

Commercial Broiler Production

David French, DVM, MAM, Dipl. ACPV
American Association of Avian Pathologists

American Association of Avian Pathologists

- Judicious Use Guidelines – Visit their website for AAAP-AVMA Guidelines for Judicious Therapeutic Use of Antimicrobials in Poultry.
 - Disease Prevention Strategies
 - Judicious Use
 - Water Administration of Antimicrobial Therapeutics
 - Feed Administration of Antimicrobial Therapeutics
 - Injectable Antimicrobial Therapeutics

Source: <https://www.avma.org/KB/Policies/Pages/AAAP-Guidelines-to-Judicious-Therapeutic-Use-of-Antimicrobials-in-Poultry.aspx>

Typical Commercial Broiler Production

- “Anything times a million is a lot.” Quote from a veterinary colleague in the poultry industry.
- Parent Stock
 - Males and Females are purchased from a Primary Breeder Company and raised for 63 to 65 weeks
 - There are roughly 10 females per male kept as a good breeding ratio
 - Each female will lay approximately 160 eggs and produce 135 chicks
 - A million bird per week operation would need at least 386,000 breeder females
 - A typical breeder house contains roughly 12 to 13,000 birds
 - Medication if required, is generally by feed or water to a house
- Broilers
 - Consider 1 million birds per week to the plant
 - Must hatch 1,050,000 birds over 4 days (262,500 per day)
 - Houses contain 25,000 to 27,000 birds – depending upon bird size and house dimensions
 - Individual handling / treatment of birds is impossible
 - Medication, if required, is generally by feed or water to a house

Medication Use by the Poultry Industry

- Judicious Use and Veterinary Oversight in a Highly Integrated Industry
 - Veterinary staff by companies in the poultry industry
 - Increased with VFD requirements
- Different Markets Drive Production Practices Affecting Antibiotic Use
 - “No Antibiotics Ever” versus “Traditional” Programs
 - Markets are different - Goals are the same – keep birds as healthy as possible but treat sick flocks when necessary
 - Unintended consequences of each program
 - Both must consider animal welfare, sustainability of agricultural practices, and food safety as they make their decisions regarding when and how to treat

What antibiotics are used by the poultry industry, and how are they used?

- Parent Stock – Most Frequent Problems
 - Early Mortality due to *E. coli*, *Salmonella typhimurium*, *Pseudomonas aeruginosa* (Gentamicin)
 - Staphylococcus (Tetracyclines, Penicillin*)
 - Coccidiosis (some use low level ionophores, but most use vaccines)
 - Worms: Ascarids, Capillaria, Tapes, Cecal (Fenbendazole)
 - Blackhead no treatment left – may require treatment of secondary bacteria
 - Mycoplasma (Mg/MS) – Chlortetracycline, Neomycin/Oxytetracycline, Oxytetracycline, Tylosin
 - Fowl Cholera / Peritonitis – (Tetracycline, Penicillin*)

*extra-label use, penicillin labeled for turkeys not chickens

Alternatives to antibiotics or aids to control for most frequent problems:

- Parent Stock Most Frequent Problems
 - Early Mortality – sanitation – breeder farm, and hatchery – can be difficult to control because of how the egg is laid – this is a given without antibiotic
 - Staphylococcus – reduce stress, organic acids
 - Coccidiosis – litter moisture and management of birds being vaccinated is helpful
 - Worms – tends to be worse following clean out – deep litter is helpful
 - Blackhead – litter and clean out management between flocks
 - Mycoplasma (Mg/MS) – All In / All Out, Biosecurity
 - Fowl Cholera / Peritonitis – Rodent control, Biosecurity

What antibiotics are used by the poultry industry, and how are they used?

- Broilers

- Early mortality (*E. coli*, *Salmonella typhimurium*, *Pseudomonas aeruginosa*) - Gentamicin
- Respiratory disease with secondary bacterial infection – Chlortetracycline, Neomycin/Oxytetracycline, Oxytet, Sulfadimethoxine + Ormethoprim (Rofenaid**)
- Coccidiosis (ionophores, chemicals, combination product)
- Necrotic enteritis (BMD, Virginiamycin, Lincomycin)
- Gangrenous dermatitis (Lincomycin or Penicillin*)
- Mg/MS (Tylosin)

** Rofenaid not currently manufactured

*extra-label use, penicillin labeled for turkeys not chickens

Alternatives to antibiotics or aids to control for most frequent problems:

- Broilers

- Early mortality – sanitation – breeder farm, and hatchery – can be difficult to control because of how the egg is laid – this is a given without antibiotic (lose > 1.5%)
- Respiratory disease with secondary bacterial infection – viral vaccination program, down time between flocks, ventilation, organic acids
- Coccidiosis – litter moisture and management of birds vaccinated is helpful
- Necrotic enteritis – ionophores push toward GD – Organic Acids
- Gangrenous dermatitis – coccidial vaccines and chemicals push toward NE – Organic Acids
- Mg/MS – Biosecurity and testing programs in breeders – Elimination of positive flocks, use of less aggressive vaccination programs in positive progeny

Summary

- As an industry, we have made a concerted effort to comply with the AAAP-AVMA guidelines for judicious therapeutic use of antimicrobials in poultry.
- Who should be responsible for antibiotic approval and denial – certainly not special interest groups with anti-technology prejudices, or marketing departments of restaurant chains.
- These products have been and should continue to be scientifically vetted by means of quality protocols, based on good science and the decision left to the FDA.

Summary

- Are there areas that we can continue to improve – always.
- Are there reasons we should be concerned about the loss of tools from the veterinary tool box – absolutely.
- Bottom line is this – we will continue to strive to fulfill the veterinary oath, which promises ... *protection of animal health and welfare, the prevention and relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge*. We must walk both sides of this issue.