The Academy of Veterinary Technicians in Clinical Practice

Application Packet, Part 2
Exotic Companion Animal
2019 Case Year
CASE LOGS and REPORTS – Additional Instructions/Guidelines

- When a validated pain score scale is not available, give a subjective pain score of mild, moderate, or severe. It is also recommended to use the mouse, rat and rabbit Grimace Scale: [https://www.nc3rs.org.uk/grimacescales](https://www.nc3rs.org.uk/grimacescales)
- When a validated BCS scale is not available, give a subjective score. The 9 point scale is recommended.
  - Rabbit BCS Reference: [https://www.pfma.org.uk/rabbit-size-o-meter](https://www.pfma.org.uk/rabbit-size-o-meter)
  - Avian BCS Reference: [https://www.pfma.org.uk/bird-size-o-meter](https://www.pfma.org.uk/bird-size-o-meter)
  - Guinea Pig BCS Reference: [https://www.pfma.org.uk/guinea-pig-size-o-meter](https://www.pfma.org.uk/guinea-pig-size-o-meter)

AVTCP Exotic Companion Animal Skills List 2019

- A minimum of 80% of the skills must be mastered.
  - Mastery is defined as to be able to perform a task consistently and competently without being coached or directed no less than 4 times.
  - Mastery requires having performed the task in a wide variety of patients and situations.
- Skills must be cross-referenced in the case logs.
- The use of personal pets or clinic animals is unacceptable.
- The use of deceased/cadaver animals to obtain skills is unacceptable.

Husbandry Requirements

<table>
<thead>
<tr>
<th>Skill</th>
<th>Case Log Number(s)</th>
<th>Vet or VTS Signature</th>
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<tbody>
<tr>
<td>1. Ability to recognize and identify different species of both common and rare avian and exotic pets</td>
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<tr>
<td>2. Mastery of husbandry requirements for the most common avian and exotic species including, but not limited to nutritional requirements, caging/housing, substrate, temperatures, humidity, lighting, grooming, bathing, foraging, enrichment, etc.</td>
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<tr>
<td>3. Expertise in the application of husbandry requirements in the hospital setting to maximize patient care and comfort</td>
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<tr>
<td>4. Proficiency in the education of clients and coworkers in the proper care of individual species of avian and exotic pets</td>
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### General Nursing

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<thead>
<tr>
<th>Skill</th>
<th>Case Log Number(s)</th>
<th>Vet or VTS Signature</th>
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<tbody>
<tr>
<td>Perform a comprehensive physical exam: identify normal/abnormal eyes, ears, nares, oral, vent, choana, heart and lung sounds, pain assessment, body condition score, hydration status</td>
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<td>Recognize signs of respiratory failure, shock</td>
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<td>Accurately and efficiently triage patients presenting for emergent conditions</td>
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<tr>
<td>In association with other medical team members, administer CPR, evaluate effectiveness, and troubleshoot therapy</td>
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<td>Thorough knowledge of substances that, when ingested, result in toxicity</td>
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<td>Efficient and accurate calculation of drug doses, solutions, and IV fluid rates</td>
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<td>Demonstrate thorough knowledge of metric conversions</td>
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<tr>
<td>Mastery of venipuncture in healthy, sick, and/or debilitated animals.</td>
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<tr>
<td>Mastery of jugular and peripheral IV catheter placement in a variety of sites in healthy, sick, and/or debilitated animals</td>
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<tr>
<td>Mastery of intraosseous catheterization in a variety of sites in healthy, sick, and/or debilitated animals</td>
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<tr>
<td>Set up and maintain an IV fluid pump and syringe pump and be able to troubleshoot equipment malfunction</td>
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<tr>
<td>Mastery of various methods of centesis (cysto, percutaneous, and abdominal/coelomic)</td>
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<tr>
<td>Proficiency in placement and maintenance of a urinary catheter in ferrets, rabbits, and guinea pigs (male and female)</td>
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</table>
18. Proper placement and/or maintenance of at least two (2) of the following types of enteral feeding tubes: nasogastric, esophageal, gastric, jejunal, crop/proventricular

19. Properly administer blood products, including obtaining donor blood and monitoring techniques throughout the transfusion

20. Set up and perform non-invasive blood pressure monitoring, evaluate blood pressure status, and troubleshoot equipment malfunction

21. Set up and monitor heart rate and rhythm with ECG monitoring, recognize normal and abnormal tracings, and troubleshoot equipment malfunction

22. Set up a pulse oximeter, evaluate oxygen status, and troubleshoot equipment malfunction

23. Administration of fluids and medications via various parenteral administration sites (IM, SC, ICe, IV, IO)

### Anesthesia/Analgesia

<table>
<thead>
<tr>
<th>SKILL</th>
<th>Case Log Number(s)</th>
<th>Vet or VTS Signature</th>
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<tbody>
<tr>
<td>24. Assign appropriate ASA status after reviewing patient history, PE, and diagnostic results in collaboration with a veterinarian</td>
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<tr>
<td>25. In collaboration with a veterinarian, determine appropriate anesthetic and peri-anesthetic protocols to provide effective pain management and maximum anesthetic safety and effectiveness</td>
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<tr>
<td>26. Perform local and regional nerve blocks</td>
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<tr>
<td>27. Evaluate the effects of common pre-anesthetic, induction, and maintenance drugs</td>
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<tr>
<td>28. Evaluate and respond to adverse reactions to and/or complications from pre-anesthetic, induction, and maintenance drugs</td>
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<td>29.</td>
<td>Implement appropriate pre-oxygenation technique and know rationale with regards to species, anemia, etc.</td>
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<tr>
<td>30.</td>
<td>Mastery of endotracheal intubation and tube placement with understanding of size, length, safe technique, and when to use cuffed vs. non-cuffed tubes in routine and emergent situations</td>
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<td>31.</td>
<td>Thorough knowledge of the risks associated with intubation and the appropriate steps to avoid these risks</td>
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<td>32.</td>
<td>Set up a capnograph end-tidal CO2 monitor, evaluate ventilation status, and troubleshoot equipment malfunction</td>
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<td>33.</td>
<td>Set up a continuous respiratory rate monitor, evaluate respiratory rate status, and troubleshoot equipment malfunction</td>
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<td>34.</td>
<td>Perform manual intermittent positive pressure ventilation with an anesthesia breathing bag and evaluate its effectiveness</td>
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<td>35.</td>
<td>Set up ventilator, calculate appropriate tidal volume and respiratory rate, and troubleshoot machine as needed</td>
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<td>36.</td>
<td>Set up and monitor temperature (esophageal, rectal, external), evaluate patient status, and troubleshoot machine malfunction</td>
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<tr>
<td>37.</td>
<td>Implement techniques to prevent hypothermia/hyperthermia and resolve these issues by safely and effectively using devices such as warm air blankets, circulating water blankets, IV fluid warmers, radiant heating devices, and incubators pre and post surgically</td>
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<tr>
<td>38.</td>
<td>Monitor and evaluate patient status and anesthetic depth using established parameters such as outward involuntary physical response (i.e. jaw tone, palpebral reflex, eye position), blood pressure, ECG, pulse oximetry, heart rate, respiratory rate, and ventilation status</td>
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<tr>
<td>39.</td>
<td>Administer and evaluate the effects of IV fluid (crystalloid and colloid) and blood component therapy during anesthesia</td>
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<tr>
<td>40.</td>
<td>Ability to assess appropriate extubation time for various species, (such as reptiles versus ferrets) with consideration of regurgitation/aspiration, and emergence from anesthesia</td>
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<td>41.</td>
<td>Set up, maintain, and troubleshoot a non-rebreathing system</td>
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<tr>
<td>42.</td>
<td>Set up, maintain, and troubleshoot a rebreathing system</td>
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<td>43.</td>
<td>Set up, maintain, and troubleshoot an anesthesia machine (oxygen tank, vaporizer, CO2 absorbent, scavenger system)</td>
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<td>44.</td>
<td>Set up, maintain, and troubleshoot an anesthetic induction chamber</td>
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<td>45.</td>
<td>Set up, maintain, and troubleshoot a waste gas scavenging system</td>
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**Surgical Nursing**

<table>
<thead>
<tr>
<th>Skill</th>
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<tbody>
<tr>
<td>46. Mastery of the unique and varied individual surgical nursing requirements of various species (ferrets, small rodents, birds, rabbits, guinea pigs, reptiles, etc.)</td>
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<tr>
<td>47. Extensive knowledge of and ability to set up necessary equipment and supplies for a variety of surgeries (i.e. reproductive tract, GI tract, ophthalmic, orthopedic, soft tissue, rigid and flexible endoscopy, laparoscopy/coeleoscopy) for each species</td>
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<tr>
<td>48. Coordinate the process of preparation, safe use, and maintenance of suction equipment, radiosurgery, electrocautery, and laser units</td>
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<tr>
<td>49. Coordinate the process of preparation and positioning of patients for a variety of surgical procedures (i.e. reproductive tract, GI tract, ophthalmic, orthopedic, soft tissue, rigid and flexible endoscopy, laparoscopy/coeleoscopy) for each species</td>
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<tr>
<td>50. Coordinate pre and post operative care of surgical patients</td>
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<td>51. Supervise staff in the care of surgical instruments</td>
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<td>52. Supervise staff in proper surgical sterilization procedures (autoclave, ethylene oxide, gluteraldehyde, etc.)</td>
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### Laboratory

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<th>Skill</th>
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<tbody>
<tr>
<td>53. Mastery of all basic laboratory testing: PCV, TP, UA, fecal analysis (direct smears, floats, gram stains, acid fast stains), external parasite analysis, basic cytology, blood smear evaluation, and estimated WBC count</td>
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<tr>
<td>54. Utilize, maintain, and troubleshoot in-house hematology and clinical chemistry analyzers and evaluate results</td>
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<td>55. Demonstrate the ability to perform at least 2 different in-house clotting tests (BMBT, ACT, Platelet evaluation, PT, APTT)</td>
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<tr>
<td>56. Demonstrate the ability to obtain samples for tests such as, but not limited to, CBC, clinical chemistries, PCR, serology, and virology. This includes: appropriate fasting protocols, correct timing of sample collection, and correct sample collection and handling</td>
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<tr>
<td>57. Properly collect, handle, and store samples of excretion, secretion, and effusion for laboratory evaluation</td>
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<tr>
<td>58. Properly collect, handle, and submit cytology and samples for laboratory evaluation</td>
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<tr>
<td>59. Properly collect, handle, and submit samples for bacterial and fungal culturing</td>
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<tr>
<td>60. Properly collect, handle, and submit samples for histopathology</td>
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### Diagnostic Imaging

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<tr>
<td>61. Coordinate the radiographic process by directing team members to consistently and efficiently produce radiographs of diagnostic quality</td>
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<tr>
<td>62. Proficiency in evaluating the patient’s condition (medical, surgical, behavioral) and adapting the radiographic procedures to those conditions</td>
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</table>
63. Demonstrate accuracy and efficiency in positioning patients for a variety of radiographic studies (thorax, abdomen, spine, skull, extremity, pelvis, dental)

64. Accurate and consistent evaluation and modification of radiographic technique

65. Perform and/or demonstrate the ability to set up and assist in contrast studies (i.e. GI studies, double contrast, cystograms, myelograms) including the setup of necessary equipment, patient preparation, and administration of contrast media

66. Ability to maintain radiograph cassettes, radiology processor and develop radiographs properly

67. Ability to utilize, troubleshoot, and manipulate technique using digital radiology

68. Demonstrate the ability to set up, maintain equipment, and assist with or perform ultrasonography

### Dentistry

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<th>Skill</th>
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<tbody>
<tr>
<td>69. Thorough knowledge of dental anatomy for all species (rodent, rabbit, ferret, hedgehog, sugar glider, etc.)</td>
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<tr>
<td>70. Efficiently perform a comprehensive oral exam</td>
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<tr>
<td>71. Readily identify oral pathology and anatomic abnormalities</td>
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<tr>
<td>72. Comprehensive knowledge of how to use and care for dental hand instruments and power instruments</td>
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<tr>
<td>73. Perform thorough and efficient dental prophylaxis</td>
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</table>
74. Efficiently and consistently produce dental radiographs of diagnostic quality

75. Ability to perform and/or assist with rodent/rabbit dental trimming

76. Ability to maintain and troubleshoot dental machinery and equipment

### Pharmacology

<table>
<thead>
<tr>
<th>Skill</th>
<th>Case Log Number(s)</th>
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<tbody>
<tr>
<td>77. Extensive knowledge of groups of drugs, their mechanisms, clinically relevant side effects, and accurate evaluation of therapeutic responses</td>
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<tr>
<td>78. Extensive knowledge of types of vaccines, their immunological mechanisms, and adverse vaccine reactions</td>
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### Behavior

<table>
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<tr>
<th>Skill</th>
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<tbody>
<tr>
<td>79. Knowledge of basic behavioral learning concepts (i.e. punishment, positive reinforcement, rewards, operant conditioning)</td>
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<tr>
<td>80. Ability to recognize appropriate and inappropriate behaviors in several species (birds, rabbits, reptiles, etc.) and provide information to clients regarding current scientifically based techniques of training, management, and behavior modification</td>
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<tr>
<td>81. Familiarity with a variety of training tools and their uses</td>
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82. Train practice staff in recognizing and managing aggressive behavior in the practice setting (i.e. use of proper restraint techniques, muzzles, sedation, etc.)

### Leadership Roles

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<tr>
<th>Skill</th>
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<tr>
<td>83. Supervise the creation and maintenance of all appropriate facility records and logs in compliance with regulatory guidelines (e.g. radiology, surgery, anesthesia, laboratory, controlled substances)</td>
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<td>84. Instruct and supervise staff in the accurate recording of medical information</td>
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<td>85. Manage inventory control</td>
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<tr>
<td>86. Establish and supervise the maintenance of appropriate sanitation and nosocomial protocols for a veterinary facility including patient and laboratory areas</td>
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<tr>
<td>87. Educate hospital staff in the recognition and proper handling and housing of patients with potentially infectious diseases</td>
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<tr>
<td>88. Proficient at developing and providing client education in a clear and accurate manner at the level the client understands (i.e. oral and written form including educational handouts)</td>
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<td>89. Outstanding interpersonal and public relations skills</td>
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<tr>
<td>90. Skilled application of crisis intervention/grief management skills with clients</td>
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<tr>
<td>91. Ability to navigate and appropriately/professionally manage social networking media sites</td>
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</table>
The AVTCP reserves the right to verify any information that the candidate provides in the application packet.

The AVTCP requires that a licensed veterinarian or a Veterinary Technician Specialist who has mastered the skill, attest to your ability to perform the task. Mastery is defined as being able to perform the task safely, with a high degree of success, and without being coached or prompted no less than four (4) times. Mastery requires having performed the task in a wide variety of patients and situations. The applicant must have mastered a minimum of 80% of the skills listed. All skills mastered must be demonstrated in the case logs and reports. The use of cadavers, clinic animals, or personal pets is unacceptable.

I, the undersigned, declare that I have read the entire AVTCP application packet. I further attest that the above-named applicant has achieved the AVTCP definition of mastery for the above skills that are marked with my signature.

_________________________________________/________________________________________
Name and Degree                                           Signature

_________________________________________/________________________________________
Name and Degree                                           Signature

_________________________________________/________________________________________
Name and Degree                                           Signature

_________________________________________/________________________________________
Name and Degree                                           Signature

_________________________________________/________________________________________
Name and Degree                                           Signature

Please provide the names and credentials of all persons who have signed this form attesting to your mastery of advanced skills in clinical practice.
AVTCP Exotic Companion Animal Knowledge Lists

This list is both a guide for applicants to prepare for studying as well as to supply a list of acceptable species for
case logs and reports. Any questions regarding species outside of this list, particularly for reptiles, amphibian, and
fish which could encompass companion species not listed here, should be emailed to the ECA Member at Large
Kathryn Torres: kgtorres@san.rr.com. Please note that crocodilian and venomous species will not be accepted.

Species List

Please note that logs, reports, and skills must be from exotic companion animals compiled from this list, not
wildlife or zoo cases. For example, if writing about a case involving a falconiform, it must belong to a falconer
who keeps them for sport/companionship and not to be released.

- Pet Birds
  - Psittacines (eg: parrots, lories)
  - Passerines (eg: canaries, finches)
  - Columbiformes (eg: doves, pigeons)
  - Ramphastidae (eg: toucan, toucanettes)
  - Falconiformes (eg: falcons, hawks, kestrels)
  - Galliformes (eg: chicken, quail)
  - Anseriformes (eg: ducks, geese)

- Pet Mammals:
  - Lagomorph (eg: rabbits)
  - Rodentia (eg: guinea pigs, chinchillas, rats, mice, hamsters, gerbils, prairie dogs, degus)
  - Diprotodontia (eg: sugar gliders)
  - Eulipotyphla (eg: hedgehogs)
  - Carnivora (eg: ferrets, skunks)
  - Artiodactila (eg: miniature pigs)

- Pet Reptiles: No venomous or crocodilians permitted
  - Squamates (eg: lizards, monitors, snakes)
  - Testudines (eg: tortoises, turtles)

- Pet Amphibians
  - Anura (eg: frogs, toads)
  - Urodela (eg: salamanders, newts, axolotls, sirens)

- Pet Fish
  - Cypriniformes (eg: koi, goldfish)
  - Perciformes (eg: Oscars, cyclids, bettas)

Anatomy and Physiology

For each species on the “Species List”, the following topics should be mastered. These parameters are meant to be
for captive avian and exotic pets, which is very different from zoo exhibits and the differences should be clearly
understood.

- Physiologic values
  - Life span
  - Average body weight
• Body temperature
• Heart rate
• Respiratory rate
• Sexual maturity
• Type of estrous cycle
• Ovulation
• Gestation period
• Litter/clutch size
• Incubation period
• Normal weight at birth
• Eyes and ears open
• Weaning age

• Integument
  • Fur
  • Feathers
  • Glands
  • Skin and dermal layers
  • Scales
  • Chromatophores
  • Osteoderms
  • Femoral pores

• Senses
  • Visual
    ▪ Pupillary light response
    ▪ Visual spectrum
    ▪ Eye shape
    ▪ Eye lids
    ▪ Lens
    ▪ Avascular retinas
    ▪ Tapetum
    ▪ Spectacle
    ▪ Nasolacrimal duct system
    ▪ Parietal eye
  • Auditory
    ▪ Acoustical ability
    ▪ Pinna
    ▪ Ear canal
    ▪ Tympanic membrane
    ▪ Operculum
    ▪ Sound frequency ranges
  • Olfactory
  • Tactile

• Metabolism
  • POTZ—preferred optimal temperature zone
  • Ectothermic
  • Behavioral thermoregulation
  • Hibernation, brumation
  • Osmoregulation

• Gastrointestinal System
  • Herbivores
  • Carnivores
  • Omnivores
- Granivore
- Insectivore
- Frugivore
- Nectarivore
- Florivores
- GI transit time
- Dental formulas for the variety of species
  - Incisors
  - Canine teeth
  - Deciduous teeth
  - Permanent teeth
  - Premolars
  - Molars
  - Diphodont dentition
  - Peg teeth
- Tongue
- Salivary glands
- Beak
  - Rhamphotheca
  - Rhinotheca
- Oropharynx
- Choanal slit
- Palatal ostium
- Diastema mastication
- Esophagus
- Crop
- Stomach
- Pylorus
  - Ability to vomit
- Liver—number of lobes
- Intestines
- Gallbladder (which species have one)
- Pancreas
- Spleen
- Splenopancreas
- Adrenal glands
- Hind gut fermenters
- Cecum
- Colon
- Fusus coli
- Chloaca
  - Coprodeum
  - Urodeum
  - Proctodeum
- Vent
- Respiratory System
  - Nares
  - Cere
  - Obligate nasal breathers
  - Operculum
- Infraorbital sinus
- Larynx
- Glottis
- Trachea
  - Cartilaginous tracheal rings
- Bronchi
- Parabronchi
- Syrinx
- Lungs
  - Anatomy
  - Quantity
  - Function
- Diaphragm
- Air sacs
- Vascularity
- Gas exchange
- Breathing cycles

• Cardiovascular System
  - Heart
  - Hepatic and renal portal systems
  - Cardiac shunting
  - Venous circulation
  - Arterial circulation
  - Lymphatic system

• Nervous System
  - Circadian Pacemaker
  - Brain
  - Spinal cord
  - Cranial nerves
  - Peripheral nerves
  - Autonomic nervous system
  - Parasympathetic nervous system
  - Vasovagal reflex
  - Melatonin
  - Pineal gland

• Musculoskeletal system
  - Pneumatic bones
  - Medullary bones
  - Skull
  - Vertebral Column
  - Vertebrae number
  - Occipital condyle
  - Synsacral
  - Coccygeal
  - Pygostyle
  - Tail autotomy and regeneration
  - Shell—modifications between species
  - Carapace
  - Plastron
  - Scutes
  - Musculature anatomy
  - Skeletal anatomy
- Forms of locomotion
- Digit anatomy

• Reproductive Systems
  - Sex chromosomes
  - Sex determination
  - Anogenital distance
  - Sexual dimorphism
    ▪ Testes
    ▪ Baculum
    ▪ Hemipenes
    ▪ Prostate
    ▪ Penis vs. Phallus
    ▪ Os penis
    ▪ Colors
  - Female Reproductive System
    ▪ Ovulation
    ▪ Ovary
    ▪ Oviduct
    ▪ Fertilization
    ▪ Egg formation
    ▪ Oviparous
    ▪ Viviparous
    ▪ Egg anatomy
    ▪ Incubation
    ▪ Gestation
    ▪ Postovulatory follicle
    ▪ Uterus
    ▪ Cervix
    ▪ Ossification of pelvic symphysis
    ▪ Mammary glands
  - Copulation techniques
  - Seasonal variances in habits

• Urinary System
  - Kidneys
  - Osmoregulation
  - Urates
  - Renal Portal System
  - Salt Gland
  - Uricotelic
  - Bladder
  - Urine consistency and color
  - Urates

• Endocrine System
  - Pituitary gland
  - Growth hormones
  - Thyroid
  - Parathyroid
  - Thymus
  - Adrenal glands
  - Corticosterone
  - Nasal salt glands
  - Pancreas
- Insulin
- Glucoregulation
- Glucose
- Glycogen
- Somatostatin

- Circulatory System
  - Heart
  - Purkinje fibers
  - Aorta
  - Cerebral arterial Circle of Willis
  - Hepatic and renal portal systems
  - Arteriovenous networks
  - Blood
  - Extrinsic and intrinsic pathways

- Lymphatic and immune system
  - Thymus
  - Spleen
  - Specific immunity
  - Bursa of Fabricius
  - IgG
  - IgE
  - IgA
  - IgM

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**Anesthesia**

Candidate must have a complete understanding of the theoretical and technical use, application, and relevance of these anesthetic issues for each individual species on the “species list”.

- Anesthetic equipment
  - ETCO$_2$
  - Doppler
  - EKG
  - Indirect blood pressure
  - Direct blood pressure
  - Blood gas analysis
  - SPO$_2$
  - Ventilation options
  - Core body temperature measurement
  - Respiratory monitoring
  - IV/IO infusion options

- Proper thermal support
- Analgesics
- Pre-anesthetic agents
- Induction agents
  - Inhalants
  - Injectables
- Administration sites
- CRI options
- Normal physiologic reference ranges
  - Heart Rate
  - Respiratory Rate
  - Core body temperature
- Anesthetic techniques
  - Intubation
  - Induction
  - IV/IO/air sac catheter placement sites and sizes
- Intra-operative fluid therapy options
- Blood transfusions
  - Blood typing
  - Rates and administration methods
  - Recognize blood transfusion reactions
- Troubleshooting anesthetic reactions
- Emergency interventions and CPR (see Knowledge list)
- Post-anesthetic complications

**Diseases and Conditions**

Candidates are expected to recognize which of these diseases are species specific, and how certain diseases can and do manifest differently between varying species.

Candidates must have a complete knowledge of each of these diseases for every species on the “species list” including:

- Causes
- Symptoms
- Modes of transmission
- Proper testing
- Treatment options
- Prognosis

- Abscesses
- Antibiotic toxicities
- Adrenal disease
- Alleutian’s disease
- Amyloidosis
- Anaphylaxis
- Anemia
- Atrial thrombosis
• Aural Abscess
• Autoimmune diseases
• Avian Bornavirus
• Barbering
• Behavioral Disorders
  ○ Feather Destructive
  ○ Skin mutilation
  ○ Screaming/Biting
• Biliary cysts/adenocarcinoma
• Blood parasites
• Cardiac Disease
• Cecal impaction
• Cheek pouch impaction
• Cherry eye
• Chlamydiosis
• Chordoma
• Clostridium piliforme (Tyzzer’s disease)
• Crop diseases
  ○ Stasis
  ○ Infection (bacterial/fungal)
  ○ Impaction
  ○ Burn
• Cryptorchidism
• Cryptosporidiosis
• Cystitis
• Dental disease
  ○ Malocclusion
  ○ Abscess
  ○ Gingivitis
  ○ Gingival hyperplasia
• Dermatitis
• Dermatophytosis
• Dirofilariasis
• Distemper virus
• Diabetes Mellitus/Insipidus
• Dystocia
• Dysecdysis
• ECE (Epizootic catarrhal enteritis)
• Edema (Dropsy)
• Egg binding/dystocia
• Egg peritonitis
• Encephalitozoon cuniculi
• Endometrial hyperplasia
• Eosinophilic enteritis
• Estrogen toxicity
- Estrus associated aplastic anemia
- Fatty liver disease
- Fecal impactions
- Fibroma
- Foreign body
  - Crop
  - Proventricular/Ventricular
  - Gastro-Intestinal
  - Tracheal
- Fungal infections
  - Aspergillosis
  - Candida
  - Ornithogaster
  - Others
- Fur slip
- Gastro-Intestinal obstruction or torsion
- Gastrointestinal stasis/Ileus
- Granulomatosis
- Helicobacter pylori
- Hemipene impaction/infection
- Hepatic lipidosis
- Herpes Virus
  - Pacheco’s Disease
  - Papillomavirus/Papillomatosis
  - Marek’s Disease
- Hydronephrosis
- Hypercalciuria
- Hypersplenism
- Hyper/hypothermia
- Hyper/hypocalcemia
- Hyper/hypovitaminosis
- Ileus
- Inclusion Body Disease (IBD)
- Inflammatory bowel disease
- Influenza
- Inhalent Toxins
  - PTFE
  - Air fresheners
  - Incense
  - Gas
- Insulinoma
- Intussusception
- Iron Storage Disease
- Lawsonia intracellularis infection
- Limb constriction- foreign object
- Liver disease
  - Infectious
  - Nutritional
  - Neoplastic
    - Hepatic Lipidosis
- Lymphoma
- Lymphadenitis
- Lymphocytic choriomeningitis virus
- Mammary neoplasia
- Mast cell tumor
- Megaesophagus
- Mucoid enteritis
- Mycobacterium
- Neoplasia varieties
- Nidovirus
- Nutritional secondary hyperparathyroidism (Metabolic Bone Disease)
- Obesity
- Ophthalmologic disease
- Osteoarthritis
- Osteomyelitis
- Otitis
- Ovarian cysts
- Paramyxovirus
- Parasitism
  - Skin
  - Gastro-Intestinal
  - Ears
  - Tracheal/air-sacs
  - Myiasis
- Parvovirus
- Pasteurellosis
- Penal hair ring
- Pheochromocytoma
- Pineconing scales
- Pneumonia
- Pododermatitis
- Polymyositis
- Polyoma Virus
- Porphyrinuria/pigmented urine
- Pre-ovulatory egg binding
- Pregnancy toxemia
- Proliferative colitis
- Prostate disease
- Proventricular Dilatation Disease (PDD)
- Prolapse
  - Cloaca
  - Vent
  - Intestinal
  - Hemipene/penis
  - Oviduct/uterus
  - Bladder
- Psittacine Beak and Feather Disease (PBFD)
- Pseudopregnancy
- Pulmonary mycoses
- Pyometra/metritis
- Rabies
- Renal disease
- Infectious
- Nutritional
- Neoplastic
- Gout
- Respiratory diseases of the small rodent
  - Murine Respiratory Mycoplasmosis (MRM)
  - Cilia-associated Respiratory (CAR) Bacillus
  - Streptococcus pneumoniae
  - Corynebacterium kutscheri (Pseudotuberculosis)
  - Pasteurella pneumotropica
  - Sendai Virus
  - Pneumonia Virus of Mice (PVM)
  - Rat Respiratory Virus (RRV)
  - Pneumonia carinii
- Rotavirus
- Rupture of the eye
- Scurvy
- Salmonellosis
- Self-mutilation
- Sepsis
- Sinusitis/air sacculitis/pneumonia
- Splay-Leg
- Spondylosis
- Stomatitis
- Testicular/ovarian neoplasia
- Thymoma
- Toxicosis
  - Lead
  - Zinc
  - Copper
  - Plant
• Tracheal mites
• Trauma
  o Dermal wounds/burns
  o Orthopedic
  o Soft tissue
  o Ocular
  o Crushing/shell wounds
  o Prey bites
• Treponema
• Trichobezoars
• Uric acid impaction
• Urolythiasis
• Uropygial gland disease
  o Impaction
  o Infection
  o Neoplasia
• Vaccine reaction
• Xanthomatosis

**Emergency and Critical Care**

Candidates must demonstrate a complete knowledge of all of these categories and parameters for each species on the “species list”. They must be able to recognize and understand how each situation differs among species and how to troubleshoot between them.

• Triage the emergency patient
  o Common emergency presentations and causes
  o Follow proper steps once emergency has been determined
• Perform complete physical exam
  o Proper capture and restraint techniques
  o Physiologic normal reference ranges
  o Auscult heart and lungs
  o Hydration status
  o When to perform exam in steps to minimize stress-related deaths
• Recognize the need to receive supplemental oxygen and methods of administration
• Temperatures and humidity requirements
• Fluid therapy regimens
  o Shock fluid therapy rates
  o Maintenance fluid therapy rates
  o Correcting hydration deficits
• Types of fluids used and when to use them
• Catheter placement sites
  o Intravenous sites
  o Intraosseous sites
  o Urinary catheters
• Equipment for fluid therapy delivery
• Analgesics
  o NSAIDS
- Opioids
- Local/topical

- Injection routes
- Tube/syringe feeding
  - Equipment/supplies
  - Calculate metabolic caloric requirements
  - Common hand feeding formulas
- Venipuncture
  - Use of lab supplies and packaging supplies
  - Venipuncture sites
  - Blood volume limitations
- Radiology
  - Proper positioning
  - When to sedate
  - Use of positioning board
- Critical care wound management
  - Hemostasis
  - Bandaging techniques
  - Splinting
- Blood transfusion medicine
  - Blood typing
  - Rates and administration methods
  - Recognize blood transfusion reactions
- CPR
  - Common emergency drugs used and routes
  - Intubation techniques in the emergency patient
  - Prep and assist with air sac cannulation
- Equipment knowledge and set up
  - Doppler placement and indirect blood pressure measurement
  - ECG placement
  - Ambu-bag/ventilator
  - Oxygen tanks/cages/incubators/nebulizers
  - Pulse Oximeters

Hematology

Candidates must have a complete understanding of each of these topics for each individual species on the “species list”.

- Venipuncture
  - Correct site/restraint
  - How much total blood can be pulled safely
- Packed Cell Volume
  - Preparation and reading
  - Serum color/quality
- Slide Preparation
  - Correct method of making a smear
  - Staining technique
- Lab supplies
  - Microtainers
  - Special swabs
Knowledge of which tests require what sort of sample (ie: plasma vs. serum vs. whole blood)

- Machines and lab devices
  - Proper microscope use and maintenance
  - Centrifuges
  - Hemocytometers
  - Refractometers
  - In-house chemistry/hematology analyzers pros and cons

- Manual count
  - Hemocytometer
  - Solutions used
  - Equation

- Cell Identification
  - Erythrocytes
  - Leukocytes
    - Granulocytes/Heterophils
    - Agranulocytes
  - Thrombocytes/Platelets

- Regeneration
  - Reticulocytes-Calculated mean
  - Grading with Plus System/percentage mean
  - Poikilocytosis/Anisocytosis/Polychromasia

- Toxic/Reactive Changes
  - Identify changes to cells
  - Grading changes

- Hemoparasites
  - Identify
  - Knowledge of different species

Behavior

Candidates are expected to master all of these parameters for each species specified on the “Species list”.

- Normal reproductive behaviors
  - Cycles
  - Oviparous, Viviparous, Ovoviviparous
  - Mating/courtship rituals
  - Sexual maturity
  - Gestation
  - Common physical displays

- Abnormal reproductive behavior
  - How to recognize dystocia
  - Irregular displays

- Age related behaviors
  - Common baby bird behaviors (eg: begging, regurgitating, rolling, sleeping, learning/practicing to fly)
  - Differences between age related blindness/lack of vision and acute blindness
  - Difference between normal age-related decrease in activity level vs. illness

- Signs of illness: Differentiate between normal behaviors and illness such as:
  - Vomiting vs. Regurgitating
  - Periods of inappetence
  - Brood patch feather removal/molting vs. feather destructive behavior
- Mouth gaping vs. respiratory distress
- Resting vs. lethargy
- Egg laying vs. dystocia
- Limping vs. playing/displaying

- Physical displays/body language for each species
  - Territorial displays
  - Affection displays
  - Aggressive/menacing displays
  - Feeding/nurturing displays
  - Mating/sexual

- Seasonal changes and associated behavior changes
  - Hibernation/brumation/estivation
  - Molting/Shedding
  - Appetite variance
  - Dietary requirements based on seasons
  - Reproductive habits

- Candidates should be prepared to advise pet owners of all species on a variety of topics and how to deal with these issues in their captive pets:
  - Biting
  - Excessive screaming
  - Boredom
  - Fighting with cage mates
  - Feather mutilation
  - Skin mutilation
  - Enrichment options
  - Foraging options
  - Basic training techniques:
    - How to medicate
    - How to restrain
    - How to teach birds to step up on a hand
    - How to safely get pets into appropriate transport carriers

Husbandry

For each species of pet, the following topics should be mastered. These parameters are meant to be for captive avian and exotic pets, which is very different from zoo exhibits and the differences should be clear in these recommendations.

- Nutrition
  - Herbivore, omnivore, carnivore, insectivore, frugivore
  - Ideal diets as per native habitat
  - Proper commercially available diets
  - Dangerous/toxic foods
  - Supplements
  - Gut loading
  - Proper food presentation
  - Frequency and quantity of feeding

- Enclosures
  - Type (cage vs. aquarium vs. free roam)
  - Natural habitat (Arboreal vs. ground dwelling vs. swamp vs. forest vs. desert vs. rain forest vs. arid)
- Substrate
- Important furniture
- Feeding devices
- Enrichment devices

- Lighting/sleep cycles
  - Proper spectrum requirements
  - How to provide appropriately for pets in captivity
  - Diurnal vs. Nocturnal vs. Crepuscular
  - Indoor vs. outdoor options

- Temperature/Humidity
  - POTZ for all species
  - Proper gradients
  - How to provide appropriately for pets in captivity
  - What is normal for these species in their natural environments and how best to recreate that for pets in captivity

- Bathing
  - Frequency and techniques (spraying vs. misting vs. fogging vs. soaking, etc.)
  - Which species require alternative “bathing” options (dust or soil baths)

- Hibernation
  - Which species naturally hibernate
  - When, as a pet in captivity, is hibernation appropriate
  - How to safely create an environment for these species to hibernate
  - Brumation vs. hibernation

- Longevity
  - Average life expectancy for captive pet species

- Grooming Needs
  - Which species may need grooming (nails/claws, feathers, beaks, etc)
  - What techniques are commonly used
  - What are signs of illness vs. normal captive overgrowth (ie: overgrown beak of a turtle due to nutritional deficiency vs. improper cage furniture and substrate)

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**Surgical Procedures**

Candidate must have a complete understanding of each of these procedures including which species may require specific procedures, how to prep for procedures, how to assist during the procedure, what instruments/tools/equipment will be required and how to properly use them, and possible pre and post surgical/procedural complications. Candidate must also be able to determine what each procedure is for and under what circumstances the procedure may or may not be indicated.

- Abscess management
- Abscess removal
- Adrenal tumor removal
- Amputation
  - Extremity
  - Penis
  - Hemipene
- Anastamosis
- Aural abscess removal
- Beak repair/reconstruction
- Biopsy
  - Dermal
  - Visceral
- Bite wound repair
- Caesarian
- Cloacalpexy
- Cryosurgery
- Cutaneous parasite removal
- Cystotomy
- Cystectomy
- Dental surgery
- Dental scaling
- Dental trimming
- Descenting
- Egg removal
- Endoscopy
  - Coelomic
  - Tracheal/Upper airway
  - Cloacal
  - Gastro-intestinal
  - Nasal
  - Intubation
- Enterotomy
- Enucleation
- Esophageal tube placement
- Exploratory abdominal
- Exploratory coeliotomy
- Gastrotomy
- Laser surgery
- Mammary tumor removal
- Orchiectomy
  - Scrotal
  - Pre-scrotal
  - Abdominal
- Orthopedic surgeries
  - Pinning
  - Plating
  - Splinting
  - Bandaging/external coaptation
  - Luxation reduction
  - Plastron/Carapace traumatic injuries
- Ovariohysterectomy
• Pancreatic tumor removal
• Prolapse repair
  o Hemipene
  o Penis
  o Oviduct
  o Colon
  o Cloaca
  o Bladder
• Radio surgery
• Salpingectomy
• Salpingotomy
• Salpingohysterectomy
• Soft tissue mass removal
• Thymoma removal
• Tracheal intubation
• Urethrotomy

**Book List ECA**

**Pharmacology**

• *Exotic Animal Formulary 5th edition, J. Carpenter,* (Saunders)
• *Plumb’s Veterinary Drug Handbook 8th or 9th edition, Plumb,* (Wiley-Blackwell)
• *The Merck Veterinary Manual 11th edition,* (Wiley)
• *Clinical Pharmacology and Therapeutics for the Veterinary Technician by,* 4th edition, R. Bill, (Elsevier)

**Anesthesia**

• *Anesthesia and Anesthesia for Veterinary Technicians, 5th edition, P. Lerche and J. Thomas,* (Elsevier)
• *Anesthesia of Exotic Pets by,* 1st edition, Longley, (Saunders)
• *Veterinary Anesthesia and Analgesia, 3rd edition, McKelvey and Hollingshead,* (Mosby)
• *Anesthesia for Veterinary Technicians, 1st edition, Bryant,* (Wiley-Blackwell)

**General Medicine**

• *McCurnin’s Clinical Textbook for Veterinary Technicians, 9th edition, J. Bassert,* (Elsevier)
• *Reptile Medicine and Surgery by Mader 2nd edition* (Saunders)
• Current Therapy in Reptile Medicine and Surgery, 1st and 3rd edition, D. Mader and S. Divers, (Elsevier)
• Ferrets, Rabbits, and Rodents: Clinical Medicine and Surgery, 3rd edition, K. Quesenberry and J. Carpenter, (Saunders)
• Textbook of Rabbit Medicine, 1st edition, Harcourt-Brown, (Elsevier)
• Exotic Animal Medicine for the Veterinary Technician, 3rd edition, Ballard and Cheek, (Wiley-Blackwell)
• Handbook of Avian Medicine, 2nd edition, Tully Jr., Dorrestein, and Jones, (Elsevier)
• Avian Medicine, 3rd edition, J. Samour, (Saunders)
• Current Therapy in Avian Medicine and Surgery, B. Speer, (Elsevier)
• Avian Medicine: Principles and Application, Ritchie, Harrison, Zantop, and Harrison, (HBD International Pub)
• Manual of Avian Practice 1st edition, Rupley, Saunders)
• BSAVA Manual of Exotic Pets, 5th edition, Meredith and Johnson Delaney, (BSAVA)
• BSAVA Manual of Rodents and Ferrets, 1st edition, Keeble and Meredith, (BSAVA)
• BSAVA Manual of Rabbit Medicine and Surgery, 2nd edition, Meredith and Flecknell, (BSAVA)
• BSAVA Manual of Raptors, Pigeons and Passerine Birds, 1st edition, Chitty and Lierz, (BSAVA)
• BSAVA Manual of Reptiles, 2nd edition, Girling and Raiti, (BSAVA)
• Amphibian Medicine and Captive Husbandry, 1st edition, Whitaker and Wright, (Krieger Publishing Company)
• Birds of Prey: Health and Disease, 3rd edition, Cooper, (Wiley-Blackwell)
• Poultry Health and Management: Chickens, Turkeys, Ducks, Geese and Quail, 4th edition, Sainsbury, (Wiley-Blackwell)
• Clinical Avian Medicine Volume 1 & 2, Harrison and Lightfoot, (Spix)
• The Veterinary Clinics of North America: Exotic Animal Practice Series, (Elsevier)

Emergency and Critical Care

• Small Animal Emergency and Critical Care for Veterinary Technicians, 2nd edition, Battaglia, (Elsevier)

Radiology


Anatomy and Physiology

• Clinical Anatomy and Physiology of Exotic Species: Structure and function of mammals, birds, reptiles and amphibians, 1st edition, O’Malley, (Saunders)
Knowledge list Avian/Exotic Pharmacology and Commonly Used Drugs

For each species on the “Species List”, the following pharmacology topics should be mastered. Knowledge of potential drug side effects and safe handling practices should be mastered for each species on the “Species List”. These parameters are meant to be for captive avian and exotic pets, in contrast to zoo exhibits and the differences should be clearly understood for these parameters.

- Drug Action
  - Pharmacokinetic factors of a drug
  - Absorption
  - Distribution
  - Excretion
  - Drug metabolism

- Routes of Administration
  - Oral
  - Parenteral administration
    - Subcutaneous
- Intramuscular
- Intravenous
- Intradermal
- Intraosseous
- Intracoelomic
- Intraperitoneal

- Neuropharmacology
  - Acetylcholine (Ach)
  - Norepinephrine (NE)
  - Agonists—causative agent
  - Antagonist—reversal, contrary action
  - Cholinomimetic Agents
    - Cholinesterase inhibitors
    - Anticholinesterases
    - Edrophonium chloride
    - Physostigmine
    - Pyridostigmine
    - Neostigmine
    - Organophosphates
      - Echothiophate iodide
  - Anticholinergics
  - Neuromuscular Blockers
  - Sympathomimetics
  - Sympatholytics

- Alpha-adrenergic blocking agents
- Beta-adrenergic blocking agents
- Tranquilizers
  - Phenothiazines
  - Benzodiazepines
- Sedatives
  - Alpha2 Adrenergic Agonists
- Hypnotic agents
- Anticonvulsants
  - Benzodiazepines
  - Barbiturates
  - N-Methyl-D-aspartate Antagonists (NMDA)
- Opioids
  - Mu & Kappa Agonist

- Kappa Antagonist
- Opioid Antagonist
- Analgesics
- Antipyretics
- Anti-inflammatory
- Corticosteroids
- Nonsteroidal Anti-Inflammatory Drugs (NSAID)
- Diuretic and Cardiovascular Drugs
  - Diuretics
  - Cardiac glycosides
- Antiarrhythmia drugs
  - Calcium channel blockers
  - Angiotensin Converting Enzyme (ACE) Inhibitors

- Antiparasitic
  - Anthelmintics
  - Anti-protozoal
  - Benzimidazoles
  - Organophosphates
    - 2PAM (Pralidoxime)
  - Tetrahydropyrimidines
  - Imidazothiazoles
  - Milbemycins
  - Ivermectins
  - Anticestodal drugs
  - Chlorinated hydrocarbons
  - Organophosphates
  - Pyrethrins

- Antibiotic
  - Penicillins
  - Macrolides
  - Fluoroquinolones
  - Sulfonamides
  - Tetracyclines
  - Aminoglycosides

- Antifungal
  - Polenes
  - Imidazole, triazole, and thiazoles
  - Allylamines
  - Echinocandins

- Hormones and Synthetic Substitutes
- Gastrointestinal Drugs
- Antiemetics
- Emetics
- Antidiarrheal Agents
- Cathartic (laxatives)
- Ulcer Management Drugs
- Chelation drugs

**Commonly Used Drugs**
- Parasiticide
  - Carbaryl 5% Powder
  - Fenbendazole
  - Ivermectin
  - Levamisole
  - Metronidazole
  - Oxfendazole
- Permethrin
- Praziquantel
- Sulfa-dimethoxine
- Fipronil
- Selamectin
- Moxydectin
- Imidoclopid

- Antimicrobial Drugs
  - Amikacin
  - Amoxicillin
  - Amoxicillin/Clavulanate
  - Ampicillin
  - Azithromycin
  - Carbenicillin
  - Cefazolin
  - Cephalexin
  - Cefoxitin
  - Cefotaxime
  - Ceftazidime
  - Chloramphenicol
  - Chlortetracycline
  - Ciprofloxacin
  - Clarithromycin
  - Clindamycin
  - Clotrimazole
  - Doxycycline
  - Enrofloxacin
  - Erythromycin
  - Fenbendazole
  - Fluconazole
  - Gentamicin (parenteral/ophthalmic)
  - Griseofulvin
  - Itraconazole
  - Ketoconazole
  - Lincomycin
  - Metronidazole
  - Neomycin, polymyxin, bacitration ophthalmic
  - Neomycin, polymyxin, bacitration, hydrocortisone ophthalmic
  - Piperacillin
  - Ponazuril
  - Ofloxacin ophthalmic
  - Oxytetracycline
  - Penicillin G Procaine Benthathine
  - Silver sulfadiazine
  - Tetracycline
  - Tetramycin ophthalmic
  - Ticarcillin
  - Trimethoprim-sulfadimethoxine
  - Tylosin
  - Vancomycin
• **Analgesics/Anesthetics/Sedatives/Reversal Agents**
  - Alfaxalone
  - Acepromazine
  - Atipamezole
  - Buprenorphine
  - Butorphanol
  - Carprofen
  - Diazepam
  - Dexametomidine
  - Fentanyl
  - Flunixin meglumine
  - Flurbiprofen ophthalmic
  - Gabapentin
  - Hydromorphone
  - Isoflurane
  - Ketamine
  - Ketoprofen
  - Meloxicam
  - Meperidine
  - Midazolam
  - Morphine
  - MS222
  - Naloxone
  - Propofol
  - Sevoflurane
  - Terbinafine
  - Tiletamine/Zolazepam
  - Tramadol
  - Xylazine
  - Yohimbine

• **Emergency drugs**
  - Atropine (parenteral/ophthalmic)
  - Calcium
  - Dexamethasone sodium phosphate
  - Diazepam
  - Midazolam
  - Dopamine
  - Doxapram
  - Epinephrine
  - Flumazenil
  - Furosemide
  - Glycopyrrolate
  - Lidocaine
  - Sodium bicarbonate
  - Vasopressin

• **Common Miscellaneous Drugs**
  - Acyclovir
  - Allopurinol
  - Aminophylline
  - Bismuth subsalicylate
- Calcitonin
- Calcium-EDTA
- Calcium gluconate
- Calcium gluconate
- Cimetidine
- Cisapride
- Deslorelin acetate
- Dexamethasone
- Digoxin
- Dorzolamide ophthalmic
- Enalapril
- Furosemide
- Honey
- Iron dextran
- Lactobacilli
- Loperamide HCL
- Levamisole
- Leuprolide acetate
- Metoclopramide
- Naloxone
- Nystatin
- Oxytocin
- Pentobarbitol sodium
- Phenobarbitol
- Pimobendan
- Praziquantel
- Prednisone
- Prednisolone
- Probenecid
- Terbutaline
- Vitamins A, B1, B12, C, D, E, K1