component Preparation Functions

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Appendix A
Volume-Reduced Platelet Blood Component Preparation Functions

Original Product Code	Component Prep Function	Final Product Code	Salvaged Plasma Created?
A3046	CA3046	A3047	No
A3056	CA3056	A3049	No
A3057	CA3057	A3050	No
A3058	CA3058	A3051	No
E3077	CE3077	E3078	Yes
E3087	CE3087	E3080	Yes
E3088	CE3088	E3081	Yes
E3089	CE3089	E3082	Yes
E4649	CE4649	E3050	Yes
E4650	CE4650	E3051	YES