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This is number ninety-eight of a continuing series of multispecies quarterly reviews and practice tips for veterinarians in Texas. Information in the *Veterinary Quarterly Review* is intended to be timely, concise, and of practical value. Ideas and input from practicing veterinarians are encouraged. Sources of abstracts, articles, or practice tips will be credited. Questions/comments may be directed to *blawhorn@cvm.tamu.edu.*

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BEEF CATTLE PRACTICE

Publication E-235, *Understanding Bovine Viral Diarrhea in Beef Herds,* Available

Bovine viral diarrhea (BVD) may affect the respiratory, immune, nervous, circulatory, and reproductive systems of cattle. In some cases, cattle are infected for a short period and either recover or die (usually stocker or feeder cattle). In other cases, cattle become persistently infected (usually cows and calves).

This three-page fact sheet explains how BVD affects beef herds and how to manage it. Released Nov. 20, the publication is available in electronic format to download from *https://agrilifebookstore.org.*

From Thomas B. Hairgrove, Coordinator, Livestock and Food Animal Systems, Texas AgriLife Extension Service; Tammy Beckham, Director, Texas Veterinary Medical Diagnostic Laboratory; and Jason Banta, Assistant Professor and Extension Beef Cattle Specialist, The Texas A&M University System, College Station, Texas.

EQUINE PRACTICE

Equine Piroplasmosis

Outbreaks of equine piroplasmosis have occurred in several states in 2008 and 2009. This tick-borne disease is caused by *Babesia caballi* and *Theileria equi* (formerly known as *Babesia equi*). Piroplasmosis affects horses, donkeys, mules, and zebras.

The wild zebra population in Africa is an important reservoir for the protozoa.

Ticks ingest blood from infected equids and transfer it to the uninfected. In the United States, ticks in the genera *Dermacentor, Hyalomma,* and *Rhipicephalus* are potential vectors for these organisms, but they do not currently carry the protozoa that cause the disease. Other modes

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of transmission include transplacental transmission, contaminated needles, and other skin-penetrating instruments.

The disease is endemic in Africa, the Caribbean (including Puerto Rico), Central and South America, the Middle East, and Eastern and Southern Europe. Countries that are not endemic include the United States, Australia, Canada, England, Iceland, Ireland, and Japan. The United States has remained free of piroplasmosis disease since 1982 after an aggressive eradication and tick control campaign was implemented in Florida.

Clinical signs of equine piroplasmosis tend to be variable and often nonspecific. The incubation period is 12 to 19 days when caused by *T. equi,* and 10 to 30 days when caused by *B. caballi. Theileria equi* is more pathogenic and therefore more refractory to treatment.

Animals may be found dead or dying in the rare peracute case. However, disease is most often found in the acute stage.

Animals present with fever, inappetence, malaise, labored or rapid respiration, and congestion of the mucous membranes. Other signs that may be seen are anemia, thrombocytopenia, jaundice, hemoglobinuria, sweating, petechial hemorrhages on the conjunctiva, a swollen abdomen, and posterior weakness or swaying.

Subacute cases may have intermittent fevers, weight loss, signs of mild colic, and mild edema of the distal limbs. Mucous membranes may be icteric or pale, and they may have petechiae or ecchymoses.

The chronic case, or carrier state, may be asymptomatic or show signs of mild inappetence, poor exercise tolerance, weight loss, transient fevers, and enlarged spleen. Carrier mares can abort or may transmit the infection to foals transplacentally. Foals born to carrier mares may be weak, anemic, icteric, or asymptomatic carriers.

State or federal animal health officials are responsible for definitively diagnosing equine piroplasmosis. If a case is suspected, immediately notify a U.S. Department of Agriculture (USDA) or Texas Animal Health Commission (TAHC) veterinarian by calling 800-550-8242 (Austin), or by calling your local TAHC office.

The differential diagnoses for equine piroplasmosis are surra, equine infectious anemia, equine monocytic ehrlichiosis, dourine, African horse sickness, pupura hemorrhagica, and various plant and chemical toxicities. Diagnosis can be made by identifying the organism in the erythrocyte of a Giemsa stained blood or organ smear. Serologic tests include complement fixation (CF), indirect fluorescent antibody (IFA), and ELISA assays. IFA and ELISA are very sensitive and therefore are used for import testing.

Most horses with equine piroplasmosis recover from the clinical signs of disease but continue to be persistent carriers. Treatment with imidocarb has resulted in PCR-negative horses for *B. caballi* while on the drug, but once treatment is removed the PCR test will return to positive. *Theileria equi* is more refractory to medication than *B. caballi.* The high dose of imidocarb approaches toxic levels; therefore toxicosis is common and includes colic and death.

An attempt to completely eliminate the carrier state in Europe has been unsuccessful. As the first line of defense in the United States, our job as veterinarians is to prevent the entry of piroplasmosis. To reduce the incidence of disease, control tick infestations and prevent blood transfer during surgical procedures. No vaccinations are effective in preventing this disease.

An epidemic of piroplasmosis in the United States would cause catastrophic damage to the naïve horse population; mortality rates would likely range from 10 to 50 percent. The USDA Animal Plant Health Inspection Service (APHIS) Veterinary Service recommends three options for horses infected with piroplasmosis: Export to the country of origin, euthanasia, or permanent quarantine.

The United States recently won the bid to host the 2010 World Equestrian Games in Kentucky. Also, zebras are becoming popular as companion animals in the United States. This influx of equidae from endemic countries should cause us to remain vigilant for equine piroplasmosis.

For more information on piroplasmosis, visit:

http://www.avma.org/reference/backgrounders/equine_piroplasmosis_bgnd.asp

http://www.cfsph.iastate.edu/Factsheets/pdfs/equine_piroplasmosis.pdf

http://www.aphis.usda.gov/publications/animal_health/content/printable_version/fs_equinep_08.pdf

Adapted from "Equine Piroplasmosis," by Heath Qualls, DVM, Equine Internal Medicine, Veterinary Clinical Sciences, Center for Veterinary Health Sciences, Oklahoma State University (OSU) as reported in *OSU Animal Health Update,* Summer 2009.

SWINE PRACTICE

USDA Issues Conditional License for Pandemic H1N1 Vaccine for Swine

On Dec. 11, 2009, the USDA announced that it had issued a conditional license to Pfizer Animal Health for a pandemic H1N1 influenza vaccine intended to vaccinate pigs against the 2009 pandemic H1N1 influenza virus. This is the first pandemic H1N1 influenza vaccine license issued by USDA.

"The USDA and its partners in animal health have worked hard to expedite the development of a vaccine for the 2009 pandemic H1N1 influenza virus," said Cindy Smith, an administrator for USDA/APHIS. "This vaccine will help producers protect their swine herds and protect themselves from economic losses in the event that their herds become infected."

On June 2, 2009, the Center for Veterinary Biologics announced that the agency would provide preapproved Master Seed Viruses to be used to develop a conditionally licensed pandemic H1N1 vaccine to protect swine. If the pandemic H1N1 virus becomes an emerging disease in swine, the availability of preapproved Master Seed Viruses would speed the response should vaccine production be warranted. On Sept. 10, 2009, USDA Secretary Tom Vilsack announced that the USDA was expediting development of the H1N1 vaccine to protect swine.

The USDA/APHIS issues conditional licenses for veterinary biologic products to meet an emergency situation, limited market, local situation, or special circumstance. The special circumstance here is the need for a product to vaccinate pigs against the 2009 pandemic H1N1 virus. Under these regulations, a product that is shown to be pure and safe and that demonstrates a reasonable expectation of efficacy may be licensed while data to establish efficacy and potency are still being obtained.

Conditional licenses are generally issued with restrictions and for a limited period. In this case, the product's conditional license is for 1 year. At the end of the conditional license period, the product's performance will be evaluated to determine if the conditional license should be renewed or if a regular product license may be issued. The product is restricted to use by veterinarians in states where its use has been approved by the appropriate state regulatory authorities.

From Dec. 11, 2009 news release, "USDA issues conditional license for pandemic H1N1 vaccine for swine," *http://www.aphis.usda.gov/newsroom/content/2009/12/h1n1_vaccine.shtml.*

WILDLIFE AND EXOTIC PRACTICE

New CDC/USDA Brochure, *Wild Hog Hunting: Stay Healthy on Your Hunt,* Available

This excellent brochure explains how hunters can avoid infection with the bacterium that causes brucellosis (and other disease-causing organisms) while handling and field dressing harvested feral hogs. It also lists the symptoms of human brucellosis in case a hunter or anyone associated with handling a live feral hog or its carcass becomes ill. Food safety tips are included for those preparing and cooking pork from feral swine.

This valuable source of information should be widely distributed to hunters in Texas and the other 34 states were feral swine exist, and it should be welcomed by the hunter it is designed to protect. Go to *http://www.cdc.gov/FeaturesHuntingSafety/Brucellosis_andHoghunters_508.pdf* to access this brochure online.

From Gary Doster, Centers for Disease Control and USDA/APHIS/WS National Wildlife Disease Program, *http://www.cdc.gov/Features/HuntingSafety/Brucellosis_and_Hoghunters_508.pdf.*

Chronic Wasting Disease Prions in Deer Feces

Research recently published in the journal *Nature* confirms that mule deer infected with the prion that causes chronic wasting disease (CWD) shed the infectious particles in feces for months before they develop clinical signs. It previously has been reported that urine, saliva, muscle, blood, and antler velvet from clinically affected animals contain the prions that cause CWD, but the role of these sources in sustaining CWD epidemics remains unclear. However, long-term exposure of susceptible animals to the causative agent shed in feces could explain the apparently efficient horizontal transmission of this disease.

In the project, researchers orally inoculated mule deer with CWD agent. Fecal samples were collected from deer before inoculation and at 3- to 6-month intervals after inoculation until the deer died or developed clinical signs of CWD. The fecal samples were irradiated to damage the nucleic acids and inactivate the bacteria and viruses within the feces, with minimal effects on prion levels. The irradiated samples were inoculated directly into the brains of transgenic mice that overexpress cervid prion protein and are extremely susceptible to CWD.

Most (14 of 15) fecal samples collected 4 months or later after inoculation were able to transmit the disease to mice. Infectivity of samples was detected from 7 to 11 months before clinical signs were observed in the deer. Once fecal excretion of the prion began, it continued at a fairly steady rate until death.

The mouse bioassay indicated that the quantity of infectious prions in any given fecal sample was much smaller than that in the brain of an animal in the terminal stages of CWD. However, the continuous fecal excretion of smaller amounts of infectious material for long periods results in a large total deposition of the prion into the environment. The dissemination of the prion in feces could provide an efficient means of transmission to other deer through the contamination of soil and forage.

Abstracted by Kevin Keel from Tamgueny G, et al. *Nature* 2009, September 24:461, pp. 529–532.

Veterinary Continuing Education Seminars
College of Veterinary Medicine & Biomedical Sciences
Texas A&M University, 2009-2010

*Feb. 5–7, 2010 ..... 17th Annual Veterinary Technician Seminar
Ms. Lori Atkins and Ms. Candise McKay

*Feb. 26–28, 2010 ..... Veterinary Opportunities with Farmed Deer
Dr. Don Davis

*April 23–25, 2010 ..... Annual Feline Medicine Conference
Dr. John August

*June 4–6, 2010 ..... 19th Annual Food Animal Conference
Drs. John Davidson and Glennon Mays

*June 25–27, 2010 ..... Pain Management and Physical Rehabilitation
Dr. Gwen Carroll

*July–December, 2010 ..... Feline Internal Medicine Monthly Grand Rounds
Dr. John August

*July 10–11, 2010 ..... Dentistry for the Small Animal Practitioner
Dr. Bert Dodd

*July 23–25, 2010 ..... Donkey/Mule Conference
Dr. Nora Matthews

*Aug. 7–8, 2010 ..... 2nd Annual Oncology/Cytology Conference
Dr. Heather Wilson

*Aug. 10–13, 2010 ..... AAEP 360 Meeting
Drs. Dickson Varner and Cleet Griffen

*Aug. 27–29, 2010 ..... 2nd Annual Canine Conference
Dr. Audrey Cook

*Oct. 8–10, 2010 ..... Small Animal Emergency Medicine and Critical Care
Dr. James Barr

*Oct. 22–24, 2010 ..... Annual Equine Conference
Chair to be determined

*Nov. 12–14, 2010 ..... 6th Annual Neurology Conference
Dr. Jonathan Levine

*Dec. 3–5, 2010 ..... Small Animal Anesthesia Conference
Chair to be determined

*Confirmed

Calendar is subject to revision.

For more information on these programs of self-study and personalized continuing education opportunities, please call 979-845-9102; (fax) 979-862-2832; or e-mail *ceoffice@cvm.tamu.edu*. Visit our Web site at *http://www.cvm.tamu.edu/vtce*.

From the Office of Veterinary Continuing Education, Texas Veterinary Medical Center, College Station, Texas.

GENERAL PRACTICE

2009 H1N1 Flu Virus Outbreak Web Site

The American Veterinary Medical Association (AVMA) Web site *http://www.avma.org/public_health/news_virus/default.asp* has a thorough chronology of worldwide H1N1 cases in affected animals and birds. The site also has answers to frequently asked questions for veterinarians, pet owners, and the general public. Updates are quickly posted to keep pace with the rapidly changing array of H1N1 infections.

Publication B-6221, *Grazing Land Stewardship: A Manual for Texas Landowners,* Available

Texas grazing lands are a critical natural resource, and managing them is both a science and an art. This publication gives even those who are new to land ownership/management all the tools and information needed to be good stewards of the land.

The book has three sections: Grazing Basics (what makes the land healthy, livestock nutrition, forage quality, water and fences, and grazing behavior), Getting Started (setting goals, land inventories, and grazing strategies) and Follow Through (record keeping, managing livestock, and managing wildlife habitat). Each chapter concludes with a helpful list of actions that can be taken to better manage grazing land.

Published March 30, 2009, the book has 148 pages and many color photos, tables, charts, and graphs. Copies are available for $15 ($12 for orders of 25 or more) at *http://agrilifebookstore.org*.

From C. Wayne Hanselka, retired Professor and Extension Range Specialist, and Robert Lyons, Professor and Extension Range Specialist, Texas AgriLife Extension Service; and Mark Moseley, Rangeland Management Specialist, USDA-Natural Resources Conservation Service (en dash after USDA).

FELINE PRACTICE

2009 H1N1 Flu Virus Infection in Pet Cats

The many confirmed cases of 2009 pandemic H1N1 virus infection in household cats, including the three fatal infections, is not a cause for pet owner panic but emphasizes the importance of taking pets to a veterinarian if they show signs of illness. This is especially important if someone in the household has recently been ill with flulike symptoms.

To date, all of the sick pets became ill after a person in the household had flulike symptoms. There is no evidence to suggest that

pets have or will spread the H1N1 pandemic flu virus to humans or other animals.

Proper hygiene and sanitation measures should be followed to limit the spread of the H1N1 pandemic flu virus.

See the American Veterinary Medical Association Web site at *http://www.avma.org/public_health/news_virus/default.asp* for up-to-date information on new cases and answers to frequently asked questions for veterinarians, pet owners, and the public.

From the American Association of Feline Practitioners Web site at *http://www.catvets.com/Newsroom/index.aspx?ID=896.*

2009 H1N1 Sample Collection and Submission Questions and Answers

Q. What samples should be obtained if a veterinarian suspects that a pet is infected with 2009 H1N1 pandemic influenza virus?

A. Based on current knowledge, it is recommended to collect an **oropharyngeal, tracheal,** or **nasal swab. Serum** should also be collected. The same samples should be collected on a dried polyester fiber swab (such as Dacron [tm]) or flocked swab (such as Copan) and placed in a sterile tube with a few drops of viral transporting medium or saline. Do not use a bacterial transport medium. The first cat (Iowa) confirmed to be 2009 H1N1 influenza-positive was diagnosed based on testing a sample obtained by **bronchoalveolar lavage (BAL)** during anesthesia, indicating that BAL samples are also sufficient for testing.

Q. How can a veterinarian test a pet if it is suspected to be infected with the 2009 H1N1 influenza virus?

A. Early in the course of illness, an oropharyngeal or nasal swab may be sufficient for testing. However, the animal must be shedding the virus in order for the **PCR** test to identify the presence of the virus. At this time, it is not known how long pets shed the virus in their respiratory secretions. In the case of the 2009 H1N1-positive cat in Utah, PCR testing of a nasal swab obtained about 1 week after the onset of illness was negative for the virus, but a **hemaglutination inhibition (HI)** assay on a convalescent serum sample was antibody positive for the virus at a 1:160 titer; this case suggests that pets may not shed the virus for more than a few days.

From the American Association of Feline Practitioners Web site *http://www.catvets.com/Newsroom/index.aspx?ID+928.*

CANINE PRACTICE

Success of Long-term Treatment of Perianal Sinuses in Dogs with Topical Tacrolimus Ointment

A recent non-controlled clinical trial was conducted on 19 dogs with perianal sinuses to evaluate the effectiveness of topically applied 0.1% tacrolimus ointment, orally administered prednisone, and a novel-protein diet. The clinical progress and client management of the condition was monitored for 2 years.

The treatment protocol was as follows: Affected dogs were placed on a 16-week protocol of a twice-daily topical application of 0.1% tacrolimus ointment, a tapering dose of prednisone PO, a novel-protein diet, and a short-term (2 weeks) metronidazole PO. Anal sacculectomy was recommended whenever anal sacs were involved. Dogs were evaluated every month for the first 4 months and then every 6 to 12 weeks for 2 years.

Results: Perianal sinuses resolved completely in 15 of 19 dogs during the 16 weeks. In the remaining four dogs, the lesions dramatically improved but failed to completely resolve. Three of these four dogs had anal sac involvement, and the owners of one dog complied poorly with treatment instructions. During the 2 years following treatment, all dogs were maintained on intermittently applied tacrolimus ointment; four dogs also received predisone every other day; and 11 dogs remained on the novel-protein diet. At the conclusion of the study, 13 of 15 dogs that survived to that point were free of perianal disease.

Conclusion and clinical application: The treatment protocol described in this clinical trial was effective and economical for resolving perianal sinuses. Dogs maintained on intermittent medications were unlikely to redevelop lesions. When the anal sacs were involved, anal sacculectomy appeared to improve the outcome.

Abstracted from B. J. Stanley and J. G. Hauptman, "Long-term prospective evaluation of topically applied 0.1% tacrolimus ointment for treatment of perianal sinuses in dogs," *Journal of the American Veterinary Medical Association,* Volume 235, Number 4, Aug. 15, 2009, 397–404.

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