

Antibiotics: Keep this effective weapon sharp



By Technical Team, EW Nutrition

Antibiotics are a precious resource whose long-term efficacy must be protected - for human and animal health. This is a difficult challenge for healthcare providers (veterinarians and medical doctors), as well as farmers and integrators. In this series of articles, we will explore the general and specific measures and solutions through which animal production can contribute to the overall reduction of antibiotic use.



Responsible animal production contributes to maintaining antibiotic efficacy

Shortly after the discovery of penicillin in 1929, Alexander Fleming already pointed out the possibility of resistance during an interview with the New York Times. The first case of penicillin resistance was reported only one year after clinical trials began; within 20 years, 80% of *Staphylococcus aureus* isolates were resistant to penicillin (Lobanovska and Pilla, 2017).

Over the years, clients and patients have gotten used to receiving a pill to quickly fix their ailments. Often, antibiotics have been prescribed for illnesses they were not effective against, including viral challenges. This has unnecessarily accelerated the rate of resistance development. To reverse this trend, education is key. At the same time, the judicious use of antibiotics, meaning the correct antibiotic for the challenge plus proper administration and duration of use, is paramount for all medical professionals to help preserve the efficacy of these critical substances.

Antibiotic use in animal production must be reduced

For many years, animal producers have used antibiotics as growth promoters. The E.U. banned this type of use in 2006, and [the United States followed in 2017](#). Evaluations have shown a decrease in antibiotic use in the U.S.: In 2014, according to the FDA, 17,000 tons of antibiotics were sold in the United States for livestock, representing 80 percent of all U.S. antibiotics sales. In 2019, a total of about 11,000 tons of antibiotics were sold for use in food-producing animals ([FDA, 2020](#)).

As the number of isolated multi-drug resistant bacteria increases and the discovery and approval of new antibiotics slows, it is imperative that the use of antibiotics in animal production, especially those that are critically [important for humans](#), is reduced to a minimum. Hence, antibiotics should only be used to treat, control, or prevent diseases in case of imminent risk, but not for growth-promoting purposes.



Scanning electron micrograph of methicillin-resistant *Staphylococcus aureus* bacteria (yellow) and a dead human white blood cell (red). Credit: National Institute of Allergy and Infectious Diseases/NIH

Customers' requests for antibiotic-free chicken push antibiotic reduction

Many birds are already raised without antibiotics in the US and elsewhere because of the demands of the market. Since 2016, chicken antibiotic sales decreased by 62% ([Dall, 2020](#)). Frequently, the goal of these antibiotic-free (ABF) production programs is to differentiate products in a highly competitive commodity market. The reduction of antibiotic use has been a secondary, generally unintended consequence.

Nevertheless, to meet customer demands for ABF products, antibiotics that are not important to human health but for production (e.g., ionophores) have also been eliminated. In many cases, this has negatively affected growth performance and bird health. As the requirements for production efficiency and welfare standards increase, transitioning from "conventional" to ABF production poses a challenge for everyone involved.

Antibiotic reduction through improved management

One must never trade animal welfare for reduced antibiotics use, but the need for them can be decreased through improved management practices. Flock health starts with genetics companies selecting birds that are resilient to disease and management challenges and continues all the way to the processing plant. All of the inputs and practices must be optimized in modern poultry production to maintain a high level of performance and animal welfare while reducing reliance on antibiotics.

Antibiotic-free requires diligent management

When antibiotics are not available, attention to detail becomes more decisive. All aspects of production are important, but the most critical stages are those that affect the downstream process. The pullets, breeders, and hatchery require the most meticulous care. Additionally, all production factors must meet the highest quality standards: feed, light, air quality, water quality, litter quality, biosecurity, vaccination, sanitation, nutrition and feeding.



Antibiotic reduction requires meticulous attention to detail to safeguard animal welfare.

Non-antibiotic feed additives support ABF programs

ABF production is all about sustainability. For agricultural operations to survive and thrive in the future, one has to move away from the old paradigm of “saving the way to success”. This is not impossible in ABF production, but misses out on the larger picture of long-term profitability, investment in innovation, and system change.

Non-antibiotic feed and water additives are essential resources to support sustainable management. To mention a few, probiotics, prebiotics, toxin binders, organic acids, and phytomolecules are all options for reducing the need for antibiotics based on different modes of action. Phytomolecules, for example, often have [antimicrobial properties](#), some toxin binders can bind [bacterial toxins](#), and pre- and probiotics support the gut flora. There are many kinds of solutions on the market; the key is to find the right ones for your issues.

Antibiotic stewardship: together for a healthier future

There is already a large body of literature demonstrating the benefits of alternative or complementary solutions. More importantly, there are already many people that successfully raise birds and other animals without antibiotics. Whenever possible, leverage your professional network and talk to trusted people with unique experiences. Working together, we can build a healthier future for people and animals.

The Antibiotic Reduction series

The series that debuts here consists of a set of articles offering professionals a practical overview of poultry production with reduced antibiotic use. The independent expert in charge, starting with the next article in the series, is **Dr. TJ Gaydos**, who holds a Master's degree in Avian Medicine and is a diplomate of the American College of Poultry Veterinarians.

Dr. Gaydos works with integrated poultry companies and allied industries, focusing on bird health and antibiotic-free production performance. He has spent his veterinary career working to improve intestinal health, animal welfare, production efficiency, and reduce zoonotic diseases. He works extensively with intestinal health, probiotics and prebiotics, and other non-antimicrobial feed additives.

Topics covered under Dr. Gaydos's guidance include biosecurity, nutrition, pullet management, hatchery sanitation, gut health, and more. Together they provide an extensive look at the producers' pain points and potential strategies to maintain bird health while mitigating the need for antibiotics.

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