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## BECKMAN COULTER AU680 SAMPLE PROCESSING

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**Purpose** The Beckman Coulter AU680 chemistry analyzer measures analytes in samples, in combination with appropriate reagents, calibrators, quality control material and other accessories.

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**Scope** The Beckman Coulter Au680 system is designed to analyze serum or plasma, urine, CSF, peritoneal and pleural fluid. To analyze samples, the appropriate reagents, reference materials, and QC samples are required. This system is designed to discard the concentrated waste Liquids (mixture) and washing waste liquids (washing water and detergents) separately.

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**Policy** Quality control must be performed and acceptable using 2 Levels of controls, every 12 hours for all analytes except for BUN, Ammonia, Gentamicin and Digoxin which requires 3 Levels of controls, every 8 hours before sample results can be released.

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**Specimen Collection** Specimen for testing are collected following the container ID required for for each specific analytes.

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**Specimen Storage** If it is necessary to store the specimen, store under refrigeration at 2 to 8°C.

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### Specimen rejection

- Follow policy on Criteria for Unacceptable specimen (LAMC-PPP-0031)

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### Reagents and/or Media

Description	Vendor	Storage
Chemistry Cartridge reagents	Beckman Coulter	Refrigerated
ISE Buffer Solution	Beckman Coulter	Room temperature
ISE Mid Standard Solution	Beckman Coulter	Room temperature
ISE Reference Solution	Beckman Coulter	Room temperature
Wash Solution	Beckman Coulter	Room temperature

### Materials and supplies

- Disposable pipette tips
- Sample cups, Hitachi cups (No. 716-0425)
- Micro-sample cup, Hitachi cups (No. 707-0313)
- Nested cups, Hitachi cups (No. 716-0415)
- Sample Racks

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### Safety or Special Safety Precautions

All laboratory employees are expected to maintain a safe working environment and an injury-free workplace. Laboratory employees are responsible for their own safety and the safety of others and adhering to all departmental and medical center safety policies and procedures.

- For standard precautions and safety practices in the laboratory; see LAMC-PPP-0123, specifically, but not limited to, equipment safety, proper body mechanics, sharps exposure and proper use of personal protective equipment (PPE).
- For Universal Body Substance precautions, see LAMC-PPP-0128, specifically, but not limited to, exposure to body fluids.
- For proper hand washing, see LAMC-PPP-0132, specifically, not limited to, proper hand washing.
- For proper infection control, see LAMC-PPP-0127, specifically, but not limited to, proper use of gloves.
- For proper handling of regular and infectious waste, see LAMC-PPP-0129, specifically, but not limited to, proper disposal of regular and biohazardous waste.
- For proper cleaning of work area, see LAMC-PPP-0130 – Cleaning Work Areas.
- For proper handling of chemicals and reagents, see the Chemical Hygiene Plan.
- For proper storage and disposal of chemical hazardous waste, see LAMC-PPP-0134.

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### Definitions

The Beckman Coulter AU680 is an automated chemistry analyzer that follows the analytic principle of Spectrum by a diffraction grating.

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## BECKMAN COULTER AU680 SAMPLE PROCESSING

**Procedure:** Follow the steps required for daily Start-up.

Step	Action
1	From <b>Home</b> screen select <b>Start Condition</b> jump button.
2	Select <b>Edit F1</b> .
3	Select <b>New Index</b> button.
4	Select <b>Confirm F1</b> .
5	Select <b>OK</b> to create a new index. (This procedure is to be performed daily right after midnight)
6	Confirm the analyzer status by selecting <b>Analyzer Status</b> from the home window.
7	Investigate any yellow or red display colors.
8	Perform all Daily Maintenance required.
9	Do a reagent check by selecting <b>Reagent Management</b> from the Home screen.
10	Select <b>Reagent Check F5&gt; Check All Positions &gt; Start</b>
11	View reagent information <ul style="list-style-type: none"> <li>• From the Main Tab, view shots/volume available</li> <li>• From the Details Tab, view reagent stability and verify fixed reagents are in correct positions.</li> <li>• Repeat for each sample type.</li> </ul>
12	Load new reagents if needed, then repeat step 10.
13	View reagent information to verify reagents have adequate stability and volume.
14	Do an <b>ISE Start Up</b> (as required)
15	Verify the ISE reagents are in date (90 day open bottle stability) and have adequate volume.
16	Load reagents as needed and prime.

**Note:** Samples loaded on the Direct Tract Sampling will automatically be processed by the analyzer. Any repeats or reruns will be manually performed by CLS.

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## BECKMAN COULTER AU680 SAMPLE PROCESSING

### Loading samples without Direct Tract Sampling

**Procedure**

Step	Action
1	Before starting analysis, place samples in the correct racks. <ul style="list-style-type: none"> <li>• <b>White:</b> Routine patient analysis and automatic repeat runs.</li> <li>• <b>Yellow:</b> Calibration analysis.</li> <li>• <b>Green:</b> QC analysis</li> <li>• <b>Orange:</b> Manual repeat run analysis</li> <li>• <b>Red:</b> Emergency analysis</li> <li>• <b>Blue:</b> Reagent blank analysis</li> </ul>
2	Place sample with the barcode label aligned in the open slot in the rack. Make sure all samples are decapped.
3	Open the sample protective cover on the rack supply unit.
4	Set the prepared racks on the racks supply unit with the rack barcode number facing the back of the instrument.
5	<b>Note:</b> Place the rack to the right of the rack identification sensor (white board)
6	Select <b>Start</b> from the keyboard or software screen.
7	When the screen labelled Start appears, verify that no red messages are on the Error List. If none, then select <b>Start</b> .
8	When done, remove the sample racks from the rack collection area and cap samples.

### Manual Programming for Samples on Racks

Step	Action
1	Select <b>Home</b>
2	Select <b>Rack Requisition Sample</b> jump button
3	Select <b>Sample</b> button
4	Select <b>Test Requisition</b> tab
5	Select <b>Switch</b> button to select “Sample Kind”
6	Select sample type from the “type” drop-down list
7	Select <b>Start Entry F1</b> .
8	Manually requisition sample, enter “Sample ID” (barcode number)
9	Select the test(s) to run on the sample. Selected tests are highlighted in blue

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## BECKMAN COULTER AU680 SAMPLE PROCESSING

**Procedure**

Continued: Manual Programming for Samples on Racks

10	If a manual dilution was made, select <b>Sample dilution F7</b> and enter the dilution rate.
11	Select <b>Demographics</b> tab to enter required patient demographic information.
12	Select <b>Entry F1</b> to save requisition.
13	Select <b>Exit F2.</b>
14	Select <b>Pending List F4</b> to view a list of samples requisitioned
15	Select <b>Close</b> to close the pending List
16	Place the samples with barcodes in appropriate rack(s)
17	Select <b>Start</b> from main button bar
18	Review errors on the Error List in the Start Window and perform any corrective actions, if necessary.
19	Select <b>Start</b> from the Start Window

Manual Programming for STAT Samples:

1	Select <b>Home</b>
2	Select <b>Stat Status</b> jump button
3	Select <b>Sample</b> button
4	Select <b>Test Requisition</b> tab
5	Select sample type from the “Type” drop-down list
6	Select <b>Start Entry F1</b>
7	Manually requisition sample: Enter “Sample ID” (barcode number)
8	Select the test(s) to run on the sample. Selected tests are highlighted in blue
9	If a manual dilution was made, select <b>Sample dilution F7</b> and enter the dilution rate.
10	Select <b>Demographics</b> tab to enter required patient demographic information.
11	Select <b>Entry F1</b> to save requisition.
12	Select <b>Exit F2.</b>
13	Select <b>Pending List F4</b> to view a list of samples requisitioned
14	Select <b>Close</b> to close the pending List
15	Select <b>STAT Status</b> button

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## BECKMAN COULTER AU680 SAMPLE PROCESSING

**Procedure**

Continued: Manual Programming for STAT Samples:

16	Check the “Kind” and “Type” columns for position assignment on the STAT table.
17	If the STAT table is busy (amber light flashing), Select <b>STAT Pause F2</b> , and then select <b>OK</b> . Wait for the amber light to stop flashing.
18	Open the small cover of the STAT table and load samples in appropriate positions with barcode facing out. Press the green TABLE ROTATION/DIAG button to rotate the table.
19	Close the small cover then select <b>Start F1</b>
20	Review errors on the Error List in the STAT Start Window and perform any corrective actions, if necessary
21	Select <b>Start</b> from the STAT Start Window.

Perform Add On and Rerun Tests on Rack:

1	Select <b>Home</b>
2	Select <b>Rack Requisition Sample</b> jump button
3	Select <b>Sample</b> button
4	Select <b>Test Requisition</b> tab
5	Requisition on add on or rerun test: Select <b>Add on F5</b>
6	Verify the correct “Sample Kind” rack in which the sample was initially processed is displayed. Select the <b>Switch</b> button if you need to change the sample kind.
7	Select sample type from the “Type” drop-down list
8	Enter the sample number in both of the “Sample No.” fields. Note: Enter a range of sample numbers if an add on or rerun is required on multiple samples for the same tests.
9	Select the <b>Select Tests to be Repeated</b> option
10	Select the test(s) to add on or rerun
11	Select <b>OK</b>
12	Select <b>Pending List F4</b> to view a list of samples requisitioned.
13	Optional: Select the sample from the Pending List and select <b>Go</b> to view the specific sample requisition. Tests with an asterisk (*) are pending processing.
14	Select <b>Close</b> to close the Pending List
15	Place the samples with the barcodes in appropriate rack(s) and place them on the rack supply unit
16	Select <b>Start</b> from the main button bar
17	Select <b>Start</b> from the Start Window

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## BECKMAN COULTER AU680 SAMPLE PROCESSING

**Procedure**

Perform Add On and Rerun Tests on STAT Table:

Note: This procedure applies only for STAT samples that require add on or Rerun test to be processed on the STAT table using the same sample ID and Index as the original sample.

1	Select <b>Home</b>
2	Select <b>STAT Status</b> jump button
3	Select <b>Sample</b> button
4	Select <b>Test Requisition</b> tab
5	Requisition on add on or rerun test: Select <b>Add on F5</b>
6	Select sample type from the “Type” drop-down list
7	Enter the sample number in both of the “Sample No.” fields. Note: Enter a range of sample numbers if an add on or rerun is required on multiple samples for the same tests.
8	Select the <b>Select Tests to be Repeated</b> option
9	Select the test(s) to add on or rerun
10	Select <b>OK</b>
11	Select <b>Pending List F4</b> to view a list of samples requisitioned.
12	Optional: Select the sample from the Pending List and select <b>Go</b> to view the specific sample requisition. Tests with an asterisk (*) are pending processing.
13	Select <b>Close</b> to close the Pending List
14	Select <b>STAT Status</b> button
15	Check the “Kind” and “Type” columns for position assignments on the STAT Table
16	If the STAT table is busy (amber light flashing) Select <b>STAT Pause F2</b> , then select <b>OK</b>
17	Wait for the amber light to stop flashing
18	Open the small cover of the STAT table and load samples in appropriate positions with barcodes facing out. Press the green TABLE ROTATION/DIAG button to rotate the table then close the small cover.
19	Select <b>STAT Start F1</b>
20	Select <b>Start</b> from the STAT Start Window.

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## BECKMAN COULTER AU680 SAMPLE PROCESSING

### Procedure

#### Recall Patient Results

1	Select <b>Home</b>
2	Select <b>Sample Manager</b> jump button. Note: Select <b>OK</b> if a “Data Not Found” message appears
3	Select <b>Main</b> Tab
4	Select <b>Data Search F3</b>
5	Select start date of search in the “Start Index” drop-down list
6	Select end date of search in the “End Index” drop-down list
7	Select <b>Search the designated sample</b> option
8	Select the check box for the desired sample kind/sample type from the “Sample Kind” column. Note: You may need to select the drop down arrow to view more sample kind options.
9	Select <b>Complete Match</b> from the “Search Sample ID” drop-down list
10	Enter Sample ID in “Search Sample ID” field
11	Select <b>OK</b>
12	To view report, select <b>Sample</b> tab
13	To print report, select <b>Print F8</b> the select <b>OK</b> .

### Interference

The most common interference for tests analyzed on the AU680 are hemolysis, lipemia and icterus. LIH reagent is used to measure these chromogens if present in the sample. Flags are generated and reported along with the results to characterize the kind of chromatic substance and the approximate concentration of the interferent.

Approximate Concentration of Chromatic Substance			
Flag	LIP (mg/dL Intralipd)	ICT (mg/dL Bilirubin)	HEM (mg/dL Hemoglobin)
N	<40	<2.5	<50
+ (1)	40-99	2.5-4.9	50-99
++ (2)	100-199	5.0-9.9	100-99
+++ (3)	200-299	10-19.9	200-299
++++ (4)	300-500	20-40	300-500
+++++ (5)	>500	>40	>500

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If a particular sample is marked with one or more of the above flags, the result is appended with the following comments:

### Hemolysis:

- If hemolysis is equal to 1 then a comment “Slight Hemolysis” is attached to the result.
- If hemolysis is equal to 2 or 3 then a comment “Specimen moderately hemolyzed. Interpret results with caution.” is attached to the result.
- If hemolysis is equal or greater than 4 then a comment is displayed “Specimen grossly hemolyzed. Recollect”. The test run is held. The CLS will then call to inform the nurse that the sample needs to be redrawn and cancel the order.

### Lipemia:

- If Lipemia is equal to 1 then a comment “Specimen is slightly lipemic” is attached to the result.
- If Lipemia is equal to  $\geq 2$  then a comment “Specimen moderately lipemic. Test performed on ultracentrifuged sample” is attached to the result.

### Icterus:

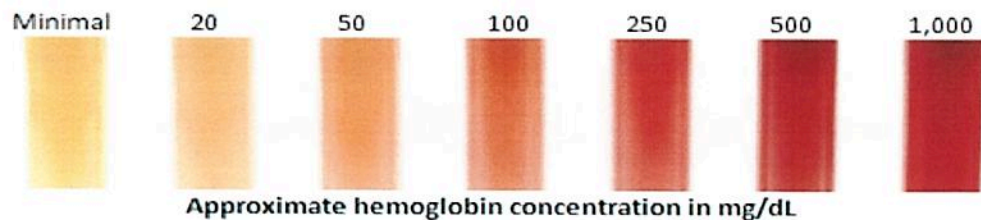
- If Icterus is equal to 1 then a comment “Slightly Icteric” is attached to the result.
- If Icterus is equal to 2 or 3 then a comment “Specimen moderately icteric. Interpret results with caution.” is attached to the result.

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### Visual Assessment

If the AU680 does not provide a reading or measurement of these chromogens in a sample, a visual assessment of the sample must be performed by the CLS/MLT. The following visual gradient may be used to evaluate the degree of hemolysis, lipemia or icterus in the sample:

Hemolysis:



HEM (mg/dL Hemoglobin)	Grading	Action
<50	None	None
50-99	+ (1)	Attach comment: "Slight Hemolysis" to the result
100-99	++ (2)	Attach comment: "Specimen moderately hemolyzed. Interpret results with caution." to the result
200-299	+++ (3)	Attach comment: "Specimen moderately hemolyzed. Interpret results with caution." to the result.
300-500	++++ (4)	The sample is grossly hemolyzed at this grade. The CLS should call and inform the nurse that the sample needs to be redrawn. The order needs to be cancelled.
>500	+++++ (5)	The sample is grossly hemolyzed at this grade. The CLS should call and inform the nurse that the sample needs to be redrawn. The order needs to be cancelled.

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Lipemia:



mg/dL      0            125            250            500            1000

LIP (mg/dL)	Grading	Action
<40	None	None
40-99	+ (1)	Attach comment: "Specimen is slightly lipemic" to the result
100-199	++ (2)	Attach comment: "Specimen is moderately lipemic. Test performed on ultracentrifuged sample." to the result.
200-299	+++ (3)	Attach comment: "Specimen is moderately lipemic. Test performed on ultracentrifuged sample." to the result.
300-500	++++ (4)	Attach comment: "Specimen is moderately lipemic. Test performed on ultracentrifuged sample." to the result.
>500	+++++ (5)	Attach comment: "Specimen is moderately lipemic. Test performed on ultracentrifuged sample." to the result.

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Icterus:



ICT (mg/dL Bilirubin)	Grading	Action
<2.5	N	None
2.5-4.9	+ (1)	Attach comment: "Slightly Icteric" to the result
5.0-9.9	++ (2)	Attach comment: "Specimen moderately icteric. Interpret results with caution." to the result
10-19.9	+++ (3)	Attach comment: "Specimen moderately icteric. Interpret results with caution." to the result
20-40	++++ (4)	Attach comment: "Specimen moderately icteric. Interpret results with caution." to the result
>40	+++++ (5)	Attach comment: "Specimen moderately icteric. Interpret results with caution." to the result

List of other interferences specific for each reagent can also be found in the 'Interfering Substances' section of the 'Instructions for Use' available at [www.beckmancoulter.com](http://www.beckmancoulter.com)

## BECKMAN COULTER AU680 SAMPLE PROCESSING

### Controlled Documents

The controlled documents are as follows:

Document No.	Name of Documents
LAMC-PPP-0123	Safety Practices
LAMC-PPP-0127	Infection Control
LAMC-PPP-0128	Universal Body Substance Precautions
LAMC-PPP-0129	Handling of Regular and Infectious Waste
LAMC-PPP-0130	Cleaning Work Areas
LAMC-PPP-0132	Hand-washing Policy
LAMC-PPP-0134	Storage and disposal of Chemical Hazardous Waste
LAMC-PPP-0338	Beckman Coulter AU 680 Quality Control

### Non Controlled Documents

The non-controlled documents are as follows:

Document No.	Document Name
	AU680 User's Guide

### Author

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