IDEXX inVue Dx Cellular Analyzer completes the CBC: real-world value of automated blood morphology at the point-of-care

Introduction

Blood morphology evaluation is an essential component of the comprehensive hematology assessment, yet it remains underutilized in point-of-care hematology testing.[1,2] It augments the complete blood count (CBC) findings by adding critical information about the morphology of red blood cells (RBCs), white blood cells (WBCs), and platelets, which cannot always be identified through automated cell counts alone, and by confirming or updating automated cell counts. In fact, an asterisk or interpretive prompt that many practitioners may perceive as an instrument error is typically the automated CBC analyzer's method of bringing attention to the need for morphologic assessment. Morphology assessment can identify immature white blood cells; allow for platelet estimation, taking into account the effects of platelet clumping; and detect RBC shape and size changes that may indicate underlying immune-mediated, metabolic, or other systemic diseases.

Traditionally, blood morphology assessment has been performed through blood film evaluation on glass slides. This manual review is highly variable due to individual differences in expertise, technique, and limited numbers of cells evaluated, as well as technical challenges due to artifacts of slide making and limitations on readable areas of slides.[3] Despite previous studies showing both the need for blood morphology review[4] and clinically relevant information provided by morphology assessment,[5] less than 10% of hematology samples in routine veterinary practice ever reach the microscope, leaving potentially important diagnostic information unrecognized.[2]

66%
of in-clinic CBCs uncover information prompting the need for blood morphology review[4]

75%
of dog and cat samples had clinically relevant morphology findings following a point-of-care CBC[5]

<10%
of hematology samples in veterinary practice ever reach the microscope[2]

About this study

Paired CBC results were gathered from the IDEXX medical database (Jan 1, 2026–May 31, 2026) from either the ProCyte Dx™ Hematology Analyzer or the ProCyte One™ Hematology Analyzer and the IDEXX inVue Dx™ Cellular Analyzer. Data was collected from a diverse population of veterinary practices, including general practice, urgent care, emergency, and specialty practices. A total of 4,783 canine and 1,802 feline hematology runs were included. The frequency and type of diagnostic information that IDEXX inVue Dx analyzers added to ProCyte Dx or ProCyte One analyzer CBCs was evaluated for the entire data set and for cases designated as "preanesthetic" CBCs by the clinic.

Key findings

IDEXX inVue Dx™ Cellular Analyzer results provided clinically meaningful blood morphology information (defined as at least one instance of an update to the WBC differential or platelet estimate from the CBC or the finding of an abnormal RBC morphology) in 55% of canine samples and 69% of feline samples, frequently augmenting the CBC results from the ProCyte Dx or ProCyte One analyzer. Hematologic findings from the IDEXX inVue Dx analyzer were most frequent when analysis was paired with automated CBCs that had asterisks (i.e., interpretive prompts) that indicated cell count abnormalities (56% of canine samples and 72% of feline samples). Even in cases of no cell count abnormalities or interpretive prompts on the CBC, blood morphology analysis from the IDEXX inVue Dx analyzer revealed morphologic findings in 25% of dogs and 59% of cats. Figures 1 and 2 describe the distribution of IDEXX inVue Dx analyzer findings.

IDEXX inVue Dx Cellular Analyzer provides additional diagnostic information	
when paired with an automated CBC from a ProCyte Dx analyzer or ProCyte One analyzer in	
1 in 2 dogs	**2 in 3** cats
and even when the CBC results are normal in	
1 in 4 dogs	**3 in 5** cats

Value of blood morphology in preanesthetic testing

The IDEXX inVue Dx Cellular Analyzer provided additional diagnostic information in 46% of dogs and 60% of cats undergoing preanesthetic testing. Refinement of WBC differentials, identification and quantification of immature neutrophils, or updates to platelet estimates were the most common changes (figure 3). Due to the IDEXX inVue Dx analyzer's ability to count platelets even in clumps, all platelet estimates on preanesthetic testing were adjusted upwards, potentially impacting anesthetic decisions. These findings show the value of including IDEXX inVue Dx analyzer use with routine preanesthetic screening.

How to apply these findings to your practice

These results show that IDEXX inVue Dx Cellular Analyzer automated blood morphology assessment adds valuable information both in patients with abnormal CBC results, as well as those with no apparent hematologic abnormalities on the automated CBC. The frequency with which the IDEXX inVue Dx analyzer provides updated or additional

information beyond the CBC will depend on the protocols used in your clinic and the patient population undergoing in-clinic CBC testing.

A targeted strategy of running an IDEXX inVue Dx™ analyzer selectively in sick pets or when prompted by a ProCyte Dx™ or ProCyte One™ analyzer CBC abnormality, analyzer flag, or unexpected hematology result is likely to yield the highest proportion of updated hematology findings.

However, this study also showed clinically relevant morphology findings occur frequently in patients with otherwise normal CBC results, meaning a selective approach may not identify all patients who would benefit from blood morphology assessment. This highlights the value of adding blood morphology to every automated CBC for truly comprehensive hematology testing.

Running the IDEXX inVue Dx analyzer alongside all in-house CBCs can simplify the workflow and reduce the risk of clinically relevant morphology findings remaining undetected. This approach helps identify abnormalities that may otherwise go undetected, including the updates observed in patients with normal ProCyte Dx or ProCyte One analyzer CBCs in this study, and many clinicians find value in morphologic confirmation of the normal CBC.

The IDEXX inVue Dx analyzer provides additional value for all in-clinic CBCs by delivering further confidence and reassurance in automated CBC counts or in updating cell counts, identifying immature neutrophils or abnormal WBCs, and characterizing and quantifying RBC morphologies. The frequency with which the IDEXX inVue Dx analyzer provides new information is significant and depends on the protocols in place for selecting patients for in-clinic CBCs and for including automated blood morphology assessment as part of the CBC.

Summary

The IDEXX inVue Dx Cellular Analyzer provided additional diagnostic information to the ProCyte Dx and ProCyte One hematology analyzer CBCs in a large percentage of both canine and feline samples. While additional findings were identified most frequently in cases with automated CBC abnormalities or interpretive prompts, the IDEXX inVue Dx analyzer also added clinically relevant information in cases with normal ProCyte Dx or ProCyte One analyzer CBC results. Notably, blood morphology evaluation by the IDEXX inVue Dx analyzer contributed additional diagnostic insights in approximately half of all preanesthetic patients. Overall, this study highlights the clinical value of automated morphology assessment by the IDEXX inVue Dx Cellular Analyzer as a complement to ProCyte Dx or ProCyte One hematology analyzer CBC results at the point-of-care. The IDEXX inVue Dx Cellular Analyzer will continue to evolve over time by adding additional menu items, helping practices realize even greater value in the future.

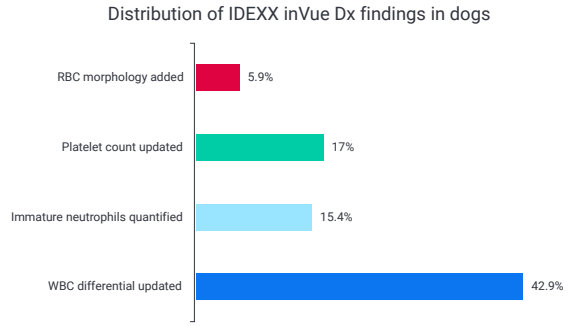


Figure 1: Distribution of IDEXX inVue Dx Cellular Analyzer blood morphology findings in dogs.

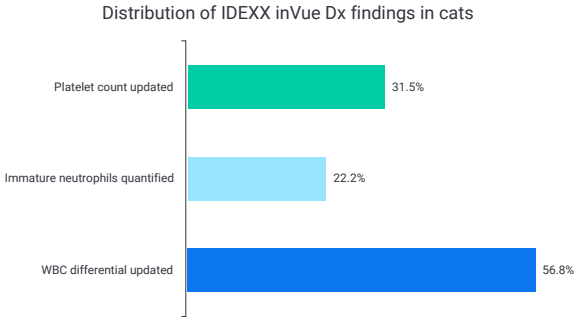


Figure 2: Distribution of IDEXX inVue Dx Cellular Analyzer blood morphology findings in cats. **Note:** Feline RBC morphology was not available on the IDEXX inVue Dx Cellular Analyzer at the time of this study.

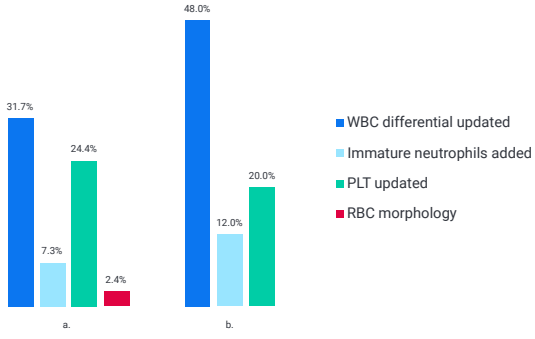


Figure 3: Proportion of each abnormality found by IDEXX inVue Dx Cellular Analyzer blood morphology evaluation on preanesthetic testing in dogs (a) and cats (b).

References

1. Weiss DJ, Wardrop KJ, eds. *Schalm's Veterinary Hematology*. 7th ed. Hoboken, NJ: Wiley Blackwell; 2022.
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3. Michael HT, Yore K, Drake C, Peta H. Inter- and intra-pathologist variability for manual 8-part white cell differentials is high [abstract]. Presented at: Congress of European Society of Veterinary Clinical Pathology; August 29, 2024; Budapest, Hungary.
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Note: This document contains forward-looking statements subject to risks and uncertainties. Refer to our cautionary statement at idexx.com/forward.

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