



## EXAMINATION INFORMATION FOR EQUINE CANDIDATES

Reviewed and revised November 2015. This version is current for the 2016 Examination

**Candidates: The Examination Security Form is a separate file, available from the Examination section of the [Information for Registered Trainees](#) web page. The form is to be signed and returned to the AVDC Executive Secretary by December 1<sup>st</sup> for the Phase 1 examination in March 2016, and by May 1<sup>st</sup>, 2016 for the Phase 2 examination in August 2016.**

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### Disabilities and Other Health Issues

Within the constraints of an examination environment requiring maintenance of anonymity of the candidates and use by the candidates of equipment during the practical examination, AVDC will endeavor to accommodate disabilities or other health concerns that are made known to the AVDC prior to the examination. Any health-related information you elect to submit will be held in confidence. A separate Disability Accommodation Request document and form is available in the [Examination](#) section of the [Information For Registered Trainees](#) web page.

## **Examination Eligibility, Fees, Format, Dates and Location**

Veterinarians become eligible to take the AVDC certification examination as a result of successful completion of an AVDC-approved training program and approval of a credentials application.

The examination will consist of two Phases, administered separately.

Phase 1 will be equivalent to the Written and Bench examinations under the pre-2015 format, and will be administered at regional examination centers on March 10-11, 2016.

Phase 2 is the Practical examination, which will be given at the Oquendo Education Center, Las Vegas, NV, August 9-11, 2016.

Entry to the Phase 2 Practical Examination is limited to candidates who have passed the Phase 1 examination. An individual who fails the Phase 1 examination three times is no longer a candidate for the AVDC examination (except as noted under 'Repeat Examinations' on page 19 of this document).

### ***Tentative dates for future examinations:***

*Phase 1, Written online examination is expected to be scheduled for the second or third Thursday and Friday in March each year.*

*Phase 2 Practical examination dates are: 2017: July 24-27; 2018: July 16-19; 2019: July 15-18.*

## **Examination Fees**

The Examination fee is separate from the Credentials Application Fee.

Examination Fees for the 2016 Examination are:

**Phase 1 Examination (Multiple choice examination): \$1,100**, whether being taken for the first or a subsequent time.

The signed Phase 1 Examination Security Form is to be submitted by and the examination fee paid by new candidates and re-examination candidates by **December 1<sup>st</sup> of the year preceding the examination**. This form is available in the Examination section of the [Information for Registered Trainees](#) web page. The AVDC Phase 1 examination fee does **NOT** include the Comira examination center fee – you will be asked to pay this fee by credit card when you call to make your Comira exam center reservation.

**Phase 2 Examination (Practical)**. Only candidates who have passed the Phase 1 examination are eligible for entry to the Phase 2, Practical Examination (with the exception of individuals who became candidates in 2013 or earlier).

The signed Phase 2 Examination Security Form is to be submitted by and the examination fee paid by new candidates and re-examination candidates by **May 1<sup>st</sup>**. This form is available in the Examination section of the [Information for Registered Trainees](#).

### **Deferral and Refund:**

Candidates who have paid an examination fee and who subsequently inform AVDC that they are electing to defer taking the examination no less than 30 days prior to the examination date may request a refund of the paid examination fee, or leave the funds in place as a credit for a subsequent examination attempt. No refund will be available if the candidate does not inform AVDC 30 or more days prior to the examination, except for documented personal or family emergency reasons.

## **Phase 1 - Multiple Choice Question Examination**

Phase 1 of the examination will consist of two sessions; the scores from the two sessions will be combined as a single Phase 1 score in determining Pass or Fail.

Phase 1 will be given March 10-11, 2016, and will be administered online at regional examination centers in the USA, with each session starting at 10 am at the time zone local to the examination center. Eligible candidates will be given information on selecting and registering for a particular examination center well ahead of the examination dates. Candidates will be allowed 4 hours to complete each session, and will be permitted to return to previous questions during the examination period. Candidates may bring two pieces of blank paper and two #2 pencils into the examination; the papers are to be turned in to the proctor for destruction at the end of the examination.

Each session of the Phase 1 examination will include approximately 100 four- or five-part multiple choice questions, which may be accompanied by images (radiographs, clinical photos/specimens, dental instruments and materials etc.). The Phase 1 examination is designed to assess knowledge of the scientific literature in topics relevant to veterinary dentistry, plus oral diagnosis and treatment planning abilities, familiarity with anatomy, materials, supplies and equipment, as well as therapeutic judgment in topics relevant to veterinary dentistry, as described in the Examination Content Table below.

### **AVDC Phase 1 Equine Examination Content Table**

Summary of Proportion of Content in each session:

- |                           |     |
|---------------------------|-----|
| 1. Periodontology         | 14% |
| 2. Endodontics            | 10% |
| 3. Oral Surgery           | 18% |
| 4. Operative Dentistry    | 9%  |
| 5. Orthodontics           | 15% |
| 6. Oral Medicine          | 9%  |
| 7. Anesthesia & Analgesia | 11% |
| 8. Diagnostic Imaging     | 14% |

<b>Performance Domain 1: Periodontology ~14% of the questions</b>
<b>Task A. Understand anatomy, physiology, pathophysiology, and pathology as it relates to periodontology</b>
Knowledge of: 1. Periodontal anatomy, development, physiology, and histology 2. Pathophysiology of periodontal disease 3. Healing of periodontal tissues 4. Alveolar bone anatomy, physiology, and histology 5. Dietary influence on periodontal health and disease
<b>Task B. Assess periodontal health or disease and develop a comprehensive treatment plan</b>

<p>Knowledge of:</p> <ol style="list-style-type: none"> <li>6. Classification systems for documenting periodontal health and disease (e.g. gingivitis, mobility, periodontal pocket depths, etc.).</li> <li>7. Instrumentation for periodontal evaluation.</li> <li>8. Clinical signs and manifestations of periodontal disease.</li> <li>9. Indications, contraindications, materials and techniques for performing periodontal treatment and addressing pathologic diastemata with or without dental malocclusion.</li> <li>10. Indications, contraindications, materials, and techniques for treatment of combined periodontic/endodontic lesions.</li> <li>11. Indications, contraindications, materials, and techniques for tissue regeneration and bone augmentation.</li> <li>12. Presence of severe cases of periodontal disease requiring staged treatment, including recognition of the impact of dental malocclusion or systemic/immunopathic effects.</li> <li>13. Assessment of pretreatment systemic, general and local immunologic health of the animal as it relates to treatment options</li> </ol>
<p><b>Task C. Utilize appropriate periodontal instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan</b></p>
<p>Knowledge of:</p> <ol style="list-style-type: none"> <li>14. Materials and techniques to treat periodontal pockets and exposed reserve crown/root surfaces.</li> <li>15. Care and use of instrumentation (e.g. curettes, scalers, etc.).</li> <li>16. Materials and patterns used to suture a periodontal flap (e.g. post-trauma, foreign body defect repair, avulsion management, etc.).</li> <li>17. Materials and techniques to perform gingival recontouring.</li> <li>18. Care, use, and mechanism of action of power periodontal equipment (e.g. air abrasion units, ultrasonic scalers, etc.).</li> <li>19. Visualization equipment (e.g. endoscope, light source, mirrors, etc.).</li> <li>20. Periodontic monitoring post-treatment.</li> <li>21. Nutritional management to promote oral health.</li> <li>22. Home care products – indications, contraindications, techniques, and materials (e.g. oral rinses, chlorhexidine gels, equine toothbrushes, mouth sprays, etc.).</li> <li>23. Mechanisms of action of home care products.</li> <li>24. Postoperative care, long-term prognosis, and future assessment.</li> <li>25. Strategies for periodontal disease prevention, maintenance and improvement.</li> </ol>

<p><b>Performance Domain 2: Endodontics ~10% of the questions</b></p>
<p><b>Task A. Understand anatomy, physiology, pathophysiology, and pathology as it relates to endodontics</b></p>
<p>Knowledge of:</p> <ol style="list-style-type: none"> <li>26. Gross and microscopic endodontic and periapical anatomy</li> <li>27. Development, histology, physiology and pathophysiology of the pulp, pulp-dentin complex and periapical tissues</li> <li>28. Response of pulp, pulp-dentin complex, and periapical tissues to both normal oral forces and abnormal pathologic influences.</li> </ol>
<p><b>Task B. Assess endodontic health or disease and develop a comprehensive treatment plan</b></p>
<p>Knowledge of:</p> <ol style="list-style-type: none"> <li>29. Clinical signs of, and methods to assess, endodontic health and disease (includes non-vital teeth, tooth fractures, tooth resorption, pulpitis, and developmental defects).</li> <li>30. Classification systems for documenting endodontic health and disease (e.g. pulp horn numbering, tooth fracture nomenclature, etc.).</li> <li>31. Indications, contraindications, materials, and techniques for vital pulp therapy, plus or minus coronal reduction.</li> <li>32. Indications, contraindications, materials, and techniques for standard (orthograde) endodontic therapy.</li> <li>33. Indications, contraindications, materials, and techniques for surgical (retrograde) endodontic therapy.</li> <li>34. Indications, contraindications, materials, and techniques of apexification.</li> <li>35. Physical properties of endodontic materials.</li> </ol>

**Task C. Utilize appropriate endodontic instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan**

Knowledge of:

36. Access and feasibility of standard (orthograde) and surgical (retrograde) endodontic therapy
37. Materials, equipment, and methods for root canal debridement and irrigation
38. Materials, equipment, and methods for obturation
39. Materials, equipment, and methods for restoration following endodontic therapy
40. Radiographic guidance during endodontic procedure
41. Causes, prevention, and treatment of iatrogenic procedural complications of endodontic therapy
42. Challenges posed by equine endodontic anatomy, eruption, and attrition
43. Radiographic evaluation of treatment outcome and long-term monitoring

**Performance Domain 3: Oral Surgery ~18% of the questions**

**Task A. Understand anatomy, physiology, pathophysiology, and pathology as it relates to oral surgery**

Knowledge of:

44. Anatomy, development, histology, physiology, pathophysiology, and pathology of maxillofacial and oral structures including nasal passages, paranasal sinuses, and temporomandibular joint.
45. Pathophysiology and pathology of primary and secondary sinus disease.
46. Maxillofacial and mandibular fracture types.
47. Biomechanical effects of mastication.
48. Incidence, prevalence, and biological behavior of oral tumors, cysts and non-neoplastic diseases that can mimic neoplasia.
49. Pathophysiology and pathology of acquired and congenital hard and soft palate defects
50. Physiology of hard and soft tissue healing

**Task B. Assess health or disease as it relates to oral surgery and develop a comprehensive treatment plan**

Knowledge of:

51. Assessment of hard and soft palate defects.
52. Assessment of head trauma patient.
53. Assessment of primary and secondary sinus disease.
54. Indications, contraindications, and techniques for exodontia of teeth.
55. Indications, contraindications, and techniques for sinus surgery.
56. Indications, contraindications, and techniques for incisional/excisional biopsy.
57. Indications, contraindications, and techniques for partial mandibulectomy and maxillectomy.
58. Indications, contraindications, and techniques for repair of acquired and congenital hard and soft palate defects.
59. Indications, contraindications, and techniques for maxillofacial and mandibular fracture repair.
60. Techniques, materials, indications and contraindications for repair of traumatic injuries.
61. Indications, contraindications, and techniques for salivary and lymph node surgery.
62. Indications, contraindications, materials, and techniques for oronasal and oroantral fistula repair.

**Task C. Utilize appropriate oral surgical instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan**

Knowledge of:

63. Non-surgical and surgical extraction techniques (includes all forms extraction).
64. Techniques, instrumentation, and management plans to address primary and secondary sinus disease.
65. Extraction site management (e.g. protect adjacent tissue, flap creation, suture techniques, packing materials, etc.).
66. Instrumentation for all forms of exodontia..
67. Management of teeth in fracture lines.
68. Management of temporomandibular joint disease and associated conditions.
69. Management of tooth displacement injuries.
70. Materials, instrumentation, and techniques for oral and maxillofacial surgery.
71. Noninvasive and invasive techniques for treatment of maxillofacial trauma.
72. Nonsurgical and surgical methods for treatment of hard and soft palate defects.
73. Nonsurgical and surgical treatment of osteomyelitis.
74. Nutritional management of the oral surgery patient.
75. Complications of extraction procedures and their management.
76. Complications of hard and soft palate repair procedures and their management.
77. Complications of maxillofacial trauma repair and their management.
78. Complications of oral biopsies and their management.
79. Complications of partial mandibulectomy and maxillectomy and their management.
80. Postoperative and follow-up management of the oral surgery patient.

**Performance Domain 4: Operative Dentistry ~ 9% of the questions**

**Task A. Understand anatomy, physiology, pathophysiology, and pathology of tooth structure**

Knowledge of:

81. Normal anatomy, embryology, development, physiology, and histology of dental structures (enamel, dentin, cementum, etc.).
82. Pathophysiology and pathology resulting in loss of dental structure (e.g. tooth resorption, caries, tooth fracture, infundibular cemental hypoplasia and degradation, etc.).
83. Response to injury and healing of dentin, dentin-pulp complex, and cementum.

**Task B. Assess structural integrity of teeth and develop a comprehensive treatment plan**

Knowledge of:

84. Nomenclature and classification systems for loss of dental structure (e.g. infundibular degradation, tooth resorption, tooth fracture, etc.)
85. Detection and management of direct and/or indirect pulp exposure.
86. Effects of alteration of normal anatomy on structural integrity.
87. Periodontal considerations for dental restoration and prostheses.
88. Indications and contraindications for infundibular restoration.
89. Indications and contraindications for placement of dental prostheses (crowns.).
90. Indications, contraindications, and uses of restorative and prosthodontic materials.
91. Types, uses, and physical properties of restorative materials.
92. Principles of micro- and macro-mechanical retention.
93. Polishing equipment and materials for use on enamel and restorative materials.

**Task C. Utilize appropriate operative dentistry instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan**

Knowledge of:

87. Cavity or defect preparation (e.g. cavo-surface angles, cavity shaping for material retention, etc.).
88. Techniques, instruments, and materials for restoration including infundibular.
89. Challenges posed by equine dental anatomy and function regarding restoration.
90. Complications and challenges of infundibular restoration.
91. Placement and finish of restoration material.
92. Techniques for managing and evaluating occlusal contacts following restorative procedure.
93. Techniques and materials for obtaining impressions and model fabrication.
94. Techniques, materials, indications, and contraindications for crown preparation, fabrication, and cementation.
95. Dental laboratory prescription writing.
96. Complications of operative dentistry and its management.
97. Postoperative and follow-up management of restorative dentistry patient.

**Performance Domain 5: Orthodontics ~ 15% of the questions**

**Task A. Understand anatomy, physiology, pathophysiology, and pathology of occlusion**

Knowledge of:

98. Developmental anatomy and physiology of skull, teeth, and occlusion.
99. Anatomy, histology, physiology and pathophysiology of skull and tooth development and dental eruption, attrition, abrasion, and exfoliation.
100. Normal occlusal contacts.
101. Mechanics of normal prehension, occlusion, and mastication.
102. Pathologic and non-pathologic malocclusions and their impact on prehension, occlusion, mastication, periodontal structures and overall health/function of the horse.
103. Occlusal characteristics of various skull types and ages categories.
104. Genetic influences on skull, tooth, and occlusion.
105. Dietary influences on prehension, occlusion, and mastication.
106. Appearance of secondary trauma associated with malocclusion.

**Task B. Assess occlusal pattern and develop a comprehensive treatment plan**

Knowledge of:

107. Nomenclature and classification systems to describe occlusion/malocclusion.
108. Consequence of decreased/increased attrition/abrasion and sharp enamel point formation.
109. Indications and contraindications for odontoplasty and occlusal adjustment.
110. Physiologic impact of odontoplasty on dental structures.
111. Impact of odontoplasty on occlusal contacts, prehension, occlusion, and mastication.
112. Animal age relative to performance of procedure and effects on subsequent growth and development.
113. Indications, contraindications, and principles of interceptive orthodontic techniques.
114. Indications and contraindications for passive and active orthodontic movement.
115. Effects of orthodontic appliances on development of teeth, skull, and occlusion.
116. Legal and ethical considerations for orthodontic treatment and genetic counseling.
117. Probability of short- and long-term success of the orthodontic treatment.
118. Indications, contraindications, and techniques for surgical correction of various malocclusions.
119. Physical properties of orthodontic materials.
120. Time required to complete orthodontic treatment and provide retention.
121. Animal behavior and treatment compliance.
122. Techniques for bite registration, dental impressions, and stone models.

**Task C. Utilize appropriate orthodontic instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan**

Knowledge of:

123. Instrumentation and techniques for odontoplasty and modification of occlusal surfaces.
124. Complications associated with odontoplasty and reduction of dental structures.
125. Active and passive appliance design, installation, maintenance and removal.
126. Equipment and materials for orthodontic treatment.
127. Indications, contraindications, advantages, and disadvantages of direct and indirect appliance fabrication.
128. Impact of orthodontic treatment on adjacent hard and soft tissue structures, periodontium, and teeth.
129. Complications of orthodontic treatment.
130. Long-term orthodontic management and importance of re-evaluations.

**Performance Domain 6: Oral Medicine - ~ 9% of the questions**

**Task A. Understand anatomy, physiology, pathophysiology, and pathology of diseases of the craniofacial region and oral cavity**

Knowledge of:

130. Normal anatomy and physiology of the craniofacial region and oral cavity.
131. Species and breed differences with respect to the incidence and prevalence of diseases of the oral cavity.
132. Prevalence and biological behavior of local and systemic diseases affecting the oral cavity and craniofacial region including developmental, degenerative, allergic, metabolic, inflammatory, infectious, immune-mediated, nutritional, traumatic, toxic, and neoplastic, both benign and malignant.
133. Systemic and regional impact of oral disease.
134. Radiation therapy, chemotherapy, and immunosuppressive medication effects.
135. Impact of bits, bridles, training, animal vocation, and owner horsemanship on oral and systemic health and animal performance.

**Task B. Assess craniofacial region and oral cavity health or disease and develop a comprehensive treatment plan**

Knowledge of:

136. Clinical presentations of primary and/or secondary systemic/regional pathology (e.g., hyperparathyroidism, petechia).
137. Indications, contraindications, limitations, and types of diagnostic tests.
138. Indications and contraindications for medical and surgical therapies.
139. Prioritization of pathology and treatment in context of overall patient health and well-being.
140. Indications, contraindications, and types of primary, secondary, and adjunctive therapy for specific, common tumors – benign and malignant.
141. Staging neoplasia.
142. Therapeutic effects and side effects of medical and surgical therapies.
143. Indications and contraindications for antimicrobial drug use.
144. Mechanism of action and microbial coverage for specific antimicrobial drugs.



**Task C. Utilize appropriate oral medicine instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan**

Knowledge of:

145. Diagnostic instrumentation and equipment.
146. Indications, contraindications, instrumentation, and techniques for tissue sampling and processing (e.g., cytology, biopsy, culture, etc.).
147. Treatment modalities/options to treat systemic and regional pathology (e.g., pharmaceuticals, immunological agents, chemotherapeutic agents, radiation, physical therapy, etc.).
148. Indications, contraindications, and techniques for feeding and nutritional management..
149. Cytological preparations, special stains, and microscopic evaluation.
150. Follow-up for medical and surgical therapies for primary and secondary disease.
151. Management of complications and side effects of medical and surgical therapies.
152. Appropriate modification of long-term medical therapies, based on patient response and potential adverse patient reactions.
153. Determination of appropriate bits, bridles, training programs, and horsemanship to achieve optimal oral health and animal performance.

**Performance Domain 7: Anesthesia and Analgesia - ~11% of the questions**

**Task A. Understand anatomy, physiology, and pharmacology of anesthesia and analgesia**

Knowledge of:

154. Species/breed differences for administration of anesthesia, sedation, analgesia.
155. Pharmacologic and physiologic mechanisms of action for injectable, inhalant, and constant rate infusion anesthetics and analgesics.
156. Metabolism of anesthetics and analgesics.
157. Anatomy and physiology of pain stimulation, perception, and response.
158. Multimodal anesthesia and analgesia.
159. Systemic physiology related to anesthesia with particular emphasis on cardiopulmonary, renal, and hepatic physiology.
160. Craniofacial and dental anatomy for regional and local anesthesia/analgesia.
161. Anesthetic drug interactions and contraindications with concurrent patient medications.
162. Anesthetic considerations for pediatric and geriatric patients
163. Physiology of maintaining homeostasis under anesthesia and sedation

**Task B. Assess health and disease for appropriate pre-anesthetic evaluation of the dentistry and oral surgery patient and develop a comprehensive anesthesia and analgesia treatment plan**

Knowledge of:

164. Significance of patient history, signalment, and physical examination.
165. Assessment of appropriate pre-procedure laboratory testing (e.g., CBC, chemistry panel, urinalysis, endocrine testing, radiography, etc.).
166. Animal demeanor in relation to anesthetic/sedative protocol.
167. American Society of Anesthesiologists (ASA) physical status classification.
168. Impact of concomitant disease (e.g., cardiac, renal, trauma) on the safety of anesthesia, sedative, and analgesia delivery, drug selection, and monitoring.
169. Standing sedation and analgesia protocols, indications, and contraindications.
170. General anesthesia and analgesia protocols, indications, and contraindications.
171. Individual anesthetic and analgesic plans for patients with concomitant disease (e.g., cardiac, renal, endocrine, trauma).
172. Multimodal pain control protocols for acute pain, chronic pain, and cancer pain.

**Task C. Utilize appropriate anesthesia and analgesia instruments, materials, and techniques and assess outcome/complications for the treatment plan, and develop follow-up plan**

Knowledge of:

173. Indications, contraindications, and techniques for intubation (e.g. endotracheal, naso-tracheal).
174. Indications and technique for tracheostomy.
175. Equipment and techniques for performing standing sedation.
176. Equipment and techniques for performing general anesthesia.
177. Anesthesia monitoring equipment and data interpretation.
178. Techniques and equipment to maintain homeostasis.
179. Equipment and techniques for regional and local anesthetic administration.
180. Anesthetic reversal agents.
181. Emergency procedures and equipment.
182. Crystalloid, colloid, and blood product support.
183. Emergency drug indications and routes of delivery.
184. Recognition and management of common arrhythmias.
185. Management of hypotensive, cardiac, respiratory and/or excitement crises.

**Performance Domain 8: Diagnostic Imaging - ~14% of the questions**

**Task A. Understand anatomy, physiology, pathophysiology, and pathology as related to diagnostic imaging**

Knowledge of:

186. Anatomy and physiology of the dental and periodontal tissues.
187. Anatomy and physiology of the skull and soft tissues of the head and neck.
188. Normal radiographic development and appearance of the teeth, jaws, and hard and soft tissue structures of the head.
189. Pathology of the teeth, jaws, and hard and soft tissue structures of the head.
190. Fundamentals of diagnostic imaging (e.g., radiographs, CT, MRI, ultrasound).

**Task B. Assess patient health or disease utilizing diagnostic imaging and develop a comprehensive plan to obtain diagnostic images**

Knowledge of:

191. Radiographic interpretation of craniofacial, sinus, and dental pathology.
192. Interpretation of advanced imaging in relation to craniofacial, sinus, and dental pathology.
193. Radiographic diagnosis of bone lesions.
194. Radiographic and advanced imaging signs of benign and malignant lesions, including determination of radiographic margins of neoplastic disease.
195. Radiographic interpretation of dental and oral/maxillofacial trauma.
196. Indications and contraindications of various diagnostic imaging modalities.
197. Patient and operator protection and general radiation safety guidelines.

**Task C. Utilize appropriate diagnostic imaging instruments, materials, and techniques to obtain and interpret diagnostic images, assess outcome/complications, and develop follow-up plan based on diagnostic images obtained**

Knowledge of:

198. Operation of X-ray generators and advanced imaging modalities.
199. Patient preparation and positioning.
200. Radiographic imaging including conventional film and digital radiography.
201. Parallel, bisecting angle, and occlusal techniques.
202. Identifying imaging artifacts.
203. Identifying and resolving image quality issues.

## **Phase 2 (Practical Examination)**

Phase 2 of the examination will be given on August 10-11, 2016, with a mandatory orientation session in the evening of August 9. This examination is designed to assess the clinical technical skills of the candidate. The examination will be given in two half-day sessions (Wednesday morning and Thursday morning) with on average four procedures to be performed per half-day session. The candidates will perform procedures within four core disciplines: periodontics; endodontics; oral surgery; and restorative dentistry/prosthodontics/orthodontics, with two procedures per core discipline. The format of the examination will be explained further at the beginning of the examination. Plan your work sequence at the start of the session, and continue to be aware of the time during the session. While every effort is made to ensure consistency between specimens to ensure fairness, as in clinical practice not all specimens are exactly the same. *Each candidate should work with their specimen(s) to the best of their ability.*

Candidates are to work independently and no candidate is allowed to receive help on any phase of the practical examination. **Planned sharing of equipment or materials among candidates is not permitted**, as this has been found to be disruptive to the examination process. With the exception of minimal conversation with a proctor directed toward the use of AVDC-provided equipment, candidates are not to engage in conversation during the examination. Pets, family members, friends, staff, and personal belongings not related to the examination will not be allowed in the examination area. Electronic music players and earphones are not allowed (see Examination Security and Candidate Misconduct). You may use earplugs if you wish to reduce ambient noise.

**Work-station:** The majority of the equipment needed will be provided by the candidate. Digital radiographic systems and high speed units will be supplied by the AVDC. Detailed instructions regarding the requirements will be supplied upon passing the Phase 1 examinations.

Candidates with preferences for specific equipment are allowed to bring their own equipment provided it does not interfere with the work of other candidates or the Examination Committee. The Examination proctors have discretion as to how to manage equipment emergencies that occur on-site.

A tank with a pillar valve connection will be provided for a Hall drill, but the hose with connection to the pillar valve and hand-piece will not be provided by AVDC. Instruments and materials such as hand-pieces, restorative material, curing lights, impression materials etc. are not supplied by the AVDC. The Examination Committee discourages the use of thermoplasticized gutta percha for endodontic procedures due to the temperature of the materials provided. The use of surgical adhesives for closure is not allowed because this prevents evaluation of surgical technique. Due to safety regulations, use of two-part, liquid-powder methyl methacrylate products and chloroform are not allowed; candidates must find an alternate material for procedures that might call for the use of such products. Candidates will not be required to use amalgam for restorative procedures. Candidates will not be required to pour stone models. To summarize, all materials necessary to complete the practical examination sessions, and which were not mentioned in this document as being supplied by the AVDC, are the responsibility of the candidate. No reading materials associated with dental equipment

or supplies may be brought into the examination room, except product information sheets that were originally packaged with the equipment or material.

**Set-up:** In addition to the set-up time in the evening prior to the first session, the candidates will be allowed into the examination room 30 minutes prior to the scheduled start time of each session, to set up their equipment.

**Radiographs:** A digital radiographic system will be used for the 2015 examination by all candidates. Information regarding the digital radiography system will be transmitted to the candidates 3 months prior to the practical examination. USB thumb-drives will be provided with each specimen for storage of images. The radiographic images will be viewed on a Nix X08D digital frame, which will be provided for each candidate; if you wish to read the instruction manual prior the examination, browse to <https://support.nixplay.com/entries/22163561-User-Guide-for-X08D-Frame> to download the .pdf file. Candidates wishing to purchase their own Nix X08D frame and bring it to the exam may do so; however, personally-owned frames must be clearly marked.

**Submission of items for grading:**

**Examination materials must be handed in on time. The final five minutes of the examination and a subsequent period will be video-taped.** Radiograph generators will be turned off with 5 minutes remaining; unprocessed films placed at the development station immediately following the generator being powered down will be processed; if a processing backlog occurs, any undeveloped films will be processed and considered “turned in” upon the call of time despite not being viewed by the candidate. All specimens and related materials for grading (such as resected specimens, impressions or USB thumb-drives containing radiographs) must be placed in plastic boxes with the top closed, and the box must be placed on the floor before or at the time that the end of the examination is announced.

**Time remaining in the session will be announced periodically by the proctor.**

**Candidates will be informed by announced count-down of the last 15 seconds prior to the end of the examination.**

If a specimen is not in the plastic box on the floor at the announced end of the examination, proctors will physically collect the specimens and place them in the plastic box. A red tag will be attached to that specimen box (which will be removed before the specimen box is seen by the graders). These red-tag specimens will be penalized 35% of the actual scores given by the graders for procedures performed on those specimens. Physical resistance by the candidate to collection of the specimen by the proctor will cause the proctor to back away with the result that the specimen will not being graded at all. Additional materials such as resected tissues or extracted teeth not in the plastic box when collected by the proctor will not be included in the materials available to the graders for that candidate.

Any items being submitted for evaluation (such as impression trays) must be completely devoid of any identifying mark other than the specimen numbers that will be assigned at the time of the examination.

Candidates must submit only what is specifically requested on the examination instructions. Any other material submitted will not be evaluated and may compromise the anonymity of the candidate.

**Safety issues:** Taking dangerous chemicals (e.g. chloroform, bleach) on airplanes is illegal.

Candidates currently residing outside the USA should be aware that the voltage in the United States is 110v. Given current travel security arrangements, review carefully what you need to bring with you.

Contact your airline and/or the US Transport Security Administration if you have any questions or concerns.

### **Possible Practical Examination Procedure List**

- While this list is representative of the types of procedures that will be included in the examination, the AVDC and the Examination Committee reserve the right to include other procedures. Any procedures not on the list will not require equipment or supplies beyond those necessary for performing the procedures on the list.
- The goal of the practical examination is to evaluate clinical skills, judgment, and treatment planning.
- The choice of technique and materials to be used for each procedure is part of treatment planning, and it is up to the examinee to select an appropriate technique and to execute the procedure. Radiographs will be required for some procedures.
- Use this list to determine what equipment, instruments and supplies may be needed, so that you are fully prepared.

#### **Periodontics**

1. Treatment of a tooth avulsion and subsequent replacement. Perform routine periodontal treatment (“prophylaxis”) on an assigned area.

#### **Endodontics**

1. Pulpectomy (standard root canal treatment) or partial coronal pulpectomy (vital pulp therapy) to a specific tooth as directed.
2. Vital pulp therapy or partial coronal pulpectomy , specific tooth as directed.

#### **Restorative**

1. Restoration of an incisor or canine tooth with an appropriate restorative such as glass ionomer or composite as specified in the examination.

#### **Oral Surgery**

1. Mucogingival flap and canine or incisor tooth removal
2. Repair / stabilization of an incisive bone fracture
3. Repair / stabilization of a rostral mandibular/maxillary fracture
4. Placement of appropriate sinus bone flaps or trephine holes to allow visualization and surgical treatment of specific tooth problems.
5. Buccotomy with transcortical alveolectomy and tooth sectioning
6. Intraoral exodontia of specific teeth

### **Orthodontics**

1. Application of an appliance or wire, as required or requested, for the treatment of mandibular brachygnathism.

### **Dental and Oral Imaging**

Full AVDC-specific dental radiograph series.

## **Reasons for Failure of Practical Examination Procedures**

AVDC does not provide individual feed-back on reasons for grading a procedure as a failure. Here is a comprehensive list of observations from recent AVDC examinations.

### **General:**

Some requested items were not submitted.

Requested radiographs do not show the required structure(s).

Stated specifications have not been met (e.g. mm of crown length to be created).

Gauze or gross debris left in the mouth.

Lip sutured to skin left in place.

Mouth gag left in specimen's mouth.

### **Soft Tissue:**

Inappropriate location or length of incision.

Irregular edges of incised tissues.

Major vessel appears to be severed but not ligated.

Un-necessary exposure of bone.

Inappropriate size of suture material.

Gaps between sutures, sutures are too loose or too tight or are crowded, or suture knots are not secure.

Tension at suture line.

Debris present.

Adjacent soft tissue has been damaged.

### **Dental structures:**

Inadequate or excessive removal of enamel or dentin, or unsupported enamel is present.

Exposed dental surfaces have not been smoothed.

Root is gouged or rough.

Tooth gouged during preparation of adjacent tissues.

### **Gingiva and Periodontal Bone:**

In addition to items in 'Soft Tissue', above:

Calculus remaining on treated teeth.

Biologic width is inadequate, gingiva is damaged or poorly adapted.

Bone is rough or inappropriately shaped.

Root is exposed.

Perforation near or into the nasal cavity.

Flap is poorly designed, and is insufficient to cover the defect without tension, or the width : length ratio is inadequate.

Flap is loose or is perforated or is poorly adapted to bone.

Tooth damage created during preparation of bone.

### **Oral Surgery:**

Poor or absent blood vessel management.

Extractions:

- Excessive bone removal and inadequate alveoloplasty.

- Excessive undermining of flaps and damage to adjacent tissue.

- Inadequate preparation or over-preparation of flap recipient site.

- Bone surfaces rough and irregular, debris in alveolus beneath suture line or on exposed bone.

- Retained root tip; root tip in mandibular canal.

- Exposure of mandibular canal.

- Alveolus of canine tooth is fractured and mobile.

Fracture repair:

- Poor wiring technique, splint is excessive or design is poor - prevents occlusal closure or causes excessive soft-tissue coverage.

- Splint has rough edges or debris found; weak bonding of splint to teeth – easily displaced; occlusal interference.

### **Endodontics**

Access is misdirected or is too shallow or over-prepared or there is damage of adjacent enamel.

Canal is over-instrumented or is inappropriately instrumented.

Failure to clean the coronal portion if a separate access is made.

Obturation is incomplete or of variable density or has obvious voids.

Tooth split by excess obturation pressure.

Debris in access site, or sealer is present on walls of access site.

Excessive apical extrusion.

### **Operative Dentistry:**

Preparation for restoration: insufficient or of excessive depth, or enamel is undercut, or extends to the bone edge or margins and surfaces are not smooth, or bone management is poor.

Root trauma.

Restorative material is not fully cured.

Soft tissue damage.

## **Orthodontics**

Inappropriate choice of or location of attachment device for anchor and/or target teeth.

Appliance will cause occlusal interference or soft tissue damage.

Appliance not securely attached.

Appliance design will not cause required tooth movement.

Appliance not finished.

Gingival or tooth damage created.

## **Suggested Reading List for Equine Candidates and Residents**

The following list is provided as suggested reading material. It is not all inclusive of every potential reference and publication, because the body of scientific literature is fluid and always changing. **No attempt is made to restrict examination questions to the material in these references.** The examination reflects the current state of knowledge in veterinary dentistry rather than material from a particular group of references. Much of veterinary dental knowledge has been derived from human dentistry. This is reflected in the suggested reading list and will also be reflected in the examination itself.

### **Books:**

#### **Anatomy:**

1. Budras KD, Wunsche A, Henschel E. Anatomy of the Horse: An Illustrated Text. Hannover, Germany: Schlutersche GmbH & Co, 2003.
2. Clayton HM, Flood PF, Rosenstein DS. Clinical Anatomy of the Horse. London: Mosby Elsevier, 2005.
3. Nanci A. Ten Cate's Oral Histology: Development, Structure, and Function. 7<sup>th</sup> ed. St. Louis: Mosby, 2007.

#### **Anesthesia and Analgesia:**

1. Tranquilli WJ and et aleds. Lumb & Jones Veterinary Anesthesia and Analgesia. 4<sup>th</sup> ed. Baltimore: Williams & Wilkins, 2007.
2. Doherty T, Valverde A. Manuel of Equine Anesthesia and Analgesia. Oxford: Blackwell Publishing Ltd., 2006.

#### **Dental Materials:**

1. Anusavice KJ. Philips' Science of Dental Materials. 11<sup>th</sup> ed. Philadelphia: WB Saunders, 2003.
2. Powers JM. Craig's Restorative Dental Materials. 12<sup>th</sup> ed. St. Louis: Mosby Elsevier, 2006.
3. Zardiackas LD, Dellinger TM, Livingston M. Dental Materials. Dental Clinics of North America, 2007; 51(3).

#### **Endodontics:**

1. Hargreaves KM and Cohen MA. Cohen's Pathways of the Pulp. 10<sup>th</sup> ed. St. Louis: Mosby, 2010.



**Equine Dentistry:**

1. Easley J, Dixon PM, and Schumacher J. Equine Dentistry 3<sup>rd</sup> ed. Philadelphia: Saunders, 2010.
2. Gaughan EM, DeBowes RM. Dentistry. Veterinary Clinics of North America: Equine Practice 14(2). Philadelphia: WB Saunders, 1998.
3. Easley J. Dentistry. Veterinary Clinics of North America: Equine Practice. Philadelphia: WB Saunders, August 2013.
4. Klugh DO. Principles of Equine Dentistry. London: Manson Publishing Ltd, 2010.

**Equine Medicine:**

1. Reed SM, Bayly WM, Sellon DC. Equine Internal Medicine 3<sup>rd</sup> ed. St Louis: Saunders. 2010.
2. McGorum BC, Robinson NE, Dixon PM and Schumacher J. Equine Respiratory Medicine and Surgery. Oxford: Elsevier, 2007.

**Orthodontics:**

1. Graber TM, Vanarsdall RL, Vig KWL. Orthodontics, Current Principles and Techniques, 5<sup>th</sup> edition. New York:Elsevier Mosby, 2011.

**Pathology:**

1. Regezi JA, Sciubba JJ, Jordan RCK. Oral Pathology: Clinical Pathologic Correlations. 5<sup>th</sup> ed. Philadelphia: Saunders, 2007.

**Periodontology:**

1. Newman MG, Takei H, Klokkevold PR, Carranza FA. Carranza's Clinical Periodontology. 11<sup>th</sup> ed. Philadelphia: Saunders, 2011.
2. Wolf HF, Rateitschak KH, Rateitschak EM, Hassell TM. Color Atlas of Dental Medicine – Periodontology.3<sup>rd</sup> ed. New York: Thieme Medical Publishers, 2005.

**Radiology:**

1. Butler JA, Colles CM, Dyson SJ, Kold SE. Clinical Radiology of the Horse 3<sup>rd</sup> ed. Oxford, Blackwell Science Ltd, 2008.
2. White SC and Pharoah MJ. Oral Radiology: Principles and Interpretation.6<sup>th</sup> ed. St. Louis: Mosby, 2008.
3. Schwarz T, Saunders J. Veterinary Computed Tomography. Oxford: Wiley Blackwell Publishing, 2011.

**Restorative Dentistry / Prosthodontics:**

1. Roberson TM, Heyman HO, and Swift EJ. Sturdevant's Art and Science of Operative Dentistry. 5<sup>th</sup> ed. St. Louis: Mosby, 2006.

**Surgery:**

1. Auer EG, Stick JA. Equine Surgery 3<sup>rd</sup> ed. St Louis: Elsevier, 2006.
2. Hupp JR, Ellis III E, Tucker MR. Contemporary Oral and Maxillofacial Surgery. 5<sup>th</sup> ed. St. Louis: Mosby, 2008.

**Veterinary Dentistry:**

1. Tutt C, Deeprouse J, Crossley DA, eds. BSAVA Manual of Small Animal Dentistry, 3<sup>rd</sup> ed. Quedgeley: British Small Animal Veterinary Association, 2007.
2. Verstraete FJM and Lommer MJ. Oral and Maxillofacial Surgery in Dogs and Cats. Philadelphia: Saunders, 2012.

### **Journals and Periodicals:**

- Journal of Veterinary Dentistry: Volume 16(1) 1999 to present.
  - Equine and dental principle articles
- The Veterinary Journal
- Equine Veterinary Journal
- Equine Veterinary Education
- Journal of the American Veterinary Medical Association
- Journal of the American Animal Hospital
- American Journal of Veterinary Research
- Journal of Clinical Techniques in Equine Practice
- Techniques in Equine Practice
- Veterinary Clinics of North America: Equine Practice
- Veterinary Record
- Veterinary Surgery Journal
- Australian Equine Veterinary Journal
- Compendium Equine: Continuing Education for Equine Veterinarians
- Dental Clinics of North America. Philadelphia, WB Saunders Co. (Last five years)

Other suggested journals with valuable dental articles in them include:

- Veterinary Radiology and Ultrasound
- Compendium of Continuing Education in Dentistry
- Journal of Periodontology
- Journal of Endodontics
- Journal of Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology

## **Passing Score, Examination Results, Repeat Examinations**

### **Phase 1 - Multiple Choice Question Examination**

A pre-set Pass cut score is NOT used. All questions are 'criterion-referenced' using the modified Angoff procedure to determine the degree of difficulty of that question for a minimally qualified entry-level veterinary dental specialist. The mean of the Angoff scores of the questions included in the examination is the pass score. Typically, the mean Angoff score is in the region of or slightly below 70%.

### **Phase 2 - Practical Examination**

The scoring standards for the practical portion of the examination are based on generally accepted dental techniques as found in current textbooks and journals and practiced by Diplomates of the AVDC. For each procedure, a grading system of 0-100 based on predetermined criteria is used. The passing grade for a single procedure is 70% or above, with 70% indicating that the procedure was performed in a minimally clinically satisfactory manner. The scores of the graders are averaged for each specimen. Fractional scores stand as is, and are not rounded. The final grade of the practical examination is the average score of the procedures assigned. The Examination Committee reserves

the right to recommend to the AVDC Board of Directors to fail a candidate in the practical examination, irrespective of the score obtained, if an error was performed by the candidate that would, in a clinical situation, result in serious harm to the patient.

### **Disclosure of Examination Results**

Candidates will receive written notification of whether or not they passed Phase 1 of the examination within 30 days of the date of the examination. Examination results for the Phase 2 examination will be distributed within 45 days of the Phase 2 examination. Results for all candidates are sent on the same day.

Candidates who are not successful in passing Phase 1 or Phase 2 of the examination will be provided with an explanation of the deficiencies that prevented their passing the examination.

For Phase 1 of the examination, information will be made available on whether the candidate passed or failed each major discipline category of the examination.

For Phase 2 of the examination the specific procedures that the candidate failed will be listed for the candidate. In addition, this document includes a comprehensive list of reasons for failing particular procedures in recent years.

Actual scores will not be released to candidates.

### **Repeat Examinations**

The AVDC certifying examination has two parts: Phase 1 (written and bench questions) and Phase 2 (practical examination). Candidates must pass Phase 1 of the certifying examination to be eligible to sit for Phase 2.

Beginning with the first examination after approval of the credentials application, candidates shall have a limit of three attempts in consecutive years for each phase of the examination, with the exception of one deferral year, and subject to the requirement that candidates must have passed the Phase 1 examination in order to be eligible for the Phase 2 examination. Exceptions to this limit on number of examination attempts may be made by the Board of Directors following petition from the candidate for one additional attempt per phase of the examination; the petition must include the candidate's proposed examination preparation action plan, which is subject to review and approval by the Board. The Board shall have the right to consider extenuating circumstances.

Candidates wishing to retake Phase 1 or Phase 2 of the examination are to complete, sign and submit the Examination Security Form, which is available for down-loading from the AVDC web site, in the Examination section of the *Information for Registered Trainees* page.

## **Examination Security and Candidate Misconduct**

Any questions before the examination regarding the examination are to be directed via e-mail to the Executive Secretary of the AVDC (ExecSec@AVDC.org) or, if the Executive Secretary is unavailable, to the Chair of the Examination Committee. Questions will be answered in writing and copies will be sent to all candidates. It is strictly forbidden to have direct or indirect contact with other members of the Examination Committee (whose names are listed below) regarding the process, format or content of the examination, from the date that an applicant is notified that s/he is a candidate

for the examination until the examination has been completed. Any breach of these rules can be considered reason for action by the Board of Directors to deny a candidate admission to the examination.

The Committee for the 2016 Equine Examination consists of: James Carmalt and Hubert Simhofer (Chairs), Stephen Galloway, Michael Lowder, Gary Wilson, Alex Reiter, and Tom Kiger (HumRRO test consulting services).

**Examination security is a primary concern for AVDC.** Do not bring personal materials (e.g. notes, books, tape recorders, photographic devices, calculators, computers, cellular phones) to the examination room. References are not to be consulted during the examination process. The examination material is not to be divulged to others.

**Candidates:** Complete and sign the Examination Security Form at the end of this document and return it to the AVDC Executive Secretary by December 1<sup>st</sup> of the year before the examination.

### **AVDC POLICY ON APPEAL OF ADVERSE DECISIONS**

The AVDC policy on appeal of adverse decisions is available on the AVDC web site by link from the *Information for Registered Trainees* page (<http://www.avdc.org/appeals.pdf>).