

*American Association of Extension Veterinarians
2021 Applied Animal and Public Health Research and Extension
Symposium 3:00PM - 6:00PM October 24, 2021 (in person and virtual)
Chair: Jim Fairles Vice Chair: Hayley Springer*

Agenda

3:00-3:05	Introduction	<i>Intro to the AAEV Symposium</i> Jim Fairles and Hayley Springer
3:05-3:20	Presentation	<i>"Lead Poisoning in Cattle and Food Chain Implications"</i>
3:20-3:25	Q&A	Karyn L. Bischoff
3:25-3:40	Presentation	<i>"Agricultural Safety is a Team Sport"</i>
3:40-3:45	Q&A	Jeff Bender
3:45-4:00	Presentation	<i>"Elements of a Successful Small Flock Poultry Extension Program"</i>
4:00-4:05	Q&A	Victoria Bowes
4:05-4:20	Presentation	"Outreach resources to promote biosecurity and zoonotic disease prevention"
4:20-4:25	Q&A	Glenda Dvorak
4:25-4:40	Break	<i>"Extension Veterinarians – Who we are, What we do, Why you should join us!"</i> Danelle Bickett-Weddle
4:40-4:55	Presentation	<i>"Web-based Resources to Advance Animal Health and Surveillance in Canada"</i>
4:55-5:00	Q&A	Doris Leung, Theresa Burns, Kate Todd
5:00-5:15	Presentation	"The Development and Implementation of an Agritourism Education Module"
5:15-5:20	Q&A	Irene Hepler
5:20-5:35	Presentation	<i>"Salmonella Illness Outbreaks linked to Backyard Poultry Purchasing"</i>
5:35-5:40	Q&A	Megin Nichols
5:40-5:55	Presentation	"Stress and Resiliency of Veterinary Students During a Pandemic"
5:55-6:00	Q&A	Kerry Rood

To participate in the symposium as an attendee, visit in person or from the AAVLD/USAHA Annual Meeting 2021 virtual event platform online!

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2021 Applied Animal and Public Health Research and Extension

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Chair: Jim Fairles Vice Chair: Hayley Springer

Speaker Bios

1. Karyn L. Bischoff

Karyn Bischoff is the diagnostic toxicologist at the Cornell University Animal Health Diagnostic Center and New York State Veterinary Diagnostic Laboratory and teaches Clinical Toxicology at the Cornell University College of Veterinary Medicine. She has more than 20 years of experience in veterinary diagnostics, including training and board certification in veterinary toxicology, and training in veterinary pathology. She expects to receive a Master's in Public Health in 2022.

2. Jeff Bender

I am a Professor in the Division of Environmental Health Sciences in the School of Public Health and the Director of the National Institutes of Occupational Safety and Health funded Upper Midwest Agriculture Safety and Health Center (UMASH). The focus of my career has been on emerging issues that affect both animal and human health. As an infectious disease epidemiologist with 20 years of post-graduate experience, I have directed and collaborated on a broad range of research and surveillance projects pertaining to infectious and specifically zoonotic diseases (i.e. influenza, malaria, rabies, and foodborne diseases).

3. Victoria Bowes

Dr Vicki Bowes has spent the last 31 years employed at the Provincial Veterinary Diagnostic Laboratory in Abbotsford, BC as a specialist pathologist with expertise in Avian Pathology. The diagnostic caseload involves disease investigations in all species of birds (wild, pet, zoological and poultry). Alongside her diagnostic work she is passionate about outreach and veterinary support to small flock poultry owners. Over the past 12 years she has delivered more than 100 Small Flock Poultry Health Workshops to remote BC communities

4. Glenda Dvorak

Dr. Glenda Dvorak is the Assistant Director and a Lead Public Health Veterinarian at CFSPH. She received her DVM at ISU in 2001, her MPH degree from the University of Iowa in 2003, and is a Diplomate in the American College of Veterinary Preventive Medicine. She has been with the Center since 2003 and has developed and managed several projects and educational programs on a wide range of topics, including biosecurity for producers and veterinary clinics, zoonotic diseases of animals, and emergency preparedness and response for animal disease outbreaks. She has developed educational modules on biosecurity and infection control for the USDA National Veterinary Accreditation Program and a guideline on cleaning and disinfection for the USDA Foreign Animal Disease Preparedness and Response Plan. Dr. Dvorak is the course

instructor for three continuing education courses, two on zoonotic diseases and one on animal emergency response and preparedness. She served as a consultant to the American Animal Health Association (AAHA) for the development of the association's "Infection Control, Prevention, and Biosecurity Guidelines". She is also an Adjunct Lecturer and Course Co-Instructor for the University of Iowa, College of Public Health Public Health Emergency Preparedness graduate course.

5. **Doris Leung , Kate Todd, Theresa Burns**

Dr. Doris Leung is a veterinary epidemiologist and communications lead with the Canadian Animal Health Surveillance System. She graduated from the Ontario Veterinary College in 2014 and obtained her Master of Public Health from the University of British Columbia in 2018. Her professional interests are in disease surveillance, veterinary epidemiology, and health communication. She currently lives in Vancouver, British Columbia, Canada.

Dr. Kate Todd has worked in small animal, equine and mixed animal practice across Canada for 14 years, as well as within the University of Guelph at the Animal Health Laboratory. As part of her project management work, she frequently collaborates with government, academia and industry stakeholders, and engages with networks of veterinary and human health experts. In addition to clinical practice, Dr. Todd operates an independent consultancy in veterinary knowledge translation and mobilization. She creates educational materials, communications planning documents, infographics and reports covering topics such as African Swine Fever, One Health, anti-microbial resistance, and infectious diseases. She also produces a series of podcasts on health and disease topics relevant to Canadian animal populations with the Canadian Animal Health Surveillance System. Currently, she works both in practice and in a supporting role as a consultant for the National Farmed Animal Health and Welfare Council on a variety of management initiatives. Dr. Todd is committed to enhancing the communication of animal health information to veterinarians, producers, and the Canadian public, and to initiating discussions and actions around veterinary and One Health concepts.

Dr. Theresa Burns is the Canadian Animal Health Surveillance System Coordinator. She is a veterinary epidemiologist, and has experience working as a practicing veterinarian in mixed, equine and small animal practices. She received DVM and MSc degrees from the Western College of Veterinary Medicine and a PhD in Epidemiology from the University of Guelph. Over her career, Theresa has had the opportunity to use methods from multiple disciplines to collaborate on complex issues at the interface of human-animal-environmental health in Canada and in other countries. She is very interested in fully understanding systems and stakeholder perspectives in order to develop real-world solutions to complex problems.

6. **Irene Hepler**

Irene is a second year MPH candidate at Utah State University and grew up in Pennsylvania. Her main focus is the veterinary and public health interface and exploring those relations through a one health approach. Pigs are her favorite animal and she hopes to one day work towards bridging the gap between swine worker health and zoonosis of pigs. In her free time, she loves watching Aggies hockey and spending time with her 10 pets.

7. Megin Nichols

Megin Nichols, DVM, MPH, DACVPM serves as the lead for the team at CDC that investigates multistate outbreaks of Salmonella and E. coli resulting from exposure to animals, pet products and raw milk. Prior to joining CDC, Dr. Nichols worked in her home state at the New Mexico Department of Health for 5 years. She received a Bachelor of Science degree in Animal Science from New Mexico State University, a Doctor of Veterinary Medicine from Colorado State University and a Master of Public Health in Food Safety and Biosecurity from the University of Minnesota. Her areas of interest include outbreak investigation, zoonotic disease, food safety, and pediatric health.

8. Kerry Rood

Kerry A. Rood, MS, DVM, MPH, DACVPM is a professor and associate department head in Utah State University's (USU) Animal, Dairy, and Veterinary Sciences (ADVS) department and has served as extension veterinarian since 2007. Before this academic appointment, he served as the Vermont State Veterinarian and Chief Animal Health Officer. A 1997 DVM graduate of KSU, Dr. Rood has been in mixed animal practice in Oregon and Utah. Kerry has received several awards, including the Extension Specialist Career Award, Undergraduate Advisor of the Year, Utah's Veterinarian of the Year, Teacher of the Year, and President of the Utah Veterinary Medical Association. As part of a team, Dr. Rood was instrumental in garnering professional, public, and legislative support for the USU School of Veterinary Medicine; a joint regional program between Washington, Idaho, Montana, and Utah. Kerry is from Coos Bay, Oregon, and raised on a family-owned dairy and beef operation. Dr. Rood married Rachel Taylor in 1989 and they have three daughters. If he gets any spare time, you will find him road cycling or competitive pistol shooting.

9. AAEV – Danelle Bickett-Weddle

Dr. Bickett-Weddle is the Immediate Past-President of the American Association of Extension Veterinarians (AAEV). She is an Associate Director at the Center for Food Security and Public Health and has a 20% extension appointment at Iowa State University. She earned her degrees from Iowa State (DVM and PhD) and the University of Iowa (MPH) and is board certified by the American College of Veterinary Preventive Medicine. She is passionate about biosecurity, public health, and the livestock industry and combines these topics in her work educating livestock producers, veterinarians, veterinary students, and the public about animal diseases and how to protect themselves and their livelihood.

Agricultural Safety is a Team Sport
Bender JB, Schossow M, Peterson C, Brihn A, Yoder C
Upper Midwest Agricultural Safety and Health Center (UMASH)
University of Minnesota School of Public Health and College of Veterinary Medicine

Farming is dangerous work and producers, farm workers and their families are at high risk of personal injury. Agricultural workers are eight times more likely to die on the job than other workers. Worker injuries on dairy farms are often related to animal handling with cattle, resulting in job restrictions. However, contact with animals (e.g. infectious diseases), machinery, noise and repetitive injuries all contribute to injuries, illnesses, disability, and fatalities related to dairy production. Worker compensation claims only represent the very “tip of the iceberg.” In a survey of Minnesota dairy farms (small to medium-sized, with herds under 500 cows) it was observed that smaller operations do not have access to worker safety resources. Of the 32 workers from 10 dairy operations completing the survey, 10 workers (31.3%) were Hispanic, and eight workers (25%) had no previous livestock experience before their current job. Fourteen (50%) workers received training related to safety and injury prevention and six (19%) suffered at least one injury in the prior 12 months. These data illustrate that worker safety and injury prevention training is needed on all operations including small and medium sized dairies. To address this, a “team approach” is needed. Veterinarians understand One Health principles, especially as it pertains to human-animal interactions and can be key partners in promoting worker health and safety. We are encouraging a broader approach to farm safety where veterinarians are part of that safety team. This includes observing worker-animal interactions, educating the workforce about health and safety on the farm (e.g. biosecurity and disease prevention), providing animal handling and welfare education, and supporting informal audits to reduce injuries and zoonotic disease transmission. We provide resources to support a broad team approach to health and safety on livestock operations. These resources include bilingual needlestick prevention, animal handling, zoonotic disease prevention, and checklists/audit tools (<http://umash.umn.edu>).

Lead Poisoning in Cattle and Food Chain Implications

K Bischoff DVM, MS, ABVT

New York State Animal Health Diagnostic Center and Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca NY

Synopsis: Decades after the United States outlawed use of lead (Pb) in paint and gasoline, Pb poisoning remains a clinically relevant problem in domestic animals. Lead exposure in cattle and other agricultural animals is particularly problematic, since products from these animals enter the human food chain. It behoves the veterinarian to be familiar with not only clinical signs and diagnosis of Pb poisoning, but to work to minimize the risk to consumers of animal products. Diagnosis of Pb poisoning in cattle is usually based on clinical observations and analysis of whole blood from live animals or liver or kidney postmortem. Herd-mates of affected animals are likely to be sub-clinically exposed. Identification of the source of contamination is critical to the management of Pb poisoning in livestock and to minimizing the risk to the human food chain. Lead elimination is unpredictable and can be prolonged in ruminants, both due to Pb particle sequestration in the rumen and, in chronic exposures, storage of Pb in the bony matrix. Lead is variably excreted in milk, and excretion can continue over several lactation cycles. Residues in skeletal muscle are usually negligible, but are not predictable based on antemortem testing. Bone and organ meats from animals with known Pb exposure are best discarded.

Elements of a Successful Small Flock Poultry Extension Program

V. Bowes, T. Redford, C. Botkin

Animal Health Centre, 1767 Angus Campbell Rd, Abbotsford, BC V3G 2M3 CANADA

Effective small flock poultry extension relies on developing strong partnerships amongst academia, local government, the commercial poultry industry and small flock interest groups such as 4-H, poultry clubs and internet-based groups. A successful small flock poultry extension program must have the support of all invested parties. The specific information needs of the small flock owner, as well as the conducive language necessary for targeted extension, is significantly different from that of the commercial poultry producer.

Promoting small flock health has far reaching social and economic benefits and an example of a successful multi-partner small flock extension program in British Columbia will be provided.

The Development and Implementation of an Agritourism Education Module

Irene Hepler, Kerry A. Rood, MS, DVM, MPH, Dipl. ACVPM, Cody Zesiger, MA, S. Clay Isom, PhD, Jessica Hadfield, MS, Melanie Stock, MS, PhD and E. Helen Berry, MA, PhD

Following an increase in cases of *Escherichia coli* diarrhea associated with exposure to animals at Utah agritourism operations, attitudes, behaviors, and current knowledge of Utah agritourism operations were assessed using a statewide survey. Of 38 usable survey responses, the majority (61%, n=19) were interested in receiving information regarding zoonotic disease prevention. Therefore, a cooperative Extension and Public Health education and outreach program targeting Utah agritourism operations was developed. The educational module consists of a pre and post quiz in order to measure how much was learned over the course of the module. The module was distributed to previous survey participants who wished to be contacted, along with distribution to agritourism venues who had information posted on Utah's Own agritourism page, Agritourism World's Utah page or venues who were found on a Trip Advisor search. Results of the pre and post quizzes will be compared to see how much knowledge the participant gained during the module.

2021 AAEV Applied Animal and Public Health Research and Extension Symposium Abstract

Web-based Resources to Advance Animal Health and Surveillance in Canada (and Beyond)

T. Burns¹, D. Leung¹, and K. Todd²

¹*Canadian Animal Health Surveillance System, National Farmed Animal Health and Welfare Council Canada*

²*National Farmed Animal Health and Welfare Council, Canada*

The Canadian Animal Health Surveillance System (CAHSS) was initiated in 2015 and is a division of the National Farmed Animal Health and Welfare Council. CAHSS is focused on the generation, exchange, and application of data-driven information to track animal health, and rapidly detect and respond to changing patterns of disease. CAHSS supports a collaborative “network of networks” structure, with network members in government, industry, research, academia, and more.

In January 2021, CAHSS launched a new website, with 61% of users from Canada and 33% of users from the U.S. The purpose of the website is to have a centralized platform for information sharing, with topics that are related to animal health and surveillance initiatives in Canada.

With the new launch, CAHSS was able to highlight several innovative tools that are of practical use for veterinarians, veterinary students, producers, researchers, epidemiologists, laboratorians, and more. These resources are bilingual (in English and French), and include an up-to-date resource library, disease alerts notification, regulated disease table, surveillance initiatives inventory, new podcast series “Animal Health Insights”, and several species-specific disease dashboards created with national partners.

The presentation will introduce CAHSS and its work and provide a brief demonstration of CAHSS’ featured tools. The presenters will also invite participants to discuss strategies to raise awareness on the organization, and methods to allow more users in Canada and the U.S. to have access to these web-based resources and materials.

***Salmonella* Illness Outbreaks linked to Backyard Poultry Purchasing
during the COVID-19 Pandemic — United States, 2020**

M. Nichols¹, G. Sean Stapleton^{1,2}, L. Stevenson¹, A. Palacios^{1,2},
M. Low^{1,2}, M. Leeper¹, J. Brandenburg^{1,2}, B. Tolar¹

¹ Division of Foodborne, Waterborne, and Environmental Diseases,
Centers for Disease Control and Prevention

² Oak Ridge Institute for Science and Education

During March 2020–December 2020, a 25% decline was observed in the number of clinical *Salmonella* isolates with whole genome sequencing (WGS) data uploaded to PulseNet, the national laboratory network for enteric disease surveillance. WGS subtyping is critical to the identification and investigation of enteric illness outbreaks. Decreased WGS data submission hinders outbreak detection and source identification. Despite a decline in the number of clinical isolates with WGS data in 2020, outbreak-associated *Salmonella* illnesses linked to backyard poultry surpassed previous years' numbers. In 2019, CDC identified 1,134 outbreak-associated *Salmonella* illnesses across 49 states linked to backyard poultry. During 2020, 1,722 outbreak-associated illnesses resulting from 12 *Salmonella* serotypes were reported from 50 states. Twenty-four percent of ill people were children aged <5 years. Of 1,000 people with information available, 332 (33%) were hospitalized and one death was reported. Epidemiologic data from interviews with ill people conducted by state and local health departments indicated a link between illness and contact with backyard poultry. Of 879 ill people with information available, 578 (66%) reported contact with chicks and ducklings in the week before illness onset. Of 188 ill people who reported poultry contact, 72% purchased poultry for the first time. Agricultural stores and media outlets reported record purchasing of poultry during the pandemic for eggs, meat, and to have as pets. Risk of salmonellosis is higher among young children and those without previous poultry ownership experience. Additional health education and messaging is needed for new poultry owners and parents of young children to prevent salmonellosis linked to backyard poultry contact.

Stress and resiliency of a first-year veterinary student cohort during the SARS-CoV-2 pandemic

Kerry Rood, MS, DVM, MPH, Dipl. ACVPM, Michael Pate, PhD, Mirella Meyer-Ficca, PhD, Michael Bishop, MS, David Wilson, PhD, Dipl. ACVPM and Ralph Meyer, PhD

Abstract:

Background: Veterinary professional curricula are extremely rigorous and stressful for students. Previous research has described and characterized stressors commonly encountered. The SARS-CoV-2 pandemic created additional stress by forcing professional veterinary curricula delivery through remote learning and incorporating physical distancing. Our research measured the stress and resiliency of a cohort of first-year veterinary students during their first semester of a professional program in the face of the COVID-19 pandemic.

Methods: Under IRB oversight, entering veterinary students' (n=31) stress and resiliency were measured using three instruments: The Veterinary Medical Stressors Inventory (VMSI), Perceived Stress Scale (PSS), and Brief Resilience Scale (BRS). As a pre- and post-test, the VMSI and BRS were used at the beginning and end of the semester to analyze students' perceived stress on items related to veterinary medical school and the self-awareness of resilience. The PSS was administered every two weeks starting in the second week of the semester.

Results: A large negative correlation between BRS (resilience) and VMSI (stressors) was found ($r = -.840$, $p < 0.01$, CI [-.939, -.613]). Qualitative variables noted as most stressful were concerns with failing a course and exam. A COVID-19 related variable noted as being the most stressful was "instructors talking with a mask on during class and any difficulties in understanding." Comments suggest that survey prompts may have heightened students' awareness of stress.

Conclusions: Our results suggest that students with increased resilience perceive less stress about veterinary curricula and provide evidence that curricula can be successfully delivered in a pandemic.