

**University of California, San Francisco – Department of Laboratory Medicine
San Francisco General Hospital
1001 Potrero Avenue, San Francisco CA 94110
Clinical Laboratory – Eberhard Fiebig, M.D., Director**

Clinical Laboratory: Point of Care Testing
Microbiology/
Serology Section

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Prepared by: Patricia Nassos, PhD, MT
Serology Supervisor

Clayton Hooper, RN
POCT Coordinator

Approved by: _____
Phillip Darney, MD
Chief, OB-GYN Service

Barbara Haller, MD, PhD
Division Chief,
Microbiology

Eberhard Fiebig, MD
Director,
Clinical Laboratory

**Vaginal pH Test
(pH Hydrion™ Paper 4.5-7.5)**

PURPOSE / CLINICAL USAGE

Determination of vaginal pH as an aid in

- 1) detection of ruptured amniotic membranes in pregnant women
- 2) detection of bacterial vaginosis and trichomonas infection

PRINCIPLE

The pH of the upper vagina is normally acidic (pH 3.8-4.5). Leakage of amniotic fluid (normal pH pH 7.0-7.5) raises the pH in vaginal fluid to >4.5. Similarly, bacterial overgrowth, as occurs in bacterial vaginosis and trichomonas, may increase vaginal pH to >4.5. Vaginal yeast infections do not change the pH of the vagina.

The pH paper is impregnated with the indicator dye nitrazine (phenolphthalein). The color of the paper changes from bright yellow at pH 4.5 and lower to dark blue at pH 7.0 and higher. Changes in color shades occur with pH increments of 0.5 from pH 4.5 to 7.5. The pH of vaginal fluid is determined by comparing the color of pH paper that has come in contact with a fluid sample to a standard color chart provided with each roll of pH paper.

TESTING PERSONNEL

- Qualified Physicians
- Qualified Nurse Practitioners, Physician Assistants, Midwives
- Qualified Registered Nurses

REAGENTS, EQUIPMENT AND MATERIALS

- pH Paper roll (Hydriion pH 4.5-7.5 or equivalent) in dispensers
- pH Color Card included with the paper dispenser
- Sterile Gloves

REAGENT STORAGE

- pH paper must be stored in its container at room temperature.
- Avoid exposure to excessive heat, direct sun light and moisture

QUALITY CONTROL

The Clinical Laboratory (Microbiology Division, 2M33) will complete all quality control of pH paper. Performance of new batches will be verified against certified buffers prior to release to POCT sites. Verified papers will be labeled with a sticker on the dispenser and given an expiration date of up to 13 months, ie, the last day of the month one calendar year from the month when QC was performed.

SPECIMEN

The paper may be applied directly to pooled vaginal fluid or to a vaginal fluid sample on a cotton swab. Specimen labeling is not required when testing is performed in the presence of the patient and only the sample from one patient is tested at a time.

PROCEDURE

- Using two patient identifiers, verify patient identification, and explain procedure to the patient and/or family.
- Observe universal precautions; wear gloves and other personal protective equipment as appropriate.
- Remove one to two inches of pH paper from the dispenser for each test. DO NOT allow it to come into contact with any liquid or other substance, which might affect pH.
- Insert a vaginal speculum and obtain a sample of vaginal discharge or fluid from the back of the vagina using a cotton tipped swab.
- Smear the fluid from the swab on the pH paper.
- Observe for immediate color change by comparing to the color chart on the dispenser.
- Record the pH value, corresponding to the color change, in the patient's chart. A pH >4.5 may indicate ruptured amniotic membranes, bacterial vaginosis or trichomonas. Note that semen and urine may also raise the pH to above 4.5.

PROCEDURE NOTES:

- Only use pH paper 4.5-7.5 from a dispenser labeled "Expir. Date MM/DD/YY"
- Do not use pH paper past the expiration date on the dispenser label
- Do not use pH paper that is colored blue BEFORE coming into contact with vaginal fluid (see note below)
- Following contact with the vaginal fluid, pH paper should be considered potentially infectious and discarded observing standard precautions for microbiological hazards.
- Do not reuse pH paper

Note: Color variation from tan to light olive green of the base paper will not interfere with accurate pH readings, ie, the paper may have a tan or light olive green color BEFORE it comes into contact with the sample, but will change color accurately according to the color chart when brought in contact with the fluid sample.

LIMITATIONS

- pH paper, used for semi-quantitative measurement of vaginal pH is intended for use by qualified medical and nursing staff only as an aid to professional diagnosis and treatment
- Antibiotic therapy or infections of the vagina can lead to elevated vaginal pH which could be interpreted falsely as the presence of amniotic fluid. Where doubt exists, standard microbiological testing should be employed to exclude infection.

- pH testing cannot distinguish amniotic fluid from urine. In instances where there is the possibility of urine contamination and/or where the patient has received antibiotic therapy, “fern” testing may be of value to verify the presence of amniotic fluid.
- False-positive reactions (elevated vaginal pH) may also occur due to alkalization of the vagina by blood, semen, soap and antiseptic solutions.
- False-negative reactions in the detection of premature rupture of membranes may occur due to decreased efflux of amniotic fluid as the time between membrane rupture and testing increases.

RESULT REPORTING

- Record the numeric pH value in the patient’s medical record

CONFIRMATORY TESTING

- pH testing of vaginal fluid is not intended as a stand-alone test for the conditions listed. At the discretion of the provider, per departmental policies or standardized procedures additional tests or procedures should be performed routinely or when pH testing yields unexpected or discrepant results.

REFERENCES

1. Simoes JA, Discacciati MG, Brolazo EM, Portugal PM, Dini DV, Dantas MCM. Clinical diagnosis of bacterial vaginosis. *Intl J Gynecol Obstet* 2006;94:28-32.
2. Davidson, KM. Detection of premature rupture of the membranes. *Clin Obstet Gynecol* 1991;34(4):715-722.

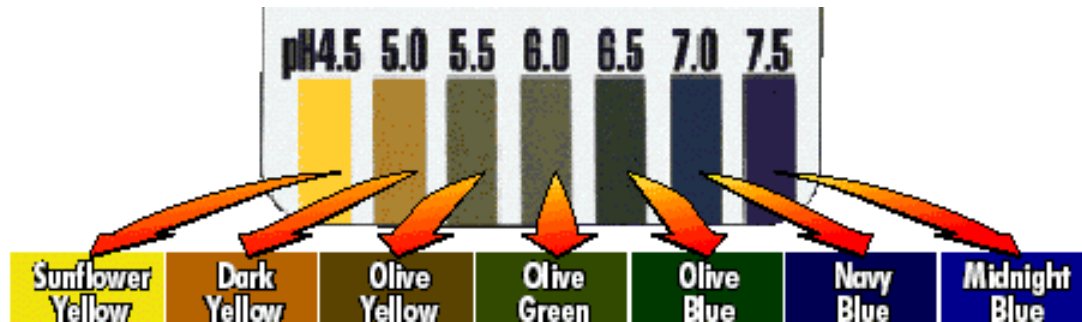
DISTRIBUTION

1. Point of Care Master Procedure Book (2M14)
2. Approved Point of Care Testing Locations

SIGNED: Philip Darney, MD, Chief, Ob-Gyn Svc; Barbara Haller, MD, PhD, Div Chief, Microbiology; Eberhard Fiebig, MD, Director, Clinical Laboratory

Appendix I

Color Chart, pH Paper 4.5 – 7.5



www.healthtreasures.com

Normal vaginal pH: 3.8-4.5

Amniotic Fluid pH: 7.0-7.5

Ruptured Amniotic Membranes: pH > 4.5

Bacterial Vaginosis: pH >4.5