

## Antimicrobial Resistance (AMR) - a major One Health Issue

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Antimicrobial resistance (AMR) is the latest trending phrase in the medical world today. It refers to the capacity of bacteria to adapt to reduce or eliminate the effectiveness of antibiotics or other chemicals used to cure or prevent infections.

Antibiotics were developed in the 20th century and have significantly reduced bacterial infections affecting humans and animals and are among the most commonly prescribed drugs used in human and animal medicine. With this arsenal available to man, the incidence of antibiotic resistant bacteria is rising globally through inadequate and/or inappropriate use of these drugs. It is estimated in the United States more than 2 million people will develop antibiotic-resistant infections per year and at least 1% of this affected population will die as a result, with projected increases in the future.

Human activities play a predominant role in AMR. Antimicrobials are used extensively for therapeutic and/or prophylactic use in humans, agriculture, household pets, plants and household cleaning products. When humans and animals get antibiotics indiscriminately (growth promotion, pest control), susceptible bacteria are killed while antibiotic-resistant bacteria (super bugs) survive, thrive and multiply in the gut of both species. This phenomenon is known as selective pressure.

From this point on, these antimicrobial resistant bacteria can spread via direct physical contact with objects and surfaces, meat products (handling, preparation and consumption) and effluent. Effluent containing antimicrobial resistant bacteria may contaminate the environment allowing spread among animals or people.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the major resistant bacteria affecting humans and is carried without a problem by many people. It is an opportunist and will cause an infection if it gets the chance that may be very difficult to treat. MRSA can be transmitted from people to their pets, but animals do not naturally harbour it.

Microorganisms have existed for billions of years on Earth. Their existence today is proof of their capacity to adapt and evolve in human and animal populations and within the environment. If the unnecessary or inappropriate use of antibiotics continues, AMR will continue to be a critical One Health issue. Physicians and veterinarians must prescribe them with care and only when necessary. They should be taken or administered (human and animal) only as prescribed, and for the full course. Their distribution for both human and animal use must be strictly controlled. These and other collaborative strategies need to be rigorously implemented to save both these vital drugs and lives.