

Sick or Not Sick?

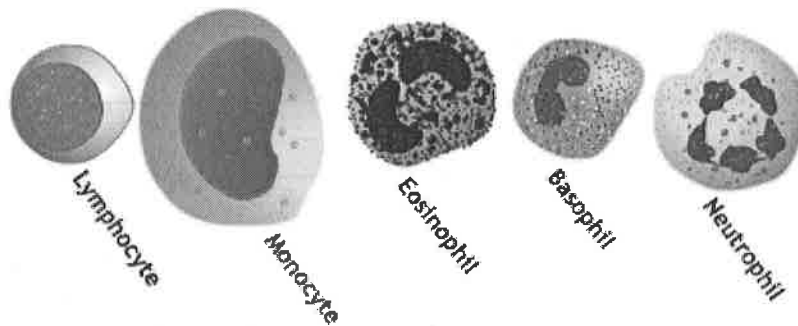
Differential Count Lab

Four patients have come into the clinic because they need blood drawn. After a blood smear slide was made it was sent to the lab to see if the patient was sick.

White blood cells can be divided into granulocytes and agranulocytes.

Granulocytes: lobed nucleus and cytoplasm is filled with tiny round specks or granules. Last three in picture below.

Agranulocytes: nucleus is round and fills up most of the cell or could look like a kidney bean and the cytoplasm is clear with no granules. First two in picture below.



By counting the WBCs present on a patient's blood slide, we can gain information about the patient's health.

Procedure:

1. Notice which patient's slide you are looking at (A,B, C, D)
2. Make your counts where the cells are spread out and not clumped together
3. Randomly move the slide to an area where WBCs are ready to see through the microscope. Once you found a good location move to the next step.
4. Count how many granulocytes you see through the microscope. Be accurate and make sure you are counting granulocytes record your count in table 1 using the correct patient. Place your count in the count #1 column
5. Now count how many agranulocytes you see through the microscope. Record in counting table 1, agranulocyte counted #1 column
6. Now randomly move the slide to another spot. Repeat steps 4 and 5 and record in the counted #2 column.
7. Move to another patient and repeat above steps. Record at least two columns for patient A, B, C, D.
8. Once you have your measurements from all patients, trade information with classmates until you have all ten spots filled on your chart. Then total them up.

Analyze: Now we must find the percent of granulocytes and agranulocytes present in their blood.

Total Number of White Blood Cells Counted	= Total number of Granulocytes counted + Total number of Agranulocytes counted	
% of each (granulocytes) =	$\frac{\text{total number of granulocytes counted}}{\text{total number of WBCs counted}} \times 100$	X 100
% of each (granulocytes) =	$\frac{\text{total number of granulocytes counted}}{\text{total number of WBCs counted}} \times 100$	X 100

Diagnosis:

Patient is healthy if:

Granulocyte #'s = 60% to 75% of total WBCs

Agranulocyte #'s = 25% to 40% of total WBCs

Patient may have a bacterial infection or patient may have internal parasites if:

Higher than normal granulocyte #

Patient may have a virus infection (like Mono) or patient may have leukemia if:

Higher than normal agranulocyte #

Patient A	Total cells counted on each	Total number of white blood cells counted	% of each
Granulocytes			
Agranulocytes			

Patient B	Total cells counted on each	Total number of white blood cells counted	% of each
Granulocytes			
Agranulocytes			

Patient C	Total cells counted on each	Total number of white blood cells counted	% of each
Granulocytes			
Agranulocytes			

Patient D	Total cells counted on each	Total number of white blood cells counted	% of each
Granulocytes			
Agranulocytes			

Anatomy and Physiology Blood Smears

