Fluid Specimen Handling and Processing

Atrium Health Wake Forest Baptist	**DOCUMENT TYPE:** Procedure	**ORIGIN DATE** 6/9/20
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APPLICABLE LABORATORY(S)):

☒ North Carolina Baptist Hospital (NCBH)
☐ Lexington Medical Center (LMC)
☐ Davie Medical Center (DMC)
☐ Wilkes Medical Center (WMC)
☐ High Point Medical Center (HPMC)
☐ Westchester
☐ Clemmons

PROCEDURE

This purpose of this procedure is to provides laboratory testing personnel with guidelines for processing body fluid samples sent to the laboratory for testing.

SCOPE

i. Procedure Owner/Implementer: Central Processing Lab
ii. Procedure Prepared by: Central Processing Management
iii. Who Performs Procedure: Central Processing Team Members

DEFINITIONS

A. Procedure: A process or method for accomplishing a specific task or objective.
B. WFBH Lab System: Wake Forest Baptist Lab System is a health system that includes Wake Forest Baptist Medical Center and all affiliated organizations including Wake Forest University Health Sciences (WFUHS), North Carolina Baptist Hospital (NCBH), Lexington Medical Center (LMC), Davie Medical Center (DMC), Wilkes Medical Center (WMC), High Point Medical Center (HPMC), Lab at Westchester and Lab at Clemmons.
C. Vitreous Fluid: Fluid in the eye located between the lens and retina. Specimen obtained from the eye via a syringe inserted into the eye. Limited fluid can be submitted.
D. Synovial Fluid: Viscous fluid found in the cavities of the joints (such as the knee).
E. BAL (Bronchoalveolar Lavage): Fluid collected when a bronchoscope is passed through the mouth or nose into airway in the lungs with an appropriate amount of fluid that is introduced and then collected for testing.
F. CSF (Cerebrospinal Fluid): Clear, colorless body fluid found in the brain and spinal cord.
G. Pleural: Fluid found between the layers of membranes that line the pleura and surround the lungs (pleural cavity/space).
H. Peritoneal: Fluid found in the peritoneal cavity (space between the layers of tissue that line the belly's wall and abdominal organs).
I. Pericardial: Fluid surrounding the heart.
J. Ascites: Fluid in the peritoneal cavity.

SUPPLIES/MATERIALS

Use appropriate personal protective equipment (PPE) when handling biohazardous specimens.

PROCEDURE GUIDELINES

A. Specimen Orders Accessioning

1. Fluid specimens are delivered to the laboratory. Verify the specimens are labeled with two unique identifiers.

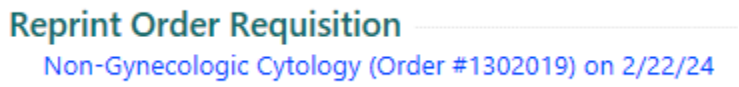
2. Determine the fluid specimen type:
   a) Bronchoalveolar Lavage (BAL)
   b) Cerebrospinal Fluid (CSF)
   c) Pericardial Fluid
   d) Peritoneal Fluid
   e) Pleural Fluid
   f) Synovial Fluid
   g) Washing

3. Obtain and begin documentation on the Fluid Specimen Checklist (Attachment A).

4. Look up the patient's orders in Chart Review – Labs tab:
   a) Open Specimen Inquiry by patient.
   b) Click on Chart Review tab
   c) Click on Labs tab within Chart Review window

5. Determine if a cytology order has been placed in Labs tab of Chart Review. Look for: Non-Gynecologic Cytology. If a cytology requisition is not in the sample bag, print a requisition from Beaker:

   a) Click on the Non-Gynecologic Cytology order. In the side pane, scroll to the section "Reprint Order Requisition."
   b) Click the blue hyperlink to the requisition.



   c) Click the printer icon in the window to print the requisition.

6. Verify which clinical lab body fluid orders are associated with the specimen.
   a) If the same test is ordered multiple times, click on the order and scroll to the Comment section. Determine if the order is entered for your current specimen, or if it is for a different fluid specimen type or source.
   b) Review all Miscellaneous Reference Test orders for tests on the body fluid.

c) Document on the Fluid Specimen Checklist which orders are present for the fluid.

7. Collect orders in Order Inquiry if not already accessioned, or scan Beaker labels to receive orders. Receive chemistry, hematology, and sendouts orders.

8. Add a Lab Comment to received samples:
a) If cytology orders were placed, enter “Sample sent to Cytology” comment using smart phrase “.cpcyto”
b) If there are no cytology orders, enter “No Cytology Order” comment using smart phrase “.nocyto”

8. Place all labels in bag with specimen(s).

B. Specimen Aliquoting and Distribution

1. For specimens that require aliquoting, label the appropriate aliquot tube. Verify identifiers match on specimen and aliquot. Initial each aliquot label. Perform aliquoting in the biosafety cabinet using sterile pipets.

2. Chemistry tests: aliquot into plain chemistry tube, minimum volume 0.5 mL.

3. Hematology tests: aliquot into plain chemistry tube, minimum volume 0.5 mL.

4. Sendout tests: aliquot into tubes provided by sendouts bench. Minimum volumes are listed in Attachment D.
a) See Section C: Freeze and Hold Specimens for handling of Freeze and Hold orders.

5. Microbiology tests: deliver labels with sample in the original container once other aliquots have been poured off.

6. Cytology tests: Original container preferred. Urine cup may also be used. A minimum volume of 0.5mL but prefer as much as possible. Keep requisition and cytology label with the sample.
a) Place specimens in the room temperature Cytology bin, or after hours, in the Cytology bin in the Spin refrigerator.

7. If there is insufficient volume for all tests ordered, contact the ordering provider for priority of testing. Document on the Fluid Specimen Checklist the order of testing and provider who authorized it.

8. Retain any unused fluid sample in the spin refrigerator extra rack or hold bin.

9. Deliver labeled aliquots or samples to the testing areas. Document time delivered on the Fluid Specimen Checklist.

10. Sendouts will write “SO” on the tube and deliver to the Spin bench if the sample requires centrifugation.

C. Freeze and Hold Specimens

1. Samples ordered for Freeze and Hold will arrive in the lab as a Miscellaneous Reference Test with the order comment to Freeze and Hold remaining sample.

2. Receive/scan in the Miscellaneous Reference Test accession.

3. If enough fluid remains after aliquoting all tests, aliquot additional sample for the Freeze and Hold in a plain chemistry tube. Fill tube roughly halfway full to allow fluid to expand when frozen. Verify identifiers and initial the aliquot label.

4. Place labeled aliquot tube in the Sendouts rack. Sendouts will answer the Miscellaneous Reference Test and order a Sterile Container Hold. Sendouts will write “freeze and hold” on the Sterile Container Hold label and place the sample in accessioning.

5. Open Container Storage in Beaker. Open the current Fluid Rack (listed on the dry erase board in accessioning):
   a) WIN CP Fluid 1
   b) WIN CP Fluid 2
   c) WIN CP Fluid 3

6. Select the next available slot in the rack. Scan the Sterile Container Hold label that came from Sendouts. Write the Rack and slot number on the tube. Click the “X” button on Container Storage to exit.

7. Take the sample to the freezer and physically store the sample in the slot listed on the tube.

D. Locating Fluid Specimens for Add-Ons

1. Receive a call or inquiry about a fluid.

2. Open Specimen Inquiry by Patient for the patient in question.

3. Determine the date the fluid was sent. Check for fluid testing performed on that date.

4. If a Sterile Container Hold was created, click on that accession to determine if it is stored in a freezer rack (as a Freeze and Hold).

5. Locations to look for the fluid sample:
   a) Walk-in refrigerator or Spin refrigerator in that date’s extra rack
   b) Micro refrigerator
   c) Hematology (if a cell count was done)
   d) Cytology

LITERATURE REFERENCES

None

RELATED PROCEDURES/POLICIES IN NAVEX

None

ATTACHMENTS/LINKED DOCUMENTS IN TITLE 21

Attachment A: Fluid Specimen Checklist
Attachment B: Labeling of Cerebrospinal Fluid
Attachment C: Handling Vitreous Fluids
Attachment D: Fluid Specimen Test Reference

REVISION DATES: REVIEW CHANGE SUMMARY AS REPRESENTED IN TITLE 21.

Name/MRN: _____

(Or place small taglet)

Fluid Type: _____

Date/Time Received in Central Processing: _____

Check orders in Beaker: _____(Initial)

Tests are present for which labs?

_____Cytology *(designate in computer with either cyto sent/not sent)*

_____Microbiology _____Chemistry

_____Hematology _____ Flow

_____ Send outs _____ Misc Freeze/Hold

Is there enough to aliquot? _____ Yes _____ No

YES – aliquot, label, initial, deliver to sections.

NO - (not enough to aliquot)

1. Call physician _____(name)
2. List priority of testing:

3. Pass the priority to the section(s). (make a copy of this form for the section)

   Note: Micro usually needs the sample first before other testing is done.
   Print, receive labels for other areas. Notify areas that tests may need to be cancelled.

Date/Time Delivered To:

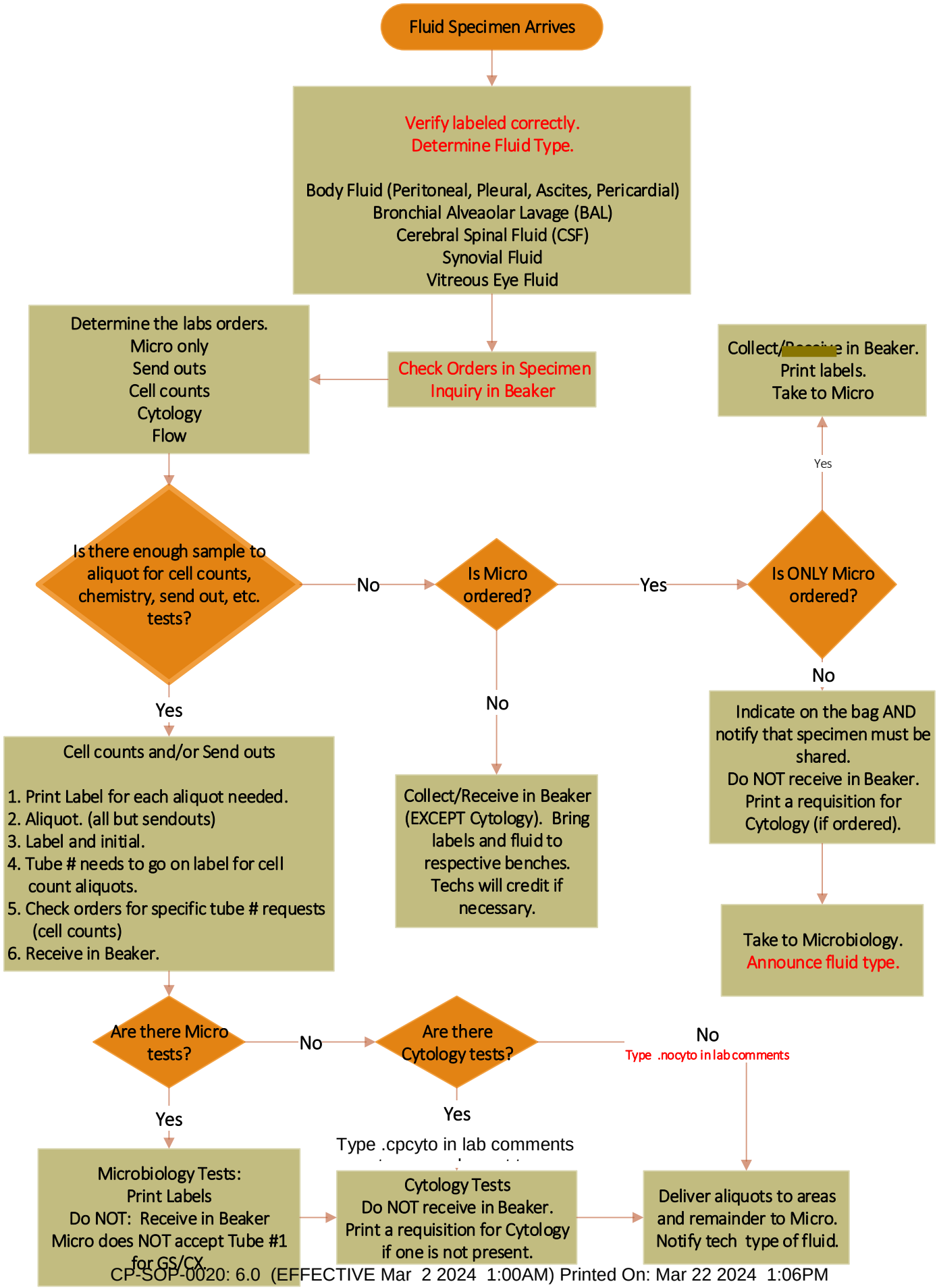
Micro _____ (NOTIFY Tech type of fluid)

Cytology (circle one: RT or Fridge) _____
RT = Room Temperature bin

Chemistry (Spin) _____

Hematology _____

Sendouts_____


Fluid Specimen Arrives
Verify labeled correctly.
Determine Fluid Type.
Body Fluid (Peritoneal, Pleural, Ascites, Pericardial)
Bronchial Alveaolar Lavage (BAL)
Cerebral Spinal Fluid (CSF)
Synovial Fluid
Vitreous Eye Fluid
Check Orders in Specimen Inquiry in Beaker
Determine the labs orders.
Micro only
Send outs
Cell counts
Cytology
Flow
Collect/Receive in Beaker.
Print labels.
Take to Micro
Yes
Is there enough sample to aliquot for cell counts, chemistry, send out, etc. tests?
No
Is Micro ordered?
Yes
Is ONLY Micro ordered?
No
Yes
Cell counts and/or Send outs
1. Print Label for each aliquot needed.
2. Aliquot. (all but sendouts)
3. Label and initial.
4. Tube # needs to go on label for cell count aliquots.
5. Check orders for specific tube # requests (cell counts)
6. Receive in Beaker.
No
Collect/Receive in Beaker (EXCEPT Cytology). Bring labels and fluid to respective benches. Techs will credit if necessary.
Indicate on the bag AND notify that specimen must be shared.
Do NOT receive in Beaker.
Print a requisition for Cytology (if ordered).
Take to Microbiology.
Announce fluid type.
Are there Micro tests?
No
Are there Cytology tests?
No
Type .nocyto in lab comments
Yes
Yes
Type .cpcyto in lab comments
Microbiology Tests:
Print Labels
Do NOT: Receive in Beaker
Micro does NOT accept Tube #1 for GS/CX
Cytology Tests
Do NOT receive in Beaker.
Print a requisition for Cytology if one is not present.
Deliver aliquots to areas and remainder to Micro.
Notify tech type of fluid.

1. CSF Tests will automatically be assigned to the tube number at collection.
    a. The default testing for each tube is:
        - 1- Chemistry
        - 2-Microbiology, Serology, PCR
        - 3-Hematology
        - 4-Sendouts
        - If the collector answers “Was spinal tap traumatic?” with Yes – a second Cell Count will be automatically generated. It will route to Tube 1.
2. If you receive fewer than 4 tubes of CSF, you can change the CSF Tube Number in Receiving under Container Type.

Attachment C: Handling Vitreous Fluids

1. Vitreous fluid usually arrives in a small syringe with very small quantity.

2. There may also be a vitreous wash in a large bag, but those are not always accompanied.

3. Check any additional labels that were sent.
   3.1 Look at the orders in the computer to see if anything was not already printed out or collected.
   3.2 Identify what to collect because the sample type will say “Vitreous Fluid”.
   NOTE: There are not Vitreous specific orders like there are with CSF, Synovial, and BAL.
   3.3 If there are lots of orders and an obvious lack of sample, call the provider for the priority of testing.

4. There are usually Micro and Send Out orders, with the occasional Cell Count.
   4.1 If there are tests that need to be poured off (Cell Count or Chemistry), take into account the volume received to determine if need to give the sample to Micro first.

5. If there are no Cell Count or Chemistry orders, give the sample to Micro to pour off what they need. Make sure labels are present for any additional send out orders.
   5.1 Micro will give it to Send Outs after they remove their sample. Send Out labels must be in the bag or If unable to obtain label write “Share Micro and Send Outs”.

Test Name	LAB Code	Lab Section	Min Volume
Cell Count, Body Fluid BAL, CSF, Pericardial, Peritoneal, Pleural, Synovial, Washing	LAB5141	Hematology	1 mL
AH Crystals, Synovial Fluid	LAB213	Hematology	1 mL
AH Flow Cytometry	LAB7218	Flow Cytometry	
Non-Gynecologic Cytology	LAB6005	Cytology	
AH Glucose, CSF	LAB185	Chemistry	0.5 mL
AH Total Protein, CSF	LAB195	Chemistry	0.5 mL
AH Lactic Acid, CSF	LAB187	Chemistry	0.5 mL
Albumin, Body Fluid Peritoneal, Pleural, Drainage, Pericardial	LAB177	Chemistry	1 mL
Amylase, Body Fluid Peritoneal, Drainage, Lavage, Pancreatic Cyst, Pleural	LAB178	Chemistry	1 mL
Bilirubin, Total, Body Fluid Peritoneal, Drainage	LAB5092	Chemistry	1 mL
Creatinine, Body Fluid Peritoneal, Drainage, Pleural	LAB5091	Chemistry	1 mL
Glucose, Body Fluid Pleural, Pericardial, Peritoneal, Dialysate, Drainage, Pancreatic Cyst	LAB186	Chemistry	1 mL
LDH, Body Fluid Peritoneal, Pericardial, Pleural, Drainage	LAB188	Chemistry	1 mL
Lipase, Body Fluid Peritoneal, Pleural, Drainage	LAB2329	Chemistry	1 mL
Total Protein, Body Fluid Pericardial, Pleural, Peritoneal, Drainage	LAB196	Chemistry	0.5 mL
Triglycerides, Body Fluid Pericardial, Peritoneal, Drainage, Pleural	LAB200	Chemistry	1 mL
HSV 1 and 2 PCR	LAB7039	Microbiology	0.5 mL
Adenovirus Qualitative PCR	LAB7041	Microbiology	0.5 mL
Meningitis-Encephalitis (ME) Panel, CSF	LAB6318	Microbiology	
AH Pneumocystis DFA Stain	LAB5593	Microbiology	0.1 mL
CMV PCR (Qualitative)	LAB7086	Microbiology	
Multiple Sclerosis Profile (Requires Red Top Serum+CSF)	LAB5770	Sendouts	0.6 mL
NMO-IgG, CSF	LAB5259	Sendouts	0.5 mL
Angiotensin Converting Enzyme (ACE), CSF	LAB123231	Sendouts	0.2 mL
VDRL CSF	LAB207	Sendouts	0.5 mL
Miscellaneous Reference Test – Review all orders for testing on CSF	LAB000	Sendouts	
Aspergillus Antigen, BAL	LAB5464	Sendouts	0.7 mL
Legionella DNA PCR, Qual	LAB5693	Sendouts	1 mL