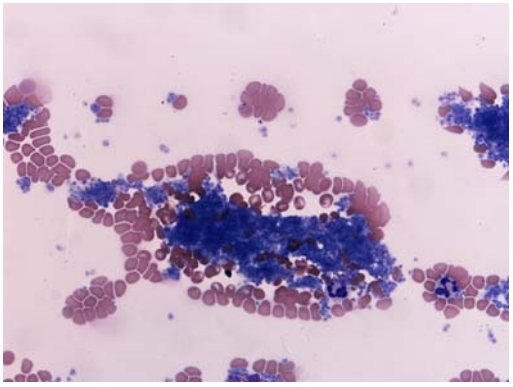
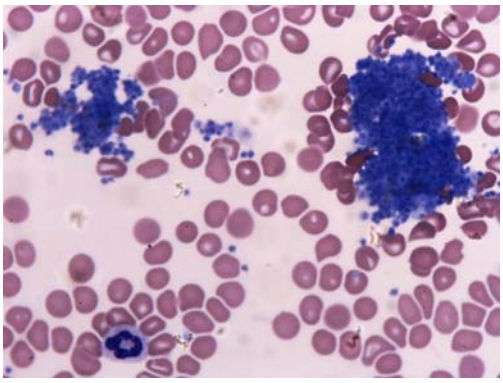
PHOENIX CENTRAL LABORATORY
Excellence in Veterinary Science

Did You Know?
Platelet Clumping

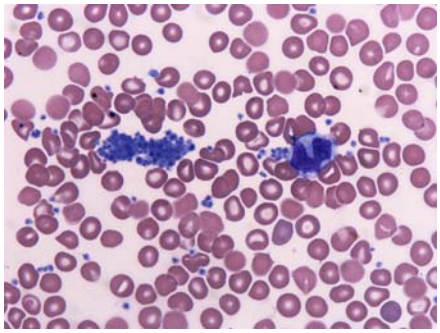
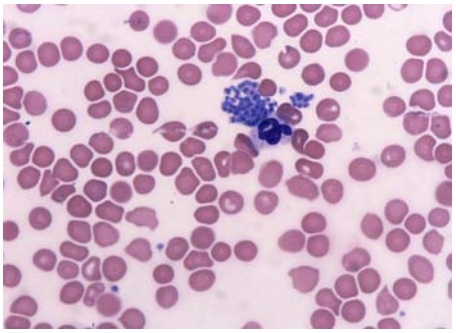
Platelet clumping can significantly affect accuracy of both machine and manual counts and makes platelet assessment on slide reviews only estimates. The two pictures below demonstrate platelet clumping in a cat.


(50x; feathered edge of a slide)


(100x; near the feathered edge)

Platelet clumping can be minimized by a clean blood draw avoiding turbulence in the blood that can activate platelets and cause them to clump. In the dog and cat, veins commonly sampled from are the jugular, medial and lateral saphenous, and the cephalic using a 20 to 22 gauge one-inch needle. If drawing blood via syringe, fill the LTT first and then the RTT/SST. Blood smears are best prepared directly from the blood draw before the sample is placed into the LTT. Clumping will be minimized on the freshly made smear compared to the smear made at the lab.

At Phoenix, the LTT is checked for clots when blood smears are made before the sample is run through the hematology analyzer. If the machine count is lower than the reference range, the blood smear (preferably a received slide if submitted) is reviewed for platelet clumping. If the technician feels platelet clumping is present and affecting the accuracy of the count, the count will be listed as DNR (did not report), a comment made on the report regarding clumping and a slide estimate done. The comment "platelet estimate is adequate" means that the count (including those in clumps) appears to be in the normal range. If the technician agrees with the low machine count, the count will be reported and platelets estimated as slightly, moderately or markedly decreased.



(100x both slides; small platelet clumps within the monolayer)

Information provided by Sandy Willis, DVM, MVSc, Small Animal Internist at Phoenix Laboratory, 1-800-347-0043, email: sandyw@pclv.net

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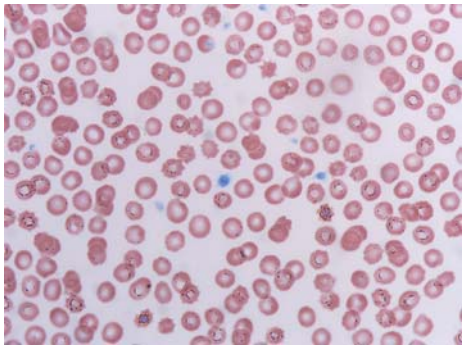
As you can imagine from viewing the above pictures, estimating platelet numbers in the face of clumping is tricky and takes experience. Sometimes a sample needs to be redrawn to make sure that sample collection and handling are not falsely lowering a platelet count. Platelet clumping due to platelet activation at sampling is common in the cat. True thrombocytopenia in the cat is relatively rare.

Spontaneous hemorrhage due to thrombocytopenia occurs when counts are less than 30-60,000/ul. Thrombocytopenia should never be ignored on a laboratory report as patients with significant thrombocytopenia may not show clinical signs of bleeding. Autoimmune thrombocytopenia generally presents with marked thrombocytopenia, often less than 30,000/ul. Coagulopathies can present with a normal platelet count but we usually see a mild to marked decrease in platelets.

To estimate platelet numbers from a slide: First scan the entire slide, particularly the feathered edge for platelet clumping. If none is seen, on 100x oil:

Count total number of platelets in 10 contiguous fields of the monolayer
Calculate the average by dividing that number by 10
Multiply the average by 20 x 10^3/uL

EXAMPLE:
Total count is 100 in 10 fields
Average is 100/10 = 10
10 x (20 x 10^3/uL) = 200 x 10^3/uL



(Platelets 100x)

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