Sutter Health
Sutter Roseville Medical Center

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Policy Area:	*Lab - Transfusion Service*
References:	
Applicability:	*Sutter Roseville Medical Center*

Processing, Reviewing, and Resulting Assays Using the Echo

PURPOSE

To provide instruction on processing, reviewing, and resulting assays on the Echo.

POLICY

- The Echo is to be used as the primary testing methodology whenever possible for all available testing with the exception of antigen typing.
- Quality control must be performed prior to the release of patient results for all tests.
- Two reagent racks (A & B) will be assigned and labeled for each Echo. The racks will be rotated at the beginning of each shift that the Echo is in use to ensure optimum reagent stability.
  - Each Echo has a reagent rack for Capture Indicator Cells that remains on the Echo with no periods of refrigeration.
  - The CLS rotating the rack at the beginning of a shift is responsible for managing reagents in both racks by checking for matching lot numbers, expiration dates, and volumes of reagents.
  - Both racks must contain the same lot number of reagents.
- The Echo allows for continuous loading of samples, reagents, strips, and buffer while in use.
- All samples and reagents shall be uncapped and loaded into designated racks with barcodes unobscured.
  - In the event a sample or reagent barcode does not read, remove rack and replace carefully onto the Echo.
- Barcodes that will not scan repeatedly may be manually entered or scanned using the attached barcode scanner if prompted. Dual entry is required for confirmation.
- All reagents, controls, and patient specimens must be free from excessive bubbles or foam, as these can interfere with liquid level detection and cause failure to aspirate properly.
- All red cell reagents require a stir ball immediately prior to being placed into use. Reagents that were used without a stir ball must be discarded and replaced immediately.
- Confirmation testing for units transferred from another Sutter affiliate may not be run on the Echo. Perform testing manually.
- Ready ID shall be used as the primary antibody ID panel with Extend I and Extend II used subsequently for rule outs with the following exceptions:
  - Extend I may be used as primary for patients with a history of Anti-c or Anti-e.
  - Extend II may be used as primary for Rh negative patients with a history of or suspected Anti-D or Rhogam interference.

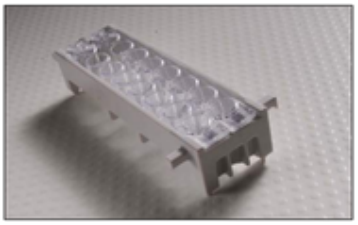
TESTS/REAGENTS/SUPPLIES

Icon and Loading Guides

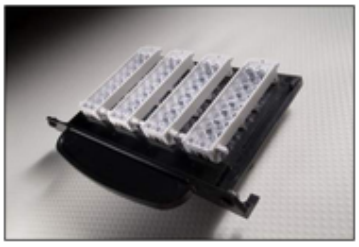
Button	Description
	**Log in** – Controls access to the operating software
	**Initialize** – Initializes the instrument
	**Worklist** – Displays the list of samples and assays that are pending from the reflex testing and LIS download
	**Run Test Wizard** – Manages the process of running assays
	**Emergency stop** – Allows operator to stop or abort instrument processing.
	**Turn on/off rack scanners** – Activates/deactivates barcode scanners for reagent and samples bays
	**Find a sample** – Allows operator to search for a sample in database files
	**Print** – Prints selected reports
	**File management** – Archives results to other media source
	**Help** – Provides access to an electronic copy of the Echo Lumena Operator Manual and access to blud_direct

Button	Description
	**Display Results** – Used to select a batch or sample ID from the menu. Clicking the button displays results.
	**Edit Results** – Used to view and edit reactions on equivocal results.
	**Approve Results** – Used to approve results for export.
	**Export Results** – Used to export results to LIS.

Collection of rack icons



Two-dimensional barcode on each **strip** to be loaded next to each other at the end of the **strip holder** with protrusions.



Side with two-dimensional barcodes and protrusions to be loaded nearest the handle of the **strip tray**.

Reagents/Supplies by Assay

	Group	Screen	Ready ID Extend I Extend II	Confirm	Crossmatch	Weak D	Pediatric	DAT	C, c, E, e, K
Anti-A	X			X			X		
Anti-B	X			X			X		
Anti-D4	X			X		X	X		
Anti-D5	X						X		
Monoclonal Control	X			X		X	X		
A1 Cells	X								
B Cells	X								
Capture LISS		X	X		X				
Capture-R Indicator Cells		X	X		X			X	
DAT Pos Control					X			X	
Ag specific antisera									X
Specimen Diluent									X
CMT Strip	X						X		X
Selected Panel			X						
RS3 Strip		X							
Select Strip								X	

Specimen Requirements

- Minimum volume requirements:
  - 250 µL red cells
  - 500 µL plasma
  - 1 mL plasma for ABID
- All specimens must be free from clots and centrifuged for 7 minutes at 3500 RPM.
- Samples with excessive hemolysis, lipemia, or icterus are not to be run. Samples with 1+ or greater hemolysis shall not be used for Capture-R Select testing, as fragmented RBC membranes interfere with monolayer formation.
- Donor unit: 2 segments dispensed into 12mm glass tube, labeled with DIN barcode, and spun for 60 seconds.

PROCEDURE

Starting Assays Using LIS Interface

Step	Action
1.	Load patient specimens and allow the instrument to query the LIS. Upon querying, the worklist bar will populate on the bottom of the screen (see example below). Access worklist using this or the worklist icon at the top of the screen. 
2.	Select tests to be run, batching one test type at a time and then select **Next**. *Note: **Screen** shall always be selected to run prior to **Group**, as the reverse will delay results significantly.*
3.	If not loaded already, load any reagents or supplies listed on the **Supplies** screen, then select **Next**.
4.	Select **Begin Tests**.
5.	Return to the worklist to select the next test type to run, as needed.

Starting Assay Without LIS Interface

Step	Action
1.	Load patient specimens and select the **Run Test Wizard**.
2.	Select the assay to be performed from the **Select tests** window, then select **Next**.
3.	Select the sample(s) to be tested from the **Select samples** screen, then select **Next**. • If *Crossmatch* assay is selected, the Crossmatch Setup screen will display next. Assign donor samples to be crossmatched to selected patient, then select **Next**.
4.	If not loaded already, load any reagents or supplies listed on the **Supplies** screen, then select **Next**.
5.	Select **Begin Tests**.

Reviewing and Resulting Assay Results

- Reactions labeled "**?**" (equivocal) by the Echo must be evaluated and modified prior to transmitting results; **only** equivocal results may be edited.
- All assays resulted as NTD must be repeated and resolved manually.
- Reactions with **antisera** of less than **<2+** will be checked for mixed field agglutination by tube unless blood type interpreted by the Echo is confirmed by historical blood type on file.
- Crossmatch, weak D, antigen typing, and panel results do not query or result using the LIS and must be manually transcribed.
- Donor confirmation testing does not query, but shall be transmitted using LIS.
- Whenever functional, the LIS interface will be used to query and result all tests possible.
- For **INWU** testing: Manually enter Echo forward type reactions into ABORh grid in Sunquest, resulting reverse type as ND.

Action	Steps
Display the report for a specimen	Perform one of the following: • Double click the sample ID listed in the **Results Panel**. • Highlight the specimen in the **Results Panel**, then select the **Display Results** button.
Enlarge the image for a specific well	Double click the well's image in the report.
Edit equivocal results	• Highlight the assay with equivocal results in the **Results Panel**. • Either right click on the assay and select **Edit** or select **Edit Results** button. • Modify the result in the **Edit results** window by highlighting the well in question, then selecting a new grade from the **Revised grade:** Drop-down list. • Enter a comment into the **Comment for revised grade:** Field (ex: "Visually positive") • Select **Close** to close and save. • An edit symbol will appear next to edited results on the **Results Panel**.
Review raw data score for an equivocal well	• Highlight the assay with equivocal results in the **Results Panel**. • Right click on the assay and select **Result File**. • Scroll to the **Reactions** section or the report and locate the strip and well number in question. • Note the raw number value assigned to the well, then look up the assay cutoff value for the specific assay in question in Appendix D of the *Echo Operator Manual*. • Use these values to assist in determining how to grade the reaction. ◦ Values at the low end of the range are more likely to be negative and values at the upper end of the range are more likely to be positive.

Printing results	• Highlight the assay or batch desired. • Select **Print** button at the top of the screen. This is required any time manual data entry or transcription is performed.
Transmit results across the LIS interface	• After reviewing results, highlight the assay or batch desired in the **Results Panel**. • Select **Approve Results**. ◦ Approved results may be unapproved by selecting **Approve Results** a second time. • Select **Export Results**. • Scan specimen CID into *Blood Order Processing* (BOP) in Sunquest (SQ) to access the accession. • Upon accessing the corresponding accession in SQ, results will display for review. • Verify patient identification between BOP and specimen and review results a final time prior to selecting **Load**. • Reactions should autopopulate in corresponding testing grids.
Manually resulting assays in the LIS	• After reviewing results, highlight the assay or batch desired in the **Results Panel**. • Print results. • As appropriate, manually transcribe results into corresponding grids in SQ accession or panel antigrams. • Place a patient label (must include patient name, accession, and CID) on the printout. • Initial and date printout.
Resulting unit confirmations	• Transmit confirmation results across LIS interface using steps noted above. • Access *BB Instruments* in SQ and select the interface for the analyzer used for testing from the Configuration drop-down menu and select **OK**. • Compare the units tested to the cup results to verify all testing was performed. ◦ If number of cup results is fewer than number of units tested, determine which units did not cross over and manually test and result confirmations. ◦ If results are highlighted in red or have a *Y* in the *Flag* column, manually test and result confirmations for those units. • Select cups to be approved, then select **OK**.

Troubleshooting

If:	Then:
Strip barcode will not read	• Open the **Strips** drop-down menu. • Scan the barcode on the white strip tray that the strip was removed from into the relevant field. Double entry is required. • Enter the strip expiration date as prompted. • Select **Close** to close and save.
Analyzer is requesting strips or reagents for an assay that are currently loaded on the analyzer	• Check to see if barcodes on reagents/strips have not been read. • Remove tray/rack with unread barcode item and replace it carefully. • If replacing does not resolve, use manual barcode scanner to manually enter barcodes.
Missing or equivocal results are present when attempting to result assay in SQ	• Select **Cancel** on result popup screen in the accession. • **Cancel** out of the accession in BOP. • Access SQ Roll & Scroll to clear the cups for the analyzer used. ◦ Function: OFC ◦ Method Code: RVEO1 or RVEO2 ◦ Enter through prompts and **Accept** to clear cups • Modify results on the Echo as appropriate/ needed. • Approve edited results and export to LIS interface.
Echo testing loaded into grids in SQ need to be removed	• Highlight test in accession. • Select **Reject RVEO1/RVEO2** above the grid. • Perform QA overrides as appropriate. • Select **Save**.
Echo testing loaded into grids in SQ is appropriate but interpretation needs to be edited *(i.e. RHDU interpretation)*	• Highlight interpretation to be edited and **Delete**. • Select **Accept**. • Enter desired interpretation. • Select **Accept**. • Perform QA overrides as appropriate. • Select **Save**.

Cups were rejected in *BB Instruments* while resulting unit confirmations	• Access SQ Roll & Scroll to clear the cups for the Echo used. ◦ Function: OFC ◦ Method Code: RVEO1 or RVEO2 ◦ Enter through prompts and accept to clear cups • Clearing the cups will clear any results (patient testing included) pending in the interface.

REFERENCE

Immucor, Inc. *Echo Operator Manual.* ECO-001-204. Norcross, GA

All revision dates:

Attachments

No Attachments