Antibiotic Resistance as an International Threat

Introduction

Antibiotic resistance is becoming an increasingly large problem across the globe. Resistance occurs when bacterial cell growth occurs in the presence of an antibiotic that would normally stop cell growth or kill the cell. Antibiotics have been around since the early 1940’s when Anne Miller was given a dose of Penicillin. Since then, resistance has developed against a variety of different antibiotics.

Antibiotic resistance can spread through many methods and can occur over several months or years. One of the most common ways for resistance to spread is through the exchange of people or goods across country lines. Ruifang Zhang and his team researched the effect of antimicrobial resistance across three different countries. Their research focused on China, Kuwait, and the United States and looked at things such as hospital-acquired infections, community acquired infections, growth rate of resistance, and patterns of resistance between the three countries. The United States and China were obvious choices for the study because of their high use of antibiotics, development of antibiotics, high amount of travelers coming in and out of the country, and their large amount of import and exports. Kuwait was chosen as the third country in order to see how a smaller more distant country might compare. This information can be used to determine if there is a threat of resistance spreading across the globe.

Discussion

The fight against antimicrobial resistance is ongoing as microbes are constantly evolving, and becoming resistant to more and more antibiotics. Some bacteria have even become resistant to multiple drugs by using the same mechanism to block the antibiotic action. Additionally, antibiotic resistance is becoming more and more common as more people begin to travel to other countries, and more goods are being exchanged. Because resistance can be so easily acquired, it has become increasingly expensive to keep up with the development of new drugs.

In order to compile the data, Zhang and his team worked with different organizations and teaching hospitals in all three countries to compile data spanning over several years. To obtain this data, bacteria was gathered and tested for antibiotic resistance to a specific drug in all three countries, and the percentage of antibiotic resistance bacteria was calculated. China was found to have the highest amount of antibiotic resistance among the three countries studied at 28%. Antibiotic resistant pathogens can spread quickly across a community or even a nation after initial infection. Increased travel to and from as well as across China has been attributed to the high resistance problem facing the country. Second to China was Kuwait at 27% where resistance seems to be growing at a higher rate. The United States had a substantially lower antibiotic resistance rate at only 8%.

While there is a large amount of antibiotic resistance in all three countries thus far there is not a whole lot of evidence to prove that there is a whole lot of convergence between the countries. However, with increased international travel there is a likely hood for transmission of resistance in the future. This is an area that is lacking in research to get ahead, and prevent future antibiotic resistance.

References

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