In the News –
Congratulations to Allison Hale (Class of 2020) for her Merck Bovine Veterinary Student Recognition Award! She was one of 18 veterinary students from across the country to be recognized at the American Association of Bovine Practitioners Annual Conference in Phoenix, Arizona, September 14th. Her application was evaluated based on interest in bovine medicine, work experience, academic & professional experience, career goals, and recommendations. Well done!

Allison Hale
Antimicrobial Stewardship and the FDA
On Friday, September 14, 2018, the US Food and Drug Administration released its 5-year plan for supporting antimicrobial stewardship in veterinary settings. Although we have seen food animal producers and veterinarians as the focus of most antimicrobial resistance discussion over the last 2 decades, this document also includes companion animal veterinary practice. WSU Veterinary Medicine Extension is already working on a project to develop continuing education on antimicrobial stewardship for cattle veterinarians to be delivered next year. The American Veterinary Medical Association is considering something for all veterinary practice types and has a document of stewardship guidelines for practitioners. Also look to the Washington State Veterinary Medical Association social media messages on Antimicrobial Stewardship for practitioners every month for a year starting in October.

Beef: Registration Open for 2018 Stockmanship & Stewardship Regional Event

A recent news release about a survey done by Merck Animal Health U.S. beef producers and veterinarians indicated that the most important topic where training is needed was animal handling. Cattle producers can get this training by registering now for the Stockmanship & Stewardship Regional event which will be held at the TRAC facility in Pasco, Wash., on October 12-13 and will feature stockmanship experts Curt Pate and Ron Gill.

Stockmanship & Stewardship is a unique two-day educational experience featuring low-stress cattle handling demonstrations, Beef Quality Assurance (BQA) educational sessions to best run your operation and industry updates. With a regional focus in mind, the planning committee of Washington, Idaho and Oregon Cooperative Extension staff will be sharing applicable research in
beef production, animal health as well as range and pasture management for Pacific Northwest beef producers.

“Improving your stockmanship skills is a very low cost, high return investment of time and money to improve profit and the quality of life for humans and animals,” said stockmanship expert Curt Pate, “and that’s what the Stockmanship & Stewardship programs are all about.”

By attending this Stockmanship & Stewardship event, producers will have the opportunity to become BQA certified, network with fellow producers, partake in hands-on demonstrations from stockmanship experts as well as learn grazing management techniques. There will also be a Youth for the Quality Care of Animals (YQCA) certification which many local fairs are now requiring of their youth exhibitors.

“These events allow producers to network with one another and learn from industry experts about real world solutions to everyday problems they encounter on their operations,” said Chase DeCoite, the director of Beef Quality Assurance for NCBA. “Beyond animal handling, each of these events incorporates valuable information about animal health, environmental stewardship, and much more.”

The program is sponsored by the National Cattlemen’s Beef Association (NCBA), Boehringer Ingelheim, and the checkoff-funded National Beef Quality Assurance program. To learn more and register for the upcoming Stockmanship & Stewardship event, visit www.StockmanshipAndStewardship.org and click on the Pasco WA meeting.

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**Dairy: Milk Allowance for Calves Can there be Too Much of a Good Thing?**

by Dale A. Moore, Extension Veterinarian, WSU

Dairy nutritionists used to recommend that we feed a calf 10% of its body weight in milk or milk replacer. For a 100 lb calf that means about 4.5 L or 4.75 quarts per day. However, over the last decade or more, we have evidence that feeding more milk than that is good for the calf -- better weight gain, immune system development and response, and disease resistance -- and good for milk production in their first lactation. But, how should we be providing that extra milk or milk replacer? Should we step up their liquid feeding or feed it all at once? What effect does feeding more milk have on the calf?

In the September issue of the *Journal of Dairy Science* is a report from investigators in the Upper Mid-west looking at differences in calves fed a gradual increase in pasteurized milk (incremental group) to those fed a large amount from day two of life. Over 1,200 calves were enrolled in the study from 5 farms. Calves in the incremental group were slowly increased to a 6 to 8 liter per day-feeding over the first two weeks of life compared to the fixed-fed calves that received 6 to 8 liters
per day from the second day of life. The researchers looked at differences in weight gain, hip height, and disease rates (from farm treatments as well as technician health scores).

Calves in the fixed feeding group gained 3 lbs more (on average) and were slightly taller at the hip by the third week of age compared to the incremental group (controlling for all other important factors). There was no effect of feeding program on the odds of being treated or having a clinical score indicating they were ‘sick’ with diarrhea or respiratory disease. The mortality rate across all farms was 1.5% and there was no difference between the feeding groups.

The results indicate that the calves will gain weight better and not be at risk for scours with higher feeding levels (6 to 8 liters) in early life, as some might fear ‘nutritional scours’. The authors suggest that some producers or farm employees might categorize the softer stools of calves drinking more milk with being diarrhea, but these calves do not really need to be treated (see the reference on calf health scoring below). More milk is better!

References

Dairy: Selective Dry Cow Therapy
by Craig McConnel, Extension Veterinarian, WSU

Selective dry cow therapy is based on only using intramammary antibiotics at dry-off to treat those cows that have been identified with previous or current intramammary infections. The methods used to identify cows to treat (or not) include 1) reviewing histories for previous episodes of clinical mastitis or high somatic cell counts (SCC), 2) performing individual quarter SCC tests at the time of dry-off, or 3) identifying active intramammary infections through the use of bacteriologic culture or molecular diagnostics such as PCR. However, as Dairy Herd Management said in March of this year, the jury is still out regarding the use of selective dry cow therapy. Well-managed herds may be able to employ a successful selective dry cow therapy program, but there remain reasons for dairies to consider the use of blanket therapy to cure existing and new intramammary infections.

Economic considerations are driving much of the conversation around selective dry cow therapy, highlighted by two recent articles published in the Journal of Dairy Science. Scherpenzeel et al (JDS, Vol. 101, No. 2, 2018) developed a mathematical model to show the economic optimization of selective dry cow therapy on Dutch herds. Predictably, they demonstrated that the optimal percentage of cows to be treated with antimicrobials at dry-off is dependent upon the udder health situation, described through bulk tank SCC and the incidence of clinical mastitis. The primary take-home message was that the economic benefits gained through improved udder health outweigh the cost savings simply due to restricting the use of dry cow antibiotics. Consequently, it was suggested that blanket dry cow therapy might be the choice of dairies necessarily focused on udder health risk avoidance. That said, there was no economic benefit to using more dry cow therapy than necessary, and the prudent use of antibiotics and efforts to improve animal well-being make an argument for trying to reduce bulk tank SCC and clinical mastitis incidence overall.

A second article by Vasquez et al (JDS, Vol. 101, No. 6, 2018) utilized a culture-dependent, on-farm algorithm to guide the use of selective dry-cow antibiotic therapy on a New York State
commercial dairy. Cows were identified as low risk (cows that might not benefit from dry-cow antibiotics) or high risk (cows that would likely benefit). Low-risk cows were those that had all of the following: SCC ≤200,000 cells/mL at last DHIA test, an average SCC ≤200,000 cells/mL over the last 3 tests, no signs of clinical mastitis at dry-off, and no more than 1 clinical mastitis event in the current lactation. The expected dry period had to be <100 days, and each low-risk cow could not have been treated with antibiotics in the last 30 days. Utilizing only on-farm data eliminated the need for microbiologic or cow-side methods that require labor, time, and money.

Low-risk cows were randomly assigned to receive intramammary antibiotics and external teat sealant, or external teat sealant only at dry-off. In this study, not using the antibiotic at dry-off in low-risk cows did not have adverse effects on new intramammary infection risk, milk yield, first-test linear score, clinical mastitis, or culling as compared with low-risk cows that were treated with antibiotics at dry-off. However, antibiotic-treated quarters were more likely to be bacteriologically cured. That said, 95% of the non-cures were due to minor pathogens and contributed to only a single case of clinical mastitis in low-risk cows.

Ultimately, the use of selective dry cow protocols has the potential to reduce the risk of bulk tank antibiotic residues and minimize the potential for antimicrobial resistance. It appears that well-managed dairies have the potential to reduce dry cow antibiotic use by approximately 60% without negatively impacting intramammary infection risk, or cow-level production and health outcomes. The willingness and ability of producers to adopt a selective treatment strategy at dry-off is reliant upon accurate, easily accessible, and cost-effective methods to identify cows. The challenge is in identifying those dairies that can successfully implement selective dry cow treatment algorithms and reserve antibiotic treatment for cows that will benefit the most.

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**Sheep: Preparing for the Breeding Season**

*by Dale A. Moore, Extension Veterinarian, WSU*

Many sheep flock owners have made their plans for the coming breeding season. For those of you still getting ready, here are some considerations:

1. Check all sheep feet and trim if necessary. Cull those chronically lame.
2. Are ewes and rams in good body condition? Do you have time to get them ready?
3. Have you considered culling the ewes that -
   a. were bad mothers last year
   b. were late to lamb
   c. had difficulty lambing
   d. prolapsed
4. Got your record-keeping system together?
5. Have the rams passed their breeding soundness exams?
6. Is everyone vaccinated and dewormed?

For a Sheep Gestation Table and Lambing Date Calculator (Dr. Bulgin in Idaho) go to: [http://www.tvsp.org/gestation.html](http://www.tvsp.org/gestation.html)

If you are interested in detailed information of sheep reproduction, go to: [http://www.omafra.gov.on.ca/english/livestock/sheep/facts/12-037.htm](http://www.omafra.gov.on.ca/english/livestock/sheep/facts/12-037.htm)
Swine: Preventing Influenza Transmission Between People and Pigs: Posters, Reports, and Graphic Novellas
By Minden Buswell, DVM MPH, WSDA

Recently, SPRS One Health Coordination Center (OHCC) and Swine Health Staff, along with USDA’s National Institute of Food and Agriculture (NIFA), worked with the Centers for Disease Control and Prevention (CDC) to develop a new CDC and USDA co-branded “flu transmission graphic” that illustrates how influenza viruses can be transmitted from pigs to people, and from people to pigs. OHCC and Swine Health staff reached out to the National Pork Board for review of the graphic and accompanying text. CDC took our combined edits, and the new graphic is now available on several URLs, including:
- Key facts about variant viruses https://www.cdc.gov/flu/swineflu/keyfacts-variant.htm

This release is timely, given the recent detection of variant influenza cases associated with exposure to pigs at fairs this year. CDC reports these cases via FluView (the Weekly U.S. Influenza Surveillance Report at https://www.cdc.gov/flu/weekly/fluactivitysurv.htm

CDC is also releasing a graphic novella about a case of variant influenza infection in a 4-H exhibitor, discussed in previous SPRS NOTES. CDC will begin active social media promotion. Our APHIS Legislative and Public Affairs office plans to amplify their message via our social media channels.

The CDC website hosting the graphic novel also will launch at the same time. The URL is www.cdc.gov/flu/graphicnovel.

WSDA Corner
Virulent Newcastle Disease (vND)
by Dr. Brian Joseph, WSDA State Veterinarian

The Washington State Department of Agriculture asks local poultry growers to be on the lookout for signs of Virulent Newcastle Disease (vND) and to report any unusually large numbers of poultry deaths or the appearance of symptoms of the disease to the WSDA Sick Bird Hotline at 1-800-606-3056.

The warning comes on the heels of an outbreak that began this May in Southern California, where the virus appeared and spread through backyard poultry flocks in Los Angeles, Riverside and San Bernardino counties. The disease, commonly known as exotic Newcastle disease, can be financially devastating because it spreads quickly with high rates of illness and mortality for domestic poultry. The vND virus can infect many bird species including chickens, turkeys, ducks, geese, and game birds. Infected birds shed large amounts of virus in respiratory fluids and feces. Backyard chickens are at greater risk and are highly susceptible because they can be “silently” infected by other birds, such as parrots, that show few or no signs of illness.

Clinical signs may include: swelling of the area around the eyes and neck, dripping of fluid from the beak and nasal area, coughing, sneezing, twisting of the head and neck, greenish diarrhea, decreased appetite, decreased production and sudden death.
No commercial poultry operations have been affected so far and properly cooked poultry poses no risk when consumed. The virus does have a limited potential to infect people and some people exposed to high viral levels have developed conjunctivitis or mild flu-like symptoms.

Wild birds such as the double crested cormorant (*Phylacrocorax auritus*), a common resident of coastal Washington, carry the virus and their populations are subject to intermittent vND outbreaks and numerous deaths. But the virus has not been detected in any domestic poultry in Washington state. For poultry, the virus can be transferred between facilities on clothing, feed, equipment or by moving birds, which may appear unaffected.

**Prevention through biosecurity**
The key to preventing vND infection is to practice consistent biosecurity. Recommendations from CDFA include:
- Use dedicated clothing and footwear or wear disposable coveralls and booties when visiting birds
- If exposed to poultry waste, change clothes and footwear, disinfect any items used and wash your car
- Use foot baths for the bottoms of shoes or plastic bottles at entry/exit of poultry enclosures
- Practice good hygiene for your hands and disinfect equipment
- Prevent wild birds from entering poultry enclosures
- Carcasses of dead birds should be double bagged in plastic garbage bags
- DO NOT dump bird carcasses on the roadside or other exposed locations
- Avoid gatherings where poultry are present
- Avoid sharing or borrowing equipment from other poultry owners
- Avoid moving your birds or purchasing new additions unless they are from an NPIP certified seller.

Vaccination can reduce shedding, limit the severity of illness and prevent death of poultry, but it does not prevent infection. Vaccines are available at feed stores and through veterinarians.

**California outbreak response**
California’s Department of Food and Agriculture (CDFA) and the USDA Animal, Plant and Health Inspection Service have marshalled resources to contain and eradicate the Southern California outbreak. Federal and California state officials are conducting active surveillance visits, sick bird calls, outreach education and investigating epidemiological links. Control Areas and Surveillance Zones have been established, based upon disease risk, around infected premises. Premises in the Control Areas and some in the Surveillance Zones have been quarantined.

Large outbreaks of vND occur periodically in commercial poultry and have been traced to backyard and smuggled poultry. A 1971 outbreak in southern California resulted in the loss of 12 million birds at a cost of $56 million. A 2002/2003 outbreak in California, Nevada, Arizona, Texas and New Mexico resulted in the depopulation of 4 million birds on 2,662 premises at a cost of $160 million.

**No Bones About It…..Planning For Mass Animal Mortality Events Is Critical**
*By Dr. Dana Dobbs, WSDA Field Veterinarian*

As a livestock producer, encountering random animal mortalities is a fairly common event on the farm or feedlot. Disposing of deceased animals typically includes burial, composting, landfills, or commercial rendering. However, in the event of a natural disaster, infectious disease, or chemical, biological or nuclear attack, what then? Here are some options on how to handle multiple dead animals at once while considering the potential impacts on human health, other livestock, and the environment.
I recently attended the 6th International Symposium on Animal Mortality Management in Amarillo, Texas, held between June 3-7, 2018. The last leg of the flight was on a “puddle hopper” with an emergency door handle taped shut during which various metallic clanking noises raised several eyebrows. I found myself sitting next to an extremely friendly Amarillo native who asked, “I’m just dying to know what kind of conference could possibly be hosted in Amarillo?” I thought that choice of words was rather fitting, but I digress.

The conference brought together subject matter experts on animal carcass disposal, including international guests. Through lectures and discussions, common themes emerged for considering which disposal method might be appropriate in a given circumstance. There is no “one size fits all” approach and several factors must be determined. However, one issue raised its ugly head time and time again - most people don’t have a plan for a mass animal mortality event. This includes some commercial operations, feedlots, and small family farms, which I found alarming.

Hence, this article will cover burial, composting, landfills and rendering, even though incineration, carcass digestion (alkaline hydrolysis), open air burning (not recommended due to environmental considerations), and natural decomposition may also be considered. The list below is by no means inclusive, nor is it meant to be a detailed discussion of methodology. However, it should get the wheels turning in the right direction while providing observations and tips for planning purposes.

1. Burial: Generally, this should occur within 72 hours of death or discovery. This method can involve deep pit or shallow burial sites, but in either case, consider the proximity to water sources such as wells, irrigation, ground water, ponds, streams, nearby residences, leachate (when water or other fluids pass through decomposing bodies, they may pick up potentially harmful substances that “leach” into the environment), failure of carcasses to degrade, odors, applicable regulations for burial, etc. Here are some general tips:

   If body parts are protruding out of the dirt, the burial is insufficient. I have actually encountered this during inspections, believe it or not! The entire carcass should be covered by at least 3 feet of soil.
   - Shallow burial pits (above ground, within a 24” trench) are an option when the potential to contaminate ground water or cost are primary concerns. This method is easy, quick, and about a year later, the pile can be spread out and farmed over depending on the animal species, pathogen, or reason for the animal’s demise. This is NOT a good method if Anthrax is suspected!
   - Fire makes soil hydrophobic, meaning it repels water. Proper burial and decomposition requires a certain moisture balance, so this soil condition would not be ideal. Conversely, a flood creates the opposite effect, creating wet animals and soil that isn’t conducive to burial whatsoever.
   - In general, smaller, divided pits seem to work better than one long trough. Carcasses should be evenly spread, and despite popular belief, lime does NOT increase the rate of decomposition.

*Example of a deep burial pit vs. shallow, or “above ground” burial. The model depicts the shallow burial site in the background.*
2. **Composting**: Composting should be considered whenever possible due to its minimal impact on the environment, ability to inactivate most pathogens, and its potential use as fertilizer after carcass decomposition. This can be accomplished in house, such as within a poultry barn, or outside. However, the cause of death or pathogens must be strongly considered before outside composting is used, especially if there are unfavorable conditions, such as poor weather, pests, predators, and if the pile is destined to be spread over farm land.

- During composting, microbes use moisture, carbon, nitrogen, and oxygen to naturally decompose carcasses. This generates heat, which kills viruses and bacteria. For poultry composting, daily temperature readings are taken from the windrow (compost pile), and once it reaches an average of 131 degrees Fahrenheit for at least 72 hours, the pile is turned. This process typically requires two, 14-day periods, or about a month, to complete. Composting times vary depending upon the animal species involved. As expected, large animals will take longer to degrade.
- Composting large quantities of animal carcasses is a controlled process that requires expertise and frequent monitoring. It is not as quick as some other methods, but very efficient when done correctly.
- Identifying a source of carbon (i.e. wood chips, straw, corn stover, yard trimmings, sawdust, etc.) BEFORE a high mortality event occurs is critical and often overlooked.
- Farmers usually have front loaders, skids, and other equipment on site, along with skilled operators. If willing or emotionally able, they may be able to assist with the composting process during a response.

![Example of a compost pile with a thermometer inserted and netting to discourage predators. The skeletal remains were uncovered to show the progress of decomposition after just 2-3 months.](image)

3. **Landfills**: Landfills provide an excellent opportunity to safely dispose of large numbers of carcasses and should be identified well in advance of an animal mortality event. Modern landfills have mechanisms in place (such as liners) to contain leachate and help prevent the spread of disease. However, you will need approval from local health officials and landfill operators, as well as applicable permits or Memorandums of Understanding (MOU). Some landfills may be unwilling to accept diseased animals during an outbreak, so having relationships established ahead of time is essential.

- In landfill operations, consider how many animals are involved and the capacity of the facility to handle the load. There must also be protocols in place for addressing leachate, odors, scavengers, wildlife exposure, and possibility of disease transmission.
- Dedicated trucks with leak-proof trailers, drivers, appropriate routes, and decontamination procedures will need to be established in a high mortality event. Strict biosecurity practices are critical to prevent transmission of disease, and drivers must be educated and provided with personal protective equipment (PPE) for their safety.

4. **Rendering**: Licensed rendering plants offer an inexpensive and environmentally safe animal disposal option under normal circumstances. However, during an outbreak, some rendering plants may refuse diseased animals, or may not have the capacity to perform this function. Additionally,
an outbreak or disaster could have significant impact on daily operations and affect normal commerce. As with landfills, having relationships and MOUs established in advance is imperative. Rendering is a process of using boiler steam to convert an animal carcass into pathogen free by-products. The carcass is ground and essentially “cooked” at a temperature between 250-280 degrees Fahrenheit. Typical by-products include fat (lard), meat and bone meal, and blood meal, which can be used for animal feed, cosmetics, and other items. With regards to transportation of carcasses to the facility, the same precautions as mentioned with landfills apply.

There are many other options available for carcass disposal, though some may not be feasible or appropriate during a natural disaster or for the containment and eradication of a disease. An example of this would be a farmer allowing several cattle to naturally decompose on only a few acres next to a neighbor’s house. Conducting a detailed risk analysis and using a team approach will help determine which method is best.

Finally, during the conference, we had the opportunity to visit several producers and commercial livestock operations. Very few of them had a plan for carcass disposal in the event of an emergency. This was particularly eye opening, considering the enormous concentration of livestock in the Texas and Oklahoma panhandle areas.

So, the take home lesson was don’t wait for a natural disaster or disease outbreak to strike before making emergency response plans that include animal carcass disposal. Participate in local or government training exercises whenever possible, establish relationships, and be prepared. This will help prevent the spread of disease, minimize losses, and enhance human, animal, and environmental health. After all, isn’t that what the “One Health” concept is all about?

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What’s New at WADDL: New Facility Becomes a Reality

Groundbreaking for new WADDL laboratories will begin in September 2018. The 60,000 sf, $60M facility will directly adjoin the Global Animal Health Research Facility housing the Paul G. Allen School for Global Animal Health in the College of Veterinary Medicine on the WSU-Pullman Campus.

Since occupying the Bustad Hall laboratories in 1978, WADDL has grown into one of the premier animal disease diagnostic laboratories in the nation and far outgrown its current laboratories in Bustad Hall. The new facility will provide the enhanced sample security and workflow, biosafety, and biosecurity (animal, public and environmental health) required for the testing capacity, complexity and regulatory compliance of a modern medical testing laboratory. The facility will also optimize synergy of the Allen School and WADDL to develop 21st century animal and human health solutions.
diagnostic tests, implement innovative infectious disease surveillance tools, and train the next of
generation scientists and diagnosticians to advance global health security.

The new WADDL facility will contain disease detection, research, and development laboratories
and will serve as a teaching laboratory for educating veterinary (DVM), post-DVM and other health
professionals, undergraduate and graduate students, and international trainees as a part of the
Allen School and the Department of Veterinary Microbiology and Pathology education programs.
The instructional laboratories provide a unique opportunity for learning modern disease diagnostic
and surveillance techniques and biosafety/biosecurity practices in an active, high quality, working
diagnostic laboratory.

WSU-WADDL promotes regional and international trade through “proof of negative” testing for
animal industries, identifies diseases transmissible from animals to humans as a “first alert”, and
keeps foods safe to eat for humans by providing food safety testing. The laboratory is the only
internationally accredited veterinary diagnostic laboratory in Washington State. As such, WADDL is
a disease surveillance laboratory on the front lines of our region’s and nation’s defense against
emerging and foreign diseases and food-borne illness.

A recent economic analysis of veterinary diagnostic laboratories found they play a significant role
to prevent and mitigate endemic disease, a vital role in surveillance and response to outbreaks of
foreign animal disease, and they allow for business continuity in livestock operations, providing a
return on investment of 795% in normal years, and 3,104% during an animal health emergency
(Schulez LL et al. Economic Impact of university veterinary diagnostic laboratories: a case study.
Preventive Veterinary Medicine 151:5-12, 2018). We sincerely thank the taxpayers of Washington
state for investing in a new WADDL facility that greatly enhances our local, regional and national
food and health security.

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**WSU Ag Animal Faculty Research Updates**

(1) Stenkamp-Strahm C, Lombard JE, Magnuson RJ, Linke LM, Magzamen S, Urie NJ, Shivley CB,
McConnel CS. Preweaned heifer management on US dairy operations: Part IV. Factors
Dairy calves shed pathogenic Escherichia coli O157 (O157) in feces and are a potential route of
exposure for human infections. As part of the National Animal Health Monitoring System’s (NAHMS)
Dairy 2014 study, we evaluated farm, animal, and environmental factors associated with O157
presence in dairy heifer calves. For this O157 study, calves were enrolled from 100 dairy operations
in 13 states. Each operation collected data from calves from birth to weaning over an 18-mo
period. A single fecal sample was collected from 487 calves in western states and from 871 calves
in eastern states (n = 1,358 total), and O157 was detected in 2.5% (n = 34) of fecal samples.
Descriptive statistics and univariable screening were used to determine which farm practices,
environmental factors, and calf health measures were associated with O157 detection. Multilevel
logistic models, controlling for dairy operation, were created using backward elimination of
screened variables. The final O157 main effects model included variables for source of colostrum,
temperature-humidity index (THI), and serum IgG concentration. Higher serum IgG was associated
with lower odds of O157 shedding, whereas calves fed colostrum from their own dam had higher
odds of O157 shedding than calves fed colostrum from pooled sources. Interaction models showed
that THI level modified the effect of colostrum source on O157 shedding; calves with a THI
indicative of heat stress had a significantly increased presence of O157 when fed colostrum from a
first-lactation dam. The THI level also modified the effects of serum IgG. *Calves with thermoneutral or heat stress THI values had increased presence of O157 with poor (<10 g/L) or adequate (10-15 g/L) serum IgG levels compared with those having excellent (≥15 g/L) serum IgG levels. These results highlight factors that influence the presence of O157 in preweaned dairy heifer calves and may be used to guide practices that mitigate shedding through improved animal husbandry.*


The objective was to determine associations between behavior during head-lock restraint and reproductive performance in dairy heifers. Behavior of 817 Holstein heifers from four farms was evaluated at feeding (Days 0 and 7) while restrained in a self-locking stanchion. All heifers were assigned a body condition score (BCS; 1, emaciated to 5, obese) on Day 0. Heifers were timed-inseminated on a maximum of three occasions to determine impact of behavior for first service pregnancy per AI (FS-P/AI) and cumulative P/AI (C-P/AI). Ovulation was synchronized with an Ovsynch synchronization protocol for first service and thereafter either Ovsynch and/or prostaglandin F2α-based protocols. More heifers displayed calm escape behavior (P < 0.05) compared with mild or aggressive escape behaviors (45.2, 28.2 and 26.6%, respectively). Adjusting for BCS (P < 0.05), FS-P/AI was greater (P < 0.05) for calm heifers compared with aggressive escape behavior, 58.0% (214/369) vs 48.2% (105/218), with FS-P/AI of heifers with mild aggressive behavior [53.5% (123/230)] intermediate and did not differ from other means. Adjusting for BCS (P < 0.0001), C-P/AI was greater (P < 0.0001) for heifers with calm compared with mild or aggressive escape behaviors [84.8% (313/369), 71.3% (164/230) and 64.7% (141/218), respectively]. Serum cortisol concentrations were not different among behavior categories, but serum substance P concentrations were greater (P < 0.05) in aggressive heifers compared with mild or calm heifers, 97.1 ± 4.9, 58.4 ± 2.9 and 52.3 ± 2.6 ng/mL, respectively. In conclusion, Holstein heifers with aggressive escape behavior during head-lock restraint had significantly reduced reproductive performance.


Over the past 175 years, data related to human disease and death have progressed to a summary measure of population health, the Disability-Adjusted Life Year (DALY). As dairies have intensified there has been no equivalent measure of the impact of disease on the productive life and well-being of animals. The development of a disease-adjusted metric requires a consistent set of disability weights that reflect the relative severity of important diseases. The objective of this study was to use an international survey of dairy authorities to derive disability weights for primary disease categories recorded on dairies. National and international dairy health and management authorities were contacted through professional organizations, dairy industry publications and conferences, and industry contacts. Estimates of minimum, most likely, and maximum disability weights were derived for 12 common dairy cow diseases. Survey participants were asked to estimate the impact of each disease on overall health and milk production. Diseases were classified from 1 (minimal adverse effects) to 10 (death). The data was modelled using BetaPERT distributions to demonstrate the variation in these dynamic disease processes, and to identify the most likely aggregated disability weights for each disease classification. A single disability weight was assigned to each disease using the average of the combined medians for the minimum, most likely, and maximum severity scores. A total of 96 respondents provided estimates of disability weights. The final disability weight values resulted in the following order from least to most severe: retained placenta, diarrhea, ketosis, metritis, mastitis, milk fever, lame (hoof only),
calving trauma, left displaced abomasum, pneumonia, musculoskeletal injury (leg, hip, back), and right displaced abomasum. The peaks of the probability density functions indicated that for certain disease states such as retained placenta there was a relatively narrow range of expected impact whereas other diseases elicited a wider breadth of impact. This was particularly apparent with respect to calving trauma, lameness and musculoskeletal injury, all of which could be redefined using gradients of severity or accounting for sequelae. These disability weight distributions serve as an initial step in the development of the disease-adjusted lactation (DALact) metric. They will be used to assess the time lost due to dynamic phases of dairy cow diseases and injuries. Prioritizing health interventions based on time expands the discussion of animal health to view profits and losses in light of the quality and length of life.

Continuing Education

Veterinarians

**WSU CVM Homecoming CE Event**, September 29, 2018. WSU Pullman. 9 AM to Noon, 3 Hours of continuing education for large and small animal practitioners and technicians. For other CE programs, visit: [https://apps.vetmed.wsu.edu/CVME/](https://apps.vetmed.wsu.edu/CVME/)

**Academy of Dairy Veterinary Consultants**, Fall Meeting October 5-6, 2018. Santa Rosa, CA. [https://academyofdairyveterinaryconsultants.org/upcoming-meetings/](https://academyofdairyveterinaryconsultants.org/upcoming-meetings/)

**WSU CVM Spring Conference**, March 29-31, 2019. SAVE THE DATE!! Pullman, WA. For updates visit: [https://cvme.vetmed.wsu.edu/](https://cvme.vetmed.wsu.edu/)

Producers

**BEEF – NCBA Recorded webinars on Genetics**. [http://www.beefusa.org/pastwebinars.aspx](http://www.beefusa.org/pastwebinars.aspx)

**BEEF – Stockmanship & Stewardship**, October 12-13, 2018. TRAC Event Center, Pasco, WA. Visit [www.StockmanshipAndStewardship.org](http://www.StockmanshipAndStewardship.org) and click on the Pasco WA meeting

**DAIRY – Genomics of Fertility Project Update and Use of Genomics**.

- October 2, 2018. World Dairy Expo, Madison WI.
- October 8, 2018. Hilton Garden Inn, 1741 Harrison St., Twin Falls ID
- October 10, 2018. Walter Clore, Prosser WA.
- December 3, 2018. Stephenville TX
- December 5, 2018. Okeechobee FL
- December 10, 2018. Tulare CA

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