



PARTICIPANT STATISTICS

PERIPHERAL BLOOD SMEAR

FIRST QUADRIMESTER 2011

MANUAL DIFFERENTIAL

Basophils %
Eosinophils %
PMN (Bands/Segs)%
Lymphocytes %
Monocytes %
Abnormal/Other %

Specimen 1			Specimen 2		
Mean	SD	Range%	Mean	SD	Range%
12.0	2.0	8.0- 16.0	0.0	1.0	0.0- 4.0
0.0	2.0	0.0- 6.0	8.0	2.0	2.0- 14.0
63.2	3.8	52.0- 75.0	56.2	1.2	51.0- 61.0
20.0	2.2	12-Jan 28.0	28.7	6.0	11.0- 47.0
0.3	1.4	0.0- 5.0	2.2	4.9	0.0- 17.0
5.2	4.7	0.0- 20.0	6.9	7.2	0.0- 29.0

Question/Response

Yes/True
No/False
TOTAL POPULATION

Specimen 1

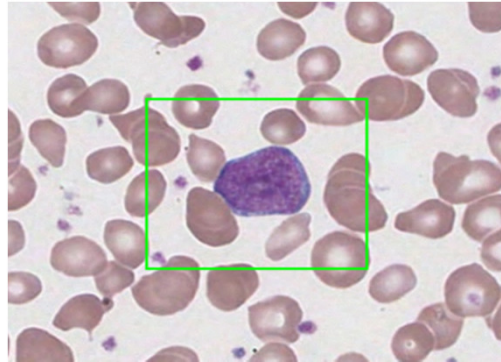
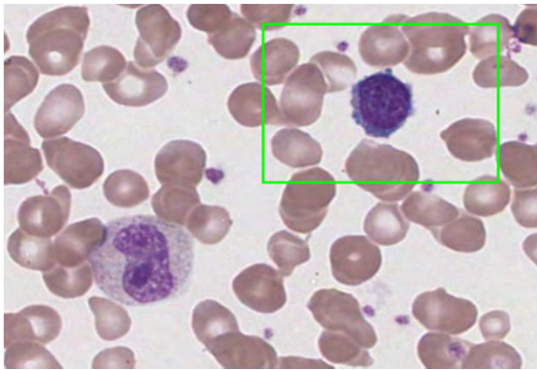
34	
14	

Specimen 2

45	
3	***

Due to a lack of participant consensus Question/Response Specimen 1 was not evaluated. The intended result was Yes/True

Peripheral Blood Smear - Slide 1



*To see the original full-sized images, please refer to the original CD or sign on to your data entry sheet at <http://www.aab-pts.org/>

Specimen 11Q1-1: Myelofibrosis:

History: A 63-year-old woman is being evaluated for complaints of fatigue and pain in her left upper quadrant. CBC results: WBC 8.4, Hgb 7.5, Hct 22.5%, Plts 448,000/ μ L. Would you refer the slide for a pathologist's review?

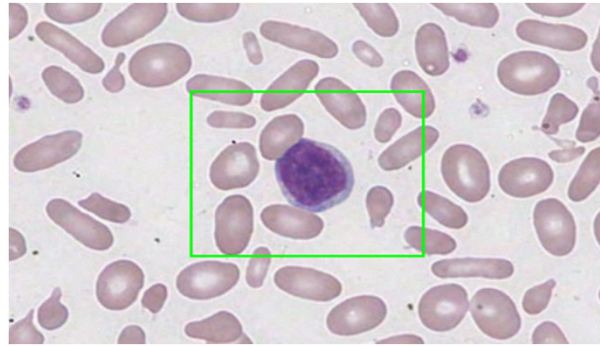
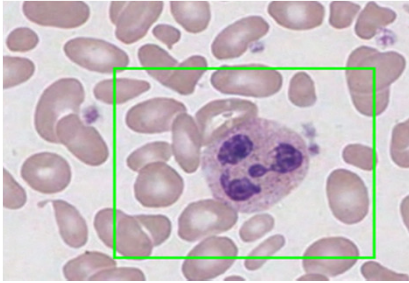
The automated CBC values indicate that the patient is anemic with an elevated white blood cell and platelet count. Numerous giant platelets are present. Many of the red blood cells are hypochromic; there is mild rouleaux formation and marked poikilocytosis with an occasional tear drop cell. There is a wide variation in the WBCs seen. Several basophils are present (cells #12, 14, and 21); this is unusual in that typically one has to search many, many fields on a peripheral blood smear to find even one basophil (if one can even be found!). Although the majority of the WBCs present are segmented neutrophils, some WBCs are quite immature, with blue cytoplasm and fine nuclear chromatin, consistent with granulocyte precursors. Occasionally, a prominent nucleolus can be seen in an apparent blast form (cell #25).

This patient was diagnosed with **myelofibrosis**. This is a hematologic malignancy characterized by proliferation of an abnormal myeloid cell in the bone marrow and subsequent replacement of the bone marrow with fibrous or scar tissue. As the bone marrow is slowly replaced with the scar tissue, two important effects occur. First, the abnormal and normal cells in the bone marrow are forced out into other tissues, principally the spleen. Extramedullary hematopoiesis results in massive enlargement of the spleen. Second, as the normal cells in the bone marrow are crowded out, their numbers fall, resulting in pancytopenia (decreased RBCs, WBCs, and platelets). Signs and symptoms of myelofibrosis include fatigue and shortness of breath (due to anemia), bruising (as platelet counts decrease over time), a feeling of fullness and/or pain in the upper abdominal area due to enlargement of the spleen, and bone pain.

Myelofibrosis is a slowly progressive disease. The median life expectancy from time of diagnosis is approximately 10 years. The only known cure is stem cell transplantation, if a compatible donor can be found and the patient is able to tolerate the procedure.

This peripheral smear should be referred to a pathologist for further review.

Peripheral Blood Smear - Slide 2



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Specimen 11Q1-2: Hereditary Elliptocytosis:

History: A 14-month-old boy is brought to the pediatric clinic when his mother becomes concerned about his skin "turning yellow". CBC results: WBC 4.3, Hgb 7.3 g/dL, Hct 21.9%, Plts 624,000/ μ L. Would you refer the slide for a pathologist's review?

As with Specimen #1, the automated CBC values indicate that the infant is anemic with an elevated platelet count. Review of the peripheral smear confirms elevation of the platelet count. A few of the lymphocytes are relatively large and contain prominent granules in the cytoplasm. Most significant, however, are the abnormalities seen in the red blood cells. There is marked anisocytosis and poikilocytosis, with the presence of elliptocytes, schistocytes, bizarre forms, and occasional polychromasia and basophilic stippling.

Elliptocytes are quite numerous on this patient's peripheral smear. It is likely that he has **hereditary elliptocytosis (HE)**, an inherited abnormality of the red cell cytoskeleton. Typically, at least 25% of the red cells are elliptocytes, although the number may be much higher. It affects about 3 to 5 per 10,000 individuals in the United States and is more common in individuals of African and Mediterranean descent. HE is inherited as an autosomal dominant trait. The majority of patients with HE are completely asymptomatic and, due to a compensated hemolysis, have normal hemoglobin values and red cell indices. The diagnosis in these individuals is made incidentally when a routine blood smear is examined. However, about 5-10% of individuals with HE suffer from moderate to severe hemolysis, such as seen with this infant. A hemolytic episode may be triggered by infection, particularly a viral infection. Note that several of the lymphocytes in the infant were large with scalloped borders and large cytoplasmic granules, all of which may be seen in association with a viral infection. As the abnormal RBCs are destroyed in the spleen, levels of unconjugated bilirubin increase (recall that this infant's mother was concerned about his skin "turning yellow"; this suggests jaundice due to elevated bilirubin levels).

The abnormalities present on the peripheral blood smear of this patient, particularly in the red cell line, suggest that this smear be forwarded to a pathologist for further review.