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A newsletter about diagnostic trends at the laboratory, animal health topics, interesting cases and new test offerings.

www.vdl.ndsu.edu

Feedback is always welcome. Please feel free to send your comments or suggestions to ndsu.vetlab@ndsu.edu and specify "newsletter" in the subject line.

NDSU Veterinary Diagnostic Laboratory

Director's Corner

I wholeheartedly agree with the premise that an organization is only as good as its people. And as far as people go, I am delighted to work with so many brilliant diagnosticians and skilled support personnel.

Our faculty and staff have a vast array of infectious disease, toxicologic and technical expertise, enabling us to meet North Dakota's veterinary diagnostic needs. As exceptional as the NDSU VDL personnel are in the lab, they are equally amazing in their outside endeavors, too. I would like to share the recent accomplishments of three such individuals.

Diandra Gallagher is a 2024 inductee into the Bison Athletic Hall of Fame. Just a few of her athletic career highlights include being a two-time NCAA champion in women's track and field and a six-time All-American. Diandra is a licensed veterinary technician and has worked at the NDSU VDL for over a decade. She has worn many hats, including necropsy and clinical pathology technician. Currently, she works as our information processing specialist and is often the first person to greet clients on the phone or in the lobby. Diandra brings to the lab the same energy and commitment that made her a champion on the field.

Over the last three years, while supervising the Microbiology and BSL-3 sections during the day, Dr. Kelli Maddock has been attending graduate courses in public health at night. This culminated in Dr. Maddock successfully defending her Doctor of Public Health (DrPH) dissertation, "Development of a Novel Capsular Typing Method for *Pasteurella multocida* by Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF MS)" in July. Dr. Maddock is at the forefront of antimicrobial resistance surveillance, is always finding ways to improve testing and embodies the One Health approach to medicine.

Dr. Quynn Steichen achieved the status of Diplomate in the American College of Veterinary Pathologists (ACVP). This accomplishment comes after three years of rigorous residency training at the NDSU VDL. As a veterinary pathologist, Dr. Steichen is committed to improving all animal and human health. However, with her master's degree in beef nutrition, Dr. Steichen is particularly passionate about food animal diseases. She remains at the NDSU VDL as a diagnostic pathologist and necropsy section head.

Congratulations to these excellent NDSU VDL lab members.

Heidi Pecoraro, DVM, Ph.D., Diplomate, ACVP
NDSU VDL Director and Veterinary Anatomic Pathologist

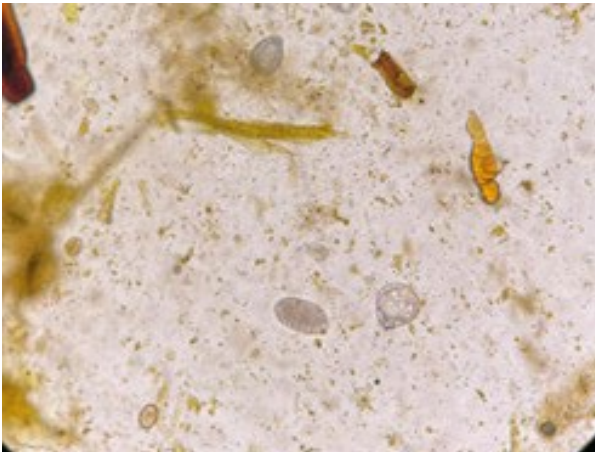
NDSU VETERINARY DIAGNOSTIC
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Bench Notes

EIA (Coggins) testing – Starting Oct. 1, Equine Infectious Anemia (Coggins) ELISA testing will be performed Tuesdays and Fridays.

Johne's PCR Testing – Please see the updated 2024-2025 Collection and Submission Guide for PCR submissions at <https://www.vdl.ndsu.edu/wp-content/uploads/2024/08/Johnes-guidelines-2024.pdf>. Call the laboratory if you have any questions.

Mystery Photo



Fecal float, lamb. (Photo by S. Gefroh)

A producer with 60 crossbred sheep recently weaned lambs three to four days prior to case submission. The entire flock had been dewormed with Valbazen three weeks prior to weaning.

Shortly after weaning, the producer noticed several ill lambs with droopy ears, lethargy and pale mucous membranes. The problem appeared isolated to the weanling lambs only.

What is the underlying cause?

Visit the NDSU VDL website (www.vdl.ndsu.edu) to see the answer and read more about the case.

Disease Updates

Kelli Maddock, DrPH, MS, MLS (ASCP)^{CM}

This year, the NDSU VDL microbiology department noted an increase in the number of cases of strangles (*Streptococcus equi* subspecies *equi*), with eight occurring so far in 2024 compared to only three in 2023. Seven of the 2024 cases appeared in North Dakota. The map shows the distribution of equine strangles in North Dakota by county.

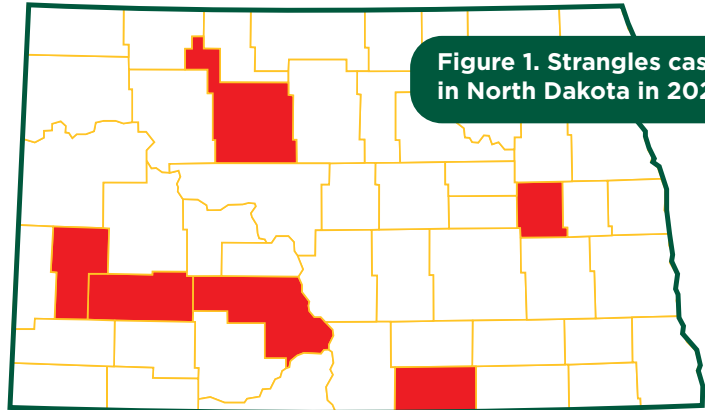


Figure 1. Strangles cases in North Dakota in 2024.

Two subspecies of *Streptococcus equi* exist, but only one is significant in causing disease. *S. equi* subspecies *equi* is the causative agent of strangles in horses, while *S. equi* subspecies *zooepidemicus* is an opportunistic pathogen of horses, dogs, cats and humans. Equine strangles is a highly contagious upper respiratory illness that leads to swelling and abscessation of the mandibular and retropharyngeal lymph nodes that may extend to the guttural pouch.

Bacterial culture is the gold standard for confirmation of strangles infections. The best samples are nasopharyngeal washes, purulent material from abscesses, guttural pouch lavage fluid or nasal swabs. Nasal swabs have the highest risk of false negative results depending on the stage of illness or due to overgrowth of nasal commensal bacteria.

S. equi subspecies *equi*, along with other β -hemolytic Streptococci such as *S. canis* and *S. equi* subspecies *zooepidemicus*, are considered universally susceptible to beta-lactams and cephalosporins, so routine antimicrobial susceptibility testing is not necessary.



Figure 2. *Streptococcus equi* subspecies *equi* on blood agar demonstrating characteristic clearing (β -hemolysis) around bacterial colonies. (Photo by S. Gefroh)

Mini Case Reports

Quynn Steichen, DVM, MS, DACVP, Veterinary Anatomic Pathologist

A 1-year-old male domestic shorthair feline was confirmed dead at the local emergency hospital. The owner reported the animal suddenly acting lethargic, not eating or drinking, and using the litterbox less frequently than normal.

On autopsy, the urinary bladder was markedly distended with serosal hemorrhages (Figure 3).

The urinary bladder mucosa is black and contains dark red, thin urine. Throughout the entire urethra, there were areas of hemorrhage with a focal stricture and urethral plug (Figure 4).

Histopathology of the urinary bladder revealed an extensively ulcerated mucosa replaced by high numbers of inflammatory cells, extensive hemorrhage and necrosis, and edema. In the submucosa, there is a necrotizing vasculitis, transmural inflammation, and a large amount of edema. The serosa is diffusely covered by hemorrhage (Figure 5).

The final diagnosis for this case was urethral obstruction with necrohemorrhagic cystitis and urethritis. The urethral obstruction was due to the urethral plug. Formation of a urethral plug happens more commonly in castrated males and intact females. When an animal has a urethral obstruction, there is retrograde flow of urine back into the urinary bladder and subsequent kidneys if the obstruction is not relieved. This leads to distension of the urinary bladder along with inflammation and necrosis. All of these lesions were observed in the current case on the autopsy. These cases often have severe bloodwork abnormalities, such as azotemia and hyperkalemia, that ultimately lead to death.

Potentially, the urinary bladder can become so distended that there is a rupture leading to a uroperitoneum (i.e., urine in the abdominal cavity). In small animals, the most common reason for a uroperitoneum is abdominal trauma (e.g., hit by car). In newborn foals, urinary bladder rupture can occur during dystocia either caused by congenital malformations or twists in the umbilical cord.

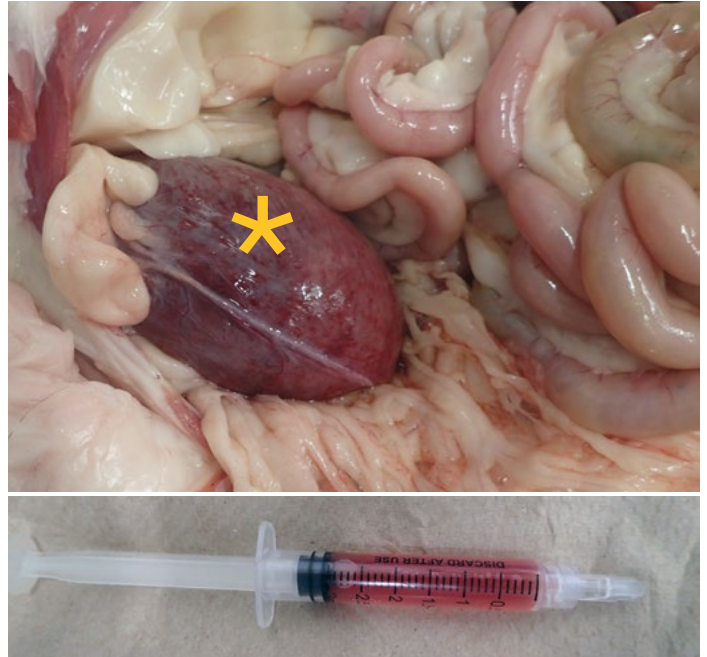


Figure 3. Distended hemorrhagic urinary bladder (asterisk) along with dark red, thin urine in syringe.
(Photo by Q. Steichen)

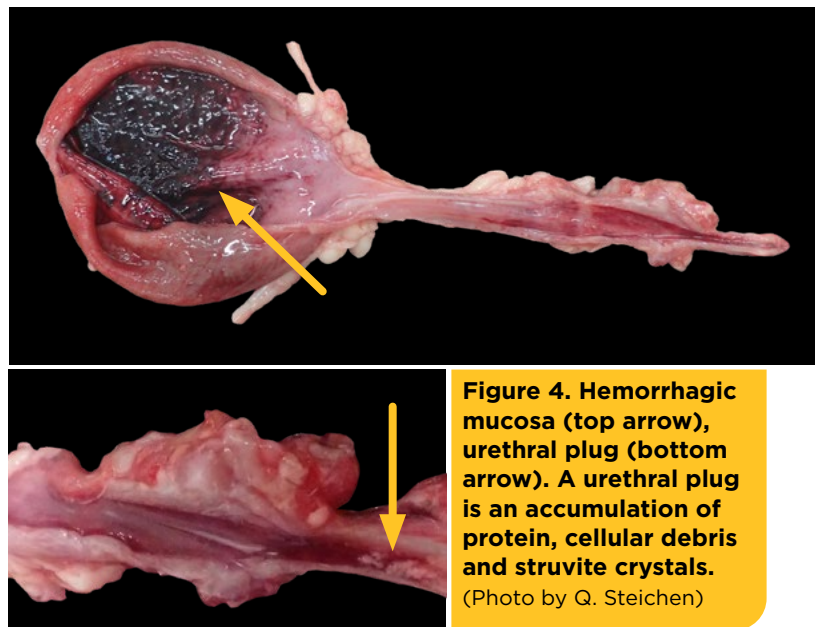


Figure 4. Hemorrhagic mucosa (top arrow), urethral plug (bottom arrow). A urethral plug is an accumulation of protein, cellular debris and struvite crystals.
(Photo by Q. Steichen)

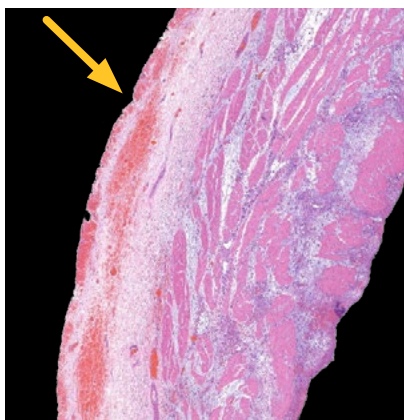


Figure 5. Transmural inflammation admixed with necrosis, edema, and diffuse hemorrhage along the serosa (arrow).
(Photo by Q. Steichen)

Calendar: Fall-Winter Closures

- November 11 – Veterans Day
- November 28 – Thanksgiving Day
- December 25 – Christmas Day
- January 1 – New Year's Day
- January 20 – Martin Luther King Jr. Day
- February 17 – Presidents Day

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Staff Spotlight



**Dawn Walden
(left) and Ken
Mbuba (right),
Database Manager.**

(Photo by H. Pecoraro)

Ken Mbuba

As database manager, Ken is responsible for managing computer and equipment software, functionality and programming for all the lab's departments. Ken plays a crucial role in maintaining the optimal performance of the laboratory's custom information management system. Due to Ken's commitment to the core values of NDSU Agriculture and his dedication to the VDL and its stakeholders, he received the Core Values Award in August. The Core Values Award is a peer-to-peer traveling award to recognize NDSU Ag team members for their commitment to the core values of integrity, impact and innovation. Ken was nominated by Dawn Walden, VDL Quality Manager. Ken's calm and thoughtful demeanor is much appreciated by all who work with him and get to experience his magic touch when resolving computer or software problems.



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For more information on this and other topics, see www.vdl.ndsu.edu

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