

Blood Smear Preparation

Principle

The purpose of the blood smear is to demonstrate all cellular elements in the same proportions in which they exist in the blood. With the glass slide method, large, heavy cells will be concentrated at the distal end or featheredge of the smear. Coverslip smears are more accurate since the distribution of leukocytes is dependent on capillary action rather than mechanical pushing. Practicality demands the routine smears be made by the glass slide technique.

Safety

All specimens, reagents and controls should be handled as though capable of transmitting infectious diseases. Wear appropriate personal protective equipment when running patient samples or performing scheduled maintenance. Refer to: Policy and Procedures Safety Manual Infection Control and Procedures 11-085-01.

Materials and Reagents

Microscope	Glass slides
Sterile Transfer Pipet	Diff Safe Blood Dispenser
Hematek Slide Stainer	

Specimen

The blood for films may be obtained from capillary blood (finger puncture) or from venous blood anticoagulated with EDTA. If any clotting has occurred in venous blood samples, severe alterations in leukocyte enumeration and differential counting will have occurred and platelet estimations will be valueless

Procedure

Step	Action
1	Make a capillary puncture. Wipe away the first drop of blood, and transfer a drop of blood 3-4 mm in diameter to a slide about a half-inch from one end. (Or place a drop of blood from an EDTA tube on a slide with a capillary tube or diffsafe technique).
2	Lay slide on a flat surface. Place an end of a second slide, balanced on the fingertips at an angle no greater than 30 degrees in front of the drop of blood.
3	Pull the spreader slide into the drop of blood. When the blood has spread along 1/2 of the width, push the spreader slide forward with a steady, even motion. The weight of the slide is the only pressure applied.
4	Allow the smear to air dry. Stain with Wright's stain.

**Procedure,
continued**

Step	Action
5	A good film should meet the following criteria: (a) The entire smear should cover no more than 1/2 of the area of the slide. (b) No portion of the smear should extend to the edges of the slide. (c) There should be no ridges, lines, or holes. (d) Leukocytes should be evenly distributed. (e) Red cells should touch but not overlap on about 1/3 of the blood film.
6	The thickness of the film is dependent on the size of the drop, speed of pushing the spreader slide, and the angle of the pusher slide.
7	Errors to avoid are: (a) Too large or too small a drop. (b) Delay between transferring the drop of blood to the slide and making the smear. (c) Dirty smear slide. (d) A chipped or dirty spreader slide. (e) Use of a spreader slide with cut off corners does not prevent margination of leukocytes. If the smear is made quickly and properly, margination can be avoided

Note: You can also use the SP-10 to perform this procedure. Please refer to Hematology Policy & Procedures, HEM.03-0010 Sysmex XN-9000, Procedure Section,
4. SP-10 Manual Mode – Smear and Stain Only.

