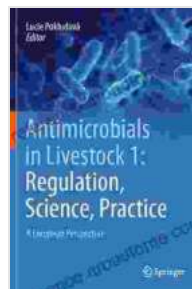


# Antimicrobial Resistance: A Growing Threat to Animal and Human Health

## What is Antimicrobial Resistance?

Antimicrobial resistance (AMR) is the ability of bacteria to resist the effects of antibiotics. This can make it difficult or impossible to treat infections, leading to prolonged illness, disability, and even death. AMR is a growing threat to both animal and human health.



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## Types of Antimicrobial Resistance

There are many different types of AMR, each caused by a different mechanism. Some of the most common types of AMR include:

- **Efflux pumps:** These pumps are located in the cell membrane of bacteria and they function to pump antibiotics out of the cell, making them less effective.

- **Enzymes that modify antibiotics:** These enzymes can break down antibiotics, making them less effective.
- **Target site mutations:** These mutations change the target site of the antibiotic, making it less effective.

## Causes of Antimicrobial Resistance

The main cause of AMR is the overuse and misuse of antibiotics. When antibiotics are used inappropriately, they can create selective pressure for bacteria that are resistant to those antibiotics. This can lead to the development and spread of AMR.

Other factors that can contribute to AMR include:

- **Poor sanitation and hygiene:** This can lead to the spread of bacteria, including those that are resistant to antibiotics.
- **Animal agriculture:** Animals in concentrated animal feeding operations (CAFOs) are often given antibiotics to prevent and treat disease. This can lead to the development and spread of AMR.
- **International travel:** People who travel to countries where AMR is common can bring resistant bacteria back with them.

## Consequences of Antimicrobial Resistance

AMR has a number of serious consequences for both animal and human health.

In animals, AMR can lead to:

- Prolonged illness

- Disability
- Death
- Increased veterinary costs

In humans, AMR can lead to:

- Prolonged illness
- Disability
- Death
- Increased healthcare costs

## **Role of Regulation in Combating Antimicrobial Resistance**

Regulation plays an important role in combating AMR. Governments can implement regulations to restrict the use of antibiotics in both human and animal medicine. They can also implement regulations to improve sanitation and hygiene, and to reduce the spread of resistant bacteria.

## **One Health Approach to Addressing Antimicrobial Resistance**

AMR is a complex issue that requires a One Health approach to address. This approach involves collaboration between human health, animal health, and environmental health professionals to address the issue of AMR at all levels.

The One Health approach to AMR includes:

- **Surveillance:** Monitoring the spread of AMR in both humans and animals.

- **Research:** Developing new antibiotics and new ways to prevent and treat AMR.
- **Education:** Educating healthcare professionals and the public about AMR.
- **Policy:** Developing and implementing policies to combat AMR.

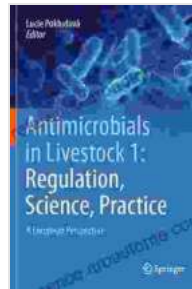
AMR is a growing threat to both animal and human health. It is important to understand the causes and consequences of AMR, and to take steps to combat this serious threat. A One Health approach is essential to addressing AMR at all levels.

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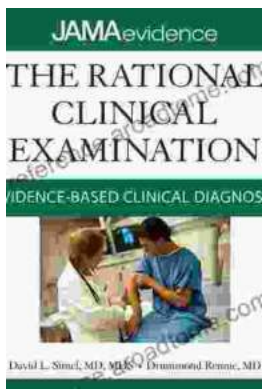
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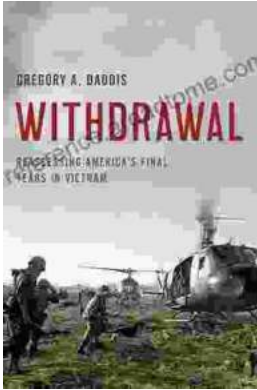
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