Antimicrobial Use in Poultry

Antimicrobial Stewardship within U.S. Poultry Production
2013 – 2017 Report
Introduction

The U.S. Poultry & Egg Association announces the release of the first-ever report quantifying the U.S. poultry industry’s on-farm antimicrobial use. The new report shows dramatic reductions of turkey and broiler chicken antimicrobial use over a five-year timeframe. As part of its commitment to the transparency and sustainability of a safe food supply, the poultry industry aims to strike a balance between the responsible use of antimicrobials “medically important” to human health and keeping poultry flocks healthy.

Under the research direction of Dr. Randall Singer, DVM, PhD, of Mindwalk Consulting Group, LLC, this report represents data regarding the use of antimicrobials from 2013 to 2017 throughout the lifetime of U.S. broiler chickens and turkeys.

What is the Difference Between Antimicrobials and Antibiotics?*

- Antibiotics or antibacterial agents prevent the development of bacteria
- Antimicrobial agents may prevent the development of various microbes including bacteria, fungi and some viruses

*Note: For the purposes of this report, these terms may be used interchangeably.

Report Collection Methods

Data regarding antimicrobial use among broiler chickens and turkeys was reported from the hatchery until the day of harvest through the five-year collection period of 2013–2017. For 2017, data representing more than 7.5 billion broiler chickens (about 90% of annual U.S. chicken production by the major companies on the WATT PoultryUSA list) and 160 million turkeys (about 80% of annual U.S. turkey production by the major companies on the WATT PoultryUSA list) were submitted, analyzed and are reported within this study.

What are Medically Important Antimicrobials?

Medically important antimicrobials are those that are important for treating human disease, as defined in FDA GFI #152.

Relevant Agricultural Regulations

The Food and Drug Administration's rulings in Guidance for Industry #209, #213 and the Veterinary Feed Directive, required changes in selected treatments, documentation and the need for veterinary supervision with medically important antimicrobial treatments. These steps increased the accuracy of data collection for all animal agriculture and dramatic changes were recorded within these findings. Despite the initial three-year time frame the FDA gave to complete the recommended changes, many poultry companies phased out their use of medically important antibiotics for production purposes before the full implementation of the rule on January 1, 2017. This is a brief description of the key rulings involved.

- **FDA Guidance #209** – The judicious use of medically important antimicrobial drugs in food-producing animals calls for 1) limiting medically important antimicrobial drugs (for human medicine) to uses in food-producing animals that are considered necessary for assuring animal health; and 2) limiting such drugs to uses in food-producing animals that include veterinary oversight or consultation.

- **FDA Guidance #213** – Provided veterinarians and poultry producers with guidance, information and a deadline by which they would need to align with Guidance #209.

- **FDA Veterinary Feed Directive (VFD)** – Antimicrobials are classified as VFD drugs, given to the animals through feed, and permitted only under the professional supervision of a licensed veterinarian.
### Results

#### Key Changes Among Broiler Chickens Over the Five-Year Period

- **Broiler chickens receiving antimicrobials in the hatchery decreased**
  - 2013: 93%
  - 2017: 17%

<table>
<thead>
<tr>
<th>Hatchery gentamicin use decreased approximately</th>
<th>Medically important in-feed antimicrobial use in broiler chickens decreased</th>
<th>Medically important water-soluble antimicrobial use in broiler chickens decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>tetracycline: 95%</td>
<td>virginiamycin: 60%</td>
<td>sulfonamide: 72%</td>
</tr>
<tr>
<td>penicillin: 21%</td>
<td>tetracycline: 47%</td>
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</tr>
</tbody>
</table>

There was a documented shift to the use of antimicrobial drugs that are not considered medically important to humans (e.g., avilamycin and bacitracin BMD).

### The Difference Between Broiler Chickens and Turkeys

For many reasons, the data records of antimicrobial use among broiler chickens and turkeys in U.S. poultry agriculture should neither be combined nor compared.

- **BROILER CHICKENS**
  - Lower body weight
  - Shorter life span
  - Less susceptible to lifetime illness
  - Smaller doses needed

- **TURKEYS**
  - Higher body weight
  - Longer life span
  - More susceptible to lifetime illness
  - Larger doses needed

### Support for Proper Treatment of Poultry Illness

Poultry producers and veterinarians are most interested in keeping their flocks healthy and minimizing mortality, which minimizes the need to use antibiotics. Of course, sick birds cannot be allowed to suffer, and they cannot be sent to harvest. It is in everyone’s best interest to keep the birds healthy. Routine activity on this front includes:

- Good hygiene in hatchery
- Well-nourished embryo
- Good sanitation of house, feed and water
- Precautions taken to reduce animals’ contact with outside pathogens
- Vitamin supplements provided in animal feed and water
- Vaccinations, where available and applicable, to prevent common poultry diseases
- Shift to use of medicines that are not critical to human medicine
Commonly Treated Poultry Illnesses

While the report results are encouraging, there are still serious bird illnesses that must be treated, documented and managed. Diseases such as these include:

- **Necrotic enteritis** – a clostridial disease, remains one of the most important diseases that requires antimicrobial therapy among broiler chickens and necessitates a considerable fraction of the overall antimicrobial use in poultry production
- **Gangrenous dermatitis** – another clostridial disease among broiler chickens, and one of the most important diseases of turkeys, also necessitates a considerable fraction of the overall antimicrobial use in poultry production
- **Colibacillosis** – a broad category of *E. coli* diseases that affect broiler chickens and turkeys, results in much of the antimicrobial use in feed and water

Volume Sold vs. Dose Administered

Prior to Dr. Singer’s study, FDA antimicrobial sales reports provided the only estimate of the domestic sale and distribution of medically important antimicrobials approved for use in food-producing animals. The FDA is supporting this effort in poultry and additional efforts in the other ag commodity groups because of the need to systematically collect on-farm antimicrobial usage estimates.

Key Changes Among Turkeys Over the Five-Year Period

<table>
<thead>
<tr>
<th>Hatchery</th>
<th>Medically important in-feed antimicrobial use in turkeys decreased</th>
<th>Medically important water-soluble antimicrobial use in turkeys decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>gentamicin use decreased approximately</td>
<td>tetracycline 67% penicillin 42% lincomycin 46% neomycin 49% erythromycin 65%</td>
<td>tetracycline 28%</td>
</tr>
</tbody>
</table>

How Medications Are Given

- **In the hatchery and after hatching:** Broiler chicken embryos and turkeys may be injected with vaccine and medication as needed for preventive health
- **Feed:** Poultry may be given medication within their feed, as one of the easiest ways to deliver the correct dosage
- **Water-Soluble:** Poultry may be given medication for therapeutic purposes dissolved in water, and though this may be a bit more challenging to dose accurately, it can support sick animals with limited appetite for food
Conclusion

This report documents that the poultry industry of the U.S. has made substantial progress in reducing its use of antimicrobials. Furthermore, full implementation of FDA GFI #213 and the changes to the VFD rule likely improved antimicrobial stewardship by shifting the medically important antimicrobials to requiring veterinary supervision and by improving overall record-keeping and data management with respect to antimicrobial administration. Moving forward in 2019, Dr. Singer will continue the annual collection of data from the broiler and turkey industries and will begin collecting data from the U.S. table egg industry. These efforts will continue to assist the poultry industry to improve antimicrobial stewardship and will also document the burden of flock illness and reasons for on-farm antimicrobial usage.

Dispelling Myths Regarding Farm-Use of Antimicrobials

**Myth:** Antimicrobials are given to poultry flocks continuously to prevent disease and make them grow better.

**Truth:** Poultry producers use antimicrobials only as they are ethically needed and legally allowed according to label and dosing instructions approved by the FDA, and as advised by a supervising veterinarian.

**Myth:** The poultry industry reduced antibiotic usage only when forced to by the FDA.

**Truth:** Many poultry companies changed antibiotic usage years prior to the change in FDA regulations. In addition, approximately 50% of broilers are produced with no antibiotics ever, which is not required by FDA. The reduction observed in the data set exceeds those from the shift to no antibiotics ever.

**Myth:** All use of antimicrobials in poultry agriculture should be eliminated to reduce antibiotic resistance in humans.

**Truth:** Chickens and turkeys, like any animal, may become ill and need treatment. Antibiotics, when used therapeutically, are administered responsibly under veterinary supervision. Eliminating antibiotics would lead to unnecessary suffering in poultry and other animals when sick.

**Myth:** Antibiotics given to poultry in animal agriculture will be present in the poultry that people buy at the store.

**Truth:** The FDA has always had threshold levels and regulations in place to ensure that all poultry treated with antibiotics go through a withdrawal period and are below FDA thresholds, and often below current analytical detection limits, before the poultry products can enter the food supply. There are many companies growing poultry with “no antibiotics ever” in response to consumer demand, but it should be known that there has been no poultry with antibiotic levels above long-standing standards established by FDA for many years for several reasons, including prevention of antibiotic resistance.

Acknowledgements

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Study Reference:
The U.S. Poultry & Egg Association (USPOULTRY) is a non-profit organization which progressively serves its poultry and egg members through research, education, communications and technical services. In part, it is committed to the advancement of research and education in poultry science and technology, to always be responsive and effective to the changing needs of the poultry industry, to increase the availability and constant improvement of the quality and safety of poultry products and to promote responsible practices in animal care and environmental stewardship.

If you have questions about this report, please use the following contact resources to inquire further:

U.S. Poultry & Egg Association
1530 Coolidge Road, Tucker, GA 30084-7303
Phone: 770.493.9401   Fax: 770.493.9257
www.uspoultry.org   info@uspoultry.org