Preparation of Blood Smears

In order to reduce the number of unacceptable smears received, Marshfield Labs recommends the following procedure to be used in preparation of blood smears:

1. The glass slides must be scrupulously clean. Slides should not be left uncovered on top of the counter. Dirt and grease will ruin a smear. It is best to keep the slides covered and in a drawer until ready for use.

2. Using a microhematocrit tube or small pipet, place a drop of well mixed EDTA anticoagulated blood 3-4 mm in diameter near the frosted end of the slide or 1/4 inch from one end of an unfrosted slide.

3. Rest the spreader slide at a 25° angle on the slide to be made. Draw in carefully back to the drop of blood.

4. The drop should flow to the edges of the spreader slide approximately 1-2 mm in depth.

5. Keep the spreader slide at a 25° angle with light but firm pressure against the horizontal slide. Increasing the angle results in a thicker smear, whereas a smaller angle gives a thin smear.

6. Draw the spreader slide rapidly and smoothly over the entire length of the smear slide pulling a thin even film behind it. The smear should cover 1/2-3/4 of the slide and finish with a “feathered” edge.

7. Prepare a second slide.

8. Allow slides to dry on a flat surface.

9. Using a pencil, label slides with the owner’s and animal’s full name, date, and species. Do not use ink or stickers/labels to identify slide.

10. Place slides in a cardboard or plastic slide container. This protects the slides from scratches and moisture. A barcode label can be attached to the container.

11. Store slides at room temperature.

12. Do not refrigerate slides or package with formalin containers.

Common Causes of a Poor Blood Smear

- As soon as the drop of blood is placed on the glass slide, there should be no delay in the making of the smear. Any delay whatsoever, results in abnormal distribution of the white cells with many of the white cells accumulating at the thin edge of the smear. Rouleaux of the red cells and clumping of the platelets may also occur.

- Drop of blood too large or too small.

- Spreader slide pushed across the horizontal slide in a jerky manner.

- Failure to keep the entire edge of the spreader slide against the horizontal slide while making the smear.

- Failure in using appropriate angle for the spreader slide. As a rule of thumb, if your patient has a low hemoglobin, increase the angle of your spreader slide; if your patient has a high hemoglobin, then decrease the angle.

- Failure to push the spreader slide across complete horizontal slide.

- Exposure of slide to formalin interferes with stain quality of smear.