

Eight-Point Antibiotic Stewardship Plan

Tools that Help Improve Animal Health



Nutrition



Hygiene



Housing



Antibiotics



Vaccines



Probiotics | Prebiotics



Enzymes



Antiparasitics

As a company dedicated to the health and well-being of animals, Elanco Animal Health recognizes our obligation to help veterinarians and farmers responsibly use antimicrobials. We also recognize there is growing concern about antimicrobial resistance (AMR), which is why Elanco has instituted a multi-faceted approach to help protect the long-term viability of antimicrobials.

At a White House Forum on Antibiotic Stewardship in 2015, Elanco unveiled an aggressive eight-point plan to help safeguard animal and human health. The key elements of the plan include:

1. **Act with responsibility** - by working globally with food producers and retailers to provide training and encourage policies that reduce shared-class antibiotic use and increase veterinarian oversight.
 - Elanco has worked with more than 10,000 producers, veterinarians and food chain partners globally to improve responsible use of antibiotics, including:
 - ◊ Creating awareness of regulatory changes;
 - ◊ Promoting policy creation and change at individual entities throughout the supply chain; and
 - ◊ Delivering health monitoring and tracking data to producers to help them make more informed animal health and care decisions to potentially reduce the need for medically important antibiotic treatment.
 - Joined with 200 other companies and 700,000 veterinarians worldwide to undersign HealthforAnimals' 'Commitments and Actions on Antibiotic Use,' which outlines the five guiding responsible use principles of the animal medicines industry.
 - Joined with the New York Academy of Sciences in presenting "Minimizing the Risk of Antimicrobial Resistance from Food Animal Production," a daylong symposium to discuss the drivers of antimicrobial resistance in food animal production; identified pathways for transmission of resistant organisms and methods for controlling transmission; explored alternative treatment approaches; and discussed consumer demands and beliefs surrounding food safety and the use of antibiotics in the food supply. The results were recently published as five papers in the *Annals of the New York Academy of Sciences*.
2. **Cease marketing of growth promotion** uses for shared-class antibiotics and eliminated growth promotion indications of Elanco's shared-class antibiotics globally in 2016.
 - Elanco has eliminated all growth promotion claims globally, changing nearly 100 labels from our medically important antibiotic molecules around the world.
3. Help customers **eliminate continuous use of shared-class antibiotics** for therapy purposes by providing an alternative.
 - The prevention of liver abscess in beef cattle is a particular area of focus for Elanco to help customers eliminate continuous use of shared-class antibiotics. Liver abscesses are observed in cattle around the world, regardless of production system, and they affect the animal's health, performance and value. Elanco is working on a number of options to bring solutions in this area, from changes in dosing to new innovations.
4. **Eliminate over-the-counter sales of shared-class antibiotics globally** - including injectable products - where veterinarian oversight exists.
 - Elanco has removed over-the-counter use from 67 product labels to require the oversight of a veterinarian in the countries where over-the-counter uses remained and veterinary infrastructure exists.

5. **Eliminate concurrent use of shared-class antibiotics to treat the same disease.**
 - Elanco does not support concurrent use of shared-class antibiotics to treat the same disease where there is no co-formulation approved. We support efforts to ensure the use of shared-class antibiotics focuses on the right drug, right dose, and at the right time.
6. **Support veterinary oversight and responsible use**, including helping build infrastructure globally.
 - Elanco has helped build training and infrastructure globally.
 - In September 2018, Elanco joined the U.S. Centers for Disease Control and Prevention (CDC) and U.S. Health and Human Services (HHS) AMR challenge committing to increase access to veterinary and professional oversight in countries with limited resources by engaging in two new partnerships in the next 12 months.
7. **Develop new animal-only antibiotics.** No animal should ever be treated with a shared-class antibiotic if an animal-only option exists. Animal-only antibiotics optimize animal welfare without compromising human use antibiotics.

Elanco has launched new animal-only antibiotics in pork and poultry, giving producers new alternatives to protect animal health and well-being without potentially impacting antibiotic treatment outcomes for people. The products:

- Prevent mortality caused by necrotic enteritis in poultry; and
- Reduce the incidence and severity of diarrhea caused by pathogenic E.coli in weaned pigs.

8. **Create alternatives.** Elanco commits to invest at least half of our food animal research budget to evaluate 25 viable non-antibiotic development projects that address diseases where there are few, or no, alternatives to shared-class antibiotics by 2020.

Elanco has intentionally built its capabilities to create alternative solutions over the past eight years, including:

- forming a Nutritional Health organization;
- opening a state-of-the-art Vaccine Innovation Center;
- opening an autogenous (or flock-specific) poultry vaccine manufacturing facility;
- creating the Elanco Alternatives to Animal Antibiotics Grand Challenge, offering more than \$2 million to support identification of new and novel ways to treat liver abscesses in cattle, necrotic enteritis and coccidiosis in poultry, and lawsonia and strep suis in pigs without the use of antibiotics;
- entering into an agreement with EnBiotix to explore application of engineered phage technology for bacterial infections as an alternative to traditional antibiotics ;
- collaborating with Novozymes, the world leader in biological solutions, to develop nutritional health products for beef cattle and dairy cows globally; and
- working with Ab E Discovery to further develop and bring to market an egg antibody focused on supporting poultry gut health and decreasing susceptibility to coccidiosis, thereby improving the growth and welfare of poultry.

We remain committed to 1) improving animal nutrition and gut health, which creates less need for shared-class antibiotics, 2) providing vaccine products, and 3) identifying products that enhance the immune system.

This intentional focus has led to adding 24 of our committed 25 alternatives to antibiotics in our pipeline. We're on track to meet the goal of 25 by 2020, as we have more candidates currently in assessment. In 2018, we commercialized two such alternatives:

- A probiotic tailored directly to the pathogens present on individual poultry farms that is precise and highly customized based on a specific pathogen strain present in the flock; and
- A vaccine to prevent porcine reproductive and respiratory syndrome (PRSS) for use in piglets two weeks and older.

At Elanco, we will continue to advance our vision of Food and Companionship Enriching Life by developing innovative solutions that protect and enhance animal health. Please visit www.elanco.com for more information about our ongoing commitment to antibiotic stewardship and alternatives to antibiotic use.