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News

Avian Influenza Update by: Drs. Mohamed El-Gazzar and Richard Slemons

Since December 2014, H5 highly pathogenic avian influenza (H5 HPAI) viruses have been detected in British Columbia, Canada and in six states in the Pacific Migratory Bird Flyway in the United States, Washington, Oregon, California, Utah, Idaho, and Nevada. Migratory wild birds appear to be playing a prominent role in the spread of these H5 HPAI viruses. Three different strains of influenza viruses have been detected and include: H5N1, H5N2, and H5N8. In spite of being three different virus strains, the viruses appear to have similar origins related to the Eurasian H5N8 influenza virus that has circulated in Asia and Europe throughout 2014. Both of the newly detected H5N2 and H5N1 viruses emerged as a mixture, having some gene segments from the Eurasian HPAI H5N8 and some gene segments from the domestic low pathogenic North American influenza viruses.

Since March 2015, only the H5N2 version of the virus had spread east to the Central and the Mississippi flyway, and was detected in 7 more states, Montana, Wyoming, South Dakota, Minnesota, Missouri, Kansas and Mississippi. Most recently The Canadian Food Inspection Agency has confirmed a case in Ontario, less than a 100 miles north of Lake Erie. In addition to migratory birds, these viruses have been recovered from sick captive birds, backyard poultry and from commercial poultry flocks in Canada and the United States. While the virus has been detected in other states in the Midwest and Canada, this virus has **NOT** been detected in the State of Ohio, neither in commercial nor in noncommercial poultry. However, and out of precautionary measures, we propose that current **BIOSECURITY** programs be reviewed for compliance and **ALL NECESSARY MEASURES ARE TAKEN TO PREVENT ANY CONTACT BETWEEN DOMESTIC POULTRY OR CAPTIVE BIRDS AND WILD BIRDS**.

This group of HP H5 AI viruses is highly pathogenic in poultry and wild captive birds including raptors, causing severe clinical illness and high mortality. This should allow for early detection and reporting of any infected poultry. Ducks are an exception in that regard; they show much milder, if any, clinical signs. Many Asian countries are having difficulty controlling H5N8 HPAI because clinical signs in domestic and wild duck populations are not observed or very mild allowing the infections to go undetected. This means that special attention should be paid to duck populations including wild, noncommercial and commercial. Also this is why mixed species backyard flocks, including ducks, require very careful monitoring and increased biosecurity programs. The

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practice of mixing poultry species is highly discouraged. On the other hand, and from all that is known about this group of H5 HPAI viruses, they **ARE NOT CONSIDERED A HUMAN HEALTH CONCERN**. These viruses have never been reported to infect humans, not in North America, not in Europe, nor in Asia. Therefore, **POULTRY AND POULTRY PRODUCTS ARE SAFE TO CONSUME** as long as they are properly handled and cooked.

While surveillance efforts are essential in planning prevention, control and eradication strategies, they are rarely, if ever, in real time! Detection of the viruses in new geographic areas is frequently after the horse is out of the barn (in this case after the virus has been present in the area for varying lengths of time). With the possibility that these viruses could persist as HPAI viruses in wild birds and/or backyard flocks and continue to spread in North America, preventing infections in the commercial poultry industries, backyard poultry, and specialty birds will be dependent upon: 1) targeted active education programs, 2) instituting biosecurity protocols appropriate to address the new threat, and, 3) in the worst case scenario, have established up-to-date eradication and operating plans in the event these HP viruses gain access to commercial poultry. Also, assuring consumers that poultry products are safe will also require attention.

The purpose of this communication is intended to raise the awareness of poultry professionals, poultry producers and poultry owners and to alert them to the current influenza situation in The U.S. This is also intended to encourage the tightening of **BIOSECURITY** measures around all poultry (commercial and noncommercial) in order to reduce the risk of these viruses being introduced into poultry and specialty bird populations.

A map showing all of the confirmed H5 HPAI cases is all attached to this e-mail message.

For more information and updates on confirmed H5 HPAI cases, please visit the USDA website at : **http://go.osu.edu/USDA_avian-influenza**

Research

Fuenzalida, M. J., Fricke, P. M., & Ruegg, P. L. (2015). **The association between occurrence and severity of subclinical and clinical mastitis on pregnancies per artificial insemination at first service of Holstein cows**. *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-8997

BACKGROUND: Research on diseases of transition cows is typically focused on cows housed indoors and fed mixed rations. Information on cows receiving the majority of their nutrients from pasture is more limited with high variability between studies, particularly concerning the frequency and method of disease recording. In addition, few studies have explored whether other analytes related to energy metabolism may also be associated with postpartum health. Thus, additional research is needed to determine if concentrations of cholesterol during the transition period may be useful to identify cows with an energy imbalance that predisposes them to postpartum diseases.

PURPOSE: The objectives were to describe the incidence of postpartum diseases and to investigate their relationships with serum cholesterol concentrations during the first 3 weeks after calving in grazing dairy cows. The associations between NEFA, BHBA, calcium, and postpartum diseases were also evaluated, as was the relationship between these metabolites and cholesterol.

RESULTS: Overall, 56% of the cows studied developed at least one clinical or subclinical disease after calving. Incidence of individual diseases was 8.8% for retained placenta, 4.2% for clinical hypocalcemia, 11.7% for clinical mastitis, 41.1% for metritis, 19.9% for subclinical hypocalcemia, and 16.6% for subclinical ketosis. Lower postpartum cholesterol in cows was associated with developing severe metritis or having more than one clinical disease after calving. For every 0.4 mmol/L decrease in serum cholesterol, cows were nearly twice as likely to be diagnosed with multiple clinical diseases after calving. Higher BHBA concentrations and lower calcium concentrations during week 1 were associated with severe cases of metritis. Low serum calcium concentration during week 1 was also associated with developing more than one clinical disorder after calving.

CONCLUSIONS: The incidence of clinical and subclinical diseases after calving can be high on pasture-based farms. Lower serum cholesterol was associated with the occurrence of severe metritis and multiple disease events, suggesting that this is a useful metabolite for monitoring health status after calving.

ACCESS THE ARTICLE…

Wadsworth, B. A., Stone, A. E., Clark, J. D., Ray, D. L., & Bewley, J. M. (2015). **Stall cleanliness and stall temperature of two different freestall bases**. *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-8965

BACKGROUND: Previous studies show that 32.6% of dairy operations use confinement freestall housing to house 60% of all lactating cattle in the U.S. These freestalls are the primary location where cows come into contact with moisture and manure, thus, affecting overall cow hygiene, udder cleanliness, risk of mastitis, and animal well-being.

PURPOSE: The objective was to describe the differences of freestall cleanliness and stall temperature between a barn with Dual Chamber Cow Waterbeds (DCCW; Advanced Comfort Technology, Reedsburg, WI) and a barn with rubber-filled mattresses (MAT).

RESULTS: Stall cleanliness was not different between the DCCW barn and the rubber-filled mattress barn. Mean temperature-humidity index throughout the study was 64.39 ± 0.82. Stall temperature was different among temperature-humidity index categories. Temperature-humidity index categories 1 (coldest), 2, 3, and 4 (warmest) had temperature-humidity index ranges of 22.94 to 50.77, 50.77 to 64.88, 64.88 to 78.75, and 78.75 to 101.59, respectively. Stall temperatures (°C; least squares means ± SE) were 2.26 ± 0.30, 8.86 ± 0.30, 15.52 ± 0.30, and 20.95 ± 0.30 for temperature-humidity index categories 1 to 4, respectively. Stalls with rubber-filled mattresses had a lower temperature (°C) than DCCW with least squares means ± SE of 10.52 ± 0.21°C and 13.29 ± 0.21°C, respectively.

CONCLUSIONS: Stall cleanliness was not different between the DCCW freestall barn and the MAT freestall barn. Although cow cleanliness and milk quality were not evaluated in this study, future research projects may focus on all of these aspects combined. Stall temperatures increased as temperature-humidity index increased. Both freestall barn stall bases held heat well, but stall temperatures were significantly greater in the DCCW barn compared with the MAT barn. Dual Chamber Cow Waterbeds may have more of a heat insulating effect compared with MAT. These factors should be considered when determining the usefulness of stall bases on farms.

ACCESS THE ARTICLE…

Sura, S., Degenhardt, D., Cessna, A. J., Larney, F. J., Olson, A. F., & McAllister, T. A. (2015). **Transport of three veterinary antimicrobials from feedlot pens via simulated rainfall runoff**. *Science of the Total Environment*. Advance online publication. doi: 10.1016/j.scitotenv.2015.03.080

BACKGROUND: Surface runoff and leaching appear to be major transport pathways by which veterinary antimicrobials eventually contaminate surface and ground water, respectively. To minimize transport of veterinary antimicrobials, antimicrobial resistant pathogens and resistance genes, steroid hormones, and nutrients from feedlots and manure storage sites via rainfall/snowmelt runoff, catch basins can be installed within these facilities to contain runoff. Catch basins (also known as retention ponds or runoff holding ponds) are designed as temporary storage facilities for runoff.

PURPOSE: The objectives were to determine how the concentrations of three veterinary antimicrobials (chlortetracycline, sulfamethazine, and tylosin) commonly administered to beef cattle in Canada, differed among bedding and non-bedding areas in feedlot pens, to determine how the concentrations of these veterinary antimicrobials varied with time in simulated rainfall runoff from the pens, and to quantify the amount of each antimicrobial that could potentially be transported to the catch basin.

RESULTS: Runoff rates were affected by the location within the pens. More runoff was generated per volume of rainfall from the non-bedding area of the pen compared to the bedding area. The volumetric runoff coefficients (VRCs) were in the range reported by other studies in Alberta, suggesting that the bulk densities of material in the research feedlot were similar to those in other feedlot facilities. The concentrations of all three antimicrobials were higher in the runoff from bedding area than those in runoff from non-bedding area reflecting the higher concentrations of antimicrobials in this region of the pen. Among the three antimicrobials, the proportion of antimicrobial transported in the runoff to that in the pen floor material was highest for sulfamethazine, followed by tylosin and chlortetracycline, respectively, reflecting the effects of water solubility and sorption coefficient on their transport in runoff.

CONCLUSIONS: The authors concluded that this study demonstrates the magnitude of veterinary antimicrobial transport in feedlot pen runoff and supports the necessity of catch basins for runoff containment within feedlots.

ACCESS THE ARTICLE…

Calendar

A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at **http://vet.osu.edu/**

Ohio Dairy Health and Management Certificate Program

Module 5 – Leadership and Personal Effectiveness
May 28-29, 2015
Hilton Garden Inn, Columbus, Ohio

Dairy Reproduction & Genomics Workshop

May 7, 2015 (9:30 a.m. – 3:00 p.m.)
Der Dutchman Restaurant, Plain City, Ohio
Registration is free and lunch will be provided!

Poultry Health Management Schools

Animal Disease Diagnostic Laboratory, Reynoldsburg, Ohio

Turkey & Broiler Health Management School
May 4-5, 2015

Layer Health Management School
May 6-7, 2015

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