Inforum

April 1998 Volume 2, Number 1

Antibiotic resistance in Canada: the issue explained.

Globally, public health officials are concerned about the emergence of antimicrobial resistance in hospital-acquired bacterial infections. It is generally thought that this increase in resistance is the result of:

- An over-reliance on the use of antimicrobials in human medicine,
- Failure to adhere to prescriptions for the full duration, and
- The increased clustering of people in places such as hospitals and day care centers.

Recent investigations have identified increasing resistance in several types of bacteria which can be transmitted from animals to humans through the food supply. Further investigations are being conducted on the emergence of resistant bacteria to improve our understanding of the use of antimicrobials in agriculture.

Current regulations for approval and use of antimicrobials in agriculture are focused on residue avoidance and not on antimicrobial resistance. However, the Bureau of Veterinary Drugs, the government agency that reviews all new animal drugs in Canada, has a long-standing policy whereby antimicrobials which are used in both human and animal agriculture can only be sold by a veterinarian.

Antimicrobial Resistance:
Answers to Commonly Asked Questions

Q. What are antimicrobials and antibiotics?

A. Antibiotic and antimicrobial are often used interchangeably. There is a difference, however. Antibiotics are a class of pharmaceuticals which are substances produced by microbes. Antimicrobials are similar to antibiotics but also include substances of synthetic origin.

Q. What is antimicrobial resistance?

A. Antimicrobial resistance is the ability of certain bacteria, which are normally destroyed by a particular antimicrobial, to survive exposure to that antimicrobial.

Q. How can antimicrobial resistance occur?

A. Antimicrobial resistance can occur in 3 ways: (1) in any group of bacteria, there are some individual stronger bacteria that can survive antimicrobial treatment and reproduce more of their kind; (2) a small percentage of bacteria may be naturally resistant to certain antimicrobials, and (3) antimicrobial resistance can be transferred from one type of bacteria to another through genetic material called plasmids.

Q. What is the animal pharmaceutical industry doing about the issue of antimicrobial resistance in farm animals?

A. The animal health products industry has funded numerous independent studies on the issue, and continues to develop new research. When developing a new animal pharmaceutical, manufacturers determine how that product should be used to most responsibly administer to the needs of the animal as well as people who eat meat, milk and eggs. Manufacturers are also committed to new product development in order to keep animal health products effective.

Q. What are farmers and veterinarians doing about the issue of antimicrobial resistance in farm animals?

A. Quality assurance programs, developed by livestock and poultry producers with help from the animal health products industry, promote proper and effective use of all animal health products, including antimicrobials. These programs stress the importance of a strong working relationship between producers and their veterinarians. They also teach efficient management practices and emphasize proper drug use as a way of improving the safety of the food supply.

Veterinarians play a crucial role in the judicious use of animal health products, including antimicrobials. Veterinarians keep detailed records on the animals and herds they treat in order to choose effective, safe therapies. The agriculture industry is also exploring new processing methods which can help eliminate harmful bacteria.

Q. What are antimicrobial residues and how are they monitored?

A. Antimicrobial residues are trace amounts of an antimicrobial remaining in meat or milk after processing. Health Canada has established levels of antimicrobial residues that are deemed safe and may legally be in the edible tissues of the animal or in the milk at the time of processing. Provincial regulators monitor the milk supply. The Canadian Food Inspection Agency randomly tests meat processing facilities to ensure all meat is free of harmful residues.

Q. Do antimicrobial residues increase the risk of developing antimicrobial resistance?

A. No. Antimicrobial residues and antimicrobial resistance are often confused but they are not related. When talking about the transfer of antimicrobial resistance from animals to humans, scientists and other are referring to the transfer of resistant bacteria, not trace levels of antimicrobials.

Q. Can anything be done to reduce the risk of food-borne bacterial illness?

A. Yes. Since bacteria are naturally present in food, it is important to carefully prepare, handle and store food. Thorough cooking can eliminate the presence of bacteria in food, prompt refrigeration can prevent bacteria from contaminating leftovers and washing hands before and after handling raw meat products can halt the spread of bacteria to other foods.