

# Take Action on Antimicrobial Resistance

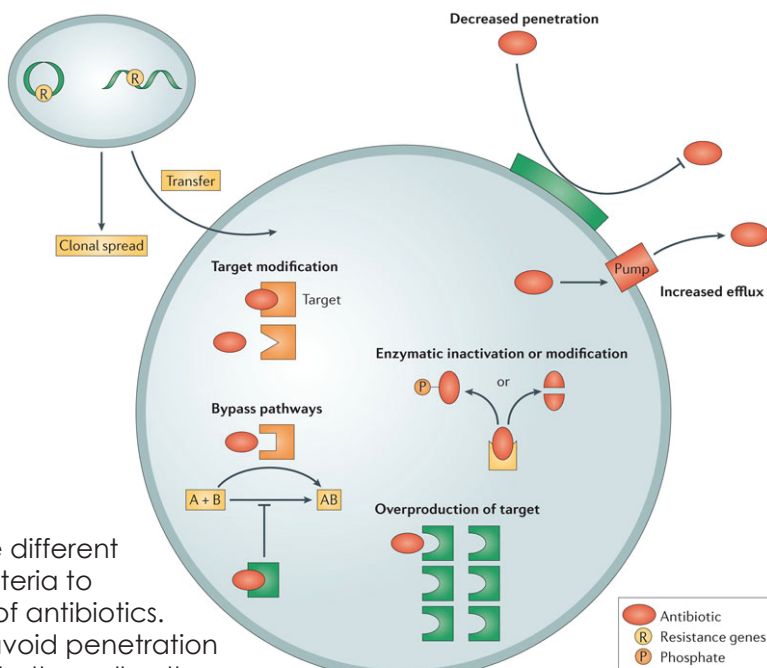
For Veterinarians and Veterinarian students

## Development of Antibiotic Resistance has serious consequences

You can take action against the development of antibiotic resistance

What is antibiotic resistance?

Antibiotic resistance (ABR) is the ability of bacteria to protect themselves against the effects of an antibiotic. Meaning the disease can't be treated with a previous working antibiotic. Bacteria have several mechanisms to ensure the antibiotic doesn't affect them.



This figure shows the different mechanisms of bacteria to reduce the effects of antibiotics. For example; they avoid penetration of the antibiotic into the cell or they have mechanisms in place to inactivate the antibiotic.

Nature Reviews | Drug Discovery

**If no action is taken now, by 2050 an estimated 10 million people per year will die from bacterial infections that are resistant to treatment.**

## When does antibiotic resistance develop?

It develops in bacteria that are exposed to antibiotics. Some behaviour increases the development and spread of resistance:

Unscrupulous/Indiscriminate usage of antibiotics

Not using the right antibiotic for the right infection. There are different types of disease-causing organisms: bacteria, viruses and fungi. Each is killed by a different type of medicine. For example, antibiotics cure only bacterial diseases. They don't cure viral diseases like Foot and mouth disease, Newcastle disease, Gumboro disease and Pox.

Not fully completing the course of treatment

For example stopping treatment when animals get better, before the recommended period of use is over.

Under-dosing

Stretching dosage to treat more animals.

Supplements

Farmers use growth / productivity promoters that contain antibiotics in feed and/or water.

Not observing withdrawal period after treatment

Therefore selling animal products that can still contain traces of antibiotics.

Slaughtering animals that have been treated and did not improve.

The slaughterhouse waste that is washed into public water systems will have antibiotic concentrations which can induce bacteria in the water to develop resistance.

Not disposing animal and human excreta properly

Antibiotics in the excreta of treated humans and livestock contaminate water and soil which create a reservoir for resistance.

Carelessly disposal of unused antibiotics

Such as: into sinks or compounds. Animals may consume them directly (high doses) or animals may be exposed indirectly (low doses). When exposed to low doses of antibiotics, some bacteria in these animals may become resistant to the antibiotics. The resistant bacteria may then be passed-on to other animals and/or humans when they consume meat, eggs or milk from these animals or through direct contact.

## Reasons behind indiscriminate usage of antibiotics

- 01** Easiness of getting medicines over the counter without prescription, even in small doses, which is under-regulation of antibiotic use.
- 02** Inadequate information on consequences of antibiotic resistance development. We need to realize that sick animals may die and if not, there is reduced production and reduced financial income. They may also be a source of resistant and/or pathogenic bacteria to humans and other animals.
- 03** Lack of funds to buy required doses (poverty).

### Everything is involved

The infectious cycle is complex; humans and animals are both responsible for dissemination of antibiotic resistant bacteria. Thus, isolated interventions have little impact. Co-ordinated action is required to minimise development and spread of antibiotic resistance.

Resistant bacteria in one environment may not be confined to that specific environment but can be carried miles away by water, animals and people.



It is easy to pass resistant bacteria from one organism to another, so, only a few organisms need to carry resistant bacteria for it to spread widely among animals and humans.

## Complex problem

- Antibiotic resistance is a worldwide health threat. Experts say it can become a bigger problem than HIV/AIDS if no action is taken.
- Human and animals share about 60% of pathogenic bacteria, indicating that resistance in animals can transfer to human and vice versa.
- New antibiotics are not coming up at the same rate as resistance occurs.
- Good farm management practices such as good hygiene, biosecurity and vaccinations will reduce the disease burden and minimise antibiotic use, without lowering production yield.
- Laboratory tests to detect agent sensitivity to antibiotics guide to the use of correct antibiotics. Unfortunately these tests are not always used before treatment options are defined.

# How can you take action?

## To reduce the development and spread of antibiotic resistance:

1. Prescribe antibiotics only after proper diagnosis is done and only when necessary.
2. Discourage farmers from using antibiotics as growth/productivity promoters.
3. Encourage farmers to observe withdrawal period after usage.
4. Encourage farmers to observe good management practices, more so hygiene and biosecurity. These will prevent animals from contracting diseases and there will be no need to use antibiotics for treatment.
5. Enlighten farmers on dangers of antibiotic resistance development – when resistance occurs, sick animals will not respond to treatment.
6. Encourage farmers to observe hygiene practices to minimise spread of infections, such as use of latrines and washing hands before and after handling animals.
7. Train farmers on animal management and especially hygiene and biosecurity. Improved animal husbandry practices, enhanced disease control measures including livestock movement control and enhanced biosecurity measures on farms can reduce animal exposure to pathogens.
8. When keeping animals in a “hospital”, enhance infection prevention and control systems.



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