Worried about antibiotic use and resistance in cattle?

It’s important to us too.

WHERE DOES ANTIBIOTIC RESISTANCE COME FROM?
When antibiotics are used, bacteria that are responsive to the drug are killed, and bacteria that aren't responsive (are resistant) survive and reproduce.

1. Some bacteria cause disease. A few are drug resistant.
2. Antibiotics kill disease-causing bacteria, as well as some good bacteria that protect the body from infection.
3. The antibiotic resistant bacteria survive and reproduce.
4. Some bacteria share their drug-resistance with other bacteria.

ANTIBIOTIC RESISTANCE HAPPENS NATURALLY
The Lechuguilla Cave in New Mexico has bacteria that have lived in complete isolation for more than four million years. When treated with a variety of antibiotics, many of these bacteria were naturally resistant.

ALL BEEF IS ANTIBIOTIC FREE
A specified withdrawal time must pass after the last treatment to ensure that there are no antibiotic residues left in the beef. The Canadian Food Inspection Agency regularly tests for residues. In 2013, over 99.9% of both domestic and imported beef products were free from residues. If residues are found, the beef is not allowed to enter the food chain.

WHY ARE ANTIBIOTICS USED IN CATTLE?

ANTIBIOTICS IN FEED
Just because an antibiotic is used in feed does not mean it is being used to promote growth. It is often better for sick animals to be treated through feed rather than aggravating their illness with stress from multiple injections.

PREVENTION
Preventing infection can reduce the need to use more powerful antibiotics if the disease becomes more serious. Preventive antibiotics are also used in human medicine, like with people who are exposed to bacterial meningitis.

GROWTH PROMOTION
A category of antibiotics called ionophores help boost growth in cattle. Ionophores are not used in human medicine, and work differently than medically important antibiotics. There is no evidence that use of ionophores causes increased resistance to antibiotics used in human medicine.

“IT is our privilege, not our right to be able to use antibiotics in the animals that we take care of.”
- Dr. Craig Dorin, Veterinarian

Ensuring animal welfare: providing care to sick cattle, including using antibiotics when appropriate, is the humane thing to do.

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www.albertabeef.org
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### Are All Antibiotics Created Equal?

Not all antibiotics are the same. Some antibiotics are more powerful than others, and some categories of antibiotics that are often used in cattle are not medically important to humans.

#### Most Important in Human Medicine

1. **Very High Importance**
   - **Category:** Drugs of last resort
   - **Use:** Most used in human medicine
   - **Examples:** Cipro, Omnicef

2. **High Importance**
   - **Category:** Drugs used in low quantities, but still medically important
   - **Use:** Commonly used in human medicine
   - **Examples:** Amoxicillin, Tylan

3. **Medium Importance**
   - **Category:** Drugs that are not medically important to humans
   - **Use:** Sometimes used for treatment, control and prevention of disease
   - **Examples:** Baytril, Draxxin

4. **Low Importance**
   - **Category:** Drugs that are not medically important to humans
   - **Use:** Not used in human medicine
   - **Examples:** E Pendrine, Vibramycin

#### Least Important in Human Medicine

- **Brand Name Examples:**
  - **Human:** Cefdinir, Amoxicillin
  - **Animal:** Ceftiofur, Neomycin

Most of these products require a veterinary prescription, just like you need a prescription from your doctor before the pharmacist will give you most antibiotics.

#### Drug Resistance Levels are Low in Beef

Canada has several surveillance programs in place to monitor trends in antibiotic resistance. Examples include the Canadian Integrated Program for Antimicrobial Resistance Surveillance, FoodNet Canada, and the newly announced Canadian Antimicrobial Resistance Surveillance System. Resistance of E. coli in beef is rarely resistant to more than one drug. Over 74% of E. coli samples were not resistant to any of the drugs tested.

#### How Difficult is it to Get a Resistant Infection?

For a person to get an antibiotic resistant infection from eating beef, a number of unlikely things must happen:

1. **Animal gets an antibiotic**
2. **Antibiotic resistant bacteria develops in animal**
3. **Bacteria survives multiple food safety controls during processing**
4. **Bacteria survives cooking**
5. **Bacteria causes illness in person**
6. **Illness fails to respond to prescribed antibiotic**
7. **Doctor prescribes antibiotic**
8. **Illness fails to respond to treatment because bacteria is resistant to prescribed antibiotic**

If beef is cooked properly, the antibiotic resistant bacteria die – breaking the chain of unlikely events. The probability of human illness in the U.S. due to drug resistant food poisoning (Campylobacteriosis) is about one in 236 million. Being killed by an asteroid is 1000 times more likely.

#### For references and more information about the beef industry, please visit the consumer section of www.albertabeef.org

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**Producers understand the concept of antibiotic stewardship. We understand the concept of leaving something in a better situation than we inherited it.**

Dr. Leigh Rosengren, Veterinarian and Producer

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**Resistance of E. coli in retail beef to any of the drugs in the VERY HIGH IMPORTANCE category is less than 2.5%.**

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**This means that there are lots of options to treat most drug resistant bacteria.**

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