Vetscan Imagyst®
AI Blood Smear Result Interpretation

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Haematology Evaluation

WBC Differential+

		Low	High
WBC Count (CBC)	16.0 K/uL		
Neutrophil	13.1 K/uL		
Band Neutrophil	0.4 K/uL		
Segmented Neutrophil	12.7 K/uL		
Lymphocyte	1.5 K/uL		
Monocyte	1.1 K/uL		
Eosinophil	0.3 K/uL		
Basophil	0.0 K/uL		
WBC Percent			
Neutrophil			
Band Neutrophil	2.5%		
Segmented Neutrophil	79.4%		
Lymphocyte	9.4%		
Monocyte	6.9%		
Eosinophil	1.8%		
Basophil	0.0%		

		Low	High
Red Blood Cell			
Nucleated RBC / 100 WBC	1.7 /100 WBC		
Polychromatophil (K/uL)	0.0 K/uL		
Acanthocyte	Present		
Eccentrocyte	Present		
Echinocyte	Present		
Keratocyte	Present		
Schistocyte	Present		
Platelet Count Estimate (K/uL)	133.8 K/uL		
Aggregated Platelet	Absent		

Grey Bands: Generic reference intervals
Blue Bands: Results

Evaluation of a blood smear generates ESTIMATED blood cell counts. For this reason, Actual reference intervals for the included parameters are not listed - due to the variability of estimated counts.

For each parameter, the Blue band shown within the wider Grey band is a generic representation of the estimated CBC counts.

WBC Differential

Estimated WBC differential is based on 200 WBC's in the monolayer. Review results in conjunction with automated CBC results. If discrepancy occurs, assess the whole slide image for signs WBCs are pushed to the feathered edge. Consider Add on Expert Review to verify and rule out significant disease states.

Platelets

If aggregated platelets are reported:

- Evaluate scanned image for PLT clumps, Including the feathered edge, and assess level of clumping with the platelet count measured by Vetscan Imagyst

Band Neutrophils

Immature neutrophils, typically ranging from 0-300/µL in dogs and cats[1]. An increase in band neutrophils, or a left shift, often accompanies inflammation. A regenerative left shift, with a predominance of mature neutrophils, indicates an adequate bone marrow response. In contrast, degenerative left shift occurs when band neutrophils outnumber mature neutrophils, often with a low or normal neutrophil count, signaling severe inflammation or compromised marrow function.

Nucleated RBC

- Most automated haematology analysers count nRBC as WBC, and the presence of high numbers of nRBC will affect the total WBC count
- nRBC: value ≥ 5 nRBC / 100 WBC is clinically significant
- If Vetscan Imagyst finds ≥ 5 nRBC / 100 WBC, the automated analyser WBC needs to be corrected using this formula:[3]
  - **Corrected WBC = initial WBC cell count x [100 ÷ (nRBC + 100)]**

Polychromatophil (PCM)

Anaemia Present

↓

Evidence of Regeneration

→ **No**

Non-Regenerative Anaemia
- Absolute reticulocyte/PCM count:[2]
  - <100,000/ul (dog)[1], <60,000/ul (cat)[1]

→ **Yes**

Regenerative Anaemia
- Absolute reticulocyte/PCM count:
  - > = 100,000/ul (dog)[1], > =60,000/ul (cat)[1]

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Reb Blood Cell Morphology

Acanthocytes

Generally form due to alterations in lipid / cholesterol composition of RBC membrane or fragmentation injury to RBCs. Observed in liver disease, haemangiosarcoma, disseminated intravascular coagulation or DIC (dog), vasculitis (dog) lymphosarcoma, gastrointestinal disease, glomerulonephritis, osteosarcoma, and high cholesterol diets have been associated with acanthocytosis. In cats with liver disease, acanthocytes are reported as the most common poikilocyte.[4,5,6]

Keratocytes

Generally form due to oxidant or fragmentation injury of erythrocytes such as observed in iron-deficiency anaemia, liver disorders, and various disorders having concomitant acanthocytes (fragmentation) and eccentrocytes (oxidant).[11,12,13]

Schistocytes

Typically caused by the fragmentation of erythrocytes due to vascular abnormalities and/or mechanical fragility of red blood cells. Erythrocyte fragments with pointed extremities are called schistocytes or schizocytes , and they are smaller than normal red blood cells.

Microangiopathic fragmentation has been described in dogs in several different disorders including DIC, glomerulonephritis, haemangiosarcoma, haemophagocytic histiocytic disorders, myelofibrosis, haemolytic uraemic syndrome, heart failure, severe iron-deficiency anaemia, caudal vena cava syndrome of dirofilariasis and chronic doxorubicin toxicosis.[14,15]

Schistocytes are seen in cats with hepatic disease, DIC, and doxorubicin toxicity.[16,17,18]

Echinocytes (Crenated Erythrocytes)

Generally form due to the expansion of the outer layer of the erythrocyte membrane. When observed in stained blood films, echinocytosis is usually an artefact that results from excess EDTA, improper smear preparation, or prolonged sample storage before blood film preparation. The appearance of the echinocytes can vary depending on the thickness of the blood film.[7]

In dogs, echinocytes have been reported with glomerulonephritis, lymphoma, haemangiosarcoma, and other neoplasms, immune-mediated haemolytic anaemia, rattlesnake envenomation, and doxorubicin toxicosis among others.[8,9]

Cats likely have echinocytes with many of these diseases as well, but echinocytes have been specifically reported with chronic doxorubicin administration.[10]

Eccentrocytes (Hemighosts Erythrocytes)

Typically caused by direct oxidative damage to the erythrocyte inner cytoplasmic membrane and cytoskeleton, resulting in adhesion of opposing cytoplasmic sides of the erythrocyte membrane. In dogs, it is generally secondary to increased endogenous oxidants associated with ketoacidotic diabetes, inflammation, neoplasia (especially lymphoma), and Babesia canis infection. Eccentrocytes have been seen in dogs ingesting or receiving oxidants including onions and garlic, acetaminophen and nonsteroidal anti-inflammatory drugs, vitamin K and vitamin K antagonist rodenticides, naphthalene, and prolonged propofol anaesthesia. Eccentrocyte formation also occurs in cats following oxidant damage.[19]

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