

THE AMERICAN COLLEGE OF POULTRY VETERINARIANS PRESENTS:

**CURRENT ISSUES ON ANIMAL WELFARE AND ANTIBIOTIC USE
IN POULTRY: PERCEPTION VS SCIENCE**

APRIL 15, 2018

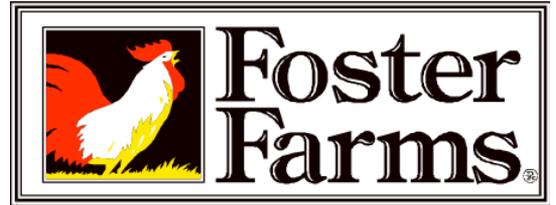
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Welcome to the 2018 ACPV Sponsored Workshop

Dear Colleagues,

Welcome to Salt Lake City! On behalf of the American College of Poultry Veterinarians (ACPV), and the ACPV Continuing Education Committee, I welcome you to the workshop, "Current Issues on Animal Welfare and Antibiotic use in Poultry: Perception vs Science." In recent years, animal welfare issues and the use of antimicrobials in commercial poultry have been raising significant interest among poultry veterinarians and professionals worldwide. Significant contributions to the knowledge on these areas have been accomplished, and there are different and sometimes opposing positions regarding these topics among poultry veterinarians and professionals dedicated to poultry. The objective of this seminar is to present the most current information, and perspectives regarding animal welfare and antibiotic usage in poultry from the standpoints of poultry production companies, allied industry, and academia.

This year we invited a selected group of speakers with recognized expertise in the areas of animal welfare, avian medicine, poultry science, and marketing. I would like to express my sincere thanks to these distinguished professionals for accepting our invitation and for sharing their knowledge, experiences and perspectives with our diplomates. I am sure that they will provide us with valuable and updated information that will be very useful to our attendees.

I also want to express my appreciation to the companies and individuals that generously contributed financially to make our workshop possible. With your collaboration, you are helping the ACPV to accomplish it's mission. Thank you so much for supporting our college!

This year, I had the opportunity to collaborate with a wonderful group of diplomates as part of our Continuing Education Committee. All your ideas, suggestions and collaboration were so helpful, and at the end of this process, we put together a very diverse and interesting agenda.

I also want to express special recognition to Nathan, Janece, and Bob Bevans-Kerr for all their logistic support.

Finally, we would deeply appreciate all our attendees providing us with their candid feedback to improve future workshops. We hope that you enjoy this workshop, and that the knowledge shared by our outstanding panel of speakers is useful and valuable to be applied in your professional activities.

Sincerely,



Alejandro Banda DVM, MSc, PhD, Dipl. ACPV, Dipl. ACVM
Chair, Continuing Education Committee (2018)
American College of Poultry Veterinarians

Special Acknowledgement

The ACPV CE committee would like to acknowledge the following individuals and organizations for their outstanding support and contributions to the workshop:

Dr. Rodrigo A. Gallardo and Dr. Richard Chin, Western Poultry Disease Conference
Nathan, Janece and Bob Bevans-Kerr, AAAP/ACPV

Speakers: Dr. Kate Barger, Dr. David French, Mr. Stephen J. Shepard, Dr. Armando Mirande, Dr. Robert Owen, Dr. Karen Christensen, Dr. Leonie Jacobs, Dr. Larry Sadler, Dr. Eric Gonder, Dr. Monica List, and Mr. Bryce Burnett.

Sponsorship Support: Tyson Foods Corp, Aviagen Inc., Merck Animal Health, Foster Farms, IDEXX Laboratories Inc., Butterball LLC, Huvepharma Inc., Cal-Maine Foods Inc., CEVA, Phibro Animal Health Corp., Boehringer-Ingelheim, BV Science-Vetanco, and Evonik Industries.

Special thanks to these companies and organizations for collaborating with the travel expenses of our speakers:

Cobb-Vantress Inc., Sanderson Farms Inc., Miller Poultry, Best Veterinary Solutions Inc., Tyson Foods Corp., United Egg Producers, Butterball LLC, Compassion in World Farming U.S., and Chick-fil-A Corporate.

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Current Issues on Animal Welfare and Antibiotic use in Poultry: Perception vs Science

Agenda (Sunday, April 15, 2018)

7:50 – 8:00 AM

Introduction

Dr. Alejandro Banda

Moderator: Dr. Alejandro Banda

8:00 – 8:30 AM

Animal welfare issues in EU member states and future trends in U.S.

Dr. Kate Barger, Director of Animal Welfare, Cobb

8:30 – 9:00 AM

Raising chickens with antibiotics: why and how?

Dr. David French, Veterinarian, Sanderson Farms

9:00 – 9:40 AM

Production and marketing of antibiotic free and organic poultry products.

Mr. Stephen J. Shepard/Dr. Armando Mirande, Miller Poultry

9:40 – 9:50 AM

Questions and Answers

9:50 – 10:15 AM

Break

Moderator: Dr. Martha Pulido

10:15 – 10:45 AM

Health challenges in the production of antibiotic free and organic poultry products.

Dr. Robert Owen, Best Veterinary Solutions

10:45 – 11:15 AM

Welfare and antibiotic issues, perspective from broiler producers

Dr. Karen Christensen, Dir. Of Animal Wellbeing, Tyson Foods

11:15 – 11:45 AM

Broiler chicken welfare during the pre-slaughter phase

Dr. Leonie Jacobs, Assistant Professor Poultry Welfare, Virginia Tech

11:45 – 12:00 PM

Questions and Answers

12:00 – 1:30 PM

Lunch Break

Moderator: Dr. Jessica Hockaday

1:30 – 2:00 PM

Welfare and antibiotic issues in commercial layers

Dr. Larry Sadler, V.P. Animal Welfare, United Egg Producers

2:00 – 2:30 PM

Welfare aspects in commercial turkeys

Dr. Eric Gonder, Veterinarian, Butterball

2:30 – 2:45 PM

Questions and Answers

2:45 – 3:15 PM

Break

Moderator: Dr. Alejandro Banda

3:15 – 3:45 PM

Welfare, science, and standards: the NGO perspective on poultry welfare

Dr. Monica List, Animal Welfare Specialist, Compassion in World Farming

3:45 PM – 4:15 PM

Poultry welfare and antibiotic use in poultry from the consumer's perspective

Mr. Bryce Burnett, Supplier Quality Program Leader at Chick-fil-A Corporate

4:15 – 4:30 PM

Questions and Answers

4:30

Adjourn

SPEAKERS

Listed in order of Presentations

DR. KATE BARGER

DIRECTOR OF ANIMAL WELFARE, COBB

Professional Experience:

2011 – Present. Director of World Animal Welfare. Cobb-Vantres
2009 – 2011. Company Veterinarian & QA Manager for Cobb Europe, Ltd.
2005 – 2008. Sales & Technical Service Mgr. for Central America-Mexico. Cobb-Vantress
2003 – 2005. USA Export Manager. Cobb-Vantress

Educational Experience:

Production Animal Medicine – Poultry. National Autonomous University of Mexico (UNAM)
Doctor of Veterinary Medicine (DVM). North Carolina State University
Bachelor degree in Poultry Science & Animal Science. North Carolina State University
Bachelor of Arts – BA. North Carolina State University

DR. DAVID FRENCH

CORPORATE VETERINARIAN, SANDERSON FARMS, LAUREL, MS.

Dr. French graduated from UGA with a DVM in 1984, and MAM in 1985.

He has worked for the University of Georgia in the department of Extension Veterinary Medicine, has worked as director of technical service – poultry for two different pharmaceutical companies, and has worked as a veterinarian in live production for two different broiler companies. He is currently working as a Staff Veterinarian for Sanderson Farms and lives in Hattiesburg, MS.

DR. STEPHEN J. SHEPARD

VICE PRESIDENT OF LIVE OPERATIONS AT MILLER POULTRY

Stephen J. Shepard serves as Vice President of Live Operations at Miller Poultry. Stephen was born in Columbia, SC and started working for a large integrator as a contract employee at a feed mill at 13 years of age. From there, he decided to pursue his education at North Carolina State University where he continued to work in the industry part time during his college years. Since his graduation, he has had the opportunity to work and hold responsibilities at various times in plant operations, live operations, poultry sales, human resources, and safety but his passion remains in operations. In his spare time, Stephen enjoys long distance running with his wife, hunting trips with family, and studying history.”

DR. ARMANDO MIRANDE

POULTRY CONSULTANT AT SUPERVET, INC.

Professional Experience:

Poultry Consultant at Supervet, Inc. March 2012 - Present
Corporate Veterinarian at Sanderson Farms Inc. January 2011 - March 2012
Director of Poultry Operations & Ingredients at Tyson Mexico 2006 - 2010
Director of Technical Services at Pilgrims Pride Mexico. 2002 - 2005
Manager of Technical Services at Biomune Company 1996 - 2002

Educational Experience:

The University of Georgia. Master of Avian Medicine, 1990 - 1992
University of California, Davis Master of Preventive Veterinary Medicine, 1987 - 1988
Universidad Nacional Autónoma de México, Doctor of Veterinary Medicine, 1980 - 1986

SPEAKERS

Listed in order of Presentations (continued)

DR. ROBERT OWEN

DIRECTOR OF TECHNICAL SERVICES FOR BEST VETERINARY SOLUTIONS

Robert Owen received his V.M.D. from the University of Pennsylvania, School of Veterinary Medicine in 1976. After operating a successful dairy practice in South Central Pennsylvania for approximately 10 years he returned to The Pennsylvania State University and earned his master's degree in avian virology in 1990 and his Ph.D. in avian physiology in 1992. From 1992 to 2004 he was Director of Veterinary Services for Hubbard Farms. Since leaving Hubbard he has served the industry as a technical services veterinarian for both the broiler and turkey industries. Currently, Dr. Owen is Director of Technical Services for Best Veterinary Solutions.

DR. KAREN CHRISTENSEN

SR. DIR. OF ANIMAL WELLBEING AT TYSON FOODS

Professional Experience:

Sr. Dir. Of Animal Wellbeing at Tyson Foods. October 2017 - Present
Associate Professor at University of Arkansas. January 2014 - Present
Board Member of PAACO 2007 - 2014
Director of Technical Services at OK Industries Inc. 1999 - 2013
Broiler Manager at OK Farms Inc. 1998 - 2000

Educational Experience:

Mississippi State University Doctor of Philosophy (PhD), Poultry Physiology, 2006 - 2010
Washington State University Master's degree, Animal Sciences, 1989 - 1992
Washington State University Bachelor of Science (BS), Animal Sciences, 1977 - 1979

DR. LEONIE JACOBS

ASSISTANT PROFESSOR POULTRY WELFARE, VIRGINIA TECH

Leonie Jacobs has started at Virginia Tech as an Assistant Professor focusing on poultry welfare in August 2017. She obtained her MS degrees on Animal Science from Wageningen University in the Netherlands, and from the Swedish Agricultural University. Her education and previous work were focused on animal welfare, mainly for poultry. The work on broiler chicken pre-slaughter welfare was part of her PhD at Ghent University in Belgium, which she finished in 2016.

DR. LARRY SADLER

VICE PRESIDENT ANIMAL WELFARE, UNITED EGG PRODUCERS

Dr. Larry Sadler has recently been named to the position of Vice President of Animal Welfare for United Egg Producers (UEP), representing more than 90 percent of the U.S. egg production. In his new role with UEP, Dr. Sadler will work with egg farms, customers and supply chain managers, and industry thought leaders to focus on continuous improvement as well as the pursuit for innovative solutions that advance the health and well-being of hens.

Dr. Sadler held various positions in meat production and processing before returning to Iowa State University to secure his master's and doctorate degrees, focusing on animal behavior and welfare. Prior to his role with UEP, Dr. Sadler served as head of animal welfare for Kraft Heinz.

Dr. Sadler has two Bachelor of Science degrees in Agricultural Business and Animal Science, a master's degree in Animal Physiology, with an emphasis in Ethology, and a doctorate in Biomedical Sciences from Iowa State University.

SPEAKERS

Listed in order of Presentations (continued)

DR. ERIC GONDER

SENIOR VETERINARIAN FOR TURKEYS AT BUTTERBALL LLC

Dr. Eric Gonder is a second-generation turkey producer, senior veterinarian for turkeys at Butterball LLC. Operations include 3 breeder divisions, 3 hatcheries, 4 slaughter plants, and over 600 contract farms in 5 states and a NPIP approved laboratory. Responsible for bird health and welfare, disaster response.

DVM, MS in avian microbiology and PhD in pathology/poultry science. ACPV diplomate. Licensed/accredited in NC and AR. PAACO auditor. PHTQA trainer.

Active in NPIP, NTF, AAAP, AVTP, AVMA, USAHA. Member of PSA, AAFHV, NCVMA. Participate in disaster/disease response exercises. Adjunct professor NCSU CVM.

Hobbies include draft horses, light construction, any individual outdoor activity.

DR. MONICA LIST

ANIMAL WELFARE SPECIALIST COMPASSION IN WORLD FARMING

Monica List received her Veterinary Medicine degree from the National University of Costa Rica in 2000. She practiced zoo and wildlife medicine at a wildlife rescue center in Costa Rica, where her work focused on rehabilitation of small primates and birds. After leaving clinical practice, she shifted her focus to animal welfare, first as Veterinary Programs Manager for the World Society for the Protection of Animals in Latin America, and more recently as Animal Welfare Specialist for Compassion in World Farming US.

Parallel to her animal welfare work, she continued her education in the areas of bioethics and practical ethics, obtaining a Master's degree in bioethics from the National University of Costa Rica, and later pursuing a doctoral degree in philosophy at Michigan State University. Her research interests include animal ethics, the ethics of food and agriculture, environmental ethics, and animal welfare, with a focus on the social and ethical dimensions of animal welfare science.

DR. BRYCE BURNETT

SUPPLIER QUALITY PROGRAM LEADER AT CHICK-FIL-A CORPORATE

Bryce Burnett graduated from Ferrum College in Ferrum, VA, in 2005, with a Bachelor of Science degree in Agri-Business. Bryce has been in the poultry sector for thirteen years, working for former companies including: Gold Kist Inc., Pilgrim's Pride and Synergy Technologies Inc. Bryce has held various positions throughout his career, mostly with emphasis on food safety, quality assurance and research and design.

Bryce came to work for Chick-fil-A, Inc., at their corporate offices, in 2014. Bryce serves on the Supplier Quality & Safety Team as a National Program Leader for Poultry. His responsibilities include quality and safety over all chicken products, Animal Welfare Team, third-party and lab auditing programs (chicken attribute testing), new projects (chicken specific) and poultry supplier approvals.

Bryce has been married to his college sweetheart Becky, for 11 years. Bryce and Becky have two children, Bryleigh (5) and Hunter (2 ½). Together they enjoy recreational sports, gymnastics, boating, scuba diving and snorkeling, and relaxing at their beach house in Destin, Fl.

Animal welfare issues in EU and future trends in U.S.

Dr. Kate Barger-Weathers

Director of Animal Welfare Cobb-Vantress

David Bayvel, former director of animal welfare for the New Zealand Ministry of Agriculture & Forestry once stated “Animal welfare is a journey, not a destination.”

This statement not only applies to the evolution of the science and research for animal welfare, the advancements in the understanding of animal behavior, and the increased use of technology to advance animal welfare monitoring, but it is also appropriate when considering the challenges and changes in practical application of poultry welfare expectations. Globally, the poultry industry continues to grow and expand due to increased consumer demand. However, while the integrated nature of the poultry industry facilitates this growth in numbers of birds and in pounds of poultry meat produced per year, the interconnectedness of the industry also facilitates changes in the area of animal welfare. Specifically, consumers, governments, animal advocacy groups and the poultry industry have moved animal welfare as a topic of discussion to a topic that is a major driver of change in the forefront of poultry production.

During this presentation at the ACPV workshop, I will highlight some of the major changes and challenges for animal welfare in the European poultry industry. For example, poultry companies in the European Union (EU) Member States face EU legislative changes for animal welfare, and they may also face additional challenges for animal welfare that are mandated by their national government, national poultry industry or veterinary groups, and expectations that are mandated by retailer or food service companies. Specifically, animal welfare issues related to humane euthanasia, broiler management, chick services in the hatchery, and poultry enrichments will be mentioned. In addition to emphasizing these challenges, I will also include examples of innovative technology, proactive welfare research, and practical lessons from poultry companies in Europe.

Although animal welfare is not a ‘new’ issue in the United States, we commonly look at what is happening ‘across the pond’ in Europe to increase our awareness about challenges that may face us in the North American poultry industry. For example, during this presentation, I will illustrate the parallels of Europe and the USA with regards to these issues: animal welfare pressure from NGO groups, expectations for welfare from food service companies, and testing and certification of poultry breeds. I will also mention the innovative and alternative approach that some poultry companies, researchers and food service providers are taking to improve poultry welfare understanding & welfare outcomes in the United States.

In summary, change in the area of animal welfare is not simply moving from point A to point B, but rather should be viewed as a journey – a journey that requires frequent stops to verify that progress is still sustainable and will have a favorable outcome, a journey in which experts and judicious decisions will help all achieve success, and a journey in which there may not be a known roadmap or just one route to realize the desired outcome.

Raising chickens with antibiotics: why and how?

Dr. David French

Veterinarian, Sanderson Farms

Today's marketplace is demanding more and more of the poultry industry. "No antibiotics ever, no shared class antibiotics, certified responsible use, organic, gluten free, hormone free, free range, cage free, slow growing" – I have been in the poultry industry since I could walk and talk, and I am more confused than ever about what is in the meat case at the supermarket. As a society, we love variety. We love choice, even if we don't fully understand what it means. As an industry, we have done a great job of identifying what the consumer wants, sometimes what the consumer doesn't even know they want, and delivering on that desire. I am not opposed to choice, or variety in the meat case. In fact, I have a problem with a lack of variety in the meat case, if everyone is forced into alternative niche products that result in a more expensive food supply, with a larger carbon foot print due to enforced inefficiencies. I have four compelling responsibilities as a veterinarian: protection of animal health and welfare, prevention and relief of animal suffering, conservation of animal resources, and the promotion of public health and the advancement of medical knowledge. There are both human and animal considerations in the veterinary oath, and it can be difficult to adequately address both at the same time. That difficulty, is what makes veterinary medicine a noble profession.

I hope to address some of the reasons why traditional poultry production should not be totally abandoned. Traditional poultry production is where animal husbandry practices minimize disease by proper management, and where treatment options exist for the unusual circumstances where birds become ill due to disease challenge. Veterinarians have a toolbox, with a limited number of effective tools, deemed safe and efficacious by the Food and Drug Administration (FDA). The limited number of tools makes us even better stewards of the products that are available. We cannot afford to prop up poor management with medications. That would be a terrible waste of valuable resources.

The products that are approved by the FDA have gone through careful scrutiny and scientific vetting prior to their approval at great cost to the producers of those products. The hurdle is so high and the cost so great that there are very few new products in the pipeline for poultry approvals. The approval process does not guarantee a life-long approval, and the agency has demonstrated that they are not afraid to remove an approval if there is scientific reason to question either safety or efficacy. All this is a good thing. Because of it, we can have confidence in the safety and efficacy of the products that we have available to us in that toolbox.

There are literally hundreds of products available that offer alternatives to traditional programs. Some have merit and some do not. In most cases they have tremendous appeal because they offer an alternative to antibiotics. That sounds like a great idea, but great ideas often come with unintended consequences. Consider the fact that because these products make no therapeutic claims in writing, they are not held to the same scrutiny and scientific vetting as are products coming through the FDA. How do we determine safety and efficacy? Are there interactions with other products used at the same time? Is there a difference between using an antibiotic in the feed and feeding a bacterial culture that is capable of producing that same antibiotic? One is considered an antibiotic program, and the other is antibiotic free. Is there a possibility that the alternative products will encourage antimicrobial resistance? If they appear to be effective, can we expect that efficacy to last or will it decrease with time? Is there a true benefit to not using the tools that the FDA has determined to be safe and efficacious, or is it just a feel good measure with no scientific backing?

Health challenges in the production of antibiotic free and organic poultry products.

Dr. Robert L. Owen
Director of Technical Services Best Veterinary Solutions

Several years ago my good friend Dr. Chuck Hofacre called me a curmudgeon and that notion was seconded by Dr. John Glisson. For those of you unfamiliar with the term, a curmudgeon can be defined as a cranky opinionated old man (as I have been known to be) or, as I prefer to think of a curmudgeon - a contrarian with the guts to challenge societal direction. As I close my 40th year of practicing veterinary medicine, I intend to not disappoint Drs. Hofacre and Glisson.

This afternoon as a diversion from my new FDA directed hobby of writing prescriptions for the few animals that I still care for that can be treated with antibiotics, I decided to take a walk on the wild side and explore the trade agreement for organic poultry between the United States of America and the European Union. Imagine my surprise when, upon perusing the document, I found the following statement:

“Likewise, the United States allows European products produced and handled under the EU Organic Program to be marketed as “organic” in the United States using the USDA organic logo under two conditions:

- 1) Antibiotics were not administered to animals; and
- 2) An import certificate is issued by an EU approved certifying body attesting to compliance with the terms of the Arrangement.”

(<http://www.usda-eu.org/trade-with-the-eu/trade-agreements/us-eu-organic-arrangement/>)

Why, I asked myself, would this statement about antibiotics need to be negotiated into an agreement about trade of organic meat between countries. After much searching, I came across Commission regulation EC 889/2008 for organic production which states:

(17) The preventive use of chemically-synthesised allopathic medicinal products is not permitted in organic farming. However, in the event of a sickness or injury of an animal requiring an immediate treatment, the use of chemically synthesised allopathic medicinal products should be limited to a strict minimum. Furthermore, in order to guarantee the integrity of organic production for consumers it should be possible to take restrictive measures such as doubling the withdrawal period after use of chemically synthesised allopathic medicinal products.

Yes it is true. In organic production in the EU, if a veterinarian decides that it is in the best interest of the welfare and humane treatment of the animals, he/she may decide to treat with antibiotics and the organic status of the flock is preserved if a withdrawal time of 48 hours is observed for those products having no stated withdrawal period and twice the time stated on the label for those products with a published withdrawal time.

For my entire tenure as a food supply veterinarian, I have heard the statement, “Watch what our friends across the pond are doing because we will be doing it in five years.” I certainly hope in five years I will be able to treat a flock of organic broilers with penicillin and alleviate their suffering rather than watching them develop egregious mouth lesions because I am trying to help them by administering high levels of copper sulfate.

Anyone who spends time in the field knows that clients, growers, and feed truck drivers are the real source of knowledge in poultry production, and it was one of my clients who recently pointed out why this is not going to happen and why the voice of the veterinary community has been painfully and notably absent. The observation he made was, “Doc, don’t you see the conflict of interest?” He may well be right because veterinarians who devoted four years of their lives in intense study and at the end stood up and took an

oath to protect animal health and welfare are apparently afraid to make waves because they are part of a massive integrated system and are subject to annual review not for their ability to fulfill the obligation of their oath, but rather to implement the latest and greatest marketing strategy.

How can we as veterinarians possibly support a system that bombards us daily with television advertising proclaiming “no antibiotics ever” and the feeding of oregano as some homeopathic wonder drug. The reality is that despite our best efforts to improve disease prevention and animal husbandry animals are going to get sick and need to be treated. In spite of the fact that major corporations proclaim on their websites that if animals are sick they need to be treated, they are not being treated or treatment is delayed by the use of some marginally effective or ineffective homeopathic remedy. Every one of us in poultry veterinary medicine has seen this happen time after time and had growers ask us why are we not doing something.

Good question. Why are we not living up to the oath that each and every one of us stood up and took the day we graduated from veterinary school? This aging grumpy curmudgeonly baby boomer thinks that it is high time that we do the same thing our colleagues across the pond have done. Stand up and demand that we be given the right to practice our profession unencumbered by marketing campaigns that let people believe that treating sick animals with antibiotics is somehow a bad thing.

In closing, here are three easy ways to start this ball rolling. First, unite and follow the lead of our European colleagues and let the world know that our AVMA ethics policy is: “Veterinarians shall not promote, sell, prescribe, dispense, or use secret remedies or any other product for which they do not know the ingredients.” Further, if in our professional opinion treatment is necessary, we request freedom to do so without recrimination on the animals we treat other than extended withdrawal times. Second, we request that the ionophore class of compounds be reclassified as anticoccidials rather than antibiotics. Third, we push for mandatory minimums for density and downtime.

Broiler chicken welfare during the pre-slaughter phase

Dr. Leonie Jacobs

Assistant Professor Poultry Welfare, Department of Animal and Poultry Sciences, Virginia Tech

Intensively reared broiler chickens are kept indoors under climatized, controlled conditions for the major part of their lives. When they reach the desired slaughter weight they are caught, put in crates, loaded onto a truck, transported to the slaughter plant, unloaded, and put in lairage until they are slaughtered. During this pre-slaughter phase or live haul phase, birds are subjected to many potential stressors that result in animal welfare impairments (e.g. Nijdam et al. 2004, EFSA 2011), for example (rough) handling, noise, vibration, thermal challenges, feed and water withdrawal, unfamiliar environments, high stocking density, and social disruption (EFSA, 2011).

A number of welfare issues have direct negative financial consequences. The most obvious loss is due to Dead on Arrivals (DOA), which among others was associated with catching method, duration, crate stocking density, season, and transportation duration (reviewed by Jacobs et al., 2017a). DOA may range from 0 to 17% depending on the study, although averages are often below 1% (reviewed by Jacobs et al., 2017a). Considering the large amount of broilers slaughtered each year, these seemingly low percentages can represent a major financial loss. Even a 0.5% DOA rate may result in an estimated annual loss of over 180 million dollars in the US (8.5 billion birds/y, 5lbs/bird, \$0.85/lb). Rough handling (Kittelsen et al., 2015; Jacobs et al., 2017b), transportation (Nijdam et al., 2004; Jacobs et al., 2017b), and emptying the containers at slaughter (Kittelsen et al., 2015) may result in fractures, bruising and dislocations. Those injuries lead to carcass degradation and slaughter yield losses. Furthermore, stress and fear can reduce meat quality (Kannan et al., 1997; Sandercock et al., 2001) and a prolonged pre-slaughter phase can result in weight loss between 3.5 and 7.3% (live shrink; reviewed by Jacobs et al., 2017b).

To reduce welfare issues and financial losses, the industry should consider welfare-friendlier alternatives. Especially the catching procedure was identified as a key risk factor for welfare (e.g. Ritz et al. 2005, Vošmerová et al. 2010). Appropriate training for workers involved may result in fewer welfare impairments. Attitudes were found to be the strongest predictors of stockperson behavior (Coleman et al., 2000). Thus, training which improves attitudes towards poultry and their welfare, potentially could improve handling and therefore welfare and income. Furthermore, the application of incentives for catching crews could stimulate a friendlier approach.

Another method to improve welfare is to monitor welfare routinely. Benchmarking with previously assessed flocks could stimulate and educate parties involved on potential improvements.

Besides pre-slaughter characteristics, the animals' health status plays an important role in their response to the pre-slaughter phase. Both high and low slaughter weights were associated with increased DOA rates (Chauvin et al., 2011). Other health aspects as leg health and lameness, plumage condition, and disease could exacerbate the impact of live haul. Therefore, a fitness assessment should be performed before loading birds. The OIE (World Organisation for Animal Health) Terrestrial Animal Health Code (chapter 7.3) and EU legislation (EC No 1/2005) stipulate the need for a fitness assessment, even for poultry. Yet this is difficult on an individual level, considering the large number of broilers involved. One practical guideline document exists that advises the industry on how to assess fitness of individual birds (livestockwelfare.com "Should this bird be loaded?" 2017). Our recent study has investigated the potential of a number of fitness indicators and showed that especially signs of illness, lameness, physical defects, and cachexia showed potential as indicators to assess fitness of broilers (Jacobs et al., 2017c).

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Welfare and antibiotic issues in commercial layers

Dr. Larry Sadler
V.P. Animal Welfare, United Egg Producers

There is a substantial disconnect between consumers and professionals in the animal agriculture industry regarding antibiotic use. There is also genuine misunderstanding by consumers about the use of antibiotics and their impact on animal welfare. Many consumers believe that a “no antibiotics ever” approach improves animal welfare. This is a false perception and there is significant room for educating consumers regarding how appropriately used antibiotics can be beneficial for animal welfare.

Development of so-called “super bugs” and the protection of antibiotics as a crucial resource for future human and animal health is often the focus of activist groups. Development of resistance is a complicated issue, one that even experts disagree, making it challenging to talk to consumers about. However, the discriminate and appropriate use of antibiotics is a shared value between consumers, activist groups and those in the agricultural industry. Demonstrating this value and promoting these efforts can be key in connecting with consumers.

Current Issues in Welfare and Antibiotic Use in Commercial Turkeys

Dr. Eric Gonder
Butterball LLC

Welfare Issues:

1. Artificial insemination of breeders. This requires weekly/semiweekly handling of ~14 kg hens and 31 kg toms throughout their 25-30 week productive lives.
2. Disposal of off-sex toms.
3. Limited demand for hen poults, except seasonally by some companies. This results in a smaller-scale issue similar to that in table egg layers and breeders – disposal of undesired day-old hatchlings.
4. Hatchery services required for management and welfare – vent sexing, beak and/or toe conditioning, take-off, counting.
5. Long distance delivery of hatchlings – 12-30 hour delivery times are not unusual. Delivery equipment and drivers must be equipped and maintained for lengthy trips.
6. Preservation of environmental conditions during grow-out. These are long-lived birds – 20-22 weeks is not unusual. Air and litter quality must be maintained for long periods, as must biosecurity and water quality.
7. Control of cannibalism/persecution in post-pubescent turkeys.
8. Culling selection and techniques/equipment.
9. Control of bird handling during brooder/finish transfers and market loading.
10. Customer demands for crash, poorly researched programs to produce no-antibiotics-ever (NAE) and organic turkeys without considering turkeys are in the field 2-3 times as long as broilers.
11. Severe lack of research on turkey management and modern turkey diseases not associated with food safety and antibiotic resistance.

Antibiotic Use Issues:

1. No new antibiotics labeled for turkeys since late 1970's.
2. Loss of nitrofurans, nitroimidazoles, streptomycin, enrofloxacin, arsenicals, water-soluble florfenicol, extra-label use of cephalosporins, clopidol, diclazuril, stenerol, coccidiosis vaccines due to manufacturing issues, misuse in other species, or the Delaney clause.
3. Pressure on veterinary staff to disregard the Veterinarian's Oath to preserve marketing status of NAE/organic flocks.
4. Loss of veterinary and service staff time to issuance of formal prescriptions in addition to case report/billing control/medication cost control incentives previously in place.
5. Antibiotic alternatives: Do they work? Are they carefully regulated? How should they be employed?
6. Severe lack of therapeutic products labelled for use in turkeys resulting in extensive extra-label use of products labeled for other species, requiring extra-label drug use time-and-effort by veterinary staff as well as internal safety/efficacy testing.

Welfare, science, and standards: NGO perspectives on poultry welfare

Dr. Monica List Animal Welfare Specialist Compassion in World Farming

In the United States, and in most industrialized countries, animal protection organizations have a long history of lobbying and campaigning for changes to the ways we treat and interact with animals, including wildlife, pets, and animals raised for food. In 1886, backed by a group of prominent New Yorkers, Henry Bergh founded the American Society for the Prevention of Cruelty to Animals (ASPCA) (Beers, 2006). After the founding of the ASPCA, the number of animal protection organizations continued to grow steadily in the post-war period, and grew exponentially, to over 1,000 groups, after another landmark moment, Peter Singer's 1975 publication of *Animal Liberation* (Beers, 2006). This publication is considered one of the foundational texts of animal advocacy, and is allegedly the most widely read work by a contemporary philosopher.

Singer's publication followed on the heels of another book considered to be an important contributor to the emergence of modern animal welfare science, Ruth Harrison's *Animal Machines*. It is believed that this book and its public reception are what prompted the British government to establish the Brambell Committee in 1965 (Broom, 2014). The Committee was so named after its chairperson, Professor F. W. Rogers Brambell, but another member of the committee, Dr. William Thorpe, an animal behaviorist, was most influential in developing the foundation that would shape animal welfare science and policies for years to come (Fraser, 2008). The Brambell Committee was tasked with investigating the conditions of farm animals in intensive husbandry systems, and in 1965 published the Report of the Technical Committee to enquire into the welfare of animals kept under intensive livestock husbandry systems, commonly known as The Brambell Report. In addition to providing the groundwork for what would later be known as "The Five Freedoms", the Brambell Report was perhaps the first widely known public document to use the term animal welfare in its contemporary sense, and it placed a strong emphasis on the need to produce scientific evidence to support the case for improved welfare in intensively farmed animals (Brambell, 1965).

For the animal advocacy movement, the emergence of animal welfare science also marked a decisive moment in terms of ideologies and overarching goals. In the decades following the publication of *Animal Machines*, *The Brambell Report*, and *Animal Liberation*, the movement continued to grow in numbers, but also became diverse in terms of goals and values. While at present these organizations are generally referred to as animal advocacy, animal protection, or animal rights groups, there are important differences with regard to ideologies that should be considered in order to better understand the goals of individual groups, and the general dynamic of the US animal advocacy landscape. For any individual or group with a stake in research or commercial activities involving animals, it is important to have a notion of the current landscape of animal advocacy organizations, in order to map out which groups best align in terms of interests and values, and may therefore act as allies or partners.

Organizations operate within the broader movement with objectives ranging from observational and advisory roles to public campaigning, lobbying and grassroots activism. Often, those who consider themselves animal welfare organizations are keen to make a distinction between animal welfare and animal rights activism. In some respects, it is an important distinction to make; animal rights organizations are more likely to have strict views on the production and consumption of animal products (many are vegan, or even abolitionist), while animal welfare organizations are generally supportive of animal agriculture and the use of animal products insofar as animal welfare is prioritized and sustainability concerns are acknowledged within those practices. It can be said that animal advocacy organizations exist on a spectrum, with strong animal rights or abolitionist positions on one end, and utilitarian animal welfare positions at the other. However, in practice, organizations who consider themselves to be in distinct camps may align on a common goal to put pressure on governments and/or businesses in order to effect change for animals. The Joint Statement on Broiler Welfare, discussed in this presentation, is an example of a collaborative project led by a coalition of animal advocacy organizations who represent different parts of the animal welfare/animal rights spectrum.

Compassion in World Farming (CIWF) is one example of an organization self-defined as an animal welfare group. Founded in 1967 by British dairy farmer Peter Roberts, CIWF currently has offices in Europe (UK headquarters, Czech Republic, Spain, France, Italy, The Netherlands, Poland, and Sweden), China, and the United States. The United States office opened in 2011, and is located in Atlanta, GA. The focus of CIWF US is its Food Business program, which engages with food businesses following a partnership approach in order to improve baseline welfare standards for farm animals. Specific activities of the Food Business program include awards programs for policies or commitments to source higher welfare animal products, partnership on higher welfare standards and policy development,

production of technical resources to support transition to higher welfare sourcing, and fostering business to business networking opportunities.

The flagship program of the CIWF US Food Business team is the Better Chicken Initiative, which focuses on improving welfare standards for broiler chickens in US supply chains. This program includes initiatives like the Better Chicken Leadership Forum, an invitation-only roundtable that brings together representatives from major US Food Businesses to discuss the challenges and opportunities of improving welfare standards in their broiler supply. The inaugural forum was held in July 2016, with a second meeting convened in August 2017, which brought together 50 attendees from 29 different organizations including producers, food service companies, and restaurants.

CIWF has also collaborated with other organizations on broiler welfare initiatives. In 2017, a coalition of US animal protection organizations, including CIWF, produced the Joint Statement on Broiler Welfare, which would be used as a unified request to food businesses to commit to sourcing chickens raised in improved welfare conditions. The statement covers five key issues, identified by the coalition as priorities for the improvement of broiler welfare: 1) switch to genetics with measurable, improved welfare outcomes; 2) reduction in stocking density to 6 lb per square foot (30 kg per square meter); 3) Environmental modifications including adequate litter, lighting, and provision of enrichment items; 4) Adoption of multi-step controlled atmosphere stunning systems for processing; and 5) The use of third party auditing to demonstrate compliance. These key issues were selected based on their relevance to broiler welfare as determined by scientific research, and because they were the minimum common denominator for the groups involved. Furthermore, the joint approach was considered best from a strategic perspective, as it presented a unified ask, and minimized the number of different requests being made to food businesses. As of March 2018, 85 food businesses have made public commitments to transition to a higher welfare broiler supply by 2024 as requested by the joint statement; some notable examples include Nestle USA, Campbell's, Unilever, Subway Restaurants, Burger King, Noodles and Co, Sodexo, Aramark, and Compass Group.

The focus of the Joint Statement on Broiler Welfare is on critical improvements to environments and practices in farm animal production, in other words, inputs or resource-based measures (RBM). At first, this may seem to be at odds with current tendencies in welfare assessment, in both animal welfare science and production, which focus on animal-based measures (ABM), also referred to as outcome-based measures (OBM). Examples of outcome-based measures commonly used in broilers include gait scores/walking ability, plumage condition (cover and cleanliness), and skin lesion scores (breast blisters, hock-burn, and footpad dermatitis scores). OBM may more accurately reflect the welfare state of the animal, and align with widely accepted definitions of animal welfare as an animal-centric concept.

However, there are three important reasons why attention to inputs is needed, in combination with balanced and transparent outcomes-based monitoring. First, the correlations between inputs and welfare outcomes have been clearly established by scientific research. There is robust evidence on correlations between genetics, environmental inputs, and welfare outcomes, which underlines the need to implement adequate thresholds for critical environmental provisions, such as litter, light, stocking density, and environmental enrichment. Second, given the lack of animal welfare regulation applicable to farm animals in the US, and specifically poultry, there is a need to establish a baseline for production practices that is aligned with both science and social concerns. Finally, even when animal welfare science can provide us with ever more precise insights on the needs, wants, and welfare of animals, it is important to keep in mind that uncertainty and fallibility are inherent characteristic of science. What this means is that, for a complex field of inquiry like animal welfare, we will only ever have, at best, partial answers and often changing answers to the questions we pose, and as such, evidence should be used and interpreted cautiously, especially when socially contentious issues like animal welfare and suffering are at stake.

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Poultry welfare and antibiotic use in poultry from the consumer's perspective

Dr. Bryce Burnett
Supplier Quality Program Leader at Chick-fil-A Corporate

The presentation, "Animal Welfare from a Consumer's Perspective," is designed to introduce the viewer to the background of Chick-fil-A, to understand Chick-fil-A's purpose and how it relates to animal welfare, specific to poultry. Through the presentation, the audience will understand how Chick-fil-A came to develop and execute a NAE (No Antibiotic Ever) program for the largest chicken chain in the country. Bryce will talk about how the program was built, what data drove the decisions, what the program stands for, and what the reality of the program has shown not only Chick-fil-A, but the poultry industry. Bryce will also touch on other animal welfare initiatives that Chick-fil-A is taking, including the company's commitment to utilizing only cage-free eggs on their menu.

2018 ACPV Sponsored Workshop Evaluation Form

COMMENTS/FEEDBACK (PLEASE CIRCLE YOUR ANSWERS)

	EXCELLENT	GOOD	FAIR	POOR
MEETING LOCATION/ROOM	1	2	3	4
WORKSHOP THEME	1	2	3	4
AUDIOVISUAL	1	2	3	4
WORKSHOP TOPICS	1	2	3	4
RELEVANCE TO YOUR WORK	1	2	3	4

SPEAKERS/TOPICS/COMMENTS
(PLEASE CIRCLE YOUR ANSWERS)

	EXCELLENT	GOOD	FAIR	POOR
DR. KATE BARGER	1	2	3	4
ANIMAL WELFARE ISSUES IN EU MEMBER STATES AND FUTURE TRENDS IN U.S.	1	2	3	4
DR. DAVID FRENCH	1	2	3	4
RAISING CHICKENS WITH ANTIBIOTICS: WHY AND HOW?	1	2	3	4
DR. STEPHEN J. SHEPARD/DR. ARMANDO MI- RANDE	1	2	3	4
PRODUCTION AND MARKETING OF ANTIBIOTIC FREE AND ORGANIC POULTRY PRODUCTS	1	2	3	4
DR. ROBERT OWEN	1	2	3	4
HEALTH CHALLENGES IN THE PRODUCTION OF ANTIBIOTIC FREE AND ORGANIC POULTRY PRODUCTS	1	2	3	4
DR. KAREN CHRISTENSEN	1	2	3	4
WELFARE AND ANTIBIOTIC ISSUES, PERSPECTIVE FROM BROILER PRODUCERS	1	2	3	4
DR. LEONIE JACOBS	1	2	3	4
BROILER CHICKEN WELFARE DURING THE PRE- SLAUGHTER PHASE	1	2	3	4

DR. LARRY SADLER	1	2	3	4
WELFARE AND ANTIBIOTIC ISSUES IN COMMERCIAL LAYERS	1	2	3	4
DR. ERIC GONDER	1	2	3	4
WELFARE ASPECTS IN COMMERCIAL TURKEYS	1	2	3	4
DR. MONICA LIST	1	2	3	4
WELFARE, SCIENCE, AND STANDARDS: THE NGO PERSPECTIVE ON POULTRY WELFARE				
DR. BRYCE BURNETT	1	2	3	4
POULTRY WELFARE AND ANTIBIOTIC USE IN POULTRY FROM THE CONSUMER'S PERSPECTIVE	1	2	3	4

1. SUGGESTED TOPICS FOR FUTURE WORKSHOP/SYMPOSIUM:

2. SUGGESTED SPEAKERS FOR FUTURE WORKSHOP/SYMPOSIUM:

3. GENERAL COMMENTS/CONCERNS:



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The American College of Poultry Veterinarians was formed in 1992 exclusively for charitable, scientific and educational purposes. It is a 501(c) 3 incorporated in the Commonwealth of Pennsylvania.

ACPV Vision

The vision of the American College of Poultry Veterinarians is to define and set the gold standard in the veterinary specialty of poultry health and well-being.

ACPV Mission

The mission of the American College of Poultry Veterinarians is to establish standards and implement the specialty certification of veterinarians who attend to poultry health and well-being by oversight of training programs and credentials, preparation and administration of the certification exam, and support of continuing education for recertification, with accountability to the American Board of Veterinary Specialties.

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