

Clinical Pathology Practice Tips
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Sample Submission:

- If not sure what sample to submit-call
- Time in transit and temperature important
- EDTA tube at least 1/3 full, make smears immediately
- Serum tubes, clot for 15-30 minutes and remove serum, transfer to clean tube
- Use citrate tubes for coagulation testing

Where to Send Samples- How to Choose:

Veterinary Laboratory-Best Choice

- Aware of species differences
- Clinical pathologist/Pathologist should be at location, oversee quality
- Credentials: Advanced training MS, PhD, Diplomate ACVP, or both
- MT or MLT (ASCP) technical training preferred
- Communication essential
- Will try to advise best sample for best answers

Human Hospitals-Not a good choice

- Do not have trouble shooting for multiple species, need different thresholds
- Biggest problems in hematology
- Do not establish animal reference intervals
- Trouble shooting and quality control set up for human beings, not animals
- No resources to help with cases
- Under increasing economic pressure to produce numbers for veterinary client

Warning Signs - When you need to change laboratories

- No on-site communication-not willing or cannot discuss cases
- No comments on hematology reports about cell appearance
- No special stains reported on histopathology reports
- Remember- No federal regulation for veterinary laboratories

Considerations for In-house Testing:

- Your time, technician time
- Quality control- control solutions, calibration
- Ease of maintenance-tubing, software. Who is responsible?
- Goals-presurgical work-ups, emergencies, all samples?

Buying Considerations

- Machine on loan for trial-Very important to try out
- Maintenance contract-usually 10% of purchase price, what include:software or hardware updates? free machine loan during repairs?
- How stable is company? Will be around to continue product?
- Reagent, control, and depreciation costs
- Buy as is; future promises may not materialize

Types of tubes:

EDTA: Best to preserve cell morphology; chelates Ca and Mg; do not use for chemistries. There is NaEDTA and K EDTA which can also alter chemistry values.

Heparin: Poor cell preservation but can use plasma for chemistries, especially STAT

Citrate: Used for coagulation testing. Obtain sample, centrifuge, and freeze plasma to transport.

Serum separator tubes: More expensive and serum must be removed. If just centrifuge, plug can loosen during transport and mix sample. Also, do not use for drug, hormone, or toxin testing since separator gel can absorb constituents.

Hematology:

For CBC submissions, make smears to send with sample. Even short time periods can cause alterations in blood. Parasites such as *Hemobartonella sp.* can detach from the erythrocytes due to being in EDTA and the cooling of the blood.

A transported sample cannot have an accurate automated platelet count performed unless it is done within 1-4 hours. Clumped platelets do not guarantee adequate platelet numbers.

Request reticulocyte counts in anemic animals to determine if the anemia is regenerative or nonregenerative. This also can be done in a practice setting. Use 1 drop of New Methylene Blue stain and 1 drop of blood. Mix and incubate 10 minutes, make smear and count how many erythrocytes have reticulin precipitant in 100 erythrocytes (gives an approximate %).

Human medical laboratories identify neutrophil bands more readily than the criteria used in veterinary medicine, e.g., the CBC from human medical laboratories will overstate the number of band neutrophils.

Chemistry:

Serum or plasma must be taken off the cells or glucose will decrease and erythrocyte enzymes can leak into sample. Hemolysis also can occur and alter values.

Do not send samples in serum separator tubes; the gel will leak and the sample will mix again. (See tubes above)

Human medical laboratories often use a dye that does not bind well to animal albumin. Suspect this if all your albumin concentrations are low.

Coagulation:

Use citrate tubes, obtain sample, centrifuge, and freeze plasma to transport.

Cytology:

Sending fluids: Use EDTA for cell morphology and a clean tube to send samples for microbiologic testing, cultures.

Just air-dry smears and do not use special preservatives. This can interfere with staining.

Urinalysis:

Use a regular stain such as Diff Quik to stain air-dried smears of urine if there is difficulty evaluating sediment cells. Sedistain can precipitate depending on the urine pH making the slides difficult to read.