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Why You Should Care About Antibiotic Resistance

Antibiotics are critical tools for treatment and control of diseases in livestock. Antibiotic resistance threatens the use of antibiotics in livestock for two important reasons. If resistance develops, the antibiotic may not be effective in treating the disease. Increased antibiotic resistance could lead to policies limiting access to antibiotics for use in livestock.

Although the major contributor to antibiotic resistance in humans is antibiotic use in human medicine, many studies agree that antibiotic use in animals has added to the resistance problem, particularly when considering enteric (gut) bacteria. More than 15 classes of antibiotics have been developed to kill bacteria in humans or livestock. Over time, all have become associated with resistance.

There are four ways that the bacteria become resistant to antibiotics.

Some bacteria develop resistance by altering their cell wall to prevent the antibiotic from entering the bacteria.

Some bacteria develop resistance to antibiotics by changing the shape or structure of the binding site for the antibiotic within the bacteria. Because the antibiotic is no longer able to bind with it, the antibiotic is rendered ineffective.

Sometimes the bacteria becomes inactive. This usually involves the production of an enzyme or compound by the bacteria that inactivates the antibiotics.

Antibiotics must accumulate in bacteria cells at concentrations high enough to kill or inhibit the growth of the bacteria. Some bacteria are able to literally “pump” the antibiotic out of the cell, decreasing the concentration and effectiveness of the antibiotic.