Criteria for Blood Smears

If a delay in test performance is anticipated, two well made slides are requested for CBCs, platelet counts, differentials, and RBC morphology evaluation. To assist your office in preparing the smears from the fresh blood in the needle tip, may we offer the following suggestions:

1.The frosted end slides are preferred. Two patient identifiers: Patient's name (full first and last), and either date of birth, social security number, or medical record number. Please print patient identification with the last name followed bt the first name and middle initial appearing at the bottom of the slide.

2. Place a small drop of blood from the needle directly above the frosted portion of the slide. Grasp a second slide by the side edges and pull back into the drop at an angle of 20°-30° depending on the thickness of the blood . Pause briefly to allow the drop of blood to spread nearly to the edges of the spreader slide. Then push straight ahead, allowing the blood behind the edge to completely "run out". Repeat for second smear.

3. This is basically the same method as the "thumb print" method; however, the angle of the spreader slide is decreased, and the push motion is slower. This will cause the area directly behind the "feather tip" to lengthen.

4. When frosted end slides are not available, print the patient's name with pencil in the thick portion of the smear after the blood has dried. If you would like additional information, call the lab and request the Hematology Department.

5. Slides must be made immediately after drawing to avoid clumping of platelets, which occurs very rapidly. Do not allow the drop to begin to dry!

6. Dry cotton should be used when removing the needle from the patient's arm. Alcohol from the cotton ball, as well as from the blood drawer's fingers, will "pickle" the RBCs, which destroys their normal morphology.

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Tips on Techniques and Handling of Blood Smears

1. Fresh blood from the needle tip is preferred, to avoid possible artifacts which can be caused by anticoagulants.

2. Slides must be grease and dust free. Fingerprints destroy cell morphology because of oils or moisture from the skin. Prepare slides away from vaporizers or other sources of humidity to avoid destruction of RBCs.

3. Slides must be made immediately after drawing to avoid clumping of platelets, which occurs very rapidly. Do not allow the drop to begin to dry!

4. Dry cotton should be used when removing the needle from the patient's arm. Alcohol from the cotton ball, as well as from the blood drawer's fingers, will "pickle" the RBCs, which destroys their normal morphology.

5. Discard the first drop of blood from the needle, since it may be contaminated with traces of alcohol or with endothelial cells from the patient's vein.

6. Handle the slides by the edges (before and after preparing smears), or by the frosted end.

7. Tilting the slides while still wet should be avoided or minimized, since it can induce false rouleaux formation.

8. Avoid having blood in front of spreader slide since this causes marked cellular distortion.

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9. The movement of the spreader slide must be smooth and firm to insure an even graduation from thick to thin. This preserves RBC morphology, leaves WBCs evenly distributed, and gives the technologist the choice of the best area for evaluation.

10. Placing the slides on the patient's requisition will not only give them a clean surface, but will assure proper labeling.

Sources of Errors and Artifacts

Oils

Slides, finger tips, counters.

Alcohol

Fingers, cotton, splatters.

Moisture

Fingers, counters, humidifiers, blowing by mouth, spills in transport, incomplete drying before packaging.

Contamination

Dust, cells from mouth, cells form skin, cells from inside vein.

Technique

Cells ahead of spreader slide, uneven spreading, delay in placing drops on slides after drawing, delay in preparing smear, drop of blood too large or too small, pushing too rapidly or too slowly.

Miscellaneous

Tilting slides, improper fixing or pre-stained slides.

Two well made unstained slides submitted to the laboratory provide the best diagnostic information.

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