

Guthrie Medical Group
POLICY & PROCEDURE

SECTION: Department	SUBJECT: PPM Procedure – Microscope Use	DEPT. Point-of-Care Testing Regional Labs
EFFECTIVE: 7/27/2016		POLICY# GMG-700-2018
SUPERCEDES: 3/04		PAGE # 1 of 4
DISTRIBUTION: PPM permitted offices		

I. INTENDED USE:

Provider-performed microscopy (PPM) is a testing modality that requires the use of a microscope and is performed by physicians and/or nonphysician practitioners during the patient's visit. Microscopic observation of clinical specimens allows for rapid detection of the presence of bacterial, fungal and parasitic organisms.

The formed elements suspended in the urine are precipitated by centrifugation and analyzed under the microscope. Cellular elements and casts often give valuable information as to the pathology of urinary tract disease and the detection of metabolic or systemic diseases not directly related to the kidney.

Examination of vaginal secretions, skin, hair and nails with a 10% KOH (Potassium Hydroxide) is utilized as an aid in diagnosis and classification of various yeast and fungal infections. As a strong alkali, 10% KOH digests the keratin surrounding the fungi so that the hyphae and spores can be seen.

Wet mount preparations are used to detect the presence of bacterial, fungal or parasitic organisms and other cellular elements indicative of pathological conditions (i.e. clue cells and polymorphonuclear leukocytes).

Examination of vaginal secretions for the presence of amniotic fluid is known as the fern test. In conjunction with patient history and vaginal fluid pH, the fern test is used to determine if the amniotic sac had ruptured. Due to the protein and sodium chloride content, amniotic fluid crystallizes to form a fern pattern when allowed to air-dry on a microscope slide.

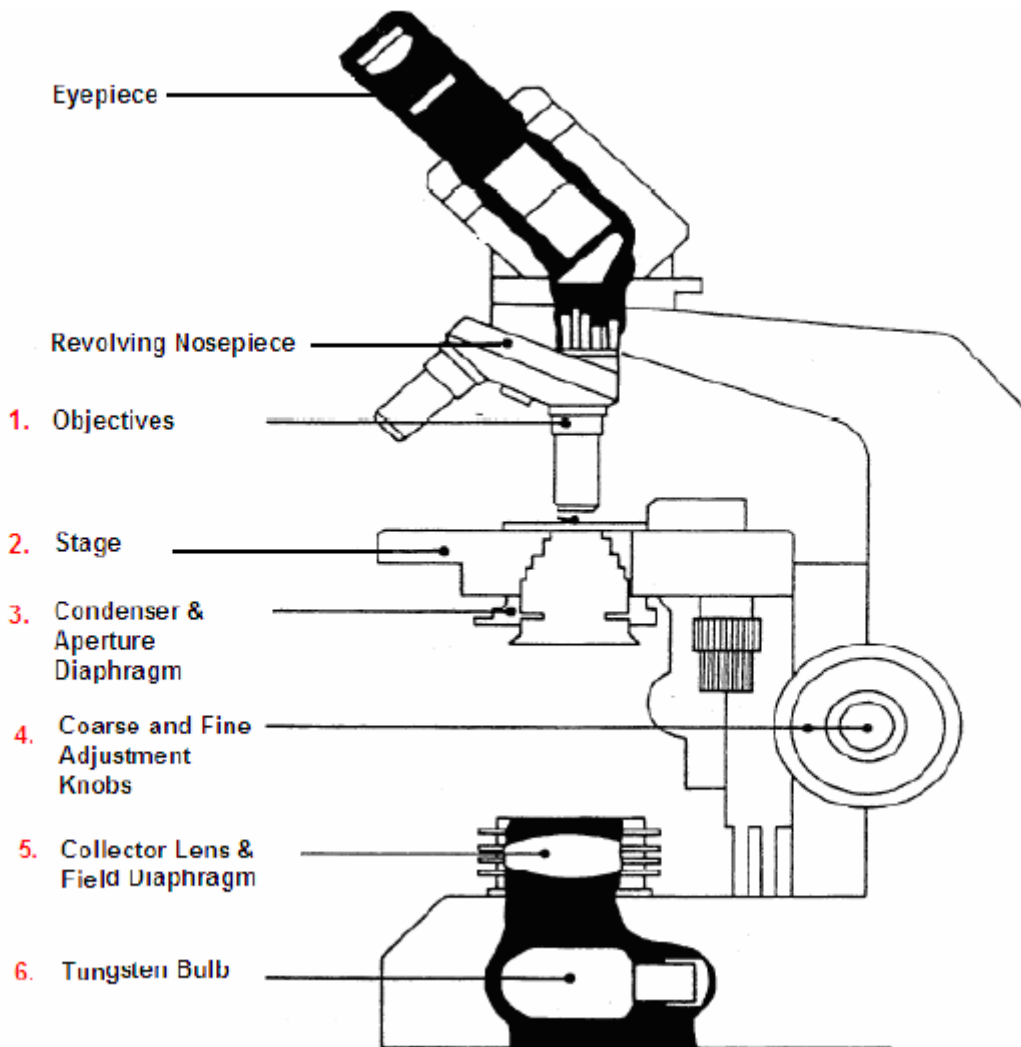
II. THE MICROSCOPE:

Achieving an accurate result with microscopic techniques requires an understanding of the operating characteristics and limitations of the equipment used. Therefore, it is recommended that the manufacturers' instructions are read prior to using the microscope.

A. Parts of the Microscope

1. Objective Lenses: Used to magnify the specimen a defined amount (i.e. 10X, 40X, 100)
2. Stage: Horizontal platform on which the specimen slide is placed
3. Condenser:
 1. Mounted under the stage to concentrate and focus light from the light bulb
 2. Raising and lowering the condenser adjusts the amount of contrast and resolution
 3. The condenser contains an aperture diaphragm, which can be opened or closed to control the amount of light striking the specimen

4. Coarse and Fine Adjustment Knobs: Used to bring the slide into focus by moving the stage toward or away from the objective lens. The coarse adjustment moved the stage in large increments and the fine adjustment causes subtle movement.
5. Collector Lens: Better microscopes have a field diaphragm on the collector lens. The adjustment of this diaphragm increases or decreases the circle of light in the viewing field.
6. Light Bulb: A built in light source that can be changed by the operator. The light intensity can be controlled with the dimmer.



B. How to use the Microscope

1. Place a properly labeled specimen slide (i.e. 2 patient identifiers) on the stage. (2)
2. Lower the condenser and turn the lamp on low. Open both the aperture diaphragm (3) and the field diaphragm (5).
3. With the 10X objective lens in place and while observing from the side of the slide and not through the eyepiece, use the coarse adjustment knob (4) to slowly raise the stage until the slide comes close to the objective.
4. Look through the eyepieces and use the coarse and/or fine adjustment until the image is sharpest.
5. Close the field diaphragm (5) almost completely and raise the condenser until the edges of the diaphragm are sharply focused (the condenser is usually at its highest position). Open the field diaphragm slowly, stopping just as it disappears from view.
6. Open and close the aperture diaphragm to optimize contrast. Contrast is increased by closing the aperture. If more light is needed, turn up the lamp.

The high (40X) objective:

7. Focus and center the specimen with the 10X objective, rotate the nosepiece slowly to bring the 40X objective into the light path.
8. Use the FINE adjustment knob to bring the specimen into focus.
9. Never raise the stage with the coarse adjustment knob when using the 40X lens. Doing so may cause the lens to hit the slide and break.

The oil immersion (100X) objective:

10. Focus and center the specimen with the 10X objective, followed by the 40X objective; lower the stage using the coarse adjustment, with the 40X objective in the light path.
11. Place a drop of immersion oil on the coverslip of the slide, directly over the light path and beneath the objective. Rotate the nosepiece until the 100X oil immersion objective comes in to the light path.
12. Look at the stage from the side and not through the eyepiece. Slowly raise the stage until the objective makes contact with the oil drop. Look through the eyepiece and use the fine adjustment knob to bring the specimen into focus.
13. When finished, lower the stage and rotate the nosepiece to the 10X objective to prevent from inadvertently touching the 40X objective. Clean the 100X objective with lens paper dampened with lens cleaner.

III. MAINTENANCE

Microscope maintenance is performed annually by contract with:

Hitech Instruments, Inc.
Microscope Service Division
925 Main Street Suite 200
Pennsburg, PA 18073
Tele: 215-679-3929

- Microscopes should be covered when not in use.
- Each day of use, wipe objective, eyepieces, and stage with lens paper.
- Keep area around microscope clean and free of dust.
- Turn off light source when not in use.
- Have service personnel thoroughly clean and inspect yearly.

IV. REFERENCES:

1. CLSI Physician and Nonphysician Provider-Performed Microscopy Testing: Approved Guideline-Second Edition POCT 10-A2 ; 2011
2. Wisconsin State Laboratory of Hygiene, Proficiency Test Photos, 2012
3. Bauer, John M.D. Clinical Laboratory Methods, 8th ed. C.V. Mosby Company, St. Louis, 1974: 50-60.
4. Todd, Sanford and Davidsohn, Clinical Diagnosis and Management by Laboratory Methods, 16th ed. W.B. Saunders Co. Philadelphia, 1985: 559-629
5. OnFocus, internet site, accessed 8/4/2014 <http://onfocus-laboratories.software.informer.com/>

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Key Contact: POCT Coordinator, Laboratory Medical Director

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*Original signed document is available in the Regional Laboratory Coordinator's Office