High Quality Veterinary Diagnostic Laboratory Data Streams:

**Missed Opportunities for Animal Health!**

Director & Professor, Epidemiology
Jacqueline L. Smith
Epidemiologist
*University of Kentucky Veterinary Diagnostic Laboratory*
Missed opportunities?

- Big data
- Near-Real Time
- Increased awareness
  - Local
  - Regional
  - National
  - International
Simple or Complex?
Fort Dodge Animal Health unveils Leptospira vaccine

Oct 01, 2004
By dvm360.com staff
DVM360 MAGAZINE

OVERLAND PARK, KAN.—Fort Dodge Animal Health announces its introduction of LeptoVax™ 4, the newest member of the Duramune, line of Leptospira vaccines. Providing a unique standard of protection against canine leptospirosis, LeptoVax 4 includes the most relevant Leptospira serovars grippotyphosa, pomona, icterohaemorrhagiae and canicola, the company says.

Leptospirosis is a potentially life-threatening disease and is reported to be the number one infectious cause of acute renal failure in dogs. The primary reservoir for these newly recognized serovars are commonly encountered wildlife, such as raccoons, opossums, skunks and rodents. This means virtually all dogs are at risk of being exposed—whether they live in a rural environment or in a suburban neighborhood.
Corynebacterium pseudotuberculosis
National Equine Study, 2012-2014

Frequency of Corynebacterium pseudotuberculosis infection in horses across the United States during a 10-year period

Isabelle Kilcoyne, DVM, Sharon J. Spier, DVM, PhD, Craig N. Carter, DVM, PhD; Jacqueline L. Smith, DVM, Amy K. Swinford, DVM, MS; Noah D. Cohen, VMD, MS, PhD

Objective—To quantify the number of horses with Corynebacterium pseudotuberculosis infection identified in the United States from January 2003 through December 2012.
Design—Cross-sectional study.
Sample—State veterinary diagnostic laboratory records of 2,237 C pseudotuberculosis culture-positive samples from horses.
 Procedures—44 state veterinary diagnostic laboratories throughout the United States were invited by mail to participate in the study. Data requested included the number of C pseudotuberculosis culture-positive samples from horses identified per year, geographic location from which the C pseudotuberculosis culture-positive sample was submitted, month and year of sample submission, breed and age of horses, and category of clinical manifestation (ie, internal infection, external infection, or ulcerative lymphangitis).
Results—Of the 44 invited laboratories, 15 agreed to participate and provided data on affected horses from 23 states. The proportion of C pseudotuberculosis culture-positive samples submitted during 2011 through 2012 (1.213/2,237 [5%]) was significantly greater than that for the period from 2003 through 2010 (1.024/2,237 [46%]). Corynebacterium pseudotuberculosis was recovered from horses in states where the disease has not been previously recognized as endemic. Affected horses were identified year-round. The greatest proportion of C pseudotuberculosis culture-positive samples was identified during November, December, and January (18/2,237 [8%]). No significant association between the clinical form of disease and age of breed of horse was observed.

Conclusions and Clinical Relevance—The occurrence of C pseudotuberculosis infection in horses increased during the 10-year period, and affected horses were identified throughout the United States. Further studies to determine changes in annual incidence and to identify potential changing climatic conditions or vector populations associated with disease transmission are warranted to help control the occurrence and spread of C pseudotuberculosis infection in horses. (J Am Vet Med Assoc 2014;245:309-314)

- 44 labs invited to participate
- Only 15 agreed to participate
- Increased infections—climate related?
Zoetis introduces first licensed equine leptospirosis vaccine

New LEPTO EQ INNOVATOR® helps protect horses from leptospirosis caused by L. pomona.

FLORHAM PARK, N.J., Nov. 10, 2015 — Today Zoetis announced the introduction of LEPTO EQ INNOVATOR®, the first and only vaccine licensed for use in horses, six months of age or older, to aid in the prevention of leptospirosis caused by Leptospira interrogans serovar Pomona, known as L. pomona. A recent study supported by Zoetis showed 75% of healthy horses have been exposed to at least one leptospiral serovar.¹ As clinical signs associated with leptospirosis are non-specific, disease in horses likely occurs more frequently than is diagnosed, and exposure to Leptospira may be more prevalent than was previously understood.

- 28 states participated
- Of 1495 horses, 45% serological incidence demonstrated nationally
- Zoetis commits to L. pomona vaccine development
USDA APHIS VS National Animal Health Laboratory Network (NAHLN) Antimicrobial Resistance Pilot Project

- USDA funded
- Joint working group to standardize data
- 19 diagnostic laboratories participated
- Four pathogens studied, 3218 isolates
- Very successful but...
- Why not standardize data when captured by LIMS?
National VDL Mapping Initiative—
AAVLD/USAHA Resolution—Passed in 2017!
OMG!
NAHLN laboratories have not adopted a standardized veterinary nomenclature for their LIMS!!

- Data sharing, combining, summarizing, and analysis difficult at best
- Near real-time products not possible
- National VDL data driven studies grueling!
OHHHHH!
What to do?
2017 Resolution Approved! 😊

AAVLD & Joint AAVLD-USHA Committees

Title: Develop and implement a national and regional GIS mapping of high quality data streams captured by veterinary diagnostic laboratories to improve animal health situational awareness and monitoring of reportable and non-reportable animal diseases. The University of Kentucky is willing to provide hosting and technical assistance for this pilot project.
2019 Resolution:
Standardized Veterinary Nomenclature across all NAHLN member laboratories
LIMS by 2024
2019 RESOLUTION (Pre-Epi Meeting)

The AAVLD and the United States Animal Health Association feels strongly that all NAHLN laboratories be required to implement a standardized veterinary nomenclature system such as SNOMED CT in their respective Laboratory Information Management Systems (LIMS) by 2024. This would facilitate the production and use of near real-time monitoring, mapping, alerting, reporting systems and peer-reviewed scientific publications to provide better situational awareness and to advance scientific knowledge to improve animal health and welfare in the U.S. **This can be accomplished through increased AAVLD laboratory accreditation and NAHLN member lab requirements for Level 1 & 2 NAHLN member laboratories.** This can be funded by NAHLN cooperative agreements or State and Federal funding (e.g. NIFA and other grants). Experts on standardized nomenclature and terminology for veterinary software applications serve on the AAVLD Informatics Committee. Furthermore, members of the Association for Veterinary Informatics, the staff of the Veterinary Medical Informatics Laboratory at the Virginia-Maryland College of Veterinary Medicine (Drs. Jeff Wilke and Julie Green) and the Veterinary Medical Data Base program group (Dr. Wayde Shipman and Kathy Ellis) are all excellent resources that can assist with this initiative.

https://www.avinformatics.org/
https://vmdb.org/
2019 RESOLUTION (Post-Epi Meeting)

The AAVLD supports formation of a committee of representatives of veterinary diagnostic laboratories to develop and implement a standardized veterinary nomenclature system such as SNOMED CT for bacterial, viral, and protozoal etiologies of bovine abortion in Laboratory Information Management Systems (LIMS) by 2024. The intention would be to subsequently expand standardized veterinary nomenclature beyond bovine abortion. Standardizing veterinary nomenclature can facilitate data summarization and sharing, and improve situational awareness of economically important animal diseases.