“Improving Antimicrobial Use in Food Animal Production: Alternatives, Options and Incentives”

APUA-sponsored National Stakeholder Meeting
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Food Industry: Perspectives and Opportunities

6th presentation
Beef Industry – National Cattlemen’s Beef Association (NCBA)
Michael D. Apley, DVM, PhD, Dipl. ACVCP
Antimicrobial Use in Beef Cattle Production

There is a range of doses chlortetracycline (CTC), TC, OTC used for prevention/control, treatment and feed efficiency. Dr. Apley is concerned about evidence (re: short term, high dose, low dose/long duration). Ionophores are used to increase efficiency of energy and nitrogen metabolism in rumen/animal and retard feedlot disorders.

The biggest challenge is at weaning. There is almost no placental transfer in calves (unlike humans). In cow/calf production, neonatal enteric disease poses a challenge
Preventive practices include:
- Pre-calving vaccination
- Movement strategies – separation of younger calves from older calves in perinatal period to avoid disease transmission
- Nutritional programs (trace elements) to assure colostrums quality and amount
- Monitoring for adequate intake of colostrums
- Early vaccination of calves

In the feedlot phase, respiratory disease is responsible for 75% of morbidity.
Feedlot preventive practices include:
- Extensive vaccination programs
- Antimicrobial administration to selected high risk groups (at risk for an outbreak)
- Cattle flow: backgrounding programs (intermediate step between weaning & feedlot)
- Nutritional management
- Cattle handling strategies to reduce stress

Research needs
- Genetic markers for disease resistance; subsequent breeding programs on disease resistance
- Novel immune system modulators
- Improved methods to identify pathogen isolates to aid in understanding pathogen population dynamics

7th presentation
Dairy Industry
Mike Lormore, DVM, MS, MBA
Livestock Veterinary Medicine: a Focus on Animal Health, Food Safety and Performance
The principal focus of livestock veterinarians is to develop systems to minimize disease risk, maximize food quality and safety, and optimize animal performance for long-term viability. These goals are accomplished through using epidemiological methods/tools and routine health monitoring. Healthy animals are central to productivity, and the need for therapeutic intervention is a failure in disease prevention. According to FAO, livestock disease reduces global productivity by 20%.

Major diseases of dairy cattle
Youngstock: enterics, pneumonia, parasites
Lactating Herd: mastitis, metritis, pneumonia, lameness, metabolic diseases

Classes of antibiotics available for both humans and animals:
Aminoglycosides, cephalosporins (1st-2nd, 3rd, 4th), Macrolides (not ketolides), quinolones/fluoroquinolones, Tetracyclines (not tigecycline), ansamycins critically imp. for horses

Disease Prevention:
Facilities designed for:
- Proper ventilation
- Animal hygiene
- Protection from her mates
- Waste management systems designed to reduce exposure to environmental pathogens
- Cooling systems (heat stress 68-70 degrees)
- Milking Systems designed to reduce bacterial load and mechanical transmission of pathogens and in-line diagnostics for early disease detection.

Cow management systems and processes:
- Biosecurity systems, proper nutrition, proper milking procedures
- Management systems: transition cow, calving, colostrum, work flow protocol designs
- Vaccination protocols
- Personnel training
- Risk assessment

Treating Sick Animals:
- Training for accurate disease identification, drug selection & treatment protocol.
- Effective treatment of sick animals, with adherence to withdrawal times.

Salmonella and E. coli O157 pose special problems which require special measures: biosecurity to minimized spread and in the case of E. coli – nutrition management, vaccination and post-harvest methods to further reduce end product contamination.

Going forward:
- Continued focus on systems development
- Expanded role of veterinarians as key part of management team
- Employee training
- Active research – including development of early detection systems and SMART data analysis systems

A limited arsenal of antibiotics is necessary in managing animal health – when animals are sick or at high risk of contracting disease.

8th presentation
Pork Industry
Paul Sundberg, DVM, PhD, Dipl. ACVPM

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Swine Health and Production: Issues Management and Program Development in Disease Prevention

Pork Quality Assurance (PQA) program was introduced in 1989 as an education program to raise awareness among producers on how to avoid product residue. Site assessment and animal well being were added to the program in 2005, so named PQA Plus. The goal is ongoing improvement and is a three step process: certification, site status (improvements from assessment implemented), and verification. This program provides information about on-farm good production practices (GPPs) to promote pork safety and pig health and include a valid veterinary/client/patient relationship (VCPR) to guide judicious use of antimicrobials and so minimize AMR. The market has supported the program – as part of a requirement for pig delivery.

The GPPs include the following components:

- Efficient/effective herd health management plan
- Responsible antibiotic use: take appropriate steps to reduce use; use only when measurable benefit; use guidelines – Take Care Responsible Use
- Record keeping: identify & track all treated animals; maintain records
- Proper storage and labels for all drug products and medicated feed
- Education of all animal caretakers on proper health & safety procedures to protect human food supply
- Development & implementation of animal caretaker training program
- Proper swine care to promote swine well-being.

All major packers require their producer suppliers have the PQA Plus certification (of education, not practice). To date, 55,000 pork producers are certified and 18,000 sites (83% of U.S. pork production) have been assessed for program implementation. An independent survey (assessment) has verified that 95% or> have implemented components of PQA plus, including having a valid VCPR and up-to-date medication and treatment records.

He/Pork Checkoff has developed a biosecurity guide for pork producers to promote more cautious behavior and reduce risk of new disease being introduced to a herd. Pork production 30% more with 40% decrease in herd size – Biosecurity and management have contributed to increasing productivity.

With respect to antimicrobial use, Paul cites Apley reference (2006 NAHMS data) – 1.6 million pounds of antibiotics/year are used for production and prevention (cf. UCS 2001 figures – 10.3 million pounds)

Paul concludes that antibiotics are an important tool for animal health. Antibiotic use is minimized (because it is a production cost) through ongoing improvements in animal husbandry, veterinary care and biosecurity.

9th presentation
Poultry Industry (no abstract or slides- transcript only)
Chet Utterback
Antimicrobial Use and Infection Prevention and Control in Poultry Production

Chet has been manager of the poultry research farm ($3.2 million) at the University of Illinois, Urbana-Champaign for 26 years – and has been working in poultry for his entire life (8 years previous in a large commercial operation). He receives 25 calls per year- from people who have backyard chickens- by the time they get analyses it would have been too late. Half the flocks will be dead by the time the results are analyzed. Most of these birds will not enter the food chain. He treated the birds with bacitracin-laced feed and they were ok – by the time results were available. People with a small number of birds will not take them to a vet. If these birds remain untreated – they can be the source of small outbreaks that will be spread – doesn’t think they should do away with ability of farmer to contact a vet by phone for advice. He uses monensin as a
coccidiostats on the farm. Dr. Yvette Johnson is the species veterinarian for the farm. Chet has even done research on coccidiosis and never had it spread to anywhere else in the farm. Chet maintains that a veterinarian is not needed if a farmer knows what he/she is doing. He uses flavomycin before using bacitracin- feed. They find that birds do so much better with this regimen, before they start them on a research trial.