

Vesicular Stomatitis (VS) UPDATE

By Dr. Gregg A. Hanzlicek

Over the last few years there have been multiple Vesicular stomatitis (VS) cases in Arizona, Colorado, New Mexico, Texas, and Utah. A 2014 Colorado VS outbreak resulted in 556 livestock investigations and 370 facility quarantines. More recently, on July 2, 2015, two horses tested positive for VS in Colorado.

The VS virus can infect multiple species. The primary species include cattle, horses, pigs, but rarely include sheep, goats, and camelids. The virus is believed to be spread primarily through insect vectors such as black flies, sandflies, and mosquitoes, but the virus can also be transmitted through contact with VS lesion secretions. The transmission of virus is thought to occur only for a very brief period of time after clinical signs are observed.

The incubation period is estimated to be between two to eight days, and the classical clinical signs include vesicles, ulcers and sloughing of the skin on the muzzle, tongue, teats and the coronary band (Figures 1 and 2). Typically, the initial observation reported by an animal owner includes anorexic and/or lame animals, and not the observation of vesicles or ulcers.

One of the most important things to remember about VS is that it presents clinically very similar to Foot-and-Mouth Disease (in cattle, horses and pigs), Swine Vesicular Disease and Vesicular Exanthema of swine. KSVDL strongly recommends veterinarians call their local APHIS/veterinary services veterinarian to examine any animal presenting oral or extremity vesicles or ulcers. In all states, VS is a reportable disease regardless of the species of animal involved.



Figure 2. Equine Coronary Band

Photos courtesy of Colorado State University Extension



Figure 1. Bovine VS

In this Issue

VS Update	1
Fungal Kerion in Dogs	2
Vaccine Titer Screening	3
Disease Trend Maps	3
KSVDL Outreach Activities	4
New KSVDL Tests & Videos	5
CE and Holiday Schedule	6

Accredited by the American Association of Veterinary Laboratory Diagnosticians

TO SET UP AN ACCOUNT GO TO:
www.ksvdl.org/accounting-and-billing/

Continued on page 4

The Diagnosis of Fungal Kerion in Dogs

Dr. Gordon Andrews and Dr. Bill Fortney



Figure 1. Raised hairless cutaneous nodule on the chin of a dog diagnosed as a fungal kerion.

Although often clinically over-diagnosed, the typical dermatophyte infection is still a fairly common skin disease seen in dogs. A less common nodular form of dermatophyte infection is a fungal kerion. Because the fungal kerion has a non-typical dermatophyte infection appearance, the precise diagnosis is often elusive and easily missed.

Infection is usually caused by *M. gyseum* or *T. mentagrophytes*. The dermatophytes are located deep within the dermis and may be few in number, so routine diagnostic tests such as a Wood's lamp examination, microscopic examination of hair shafts for fungal elements, and fungal culture often yield negative results. The presence of secondary bacterial infection (*Staph. sp*) may complicate the diagnostic findings.

Grossly a fungal kerion is a firm to boggy, well-circumscribed, raised, focal or multifocal cutaneous nodule (Figure 1). Occasionally the lesion is exudative and may have draining tracts. Fungal kerions can occur anywhere on the body, but most commonly are localized on the

face, pinnae, paws and/or tail. Depending on the lesion appearance, location, and number of kerion(s) involved; a fungal kerion can mimic bacterial furunculosis, demodex, histiocytoma or other cutaneous neoplasia, or even auto-immune disease.

Biopsy DX

Because these lesions typically present as a single cutaneous mass, neoplasia is suspected and they are frequently surgically excised and

submitted for histopathologic

examination. Histologically the lesion is characterized as a nest of ruptured hair follicles replaced by suppurative to pyogranulomatous inflammation sometimes with eosinophils oriented around hair fragments that contain fungal hyphae and are surrounded by fungal spores (Figures 2 and 3).

With a single and uncomplicated kerion, the use of a topical "antifungal" agent may be sufficient therapy. However complicated and multiple lesions are best managed with both topical and systemic "imidazole" medication. The secondary bacterial infections should also be managed. Even with appropriate treatment strategies, it may take four – eight weeks for the lesion to resolve. Rarely the infected hair follicles are sufficiently damaged and never re-grow.

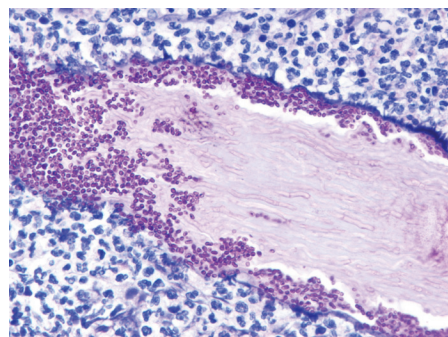


Figure 3. Hair shaft with dermatophyte hyphae within the hair shaft and fungal spores surrounding the hair. The hair shaft is surrounded by neutrophils and macrophages.

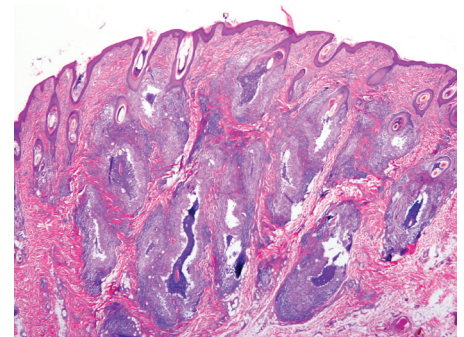


Figure 2. Multifocal areas of pyogranulomatous inflammation oriented around and replacing hair follicles.

Canine and Feline Core Vaccine Titer Screening

Rabies Titer Test

The **Micro Rabies Screen (MRS) test** is a serum neutralization assay based on the RFFIT. Since The MRS test measures rabies virus neutralizing antibody (RVNA) titers, it can be used as a rapid screening for evaluating the need for rabies boosters.

A review of rabies challenge studies indicates there is a positive correlation between rabies virus neutralizing antibody (RVNA) titers and the level of protection after virus challenge. Pre-exposure vaccination coupled with a RVNA titer at or above 0.5 IU/mL indicates greater assurance of protection than does current vaccination status.

Using the **MRS** test results:

- If the RVNA value is <0.5 IU/mL, KSVDL recommends administering a rabies booster.

- If the RVNA value is >0.5 IU/mL, KSVDL does not recommend a rabies booster, but to recheck in one year.

Other Core Vaccine Serologic Tests

The current trend is to carefully assess each patient's disease risk to determine if vaccine(s) are necessary and if so, which vaccine(s) would be appropriate. The use of serological titers can be a valuable tool in making those vaccine decisions especially in animals with histories of a previous vaccine reaction; those individuals prone to allergic reactions; in those specific cases where concerns of "over vaccinations" persist.

CANINE: There is an **excellent correlation** between a "positive" titer and protection against viral challenge with canine distemper virus (CDV); canine adenovirus

(CAV); and canine parvovirus2 (CPV), and rabies (RV).

CDV: SN $> 1:32$

CAV: SN $> 1:32$

CPV2: HI $> 1:80$

FELINE: In cats there is an **excellent correlation** between a "positive" titer and protection against challenge with the feline panleukopenia virus (FPL) and rabies virus (RV) but only a **good correlation** with feline herpesvirus (FHV1) and feline calicivirus (FCV) protection.

FPL: HI $> 1:16$

FCV: SN $> 1:16$

FHV1: SN $> 1:16$

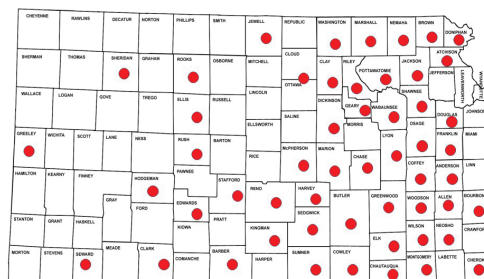
For more information on these test options, please contact KSVDL Client Care at clientcare@vet.k-state.edu or 866-884-3867.

Diagnostic Disease Trends Maps for Kansas

KSVDL has added a new web page that contains maps of Kansas indicating those counties where positive diagnostic submissions have originated.

Disease trend maps include:

- Anaplasmosis
- Canine Brucellosis
- Canine Leptospirosis
- Johne's
- Rabies
- Rocky Mountain spotted fever
- Trichomoniasis
- Tularemia



Anaplasma marginale

To view these maps, visit ksvdl.org and click on the icon below:



VS UPDATE | *Continued from page 1*

There have been very rare reported cases of human VS. These infections were presumably contracted through close contact with infected animals. In humans, the most common presenting clinical sign is not vesicles and ulcers, but flu-like symptoms.

There are two primary VS strains in the U.S.: New Jersey and Indiana. Regardless of the strain, research indicates that horses will seroconvert between six to 12 days after infection. (Experimental Vesicular Stomatitis Virus Infection in Horses: Effect of Route of Inoculation and Virus Serotype. E.W. Howerth, et al. Veterinary Pathology, 2006, vol. 43, pages 943-955.)

Presumably, seroconversion timing is similar in cattle and pigs.

For an accurate VS diagnosis, in cattle, horses, and pigs, the appropriate sample to submit to KSVDL is 0.5 ml of serum in a preservative-free tube (red-top tube). This is a serum-neutralizing antibody test, which includes both New Jersey and Indiana strains.

For more information about VS, other diseases or diagnostics, please contact KSVDL Client Care at 866-512-5650 or clientcare@vet.k-state.edu.

KSVDL Outreach Activities

- Dr. Ben Hause gave a talk at the Symposium of Computational Resources for Swine Viral Diseases at the USDA-National Centers for Animal Health titled, "PRRSV genome diversity (there's a lot more going on besides the GP5)."
- Dr. Kelli Almes attended the 2015 Emergency Conference on One Medicine One Science, Avian Influenza, Minneapolis, Minnesota.
- Drs. Ben Hause, Richard Hesse and colleagues published, "Identification of a novel Picornavirales virus distantly related to posavirus in swine feces" in Virus Genes.
- Dr. Dick Hesse gave the keynote presentation ("Identification of Emerging Swine Viruses & What to do with Them") at the 8th Symposium of the Swine and Poultry Infectious Diseases Research Center (CRIPA) at the University of Montreal, College of Veterinary Medicine, Saint Hyacinthe, Quebec.
- Drs. Dick Hesse and Gary Anderson attended the World Association of Veterinary Laboratory Diagnosticians in Saskatoon, Saskatchewan. Dr. Hesse was a plenary speaker ("Emerging Swine Enteric Coronaviruses in North America") and Dr. Anderson was a moderator and attended the executive meeting.
- Drs. Kelli Almes, Jamie Henningson, and Jerome Nietfeld presented case reports during the 76th Annual Conference for Veterinarians, Manhattan, Kansas.
- Dr. Gregg Hanzlicek, with assistance from veterinary student Heidi Yonkey completed John's risk assessments on four western Kansas and Nebraska dairies.
- KSVDL sponsored Pioneering Partnerships with NBAF, Manhattan, Kansas.
- Drs. Bill Fortney and Gregg Hanzlicek made presentations at the SE KVMA, Cherryvale, Kansas.
- Drs. Gary Anderson and Gregg Hanzlicek attended the Western States Livestock Health Association meeting, Denver, Colorado.

New videos from the KSVDL

We have posted new videos on the KSVDL YouTube® channel covering the following topics:

- Collection and Submission of Swabs
<https://www.youtube.com/watch?v=ZGdwHnub-4I>
- Bovine Nitrate Sample Collection
<https://www.youtube.com/watch?v=ysn-n-oZOYo>
- Bovine Rabies Sample Collection
<https://www.youtube.com/watch?v=01gXa8KkuPA>



Subscribe to the KSVDL
YouTube® channel:

<https://www.youtube.com/channel/UCtx-IIIxqj5PAMQYryXaRhA>

Continuing Education Videos

Listed are the presentations from the Continuing Education Conference KSVDL held in November, which may be viewed at no charge. Presentations address the new antibiotic regulations facing practicing veterinarians.

- Antibiotic Stewardship: What does that really mean?
- Increasing Antimicrobial Resistance – Implications for the Veterinary Practitioners in Germany and other European countries, Part 1
- Increasing Antimicrobial Resistance – Implications for the Veterinary Practitioners in Germany and other European countries, Part 2

These videos, and more, can be found at: <http://www.ksvdl.org/resources/>

Available Testing Options

Canine Influenza

Canine Respiratory Panel: A PCR panel that tests for many of the common causes of canine respiratory disease, including Influenza A, Mycoplasma spp., Bordetella bronchiseptica, Canine Adenovirus-2, Canine Herpesvirus-1, Canine Distemper virus, Canine Parainfluenza virus-3, Canine Respiratory Coronavirus and Canine Coronavirus.

Universal Canine Influenza A Panel: This PCR panel tests for all Influenza A subtypes including the older canine H3N8 strain and the new H3N2 strain. However, to identify the subtype of the influenza virus identified in the sample, influenza gene sequencing could be completed: see below.

Canine Influenza Gene Sequencing: Sequencing can be requested on samples that are PCR positive for the Universal Influenza Panel. Sequencing will differentiate between the previously common H3N8 and the new H3N2 subtypes. It will also subtype any new or emerging subtypes.

Dairy Metabolic Profile

KSVDL now offers a panel of tests to assess transition cow health and management programs.

The panel includes: calcium, phosphorus, magnesium, NEFA and BHBA. The appropriate sample is serum submitted in a red-top tube (serum separator tubes are not recommended).

Developing, Delivering Accurate, Innovative Diagnostic Services

The mission of the Kansas State Veterinary Diagnostic Laboratory (KSVDL) is to develop and deliver accurate, innovative, and timely diagnostic and consultative services to the veterinary and animal health community while providing support for teaching, training and research programs.

**1800 Denison Avenue
Manhattan, KS 66506**

**Phone: 785.532.5650
Toll Free: 866.512.5650**

Continuing Education

www.vet.k-state.edu/education/continuing/

August 28-31, 2015

**Central Veterinary Conference (CVC)
Kansas City**

Kansas City, Missouri

<http://www.thecvc.com/register-now-to-attend-cvc-kc/>

September 17-19, 2015

**American Association of Bovine
Practitioners Annual Conference**

New Orleans, Louisiana

<http://www.aabp.org/meeting/>

For more information call the Continuing Education
Office at 785-532-4528.

Test Results and Schedules

**Laboratory results available
online, all the time!**

Holiday Schedule:

Labor Day: Closed Monday, September 7

Thanksgiving: Closed, Thursday, November 26
and Friday, November 27; Open
Saturday, November 28

Christmas: Closed: Friday, December 25; Open
Saturday, December 26

To receive this newsletter by e-mail, contact: ksvdloutreach@vet.k-state.edu.

KANSAS STATE
UNIVERSITY

