SMEAR PROCEDURES - DIFFERENTIAL, PLT & WBC ESTIMATES

● REMEMBER to adjust light (raise condenser & open diaphragm) when changing from manual cell counting (low light) to looking at stained blood smears (oil immersion and high light). ■ Scan the smear on low power (10x) to check cell distribution and smear quality (or “BAD” cells) before going to oil immersion.

A. Manual DIFFERENTIALS:
Performed on a properly prepared Wright's stained blood smear using OIL immersion (100x) and HIGH light in the “rainbow” area where the red cells just touch.

The leukocyte differential is done to classify the type of leukocytes present in the blood. The slide is scanned from side to side counting & identifying 100 consecutive WBC's using counter keys = relative (%).

USUAL Diff Sequence: Segs %-Bands %-Lymphs %-Monos %-Eos %-Basos %

NOTE: IF SEEN, Nucleated RBC's are reported # per diff & immature WBCs are included in 100 cell diff.

B. Cell MORPHOLOGY:
The white cells, red cells and platelets are observed for normal size, shape, inclusions and/or granulation. Any variations from normal are quantitated or noted per institution policy. SEE GUIDELINES for GRADING ABNORMAL MORPHOLOGY (pg 16).

C. PLATELET ESTIMATE:
The number of platelets are estimated from the Wright's stained smear where the red cells just touch by the following method:

1. Count the # of platelets in each of 10 fields using OIL immersion (OIF’s)...use counter keys when counting platelets. Find the average (don’t round) = Avg # PLTS per OIF.

   ● Take 1st 10 PLTS (from Avg # PLTs/OIF) x 20,000 each (or 200,000/cmm) PLUS each additional PLT (above 10) x 10,000/cmm each = PLT estimate/cmm.

2. The platelet estimate should agree with the PLT count and corresponds to a platelet range.
   a. Should agree ± 20% if the PLT count is > 50,000/cmm.
   b. Should agree ± 10,000 if the PLT count is < 50,000/cmm.
   c. The platelet estimate corresponds to a platelet comment range, as listed on the bottom of page 16.

D. WBC ESTIMATE:
The number of WBC’s are estimated from the stained smear using the high power lens and in an area where the red cells are slightly overlapping.

1. Count the # of WBC’s in 10 HIGH (40x) power fields (HPFs); find average.
2. The average # WBC’S per HPF x 2,000 = WBC estimate/cmm.
3. The estimate should agree ± 20% with the WBC count.

E. PLT/WBC ESTIMATE NOTES:
■ Platelet and WBC estimates include those fields with no cells counted.
■ WBC estimates include smudge or broken cells.
■ PLT/WBC estimates are used to check the validity of automated/manual cell counts; estimates are NOT ‘reported’.
■ If the estimate does not ‘agree’, check estimate procedure, e.g., calculation, objective, area.