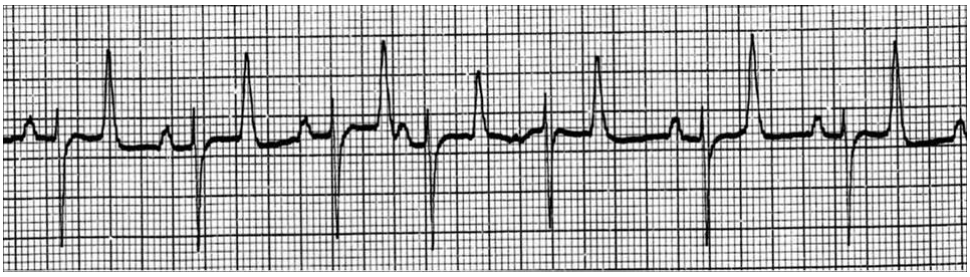
MC Practice Questions for Candidates

These questions have been pulled from the bank of questions as a representative sample of questions for MC1 and MC2. These questions have been moved to the bank because they have been used on exams for several years. References may be older than the 5 years on the exam reading list.

1. CARDIOVASCULAR – Food Animal
Answer: B
Idiopathic hemorrhagic pericardial effusion in cattle is **BEST** treated with which of the following?
A. Long term antibiotic therapy
B. Pericardial drainage and lavage
C. Rib resection and pericardial marsupialization
D. Vitamin K therapy and diuretics

Ref: Peek, Simon. ACVIM Forum Proceedings. 2010.
Jesty et al., J Am Vet Med Assoc. 2005; 226(9):1558-2.
Firshman et al., J Vet Intern Med. 2006; 20:1499-1502.

2. CARDIOVASCULAR – Food Animal
Answer: A
The following ECG (paper speed 25 mm/sec) was recorded from a 3-year old cow:



Which of the following would be the **MOST** correct interpretation of the rhythm?
A. Atrial premature contraction
B. Second degree A-V block
C. Sinus arrhythmia
D. Ventricular premature contraction

Ref: Vet Med, 10th, pp. 415-416.

3. DERMATOLOGY – Food Animal
Answer: A
You are called to examine a group of first calf Holstein heifers for the complaint of skin lesions. The heifers reside in a 200-cow dairy in the Northeastern United States. Lesions are generally observed 2 to 3 weeks after calving. The observed problem affects approximately 50% of fresh heifers. No cows in their second or greater lactations have been affected.

The characteristic lesion is multiple thin-walled 1-2 cm diameter vesicles confined to the skin of the teats and ventral udder which progress to painful erosions. Erosions generally resolve over a period of 2 weeks to 2 months. A small proportion of the heifers develop severe secondary mastitis and deep cellulitis.

There are no lesions on the hands of animal handlers.

What is the **MOST** likely cause of the teat leasion in this herd?
A. Bovine herpesvirus-2
B. Pseudo cowpox
C. Vesicular exanthema
D. Vesicular stomatitis

4. ENDO/METAB/NUT - Camelids
Answer: A
Camelids commonly have a higher and more prolonged stress-induced hyperglycemia when compared to other domestic herbivores.

This is **MOST** commonly due to which of the following?
A. Decreased insulin response
B. Decreased urinary excretion of glucose
C. Higher epinephrine release
D. Higher glucocorticoid release

Ref: Cebra C. VCNA Food Animal. 2009: 25:339-52.

5. ENDO/METAB/NUT - Camelids
Answer: A
In addition to increased NEFA's, increases in which of the following clinicopathologic parameter is **MOST** correlated with hepatic lipidosis in camelids?
A. Beta-hydroxybutyrate
B. Cholesterol
C. Glucose
D. Triglyceride

Ref: Cebra, VCNA Food Animal, 2009 (2); 345-346. Disorders of Carbohydrate or Lipid Metabolism in Camelids.

6. ENDO/METAB/NUT - Equine
Answer: D
Which one of the following is the **MOST** consistent clinical sign with equine anhidrosis?
A. Patchy alopecia
B. Polydipsia
C. Tachycardia
D. Tachypnea

7. ENDO/METAB/NUT – Food Animal
Answer: A
Which one of the following test results or observations would be **MOST** suggestive of subacute rumenal acidosis (SARA) in a herd of Holstein dairy cattle?
A. Decreased bulk tank milk fat
B. Increased bulk tank milk somatic cell count
C. Increased incidence of lameness due to digital dermatitis
D. Rumen pH of 6.0 in several cows

Ref: Vet Med 10th, pp. 319.

8. EPIDEMIO/STATS – Large Animal
Answer: B
A test is developed that detects the presence of disease X in an animal population. The sensitivity of this test is 0.89 and the specificity is 0.77.

As the prevalence of disease X increases, which one of the following is **TRUE**?
A. Predictive value of a negative test will increase
B. Predictive value of a positive test will increase
C. Sensitivity of the test will increase
D. Specificity of the test will increase

Ref: Smith RD, Veterinary Clinical Epidemiology, 3rd edition (2006) pp. 33-51.

9. EPIDEMIO/STATS – Large Animal
Answer: D
A new test is evaluated for the detection of coronavirus. Sixty patients are evaluated that have similar clinical signs: 30 with coronavirus and 30 without coronavirus.

If the sensitivity of the test is 66% and the specificity is 50%, how many patients show a **NEGATIVE TEST**?
A. 10
B. 15
C. 20
D. 25

Ref: Smith RD, Veterinary Clinical Epidemiology 3rd p. 36.

10. EPIDEMIO/STATS – Large Animal
Answer: B
In a test of drug efficacy, the assumed null hypothesis is that the test drug is no better or worse than placebo.

If a statistical test comparing response to drug versus response to placebo has a calculated P value of .001, what is a **logical** conclusion?
A. The response to drug is better than response to placebo.
B. The response to drug is different than the response to placebo.
C. The response to drug is the same as response to placebo.
D. The response to drug is worse than response to placebo.

Ref: Veterinary Clinical Epidemiology 3rd Ed pp138-9.

11. FLUID/ELEC/AB – Equine
Answer: C
Which of the following alterations in strong ion difference (SID) and anion gap (AG) would be expected in a horse with proximal enteritis of 18 hours duration that had not yet been treated?
A. Decreased [SID]; increased AG
B. Decreased [SID]; normal AG
C. Increased [SID]; increased AG
D. Increased [SID]; normal AG

Ref: Smith LAIM 4th Ed 2009. p389.

12. GASTROINT. - Equine
Answer: B
A 21-day-old Morgan filly presents for evaluation of loss of suckle, weakness, lethargy and icterus. Evaluation of a serum biochemical profile reveals evidence of hepatic compromise.

Of the following options, what is the **MOST** likely cause?
A. *Clostridum novyi* type B
B. *Clostridium piliforme*
C. Equine Herpesvirus
D. Hyperammonemia of Morgans

Ref: Reed, Bayly & Sellon 3rd ed. p. 959.

13. GASTROINT. - Equine
Answer: B
Which of the following serum biochemical parameters can be **markedly above** adult reference interval when measured in healthy neonatal foals?
A. Albumin
B. Bile acids
C. Creatine kinase
D. Troponin I

Ref: Barton JVIM Volume 21 Issue 3, Pages 508 – 513.

14. IMMUNOLOGY - Equine
Answer: D
The basis of severe combined immunodeficiency (SCID) of Arabian horses is a homozygous defect of a gene involved in the production of what?
A. CD4+ and CD8+ T Lymphocytes
B. Immunoglobulins M, G, G(T) and A
C. Neutrophils and natural killer cells
D. T and B lymphocytes

Ref: Smith 4th Ed. LAIM pp1671.

15. IMMUNOLOGY – Food Animal
Answer: C
Which of the following is a common finding in calves with bovine leukocyte adhesion deficiency?
A. Band neutrophilia
B. Lymphopenia
C. Mature neutrophilia
D. Monocytosis

Ref: Divers and Peek, Diseases of Dairy Cows, 2nd ed. 2008. P 70-71.

16. IMMUNOLOGY – Large Animal
Answer: C
Which of the following **CORRECTLY** links a disease with the immune system component mainly responsible for the associated pathology?
A. Purpura hemorrhagica – IgE
B. Neonatal isoerythrolysis – IgM
C. Anaphylaxis – IgE
D. Culicoides hypersensitivity – IgG

17. INF. DISEASE – Equine
Answer: B
Which one of the following statements pertaining to Equine herpesvirus 1 (EHV-1) myeloencephalopathy is **TRUE**?
A. CSF analysis typically reveals xanthochromia, increased protein concentration and markedly increased nucleated cell count.
B. Foals usually do not show neurological manifestations during outbreaks characterized by severe neurologic disease in adults.
C. Myeloencephalopathy occurs secondary to viral replication within spinal cord motor neurons.
D. Neurologic signs develop gradually and progress over a period of 5 to 10 days.

Case Management Practice Questions for Candidates

Patient Management Practice Questions

These questions have been pulled from the bank of questions as a representative sample of questions for the Case Management Exam. These questions have been moved to the bank because they have been used on exams for several years. References may be older than the 5 years on the exam reading list. Pictures in this document are from the printed exam format used in the past. Pictures will be visible via computer screen.

1. DIAGNOSIS - Equine
Answer: A
A 15-year-old Quarter Horse has been unusually quiet for the last couple of weeks. You notice that th horse spends a lot of time walking around the perimeter of the stall, usually in a counter-clockwise direction. The horse also seems "spooky" and reluctant to follow when you try to lead him. The mena response, although present on the left side, is absent on the right. All other aspects of the neurologic examination (including pupillary light reflexes and other cranial nerve tests) are normal.

On the basis of clinical signs, what is the **MOST** likely location of the causative lesion?
A. Left cerebral cortex
B. Midbrain on the left side
C. Nuclei of cranial nerve VIII on the left side
D. Right cerebral cortex

Ref: DeLahunta, Veterinary Neuroanatomy and Clinical Neurology 3rd ed 2008, p 319-47.

2. DIAGNOSIS - Equine
Answer: C
Which of the following CSF analyses would be most consistent with a diagnosis of equine herpesviru myoencephalopathy?

A.	29	120	95
B.	250	15	65
C.	7	340	230
D.	3,200	210	180

Ref: Bayly, Reed and Sellon. Equine Internal Medicine. ed 2 2004 pp 617-624.

3. DIAGNOSIS - Equine
Answer: D
You are presented with a 5-year-old Quarter Horse halter mare that has bruxism and has eaten only hay in past 4 days. You suggest that the client haul the horse to the nearest referral facility with a 3 meter endoscope 200 miles south of your clinic.

Which of the following is the **MOST** appropriate alternative test to gastroscopy for this horse?
A. D –xylose absorption
B. Glucose absorption
C. Glutamine absorption
D. Sucrose absorption

Ref: JVIM 2006 20; 388- 394; AJVR 65(1); 31-39.

4. DIAGNOSIS - Equine
Answer: A
A local veterinarian calls you for advice. She has just measured T3 and T4 concentrations in a 6-day-foal and its mare. The horses look healthy and have no history of medical problems, the mare's T3 ar T4 values are within reference range, but the foal's T3-T4 levels are 10 times higher. The owner is concerned and the local veterinarian is not sure how to treat the foal.

What would you recommend?
A. No action is required, T3-T4 values in foals are normally higher than adults.
B. Perform a thyrotropin-releasing hormone (TRH) stimulation test on the foal.
C. Question the owner about the diet of the mare- especially the feeding of any iodide supplements such as seaweed meal.
D. Ultrasound and biopsy the foal's thyroid gland.

Ref: Reed, Bayly & Sellon: Equine Internal Medicine. 3rd Ed 2010 p 1255.

5. DIAGNOSIS – Food Animal
Answer: A
You have diagnosed left displacement of the abomasum in a 4-year-old Guernsey cow. No other abnormalities are apparent on physical examination. The cow's body condition score is 3 on a 5 point scale. The cow calved 6 days ago. Milk production and appetite were normal until 24 hours ago. In th process of performing a right paralumbar omentopexy you notice that the omentum and intra abdomir fat are a deep yellow color.

What is the **MOST** likely cause of the yellow color?
A. Beta-carotene
B. Beta-hydroxybutyrate
C. Conjugated bilirubin
D. Unconjugated bilirubin

6. DIAGNOSIS – Food Animal
Answer: B
You are examining a 2-week-old whiteface ewe lamb that has developed progressive pelvic limb atax over the last several days.


#7

Which of the following is the **MOST** likely cause for this animal's clinical signs?
A. Bluetongue virus
B. Copper deficiency
C. Degenerative myeloencephalopathy
D. Polioencephalomalacia

Ref: TJ Divers VCNA: Food Animal Practice 2004 231-242.
Smith LAIM 4th, p. 1170-1171.

7. DIAGNOSIS – Food Animal

Answer: D

A flock of ewes in Idaho has been experiencing an outbreak of “abnormal” lambs over the past few weeks. Most lambs appear normal at birth, however approximately 15% have been born with varying degrees of facial deformity including cyclopia and twisted mandibles.

Other lambs have been born live but have very short legs.

What is the **MOST** likely cause of these congential deformitites?

A. *Conium maculatum* (poison hemlock)
B. *Lupinus leucophylus* (lupine or blue bonnet)
C. *Oxytropis sericea* (locoweed)
D. *Veratrum californicum* (false hellebore or skunk cabbage)

Ref: Smith, 4th, pp. 1696.

Case Report Practice Questions

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The scenario will be visible on the computer screen with each question that relates to it.

SCENARIO 1: Test selection and interpretation - Food animal (FA)

A seven-year-old, 1056-lb (479-kg) late pregnant Angus Hereford cross cow with a body condition score of 4/ 9, that had been reared from birth by the current owner, presents for diarrhea, lethargy, and inappetence. Clinical signs had been noted for four days before presentation. Fifteen of 38 herd mates recently died acutely after exhibiting signs of ataxia, inappetence, and diarrhea. It is March and the cows graze on 100 acres of native grass pasture containing Brassica spp. and Johnson grass, supplemented with ad libitum mineral and coastal Bermuda grass hay. A stream serves as the only water source. Adult cows and weaned calves are administered fenbendazole suspension and vaccinated with a product containing killed bovine Herpes virus-1, parainfluenza 3 virus, bovine respiratory syncytial virus, bovine viral diarrhea virus, Campylobacter fetus, and Leptospira serovars.

In addition to profuse, watery, and green diarrhea and lethargy, the cow is tachycardic and tachypneic. The cow is eating a small amount of feed, and has a normal abdominal contour without pings or splashes on percussion and succussion. A single weak rumen contraction occurs each minute.

Serum chemistry and hematology results include:

Parameters	Units	Result		Reference Range
Sodium	mEq/L	127	L	129-146
Potassium	mEq/L	3.8		3.3-4.6
Chloride	mEq/L	63	L	97-108
Calcium	mg/dL	6.5	L	7.4-11.5
Phosphorous	mg/dL	15	H	3.0-9.2
Magnesium	mg/dL	4.1	H	2.0-2.8
Total CO_2	mEq/L	44	H	22.9-35.3
Anion gap	mmol/L	23.8	H	10-18
Creatinine	mg/dL	2.9	H	0.6-1.6
Blood urea nitrogen	mg/dL	67	H	4-23
Total protein	g/dL	8.0		6.5-9.3
Globulins	g/dL	5.0	H	3.2-4.4
Albumin	g/dL	3.0		3-4
Red blood cells	$10^6/\mu L$	8.98		5.0-10.0
Packed cell count	%	47	H	24-46
Hemoglobin	g/dL	16	H	8-15
Fibrinogen	mg/dL	1500	H	300-700
White blood cells	$10^3/\mu L$	5.7		4.0-12.0
Band neutrophils	$10^3/\mu L$	0		0-120
Seg. neutrophils	$10^3/\mu L$	2622		600-4000
Lymphocytes	$10^3/\mu L$	1824	L	2500-7500
Monocytes	$10^3/\mu L$	1254	H	25-840

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Question 1

Based on history and physical examination findings, which of the following is the most appropriate antimicrobial treatment for this cow?

A. Ceftiofur.
B. Florphenicol.
C. ✔ Tetracycline.
D. Sulphadimethoxine.

Reference: Smith, B et al. Large Animal Internal Medicine 6th Edition, Elsevier, 2019 Page(s): 910

Question 2

Based on the history, physical examination, hematology and serum chemistry findings; which of the following is the most appropriate initial fluid therapy?

A. 24L 0.9% sodium chloride containing 20mEq/L potassium chloride and 25ml/L 23% calcium gluconate as a bolus.
B. ✔24L 0.9% sodium chloride as a bolus, followed by continuous infusion of 0.9% sodium chloride containing 25ml/L 23% calcium gluconate.
C. 24L 0.9% sodium chloride as a bolus, followed by continuous infusion of 0.9% sodium chloride containing 20mEq/L potassium chloride and 25ml/L 23% calcium gluconate.
D. 24L oral sodium chloride containing 500ml 23% calcium gluconate.

Reference: Smith, B et al. Large Animal Internal Medicine 6th Edition, Elsevier, 2019 Page(s): 1542-1543

Question 3

Fluid therapy corrected the hypovolemia. Heart rate and respiratory rate returned to normal. 3 rumen contractions were auscultated every 2 minutes. Profuse diarrhea persisted, but appetite improved. The owner's priority is now the rest of the herd.

Which of the following additional diagnostic tests should be performed? (Select two.)

A. Abdominal fluid cytology.
B. Abdominal radiography.
C. Fecal culture for *Clostridium difficile.*
D. ✔ Fecal culture for Salmonella.
E. Fecal PCR for *Clostridium perfringens* type C.
F. Rumen chloride concentration.
G. Rumen pH.
H. ✔ Serum arsenic and lead concentration.
I. Serum ELISA and fecal PCR for *Mycobacterium avium ssp.paratuberculosis.*

Reference:
Constable, Peter, Kenneth W Hinchcliff, Stanley Done, and Walter Gruenberg. VETERINARY MEDICINE. 11th ed., ELSEVIER, 2016. Page(s): 445-455 Reference: Constable, Peter, Kenneth W Hinchcliff, Stanley Done, and Walter Gruenberg. VETERINARY MEDICINE. 11th ed., ELSEVIER, 2016. Page(s): 423 Reference: Constable, Peter, Kenneth W Hinchcliff, Stanley Done, and Walter Gruenberg. VETERINARY MEDICINE. 11th ed., ELSEVIER, 2016. Page(s): 368-369

Question 4

Fecal PCR for coronavirus is positive. Which of the following is the BEST assessment of this result?

A. This case and the herd disease of diarrhea, ataxia and death is likely caused by coronavirus.
B. ✔ The disease in this cow, but not the herd disease, could be caused by coronavirus.
C. This screening test should be confirmed by fecal antigen ELISA before diagnosis of disease.
D. This test result is not significant because of the lack of clinical signs of respiratory disease.

Reference: Constable, Peter, Kenneth W Hinchcliff, Stanley Done, and Walter Gruenberg. VETERINARY MEDICINE. 11th ed., ELSEVIER, 2016. Page(s): 599-601

SCENARIO 2: Diagnosis - Equine (EQ)

A 17-year-old, 990-lb (450-kg) Quarter Horse gelding presented in winter for history of weight loss. It has lost approximately 100 kg in the past 4 months.

Historically the horse has been prone to weight gain and was being fed low-starch pelleted feed and grass hay with no access to grass pasture. The gelding's feed was increased when weight loss was noted and despite consuming all feed given, continued to lose weight. The horse was housed on a dirt paddock with another horse.

In the four years that the owners have had the horse, no preventive care had been performed with the exception of anthelmintics given biannually. Ivermectin / praziquantel was administered four months ago. The gelding had no history of colic or diarrhea and had last been vaccinated one year ago (Eastern/Western encephalitis, West Nile Virus, tetanus, influenza and Equine Herpesvirus 1-4).

The gelding was bright, alert, and responsive with a temperature of 99°F (37.2º C), heart rate of 44 bpm, and respiratory rate of 18 breaths/minute. The horse had a body condition score of 2/9, and its hair coat was normal for the season. Multifocal areas of alopecia were noted along the dorsum. Mucous membranes were pink and moist with a normal capillary refill time. Rectal exam and thoracic and abdominal auscultation were unremarkable.

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Question 1

What is the MOST appropriate initial diagnostic test?

A. ✔ Glucose absorption test.
B. Intestinal biopsies.
C. Transabdominal ultrasound exam.
D. Urinalysis.

Reference: Reed, Stephen, Warwick Bayly, and Debra Sellon. EQUINE INTERNAL MEDICINE. 4th ed., ELSEVIER, 2017. Page(s): 243-245

Question 2

Hematology and serum biochemical analysis results:

Parameters	Units	Result		Reference Range
Hematocrit	%	41.1		35.0-50.0
Hemoglobin	g/dL	14.2		11.0-19.0
Total plasma protein	g/dL	7.1		5.7-8.1
Red blood cells	10^6/µL	7.5		6.0-12.0
MCV	fl	54.8		35.0-55.0
MCH	pg	34.5		30.0-36.0
White blood cells	µL	8.9		6.0-12.0
Band neutrophils	µL	0		0-0.1
Seg. neutrophils	µL	8.4	H	3.0-7.0
Lymphocytes	µL	0.4	L	1.5-5.5
Monocytes	µL	0.09		0.05-0.8
Eosinophils	µL	0		0-0.4
Platelet count	µL	adequate		100,000-600,000
Fibrinogen	mg/dL	264		115-289
Anion gap	mM/L	15.0		
Creatinine	mg/dL	0.70		0.6-1.8
ALP	IU/L	258		109-331
AST	IU/L	509		206-810
GGT	IU/L	88	H	12-46
CK	IU/L	224		88-453
Total bilirubin	mg/dL	1.9		0.1-2.6
Urea	mg/dL	17		8-27
Glucose	mg/dL	239	H	73-124
Insulin	mIU/L	22	H	<20
Sodium	mEq/L	132		132-144
Potassium	mEq/L	4.0		2.7-4.8
Chloride	mEq/L	95		94-103
Calcium	mg/dL	11.5		10.7-13.4
Phosphorus	mg/dL	2.5		2.0-5.7
Magnesium	mg/dL	2.3		1.6-2.7
Total protein	g/dL	6.6		4.7-7.5
Albumin	g/dL	3.1		2.5-3.8
Globulin	g/dL	3.5		2.2-3.8
Total CO_2	mM/L	26.0		23-31

What additional test should be performed?

A. ✔ Endogenous ACTH concentration.
B. Endogenous cortisol concentration.
C. Free T3 and free T4 concentrations.
D. 24-hour cortisol clearance.

Reference: Reed, Stephen, Warwick Bayly, and Debra Sellon. EQUINE INTERNAL MEDICINE. 4th ed., ELSEVIER, 2017. Page(s): 287

Question 3

Which component of a routine forage analysis is most relevant for dietary management of this patient?

A. Neutral detergent fiber.
B. Crude protein.
C. Digestible energy.
D. ✔ Water soluble carbohydrate.

Reference: Veterinary Clinics of North America (Equine and Food Animal) Page(s): Frank N VCNA Equine Clin Aug 2018 pp. 299-312