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| Document Contact | Tanya Williams: Medical Technologist Lead |
| Area | Laboratory-Chemistry |
| Applicability | Taylor + Trenton + Wayne |

# Pleural Fluid pH



Document Type: Procedure

# I. PURPOSE AND OBJECTIVE:

Pleural fluids may be collected and sent to the clinical laboratory for diagnostic testing. Tests are ordered for four general purposes, 1) to differentiate exudate from transudate, 2) identify infection or malignancy in exudates, 3) to diagnose the underlying cause of fluid accumulation and disease process, and 4) to distinguish urine from serous effusion. Pleural fluids are generally classified as either exudate or transudate. This test is not performed at Beaumont Canton.

# II. DEFINITIONS:

A. **Exudate**-a fluid with a high content of protein and cellular debris which has escaped from blood vessels and has been deposited in tissues or on tissue surfaces, usually a result of inflammation. Most exudates show some degree of cloudiness or turbidity and often clot if not heparinized.

B. **Transudate**-a fluid substance that has passed through a membrane or has been extruded from a tissue. It is characterized as having high fluidity and having a low content of protein, cells, and other solid materials derived from cells. Transudates are typically clear, pale yellow, or straw colored.

# III. SPECIMEN COLLECTION AND HANDLING:

A. The physician will collect the specimen in a heparinized syringe and will send it to the laboratory on ice along with documentation of the type of fluid collected and the tests ordered. pH testing is performed on pleural fluid only.

B. Specimen Stability:

1. pH - Specimens should be analyzed as soon as they are received in the laboratory. Fluid pH is stable for 1 hour when received on ice. Specimens not received on ice will still be assayed and the following smartphrase comment **".noiceph" (Specimen not sent on ice. Result may deviate from the true value by as much as +/- 0.03. Please interpret with caution in clinical context.)** will be attached to the result.
2. All other chemistry tests are stable for 7 days at 2-8 C and will be sent to Beaumont Dearborn Laboratory for testing.

C. Specimen types:

1. Heparinized Syringe is the only acceptable specimen for pleural pH.

D. Rejection Criteria:

1. Reject any container other than a heparinized syringe.
2. Reject any syringe with air bubbles. All air bubbles must be immediately expelled at the time of collection.

# IV. REAGENTS:

A. Refer to Radiometer ABL 800 Series Operator procedure.

# V. EQUIPMENT:

A. Radiometer ABL800 Flex Series Blood Gas Analyzer

# VI. CALIBRATION:

A. Calibrations will be performed as established by the ABL Radiometer 800 Series Maintenance Procedure.

# VII. QUALITY CONTROL:

A. Quality control material is performed as established by he ABL Radiometer 800 Series Maintenance Procedure.

# VIII. PROCEDURE:

A. Pleural fluid pH is performed on the Radiometer ABL800 Flex Series Blood Gas Analyzer according to the Radiometer ABL 800 Series Operator Procedure.

B. The result is reported out along with the comment:
**Pleural fluid pH <7.20 may indicate a complicated parapneumonic effusion where drainage may be necessary. Reference ranges and other method performance specifications have not been established for pH measurements in other body fluid types. The test result must be integrated into the clinical context for interpretation.**

C. If the specimen is not received on ice, attach the smartphrase comment **".noiceph" (Specimen not sent on ice. Result may deviate from the true value by as much as +/- 0.03. Please**

**interpret with caution in clinical context)** to the results.

# IX. EXPECTED VALUES:

A. Pleural fluid pH:
    1. >7.2 suggests uncomplicated parapneumonic effusion
    2. <7.2 suggests complicated parapneumonic effusion

# X. REPORTABLE RANGE:

A. Pleural fluid pH:  7.0 to 7.5
B. If the pleural pH result is <7.0 or >7.5 then report out as <7.0 or >7.5.

# XI. REFERENCES:


A. Medical Dictionary." TheFreeDictionary.com. N.p., 2019. Web. <medical-dictionary.thefreedictionary.com/>.
B. Henry, J, et al. Clinical Diagnosis and Management By Laboratory Methods. Philadelphia Pennsylvania, Elsevier, 2001.
C. Rifai, Nader, et al. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. St. Louis, Missouri, Elsevier, 2018.




## Approval Signatures

| Step Description | Approver | Date |
|---|---|---|
| Medical Director | Muhammad Arshad: Chief, Pathology | 5/7/2024 |
| Policy and Forms Steering Committee Approval (if needed) | Tanya Williams: Medical Technologist Lead | 4/26/2024 |
| | Christopher Ferguson: Dir, Lab Operations B | 4/26/2024 |
| | Kristen DiCicco: Mgr, Laboratory | 4/26/2024 |
| | Ashley Beesley: Mgr, Laboratory | 4/25/2024 |
| | Katherine Persinger: Mgr, Laboratory | 4/24/2024 |

## Applicability

Taylor, Trenton, Wayne