

6 Factors That Have Caused Antibiotic Resistance

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Antibiotic resistance has become a global threat, and with Antibiotic Awareness Week, it is important to understand the series of events that have led the world to this predicament. Originally touted as a miracle discovery, we are seeing that there can be too much of a good thing.

Antibiotics Strictly Target Bacteria

The use of antibiotics has saved millions of lives, but its pervasive use to treat any infection, whether serious, minor, or even viral has led to the increase in antibiotic resistance. Antibiotics strictly target bacteria, but it is sometimes difficult to differentiate between viral and bacterial infections without costly tests. It is often less time-consuming and more cost effective to proactively prescribe antibiotics, rather than take precautions and prescribe only the correct treatment.

Another issue with antibiotics is the inability to monitor patient intake. Antibiotic dosages are designed to eradicate entire populations of the pathogens. When antibiotics are not taken for the entire prescribed course, pathogenic bacteria can adapt to the presence of low dose antibiotics, and eventually form a population that is completely resistant to the antibiotic regardless of the dosage.

Antibiotic usage is also not exclusive to humans. Every day, antibiotics are used to treat livestock and fish to prevent infections. Similar to overuse in humans, uncontrolled use of antibiotics creates a reservoir of bacteria that could become resistant, thus rendering the antibiotic useless.

As a result of cities becoming more densely populated, people are exposed to more pathogens all the time. Hospitals and clinics are seeing more and more patients with infections, and it is not always possible to curb the spread of a pathogen in a population. Identification, isolation or treatment of all infectious diseases are not often feasible, resulting in the addition of more pathogens to the local community. Coupled with lack of hygiene and poor sanitation, urban centers become an ideal breeding ground for bacteria.

The Number Of New Antibiotics Being Identified Has Slumped To An All Time Low

Finally, one of the last contributing factors to antibiotic resistance is the lack of new antibiotics being developed. Following an unprecedented number of antibiotic discoveries in the last 40 years, the number of new antibiotics being identified has slumped to an all time low. Without new drugs to combat the ever-increasing number of antibiotic resistance, society is running out of options in the treatment of infections.

In summary, the **6 main causes of antibiotic resistance** have been linked to:

- Over-prescription of antibiotics
- Patients not finishing the entire antibiotic course
- Overuse of antibiotics in livestock and fish farming
- Poor infection control in health care settings
- Poor hygiene and sanitation
- Absence of new antibiotics being discovered

Learn more:

Center for Disease Control (2015) Antibiotics Aren't Always the Answer

<http://www.cdc.gov/features/getsmart/>

World Health Organization (2015) Antibiotic Resistance

<http://www.who.int/mediacentre/factsheets/antibiotic-resistance/en/>

World Health Organization (2015) Global Action Plan on Antimicrobial Resistance.

http://apps.who.int/iris/bitstream/10665/193736/1/9789241509763_eng.pdf

European Antibiotic Awareness Day (2015)

<http://ecdc.europa.eu/en/EAAD/Pages/Home.aspx>