Research Anesthesia Skills

A minimum of 80% of the skills must be mastered.
Mastery is defined as to be able to perform a task consistently and competently without being coached or directed no less than 4 times.
Mastery requires having performed the task in a wide variety of patients and situations.

Pharmacology

	Skill	Case Log Number(s)	DVM or VTS Signature
1.	Administer and assess the effects of an inhalant anesthetic via precision vaporizer, describing any physiological changes after administration in your patient. **Indicate inhalant**: _____		
2.	Administer and assess the pre-anesthetic effects of an anticholinergic, describing any physiological changes after administration in your patient. (e.g. atropine, glycopyrrolate)		
3.	Administer and assess the pre-anesthetic effects of an anticholinergic, describing any physiological changes after administration in your patient. (e.g. atropine, glycopyrrolate)		
4.	Administer and assess the pre-anesthetic effects of a pure agonist opioid, describing any physiological changes after administration in your patient. (e.g. hydromorphone, fentanyl, methadone, etc.)		
5.	Administer and assess the pre-anesthetic effects of an agonist/antagonist, describing any physiological changes after administration in your patient. (e.g. butorphanol, nalbuphine)		
6.	Administer and assess the pre-anesthetic effects of a partial agonist opioid, describing any physical changes after administration in your patient. (e.g. buprenorphine)		
7.	Administer and assess the pre-anesthetic effects of an alpha-2 adrenergic agonist, describing any physiological changes after administration in your patient. (e.g. medetomidine, dexmedetomidine)		
8.	Administer and assess the pre-anesthetic effects of a benzodiazepine, describing any physiological changes after administration in your patient. (e.g. midazolam, diazepam)		
9.	Administer and assess the effects of a dissociative anesthetic agent used as part of an induction protocol, describing any physiological changes after administration in your patient. (e.g. ketamine/benzo, Telazol)		
10.	Administer and assess the effects of IV thiopental, diprivan, etomidate, or alfaxalone as an induction agent, describing any physiological changes after administration in your patient. **Indicate drug**: _____		
11.	Administer and assess the effects of a non-depolarizing neuromuscular blocking agent, describing any physiological changes after administration in your patient. (e.g. atracurium, pancuronium, etc.) **Paralytic used:**_____		
12.	Administer and assess the effects of a multimodal analgesic protocol during the maintenance phase of balanced anesthesia.		
13.	Administer and assess the effects of an inhalant plus an analgesic CRI during the maintenance period of anesthesia, describing any		

	physiological changes after administration in your patient. Indicate the analgesic drug used as the CRI and the reason for use.		
14.	Administer and assess the effects of a non-steroidal anti-inflammatory agent, describing any physiological changes after administration in your patient. (e.g. carprofen, ketoprofen, meloxicam, robenacoxib)		
15.	Administer and assess the effects of an IV opioid constant rate infusion (e.g., morphine, fentanyl, hydromorphone, remifentanil, etc).		
16.	Administer and assess the effects of an opioid antagonist (e.g., naloxone, nalmefene).		
17.	Administer and assess the effects of an alpha-2 antagonist (e.g. atipamezole, tolazoline, yohimbine)		
18.	Administer and assess the effects of an antiarrhythmic drug (e.g., lidocaine, esmolol, procainamide), and indicate the reason for use.		
19.	Administer and assess the effects of a positive inotrope to maintain blood pressure (e.g., dopamine, dobutamine), and indicate the reason for use.		

Physiology and Physiologic Response

	Skill	**Case Log Number(s)**	**DVM or VTS Signature**
20.	Evaluate and respond to adverse cardiovascular reactions and/or complications to **pre-anesthetic** drugs. (e.g. bradycardia , hypotension)		
21.	Evaluate and respond to adverse respiratory reactions and/or complications to **pre-anesthetic** drugs. (e.g. respiratory distress, hypoxemia)		
22.	Evaluate and respond to adverse cardiovascular reactions and/or complications to **induction** drugs (e.g., arrhythmias, and hypotension).		
23.	Evaluate and respond to adverse respiratory reactions and/or complications to **induction** drugs (e.g., apnea, hypoxemia).		
24.	Administer and describe use of IV crystalloid fluid therapy during anesthesia (e.g., LRS, Normosol-R).		
25.	Administer and describe use of IV synthetic colloid fluid therapy (e.g., Dextrans, Hetastarch, Vetstarch)		
26.	Administer and evaluate the effects of IV blood components during anesthesia (e.g., whole blood, packed RBC's, plasma), and indicate the reason for use.		

Equipment Use and Understanding

	Skill	**Case Log Number(s)**	**DVM or VTS Signature**
27.	Insert esophageal stethoscope to evaluate and monitor heart rate and respiratory rate.		
28.	Set-up and operate a pulse oximeter, indicate function, and describe how to troubleshoot equipment malfunction.		

29.	Set-up and monitor heart rate and rhythm with continuous ECG monitoring, identify arrhythmias and indicate if/when treatment is necessary; describe how to troubleshoot equipment.		
30.	Set-up and monitor temperature via nasal, esophageal, or rectal probe and evaluate patient status (e.g., hypothermia vs. hyperthermia and their relationship to anesthesia).		
31.	Demonstrate proper use of external warming devices such as forced warm air blankets, Hot Dog® and circulating water blankets, indicate reason for use.		
32.	Set-up and operate a capnograph or capnometer (end-tidal CO2 monitor), evaluate ventilation status and describe how to troubleshoot equipment.		
33.	Set-up and monitor blood pressure indirectly with an occlusion cuff and Doppler flow probe, evaluate blood pressure status and describe how to troubleshoot equipment.		
34.	Set-up and monitor blood pressure indirectly with an oscillometric blood pressure monitoring device, evaluate blood pressure status and describe how to troubleshoot equipment.		
35.	Set up and monitor blood pressure directly using an indwelling arterial catheter attached to a pressure transducer or aneroid manometer, evaluate blood pressure status and describe how to troubleshoot equipment. *if IBP is the main technique used for BP monitoring applicant can ignore skill numbers 33 and 34.		
36.	Set-up, pressure check and operate a rebreathing system, describe how to troubleshoot equipment. (e.g., circle, Universal F).		
37.	Set-up, pressure check and operate a non-rebreathing system, describe how to troubleshoot equipment. (e.g., Bain, Jackson-Rees).		
38.	Set-up an anesthesia machine, indicate proper function and maintenance (e.g., oxygen cylinder, vaporizer, flow meter, CO2 absorbent and canisters, one way valves).		
39.	Set-up and perform intermittent positive pressure ventilation (IPPV) using a mechanical ventilator, evaluate its effectiveness and describe how to troubleshoot equipment.		
40.	Set-up and demonstrate use of a waste gas scavenging system (active or passive).		
41.	Demonstrate proper use of a laryngoscope for endotracheal intubation.		

42.	Set up and demonstrate use of an IV fluid pump, describe how to troubleshoot equipment.		
43.	Set up and demonstrate use of a syringe pump, describe how to troubleshoot equipment.		
44.	Set up and operate a rebreathing circuit using **low flow** oxygen flow rates, describe how to troubleshoot equipment. Indicate oxygen flow rate used and rationale for use.		
45.	Properly select an endotracheal tube based on diameter and length, indicate rationale for selection.		
46.	Understand and evaluate the risks of complete anesthetic gas induction		

Laboratory Sample Collection and Analysis

	Skill	**Case Log Number(s)**	**DVM or VTS Signature**
47.	Collect blood samples for blood glucose levels, initiate sample analysis and interpret results (e.g., hypoglycemia, hyperglycemia).		
48.	Collect blood samples for PCV and total protein, initiate sample analysis and interpret results (e.g., anemia, dehydration).		
49.	Collect blood samples (arterial or venous) for blood gas analysis, initiate sample analysis and interpret results.		

Skills and Techniques

	Skill	**Case Log Number(s)**	**DVM or VTS Signature**
50.	Auscultate thorax to assess cardio-respiratory function, indicate any abnormalities heard.		
51.	Perform manual intermittent positive pressure ventilation (IPPV) during the anesthetic procedure, describe technique, and indicate the advantages and disadvantages.		
52.	Perform pre-oxygenation, describe technique and indicate rationale for use.		
53.	Perform endotracheal intubation, indicate confirmation of proper placement in a minimum of two species. **Species:**_____		

54.	Ability to setup and maintain an animal using the forced mask technique.		
55.	Describe proper inflation of the endotracheal tube cuff; indicate type of cuff present on endotracheal tube.		
56.	Demonstrate proper use of a stylet or guide tube to assist with intubation, describe rationale for use.		
57.	Indicate appropriate patient extubation time in regards to specific species or breed requirements.		
58.	Perform subcutaneous injections, indicate drug, location and reason for administration route.		
59.	Perform intramuscular injections, indicate drug, location and reason for administration route.		
60.	Perform intravenous injections, indicate drug, location and reason for administration route.		
61.	Insert and maintain an arterial catheter; indicate location and possible complications.		
62.	Insert a peripheral IV catheter, indicate location and possible complications.		
63.	Assess peripheral pulses, indicate location and describe quality.		
64.	Insert and maintain a jugular catheter, indicate possible complications.		
65.	Perform an epidural injection; indicate the drugs used and rationale for procedure.		
66.	Perform a local or regional anesthetic block and indicate the drugs used (e.g., brachial plexus block, ring block, intercostal nerve block, etc.).		
67.	Administer and assess the effects of an anticholinesterase inhibitor to reverse a non-depolarizing neuromuscular blocking agent, describing any physiological changes after administration in your patient. (e.g. neostigmine, edrophonium)		
68.	Assess pain and assign a pain score using a pain scoring system (e.g., Glascow, CSU or modified version).		
69.	Administer analgesic therapy and assess response to therapy using a pain scoring system.		
70.	Assist with intubation of a patient for one lung ventilation, describe		

	the technique and indicate the rationale for the procedure.		
71.	Administer and evaluate the effects of emergency drugs used during cardiopulmonary arrest. (e.g. atropine, epinephrine, lidocaine and/or vasopressin)		
72.	Set-up and evaluate a Positive End Expiratory Pressure (PEEP) or Continuous Positive Airway Pressure (CPAP) device, indicate rationale for use.		
73.	Identify and initiate treatment for regurgitation under general anesthesia.		
74.	Administer and assess the effects of a vasopressor to maintain blood pressure, describing any physiological changes after administration in your patient. (e.g. ephedrine, phenylephrine, norepinephrine, vasopressin, etc)		
75.	Ability to place via percutaneous access a venous sheath into the femoral vein or artery, jugular vein or carotid artery.		
76.	Identify and initiate treatment for regurgitation under general anesthesia.		
77.	Ability to setup and maintain an animal using the force mask technique.		
78.	Administer and assess the effects of a total intravenous anesthesia (TIVA) protocol for maintenance of anesthesia, indicate drugs used and describe any physiological changes after administration in your patient.		
79.	Administer and assess the effects of an IV agonist/antagonist as a partial reversal to a mu agonist, describe any physiological changes after administration in your patient.		
80.	Set up and operate a rebreathing circuit using **closed flow** oxygen flow rates. Indicate oxygen flow rate used and rationale for use.		
81.	Perform nasotracheal intubation, describe rationale for use.		
82.	Ability to appropriately choose and place a largyeal mask airway.		
83.	Set up, calibrate and operate an anesthetic gas analyzer monitor (e.g., ET ISO, etc) interpret results and describe how to troubleshoot equipment.		
84.	Set up and perform a tracheostomy		

Surgical Nursing

	Skill	Case Log Number(s)	DVM or VTS Signature
85.	Mastery of instrument and equipment disinfection techniques		
86.	Mastery of stereotaxic positioning		
87.	Sterile draping of patient		
88.	Demonstrate advanced knowledge and proper use of equipment used to move, protect, pad, and position large animal surgical patients		
89.	The ability/ knowledge to set-up, maintain, and troubleshoot various equipment used for laparoscopic or arthroscopic surgery		
90.	Maintain, set-up, troubleshoot, and understand indications for electrocautery units		
91.	Maintain, set-up, troubleshoot, and understand indications for portable or central suction units		
92.	Demonstrate knowledge of shelf life of sterile goods when using low temperature sterilization methods (e.g., ethylene oxide, hydrogen peroxide gas plasma)		
93.	Demonstrate knowledge of shelf life of sterile goods when using steam sterilization methods		
94.	Mastery of stomach tube placement tube placement with regard to size, length, safe technique in ruminants and/or non-ruminants.		
95.	In association with other medical team members, administer CPR (following VECCS RECOVER guidelines), evaluate effectiveness, and troubleshoot therapy		
96.	Command of animal welfare guidelines set by the USDA especially in the areas of pain management and humane end points.		

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

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Printed Name and Degree Signature

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Printed Name and Degree Signature

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