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Animal Health MATTERS Newsletter

Veterinary and Biomedical Sciences

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Animal Health MATTERS

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Animal Health MATTERS

December 2012



SDSU Tracks Epizootic Hemorrhagic Disease in South Dakota Cattle

Veterinarians, cattle producers, state veterinary officials, and SDSU investigators had the chance to observe how a long-recognized disease of deer affected South Dakota cattle this past September and October.

Epizootic Hemorrhagic Disease (EHD) is a disease that predominantly affects white-tailed deer, causing prominent die-offs in certain years in South Dakota and surrounding states. EHD is caused by a virus that is transmitted by small biting flies of the *Culicoides* family (better known as biting midges, sand gnats, sand flies, or no-see-ums). When these insects feed on a viremic infected animal, they can then transmit the virus to a susceptible animal. Since transmission exclusively occurs through these insects, the incidence rate of EHD in deer and other animals drastically drops off after freezing temperatures.

Culicoides is a particular species of insect that prefers moist soil and organic matter (such as manure piles) in which to breed. The areas of South Dakota reporting EHD cases in cattle were also areas most impacted by drought conditions in 2012. River banks and creek beds in the process of drying up probably contributed ample habitat for the reproduction of these biting midges.

Once inside the body of a susceptible animal, the virus infects and damages the cells that line the inside of small blood vessels. Damage to these cells creates a lack of integrity of the vessels along with subsequent leakage and hemorrhage in affected areas of the body. In wild deer, the clinical signs caused by EHD are not often observed, but consist of excessive salivation and nasal discharge, sometimes bloody in nature. Weakness and respiratory distress also are common. More often than not, affected deer are simply found dead.



SDSU Veterinary and Biomedical Sciences Professor Chris Chase (L) and pathologist Anwar Sarah (second from right) discuss clinical signs of EHD in a cow herd with producers Greg and Mike Anderson. Photo: Russ Daly

What investigators found this fall in South Dakota cattle was much less severe than the die-offs noted in deer populations. The initial suspicious case in cattle was reported to the South Dakota Animal Industry Board in early September. The affected animal was a cow from Hutchinson County that had erosions on the dental pad and on the muzzle. Due to the nature of the clinical signs, a foreign disease investigation was launched, with samples sent to the Foreign Animal Disease Diagnostic Laboratory in Plum Island, NY. Samples were negative for foreign animal diseases such as Foot and Mouth Disease. Subsequent follow-up diagnostics showed that blood samples from the animals were PCR-positive for EHD virus.

Following the initial diagnosis of EHD in that herd, veterinarians throughout southeastern South Dakota began to report other herds with similar problems.

Excessive salivation, erosions in the mouth cavity, crusty muzzle and udder, and coronary band lesions with lameness were the clinical signs most often noted. These herds were reported to the Animal Industry Board and many of them had samples taken (whole blood for PCR and serum for serology) and submitted to the SDSU ADRDL for diagnostics. The clinical signs in these animals were most likely reflective of the vascular damage caused by the virus at the muco-cutaneous junction (lips, dental pad, coronary band).

To gain a first-hand look at South Dakota herds affected with EHD, SDSU veterinarians, with guidance from the Sioux Nation Veterinary Clinic in Viborg, visited and took samples from a selection of herds. Research professor Chris Chase, Extension Veterinarian Russ Daly, and

EHD

(Continued on page 3)

Director's Message: One last time...thanks for the memories

David H. Zeman, DVM, PhD, DACVP — Head and Director

Dear friends, colleagues, customers and former students: this will be my last Director's message as I have announced my retirement from SDSU effective January 21, 2013. I have spent 31 years in academic veterinary medicine, am in my 27th year of service as an SDSU faculty member, and in my 16th year as administrative leader of the VBSD and the ADRDL. It has truly been a pleasure to work along-

side all of you to fulfill our mission of protecting and improving animal health. In the process together we have alleviated animal suffering, helped to feed the world, impacted human health, bolstered the economy of our region, and educated students that are now practicing veterinarians and animal health scientists. It has certainly been easy to be passionate about such a noble mission. I have been

tremendously blessed to work with such an outstanding staff and faculty. Their level of professionalism and dedication is second to none in this business. Likewise, the animal owners and veterinary practitioners we deal with are the best in the nation; thank you for your loyalty. As always, on behalf of the VBSD and the ADRDL, it has been an honor and a pleasure to serve...thanks for the memories! ■

Question and Answer Session: Dr. David Zeman

Dr. David Zeman is retiring from SDSU after 15 years as Veterinary and Biomedical Sciences department head and ADRDL director. Beginning his career at SDSU in 1986 as a pathologist and assistant professor, he became department head and ADRDL director in 1997. Since that time, revenues to the ADRDL have increased over 7-fold due to increases in test offerings and test volume. He served as president of the American Association of Veterinary Laboratory Diagnosticians in 2001. He received the highest honor possible from that organization, the Pope Award for Veterinary Diagnostician of the Year in 2006, and was named South Dakota Veterinarian of the Year in 2003 by the SDVMA.

He recently took time to answer some questions about his time at SDSU and future plans.

Q. What are your plans for the future?

A. My wife Colleen and I will continue to live in Brookings and remain active members in the community; however, we also look forward to spending our winters in Florida. From February through April, we'll be living in Venice, Florida, which is between Tampa and Fort Meyers on the Gulf Coast. It's actually going to be a semi-retirement, since I still plan to be involved in veterinary pathology on a part-time basis. In a way, it is a return to my roots as a pathologist. I still feel the best part of my day is when I am behind the microscope and it's just me, the veterinarian, and the animal involved.

Q. What do you feel are your biggest accomplishments as department head/director?

A. Helping the ADRDL make the transition from more reactive diagnostic

medicine to more proactive diagnostic medicine, a transition that has not been easy for some veterinary labs across the country. Around the time I became department head, veterinarians were beginning to ask for more antemortem procedures, in order to get ahead of disease issues rather than always playing catch-up. We listened to their needs and as a result, we have significantly increased our offerings in serology and molecular diagnostics to meet their needs. Helping the ADRDL become a member of the National Animal Health Laboratory Network, the Food Emergency Response Network, the CDC Veterinary Laboratory Response Network, and become a Select Agent Registered Laboratory was all very rewarding and enhanced our national stature. In addition, we have grown our research program significantly over the years and now receive grant funds from a wider variety of funding agencies. Lastly, it is enjoyable to help many young students to fulfill their dream of becoming a veterinarian via our strong pre-veterinary medicine program. These are the things I am proud about on behalf of the entire department.

On a national level, I feel good about helping the AAVLD accreditation process move the accredited labs forward in meeting international standards with their quality systems. This has removed a great deal of vulnerability from the nation's veterinary diagnostic laboratories, and ensures that they can withstand external audits and questions about their procedures.

Also, being involved in the establishment of the National Animal Health Laboratory Network (NAHLN) was a highlight of my professional career. This has

dramatically increased the level of cooperation between state and federal laboratories, to both sides' benefit.

Q. Any disappointments during your time as department head?

A. We were gaining very good steam from university administration and our stakeholder partners to get a high-containment BL-3 laboratory addition approved and built for our state. Then the 2008 recession hit, and any plans had to be put to the side. It's my hope that as the economy recovers, that the subject will get another look. BL-3 laboratory space will be increasingly important to veterinary diagnostic laboratories who hope to remain at the highest level of participation in animal disease surveillance and research.

Q. What will you miss the least about your job at SDSU?

A. Probably the "busy-ness" of each day: the time spent reading e-mails!

Q. What will you miss the most about your job at SDSU?

A. Definitely the people. When it comes to the people who work at the ADRDL and VBSD, I couldn't ask for better, more hard-working individuals. It's also been a great pleasure to interact with our veterinarians out in the field. It has truly been an honor and a privilege to serve these people in this role for this many years. ■



EHD

(Continued from page 1)

pathologist Anwar Sarah visited four herds in Yankton, Turner, and Hutchinson Counties on September 14. The SDSU veterinarians found cattle with clinical signs that matched the findings of area veterinarians: cows had multiple oral erosions on their gums and dental pad. In one herd, two cows were found to have more severe problems, with crusty, peeling skin on the nose and the udder along with lesions between the toes on the coronary band. Another herd reported approximately 10% of their animals affected, although the clinical issues were mild and some of the animals were beginning to recover.

Notably, one of the herds examined that day was a 115-cow dairy herd. To our knowledge, EHD in dairy herds had not been previously reported in the United States. In that herd, one cow, which had freshened 10 days earlier, was noted with mild oral lesions and crusts on the muzzle. Samples were taken from cattle in all four herds, which were positive for EHD virus on PCR examination as well as positive for antibodies on AGID serologic testing for EHD.

PCR testing to detect EHD viral DNA in blood samples is the best confirmation of an active viremia in an animal, and along with typical clinical signs and lesions, can be

EHD (Continued on page 7)

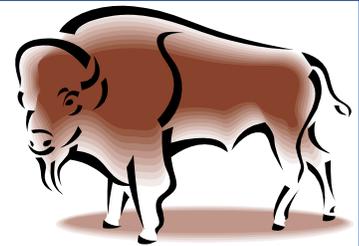
Questions Yet to be Answered about EHD in Cattle

The Fall 2012 outbreak of EHD in cattle presents SDSU researchers with an opportunity to better characterize a disease syndrome for which there is not a lot known. Some of the ongoing projects SDSU Veterinary and Biomedical Sciences Department personnel are undertaking hope to answer questions such as:

- How long do cattle stay positive for EHD antibodies? SDSU is working with a dairy herd in Hutchinson County to sequentially test older animals as well as new calves to get a feel for the persistence of these antibodies in an affected herd.
- What was the actual within-herd incidence of EHD in affected cattle herds? Follow-up calls will be made to producers and veterinarians to gain a sense of incidence now that new cases are not being reported.
- Are there any medium- to long-term effects of EHD infection in cattle? A cow-calf herd in Yankton County as well as the Hutchinson County dairy herd will be monitored for longer-term effects, especially on reproduction.
- How can the histopathology of the lesions caused by EHD in cattle be better characterized? For future cases, veterinarians are encouraged to contact the ADRDL and consider sending punch biopsies of any lesions noted.

EHD in Bison: Three Case Submissions

Of the many case submissions investigated by the SDSU ADRDL during the EHD outbreak, possibly the ones of most interest involved three separate bison herds. Very little is described in the literature when it comes to natural or experimental infections of bison with EHD virus; likewise, there is little precedent for ascribing diagnoses to these cases. All three bison submissions were from animals that died; significant post-mortem lesions were present in all cases, although none of them were reported to have oral lesions such as those that were commonly noted in cows.



- **Bison case #1** came from Yankton County, an area of many reported cattle EHD infections. In late September, two animals died from this herd of approximately 20 bison. A bull had been found dead; shortly after that a bison cow that had been acting slow and lethargic for the past 3-4 days died. The veterinarian's post-mortem examination revealed very large paint-brush hemorrhages on the surface of the rumen, hemorrhagic enteritis, and hemorrhages within the kidneys. A PCR test performed on spleen from the animal was positive for EHD virus serotype 2, and negative for bluetongue and malignant catarrhal fever. These were the only two animals affected in the herd; no other animals showed any clinical signs.
- **Bison case #2** was located in southern Union County near the Missouri River. A herd of 20-25 bison was grazing wooded pasture adjacent to the river. The producer lost 2 bison cows in a short period of time, and approximately a week later, a bull was found dead. No obvious clinical signs were noted except for lethargy just prior to death. In the bull, the referring veterinarian noted a large amount of bloody diarrhea as well as hemorrhagic intestinal contents. The kidneys were a dark gunmetal color with much congestion. The pathology report noted a severe segmental hemorrhagic enteritis and hemorrhage and necrosis in the kidney. A clostridial organism was isolated from the intestines, which was of unknown significance. No other signs were noted in the rest of the bison herd, although many dead white-tailed deer were noted in the area.
- **Bison case #3** was one of only a handful of submissions that came from West River. This herd of approximately 80-100 bison was located in eastern Custer County. Four head of bison died over the course of 4-5 days in early October. The referring veterinarian found a thickened duodenum, congested spleen, and hemorrhages in the omasum and small intestine. Histopath revealed severe necrohemorrhagic enteritis and omasitis, with some indication of peritonitis. *Clostridium perfringens* organisms were also isolated from the intestine. PCR on the spleen was positive for EHD virus and negative for bluetongue virus. One lame animal and another animal "acting slow" were treated by the owner, but no other significant problems were noted in this herd besides the death losses.

Where the Diagnostic Process Starts: the ADRDL's Specimen Receiving and Necropsy Sections

It might be an insulated cardboard box stuffed with newspapers, ice packs, and plastic bags filled with tissue sample from a calf. It might be a cooler filled with hundreds of blood tubes. Or it might be a 1200-pound dairy cow on the back of a cattle trailer. Regardless of the type of sample submitted by the ADRDL's veterinary and animal producer clients, its diagnostic journey begins in one of two rooms: the receiving office, where shipped packages are opened, or the necropsy room, where whole animals are dropped off.

In the case of shipments of tissue or blood samples collected by veterinarians in the field, a group of employees performs the daily morning ritual of opening boxes, reading test request forms, matching the samples to the forms, and determining where the samples will go from there. Samples of tissues for examination by pathologists will be passed through the window to the necropsy room for further processing. Blood samples are carted across the hall for the serology lab. Samples for PCR testing, such as oral fluid samples or semen samples from pigs for PRRS testing, or sheath samples from bulls for trichomoniasis testing, are carted next door for processing in the molecular diagnostics laboratory.

Each individual sample is recorded and entered into the lab results reporting database, and a unique case number is assigned to each submission. A faculty case coordinator or pathologist is assigned to each case right off the bat in the receiving office. Three clerical staff members, Margaret Janssen, Evonne Freyberg, and Kim Hyland take care of this process, with help from necropsy technician Myron Olson and several student helpers.

For pathology cases, the necropsy floor is the next stop. There the pathologists process each individual case, partitioning out the samples to the appropriate sections for further testing, according to the requests from the submitting veterinarian. One lung sample from a calf that died from pneumonia might go to several different sections: bacteriology for bacterial culture, molecular diagnostics for PCR testing, virology for FA or virus isolation, and tissue pro-

cessing to be made into histopath slides.

Margaret Janssen is the clerical staff member making this process run smoothly. When it comes time to process cases and help pathologists on the necropsy floor, Margaret is the one to leave her computer screen in the receiving office, don a lab coat and boots, and make sure the proper tests get ordered and submitted from the necropsy room to the proper laboratories within the ADRDL. Margaret grew up on a dairy farm near Elkton, SD, and has worked at the ADRDL since 1979.

Visitors viewing the necropsy floor from the window in the public receiving area of the ADRDL on any given day will usually see at least one whole animal on the floor or on one of the stainless steel tables in the necropsy room. These animals could be as small as baby pigs from a farrowing house suffering from neonatal diarrhea (scours) or as large as a draft horse that had been found dead with no apparent clinical signs.

The ADRDL pathologist in charge of the necropsy section is Dr. Dale Miskimins. Dr. Miskimins received his DVM degree from Iowa State University and, after practicing in food animal practices in central South Dakota, obtained his MS degree in pathology from Iowa State. Dale joined the SDSU ADRDL in 1990 after working at the Galesburg, Illinois, veterinary diagnostic laboratory.

Myron Olson (see next story) is the ADRDL's lead necropsy technician, and supervises the student workers, along with assisting the pathologists in opening up specimens, and keeping the necropsy room clean and in good repair.

Dr. Miskimins, Margaret and Myron have noted many changes over the years they have worked back on the necropsy floor. Changes in animal agriculture have revealed themselves to the diagnos-



ADRDL Necropsy Laboratory staff (L-R): Margaret Janssen, Dr. Dale Miskimins, Myron Olson. Not Pictured: Student workers Hillery Baysinger, Lacy Bobb, Hannah Ellsworth, Olivia Kendall, Jenetta Porter, Kenzie Rathbun, and Nathan Wilen. (Photo: Russ Daly)

tic laboratory. Shifts toward antemortem diagnostics, surveillance programs, and preventive medicine programs have meant fewer whole bodies to work and more blood samples to process instead. Bio-safety procedures have also significantly intensified throughout the years: an increased awareness of worker safety means that many procedures that were performed out in the open are now done under biosafety cabinets or hoods.

In addition, the constant changing face of animal disease manifests itself every day in the receiving office and out on the necropsy floor. New syndromes such as EHD in cattle, fish diseases, and influenza in species such as mink, stand out as examples of emerging and evolving diseases that have their beginning as diagnostic case submissions.

Even in today's animal agriculture, the animal brought to the necropsy lab by a farmer in need of help is one of the best examples there is of a dynamic, engaged service organization such as the ADRDL being looked to for answers. Infectious diseases will evolve and remain significant even in light of advances in preventive medicine and antemortem methods. It takes observant, dedicated individuals to detect those emerging and changing diseases in animals—and much of that starts right on the necropsy floor. ■

Pre-Vet Students and the Necropsy Floor: an Education Unique to SDSU

It's not uncommon for former SDSU Pre-veterinary students to comment on how their SDSU classes prepared them for the rigors of veterinary school as well as or better than many of their classmates. But for a subset of those SDSU grads, their academic experience is enhanced by a very special out-of-classroom job on the necropsy floor of the ADRDL.

During most semesters and summers, three to five students are employed as student workers in the ADRDL necropsy laboratory. They function to keep the lab orderly: keep shelves stocked with formalin jars, keep tables and equipment clean, and keep the floor clean from the post-mortem activities of the pathologists. Not exactly a conventional campus job for most students, considering that most days the necropsy helpers are walking through puddles of blood, rumen contents or other body fluids previously contained in a dead farm animal.

These students' job roles go beyond washing and cleaning, however. These students play a significant role in helping the ADRDL pathologists with necropsy examinations. They become trained in opening up animal carcasses for pathologists and assist them in collecting samples of different organs for further diagnostic testing. As such, these undergraduate student helpers receive an education in gross pathology that's on par with the experience fourth year veterinary students get in their diagnostic laboratory rotation.

The educational process for these stu-

dents is ushered along by the individual pathologists that work with the students on a daily basis. But supervising and helping the students with their initial training on necropsy technique falls upon Myron Olson, a 14-year employee of SDSU's ADRDL. In addition to Myron's supervising and training student workers, his job description includes delivery and processing of incoming mail and specimen shipments, assisting the rendering service with carcass disposal, and keeping the necropsy room and its equipment in good working order. For many people who transport animals to the ADRDL, Myron is often the first person at SDSU they interact with once they back up their truck to unload their specimen.

Myron is quick to point out that the most interesting part of his work is his interaction with the student workers. "Over the past 14 years, I've counted up 55 students that I've worked with back in the necropsy lab, and of those students, I would guess 85-90% of them have gone on to veterinary school, with a great number of those individuals coming back to practice in the area and submitting samples as customers of the lab themselves." This semester there are seven undergraduate pre-veterinary students working under Myron, ranging all the way from freshmen to seniors.

For most undergraduate students, working with dead animals is a drastic change from their experiences with their own (live) animals back on their farms or in their homes. Most students pick up skills with their post-mortem knives relatively quickly, but that doesn't mean there's not a learning curve involved. "Some of the most interesting days come when you finally let the student take on their first necropsy without my help—especially when that animal involves a large, bloated bovine!" says Myron. Margaret Janssen, who works with Myron and the students on the necropsy floor agrees: "It never fails that the first time a student is on their own with Myron gone, they'll get a



Margaret Janssen (L) works with SDSU pre-veterinary student worker Lacy Bobb (center) and Myron Olson to process incoming lab specimen shipments on a Tuesday morning in the ADRDL receiving office. (Photo: Russ Daly)

large cow to wrestle through all by themselves!"

Student workers are an integral part of the day-to-day business of the entire ADRDL, and it's a mutually beneficial relationship. Students gain experience with laboratory techniques and gain an understanding of the disease processes and surveillance methods observed and employed by veterinarians across the region. For the students who work on the necropsy floor, they get a great introduction to gross pathology, post-mortem examinations, and disease processes—subjects that most of them will encounter on a daily basis in practice. "I didn't realize how much I had learned in my years working with Myron and the pathologists on the necropsy floor until I encountered pathology and anatomy classes in veterinary school—so many things 'clicked' in vet school because of that experience at SDSU" says Tim Kruse, a current fourth-year veterinary student at Iowa State.

The SDSU faculty and staff get more than student labor out of this relationship, though. According to Myron, "One of the best parts of my job is getting to know the students' different personalities and watching their skills progress as they do more and more necropsy procedures." That sentiment is echoed by Margaret Janssen: "Some of the most memorable times on the job have been when our former students come back and thank Myron for all the 'life lessons' he has imparted on them." ■



Myron Olson (L) directs SDSU pre-veterinary student worker Hannah Ellsworth in collecting samples from a dairy cow. (Photo: Russ Daly)

Pieces and Parts

ADRDL Submission forms now “Save-able”

The ADRDL’s submission forms can now be saved on your computer for future use.

These forms are available under “Submission Forms” at the ADRDL website (<https://www.sdstate.edu/vs/adrdl/>). Once the form of choice is opened, clinic contact (or any other information) can be entered into the form and saved onto the computer using the “save a copy” icon (or Shift+Ctrl+S) within the Adobe window.

Once this personalized version of the submission form is saved to the computer, one can skip having to fill in clinic information every time a submission form is completed.

Anytime you have questions or suggestions about our forms please contact Mr. Jon Greseth or Dr. Tanya Graham at 605-688-5171.



Salmonella in Pets Study Extended for Another Year; Samples Requested

SDSU’s ADRDL recently received word that the Vet-LRN Cooperative Laboratory Agreement *Salmonella* Project (V-CLASP) will go on for an additional year.

During 2012, 20 veterinary clinics answered the call and submitted samples to SDSU for this important project. Their participation put South Dakota at the top of the 11 participating states for numbers of samples submitted. The two-year goal has been set for each participating laboratory to test 200 samples from symptomatic dogs and cats and 200 samples from asymptomatic dogs and cats. Due to the excellent cooperation from our veterinarians, SDSU is right on track to meet that goal.

Because of the extension of the project, veterinarians are encouraged to keep submitting samples. Participating veterinarians receive salmonella culture on fecal samples at no charge, provided they include a short survey with patient information. Identifying information is kept strictly confidential.

When complete, a much better understanding of specific risk factors that influence Salmonella shedding in dogs and cats will be gained. Harmonized methods across laboratories will mean that the infrastructure will be in place to quickly respond when Salmonella outbreaks occur due to pet food contamination, etc.

Veterinarians are encouraged to take advantage of the free Salmonella culture when examining their sick as well as healthy dog and cat patients. The SDSU ADRDL will provide shipping containers, sample vials, and surveys for use by veterinarians and their staff free of charge.

Please contact Seema Das (seema.das@sdstate.edu) or Russ Daly (russell.daly@sdstate.edu) or 605-688-5171 if your clinic would like to participate or if you have questions about the project.



Sandra Gustafson, Senior Claims Clerk at the Veterinary and Biomedical Sciences Department and ADRDL, retired October 19, 2012. Sandra began her career at SDSU in the Finance and Budget Department’s Property Management division in 1986, and had worked at the VBSD/ADRDL since 1998. (Photo: Russ Lokken)

Incoming Freshmen with Pre-Vet Majors at SDSU, Fall 2012

The following is a list of the incoming freshmen who have declared a pre-vet major for Fall semester 2012 at SDSU:

South Dakota

Aberdeen – Allison Marnette
 Arlington – Trent McKee
 Bowdle – Jenna Brandt
 Carter – Chance Littau
 Chamberlain – Steven Derald
 Clear Lake – Emily Smith
 Elkton – Camille Lynn
 Faith – Carrietta Schalesky
 Harrisburg – Andrew Hughes
 Huron – Sarah Arbeiter

Kadoka – Alexandra Smiley
 Lake Andes – Joy Kirkpatrick
 Long Valley – Cassidy Ferguson
 Madison – Shelby Cooper
 Monroe – Elizabeth Swisher
 Presho – Sarah Muirhead
 Rapid City – Sierra Reister
 Reliance – Kara Schelske
 Sioux Falls – Danielle Evers
 Sioux Falls – Nicole Fritz
 Sioux Falls – Kaitlin Gordon
 Sioux Falls – Hannah Jensen
 Sioux Falls – Melissa Young
 Twin Brooks – Katie Boone
 Watertown – Meagan Hardee
 White – Lacey Quail

Iowa

Rock Valley – Sara Kleyer

Illinois

Woodstock – Megan Graf

Kansas

Edgerton – Shannon Warren

Maryland

Chester – Autumn Lee

Michigan

Stephenson – Megan Grinsteiner

Minnesota

Albert Lea – Grady Ruble
 Brooklyn Park – Rachel Regan
 Currie – Jocelynn Glenn
 Edgerton – Julie Bobb
 Fairmont – Braden Grefe
 Jordan – Olivia Kendall

Lafayette – Alicia Martens
 Little Canada – Allene Gustafson
 Lonsdale – Zane Bucher
 Magnolia – Jeremy Reisdorfer
 Marshall – Ashley Atkins
 Milroy – Samantha Welu
 Waseca – Tatiana Krause
New Hampshire
 Milford – Alex Martineau
Rhode Island
 Middletown – Jacqueline Walker
Washington
 Spokane – Haley Peterson
 Yacolt – Alyse Homola
Wisconsin
 Waterford – Brooke Pearson

EHD

(Continued from page 3)

used to make a diagnosis of EHD in cattle. However, PCR testing simply detects the presence of the virus. In order to more completely characterize the virus (sequencing and use in experimental animals), the virus must be propagated on cell culture. Fortunately, the SDSU ADRDL's virology section (Stacy Wessels, Pam Leslie-Steen, and Lyle Braun) was able to accomplish this task. With the aid of Dr. David Stallknecht at the Southwestern Wildlife Disease Study at the University of Georgia, this cattle-related EHD virus will be fully sequenced and compared to other types of EHD found throughout the US.

Since those first reports in early September, the SDSU ADRDL has received 80 submissions from 35 different veterinarians requesting EHD diagnostics. Three cases were from bison (all positive), nine from deer, two from sheep (both negative), and the rest from cattle. Of the 66 cattle cases, EHD infection was confirmed in 44 of them through PCR detection of the virus or through positive serology. The true number of cattle herds affected by EHD is likely to be significantly larger than the numbers of cases submitted to the ADRDL. Once an EHD diagnosis was confirmed in an area, most veterinarians counseled their clients accordingly without submitting diagnostic samples. SDSU Veterinary Extension received reports of at least 48 herds in addition to the case submissions, from area veterinarians and the South Dakota Animal Industry Board.

The seasonal and inconsistent nature of EHD outbreaks, especially those in cattle, means that this may be a once-in-many-years chance to study how this virus in particular affects cattle, and how it behaves in individual animals as well as in herds of cattle. Projects are underway to better characterize the 2012 EHD outbreak in cattle and to understand the effects of the virus on diagnostic tests and on the cattle themselves (see box on p. 3).

Fortunately, the within-herd incidence of EHD was typically low, with most producers reporting only one or two affected animals within the herd. Most of these cattle recovered without long-term effects, although many of these animals were lame and off feed for several days. Very few death losses were reported overall. EHD is not a human health or food safety threat.

While a relatively low-incidence and mild disease in cattle, there are several reasons that cattle producers, veterinary practitioners, and regulatory and academic veterinarians are inter-

ested in EHD. The nature of the oral lesions in these animals makes it essential to rule out serious foreign animal diseases such as foot and mouth disease and other vesicular diseases. Cattle producers and veterinarians should not become

complacent with EHD as a clinical diagnosis in future years without first gaining input from state Animal Industry Board or USDA veterinarians to rule out more serious conditions. The fact that EHD affects wildlife as well as cattle populations is also a contentious issue for some. In reality, EHD is not caused by deer, nor by cattle, although these are the species that bear the brunt of the clinical signs. By learning more about this syndrome, it's hoped that the future effects of this disease on wildlife as well as domestic animals can be reduced. ■



Representative oral lesion from a beef cow affected with EHD: erosion of the mucosal surface of the rostral dental pad (circle). Photo: Russ Daly

Continuing Education Events

November 29-December 1

Academy of Veterinary Consultants Winter Meeting

Renaissance Denver Hotel, Denver, CO, <http://www.avc-beef.org>

December 7-8

Wyoming Veterinary Medical Association Winter Meeting

Ramkota Hotel, Casper, WY, <http://www.wyvma.org/>

January 25-26, 2013

Montana VMA Winter Meeting

Bozeman, MT, www.mtvma.org

February 16, 2013

James Bailey Herd Health Conference

South Dakota State University, Brookings, SD

www.sdvmed.org

February 17-21, 2013

Western Veterinary Conference

Mandalay Bay Convention Center, Las Vegas, NV, www.wvc.org

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Animal Health MATTERS

The SDSU Veterinary and Biomedical Sciences Department conducts research, teaching, professional service, and extension service to South Dakota and the surrounding region. Entities within the department include the South Dakota Animal Disease Research and Diagnostic Laboratory, the Olson Agricultural Analytical Service Laboratory, and the Center for Infectious Disease Research and Vaccinology.

The South Dakota Animal Disease Research and Diagnostic Laboratory is a full-service, all-species diagnostic laboratory accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD). The AAVLD accreditation program complies with international expectations for quality diagnostic services under the guidance of the World Organization for Animal Health (the OIE). The ADRDL collaborates with the USDA National Veterinary Services Laboratory on many federal disease monitor and eradication programs and is a member of the National Animal Health Laboratory Network. For information regarding the laboratory's Quality System, contact Rajesh Parmar – ADRDL Quality Manager, at 605 688 4309.

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IN THIS ISSUE

SDSU Tracks Epizootic Hemorrhagic Disease in South Dakota Cattle	1
Director's Message: One last time...thanks for the memories	2
Question and answer Session: Dr. David Zeman.....	2
Where the Diagnostic Process Starts: the ADRDL's Specimen Receiving and Necropsy Sections	4
Pre-Vet Students and the Necropsy Floor: an Education Unique to SDSU	5
Pieces and Parts	
ADRDLD Submission forms now "Save-able"	6
Salmonella in Pets Study Extended for Another Year; Samples Requested.....	6
Incoming Freshmen with pre-Vet Majors at SDSU, Fall 2012	6
Continuing Education Events.....	7