

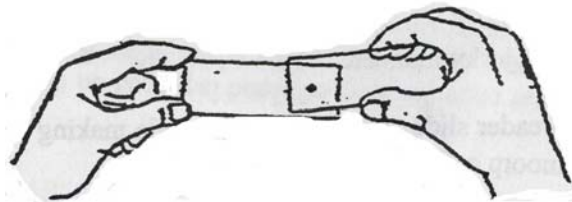
PREPARATION OF DIFFERENTIAL BLOOD SMEARS

If you order a CBC with differential and the sample will not arrive at UVMC within 4 hours, a blood smear must be made for the differential. A carefully prepared blood smear is vital for an accurate differential count. If the smear is made too thin, there is a chance the larger cells will be collected at the thin edge. If too thick, the cells appear too round to properly identify. Preparation technique, therefore, is of the utmost importance in the blood cell differential. Our laboratory is happy to assist in training of office personnel. Please contact an Outreach Specialist at (802) 847-5121 to schedule training.

****When handling blood or other body fluids always wear gloves.****

Manual Method (push smear) for Making Blood Smears

1. Place a drop of blood approximately 3-4 mm in diameter at one end (non-frosted) of the slide:
 - a. Use clean glass slides of sufficient quality so that the edges of the slide are smooth (free of nicks or imperfections). If the slides used do not have smooth edges the resulting smear will be uneven and full of streaks.
 - b. Fill a microhematocrit tube with blood. Carefully place a small drop of blood in the middle of the slide approximately 1 cm from the frosted end.



2. Draw a spreader slide back into the blood, allow blood to spread, then immediately push the spreader slide over the entire length of the slide:
 - a. Place the slide on a table top with the drop of blood on the right (for left-handed people it may be easier to reverse all techniques to the opposite hand).
 - b. With the left hand, hold the slide on the table. Hold the spreader slide with the right hand and place the end slightly in front of the drop of blood on the other slide. There should be an approximately 25 degree angle between the two slides (see diagram above).
 - c. Draw the spreader slide back toward the drop of blood. As soon as the spreader slide comes in contact with the drop of blood, the blood will spread to the edges of the slide. (Be careful that no blood gets in front of the spreader slide.)
 - d. Keeping the spreader slide at a 25 degree angle, and the edge of the spreader slide firmly against the horizontal slide, push the spreader slide rapidly over the entire length of the slide. Label the slide with the patient's full name.
3. Prepare a second slide on the same specimen using the same procedure.
4. Allow the slides to air dry and label. (Do not use a fan to dry.)
5. Label the frosted area with a pencil; include patient name and Fletcher Allen Medical Record Number and/or date of birth.

Discussion

1. The glass slides must be clean and have smooth edges.
2. There should be no delay in making the smear once the drop of blood is placed on the glass slide. Any delay whatsoever results in abnormal distribution of the white cells. Rouleaux and platelet clumping may occur.

3. Common causes of a poor blood smear:
- Drop of blood is too large or too small.
 - Spreader slide pushed across the slide in a jerky manner.
 - Failure to keep the entire edge of the spreader slide against the slide while making the smear.
 - Failure to keep the spreader slide at a 25 degree angle with the slide. (Increasing the angle results in a thicker slide, whereas a smaller angle gives a thinner smear.)
 - Failure to push the spreader slide completely across the slide.

Examples of Properly and Improperly Prepared Smears:



Properly made smear contains no streaks and tapers to a feathered edge with adequate area for differential to be performed.



Improperly made smear. Lots of streaks with no feathered edge. This may be caused by not allowing the drop of blood to spread along the spreader slide, spreader slide being pushed too rapidly or a poor quality spreader slide.



Improperly made smear. No feathered edge. This type of slide results when either the drop of blood is too large and/or the spreader slide is pushed too slowly.



Improperly made smear. Irregular pressure applied during slide preparation.