



AMERICAN COLLEGE OF  
VETERINARY ANESTHESIA  
AND ANALGESIA

## **ACVAA Written Examination Report of Results September 10, 2017**

### **2017 Examination Committee Composition:**

Chair – Erin Wendt-Hornickle (year 3)

Members –Patrick Burns, Tom Doherty, Lydia Love (year 3); Natalia Guerrero, Lori Bidwell, Shannon Beazley, Lois Wetmore (year 2); Kate Bailey, Courtney Baetge, Ashley Wiese, Veronica Salazar (year 1); Chris Egger (ACVAA President-Elect and BOD Liaison)

### **Written and Oral Examination Room Assignments:**

#### **Group/Room A**

Members – Lydia Love (Chair), Lori Bidwell, Natalia Guerrero, Veronica Salazar

Written Examination Essay Category and Questions –

Q1 Cardiovascular physiology: Discussion of reflexes -- Bainbridge reflex, Baroreceptor reflex, Bezold-Jarisch reflex, Brahnam's sign, Cushing's reflex, Dive response  
Oculocardiac reflex

Q2 Pharmacology: Opioids – classification, mechanism of action, species differences, scheduling

Q7 Equipment and Circuits: Most common position, appropriate working pressure, function, safety features of various equipment & principles/laws and how they affect the same equipment (Boyle's Law, Dalton's Law, Hagen-Poiseuille equation, Vapor pressure)

Q10 Case Management: Pheochromocytoma in Labrador retriever

#### **Group/Room B**

Members – Patrick Burns (Chair), Tom Doherty, Kate Bailey, Ashley Wiese

Written Examination Essay Category and Questions –

Q3 Respiratory: Fick's law of diffusion

Q5 Monitoring: Capnography, labeling parts of capnography, infrared and N2O interference, mainstream vs sidestream

Q8 Core species: JRT ECG and anesthesia for pacemaker placement

Q9 Complications: CPR, recover guidelines

#### **Group/Room C**

Members – Lois Wetmore (Chair), Shannon Beazley, Chris Egger, Courtney Baetge

Written Examination Essay Category and Questions –

Q4 Fluids, electrolytes, and acid: Calcium control, disorders, management in equine colic

Q6 Pain Physiology

Q11 Pathophysiology Peripheral and central sensitization, treatment

Q12 Other species: Owl with radius/ulna fracture, CV differences vs mammals and anesthetic management

### **Essay Examination Development and Grading:**

As was piloted for the 2015 written examination and done in 2016 as well, Room Chairs were given the essay question domains and tasked with drafting initial question stems for the 12 designated essay questions in collaboration with their room members. These initial question stems were shared among

the Examination Committee (EC) Chair and the three room chairs to ensure that the scope of the overall essay examination was sufficient and that there was no duplication of questions. One essay question stem was then assigned to each examiner on EC. Examiners developed their questions and weightings and these were shared with all members of the room and revised as necessary in collaboration with the room chair and the EC Chair. Once the question was considered complete, the author of the question wrote the answer and these were shared with the other examiners in that room. Each room only viewed and graded exams assigned to their room to comply with the ACVAA Policies and Procedures.

Final discussions regarding question wording, weighting, answer details, and grading guidelines occurred for each room via email or teleconference prior to the examination. Essays were distributed to examiners the day after the examination concluded; diagrams were distributed 2 days after the examination concluded. Essays were graded using the 5-point holistic approach (see below). Each essay was graded by two examiners - the individual who wrote the question/answer and one other individual from the same examination room. The two grades were averaged to attain the final grade for that question. If the grade differential was greater than 1 point, the two original examiners were asked to re-grade that candidate's essay and report back to the EC Chair. If there was still greater than 1 point difference in the grades, a third individual graded the question and this grade was used as the final grade (as described by the ACVAA Policies and Procedures). All data entry and calculations were rechecked for each candidate multiple times.

Because the exam committee did not know the passing grade for the essay examination the following 5-point scale was used in grading:

- 1: No or minimal relevant information
- 2: Some relevant information, overall inadequate answer
- 3: Marginally adequate answer
- 4: Adequate answer for an entry level diplomate
- 5: Strong answer, beyond expectation for an entry-level diplomate

Assignment of partial grades was not permitted.

In total, 27 candidates sat the written examination and were instructed to submit 10 essays each (5 on each examination day). In total, 25 essays (9%) involving 10 of the 12 questions required a second look by examiners. Eleven of these were for a single question. This second look rate is a little higher than previous years. Three of the questions required formal regrades by a third individual. The regrade scores from the third examiner were equal to the lowest of the scores given by the two original examiners in all instances.

There were no core (i.e. required) essay questions again this year and the time allowed for the essay examinations was 5 hours each day with the exception of one candidate who received special accommodations as directed by a physician and was given 5 hours and 40 minutes each day.

### **Multiple Choice Examination Development and Grading:**

The Multiple Choice Examination Committee (MCEC) meets independently from the overall EC. The MCEC committee members include Maria Killos (Chair), Bonnie Hay Krause, Michele (Mike) Barletta, Carolyn McKune and Gregg Griffenhagen. Doris Dyson is the database manager. The MCEC met in North Carolina from March 20-23, 2017 to review and finalize the exam questions. The multiple choice examination was compiled by this committee and then sent to the EC Chair (Lamont) and the ACVAA Secretary (Kushner) for review and printing.

Grades from the data bank manager were submitted to the MCEC Chair. Statistical analysis, with point biserial scores, was included in the report to give objective data for question evaluation or removal. Several scenarios were considered, including incorporating all 200 questions, removing all new questions, removing new questions that had performed poorly, and giving all candidates credit for the 9 poorly performing new questions. Effects on final scores and pass/fail rates were evaluated. The scores

were reported as raw scores and percentages after removing the poorly performing new questions (a total score of 291) and also using a system where everyone receives credit for the 9 poorly performing new questions (referred to as “score all” by Prometric). Previously used questions performing poorly were not excluded from the final grading. This information was shared with Prometric to aid in the cut score determination.

### **Standard Setting (Cut Score) Study Panel:**

While grading of the essays and the multiple choice examination was in progress, a Standard Setting (Cut Score) Study Panel was convened to evaluate the examination and set the cut score. This process was conducted by Prometric via several teleconferences. A panel of nine judges recruited by the ACVAA completed the standard setting study. The panel included Brad Simon, Lyon Lee, Jen Carter, Rachel Bennett, Ashley Wiese, Gwen Touzot-Jourde, Bonnie Gatson, Ludovicia Chiavaccini Becky Johnson, Lane Johnson and Tatiana Ferriera. The judges were selected from a pool of practicing members of the college and were considered experts in their field. The Angoff method was used for the multiple choice portion of the examination and the Monoreg method was used for the essay portion. A summation of the study and its results (titled ACVAA Cut Score Report) was sent to the EC Chair (Wendt-Hornickle) and distributed to all the members of the EC via email prior to a teleconference with Prometric staff. A copy of the finalized ACVAA Cut Score Report has also been submitted to the BOD along with this report.

### **Teleconference to Determine Final Cut Score:**

A teleconference to explain the Cut Score Report and determine a final cut score for the examination was held Monday, June 19, 2017 from 1 to 2 pm Eastern Daylight Time. It was led by Kathryn Hill from Prometric. The following members of the EC were present: Courtney Baetge, Veronica Salazar, Kate Bailey, Lois Wetmore, Patrick Burns, Ashley Wiese, Tom Doherty, Lydia Love, Erin Wendt-Hornickle, Shannon Beazley and Chris Egger (non-voting). The EC members were sent a draft of the ACVAA Cut Score Report from Prometric to review prior to the teleconference.

The teleconference included a brief explanation of the procedures employed to select the standard setting (cut score) study panel, the methods used in conducting the study, and the analyses performed for the study (see ACVAA Cut Score Report from Prometric). The definition of a minimally qualified candidate was used to rate and grade both the multiple choice and essay examination questions.

The Prometric representative asked if there were any questions of the EC members, especially those members who have not participated in this cut score meeting in previous years. There were no questions.

Next the panel recommended passing scores and the possible adjustments were reviewed. The discussion began with an explanation of how the multiple choice exam was rated by the Cut Score Panel and an explanation of reliability, standard deviation of judgment, and the standard error of judgment. The Prometric representative explained that the second rating of the multiple choice questions by the Cut Score Panel resulted in greater reliability and lower standard deviation and standard error of judgment and also discussed the relevance of the Beuk adjustment.

The EC was then asked to look at Table 4 and 5 of the Prometric draft report and decide which cut score to accept for the multiple choice section of the examination. The options were to accept the Cut Score Panel recommended cut score or 1 to 3 SEJs above or below the cut score. After little discussion, the EC voted to accept the recommended cut score for the multiple choice resulting in a cut score of 138 out of 200 total points being a passing grade (69%).

The process of analyzing and rating the essays was then explained (see Prometric report for details). A similar discussion followed around which cut score to accept for the essay section of the examination (Table 8 of the draft report). After little discussion, the EC voted to accept the recommended cut score for the essay exam, resulting in a passing cut score of 34 out of 50 or 68%.

The essay score was multiplied by 4.0 so that the multiple choice and essay scores could be weighted equally ( $S_{MC} + S_E * 4.0 = \text{raw score}$ ) and the raw scores were converted to scaled scores using a linear transformation method ( $\text{ScoreScaled} = 1.9380 * \text{ScoreRaw} + 124.8062$ ). The scaled cut score is 650. The final raw and converted scores were received by the Exam Committee Chair on Tuesday June 20, 2017. All data entry and calculations were rechecked for each candidate (also, see ACVAA Scaling memo attached).

### **2017 ACVAA Written Examination Results:**

A total of 27 candidates completed the ACVAA written examination in 2017. Twenty four candidates were taking the examination for the first time, one candidate was taking the examination for the third time, one candidate was taking the exam for the fourth time and one candidate was taking the exam for the eighth time. Five candidates took the examination off site under the supervision of an ACVAA diplomate. The alternate sites were in the United Kingdom and Australia. The Exam Committee Chair (Wendt-Hornickle) was available for questions via telephone or email.

This year's examination was administered at a new location in Madison, WI and was proctored by the Exam Committee Chair (Wendt-Hornickle) and the Executive Secretary, Lynne Kushner. On the afternoon of Day 1 of the examination (1) and on day 2 of the examination (3), there was a problem with computers freezing. In all instances, the computers were MACs and required a restart which resolved the problem without losing any of the candidate's answers. An attempt to contact Examsoft via the provided telephone number was made during the first freeze but was unsuccessful.

An excel file detailing the candidates scores have been submitted with this report.

The passing scaled score of 650 resulted in 15/27 (59%) candidates passing and 12/27 (41%) candidates failing this year's written examination.

- First-time test-takers: 14/24 passed
- Third-time test-takers: 1/1 passed
- Multiple cycle test takers: 0/2 passed

The Exam Committee Chair (Wendt-Hornickle) took the examination and teleconference results to the Board of Directors on 6/20/17. The BOD voted to amend the committee's recommendations for the multiple choice portion of the examination to more closely reflect the Beuk adjustment. The committee's recommendation for the essay portion was accepted.

This alteration resulted in 17/27 (63%) candidates passing and 10/27 (37%) candidates failing this year's written examination.

- First-time test-takers: 16/24 passed
- Third-time test-takers: 1/1 passed
- Multiple cycle test takers: 0/2 passed

Eight of ten individuals failing the exam failed both sections. Two individuals who failed the exam passed the essay portion but failed the multiple choice portion. Three individuals scoring below passing on one section scored high enough on the other section to result in a passing grade overall. Three candidates who passed the exam failed the essay section. No candidates who passed the exam failed the multiple choice section.

Respectfully submitted,  
Erin Wendt-Hornickle, DVM, DACVAA