



2013-2023 Report

Antibiotic Stewardship Within U.S. Poultry Production

Introduction

Updated research, supported by U.S. Poultry & Egg Association, has been released quantifying the U.S. poultry industry's on-farm antibiotic use. The new report adds data from 2023 to the previously published peer-reviewed reports and now covers the use of antibiotics from 2013 through 2023 for U.S. broiler chickens and turkeys and from 2016-2023 for U.S. layer chickens. The data is collected, analyzed and published under the research direction of Dr. Randall Singer, DVM, PhD, of Mindwalk Consulting Group, LLC and the University of Minnesota.

The data collected through the voluntary participation of U.S. poultry companies demonstrates a commitment to antibiotic stewardship and disease prevention within poultry production. 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 antibiotics, especially those considered "medically important" to human health and keeping poultry flocks healthy.

Report Collection Methods

Data regarding antibiotic use among broiler chickens and turkeys was reported from the hatchery until the day of harvest through the 11-year collection period of 2013-2023, with major poultry companies in the United States voluntarily reporting their antibiotic use data. Data for the table egg industry was reported from the hatchery throughout production for the eight-year collection period of 2016-2023.

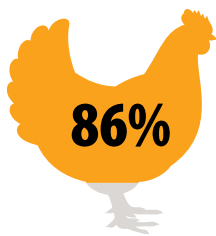
For all three datasets, a substantial fraction of U.S. production is included, based on a comparison to annual U.S. production numbers reported by the National Agricultural Statistics Service of USDA. Again, participation by these companies was entirely voluntary. Specifically, the datasets represent:

Approximately
150 Million
Average Hens in Lay



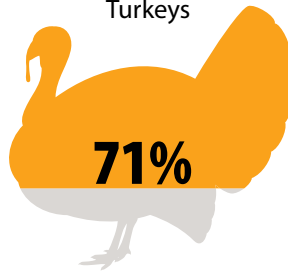
(more than 46% of annual U.S. layer/egg production)

Approximately
8 Billion
Broiler Chickens



(more than 86% of annual U.S. chicken production)

Approximately
150 Million
Turkeys



(more than 71% of annual U.S. turkey production)

Relevant Agricultural Regulations & Information

FDA Guidance #209

The judicious use of medically important antibiotics in food-producing animals calls for 1) limiting medically important antibiotics (for human medicine) to uses in food-producing animals that are considered necessary for assuring animal health; and 2) limiting such antibiotics 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)

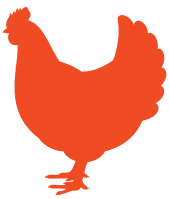
VFD Antibiotics are given to the animals through feed, and permitted only under the professional supervision of a licensed veterinarian.



What are "Medically Important" Antibiotics?

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

Results

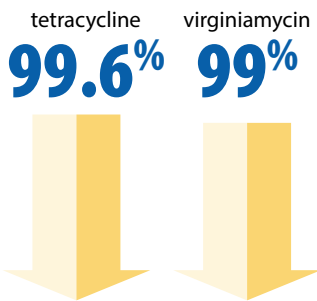


Key Changes Among Broiler Chickens Over the 2013–2023 Period

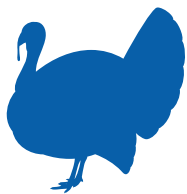
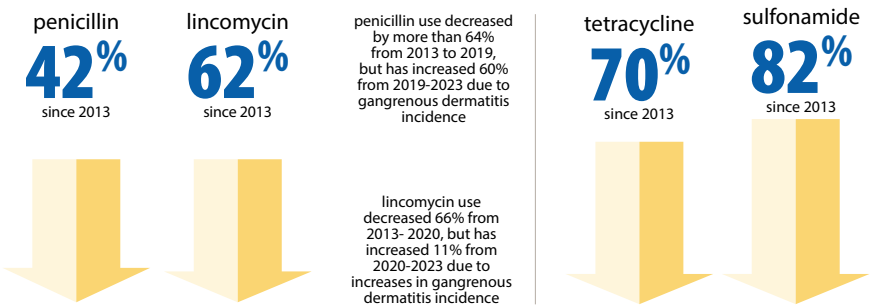
Broiler chickens receiving antibiotics in the hatchery **decreased from 90% (2013) to less than 1% (2023)**

Medically important in-feed antibiotic use in broiler chickens decreased substantially:

There has been **no reported in-feed tetracycline use** since 2019, and virginiamycin use has decreased **about 99%** over the 11-year period



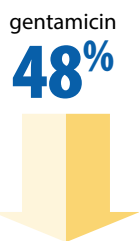
Medically important water-soluble antibiotic use in broiler chickens decreased substantially from 2013–2019 but has increased for some antibiotics from 2020–2023:



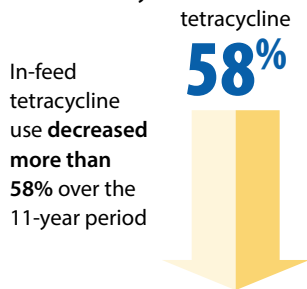
Key Changes Among Turkeys Over the 2013–2023 Period

Turkeys receiving antibiotics in the hatchery **decreased from 97% (2013) to approximately 40% (2023)**

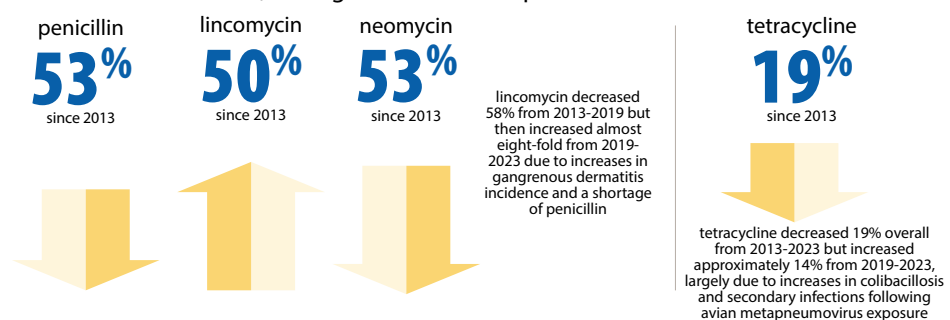
Hatchery gentamicin use decreased almost 48% from 2013 to 2023



Medically important in-feed antibiotic use in turkeys decreased substantially:



Medically important water-soluble antibiotic use in turkeys decreased substantially from 2013–2019 and then stabilized or increased from 2019–2023. Increases were typically due to increased disease incidence, as seen in other countries as well, during the 2019–2023 period:



The Difference Between Broiler Chickens and Turkeys

For many reasons, the data records of antibiotic 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 Required

Turkeys

- Higher Body Weight
- Longer Life Span
- More Susceptible to Lifetime Illness
- Larger Doses Required



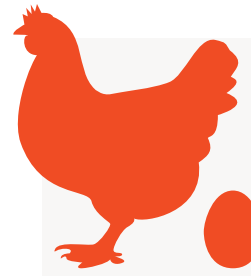
Key Findings Among Layer Chickens Over the 2016-2023 Period

In the U.S. there are three primary phases of commercial egg production: hatchery, pullet growing farms and egg laying farms. The majority of chicks purchased by egg companies are sourced from hatcheries that are owned and operated by genetics companies. Consequently, data regarding antimicrobials administered to these day-old pullets prior to arrival on the pullet farm would be held by the genetics companies. Pullets are then raised on farms owned by the production company or contract growers until the



birds are approximately 16 to 18 weeks of age. The birds are then transferred to egg-laying barns which are often located on separate premises from the pullet farms. Hens will typically begin laying eggs around 20 weeks of age. The length of the productive life of a laying hen depends upon the number of egg production cycles utilized on the egg farm but typically ends when the hen is around 80 to 100 weeks of age.

Antibiotic use in layer chickens is very different from broiler chickens and turkeys. Table egg production is similar to milk production, where the product for human consumption is produced on a daily basis. Most antibiotics that could be administered to laying hens have withdrawal periods that would prevent all eggs produced during this period from entering the food supply. This is one reason why little antibiotic is used in table egg production in the U.S. The primary medically important antibiotic used in the laying hens in this dataset was chlortetracycline (CTC) administered in the feed, in part because it has a zero-day withdrawal, meaning that there is no loss of eggs during the treatment period. There are no other medically important antibiotics that are labeled for use in table egg production hens that have a zero day withdrawal.



The primary medically important antibiotic was used in layer production for treatment and control of disease: Chlortetracycline (CTC)

CTC was only administered via **the feed in pullets and hens**

The majority (>95%) of CTC was used in the laying hens for **treatment of disease**, and no pullets in the dataset were given CTC in the feed during 2022 or 2023

Less than 0.1% of total hen-days were exposed to CTC

All chicks in the dataset received **gentamicin in the hatchery**, which were owned and operated by the genetics companies.



Prevention of Poultry Illness

Poultry producers and veterinarians are most interested in keeping their flocks healthy and preventing disease, 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:

- Hatchery hygiene
- Sanitation of house, feed and water
- Precautions taken to reduce animals' contact with outside pathogens
- Well-balanced feed formulated by poultry nutritionists
- Vaccinations to prevent common poultry diseases
- Fresh, sanitized drinking water

Commonly Treated Poultry Illnesses

Several serious bird illnesses continue to present problems to the health and welfare of U.S. chickens and turkeys, including substantial secondary bacterial infections following avian metapneumovirus contagions. Prevention measures for these diseases are imperfect, and consequently, antibiotics are used to treat these sick birds. Several of these key diseases include:

Necrotic enteritis

A clostridial disease, remains one of the most important diseases that requires antibiotic therapy among broiler chickens

Gangrenous dermatitis

Another clostridial disease among broiler chickens, and one of the most important diseases of turkeys

Colibacillosis

A broad category of *E. coli* diseases that affect broiler chickens and turkeys

Volume Sold vs. Dose Administered

FDA releases annual antibiotic sales reports which provide an estimate of the domestic sale and distribution of medically important antibiotics approved for use in food-producing animals. These sales data provide no details or context



for the actual use of these antibiotics on the farm. For this reason, FDA has helped support efforts in poultry and other animal agricultural commodities to understand how the antibiotics are actually used on the farm. FDA is currently exploring mechanisms for the voluntary collection of these data in all animal species. To improve overall stewardship of antibiotics in animal agriculture and to ensure that antibiotics are used responsibly, it is critical to work with industry veterinarians who have oversight of all medically important antibiotic

administrations and who are collecting data regarding antibiotic use on the farm.



How Medications Are Administered

Veterinarians evaluate flock and medication circumstances to select the most effective antibiotic(s). The treatment options include:

- Injected at the hatchery: Chickens and turkeys may be injected with vaccine and medication in the egg (in ovo), or as day-old hatchlings, as needed for preventive health
- Mixed into the feed
- Mixed into the drinking water

Conclusion

This report points to the continued focus on the judicious use of antibiotics in the U.S. poultry industry, particularly those that are considered medically important. U.S. Poultry & Egg Association will continue to support Dr. Singer in the annual collection of data from the layer, broiler and turkey industries. These efforts will continue to help the poultry industry improve antibiotic stewardship and will better describe the reasons for on-farm antibiotic usage.

Acknowledgements

This project is funded with multiple annual grants from the U.S. Poultry & Egg Association. The project was also partly supported from 2016 to 2023 under a cooperative agreement between the U.S. Food and Drug Administration and Dr. Singer (U01FD005878). Beginning in September 2024, a new cooperative agreement between FDA-CVM and Dr. Singer was initiated, thus continuing the public-private partnership for this effort. The project could not have been such a success without the support of the National Chicken Council, National Turkey Federation and United Egg Producers, as well as the voluntary participation of layer, broiler chicken and turkey companies of the U.S.

Study Reference:

Details of the studies can be found on the website of Mindwalk Consulting Group (<https://mindwalkconsultinggroup.com/>).

About the U.S. Poultry & Egg Association

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,
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