The Comprehensive Complete Blood Count (CBC)

A CASE-BASED APPROACH

Comprehensive CBC testing consists of 2 components:

a quantitative CBC and a qualitative blood smear[1]

Automated CBC: Quantitative evaluation

- Numerical data and indices
- Graphical representations

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Blood smear: Qualitative evaluation

- **Estimated** counts for quality assurance
- Cellular morphology

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Comprehensive CBC

Ideally, a blood smear evaluation should always be performed as a part of every CBC[1]

But it is **vital** that blood smears are performed in every:

- Patient who is sick
- Instance of abnormal counts or automated cell count flags

Automated cell count flag	Abnormality
Red blood cells (RBCs)	Anemia[2,3]
White blood cells (WBCs)	Cancer; infection; inflammation[2,3]
Platelets (PLTs)	Disease; clumping[3]

Why aren't blood smears performed very often?

- Lack of experience preparing blood smears
- Time- and labor-intensive process
- Lack of confidence and experience with interpretation
- Assumption that automated counts are correct every time

VETSCAN IMAGYST™ uses the accuracy of artificial intelligence (AI) to deliver critical data that supplements automated CBC results[4]

- Provides an estimated PLT count and identifies presence of PLT clumps, which may impact PLT counts
- Estimates total WBC count
- Verifies WBC differential (%)
- Identifies and counts polychromatophils (immature red blood cells—an indicator of a potential regenerative process) and nucleated RBCs
- Access to expert review by a Zoetis clinical pathologist for further evaluation via digital image transfer is available when needed*

A blood smear evaluation should not be utilized as a replacement for an automated cell count

If properly maintained, automated analyzers are more precise and accurate than manual counting of cells[5]

*Additional costs may apply.

Case Study: Belle

8-year-old FS DLH

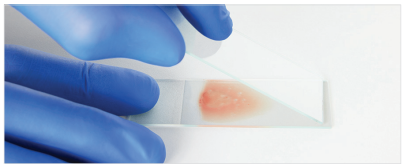
	History and clinical presentation	• Presents for dental cleaning with anticipated extractions • No recent lab work
	Physical examination abnormalities	None observed
	Diagnostic testing abnormalities	Mild thrombocytopenia (105 x 10^9 cells/L; normal=160-500 x 10^9 cells/L)
	Next steps	**Blood smear with VETSCAN IMAGYST™ to confirm thrombocytopenia**

DLH=domestic long hair; FS=female spayed.

VETSCAN IMAGYST delivers blood smear results in minutes

vs sending to a reference lab, which could take days

Prepare blood smear using traditional methods

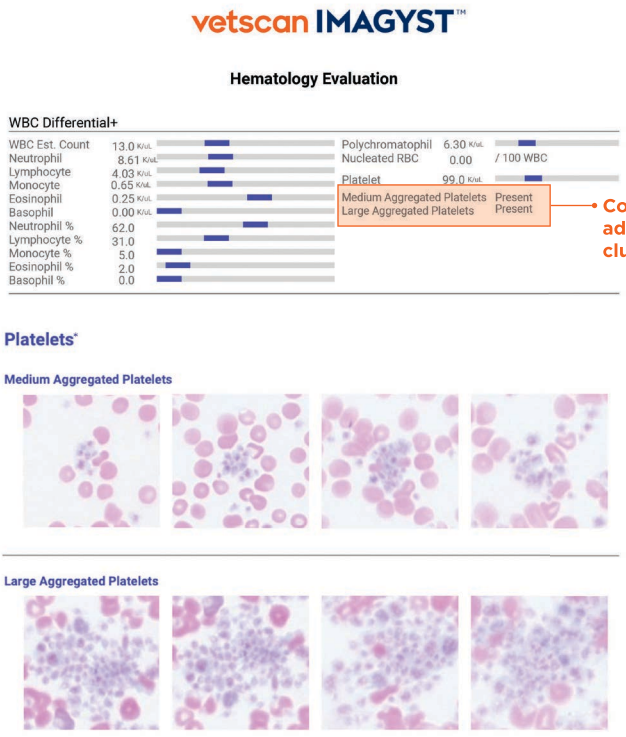


Get accurate results in minutes with VETSCAN IMAGYST[4]

- Confirmed clumped PLTs with confidence
- Confirmed WBC counts due to PLT clumping

Outcome

Belle was cleared for her dental procedure in minutes



*Select VETSCAN IMAGYST images for Belle. Note that images for all cell types (neutrophil, lymphocyte, monocyte, eosinophil, polychromatophil and platelets) are provided with each VETSCAN IMAGYST AI blood smear report.

Case Study: Lucy

3-year-old FS Labrador retriever

History and clinical presentation	Acute, progressively worsening lethargy and weakness

Physical examination abnormalities	• Depressed but responsive upon presentation
	  - Bounding pulses
	• Pale, slightly icteric mucous membranes
	• Thoracic auscultation
	  - Heart rate: 160 BPM; respiration rate: panting
	  - Grade 2/6 heart murmur
	• Possible splenomegaly on abdominal palpation

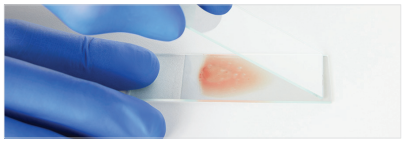
Diagnostic testing abnormalities	• Severe anemia (HCT=16.0%; normal=37.0-55.0%) • Thrombocytopenia (103 x10^9 cells/L; normal=165-500 x 10^9 cells/L) • Leukocytosis (WBC=48.69 x 10^9 cells/L; normal=6.0-17.0 x 10^9 cells/L) • Bilirubinemia • Increased liver enzymes (ALP, ALT)
Next steps	**Blood smear with VETSCAN IMAGYST™ to further investigate anemia and thrombocytopenia**

ALP=alkaline phosphatase; ALT=alanine aminotransferase; BPM=beats per minute.

VETSCAN IMAGYST delivers blood smear results in minutes

vs sending to a reference lab, and waiting days for results

Prepare blood smear using traditional methods



Get accurate results in minutes with VETSCAN IMAGYST[4]

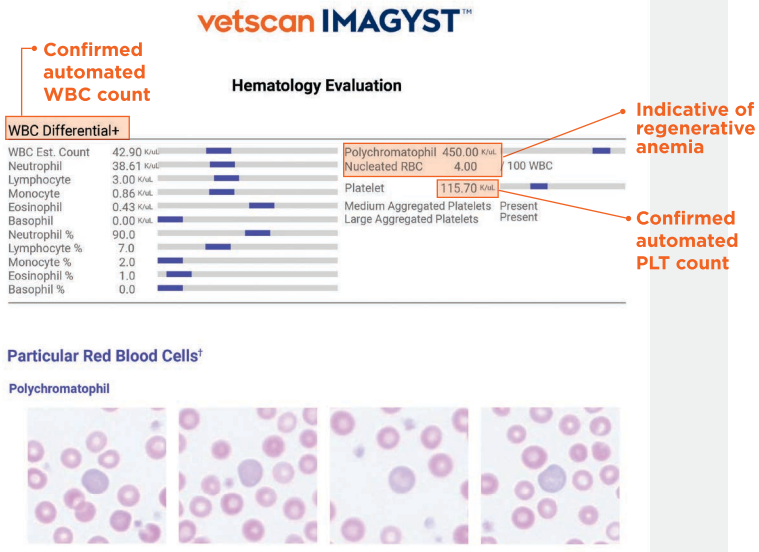
IMAGYST provides a polychromatophil count that can **serve as a proxy** for a reticulocyte count[6]

Add on optional expert review*

Pathologist examines for morphological changes to narrow differential diagnoses

Expert findings

- Spherocytosis
- Ghost cells
- Polychromasia
- Anisocytosis



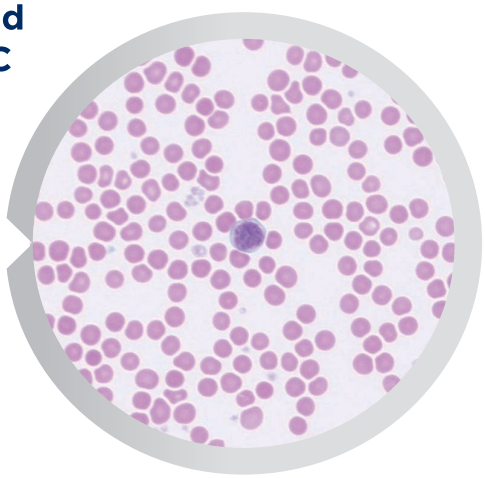
Outcome

- Diagnosis of immune-mediated hemolytic anemia was made within hours of presentation—which would have been unlikely without VETSCAN IMAGYST
- Lucy immediately started treatment

*Additional costs may apply.

†Select VETSCAN IMAGYST images for Lucy. Note that images for all cell types (neutrophil, lymphocyte, monocyte, eosinophil, polychromatophil and platelets) are provided with each VETSCAN IMAGYST AI blood smear report.

VETSCAN IMAGYST™ conveniently delivers AI-driven blood smear analysis, providing critical data to supplement CBC results and help inform diagnosis and treatment



- **RESULTS IN MINUTES:** VETSCAN IMAGYST uses the accuracy of AI to efficiently read blood smears in minutes, so your staff doesn't have to[4]
- **SIMPLIFIED WORKFLOW:** VETSCAN IMAGYST provides AI-driven analysis of blood smears, so staff can focus on other tasks
- **MAY IDENTIFY ABNORMALITIES SUCH AS:** abnormal WBC count, low platelet count, platelet clumping and RBC changes associated with anemia

Integrating VETSCAN IMAGYST into a complete, in-hospital hematology solution

Use any point-of-care hematology analyzer

VETSCAN® HM5 is an easy-to-use option that reports a full, 5-part CBC differential with 22 parameters in <4 minutes

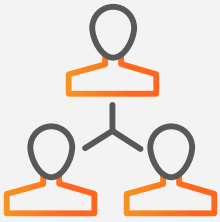
Get additional insights with VETSCAN IMAGYST AI Blood Smear

- Follow up on abnormal automated CBC results
- If abnormalities are observed, expert review via digital image transfer is available*
- Confirm automated cell counts

Access expert review by a Zoetis clinical pathologist when needed*†

Digitally submit images for further evaluation not reported by AI review, including:

- WBCs—left shifts, toxic changes, malignancy
- RBCs—morphology, inclusions
- PLTs—macroplatelets



Optional complimentary consult

Get free consultations from veterinary specialists with the Zoetis Global Consultation Service, as needed

With VETSCAN IMAGYST, expert-level WBC differential and blood smear review can be performed in any hospital

Request a demo today!

*Additional costs may apply.
†Option to send physical slide to our network of clinical pathologists as needed.

References: 1. Villiers E. Introduction to haematology. In: Villiers E, Ristic J, eds. *BSAVA Manual of Canine and Feline Clinical Pathology*. 3rd ed. British Small Animal Veterinary Association; 2016:27-37. **2.** Kahn CM, Line S, Aiello SE. Diagnostic procedures for the private practice laboratory. In: Kahn CM, Line S, Aiello SE, eds. *The Merck Veterinary Manual*. 10th ed. Merck & Co., Inc.; 2010:1487-1492. **3.** Barger AM. The complete blood cell count: a powerful diagnostic tool. *Vet Clin North Am Small Anim Pract*. 2003;33(6):1207-1222. doi:10.1016/s0195-5616(03)00100-1. **4.** Data on file, Study No. D870R-US-21-045, 2021, Zoetis Inc. **5.** Harvey JW. Hematology procedures. In: Harvey JW, ed. *Veterinary Hematology: A Diagnostic Guide And Color Atlas*. Elsevier Inc; 2012:11-32. **6.** Data on file, Study No. DH7MR-US-21-038, 2021, Zoetis Inc.

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