Supplemental material 2:

RBC washing protocol with the CATS device.

Responsible	Step	Action
OPERATING ROOM/PATIENT ROOM SET-UP		
Autotransfusion Personnel	1.	Enter OR or patient room with CATS (designated for study) and perform patient ID per Patient Identification.
	2.	Press the I (power on) key until the screen turns on.
	3.	Press the Select Program key to choose the desired wash program. a. Use the ↓ key to find the High Quality Wash program. b. Once the High Quality Wash program is selected, press the Enter key.
	4.	Continue with disposable set-up per CATS.
	5.	Press the Prime key. NOTE: The CATS device recognizes High Quality Wash as an adult prime and will prime with approximately 283 mL of saline.
	6.	Record patient/surgery information on yellow AT worksheet.
	7.	Record lot numbers of disposables on reverse side of yellow AT worksheet.
	8.	Record the AT tech pager number that is responsible for case on RBC Study Sheet for In-Room Provider (see attachment)
PRE – SAMPLE COLLECTION		
	9.	Anesthesia will hand over one unit of RBCs to Autotransfusion personnel.
	10.	Record time of RBC unit request on RBC Study Sheet for In-Room Provider
	11.	Place one unit number label on RBC Study Sheet for In-room Provider and one unit number label on RBC BLOOD BAG PLASMA COLLECTION FORM
	12.	Spike one port of the RBC unit with a sterile plasma transfer set device.
	13.	Attach a sterile 10 mL syringe to plasma transfer set device.
	14.	Draw 6mL of RBCs into syringe.

	15.	Dispense contents of syringe into 10 mL EDTA tube provided by research coordinator.
	16.	Place one patient ID label on EDTA tube and place in biohazard bag.
	17.	Fill out required sections of RBC BLOOD BAG PLASMA COLLECTION FORM: a. Site ID = 001 b. Subject ID = 4 digit # located on In-Room provider sheet c. Check the box next to Plasma #1 Pre-wash d. Date/time of sample collection
	18.	Fill out pink study card with the following information: a. Place one patient ID label in upper left corner b. Record Subject ID c. Record Date/time sample was collected
	19.	Place the RBC BLOOD BAG PLASMA COLLECTION FORM and pink study card in biohazard bag with EDTA sample.
	20.	Hang RBC unit on CATS pole.
PRE-DILUTION OF RBCS BEFORE WASHING		
	21.	Open one 1000 mL bag of saline and hang on CATS pole
	22.	Open Y-type Blood Set with Pump and close both roller clamps.
	23.	Attach female end of Y-type blood set to the male port on the side of the blood collection reservoir.
	24.	Spike 1000 mL bag of saline and open roller clamp.
	25.	Drain entire volume of saline bag into blood collection reservoir.
	26.	Disconnect empty bag and attach another 1000 mL bag of saline.
	27.	Drain 200 mL of saline into blood collection reservoir and close clamp.
	28.	Spike one unit of RBCs with remaining spike.
	29.	Drain contents of RBCs bag into blood collection reservoir. NOTE: The pre-dilution of the RBCs/saline mixture is 4:1.
	30.	Swirl the contents of the reservoir to ensure proper mixing.
	31.	Track the total amount of saline bags used on Comments section of AT worksheet.

WASHING (PROCESSING)		
	32.	Press the start key to begin processing.
	33.	Record the following information on the yellow AT worksheet: a. Unit number (take label from original bag) b. Processed by c. Processing time (Time processing began until processing finished. E.g. 0915-0930)
	34.	Once blood reservoir is empty, press Save Final PRC key.
	35.	Press Save Final PRC key on next screen.
	36.	Record the remaining information in the processing section of the yellow AT worksheet: a. RBC volume recovered b. Transfer pack volume c. Comments section: Track number of saline bags used.
POST - SAMPLE COLLECTION		
	37.	Attach a sterile plasma transfer set device to one port on the reinfusion bag and close clamp.
	38.	Attach a sterile 10 mL syringe to plasma transfer set device and open clamp.
	39.	Draw 6mL of RBCs into syringe.
	40.	Dispense contents of syringe into 10 mL EDTA tube provided by research coordinator
	41.	Place one patient ID label on EDTA tube and place in biohazard bag.
	42.	Fill out required sections of RBC BLOOD BAG PLASMA COLLECTION FORM: e. Site ID = 001 f. Subject ID = 4 digit # located on In-Room provider sheet g. Check the box next to Plasma #2 Post-wash h. Date/time of sample collection
	43.	Fill out pink study card with the following information: d. Place one patient ID label in upper left corner e. Record Subject ID f. Record Date/time sample was collected
	44.	Place the RBC BLOOD BAG PLASMA COLLECTION FORM and pink study card in biohazard bag with EDTA sample.

	45.	Open clamp and drain contents of reinfusion bag into transfer pack.
	46.	Expel air from transfer pack.
	47.	Seal transfer pack using the hand sealer and two hand sealer clips. Cut between the clips.
LABELING		
	48.	Complete Research Only - Washed Allogenic Blood label in the following manner a. Retrieve unit number label from original RBC unit and place in the upper left corner of blood label. b. Place a patient ID label on the lower left corner. c. Record the volume of the washed unit. d. Record the time (hh:mm) that the CATS began washing the RBC unit. e. Record the expiration date/time (4 hours from beginning of wash).
	49.	Affix label to transfer pack.
ADMINISTRATION		
	50.	Perform visual inspection of unit and release unit to Anesthesia/nursing/Perfusion personnel. a. Record initials in the "Inspected and Release by" box on the AT worksheet. b. Record Time transfused/volume transfused.
SENDING SAMPLES		
	51.	OPERATING ROOM: a. Place samples in OR window for lab personnel. b. Press the LAB button the communication panel. PATIENT ROOM: a. Using the nearest small tube station, send all collected samples to 4th tower.
ADDITIONAL WASHED RBCS DURING STUDY TIME PERIOD		
	52.	If additional units are requested to be washed in the current OR or patient room, repeat the following sections in this procedure: a. Pre-sample collection b. Pre-dilution of RBCs before washing c. Processing d. Post-Sample Collection e. Labeling

		f. Administration
	53.	After surgery is complete, perform tear-down/cleaning of CATS device per procedure.
	54.	Transport CATS device and yellow AT worksheet with patient information to patient room.
	55.	Once an order for the first RBC unit is received, go to patient room and perform steps in OPERATING ROOM/PATIENT ROOM SET-UP section.
	56.	Complete all steps in the following sections in this procedure for all subsequent RBC orders: a. Pre-sample collection b. Pre-dilution of RBCs before washing c. Processing d. Post-Sample Collection e. Labeling f. Administration
	57.	After the last order for RBCs and the washing process has been completed, perform tear-down/cleaning of CATS device per procedure.
	58.	Transport CATS device to Autotransfusion office.
	59.	Place yellow AT worksheet on Quality Specialist desk.