

**2017 Applied Animal and Public Health Research and Extension  
Symposium**

**14 October 3-6 pm**

**Royal Palm Salon 4-5**

3:00 – 3:20 p	K.A Rood and M. Pate  <b>Infection Control Practices and Zoonotic Disease Risk Among Utah Practicing Veterinarians</b>
3:20 – 3:40 p	M. Lee, A. Canon, K. Obbink and B. Nelson  <b>Excellence in Exhibition: Preventing Disease in Animals and People: <i>Bring Home the Blue, Not the Flu!</i></b>
3:40 – 4:00 p	M. Wang and D.R. Smith  <b>The cost of bovine respiratory disease in US beef calves prior to weaning</b>
4:00 – 4:20 p	J. Wenzel, C. Gifford, G. Hawkes  <b>Economic Impacts of Trichomoniasis</b>
<b>4:20 – 4:35 p</b>	<b>Break</b>
4:35 – 4:55 p	J.S. Odani, H.M. Zaleski, N. Ogasawara, B. Castle, F. Vannucci, T.W. Heskett  <b>Swine Disease Surveillance in Hawai'i</b>
4:55 – 5:15 p	J. Britten, D.J. Wilson, K.A. Rood  <b>Casein hydrolysate as a possible adjunct or replacement treatment to current antibiotic therapies used at dry-off in dairy cows.</b>
5:15 – 5:35 p	K.R. Burton  <b>Animal Disease Response Training (ADRT)</b>
5:35 – 6:00 p	K. Hoopes  <b>Ride Utah!</b>

# Infection Control Practices and Zoonotic Disease Risk Among Utah Practicing Veterinarians

Kerry A. Rood<sup>1</sup> and Michael L. Pate<sup>2</sup>

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Practicing veterinarians are exposed to unique occupational hazards and zoonotic diseases. National studies have highlighted a lack of veterinary awareness for these hazards. In Utah (and likely other states), reports of acquired zoonoses are sporadic, and underlying risk factors poorly understood. To better clarify occupational risk factors, the knowledge, attitudes, and behaviors of Utah veterinarians were examined. An internet based survey was sent to 809, currently licensed, Utah veterinarians identified from a list provided by the Utah Division of Professional Licensing. Two hundred and thirty-five (29%) veterinarians responded, with 91.5% self-identifying as clinical veterinarians. Animal bites, needle-sticks, and cuts were specifically queried with 40.5, 59.8, 21.6%, respectively, reporting these injuries within the past year. Nearly 8% of clinical veterinarians reported not being vaccinated against rabies virus, with 44% not checking their rabies titer in 10 years or longer. Twenty-two percent reported having contracted a zoonotic disease. While 19% reported having access to particulate respirators, only 24% had undergone fit testing. Sixteen percent of Utah clinical veterinarians reported lost time from work due to an animal injury. Of those who reported time lost from work, 81% indicated one or more lost days, with 25% missing a month or more. These results highlight the need for veterinary education and outreach on occupational hazards and disease risk.

**Excellence in Exhibition: Preventing Disease in Animals and People**  
***Bring Home the Blue, Not the Flu!***

M Lee, A Canon, K Obbink and B Nelson  
Center for Food Security and Public Health (CFSPH), Iowa State University

Youth agriculture programs, including raising and showing livestock, help youth develop responsibility, learn good sportsmanship, gain confidence, and teach the public about animal agriculture. However, many zoonotic diseases can affect exhibitors and spectators, especially when people have close contact with animals. Several animal related disease outbreaks, such as variant influenza A virus of swine (H3N2v) and enteric diseases caused by *E. coli* and *Campylobacter*, have been associated with fairs in recent years. Children infected with these pathogens are at increased risk for severe complications. Youth involved in animal agriculture, teachers, volunteer leaders, and parents, should understand disease risks and preventive measures to reduce the occurrence of zoonotic diseases. Providing accessible, free, web-based education can produce engaging results and can be easily incorporated into current agriculture or science curricula. Excellence in Exhibition: Preventing Disease in Animals and People ([www.BlueNotFlu.org](http://www.BlueNotFlu.org)) is an online, interactive, educational course that was developed by CFSPH in collaboration with the Iowa Department of Public Health and with support from the Centers for Disease Control and Prevention and the Council of State and Territorial Epidemiologists. The course, which includes six lessons designed to be completed in 20–30 minutes each, may be taken independently by anyone at any time, but is targeted at youth aged 13–18 years. The first three lessons cover specific zoonotic diseases, such as influenza, and ways to prevent transmission to humans and animals. The remaining lessons review case studies, agencies, and career opportunities in One Health. Learning objectives, PowerPoint slides, supplemental materials, and class activities are also available. The course is designed to be used widely and in a variety of ways, including incorporation into classroom, chapter, and club curricula, into 4-H projects on animal and human health, as preparation for FFA contests, and/or as prerequisites for showing at local or state exhibitions or fairs. Real-time information on user data associated with course web page views has shown over 2900 unique page views in 47 states and 32 countries since release; additionally, an optional evaluation component has indicated an increase in knowledge and plans to adopt disease prevention habits upon post-course completion.

Word count: 349

## **The cost of bovine respiratory disease in US beef calves prior to weaning**

M. Wang and D.R. Smith

Department of Pathobiology and Population Medicine, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS, USA, 39762.

### **ABSTRACT**

The objective of this study was to estimate the direct economic cost of bovine respiratory disease (BRD) in US beef calves prior to weaning. A stochastic simulation model was conducted using computer spreadsheet add-in software. Input data were obtained from USDA, peer-reviewed papers, and a survey of BRD treatment and labor costs by beef cow-calf producers. Results were reported by a median point estimate with 90% credible interval. Between 2011 and 2015 the estimate of the median total economic cost of BRD in pre-weaned beef calves was \$165 million (129–246), of which the costs due to death, medical treatment, and weight loss were \$126 million (92–200), \$25 million (20–32), and \$15 million (9–25), respectively. The median costs associated with death due to BRD in calves < 3 weeks and ≥ 3 weeks of age were \$44 million (29–72) and \$84 million (57–138), respectively. Death loss in calves prior to weaning was the largest cost component (76%). Total cost of BRD was most sensitive to deaths in calves ≥ 3 weeks of age. This model estimates the total and component costs of BRD in US beef calves prior to weaning due to deaths, reduced performance, medicine, and labor to treat sick calves. Death loss was the most influential part of the total cost of BRD in beef calves prior to weaning.

## **ECONOMIC IMPACTS OF TRICHOMONIASIS**

J Wenzel, C Gifford, G Hawkes  
New Mexico State University

Trichomoniasis is a disease that can be economically devastating in a short period of time. Trichomoniasis is known to reduce herd fertility, and the economic impacts from reproductive losses can be substantial for the livestock enterprise with extensive implications for both production and economic sustainability. However, the full extent of economic damages associated with a Trichomoniasis outbreak in New Mexico livestock operations has not been evaluated. Therefore, a series of factors that are impactful to the economic profile of the livestock production unit were considered in a recent survey of known positive premises across New Mexico. Survey results were used to identify physiological factors that were the most economically impacted and included: calf crop percentage, conception rate, cull rates, weaning weights and re-establishment of the herd. Impacts associated with Trichomoniasis are not a one-year recovery process, but rather a long-term situation that requires intensive management by the livestock producer to return to profitability. The average of survey results were then used in the following economic model.

### **Cost and Return Estimate**

A representative livestock enterprise was employed in the modeling process using the New Mexico State University cost and return estimate generator. The representative ranch had 400 mother cows, 1:20 bull/cow ratio, 15% replacement rate, and a 91% weaned calf crop. The comparative analysis cost and return estimate for a Trichomoniasis infected herd had the same number of mother cows, 1:20 bull/cow ratio, 35% replacement rate and a 64% weaned calf crop. These values were determined through survey responses.

### **Summary**

The introduction of this disease in a livestock enterprise will have economic impacts. These impacts will impact both liquidity and solvency. The overall impact of the study determined that all factors when combined will have a total economic impact to the livestock enterprise of greater than \$400 per cow. Annualized return on investment (of testing for trich) would exceed 129% in this scenario. A return with a level of significance as presented allows the livestock enterprise owner/management team to make an easy decision to initiate and sustain Trichomoniasis testing.

## Swine Disease Surveillance in Hawai'i

J.S. Odani<sup>1</sup>, H.M. Zaleski<sup>1</sup>, N. Ogasawara<sup>1</sup>, B Castle<sup>1</sup>, F. Vannucci<sup>2</sup>, T.W. Heskett<sup>3</sup>

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### Abstract

#### *Historical Background*

Swine play an important cultural and economic role in Hawai'i, and despite Hawai'i's relative isolation from the mainland USA and other countries, many swine pathogens have been introduced into the domestic herd. Porcine Respiratory and Reproductive Syndrome virus has been present in Hawai'i since 1992, and both the European and the North American strains have been detected. Porcine Circovirus 2 was first detected in Hawai'i in 2008, and subsequent surveillance in 2009 showed that it had already spread widely throughout the state. A variant strain of Porcine Epidemic Diarrhea virus caused disease in a single O'ahu farm in 2014, and investigations revealed other infected farms that did not exhibit clinical signs. Senecavirus A was first detected in imported hogs in Hawai'i in 2013, and sporadically thereafter in recently imported animals.

#### *Current Study*

The State of Hawai'i comprises a chain of eight major islands separated by sea, enabling interisland variability in disease introduction and maintenance. Therefore, swine herds on the four main swine producing islands (Kaua'i, O'ahu, Maui, and the Big Island) were included in this study, and serum samples were tested for Porcine Epidemic Diarrhea virus (IFA), Senecavirus A (IFA), Porcine Respiratory and Reproductive Syndrome virus (ELISA), and Porcine Circovirus 2 (ELISA) by the University of Minnesota's Veterinary Diagnostic Laboratory. Fecal samples were evaluated for parasites via the sodium nitrate flotation method. Results from this ongoing project suggest that there are geographic differences in pathogen occurrence, which provides meaningful information that local swine producers, veterinarians, consultants, and regulatory agencies can use in their decision-making process. Current data and maps will be presented.

**Casein hydrolysate as a possible adjunct or replacement treatment to current antibiotic therapies used at dry-off in dairy cows**

J. Britten<sup>1</sup>, D.J. Wilson<sup>1,2</sup>, K.A. Rood<sup>1,2</sup>

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Intramammary antibiotic infusions, often in a slow-release form, are commonly used at dry-off in dairy cows. Consumer concern over the use of antibiotics in food production animals has become a substantial issue in the U.S. Many consumers want minimal or zero use of antibiotics in production animal management. Additionally, the use of dry cow antibiotics has already been banned in some countries, a trend that seems to be spreading globally. Previous studies have shown intramammary (IMM) casein hydrolysate (CNH) to be effective in both inducing mammary involution in single mastitic quarters and accelerating this process at the time of dry off. The aim of this study was to explore the use of IMM CNH treatment at the time of dry off in dairy cows to accelerate mammary involution. A commonly used dry treatment protocol, intended to be representative of current industry practices, served as a control and was compared in a split udder design to 4 different treatment combinations. Study animals (n=32) were divided evenly into 2 groups, pregnant or open, with one udder half as the experimental unit and the contralateral half as an internal control. Pregnant cows had milk samples collected at 6 time points for bacterial culture and testing of somatic cell count, pH, lactose, lactoferrin and serum albumin, as biochemical markers of involution. These animals were also bucket milked before dry off and then followed through to calving for evaluation of bacterial cures and proportion of total-cow milk production after calving by udder half in each treatment group. Open cows were euthanized either 2 or 7 days after treatment for collection of mammary tissue samples. Samples were dissected from 3 separate zones per quarter, for a total of 12 samples per cow, and histopathological characterizations evaluated for cellular change. Results comparing IMM infusions of common dry-off antibiotic treatments to combinations using CNH will be reported.

**Animal Disease Response Training (ADRT)**  
**KR Burton, DVM**  
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**Kansas State University**  
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Recent outbreaks of Porcine Epidemic Diarrhea Virus (PEDV) and Highly Pathogenic Avian Influenza (HPAI) in the U.S. have re-focused attention to agricultural emergency preparedness and the necessity in coordinating responders. Animal Disease Response Training (ADRT) emphasizes whole community involvement and the importance multiple resources bring to a highly coordinated response. Non-traditional response personnel must understand their roles and be able to communicate effectively through all levels of the Incident Command Structure.

ADRT provides awareness level training for local, state, tribal, and territorial first responders. Familiarizing local and state responders with this type of training is key for a quick and effective response. Response personnel will be much more effective if they possess an awareness level of knowledge concerning why and how response procedures need to occur. Minimizing the impact of animal disease outbreaks requires complex coordination between many individuals, organizations, and government agencies. It is essential that each responder understands and can communicate the basic concepts necessary for an effective response effort.

ADRT focuses on best practices and safety issues associated with an animal disease outbreak in the areas of quarantine, biosecurity, euthanasia and disposal; use of personal protective equipment; and cleaning and disinfection. ADRT also assists in promoting and enhancing the coordination of responders across jurisdictions, lines of authority, and disciplines by examining the integration of response efforts.

The ADRT curriculum is approved by the Federal Emergency Management Agency's (FEMA) National Preparedness Directorate, National Training and Education Division (NTED) and is included in its State/Federal sponsored course catalog (Course # DHS-128-RESP). Upon successful completion of the course, each student receives a Department of Homeland Security Certificate of Completion. ADRT is an eight (8) hour course delivered over one (1) instructional day, by mobile training teams at an instructional site chosen and provided by the requesting entity.

ADRT is for non-traditional responder groups that include, but are not limited to:

- Emergency Management
- Emergency Medical Services
- Veterinarians
- Fire Fighters
- Law Enforcement
- Public Health
- Public Works
- Environmental Agencies
- Producers
- Industry

## **Ride Utah! A Therapeutic Equine Activity for Military Personnel**

Karl H. Hoopes

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Our fast-paced lives have led to an increased need to understand and focus on mental health awareness. Additionally, nearly 1 in 4 active and retired military personnel exhibit signs of stress ranging from PTSD to depression. Each branch of the military has developed internal resiliency programs to increase psychosocial support and the ability to bounce back from stressors. Current research has shown clinically significant benefits from therapeutic horse activities with military personnel, veterans, and family members. Utah State University Extension has developed a therapeutic equine program called Ride Utah! that provides military personnel and a guest a 1-2-hour trail ride, lunch, and a professionally moderated group discussion focused on military family issues. Ride Utah! is hosted in each county by USU Extension and collaborates with community members and military support groups. The results from the participant completed Conner-Davidson Resiliency Scale's demonstrate that Ride Utah! is harnessing Utah's natural beauty and resources into a successful program that is improving participant's emotional wellbeing and strengthens communities. Program evaluation indicates an increase in resiliency for individuals participating in Ride Utah!.