HANDLING LIPEMIC CHEMISTRY SAMPLES

☒ St. Joseph Medical Center, Tacoma, WA	☒ St. Anthony Hospital Gig Harbor, WA	☐ Harrison Medical Center, Bremerton, WA
☒ St. Francis Hospital, Federal Way, WA	☒ St. Elizabeth Hospital Enumclaw, WA	☐ Harrison Medical Center, Silverdale, WA
☒ St. Clare Hospital Lakewood, WA	☐ Highline Medical Center Burien, WA	☐ PSC

PURPOSE

To provide instructions for handling and reporting results from Chemistry samples with lipemia.

PRINCIPLE

The Beckman Airfuge is a compact, air driven ultracentrafuge. Ultrafugation is centrifugation with an exceedingly high rate of rotation which separates the molecules of a substance. In this case it separates lipids from serum or plasma.

RELATED DOCUMENTS

M-F-CH-1940	DXC 600 (AMR) Analytical Measurement Range
J-F-CH-1940	DXC 800 (AMR) Analytical Measurement Range
	AU480 (AMR) Analytical Measurement Range
R-F-CH-1941	Chemistry Indices
	AU480 Chemistry Indices

The following tests should not be ultrafuged or Airfuged:

TEST	REASON	ACTION
Ammonia	Do not ultrafuge or airfuge per Manufacturer	Chartable comment-*"Unable to result Ammonia due to lipemic interference."* Cancel test if possible or credit test.
Cholesterol, Triglycerides or any part of Lipid Panel	The lipids are what is intended to be tested.	Analyze sample that has NOT been ultrafuged or airfuged.
CRP	Do not ultrafuge or airfuge per Manufacturer	Send to reference lab.

For Sites without an Airfuge/Ultrafuge:

INSTRUMENT	LIPEMIA LEVEL (instrument specific)	TEST(S)	ACTION
AU480- no airfuge	Slight (2+)	All	Report results. Not affected at this level.
AU480- no airfuge	Moderate (3+) or higher	Lipase	• Send minimum of 1 ml of sample Stat to SJ for Airfuging/Ultrafuging. • Result only the smartphrase .SENTLIP on test level for all affected tests. • Prelim verify. No entries in the test field.
AU480- no airfuge	Moderate (3+) or higher	Ammonia	Chartable comment-*"Unable to result Ammonia due to lipemic interference."* Cancel or credit test.
AU480- no airfuge	Moderate (3+) or Marked (4+)	All other tests	Report results. Not affected at this level.
AU480- no airfuge	Gross (5+)	Many tests affected	• Send minimum of 1 ml of sample Stat to SJ for Airfuging/Ultrafuging. • Do not report any test results. • Notify the floor that the sample is being sent Stat to SJ. • Document notification in the LIS in the Comm Log.
DXC600 and 800- no airfuge	Slight (2 to 3) or higher	Ammonia	• Do not ultrafuge or Airfuge per Manufacturer. • Enter Chartable comment-*"Unable to result Ammonia due to lipemic interference."* • Cancel test if possible or credit test.
DXC600- no airfuge	Moderate (4-6)	PAB, Saly, Uric, VPA, TBIL	• Result only the smartphrase .SENTLIP on test level for all affected tests • Prelim Verify results for tests other than these (tests not affected). • Send minimum of 1 ml of sample Stat to SJ for Airfuging/Ultrafuging. • Do not final Verify any tests.
DXC600- no airfuge	Marked (7 to 8) or Gross (9 to 10)	Numerous	• Send minimum of 1 ml of sample Stat to SJ for Airfuging/Ultrafuging. • Do not report any test results. • Notify the floor that the sample is being sent Stat to SJ and document notification in the LIS Comm Log.

STEPS

1. Lipemia is visually noticed in a chemistry sample. Lipemia, except for Gross lipemia. should be quantified by being run on an instrument. See following steps for manually resulting Gross Lipemia.

   NOTE: for sites without an Airfuge, go to step 3 and see tables above.

2. If the lipemia is Gross upon visual inspection,
   a. result it in the Remisol Lipemia field by
   b. double clicking the sample from the Samples List to open it up
   c. right click on the column and choose "Add Manual Run"
   d. enter a result of 10 in the Lipemia field and thumbs it up so it will cross to Beaker**.**
   e. **Don't result the Gross lipemia directly into Beaker.** If you do, when the ultrafuged lipemia result comes across from Remisol, the Gross value will get overwritten and it will autoverify.

f. After resulting the lipemia in Remisol and transmitting it, right click and highlight all the tests on that sample (including the lipemia and other indices) and then right click and choose "Rerun Parameter", then go to step 9.

3. For sites without an airfuge:
   a. See table above.
   b. Consider asking for more sample before sending, if there is not very much.
   c. If sample is also grossly hemolyzed, have the sample redrawn before sending.
   d. If the sample has been run and is being sent out for Airfuge/Ultrafuge:
      i. Send a copy of the results
      ii. Put a note on the sample bag saying "**Give to Chemistry Department- DO NOT put on the Line**"
      iii. Put the sample onto a packing list to SJ and transfer the test.

4. At sites with an airfuge, run on instrument prior to airfuging.

5. Lipemia ≤2 will autoverify unless there is some other reason for it to be held up

6. Lipemia ≥3 will be held up in Remisol (if an affected test has been run).

7. On the Remisol, highlight only the lipemia result and thumbs up so the lipemia from the original sample goes to the LIS. This is the lipemia result that should be reported for the sample. It will be held there until the chemistry results are ready.

8. On the Remisol, request a rerun of the tests (including lipemia, hemolysis and icterus) on that sample. Rerun the lipemia so the airfuged sample will be checked for complete clearing of lipemia.

9. Print out the lipemic sample results from the DXC and from the Remisol and save for filing or technical review.

10. Airfuge the sample.

11. Clearly mark the container of the airfuged sample **(**with "AIR ULTRAFUGED" label if available, or write "AIR" on tube if label not available)

12. DO NOT put the insert containing the airfuged sample back in the original tube to run or after the run. Use a labeled empty tube instead.

13. Run the airfuged sample and report those chemistry results if hemolysis and lipemia results are acceptable. Repeat airfugation if lipemia is still above the acceptable level for your tests (go to step 7). If hemolysis is present, follow protocol. The result for the lipemia itself should be from the original sample.

14. An elevated lipemia result in the LIS (from step 6) will prevent the sample from autoverifying in Beaker.

15. **BEFORE manually verifying the results, go to LIS Result Entry and Verification**
   a. Call up the sample accn#
   b. On one of the tests, use the chartable comment .AIRF *"Specimen lipemic. Results are not affected. Analysis was performed on clarified specimen, except for lipids."*
   c. Do not use the indices line for this comment.
   d. Then verify the results.

16. Print out the airfuged sample results from the DXC and/or the Remisol and staple with the DXC/Remisol lipemic result printout. Put with reports to be saved.

NOTES:
-You may need to request more sample in order to perform the airfuging (or multiple airfuging).
-You may need to notify the nursing unit of delays associated with this special handling.
-For samples that give a high lipemic index on the DXC that are not visibly lipemic, per Beckman, this may be due to abnormal proteins that precipitate with the DIL1 reagent during the indices test on the analyzer. Report Lipemia index as 0 if there is no visible lipemia.
-Do not Thumbs up the lipemia from the Remisol if the visual is low and instrument index is very high.
-If visual lipemia is present at a low level but the instrument lipemia index is high, please consult with tech in charge, MTC or manager for how to proceed.
-Smartphrase .SENTLIP reads *"Specimen sent stat to SJMC laboratory for testing due to lipemia interference."*

REFERENCES

Dorlands Illustrated Medical Dictionary, 23rd edition, 2003
CLSI, C-56A, Volume 32, pages 11-13