Beyond Factory Farming
Au-delà de l'agriculture industrielle

FACT SHEET:

Antibiotic Resistance Factories

Antibiotics are one of the most powerful tools in modern medicine. Prior to the discovery of antibiotics many people died from infections and diseases caused by bacteria, or lived with chronic conditions and disabilities that are now curable. The medical benefits of antibiotics have been so fully accepted that we tend to take them for granted. **However, if antibiotics are used irresponsibly, the pathogens they kill will evolve resistance, making the drugs useless.** The worst-case scenario is a return to the 19th century, where people frequently suffered and died as a result of infected wounds and diseases such as pneumonia.

Antibiotics used as Growth Promoters in Canada

Antibiotics (also known as antimicrobials) are used in agriculture as well as in medicine. Some are used to treat sick animals, but **the vast majority of livestock antibiotics are used in factory farms as a feed additive to promote growth and prevent disease**[1]. Animals living in the crowded stressful conditions of industrial livestock operations grow faster if given low doses of antibiotics, but in less crowded conditions antibiotics do not affect growth rate. This indicates that feeding antibiotics is to compensate for unhealthy living conditions of the barns. As much as 90% of the antibiotics used in livestock production in Canada are used as growth promoters[2].

Factory farm conditions are ideal for creating antibiotic resistant bacteria. When low levels of antibiotics are used routinely, susceptible germs die off quickly, leaving those resistant to the drug to reproduce and multiply. Different kinds of bacteria can trade genes, so resistance conferred in the factory farm environment can be passed on to other bacteria in soil and water that is in contact with manure. Antibiotic resistant organisms are also found on meat that has been contaminated with fecal material. People who eat contaminated meat get sick with food poisoning, and create an opportunity for antibiotic resistant pathogens to pass resistance on to other bacteria in the person's system.

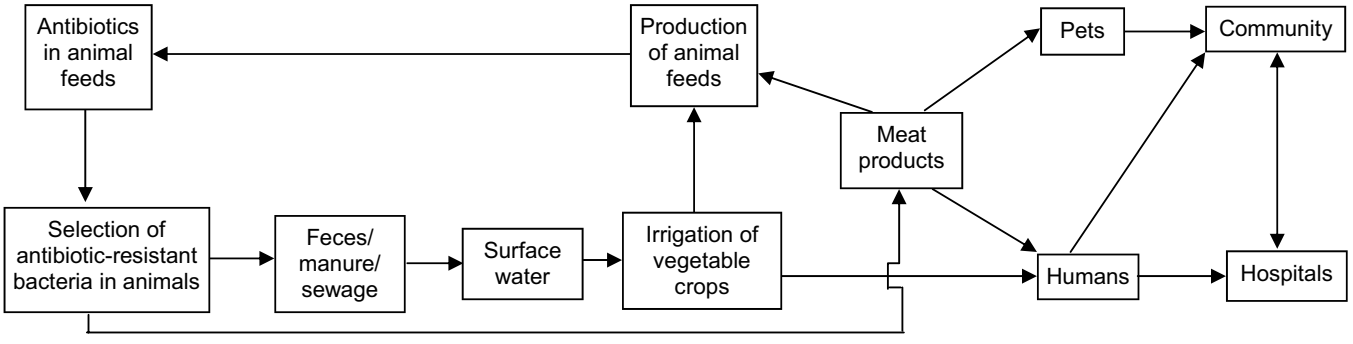
Antibiotic Resistance a Public Health Issue

When people become infected with antibiotic resistant pathogens it is much more difficult to treat their illness. In October 2006 antibiotic resistant *Clostridium difficile*, a sometimes fatal intestinal disease, was found in people who had not been in the hospital[3]. *C. difficile* was thought to be acquired only in hospitals, where antibiotic use is rife. But increasingly *C. difficile* disease in being found in people who haven't been hospitalized. So how did they contract the bug? Contaminated food is suspected. An Ontario Veterinary College study shows that the same strain of *C. difficile* that has caused severe hospital outbreaks has been found in the feces of dairy calves in Ontario.

Links between "human" and "animal" antibiotics

The rise of antibiotic resistance due to excessive use of antibiotics in livestock production is a serious public health problem recognized by the World Health Organization (WHO). In 1997 WHO recommended that antibiotics in livestock production be strictly regulated by governments, that the use of antibiotics as growth promotants be replaced with alternatives, and that **the use of any antimicrobial for growth promotion be terminated if it is also used in human medicine** or is known to select for cross-resistance to medical antimicrobial drugs.

The Canadian government's own advisory committee stated that "Even resistance in animal bacteria that are harmless to humans is important to public health because these bacteria are a pool of resistance genes available to be transferred from animal bacteria to human pathogens[4]."



The agricultural use of antibiotics in animal feed can result in the selection and transmission of antibiotic-resistant bacteria.These bacteria move through the environment by a variety of routes, and their presence ultimately has consequences for human health. - *Canadian Medical Association Journal*, Nov. 1998, p.1130

It is not enough to stop feeding livestock antibiotics used for human medicine. Feeding animals drugs not used in humans can increase resistance to drugs important in human medicine if the antibiotic resistance traits are genetically linked. The linkage of two or more resistance genes on DNA strands bacteria normally trade with each other is an increasing concern. Understanding this process makes it less justifiable to seperate antibiotics into "animal" and "human" use categories when considering antimicrobial resistance issues.[5]

Canadian response inadequate

Canada has not eliminated antibiotic use in livestock production. In 2002 the federal goverment finally started a surveillance program, the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS)[6].

The CIPARS 2004 surveillance showed that

- Generic *E. coli* samples showed resistance to one or more antimicrobials in 80% of swine, 78% of chicken, and 31% of cattle isolates.
- For *Salmonella*, 63% of all chicken isolates were resistant to one or more antimicrobials.
- For *Campylobacter* isolates from chicken, 53% from Ontario and 81% from Québec were resistant to one or more antimicrobials.
- For *Enterococcus* isolates from chicken, 98% from Ontario and 94% from Québec were resistant to one or more antimicrobials.

Clearly the use of antibiotics in livestock is creating antibiotic resistance and contaminating Canadian factory farmed meat.

In January 2007 Canada'sVeterinary Drugs Directorate asked livestock producers and veterinarians to check how effective antibiotics are as growth promoters, and to stop using them if they are not providing an economic return[7]. This baby step in the right direction is far less than what is required. The European Union banned the use of subtherapeutic antibiotics as of January 1, 2006. In 1999 Denmark banned them, and significantly reduced levels of antibiotic resistance while demonstrating that antibiotics can be eliminated without losing production capacity[8].

Resisting antibiotic resistance

Canadian consumers can avoid meat contaminated by antibiotic resistant bacteria by seeking out certified organic meat. Organic certification does not permit the use of antibiotics. Organic farmers may use antibiotics to treat sick animals, but the animal cannot be sold as certified organic.

Consumer demand for certified organic meat, and meat purchased directly from local farmers where it is possible to verify antibiotic use is helpful. However **effective monitoring and surveillance and strict regulations combined with the capacity and will to enforce them are required to deal with the public health issue that affects all Canadians** whether or not they purchase or eat meat. The alternative is to lose antibiotics as a medical tool. BFF

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References:

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[2] ibid.
[3] *Link probed between eating meat, C. difficile*, CTV, Wed. Oct. 4 2004
[4] Report of the Advisory Committee to Health Canada on Animal Uses of Antimicrobials and Impact on Resistance and Human Health, June 2002
[5] Antibiotic resistance: synthesis of recommendations by expert policy groups by Alliance for the Prudent Use of Antibiotics, JL Avorn, JF Barrett, PG Davey, SA McEwen, TF O'Brien and SB Levy. Boston, MA, United States of America.
[6] Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) http://www.phac-aspc.gc.ca/cipars-picra/2004_e.html
[7] http://www.hc-sc.gc.ca/dhp-mps/vet/antimicrob/agp_hc_vdd_e.html
[8] *Antibiotic ban cuts drug resistant bugs*, Debora MacKenzie, New Scientist 17:19 13 August 2003

Organizations working on antibiotic resistance and factory farming issues:

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