

2020/21 Equine Anesthesia, Analgesia & Perioperative Care in 3 Modules for Veterinarians and RVTs



**Promoting and Advancing Anesthesia
& Analgesia Care Animals Deserve**



No. of course participants: 20 (Minimum) - 40 (Maximum)

Requirements: Veterinary degree or licensed veterinary technician/nurse

Course director: Dr. Bernd Driessen, Professor of Anesthesiology, Dipl. ACVAA, Dipl. ECVPT, New Bolton Center - University of Pennsylvania

Organisation: NARKOVET CONSULTING,® LLC. & ETHOS VETERINARY HEALTH/VETBLOOM in cooperation with Rood and Riddle Equine Hospital, Lexington.

Instructors: Bernd Driessen, DVM, PhD, Dipl. ACVAA & ECVPT; Lauren Duffee, VMD, Dipl. ACVAA; Klaus Hopster, DVM, PhD, Dipl. ECVA, Charlotte Hopster-Iversen, DVM, PhD, Dipl. ECVIM; John A. E Hubbell, DVM, MS, Dipl. ACVAA

Event location: Rood and Riddle Equine Hospital, 2150 Georgetown Road, Lexington, KY 40511

ACVAA- and AVTAA-endorsed CE program; RACE CE hrs (for entire course): 87

ENTIRE PROGRAM (11 days) - 87 hrs

Module 1: Days 1-4 (August 27 - 30, 2020)

Module 2: Days 5-7 (November 19 - 21, 2020)

Module 3: Days 8-11 (March 03 - 06, 2021)

3 cumulative online exams several weeks after each module

Module	Day	Date	Time	Location			Activity		
			7:45 AM	Rood & Riddle Equine Hospital			Registration - Distribution of Course Handbooks		
			Time	Location	Course hour	Instructor	Subject	Topics covered during lecture	
1	1	Thursday, 08/27/2020	8:15 AM	Rood & Riddle Equine Hospital	1	Driessen	Introduction	Welcome address and introduction to the course (structure of the course and topics covered in the course; teaching goals; MCQ testing, inter-module home work and on-demand e-learning components)	
			8:45 AM		2	Driessen	Anesthesia & Pain Management in Today's Equine Health Care Environment	Equine Anesthesia Guidelines, horse owner expectations and their translation into practice; advantages of building a functioning anesthesia team in a hospital setting under consideration of the different, also legal, standing of RVTs versus vets	
			9:30 AM		3	Driessen	Pharmacological Principles	Principles of pharmacodynamics and pharmacokinetics (delivery, distribution & elimination) of injectable agents	
			11:00 AM		4	Driessen	Premedication	Clinical pharmacology of premedication drugs and criteria for their use in the equine - Part I	
			12:00 PM		5	Driessen	Premedication	Clinical pharmacology of premedication drugs and criteria for their use in the equine - Part II	
			1:00 -2:00 PM		Lunch				
			2:00 PM	Rood & Riddle Equine Hospital	6	Driessen	Intravenous Central Muscle Relaxants	Clinical pharmacology of intravenous central muscle relaxants (guaifenesin and benzodiazepines) and criteria for their use in the equine	
			3:00 PM		7	Driessen	Intravenous Anesthetics	Clinical pharmacology of intravenous anesthetics (ketamine, Telazol®, propofol, alfaxalone) and criteria for their use in the equine, Part I	
			4:00 PM		8	Driessen	Intravenous Anesthetics	Clinical pharmacology of intravenous anesthetics (ketamine, Telazol®, propofol, alfaxalone) and criteria for their use in the equine, Part II	

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
1	2	Friday, 08/28/2020	8:00 AM	Rood & Riddle Equine Hospital	9	Hopster	Preanesthetic Patient Assessment & its Importance	Preanesthetic physical status and anesthetic risk assessment including ASA classification and its limitations, and consequences for anesthetic case management		
			9:00 AM		10	Hubbell	Field Anesthesia / Total Intravenous Anesthesia (TIVA)	Practice tested TIVA techniques for field anesthesia		
			10:00 AM		11	Hubbell	Field Anesthesia / Total Intravenous Anesthesia (TIVA)	Common complications associated with field anesthesia or TIVA		
			10:45 AM		12	Hopster/ Driessen / Hubbell et al.	Premedication Drug Dosing: Which, When, By Which Route, How much?	Workshop in small groups: Selecting premedication protocols based on selected case scenarios (drugs, doses, routes of administration)		
			12:00 PM		13	Hopster/ Driessen / Hubbell et al.	Induction Of Anesthesia: When, How, And With Which Drugs	Workshop in small groups: Selecting anesthetic induction protocols based on selected case scenarios (drugs, doses, routes of administration)		
			1:00 -2:00 PM	Lunch						
			2:00 PM		14	Hopster/ Driessen / Hubbell et al.	Field Anesthesia / Total Intravenous Anesthesia (TIVA)	Field anesthesia: Demonstration of different protocols and handling techniques		
			3:00 PM		15					
			4:00 PM		16					

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
1	3	Saturday, 08/29/2020	8:00 AM	Rood & Riddle Equine Hospital	17	Hubbell	Inhalation Anesthetics	Clinical pharmacology of inhalant anesthetics (isoflurane, sevoflurane, desflurane; N ₂ O)		
			9:00 AM		18	Driessen	Balanced Anesthesia	Techniques and advantages of "balanced" inhalation anesthesia (also called PIVA) and selection criteria based on case presentations		
			10:00 AM		19	Driessen	Inhalant Anesthesia	Workshop: Uptake, distribution & elimination of inhalant anesthetics (isofluran, sevofluran, desfluran; N ₂ O) inkl. high flow/low flow anesthesia demonstrations using Gasman® computer simulations		
			10:45 AM		20	Driessen	Perianesthetic Monitoring	Characteristics of general anesthesia/anesthetic depth/anesthetic record (standard or digital)		
			12:00 PM		21	Hopster	General Anesthesia: Equipment For Inhalant Anesthesia	Anesthesia machine, anesthetic circuits, vaporizers & related equipment		
			1:00 -2:00 PM	Lunch						
			2:00 PM	Rood & Riddle Equine Hospital	22	Hopster/ Driessen / Hubbell et al.	General Anesthesia: Equipment For Inhalant Anesthesia	Interactive workshop: Assembly & function testing of anesthesia machinery of various manufacturers & related equipment		
			3:00 PM		23					
			4:00 PM		24	Hopster	Equine Respiratory Physiology	Basic anatomy and physiology of the respiratory system & effects of anesthesia on respiratory function		
Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
1	4	Sunday, 08/30/2020	8:00 AM	Rood & Riddle Equine Hospital	25	Hopster	Equine Respiratory Physiology	Interpretation of capnography and pulse oximetry data in the context of clinical respiratory and cardiovascular function monitoring		
			9:00 AM		26	Driessen	Equine Respiratory Physiology	Principles of blood gas analysis for the assessment of pulmonary gas exchange		
			10:00 AM		27	Hopster	Mechanical Ventilation	Indications for and techniques of positive pressure ventilation and its impact on the anesthetized horse		
			10:45 AM		28	Hopster/ Driessen / Hubbell et al.	Inhalant Anesthesia	Workshop: Demonstration of various types of mechanical ventilators, and modes of ventilation (pressure versus volume limited ventilation), ventilator settings, recruitment maneuvers and PEEP ventilation		
			12:00 PM		29					
			1:00 -2:00 PM	Sandwich lunch & Adjourn						
Home study between modules 1 & 2				1-2 Webinars plus 2-3 sets with 8-20 exercise questions each to facilitate reviewing teaching handouts (time effort: ≈ 2 hrs per question set (6 hrs total))						

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
2	4	Thursday, 11/19/2020	8:00 AM	Rood & Riddle Equine Hospital	30	Hubbell	Equine Cardiovascular System Physiology	Basic anatomy and physiology of the cardiovascular system		
			9:00 AM		31	Hubbell	Equine Cardiovascular System Physiology	Impact of anesthesia on cardiovascular system functioning		
			10:00 AM		32	Driessen	Heart Rhythm Monitoring During Anesthesia	The ECG - what it represents and how to read it		
			10:45 AM		33	Driessen	Heart Rhythm Monitoring During Anesthesia	Interactive workshop: Systematic approach to ECG rhythm recognition		
			12:00 PM		34	Driessen				
			1:00 -2:00 PM	Lunch						
			2:00 PM	Rood & Riddle Equine Hospital	35	Hopster	Hemodynamic Function Monitoring	Basic techniques of cardiovascular system monitoring (invasive/non-invasive)		
			3:00 PM		36	Hopster				
			4:00 PM		37	Hopster	Perianesthetic Monitoring & Management of Hemodynamic Function	Step-for-step demonstration of setting-up invasive arterial blood pressure recording and management of arterial hypo- & hypertension		

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
2	5	Friday, 11/20/2020	8:00 AM	Rood & Riddle Equine Hospital	38	Hopster	Pharmacological Support of the Cardiovascular System	Fluids, inotropes & vasopressors		
			9:00 AM		39	Hopster	Perianesthetic Blood Volume & Blood Component Status	Perioperative hypovolemia treatment (shock therapie) with crystalloids, colloids, and blood products		
			10:00 AM		40	Hubbell	Perianesthetic Cardiac Arrhythmias & their impact	Systematic approach to diagnosing of common perianesthetic arrhythmias and treatment		
			10:45 AM		41	Hopster/ Driessen / Hubbell et al.	Perianesthetic Cardiac Arrhythmias	Interactive workshop in groups: Diagnosing and treatment of common perianesthetic arrhythmias using case examples		
			12:00 PM		42					
			1:00 -2:00 PM	Lunch						
			2:00 PM	Rood & Riddle Equine Hospital	43	Hopster	Perianesthetic Maintenance of Acid-Base Homeostasis	Diagnosing and treatment of respiratory versus metabolic acidosis (incl. Anion-gap).		
			3:00 PM		44	Hopster	Perianesthetic Maintenance of Acid-Base Homeostasis	Interactive workshop: Diagnosis and treatment of abnormal acid-base status based on arterial blood gas analysis using case presentations - Part I		
			4:00 PM		45	Hopster	Perianesthetic Maintenance of Acid-Base Homeostasis	Interactive workshop: Diagnosis and treatment of abnormal acid-base status based on arterial blood gas analysis using case presentations - Part II		

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture			
2	6	Saturday, 11/21/2020	8:00 AM	Rood & Riddle Equine Hospital	46	Hopster	Perianesthetic Maintenance of Electrolyte Homeostasis	Plasma electrolyte imbalances and their impact on organ function.			
			9:00 AM		47	Hopster	Perianesthetic Maintenance of Electrolyte Homeostasis	Interactive workshop in small groups: Diagnosis and treatment of abnormal electrolyte status based using case presentations - Part I			
			10:00 AM		48	Hopster	Perianesthetic Maintenance of Electrolyte Homeostasis	Interactive workshop in small groups: Diagnosis and treatment of abnormal electrolyte status based using case presentations - Part II			
			10:45 AM		49	Driessen	Perianesthetic Muscle Paralysis	Indications, monitoring and reversal of neuromuscular blockers (NMBs) - Pharmacology of NMBs (Focus: [cis-]atracurium)			
			12:00 PM		50	Driessen					
			1:00 -2:00 PM	Lunch							
			2:00 PM	Rood & Riddle Equine Hospital	51	Driessen	Recovery Period & Postoperative Complications	Recovery of horses from anesthesia: requirements for recovery stall and related appliances/tools			
			3:00 PM		52	Driessen	Recovery Period & Postoperative Complications	Video and possibly live demonstration of assisted recovery techniques			
			4:00 PM		53	Driessen	Recovery Period & Postoperative Complications	Management of frequent postoperative complications during recovery - Monitoring & grading of recovery quality			
			4:45 PM		54	Hopster	Euthanasia	The new AVMA guidelines for acceptable euthanasia in the horse			
			Home study between modules 2 & 3				1-2 Webinars plus 2-3 sets with 8-20 exercise questions each to facilitate reviewing teaching handouts (time effort: ≈ 2 hrs per question set (6 hrs total))				

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
3	7	Wednesday, 03/03/2021	8:00 AM	Rood & Riddle Equine Hospital	55	Driessen	Perioperative Analgesia	Physiology and pathophysiology of perioperative pain		
			9:00 AM		56	Driessen				
			10:00 AM		57	Driessen	Perioperative Analgesia	Recognition and scoring of pain- and (dis-)stress in the horse using various equine pain scoring systems		
			10:45 AM		58	Driessen	Perioperative Analgesia	Treatment of perioperative pain - Clinical pharmacology of analgesics commonly used in the horse		
			12:00 PM		59	Driessen				
			1:00 -2:00 PM	Lunch						
			2:00 PM	Rood & Riddle Equine Hospital	60	Hopster	Locoregional Anesthesia and Analgesia	Clinical pharmacology of local anesthetics, analgesics, and adjuncts commonly used for locoregional anesthesia and analgesia in the horse		
			3:00 PM		61	Hopster	Locoregional Anesthesia and Analgesia	Commonly applied techniques of locoregional anesthesia and analgesia in the horse (topical, infiltration, perineural, and spinal anesthesia and analgesia; Bier-Block (IVRA))		
			4:00 PM		62	Driessen	Perioperative Analgesia	Treatment of perioperative nociception/pain in the equine - Strategy of multimodal analgesia		

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
3	8	Thursday, 03/04/2021	8:00 AM	Rood & Riddle Equine Hospital	63	Hopster	Sedation & Analgesia In The Standing Horse	Effective sedation and analgesia protocols for procedures in the standing horse		
			9:00 AM		64	Hopster	Perioperative Analgesa	Epidural short term and long-term anesthesia and analgesia in the horse including step-for-step illustrations/-demonstrations for epidural catheter placement		
			10:00 AM		65	Hopster	Perioperative Analgesie	Loco-regional anesthesia & analgesia techniques for procedures in the head including step-for-step illustrations/-demonstrations		
			11:00 AM		66	Hopster/ Driessen / Hubbell et al.	Perioperative Analgesie	Wet lab with cadavers: Practice of local blocks for dental, eye, and ear procedures		
			12:00 PM		67					
			1:00 -2:00 PM	Lunch						
			2:00 PM	Rood & Riddle Equine Hospital	68	Driessen	Disease-specific Aspects of Anesthesia	Principle approach to emergency anesthesia (example: trauma patient)		
			3:00 PM		69	Hopster	Disease-specific Aspects of Anesthesia	Anesthesia for the patient with eye disease and eye lacerations		
			4:00 PM		70	Driessen	Disease-specific Aspects of Anesthesia	Anesthesia for the patient undergoing throat and upper airway surgery (incl. laer surgery)		
			5:00 PM		71	Driessen	Disease-specific Aspects of Anesthesia	Anesthesia for the patient at risk of major intraoperative blood loss (e.g. sinus surgery, nasal septum resection, soft tissue laceration).		

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
3	9	Friday, 03/05/2021	8:00 AM	Rood & Riddle Equine Hospital	72	Driessen	Disease-specific Aspects of Anesthesia	Anesthetic management of the colic horse		
			9:00 AM		73	Driessen				
			10:00 AM		74	Hopster	Age-specific Aspects of Anesthesia	Anesthetic management of the geriatric horse		
			10:45 AM		75	Hopster	Species-specific Aspects of Anesthesia	Anesthetic management of pony, draft and ferral horses		
			12:00 PM		76	Hopster	Species-specific Aspects of Anesthesia	Anesthetic management of donkey, mule, and zebra		
			1:00 -2:00 PM	Lunch						
			2:00 PM	Rood & Riddle Equine Hospital	77	Hopster	Perianesthetic Complications	Perianesthetic complications - Focus: cardiovascular system		
			3:00 PM		78	Hopster	Perianesthetic Complications	Perianesthetic complications - Focus: respiratory system		
			4:00 PM		79	Hopster	Perianesthetic Complications	Cardiovascular arrest - CPR in the horse		

Module	Day	Date	Time	Location	Course hour	Instructor	Subject	Topics covered during lecture		
3	10	Saturday, 03/06/2021	8:00 AM	Rood & Riddle Equine Hospital	80	Driessen	Physiology of the Equine Neonate & Infant	Physiologic and pharmacologic considerations in the foal relevant to anesthesia		
			9:00 AM		81	Driessen				
			10:00 AM		82	Hopster-Iversen	Pathophysiological Conditions in the Equine Neonate and Infant	Diseases in the foal relevant to anesthetic management		
			10:45 AM		83	Driessen	Anesthesia, Analgesia, and perioperative Care in the Foal	Anesthetic Management of the equine neonate (\leq 1 month old) and infant (1 - 4 months old)		
			12:00 PM		84	Driessen	Anesthesia, Analgesia, and perioperative Care in the Foal	Supportive care and pain therapy throughout the perianesthetic period		
			1:00 -2:00 PM	Lunch						
			2:00 PM		85	Driessen	Anesthesia, Analgesia, and perioperative Care in the Foal	Anesthetic management of the foal with chest trauma and the foal with uroperitoneum		
			3:00 PM		86	Hopster-Iversen	Anesthesia, Analgesia, and perioperative Care in the Foal	Basic (CPR) and advanced life support in the foal with cardiac arrest		
			4:00 PM		87	Hopster-Iversen	Perioperative Intensive Care in the Foal	Intensive care in the critically ill equine neonate and infant		
Home study following module 3				1-2 Webinars plus 2-3 sets with 8-20 exercise questions each to facilitate reviewing teaching handouts (time effort: \approx 2 hrs per question set (6 hrs total))						

Modules 1 - 3	Day	Date	Time	Location	Course hour	Contact	Subject
Exams		Saturday, 11/14/2020	10:00 - 11:30	Online	E1	NVC - US	MC test (40 MCQ) related to course module 1.
		Saturday, 02/20/2021	10:00 - 11:30	Online	E2	NVC - US	MC test (40 MCQ) related to course module 2.
		Saturday, 05/08/2021	10:00 - 11:30	Online	E3	NVC - US	MC test (40 MCQ) related to course module 3.
		Within 1-5 days post test				NVC - US	Communication of test results to examinees and mailing of course module attendance certificates, and eventually distribution of final course certificates to all participants who successfully passed all MCQ tests. *

* Successful conclusion of the course program requires a cumulative test score of minimum 70 %. Retake exams will be granted upon payment of an additional testing fee.