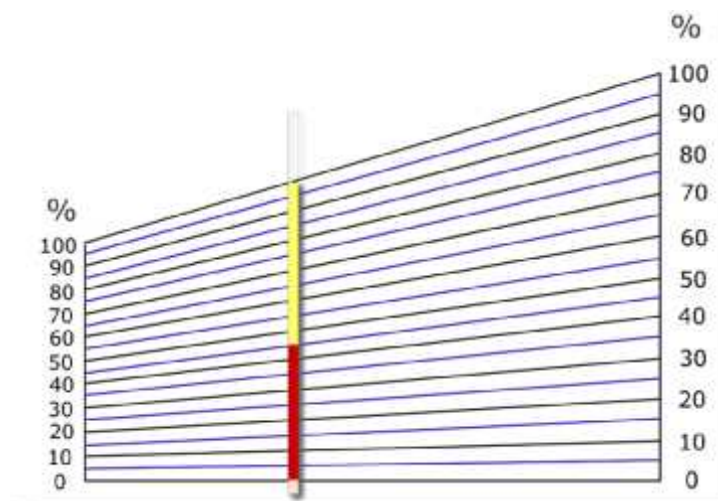




Determination of **P**acked **C**ell **V**olume (PCV) OR Hematocrit (HCT) Value

BLOOD TRANSFUSION
LAB

M.Sc. MAHER ALI



PCV or HCT is defined as the volume of RBCs per unit volume of the whole blood.

The PCV is a mathematical expression of the number of RBCs, or packed cell volume, expressed as a percentage of whole blood. For example, a packed cell volume of 45% means that a 100-mL sample of blood contains 45 mL of packed RBCs, which would reflect an acceptable level of RBCs for a patient of any given age

Normal range

- Males: 40 %–50 %
- Females: 37 %–47 %
- Newborns: 53-65 %

Equipment for this station:

- Centrifuge
- Whole blood in heparin or EDTA tube
- capillary tubes (EDTA)
- Plasticine tray
- Microhaematocrit reader
- Gloves

Procedure



Switch on the centrifuge at the wall. Some centrifuges also have a switch on the machine. Open the lid – some centrifuges have a button while others have a catch.



Unscrew the metal cover.



Check that the centrifuge is clean and free from debris or previous samples.



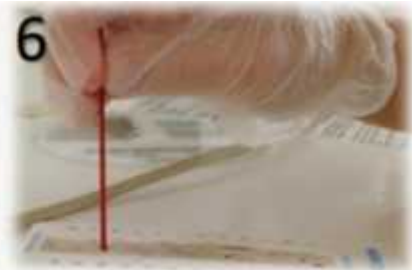
Gently invert the tube to mix the sample.

Hold the tube at an angle and introduce the microhaematocrit (capillary) tube. Allow blood to track up the tube. Continue until the tube is about 3/4 full.



Put your index finger over the top of the capillary tube before removing it from the sample or blood will leak!

Keeping your finger over the end of the tube, wipe the outside of the capillary tube clean with a piece of tissue.



Make sure there is an area of the plasticine that is clear from previous holes. Place the capillary tube onto the plasticine then remove your index finger from the top. Having removed your finger then gently press the capillary tube into the plasticine and then withdraw the tube. Wipe the tube clean with a tissue.



7
Check there is a sufficient plasticine plug. If not, then discard the capillary tube into a sharps bin and start again.



8
Fill 2 tubes and place them opposite each other in the centrifuge. This is to balance the centrifuge; every tube must have another tube opposite it. Place the plasticine plug end of the tube against the rubber (outer) edge of the tube to stop the contents spilling out when spun.



9
Screw the metal cover (plate) on firmly. Close and secure the centrifuge lid.

Centrifuges are dangerous if used incorrectly so ensure that steps 8 & 9 are followed carefully.

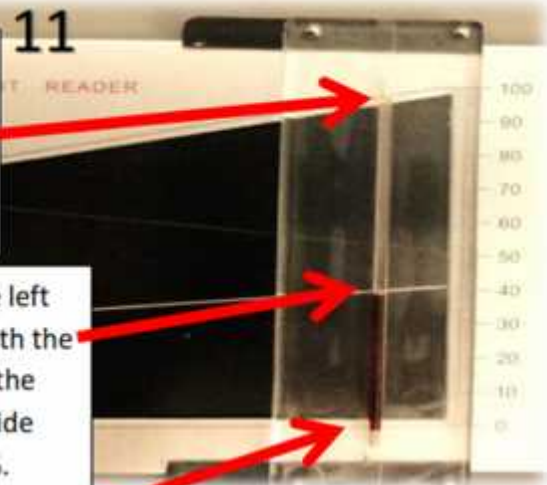


10
Set the time to 5 minutes then start the centrifuge spinning. Once the centrifuge has come to a complete stop, open the lid and remove the metal cover (plate).

3) Move the slider so the top of the plasma fraction is level with the top line (100%).

4) Use the adjuster on the left to align the middle line with the top of the red cells. Read the PCV from the right hand side scale. In this case it is 41%.

2) Adjust the tube on the slider so that the top of the plasticine is level with the bottom line (0%).



1) Place the capillary tube onto the haematocrit reader. It should be positioned as shown above.

PCV decreases in

- Anemia.
- Cirrhosis.
- Hemorrhage.
- Bone marrow failure
- Renal diseases.
- Normal pregnancy.
- Leukemia

PCV Increase in

- increase red blood cells.
- Drought.
- living in a high area, or smoking.
- Some chronic liver diseases.
- heart disease.
- Carbon monoxide poisoning.