**Practice Questions:**

*What genus of hard ticks is a frequent vector for Theileria equi in the wildlife–livestock interface?*

Answer: *Amblyomma spp*.

*Describe the general life cycle of Echinococcus spp.*

Answer:

* Obligate two-host tapeworms of mammals
* Definitive host = carnivores/predators
* Intermediate host = herbivorous or omnivorous prey
* Eggs are accidentally ingested by herbivorous or omnivorous intermediate hosts
* Carnivore definitive hosts consume intermediate hosts

Flanders, J. A. (2018). Survey for equine herpesviruses in polar bears (*Ursus maritimus*) and exotic equids housed in us aza institutions. *Journal of Zoo and Wildlife Medicine*, *49*(3), 599-608.

Abstract: **Infection by equine herpesvirus (EHV) strains (EHV-1, EHV-9) in ursid species, including polar bears (*Ursus maritimus*), has been associated with neurological disease and death.** A serosurvey of captive exotic equid and polar bear populations in US Association of Zoos and Aquaria institutions was performed to determine the prevalence of EHV strains using quantitative polymerase chain reaction (qPCR) and enzyme-linked immunosorbent assay (ELISA) tests. **Equid species surveyed included zebra (*Equus* spp.), Przewalski's wild horse (*Equus ferus przewalskii*), Persian onager (*Equus hemionus*), and Somali wild ass (*Equus africanus somaliensis*).** A questionnaire regarding husbandry and medical variables was distributed to institutions housing polar bears. **No polar bears tested positive for EHVs on qPCR of blood or nasal swabs. No exotic equids tested positive for EHVs on qPCR of blood, but two exotic equids (*n* = 2/22; 9%) tested positive for EHVs on qPCR of nasal swabs. On ELISA, polar bears infrequently were positive for EHV-1 (*n* = 5/38; 13%). Exotic equids were positive for EHV-4 on ELISA more frequently (*n* = 30/43; 70%) than for EHV-1 (*n* = 8/43; 19%).** Nine institutions submitted samples from both exotic equids and polar bears, two of which had both exotic equids and polar bears positive for EHVs by ELISA. Each of these institutions reported that the polar bear and exotic equid exhibits were within 80 m of each other and that risk factors for fomite transmission between exhibits based on husbandry practices were present. One institution that did not house exotic equids had a polar bear test positive for EHV-1 on ELISA, with no history of exposure to exotic equids. Further testing of captive polar bears and exotic equids is recommended, as is modification of husbandry practices to limit exposure of polar bears to exotic equids.

Which of the following is true regarding equine herpesvirus (EHV)?

1. EHV 1 is associated clinical signs confined to the respiratory system.
2. Clinical disease with EHV1 has not been reported in non-equid species.
3. Polar bears (*Ursinus maritimus*) exposed to EHV1 do not seroconvert.
4. EHV 9 has been associated with neurologic signs in polar bears (*Ursinus maritimus*).
5. EHV would not be expected to be transmissible via fomites.

Answer: D

Wenker, Christian, et al. "Equine sarcoids in captive wild equids: diagnostic and clinical management of 16 cases—a possible predisposition of the european cohort of somali wild ass (equus africanus somaliensis)?." *Journal of Zoo and Wildlife Medicine* 52.1 (2021): 28-37.

**Abstract**: Equine sarcoids (ES) were diagnosed in 12 Somali wild asses (SWA) (Equus africanus somaliensis) from 10 different institutions of the SWA European Endangered Species Programme from 1976 to 2019. Samples of surgically excised masses, biopsies, or necropsy samples were submitted for histologic and virologic analysis. In addition, tissue samples from one onager (Equus hemionus onager), one kulan (Equus hemionus kulan), and two Hartmann’s mountain zebras (HMZ) (Equus zebra hartmannae) were examined. Histology conﬁrmed the diagnosis of ES exhibiting the typical microscopic features. **Polymerase chain reaction detected bovine papillomavirus type 1 (BPV1) DNA in eight SWA samples and bovine papillomavirus type 2 (BPV2) DNA in one SWA sample. The onager, kulan, and one HMZ sample tested positive for BPV1. The other HMZ tested positive for BPV1 and BPV2. This is the ﬁrst report of ES in an onager**. **Surgical excision was the treatment elected by most veterinarians. A follow-up survey of the cases over several years after clinical diagnosis and therapy revealed variable individual outcome with ES recurrence in four cases.** Three SWA and the kulan were euthanized due to the severity of the lesions. Nine affected SWA were males with seven having a sarcoid located at the prepuce. Because a genetic disposition is a risk factor for the development of ES in horses, this may also be true for endangered wild equids with few founder animals in their studbook history. Innovative approaches regarding therapy and prevention of ES in wild equids are therefore highly encouraged.

Which of the following is true regarding equine sarcoids?

1. Equine and caprine papillomaviruses have been associated with sarcoid lesions.
2. Radical surgical excision is recommended for successful outcomes.
3. Sarcoids have not been reported in Hartman mountain zebras (*Equus zebra hartmannae*).
4. Nodular equine sarcoids are associated with malignancy.
5. A genetic disposition for equine sarcoid development has not been observed.

Answer: B

Description of gastric ulcers and of their suspected, associated risk factors in deceased wild equids at the réserve africaine de sigean, france (2010–2016).

Lamglait, B., Vandenbunder-Beltrame, M., Trunet, E., & Lemberger, K.

Journal of Zoo and Wildlife Medicine, 2017;48(3):668-674.

Name a wild equid species with a high prevalence of gastric ulceration, the most common location in the stomach, and a potential predisposing factor.

A. Grant’s zebra, cardia, parasitic enteritis

B. Grevy’s zebra, cardia, degenerative joint disease

C. Hartmann’s zebra, margo plicatus, housing in a stall

D. Somali wild ass, glandular fundus, foals < 3mo old

E. Asiatic wild ass, pylorus, high soluble carbohydrate diet

Answer: C

Health assessment of wild lowland tapirs (*Tapirus terrestris*) in the highly threatened Cerrado biome, Brazil.

Fernandes-Santos RC, Medici EP, Testa-José C, Micheletti T.

Journal of wildlife diseases. 2020;56(1):34-46.

Which of the following is true regarding clinically healthy tapirs in Brazil?

A. Glucosuria is a common finding on urinalysis

B. *Babesia* spp. organisms are often seen on blood smears

C. Elevated liver enzymes are common across biomes

D. Most have evidence of exposure to blue-tongue virus

E. No hematology differences are seen across biomes

Answer: D

Q: A 15 yo Przewalski’s horse (Equus ferus przewalskii) presents for excessive hair growth, polyuria and polydipsia, and a shifting leg lameness. What diagnostic do you recommend to confirm your suspected diagnosis?

A: ACTH level (suspected diagnosis of PPID/Cushing’s)

Which of the following are true regarding the use of a single-dart or staged two-dart anesthesia induction protocol using ketamine-thiafentanil-medetomidine-butorphanol in Przewalski’s horses (*Equus ferus przewalskii*)?

1. More muscle fasciculations observed on induction with the two-dart protocol
2. Time from reversal to standing was shorter with the single dart protocol
3. Respiratory depression was profound with the single dart protocol
4. The need for supplemental propofol was greater with the single dart protocol
5. Recoveries were considered poor with the two-dart protocol

A Grevy’s zebra (*Equus grevyi*) housed in a mixed species African plains exhibit displays acute onset ataxia, nasal discharge, and dyspnea. The animal dies and necropsy shows meningoencephalitis and interstitial pneumonia with intranuclear inclusion bodies. Name an important infectious etiology of concern and discuss management strategies for prevention in the remainder of the animals on exhibit.

* EHV-9, EHV-1
* Quarantine affected, consider vaccination, screen other susceptible exhibit animals (African herbivores, rhino may be natural reservoir, giraffes susceptible), permanently separate zebras from other susceptible species, limit stressors, reduce stocking density of exhibit, long term monitoring of shedding