



ANTIBIOTIC RESISTANCE

The Issue

There is an increasing concern around the world that certain organisms such as bacteria, viruses, fungi and parasites are becoming resistant to the drugs used to fight them. An example of this is the increasing resistance in antibiotics to treat bacterial infections. This could make treatment more difficult, resulting in fewer effective antibiotics to prevent and treat infections and infectious diseases.

Background

Antibiotic resistance occurs when an antimicrobial drug is no longer effective in killing or stopping the growth of particular microorganisms, such as bacteria. The term antimicrobial refers to both natural and synthetic substances like antibiotics and disinfectants which can kill or block the reproduction of microorganisms.

Until the 1940s, when antibiotic drugs were discovered, people with infections such as tuberculosis, pneumonia and sexually transmitted diseases often died because the available treatments were not very effective. With the discovery of new drugs, the ability to fight diseases improved dramatically. However, since then, some germs have become resistant to these drugs.

The Causes of Antibiotic Resistance

A major cause of resistance is believed to be overuse or inappropriate use of drugs such as antibiotics, in preventing or treating infections in people, animals and plants. Germs constantly adapt to their environment and have the ability to take on the characteristics of other germs. When antibiotics are used inappropriately, the weak bacteria are killed,

while the stronger, more resistant ones survive and multiply. Germs that develop resistance to one antibiotic have the ability to develop resistance to another antibiotic. This is called cross-resistance.

Links have also been made between giving drugs to animals and the development of resistance in humans. Drugs are often given to food-producing animals to treat and prevent infections in the agri-food industry and to promote growth. Products are also sprayed on fruit trees to prevent or control disease. These can then be transferred to humans in meat, milk, fruit or drinking water, adding to the resistance problem. An example of this is drug-resistant Salmonella, which can be transferred from animals to humans through the food chain.

Other factors that cause resistance include an incorrect diagnosis that results in an inappropriate drug being prescribed, or not taking an antibiotic prescription according to the instructions; for example, not taking all of a prescription.

You can be exposed to drug-resistant germs in the same way you get other infections, through:

- contaminated food, water or soil
- unsafe sexual practices
- contact with infected people or animals
- during treatment in a clinic or hospital.

Drug-resistant germs can also enter Canada through imported food or international travel.

Safe Use of Antibiotics

Proper diagnosis is the first step in the effective treatment of any infection. Visit your doctor for a proper assessment. Be aware that antibiotics are not effective for everything.



For example, antibiotics are not effective against viruses, such as colds and flu. Also, specific germs can be treated more effectively with drugs that are targeted to them. This often requires a lab test.

- Take medication as directed by your doctor or pharmacist. Do not stop taking a prescription part way through the course of treatment (unless you are having a serious adverse reaction) without first discussing it with your doctor. Even if you feel better, use the entire prescription as directed to make sure that all of the germs are destroyed.
- Do not share prescriptions with anyone else. Taking an inappropriate drug makes the resistance problem worse.
- Do not flush out-of-date or unused medication down the toilet, or pour it down the sink, or put it in the garbage. If you do, this medication will end up in the water table which could increase the drug resistance problem. Instead, check to see if your pharmacy has a drug recycling program that disposes of unused drugs in an environmentally safe manner. If your area does not have such a program, take the drugs to your municipal waste disposal depot for proper disposal.

Minimizing Your Risk

You can help prevent and reduce drug resistance by taking the following steps:

- Avoid the use of antibacterial soap and "bacteria-fighting" cleaning products. These products kill 'good' bacteria which fight bad germs. Cleaning with soap and water, or disinfecting surfaces with a solution of water and vinegar or household bleach is adequate.

- Wash your hands regularly with soap and water for at least 20 seconds. It is the most effective way of preventing any type of infection.
- Have your doctor vaccinate you and your children and keep vaccinations up to date.
- Store, handle and prepare food safely. When preparing food, be sure to wash cutting boards and knives with detergent and water. Use bleach on surfaces where you have handled raw poultry. Thoroughly wash all fruits and vegetables that will be eaten raw.
- If you use well water, have it tested regularly.
- Encourage farmers to give antibiotics to their animals only when needed.

Government of Canada's Role

The federal government, while developing overarching policies to address the antibiotic resistance issue, is also leading other activities including; research, surveillance and education.

Health Canada and the Public Health Agency of Canada are working both from a national and international perspective with other government departments and agencies to bring science and policy together.

A multi-stakeholder conference was held on antibiotic resistance and produced a final report in 2002. This report focused on developing a common understanding of antibiotic resistance and related issues from a Canadian perspective. New policies, guidelines and actions are being developed based on these recommendations.

Health Canada and the Public Health Agency of Canada provide financial support to a number of initiatives such as research on antibiotic resistance and the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS). The CIPARS annual reports, which were released in March 2004 and February 2005, are available on Health Canada's Web site.

Need More Info?

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Canadian Committee on Antibiotic Resistance
<http://www.ccar-ccra.org/>

Canadian Bacterial Surveillance Network (CBSN)
<http://microbiology.mtsinai.on.ca/research/cbsn/default.asp>

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