

Your Health

by Dr. Paul Roumeliotis

Bacterial Infections

Bacteria are one type of germ or microbe that can infect humans. There are basically three types of germs that infect humans: bacteria, viruses and moulds (or fungi). Bacteria are living “uni-cellular” organisms, which means they are made up of one cell. Each bacterial cell has the capacity to live, grow and reproduce itself. Bacteria reproduce themselves by dividing. In other words, one bacterial cell will divide into 2, then into 4 and into 8, and so on. Bacteria are tiny and cannot be seen by the naked eye. So as a “bacterial family” grows, millions of individual bacteria are formed that can be seen only under a microscope.

There are hundreds of different types of bacteria. Some can cause disease in humans and animals, while others do not cause any disease but may protect us from other more dangerous forms of infections. The bacteria that can cause disease are known as “pathogenic”. Interestingly, some bacteria survive only in cold temperatures, yet others need warm or even hot temperatures to live. Pathogenic bacteria enter the body from a few possible routes: one can breathe in bacteria, ingest or eat food covered with bacteria, or the infection can get in through the skin. Depending on the type of bacteria and where it enters the body, various infections can occur including brain (meningitis), ear, throat, sinus, stomach/intestinal, urinary, blood, bone and skin infections.

How do bacteria cause infection?

This depends on the type. Some bacteria cause infections just by growing and living in a certain part of the body. The presence of these germs triggers our body’s defense or immune system to act. This reaction, known as inflammation, features redness, swelling and warmth around the area of the infection (a skin infection, for example). In other circumstances, bacteria make certain chemicals called toxins that actually enter the body and cause symptoms and sickness, possibly throughout the body. An example of toxin-producing bacteria is *E. coli* 0157, the cause of “hamburger disease”.

How are bacterial infections treated?

The best approach is prevention. By far, one of the most important advances in medicine over the last century has been vaccines or immunization. Thanks to the development of bacterial-specific vaccines, illnesses like diphtheria, tetanus, and pertussis (whooping cough), have almost disappeared. Over the last 15 years, newer vaccines have become available that protect against even more infections including meningitis, pneumonia, and severe throat, bone and skin infections. Another important advance against bacterial infections is antibiotics, which have also saved countless number of lives.

On a final note, there is a difference between bacteria and viruses. Viruses are very tiny; in fact, much smaller than bacteria. They infect by entering and reproducing inside the body’s cells. By doing so, they destroy the cells they infect, and spread. Like bacteria, there are pathogenic and non-pathogenic viruses. However, unlike bacteria, viruses are not affected by antibiotics.

Dr. Paul Roumeliotis is the Medical Officer of Health for the Eastern Ontario Health Unit and Assistant Professor of Pediatrics, McGill University. © Dr. Paul Roumeliotis