MANUAL SPUN HEMATOCRIT (HCT)/Packed Cell Volume (PCV)

A. **PRINCIPLE/SPECIMEN:**
The hematocrit measures the volume of packed red cells in a given volume of whole blood. This method uses EDTA anticoagulated whole blood or capillary blood obtained by fingerstick.

B. **EQUIPMENT:**
Microhematocrit tubes, clay, HCT sheet with holes, microhematocrit centrifuge, HCT reader

C. **CONTROL:** Streck Para 4® Normal control level. Store the whole blood control at 2-10°C and bring to room temperature for 15 minutes before use. Do not use beyond the expiration date.

D. **PROCEDURE:**
1. **MIX** EDTA blood specimen and whole blood control vial (Normal level) well **before** taking the blood sample. TILT to mix – do NOT shake.
2. Fill **TWO** microhematocrit tubes 2/3 full for each EDTA sample and/or control. Bubbles are OK. Each test is done in duplicate.
3. Clay the dry end of each tube and put tubes in HCT sheet holes. Label the sheet with your name and carefully transport to centrifuge area.
4. Balance tubes in centrifuge, PUT ON LID, and centrifuge 5 mins. Record the centrifuge # and groove #’s used for each tube on sheet.
5. After centrifugation, use the HCT reader (e.g. card) to set 0 and 100, then read the HCT% at the top of the packed red cells; read to the nearest 0.5%. Record the HCT% obtained for each tube on the labsheet.

Refer to the diagram of layers present in a spun hematocrit tube.

E. **QUALITY CONTROL:**
1. Duplicate HCT tubes must agree ± 1% (1% = 1 HCT percentage point) to accept results or another HCT tube must be centrifuged.
2. The control must be within ± 2 standard deviations of the assayed control mean to accept patient HCT results. Check that the HCT control value is within the acceptable limits given on the HCT QC Chart. If the control does not "read", testing must be repeated%^.

^If the HCT control is not within the acceptable range, FIRST check that you are using the HCT reader properly.

F. **REPORTING:**
1. Average the patient HCT results IF the control is acceptable and duplicate HCT tubes agree, e.g., for results of 37.0 and 38.0, report a final patient HCT result of 37.5%.
2. Manual hematocrit results are reported to the nearest 0.5%. Therefore, do not average patient HCT results of 32.5% and 33.0% (for example), report either.

G. **SOURCES OF ERROR:**
● Pre-analytical/blood collection errors, e.g. clotted blood, hemolysis, EDTA tube filled less than half full with blood.
● Analytical/technical errors, e.g. inadequate mixing of blood sample, insufficient centrifugation, poor duplication of results, improper use of HCT reader or including buffy coat in HCT reading.

G. **FINAL CHECK OF HGB AND HCT RESULTS:**
Check that your patient HGB and HCT results correlate....does the HGB x 3 = HCT ± 3%?
● H&H values obtained on control samples will NOT correlate.