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Area	Laboratory-Point of Care
Applicability	Dearborn, Farmington Hills, Trenton, Troy, Wayne

Point of Care Fern Test

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

A. To describe how to perform fern testing for non-laboratory personnel designated as a provider (Doctor, Mid-Level Provider/Advanced Practice Provider, Resident).

B. This document is only applicable to areas that are approved for testing under one of the laboratory's Clinical Laboratory Improvement Amendments (CLIA) certificates.

II. PRINCIPLE AND CLINICAL SIGNIFICANCE:

A. The fern test is used to evaluate the pregnant patient for the presence of amniotic fluid in vaginal secretions to detect preterm premature rupture of membranes and/or the onset of labor.

B. Fern test refers to detection of a characteristic fern-like pattern in vaginal secretions when a specimen is allowed to dry on a glass slide and is viewed under a low-power microscope. Ferning occurs due to the presence of sodium chloride in vaginal secretions. The fern-like patterns are due to the crystallization of the sodium chloride on mucus fibers.

C. The provider can rely on a combination of patient history, vaginal fluid pH of 6.5 or greater, and a positive fern (crystallization) test in deciding whether the amniotic sac has ruptured.

III. SPECIMEN COLLECTION AND HANDLING:

Always follow established procedures for Standard Precautions/Hand Hygiene when collecting and handling a specimen. Hands must be washed or disinfected with antiseptic soap or an alcohol-based hand rub as outlined in the Laboratory Infection Control policy before and after gloves are used. Gloves must be worn when performing patient testing and changed between patients.

A. Patient Preparation

1. Obtain the patient's history to verify that the specimen will not be contaminated with soap, semen, or lubricants.

B. Patient Identification

1. Patients must be identified at the bedside using two identifiers (Joint Commission).

C. Specimen/Slide Labeling
    1. If the specimen is taken to another location for patient testing, the swab/pipette may be placed in a conical tube for transit to the microscope and must be labeled with patient name and identification (ID) number (Joint Commission). If the slide is prepared at the bedside, it must be labeled with the patient name and ID number prior to transport to the microscope.

D. Specimen Collection, Handling, Disposal
    1. Verify that the specimen collection supplies are not expired.
    2. Position the patient in the dorsal lithotomy position.
    3. Place the sterile speculum into the vaginal vault.
        a. Do not use lubricants or antiseptics.
    4. Obtain a sample of vaginal secretions from the posterior vaginal pool using a sterile swab or pipette.
        a. Do not touch the mucus plug.
    5. Place the fluid on a glass microscope slide, labeled with the patient's name and ID.
    6. Spread the specimen evenly so that a thin smear is formed. Maintain at room temperature.
        a. Do not use a coverslip.
    7. Discard the pipette in a biohazard container. Discard the swab in a puncture-resistant biohazard container.

E. Specimen Acceptability Criteria
    1. Vaginal pool that was collected without lubricants or antiseptics

F. Specimen Rejection Criteria
    1. Specimens contaminated with blood, soap, or recent intercourse

IV. EQUIPMENT/SUPPLIES:

A. Bright Field Microscope
B. Sterile Vaginal Speculum
C. Sterile Swab or Pipette
D. Glass Microscope Slide
E. Gloves
F. Conical Tube (Optional-For Specimen Transport)

V. MAINTENANCE:

A. Microscope preventative maintenance is performed by an outside vendor on an annual basis. A copy of the record of maintenance is stored in the site-specific laboratory.
B. POC personnel will round on a quarterly basis to confirm that the microscope is clean.
    1. The microscope should be kept clean and covered when not in use.
    2. The 10X and 40X objectives must be free of oil.
    3. If the microscope housing, objectives, lenses, condenser, stage, etc. are dirty, staff should clean with a lint-free cloth dampened with water.

C. The annual professional preventative maintenance, inspection by POC staff, and cleaning, if needed, will be documented on the Fern Test and Wet Mount Microscope Cleaning and Maintenance Log.

VI. QUALITY CONTROL (QC):

A. No QC is required for this procedure.

VII. PROCEDURE:

A. Allow the slide to air-dry for 5 minutes.
    1. Do not apply heat to the slide.
    2. Do not wave or blow air on the slide.
    3. Do not use a coverslip.

B. Verify the slide is completely dry before microscopic examination. Upon visually inspecting the slide, residue will be seen from the dry specimen. Confirm the dried specimen is visible on the slide prior to viewing to verify that the slide has been adequately prepared.

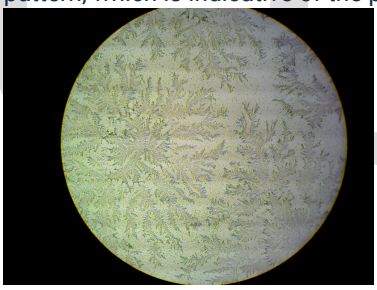
C. Examine the slide under 10X and/or 40X magnification. Examine all fields thoroughly.

D. Look for fern-like crystals. Ferning will be easily seen in most fields if the test is positive.

E. Discard the slide into a puncture-resistant biohazard container.

VIII. INTERPRETATION OF RESULTS:

A. Amniotic fluid will form a tree-like or fern-like pattern when air-dried. A positive fern test exhibits this pattern, which is indicative of the presence of amniotic fluid, and therefore, rupture of fetal membranes.



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B. A negative result is reported when no fern pattern is observed on the slide.

IX. RESULT REPORTING:

A. Record the results in the patient's chart along with the date and time of testing and the performing provider.

X. REPORTABLE RANGE:

A. Negative or Positive

XI. EXPECTED RESULTS:

A. Negative

B. Any results exhibiting inconsistency with the patient’s clinical status should be repeated or supplemented with additional testing and diagnostic procedures such as vaginal pH testing.

XII. CRITICAL VALUES:

A. None

XIII. SYSTEM DOWNTIME:

A. Document results on the Point of Care Downtime Result Log found in the Point of Care Downtime Result Recording, Reporting and Recovery procedure.

B. When Epic becomes available, enter the results in the Epic chart notes.

XIV. LIMITATIONS AND INTERFERING SUBSTANCES:

A. A positive fern test should be used in conjunction with the patient's history and vaginal pH result when deciding whether fetal membrane rupture has occurred.

B. False positive results may occur in the presence of blood, soaps, infection, recent intercourse, or contamination with large amounts of cervical mucus.

C. "Ferning" is not specific for amniotic fluid. Other substances (e.g. blood) can demonstrate microscopic crystallization in a fern pattern when dried. Specimens contaminated with blood at a dilution of less than 1:1 and meconium do not interfere with this test.

D. Cellular debris and blood may obstruct crystallization of amniotic fluid; therefore, causing a false negative result.

E. "Prolonged rupture of membranes (greater than 24 hours) or slow, minimal amniotic fluid leakage can yield false negative results." (SFGH reference)

XV. REFERENCES:

A. Point of Care Testing Approval Process

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E. Chuanyi, Mark Lu MD, McPhee, Stephen MD, Pocket Guide to Diagnostic Tests. Chapter 2. McGraw Hill Professional, New York. 2012.

F. Cunningham F, & Leveno K.J., & Bloom S.L., & Dashe J.S., & Hoffman B.L., & Casey B.M., & Spong C.Y.(Eds.), Normal Labor.(2018). Williams Obstetrics, 25e. McGraw-Hill. https://accessmedicine-mhmedical-com.beaumont1.proxy.liblynxgateway.com/content.aspx?bookid=1918&sectionid=185050991

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Attachments

Fern Test and Wet Mount Microscope Maintenance Log.pdf

Fern Test Training and Competency Assessment.pdf

Fern Test Training Guide.pdf

Approval Signatures

Step Description	Approver	Date
CLIA Medical Director	Ryan Johnson: OUWB Clinical Faculty	2/9/2024
CLIA Medical Director	Muhammad Arshad: Chief, Pathology	2/6/2024
CLIA Medical Director	Vaishali Pansare: Chief, Pathology	2/6/2024
CLIA Medical Director	Jeremy Powers: Chief, Pathology	2/1/2024
Policy and Forms Steering Committee Approval (if needed)	Jessica Czinder: Mgr, Division Laboratory	2/1/2024
	Caitlin Schein: Staff Physician	1/31/2024
	Nga Yeung Tang: Tech Dir, Clin Chemistry, Path	1/29/2024
POC Best Practices	Jessica Czinder: Mgr, Division Laboratory	1/29/2024
	Jessica Czinder: Mgr, Division Laboratory	1/29/2024

Applicability

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