2024 ACVIM NEUROLOGY SPECIALTY EXAMINATION
Candidate Preparation Information for First-time Exam Candidates

The information below is provided to help you prepare to you for the Neurology Specialty Examination. Information pertaining to the exam schedule, administration, use of translational dictionaries, and special accommodation requests can be located on the Neurology Candidate landing page on the ACVIM website: https://www.acvim.org/resources-for/candidates/neurology

Included in this document is general information regarding:
- Exam Structure
- Exam Scoring
- Suggested Study Materials
- Neurology Specialty Exam Blueprint

EXAM STRUCTURE
The Neurology Specialty Examination consists of three sections. Exam items may be a combination of multiple-choice questions and other machine scorable item types (i.e., fill in the blank, selecting from a list, hotspot, etc.).
- General Knowledge: 50 points
- Radiology: 55 points
- Clinical Cases: 145 points

EXAM SCORING
The Neurology Specialty Examination is a conjunctive exam consisting of three sections scored separately. The pass points are recommended based on the minimal level of competence as determined by Neurology Diplomates after rating the examination through the standard setting process. The pass points are approved by the ACVIM Certification Council.

To become Board-certified, a candidate must pass each section of the Specialty Examination. Candidates taking the examination for the first time are expected to take all sections. Candidates who have successfully completed at least one section of the examination upon the first try are required to retake only the section that was failed. Candidates who have not successfully completed any of the sections of the examination must retake all sections the following year.

SUGGESTED STUDY MATERIALS
The list of suggested reference materials below is meant to guide Candidates in preparing for the Specialty Examination. This list of journals and textbooks is not all-inclusive and does not exclude the possible use of additional sources not specifically listed in this reference guide, such as seminal articles published prior to the date range provided in this document. It represents a body of knowledge that a minimally qualified Board-certified veterinary neurologist is expected to know. While the most up to date publications may not be present on this list, as a best practice residents should have exposure to current literature as an ongoing part of their residency training programs. Specific recommendations for preparation cannot be made beyond the clinical training gained from participation in a residency program.

Textbooks

Note: When more than one edition is available, reference the most current edition, but earlier editions are often current enough with respect to core concepts.

- A Practical Guide to Canine and Feline Neurology (Dewey, CW)
- An Atlas of Surgical Approaches to the Bones and Joints of the Dog and Cat (Piermattei, DL)
- Basic Neuroscience: Anatomy & Physiology (Guyton, AC)
- Fisch & Spehlmann's EEG primer: Basic principles of digital and analog EEG (Fisch, B)
- BSAVA Manual of Canine and Feline Neurology (Platt, SR)
- Clinical Syndromes in Veterinary Neurology (Braund, KG)
- Current Techniques in Canine and Feline Neurosurgery (Shores, A)
- Deafness in Dogs and Cats (Strain, GM)
- Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice (Kimura J)
- Electromyography and Neuromuscular Disorders (Preston, DC)
- Equine Neurology (Furr, M)
- Exercises in Veterinary Radiology: Spinal Disease (Morgan, JP)
- Fundamentals of Canine Neuroanatomy and Neurophysiology (Uemura, EE)
- Fundamentals of Veterinary Clinical Neurology (Bagley, RS)
- Handbook of Veterinary Neurology (Lorenz, MD)
- Histological Classification of Tumors of the Nervous System of Domestic Animals (Koestner, A)
- Infectious Diseases of the Dog and Cat (Greene, CE)
- Large Animal Neurology: A Handbook for Veterinary Clinicians (Mayhew, IR)
- Miller's Anatomy of the Dog (Evans, HE)
- MRI and CT Atlas of the Dog (Assheuer, J)
- Physiological and Clinical Anatomy of the Domestic Mammals: Central Nervous System Vol. 1 (King, AS)
- Principles of Neural Science (Kandel, ER)
- Practical Small Animal MRI (Gavin, PR)
- Small Animal Neurological Emergencies (Platt, SR)
- Small Animal Spinal Disorders: Diagnosis and Surgery (Wheeler, SJ)
- Small Animal Surgery (Fossum, TW)
- Textbook of Small Animal Surgery (Slatter, D)
- Textbook of Veterinary Diagnostic Radiology (Thrall, DE)
- Textbook of Veterinary Internal Medicine: Diseases of the Dog and Cat (Ettinger, SJ)
- Veterinary Drug Handbook (Plumb, DC)
- Veterinary Neuroanatomy: A Clinical Approach (Thomson, C)
- A Veterinary Neuroanatomy and Clinical Neurology (De Lahunta)
- Veterinary Neurology (Oliver, JE)
- Veterinary Neuropathology (Summers, BA)
- Veterinary Neuropathology: Essentials of Theory and Practice (Vandevelde,M)
- Veterinary Ophthalmology (Gellatt, KN)
- Veterinary Clinics of North America Equine Practice: Clinical Neurology, 2011 (Divers, TJ)
- Veterinary Clinics of North America Equine Practice: Selected Neurologic and Muscular Diseases, 1997 (Haussler, KK)
- Veterinary Clinics of North America Exotic Practice: Exotic Animal Neurology, 2018 (Lofstedt, J)
- Orosz, SE   Veterinary Clinics of North America Exotic Practice: Neuroanatomy and Neurodiagnostics, 2007
- Veterinary Clinics of North America Food Animal Practice: Food Animal Neurology, 2017 (Tell, LA)

- Veterinary Clinics of North America Food Animal Practice: Ruminant Neurologic Diseases, 2004 (Washburn, KE)
- Veterinary Clinics of North America Small Animal Practice: Neurology, 2018 (Constable, PD)
- Veterinary Clinics of North America Small Animal Practice: Advances in Veterinary Neurology, 2014 (Kerwin, SC)
- Veterinary Clinics of North America Small Animal Practice: Diseases of the Brain, 2010 (Olby, NJ)
- Veterinary Clinics of North America Small Animal Practice: Diseases of the Spine, 2010 (Thomas, WB)
- Veterinary Clinics of North America Small Animal Practice: Neuromuscular Diseases II, 2004 (Shelton, GD)
- Veterinary Clinics of North America Small Animal Practice: Neuromuscular Diseases, 2002 (Shelton, GD)
- Veterinary Clinics of North America Small Animal Practice: Common Neurologic Problems, 2000 (Thomas, WB)

Journals (July 2018 – June 2023)
- ACVIM Forum Proceedings
- American Journal Veterinary Research
- Australian Veterinary Journal
- BMC Veterinary Research
- Canadian Veterinary Journal
- Compendium Continuing Education: Practicing Veterinarian
- Equine Veterinary Journal
- Frontiers in Veterinary Neurology and Neurosurgery
- Journal American Animal Hospital Association
- Journal of the American Veterinary Medical Association
- Journal of Feline Medicine and Surgery
- Journal Small Animal Practice
- Journal Veterinary Diagnostic Investigation
- Journal Veterinary Emergency and Critical Care
- Journal Veterinary Internal Medicine
- Journal of Veterinary Pharmacology and Therapy
- PLOS ONE
- Progress in Veterinary Neurology
- The Veterinary Journal
- Topics in Companion Animal Medicine
- Veterinary Clinical Pathology
- Veterinary and Comparative Orthopaedic and Traumatology
- Veterinary Immunology / Immunopathology
- Veterinary Pathology
- Veterinary Radiology and Ultrasound
- Veterinary Record
- Veterinary Surgery

ACVIM Consensus statements (July 2018 – June 2023)

American College of Veterinary Internal Medicine (ACVIM)
Neurology Specialty Exam (NEURO)
Test Specifications

I. General Knowledge	20%

A. Anatomy & Physiology

1. Identify the gross anatomy and neuroanatomic structures of the cat, dog, horse, and food/fiber animal brain and spinal cord

2. Recognize the basic microscopic anatomy of the nervous system (e.g., astrocyte, neuron, Purkinje cell)

3. Describe the functional neuroanatomy of the central, peripheral, and autonomic nervous systems

4. Describe the basic principles of neurophysiology in regard to neurotransmission

5. Describe the basic principles of cerebrospinal fluid (CSF) dynamics (e.g., production, flow, absorption)

6. Describe the physiological maintenance of intracranial pressure

7. Recognize the differences in vascular anatomy between species

8. Outline the principles of nociceptive pathways

B. Pharmacology & Toxicology

1. Explain the effects of pharmaceuticals and neurotoxins on central, peripheral, and autonomic nervous system receptors and neurotransmitters

2. Describe the mechanisms of drug-delivery through the blood-brain barrier

3. Explain mechanisms of drug resistance (e.g., anti-seizure, anti-microbial)

4. Describe the mechanism of action of the major classes of anti-seizure drugs

5. Recognize the basic principles of anti-seizure drug absorption, metabolism, and clearance (e.g., efficacy, half-lives, MOA, pharmacodynamic, pharmacokinetics, safety, side effects)

6. Differentiate the classes and mechanisms of action of analgesic and anesthetic therapy

7. Recognize the basic principles of neurologic drug absorption, metabolism, and clearance (e.g., efficacy, half-lives, MOA, pharmacodynamic, pharmacokinetics, safety, side effects)

8. Describe the mechanisms of action and side-effects of immunomodulatory and chemotherapeutic drugs for neurologic diseases (e.g., inflammatory, neoplasia, neuromuscular)

II. Medical Neurology	31%

A. Technical Skills & Diagnostic Interpretation
1. Interpret neurologic findings from an examination of a cat, dog, horse, and food/fiber animal
2. Provide a neuroanatomic localization based on examination with or without historical findings
3. Interpret hematological, serum chemistry, and urinalysis results as they relate to neurologic disorders
4. Interpret organ function tests (e.g., endocrine, liver) as they relate to neurologic disorders
5. Interpret radiographs of the thorax and abdomen as they relate to neurologic disorders
6. Describe the anatomy and technique for cisterna magna collection of CSF in a cat, dog, horse, and food/fiber animal
7. Describe the anatomy and technique for lumbar collection of CSF in a cat, dog, horse, and food/fiber animal
8. Describe the technique for a cervical and lumbosacral epidural and perineural injections
9. Recognize indications for, and the physiological basis of, electrodiagnostic testing (e.g., sensory, motor, evoked potentials)
10. Describe how to set-up for EMG, nerve conduction testing, BAER, and EEG
11. Interpret testing results from EMG, nerve conduction testing, BAER, and EEG
12. Recognize indications for Myringotomy
13. Differentiate infectious disease testing techniques (e.g., PCR, serology, western blot)
14. Interpret infectious disease testing results
15. Recognize common genetic mutations that cause neurologic and muscular diseases
B. Canine & Feline Disease Pathogenesis, Diagnosis & Treatment (e.g., analgesia, hyper-osmotic agents/fluid therapy)
1. Describe the pathogenesis, diagnostics, and treatment of:
a. vascular disease affecting the nervous system
b. inflammatory disease of the CNS (e.g., infectious vs non-infectious)
c. inflammatory disease of the PNS, including neuromuscular system (e.g., infectious vs non-infectious)
d. traumatic disease of the CNS
e. traumatic disease of the PNS (including neuromuscular system)
f. neoplastic diseases affecting the CNS
g. neoplastic diseases affecting the PNS, including neuromuscular system (e.g., paraneoplastic)
h. toxic diseases affecting the nervous system
i. anomalous and/or congenital diseases affecting the nervous system

j. metabolic diseases affecting the nervous system (e.g., endocrinopathies, liver disease)
k. nutritional diseases affecting the nervous system
l. degenerative diseases affecting the nervous system (e.g., juvenile, geriatric)
m. movement disorders (e.g., episodic ataxias, paroxysms, tremor syndromes)
n. epilepsy (e.g., genetic, reactive, structural, unknown)
o. micturition dysfunction (e.g., UMN/LMN bladder)
p. disc disease
q. sleep disorders
r. Myringotomy
2. Describe diagnosis and treatment of idiopathic nervous system diseases (e.g., facial nerve paralysis, trigeminal neuritis)
3. Recognize basic principles of radiation therapy as it applies to neurologic disorders:
a. indications
b. complications
c. modalities (e.g., fractionated, stereotactic)
C. Complimentary Therapies
1. Recognize the indications for complimentary therapies (e.g., acupuncture, rehabilitation, regenerative medicine)

III. Surgical Neurology	**22%**
A. General	
1. Apply tissue handling theory and techniques (e.g., bone and wound healing, hemostasis, skin-handling, tension lines)	
2. Apply principles of fixation and biomechanics to neurosurgical cases	
3. Select appropriate neurosurgical instrumentation	
B. Surgical Procedures	
1. Identify the indications, describe the procedures and post-operative care, and recognize the complications for the following surgical procedures:	
a. Ventral slot	
b. Cervical hemilaminectomy	
c. Thoracolumbar hemilaminectomy	
d. Durotomy	

e. Corpectomy
f. Dorsal laminectomy of cervical and thoracolumbar vertebral column
g. Lumbosacral decompression
h. Disc fenestration
i. Vertebral column stabilization (e.g., cervical, lumbar/LS, thoracic)
j. Nerve and muscle biopsy
k. Ventriculoperitoneal shunt
l. Craniectomy (e.g., rostro-tentorial, suboccipital, transfrontal)
m. Atlantoaxial (AA) luxation
n. Tumor excision (e.g., brain, spinal cord)
2. Recognize the indications for the following surgical procedures:
a. Hypophysectomy
b. Foraminotomy
c. Corpectomy
d. Brain biopsy (i.e., stereotactic)
e. Cervical vertebral distraction-fusion (e.g., disc replacement)

IV. Neuroradiology	**22%**
A. Radiographs	
1. Interpret radiographs of the axial and appendicular skeleton	
2. Interpret radiographs of the skull	
B. Myelogram (Radiograph & CT)	
1. Describe indications and techniques for performing a myelogram	
2. Interpret myelograms of the vertebral column (including artifacts of myelograms)	
C. Computerized Tomography (CT)	
1. Describe indications for performing a CT	
2. Describe the fundamentals of CT imaging (e.g., Hounsfield units, window width and level)	
3. Describe CT scanning protocols (e.g., contrast media, imaging planes, slice thickness)	
4. Interpret CT images of the head	
5. Interpret CT images of the vertebral column and spinal cord	

6. Identify common artifacts of CT and describe how to correct them

D. Magnetic Resonance Imaging (MRI)

1. Describe indications for performing an MRI
2. Describe the fundamentals of MRI (e.g., basic physics / image acquisition, contrast media, IR, TE, TR)
3. Identify common MRI sequences and their indications (e.g., ADC, DWI, FLAIR, STIR, T1, T2, T2*)
4. Interpret MRI images of the head
5. Interpret MRI images of the vertebral column
6. Interpret MRI images of the peripheral nervous system and musculature
7. Identify common artifacts of MRI & describe how to correct them

V. Neuropathology   5%

1. Explain CSF sample storage and preparation
2. Interpret CSF cytology on photomicrograph
3. Clinically interpret CSF analysis (e.g., cell count, CK, glucose, protein)
4. Describe collection and storage of a biopsy sample from a CNS, PNS, and muscle sample
5. Identify and provide differentials for various diseases in the CNS, on a gross and microscopic level (e.g., vascular, neoplasia, inflammatory, metabolic)
6. Identify and provide differentials for various diseases in the PNS, including the neuromuscular system, on a gross and microscopic level (e.g., neoplasia, inflammatory, trauma)
7. Evaluate a clinical and anatomical pathological report and provide differentials