FACTSHEET

ANTIBIOTIC USE AND RESISTANT BACTERIA – RISKS FOR THE INDIVIDUAL

Antibiotics can be life-saving medicines. However, antibiotic use drives resistance development and can also have direct negative effects on the individual consumer. Here, we discuss the risks associated with resistant bacteria and antibiotic use from the perspective of the individual and provide some examples.

RISKS FOR THE INDIVIDUAL

Treatment failures
Resistant bacteria already cause many infections worldwide. There are usually still effective antibiotics available, but some bacterial infections are increasingly difficult to treat. Infections with these bacteria are associated with prolonged hospital stays and higher mortality rates especially for vulnerable patients groups such as preterm babies and patients treated with immunosuppressive therapies. Gonorrhea is a sexually transmitted disease that affects around 106 million adults every year. Some cases of gonorrhea are close to untreatable because of resistance to last-resort antibiotics, which may result in infertility. Tuberculosis is a serious bacterial infection typically affecting the lungs and the cause of 1.5 million deaths in 2014. Multidrug-resistant tuberculosis is now on the rise forcing doctors to use antibiotics associated with more side effects and higher risk for treatment failure as compared to standard therapy.
Economic losses
Antibiotic resistance is costly, both for the individual and for society. Globally, the rising rates of resistant infections are pushing up costs of treatment. As prolonged illness and premature death take their toll, families may experience economic losses due to reduced incomes. The burden of infectious diseases is high especially in low and middle-income countries. Moreover, inappropriate use of antibiotics, such as taking antibiotics for a cold, means unnecessary out of pocket spending. Antibiotic resistant infections also affect animals. Death to livestock can damage the finances of both individual citizens and society.

Carriage of resistant bacteria
Antibiotic treatment is associated with a risk for becoming a carrier of resistant bacteria and future infection with these strains. When you take an antibiotic, not only the infecting bacteria but also bacteria in the normal flora will be affected, potentially resulting in emergence of resistance. Carriage can also be the result of exposure to for example food or environmental sources contaminated with resistant bacteria. Resistance development can occur after a single dose of antibiotics and resistant bacteria can persist for several months. Multiple studies have shown that use of antibiotics during the past 3-month period is a risk factor for infection with resistant bacteria.

Additional infections
Imbalance in the normal flora following antibiotic treatment puts you at risk for additional infections; so called superinfections. When the normal flora is reduced, it provides an opportunity for other microbes to grow and potentially cause a new infection. For example, *Clostridium difficile* can cause severe, even deadly, diarrhea as a consequence of antibiotic therapy. It is one of the most common hospital-associated infections in the US infecting approximately 250,000 patients every year. Another common complication following antibiotic treatment is fungal infection, for example oral or vaginal thrush caused by the fungal yeast *Candida albicans*.

Adverse drug reactions
As all pharmaceuticals, antibiotics can have medicine-related side effects. Gastrointestinal side effects (abdominal pain, nausea, vomiting or diarrhea) are typically reported in 1-10% of treated patients for most antibiotics. Certain antibiotics are reported to cause diarrhea in 20-25% of the patients. Serious adverse effects such as kidney or liver toxicity are rare but of great importance in clinical practice when using certain antibiotics. In the treatment of multidrug-resistant bacteria, older antibiotics with more toxic side effects are sometimes
used because other options are lacking. Antibiotics can also cause allergic reactions. These are usually mild, but may progress to life-threatening conditions that must be treated promptly. It has been reported that 1 of 1000 antibiotic prescriptions results in an emergency department visit due to adverse events.