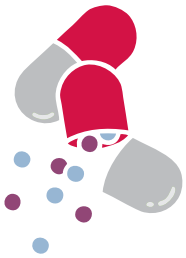
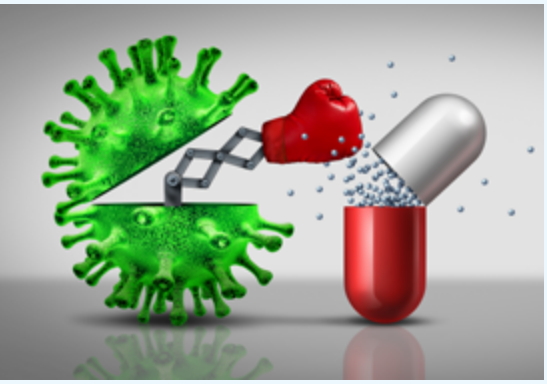
Sheep and Antimicrobial Stewardship



Antimicrobials and antimicrobial resistance

What are antimicrobials?

Antibiotics are a type of antimicrobial drug that can **kill** or **inhibit the growth** of bacteria that make people and animals sick. Many types of antimicrobials are produced naturally by bacteria to aid their survival.



What is antimicrobial resistance?

Antimicrobial resistance is the ability of bacteria to **resist the effect of an antimicrobial**, so that it is not killed or its growth is not inhibited.

Antimicrobials and **antimicrobial resistance** existed long before antibiotics were used to treat disease. Antimicrobial resistance has become an important health problem because bacteria that cause disease in animals and people have started to become resistant and can no longer be treated with available antibiotics. Because of this, antimicrobial resistance is considered by the World Health Organization to be one of the greatest threats to human and animal health.

Why is this important?

Some common diseases of humans and animals are becoming increasingly difficult and costly to treat because of antimicrobial resistance.

Antibiotic use in livestock agriculture

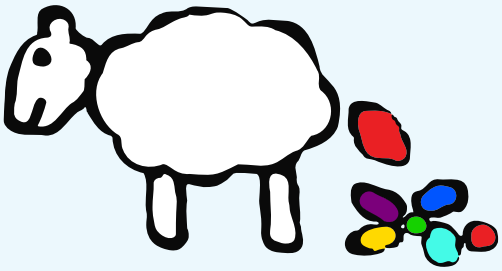
One of the most important drivers of antimicrobial resistance is the unnecessary use of antibiotics in humans and animals.

Diseases caused by viruses and parasites may be indistinguishable from bacterial diseases and may not respond to antibiotics. It is often necessary for the veterinarian to utilize laboratory testing to know if antibiotics are needed.

Antibiotic treatment should always be under the guidance of a veterinarian.

Consequences of antibiotic use in animals

Two important factors contribute to the spread of antimicrobial resistance:



1. **Animals excrete some of the antibiotic dose** via their urine and feces. This results in selection for resistant bacteria in the environment that may then infect animals or people. Vegetables grown in soils fertilized with animal waste can become contaminated with resistant bacteria.
2. **Antimicrobial resistant bacteria often develop in the gut when animals are treated with antibiotics.** These resistant bacteria can easily spread to other animals or people in close contact or may contaminate fresh meat products at the time of slaughter.

The Ohio State University
College of Veterinary Medicine

Antimicrobial Stewardship Program
Department of Veterinary Preventive Medicine
Ohio State College of Veterinary Medicine
BuckeyeASP@osu.edu

Sheep and Antimicrobial Stewardship

Disease prevention is the key to reducing the use of antibiotics and reducing antimicrobial resistance

The earlier a sick sheep is recognized and isolated, the greater the likelihood of a successful treatment outcome

Prevent exposure by maintaining a closed flock or purchase sheep from flocks free of diseases like foot rot (*Dichelobacter nodosus*), and enzootic abortion (*Chlamydia abortus*).

Quarantine and Monitor introduced sheep, including those returning from fairs and other events, for signs of sickness such as fever, diarrhea, cough, lameness, or loss of appetite.

Prevent spread – Wash hands, equipment and boots, and change clothing after entering the quarantine or hospital area of the farm.

Vaccinate – Protect your flock from common deadly diseases like tetanus, enterotoxaemia and pulpy kidney. At risk flocks should also be vaccinated for foot rot, caseous lymphadenitis (*Corynebacterium pseudotuberculosis*), and enzootic abortion.

Good management – House sheep in clean, warm, dry and well-ventilated conditions, with special attention to pregnant and lactating ewes and weaners, to prevent respiratory and gastro-intestinal diseases. Monitor body condition and maintain optimal nutritional management.

Monitor and, if necessary, **treat** sheep for intestinal worms and other parasites like coccidia.

To prevent antimicrobial resistance and to make sure antibiotics keep working, antibiotic treatment of sheep should be on a case-by-case basis and should **ALWAYS** be under the direct supervision of a veterinarian.

THE OHIO STATE UNIVERSITY
COLLEGE OF VETERINARY MEDICINE

Antimicrobial Stewardship Program
Department of Veterinary Preventive Medicine
Ohio State College of Veterinary Medicine
BuckeyeASP@osu.edu