WVDL Spring Newsletter

Spring - May 2024

Wisconsin Veterinary Diagnostic Laboratory

UNIVERSITY OF WISCONSIN–MADISON

Memorial Holiday Lab Closure

The WVDL (both Madison & Barron locations) will be closed on ***Monday, May 27th, 2024***, in observance of the Memorial Day Holiday. Please plan appropriately for this interruption in shipping and testing. Regular business will resume Tuesday, May 28th, 2024. We wish you a Safe & Happy Memorial Day!

Message from the Director

Spring has finally arrived, and it is great to see the leaves back on the trees. The red and white tulips blossoming by the WARF building on UW-Madison campus are one of my favorite scenes of spring. We did not experience any HPAI affected domestic poultry flocks with the spring migration, but the H5N1 influenza A outbreak in dairy cattle has kept us busy as part of the national response to protect and sustain animal and public health.

We are grateful for Dr. Becky Suchla's service on the WVDL Board of Directors as she cycles off after 3 years. Dr. Rosemary Marusak has been nominated by Governor Evers to fill this role and we are excited to have Rosemary on our Board.

The renovation and addition to the Barron Laboratory is making progress and the project team is searching for a construction manager to get the project through to the finish line. We are anticipating the project to be done in 2026 or early 2027.

Thank you for taking the time to read our quarterly newsletter! There is always great information and updates to our service and diagnostic offerings. Please contact us with questions and we look forward to working with you this summer. Save the date of Thursday, December 5th for the WVDL Bovine Germplasm Export meeting at the Madison Laboratory.

Keith

Molecular Diagnostics & Virology Update

HPAI/BIAV PCR Testing in Cattle at WVDL: Preparing for Sample Submission

WVDL provides Influenza PCR testing in cattle on milk from lactating cows for movement or nasopharyngeal swabs for non-lactating cows. Testing non-lactating healthy animals is not required at this time. Refer to the WVDL's FAQ for additional details on sampling and submission instructions. https://www.wvdl.wisc.edu/hpai-biav-in-cattle-faq/

WVDL submission form: **"Influenza A In Livestock PCR Submission Form"** can be found here: https://www.wvdl.wisc.edu/forms/ **Please complete ALL required fields. The reason for testing**

sampled date and premise ID are all required for USDA funding to cover the testing cost.

Premises ID is required for this testing. Premises ID is printed on the Milk Producer License. It can be found in the middle of the license titled "Livestock Premises Code". Wisconsin Livestock Identification Consortium (WLIC) can be contacted for help with your Premises ID: (888) 808-1910 or visit: https://wiid.org/.

Shipping container: Please submit 3-10ml of milk in a labeled, well-sealed container to prevent leakage. For nasal swab testing, use non-wooden shafted swabs for collection and the swabs should be submitted in vial transport media or in a red top tube with 1-3 ml of saline. Dry swabs will not be tested.

Testing schedule: Routine testing is performed 3 days/week (M, W, F). The expected time for results to be available is 1-3 days from receipt at WVDL. An additional testing schedule may be added only when same day testing results are needed, thus advance arrangement is **required** for these types of testing. Please reach out to us as soon as you anticipate urgent testing needs for interstate movement.

WVDL email contacts: One email address has been created to streamline point of contacts at WVDL. Please use AISubmissions@wvdl.wisc.edu when contacting WVDL about influenza questions and sample submissions.

Any abnormal clinical signs should be reported to DATCP at (800) 572-8981.

Accession Type	Sample to test	OK to pool? Pooling done at WVDL	Testing TAT
Interstate Movement (M)	Milk, nasal swabs	Milk: yes, up to 5 Swabs: no	1-3 d
Surveillance Testing (no illness) (EE)	Milk, nasal swabs, tissues	Milk: yes, up to 5 Swabs: no Tissues from same animal: yes	1-3 d
Foreign Animal Disease Investigation (FADI)	Milk, nasal swabs, tissues	Milk & swabs: no Tissues from same animal: yes	Priority level dependent

Latest News From DATCP - Bovine Influenza

CLICK above for more information on Bovine Influenza - 2024

Avian Metapneumovirus (aMPV) Update

On January 23, 2024 the National Veterinary Services Laboratories (NVSL) confirmed avian metapneumovirus (aMPV) subtype B in samples from turkeys and broilers in Virginia and North Carolina. On February 1, APHIS also confirmed the presence of aMPV subtype A in turkeys in California from samples collected between November and December 2023. While aMPV subtype C was known to exist in the United States, subtypes A and B had not previously been identified in the United States. This is not a regulatory disease, APHIS does not expect trade impacts nor anticipate any regulatory response activities to restrict movement or stamp out disease.

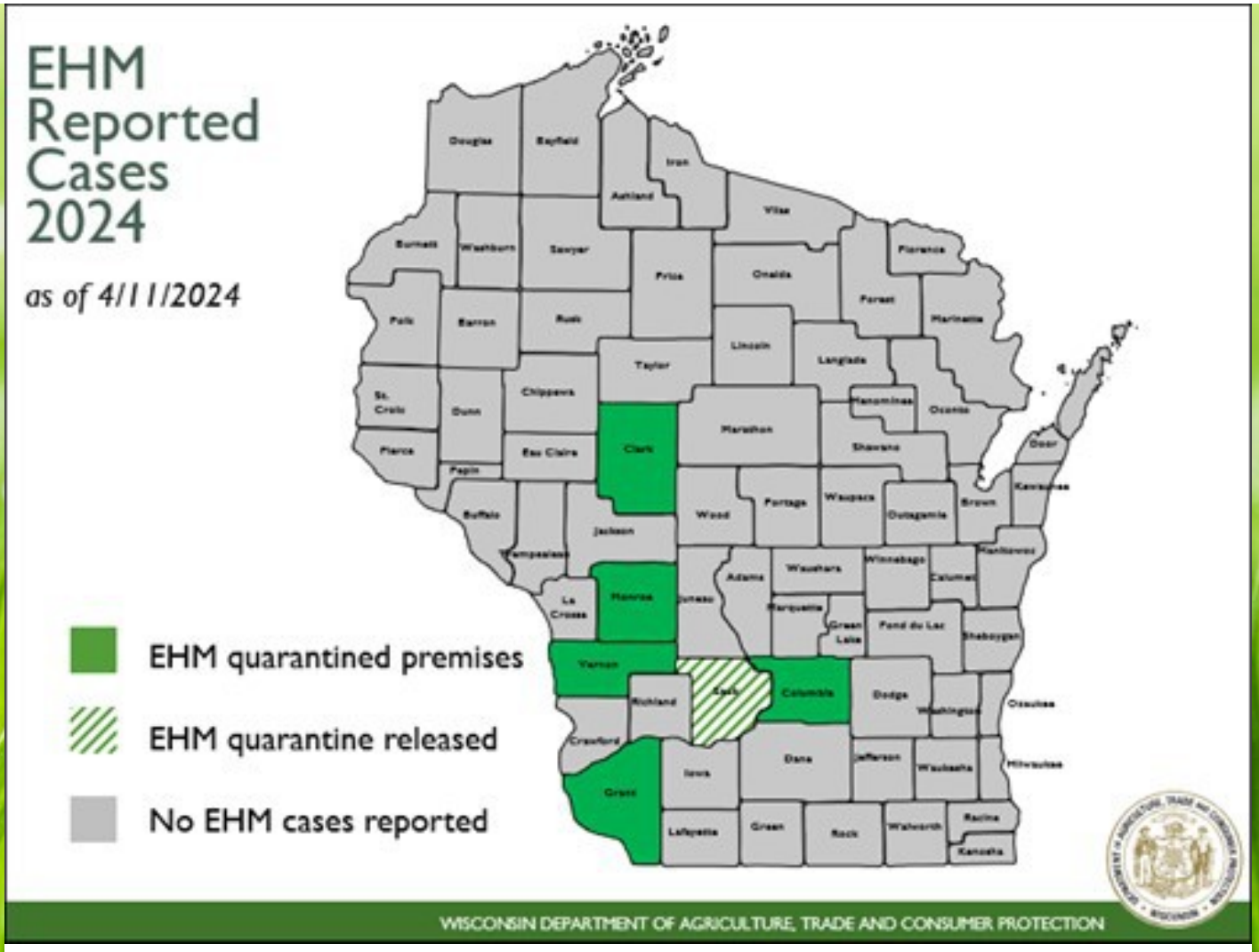
WVDL has validated a multiplex PCR assay based on NVSL protocol which will detect and differentiate between all three aMPV subtypes. In April 2024, WVDL detected aMPV subtype A from samples in Wisconsin of which were later confirmed at NVSL. WVDL will continue to test any sample submitted for aMPV using this new assay. Any sample testing positive with a Ct value lower than 34 from a new farm will be referred to NVSL for viral isolation and whole genome sequencing of the virus, at no cost to the submitter.

Beside the PCR assay, serology testing for detection and monitoring of antibodies for all subtypes of aMPV by an ELISA assay is available at our Barron laboratory.

Equine Herpesvirus Type 1 Update

The Department of Agriculture, Trade and Consumer Protection (DATCP) has received reports of Equine Herpes Myeloencephalopathy (EHM) cases in six Wisconsin counties. Equine herpesvirus-1 (EHV-1) is a highly contagious virus that causes respiratory disease, abortion, and intermittent outbreaks of neurologic disease in horses known as EHM, which is often fatal. Horses at facilities where EHM has been diagnosed have been quarantined. Equine herpesviruses are reportable in Wisconsin. Cases are reported in the U.S. every year, often in the cool early spring months, however there are more cases in Wisconsin this year than any year in the previous decade. Commingling horses from multiple farms and purchasing horses from a sale or market are risk factors associated with this outbreak. Please visit the DATCP webpage for more information on EHM and equine movement here.

The Equine Disease Communication Center (EDCC) is another great resource for veterinarians working in the field of equine medicine. The EDCC is a site created to improve the health and welfare of horses by communicating real time alerts and information to assist in preventing and mitigating equine infectious diseases. Follow this link to find updates on current disease outbreaks as they occur. Information provided includes the date listed, reportable disease name, location and current status. Specific premises will not be named but the general location by town, county and state will be listed. When locations, events, or horses are at risk they will be listed. Updates will be posted as they are received.



Bacteriology Update

Changes to Bacterial Names

Recently, several bacterial name changes have occurred. *Mycoplasma* and *Clostridium* species are the most significant name changes. Several *Mycoplasma* were renamed to the genus *Mycoplasmopsis* including *M. bovis, M. bovigenitalium, M. meleagridis and M. synoviae.* However, *Mycolplasma gallisepticum* was renamed to the genus *Mycoplasmoides gallisepticum*. When receiving bacterial culture reports several of these new names have already been implemented. This summer, the WVDL will rename the reports where the test name includes the genus and species such as *Mycoplasmopsis bovis* bacterial culture and molecular diagnostic tests and various avian *Mycoplasma* serology tests to reflect the new names.

Former Genus and Species	Current Genus and Speices
Actinomyces canis	*Schaalia canis*
Bacteroides vulgatus	*Phocaeicola vulgatus*
Clostridium difficile	*Clostridioides difficile*
Clostridium glycolicum	*Terrisporobacter glycolicus*
Clostridium limosum	*Hathewaya limosa*
Clostridium sordellii	*Paeniclostridium sordellii*
Enterobacter aerogenes	*Klebsiella aerogenes*
Facklamia ignava	*Falseniella ignava*
Flavobacterium brevis	*Empedobacter brevis*
Haemophilus parasuis	*Glaesserella parasuis*
Ochrobactrum anthropic	*Brucella anthropic*
Mycoplasma bovis	*Mycoplasmopsis bovis*
Mycoplasma meleagridis	*Mycoplasmopsis meleagridis*
Mycoplasma synoviae	*Mycoplasmopsis synoviae*
Mycoplasma gallisepticum	*Mycoplasmoides gallisepticum*
Propionibacterium acnes	*Cutibacterium acnes*
Staphylococcus lentus	*Mammaliicoccus lentus*
Staphylococcus sciuri	*Mammaliicoccus sciuri*
Streptomyces sp.	*Actinomyces sp.*

Changes for Respiratory Panel Ordering at WVDL

This summer the WVDL will be divorcing the bacterial culture and molecular diagnostic PCR tests. The targets and quality of the tests will remain the same, but the tests will be separated for better clarity for WVDL clients. The current panel test name is listed in the first column and the next two columns provide the bacterial and molecular diagnostic tests that make up that panel test. When requesting a panel, in the future, clients will need to request both the bacterial and molecular tests separately.

As a reminder, when submitting swabs, a swab in viral transport media, such as BHI broth, is needed for Molecular Diagnostic tests and a swab in bacterial transport media, such as Amie's, is needed for culture. Additionally, a culture is needed for sensitivity testing.

Current Panel Test	Bacterial Culture Test	Molecular Diagnostic Test
Bovine Respiratory Complete Panel	Bovine Respiratory Bacterial Culture	Bovine Respiratory PCR Panel
Bovine Bacterial Culture plus *Mycoplasma* PCR Panel	Bovine Respiratory Bacterial Culture	*Mycoplasma bovis* PCR

Pathology Update

Additional Fee for Captive Cervids Submitted Without an Official ID at WVDL

WVDL will begin charging $20 per farmed cervid head or carcass that is submitted without an Official ID for Regulatory Sample Collection. This fee will cover the cost of the tag and administrative costs associated with applying and recording the Official ID. This change is to ensure that all animals that are submitted to WVDL as a whole carcass or head are in compliance with the DATCP Farmed Cervid Official Identification Requirements.

WVDL highly encourages all clients/owners to apply an Official ID tag prior to submission.

Recent Pathology Outreach

Tori Smith, certified histotechnician and microbiologist within the Pathology Sciences section at the WVDL, is the current Wisconsin Histology Society President and has worked closely with board members from the Illinois Society for Histotechnology to plan the first ever Bi-State Symposium scheduled May 10-11, 2024, in Elgin, IL. This two day symposium covered topics such as Ethics, Travel Histology, Forensic Pathology, and Chemical Hazards in Histology. Future plans are to hold this Bi-State event every other year in Illinois. In addition, the Wisconsin Histology Society hosts an educational symposium, held at the WVDL, every Fall.

During the Bi-State Symposium, Dr. Maggie Highland presented for 3 hours on examples of biopsy and necropsy cases that require and/or benefit from subsequent staining techniques (special stains or immunohistochemical stains) in order to make accurate diagnoses. The goal was to illustrate the value of both special stain and immunohistochemical stain techniques in assisting the anatomic pathologist with case evaluation and diagnosis. An overview on assessing validity of tissue section stains by light microscopy and specific uses of stains were covered. In addition, this presentation provided an overview of transmissible spongiform encephalopathies that impact both animals (e.g. chronic wasting disease, scrapie, bovine spongiform encephalopathy) and humans (e.g. Creutzfeldt-Jakob disease, Kuru), and the importance of immunohistochemistry in surveillance and diagnosis of these diseases in animals.

Ashlee McDonald, microbiologist within the Pathology Sciences section at the WVDL, attended the 17th Annual Veterinary Forensic Sciences Conference and 5th Congress of the Italian Society of Veterinary Forensic Science this month. There she presented on Cases from the WVDL that utilized veterinary Forensic Pathology. Ashlee is the currently in the process of completing her certification in Forensic Pathology. She has also been busy this past month representing WVDL in high school outreach events focusing on careers in Animal Science and how the WVDL plays a role in herd health diagnostics.

Timely Information on Coxiella

***Coxiella burnetii* – A Reportable Zoonotic Disease Agent**

Coxiella burnetii is a small, obligate intracellular, Gram-negative coccobacillus bacterium and the causative agent of Query ("Q") fever in humans. In 1935, concurrent discovery of this bacterium occurred in Queensland Australia and in the Bitterroot Valley in Montana. Discovery in Australia occurred during an investigation of a mysterious illness that was impacting abattoir workers. In Montana, discovery came while researchers were attempting to isolate another bacterial pathogen (*Rickettsia* rickettsia) from ticks. Although infection in animals is typically subclinical, *C. burnetii* can cause decreased reproductive efficiency and abortions in infected domestic ruminants, including goats, sheep, and cattle. This bacterium propagates to high numbers in the placenta and birthing secretions, has a very low infectious dose (1-10 viable bacteria), and is environmentally stable and easily aerosolized, thus creating a source of infection for humans. However, infection in humans is not limited to those working with or around livestock, as a CDC review of 405 confirmed cases of Q fever from 2000-2010 reported no livestock contact.

Clinical Presentation in Humans (Q fever)

Infectious exposure to onset of clinical disease ranges from 3 to 40 days in humans. Approximately 50% of infected humans remain asymptomatic. When illness occurs, it commonly presents as a non-specific febrile illness that may occur with pneumonia or hepatitis. The fatality rate of acute Q fever is < 2% of untreated patients, and negligible in appropriately treated individuals. Approximately 20% of acute cases report a post-Q fever fatigue syndrome that can persist for more than a year. Up to 5% of acute cases are reported to progress to chronic Q fever, which is commonly associated with endocarditis. Individuals >60 years old and those who are immunosuppressed, or have a history of cardiac valvular surgery, valvular prosthesis, or aneurisms are at greater risk of developing illness. Humans (asymptomatic and symptomatic) who recover fully from infection may have lifelong immunity against re-infection.

Diagnosis in Livestock

For cases of abortion, both the fetus and placenta should be submitted for diagnostic investigation. All small ruminant abortion cases submitted to the WVDL are screened for *C. burnetii* by quantitative PCR (qPCR) prior to submitting tissues for culture. Bovine abortion cases are tested for *C. burnetii* based on clinical information and/or histopathologic changes that may suggest coxiellosis.

Cycle threshold (Ct) values obtained from quantitative PCR (qPCR) performed on placenta and fetal tissues are valuable in determining if *C. burnetii* is the most likely cause of abortion, as opposed to a detection that represents a concurrent shedding by the dam or environmental contamination. Shedding by an asymptomatic host can occur in vaginal secretions, feces, urine, and milk. High numbers of bacteria (corresponding to low Ct value), coinciding with histopathologic changes in the placenta +/- in fetal organs, provide strong evidence to support a diagnosis of *C. burnetii* abortion. However, cases in which *C. burnetii* is detected though likely not the cause of abortion (high Ct value and lack of histopathologic changes) still warrant discussion regarding potential implications for the herd/flock, as well as potential zoonotic risks.

In addition to qPCR, serology may provide additional diagnostic information about herd/flock exposure to *C. burnetii*. Available serologic testing includes ELISA and compliment fixation (CF). For details on the usefulness and limitations of serologic testing, the American College of Veterinary Internal Medicine's Consensus Statement is a valuable resource (see resources below).

State and Federal Agency Notification Requirements Following Detection of *Coxiella burnetii*

Once a specimen (*e.g.* fetus, placenta, or other specimens) is submitted to the WVDL and has *C. burnetii* detected by PCR, WVDL sends out notifications to external agencies. For cases submitted from Wisconsin premises, *C. burnetii* is reportable to multiple state and federal agencies, each with a different notification deadline.

1. Wisconsin Department of Health Services (WDHS): 72 hours
2. Center for Disease Control (CDC) and United State Department of Agriculture: 7 days
3. Department of Agriculture, Trade and Consumer Protection (DATCP): 10 days

WVDL sends the reporting forms to each agency via email. The submitting veterinarian and/or veterinary clinic is included on the email as notification that the detection has been reported. This notification is provided to veterinarians to prevent surprise in the likely event that one of the state or federal agencies contacts the veterinarian regarding the detection of *C. burnetii*. In addition to reporting the positive detection, WVDL is required to appropriately dispose of all remaining samples, both fresh and fixed, within 7 days of the positive detection result.

The Wisconsin Department of Health Services may contact both the veterinarian and the owner of the animal(s) for cases with positive detection of *C. burnetii.*

Multiple resources (listed below) are available that can provide additional information about *Coxiella burnetii*, coxiellosis in animals, and Q fever in humans, as well as recommendations for mitigating and communicating risk of this bacterium.

Resources:

1. Prevention and Control of *Coxiella burnetii* Infection among Humans and Animals: Guidance for a Coordinated Public Health and Animal Health Response, 2013. NASPHV/NASAHO http://www.nasphv.org/Documents/Q_Fever_2013.pdf

2. Diagnosis and Management of Q Fever – United States, 2013, Recommendations from CDC and the Q Fever Working Group. MMWR Vol 62 No 3, March 29, 2013.

3. Q fever Factsheet. 2003-2017. Center for Food Security & Public Health, Institute for International Cooperation in Animal Biologics, Iowa State University-College of Veterinary Medicine, and USDA. https://www.cfsph.iastate.edu/Factsheets/pdfs/q_fever.pdf
4. Centers for Disease Control and Prevention – Q Fever https://www.cdc.gov/qfever
5. Management of *Coxiella burnetii* infection in livestock population and the associated zoonotic risk: A consensus statement. 2018. Journal of Veterinary Internal Medicine. 32:1481-1494 (Open Access publication). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6189356/

Serology Update

Percent Competition added to BLV and BTV cELISA Reports

The Percent Competition has been added to the BLV and BTV competitive ELISA reports for clients to review. The interpretation for each of these cELISAs is printed with the results, which includes the cut-off value for positivity. Having individual percent competition values allows for clients to track individual animal results as they relate to the cut-off.

Contact Us

Wisconsin Veterinary Diagnostic Laboratory Providing You With Reliable Results and Exceptional Customer Service

Wisconsin Veterinary Diagnostic Laboratory - Madison
445 Easterday Lane
Madison, WI 53706
Phone: 608. 262. 5432
Toll Free: 800. 608. 8387
Fax: 608. 504 .2594
Wisconsin Veterinary Diagnostic Laboratory - Barron
1521 E. Guy Avenue
Barron, WI 54812
Phone: 715-637-3151
Toll Free: 800-771-8387
Fax: 715-449-5052
Email: info@wvdl.wisc.edu
Website: https://www.wvdl.wisc.edu/
Phone: (800) 608.8387
Facebook: https://www.facebook.com/WisconsinVeterinaryDiagnosticLaboratory/
Twitter: @wvdl_lab

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