

# The Academy of Veterinary Clinical Pathology Technicians

## Knowledge Topic List

<b>General Knowledge</b>
Rational for each testing procedure and/or combination of testing procedures, including related pathophysiology
Ability to inform clients regarding the tests and alternatives
Identify, prevent and mitigate the hazards, risks and harmful effects of the procedures for the patient and veterinary health care team
Understand and utilize appropriate manufactures' supplied information, including MSDS
Understand the (inter)relationship between procedures
Specific specimen collection, handling, storage and shipping processes for individual and conglomerate procedures
Understand and demonstrate the ability to apply appropriate species and individual patient pre- and post-analytic care, handling, minimal/low stress restraint and management as they relate to test results and patient welfare
Ability to apply testing principles/methodology and perform testing procedures
Ability to select, appropriate, utilize, store and maintain instruments and supplies so all are functional and available to meet patient needs
Recognize personnel and facility limitations by understanding and identifying the characteristics of specimens, tests and/or results that will necessitate the submission of the specimen/results for review and/or testing by a reference laboratory and clinical pathologist
Understand sensitivity, specificity and how it relates to test selection
Instrument troubleshooting
Instrumentation selection criteria
<b>Quality Control/Assurance</b>
Usage of Levy-Jennings chart
Understand what is involved and how to set up a quality control/ assurance program for the laboratory
Commercial availability of quality control materials, options
Address potential cost issue
<b>Reference Intervals</b>
Knowledge and understanding of reference intervals
Understand how reference intervals are generated for use at a given facility
Rationale as a tool for validating result
Rationale as a tool for the veterinarian in the diagnostic process
Relationship to patient results
<b>Hematology</b>
Understand the principles of both manual techniques and a variety of automated methodologies
Proper specific specimen collection
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
Knowledge and understanding of specific tests and the diseases or processes that relate to that test.
Hematopoiesis, erythropoiesis

Understand leukocyte function and kinetics
Regenerative and non-regenerative anemias
Erythrocyte morphology, normal and abnormal
Leukocyte morphology, normal and abnormal
Platelet production, function and morphology, normal and abnormal
Leukocyte, erythrocyte and platelet inclusions and parasites
Basic understanding of lymphoproliferative and myeloproliferative disorders
Understanding of exotic hematology (avian, reptile and others)
Knowledge and understanding of usage of a “grading scheme” for evaluation of cellular morphology
<b>Clinical Chemistry</b>
Wellness, pre-surgical, disease specific, system and organ specific profiles and individual tests utilizing automated bench/point of care and manual methodologies
Species specific tests and profiles
Knowledge and understanding of specific tests and the organ system, diseases or processes that relate to that test.
Specific specimen collection
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Urinalysis</b>
Proper usage of reagent strips, interferences
Reagent strip validity vs. those lacking validity in the veterinary patient
Know when a culture should be performed
Knowledge of the renal physiology and how it may impact evaluation of the urine sample.
Knowledge and understanding of specific tests and the diseases or processes that relate to those tests
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Cytology</b>
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
Recognize personnel and facility limitations by understanding and identifying the characteristics of specimens, tests and/or results that will necessitate the submission of the specimen/results for review and/or testing by a reference laboratory and clinical pathologist
Knowledge of collection methods and effects the collection methods on test results
Understanding of basic cell types
<b>Coagulation</b>
Understand diseases and problems related to coagulopathies (hemostasis) such as thrombocytopenia, thrombocytosis, ITP, IMHA, DIC, Evans syndrome, von Willebrands disease, toxicosis with anticoagulant rodenticides.
Knowledge of hemostasis and individual coagulation factors. Primary hemostasis, intrinsic, extrinsic and common pathways (secondary hemostasis)
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Immuno-Hematology</b>
Knowledge of blood typing and/or grouping of the various species
Understand the general principles of and indications for blood transfusion

Understand donor selection
Understand appropriate sample handling and collection for sending samples for blood typing
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Serology/Immunology</b>
RIM
Understand various serological testing available in diagnostic and reference labs, such as: compliment fixation, immunofluorescence, PCR/DNA amplification, antibody titers.
Knowledge of which species a particular antibody/antigen serology test may be used
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Endocrinology</b>
Understand diagnostic tests for a variety of diseases such as Addison's, Cushing's, diabetes, and various thyroid problems.
Understand reproductive cycle stages, pregnancy maintenance
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Toxicology</b>
Be familiar with various common agents that are toxic to animals
Knowledgeable of shipping processes of various specimens to toxicology laboratories of the following specimens : fluids, tissue, feeds, whole blood, serum/plasma, vomitus, gastric lavage, feces, urine and others
Be aware that many clients may want/need drug screens.
Quality Control/Assurance
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Acid-Base Evaluation</b>
Evaluation of venous vs. arterial samples
Proper collection and handling of blood gas samples
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
Understanding of acid base disorders
Anion gap usage, measurement
<b>Microbiology</b>
Know and understand the process and preparation for all types of cultures, such as aerobic, anaerobic, blood, fungal, and fecal cultures.
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures
<b>Parasitology</b>
Knowledge of internal and external parasites, including species-specific parasites, life cycles, related diseases and methods of prevention and treatment.
Knowledge of resistance to anthelmintic(s)
Understand the current guidelines for parasite control in individuals vs. herd, pasture rotation, and disposal of manure and bedding
Pre-analytic, analytic, post-analytic influences on the accuracy and validity of procedures

<b>Miscellaneous Testing</b>
Electrophoresis - protein
Handling, processing and shipping guidelines for urinary calculi
<b>Miscellaneous Technical Skills</b>
Understanding of all the parts and functions of the microscope
Proper maintenance and cleaning of the microscope
Sample submission including formalized and "dry ice" samples
Understanding of the calibration process of centrifuges