Malaria Smear Preparation Procedure	**Attachments** ☐ Yes ☒ No
Key words Plasmodium, paroxysmal fever, Malaria, Blood parasite, Trypanosomes, Microfilaria	**Number** **GHI-PC-CLINIC LAB-PROCEDURES-Malaria Smear v. 11-2019**
Category Provision of Care	**Effective Date** **See Electronic File**
Manual Clinic Laboratory Procedure Manual	**Last Review Date** **See Electronic File**
Issued By Clinic Laboratory – Regional Clinic Laboratory Supervisors	**Next Review Date** **See Electronic File**
Applicable Clinic Laboratory Staff	**Origination Date** **September 1985**
	Retired Date
Level of Complexity Not applicable	**Contact** Regional Clinic Laboratory Supervisors
Review Responsibility Regional Clinic Laboratory Supervisors	**Approved Date** See Electronic File
APPROVAL(S) Laboratory Medical Director	

PURPOSE/PRINCIPLE

The definitive diagnosis of malaria is based on the demonstration of the parasite in the blood. A thick film allows the examination of a larger amount of blood and is used as a screening procedure. A thin film is prepared for a quick diagnosis of high parasitemia and for speciation purposes.

Four species of the protozoan Plasmodium cause malaria: P. vivax, P. falciparum, P. malariae, and P. ovale. The two most common forms of malaria are caused by P. vivax and P. falciparum. The most life threatening form of malaria is caused by P. falciparum, which is the most common species in tropical Africa.

In cases where fever follows classical paroxysms of chills, the best time to prepare blood smears is shortly after a paroxysm, or about 10 hours later when enough young asexual parasites have matured to the trophozoite stage for speciation purposes.

POLICY

All slides, even those packaged as “precleaned” should be cleaned with alcohol before being used to make the thin and thick blood smears. This is done to ensure the removal of all dirt and grease that would prevent any parasites present from adhering to the slides.

Laboratory staff will follow the approved techniques outlined in this procedure.

Reagents/Materials

1. Glass Slides
    a. Use frosted slides and label using the small computer labels. Labels can be used on these slides as the microbiology lab does not use a stainer.
2. Applicator sticks
3. Alcohol

Specimen

5 thin smears and 5 thick smears

If a venipuncture is performed, prepare smears from a freshly drawn EDTA tube. If a fingerstick is used for blood collection make smears from an EDTA capiject or from the capillary (fingerstick) puncture. For best results, slides should be prepared within 1 hour of collection as the anticoagulant will begin to affect the morphology, staining, and adherence to the slides of Plasmodium parasites. Slides may be made up to 8 hours after collection with a comment indicating; *"Specimens with extended exposure to EDTA anticoagulants can result in altered parasite morphology, inaccurate % of parasitemia and poor slide quality."*

PROCEDURES

1. **THIN SMEAR PREPARATION**

   Prepare 5 thin smears as follows:

   a. Clean 5 slides using alcohol and dry.

   b. Label slides with small computer label.

   c. Make slides same as routine differentials.

   d. Dry smears quickly by fanning to preserve cell morphology.

2. **THICK SMEAR PREPARATION**

   Prepare 5 thick smears as follows:

   a. Clean 5 slides using alcohol and dry.

   b. Label slides with small computer label.

   c. Place 1-2 drops of blood on the slides.

   d. With an applicator stick, gently mix the drops and spread the blood to about the size of a dime or nickel.

   e. Allow the smears to air dry at room temperature for at least 1 hour in a dust-free area.

3. **Thick Smear Preparation-Scratch Method (Preferred method for thick smear)**

   Prepare 5 thick smears as follows:

   a. Clean 5 slides using alcohol and dry.

   b. Label slides with small computer label.

   c. Place 1-2 drops of blood on the slides.

   d. Using the edge of glass microscope slide, apply firm pressure to create small scratches in the underlying slide while spreading blood in to a circle about the size of a dime or nickel.

      The scratches allow for improved adherence of the blood film to the slide without affecting the smear morphology.

   e. Allow the smears to air dry at room temperature for at least 1 hour in a dust-free area.

   Note: Optimal thickness occurs when one is able to read newsprint through the blood. If the blood is too thick, or if any grease is on the slide, the blood will flake off during staining.

4. **REFERRAL OF SPECIMEN**

   Send at least 5 thin and 5 thick smears to Regions Hospital Laboratory. Send the EDTA tube or Capiject tube with the slides.

- **Evenings or Weekends –** Call a courier to deliver to Regions Hospital. Results must be available to the provider by the next day or within 24 hours.

PROCEDURE NOTES

None

REFERENCES

1. CDC Laboratory Update: Preparing and Staining Blood Films for the Diagnosis of Parasitic Infections.v CDC C78-36.
2. Campbell, C and Chin, W: Diagnosing and Monitoring Malaria. Diagnostic Medicine, May/June 1981. pp. 46-49.
3. Finegold, S. and Martin, W: Diagnostic Microbiology.

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COMPLIANCE

Failure to comply with this policy or the procedures may result in disciplinary action, up to and including termination.

ENDORSEMENT

Laboratory Administration