Resist the urge: Antimicrobial Resistance

Hi all, my name is Elliot Stanton and together Amy Quinn, I will be chairing one of our health committees in the 2015 George Watson's College Model United Nations conference. I started MUN 3 years ago now and have enjoyed every minute of it (even if I was a tad shy at first). If there is one thing I would stress about MUN, please don't stay in your shell. You will definitely get so much more out of the experience and have a lot more fun if you make an active contribution to the debate. This will be my second year chairing a health committee and I am greatly looking forward to it. The standard of debate is always exceptionally high and all delegates taking part are always extremely welcoming, whether this is your first time or not. Don't worry if you are at all nervous as it is only natural. One of the best and most satisfying parts of the conference is finding the courage to speak up in front of groups (who will in turn listen attentively).

If you want to make the most out of this weekend I highly recommend that you use this briefing paper and other reliable resources to write a short (50 words) position paper. A position paper is simply a few sentences outlining what your nation's stance is on this particular topic. Writing one of these will greatly improve the overall quality of debate we are able to have on this topic as it allows for a more informed debate and in turn will certainly improve your chances of winning a prize. If you could email me at estanton10@gwc.org.uk before the 27 of February I would be very grateful.

It would also be ideal if you could prepare at least one resolution for the topics of debate in the health committee. Ideally we would like to see more than just one resolution from each delegate. However, we would also like to stress the fact that we would much rather receive a couple of outstanding resolutions rather than four average ones as debating multiple resolutions from the same delegate is highly unlikely. It would also be brilliant if you could bring both a paper copy of your resolution and an electronic copy on a USB stick.

Current Context: The Problem

As global populations rapidly increase, the amount of antibiotic medications used to prevent microbial infection also greatly increased. This huge increase in the use of antibiotic medicines has lead to a potentially catastrophic problem arising. This being the problem of Antimicrobial resistance. Antimicrobial resistance is defined by the World Health Organisation (WHO) as a microorganism's resistance to an antimicrobial drug that was once able to treat an infection by that microorganism. This resistance develops as antibiotics place a 'selection pressure' on microorganisms. This pressure being in developing a resistance to antibiotics or face death. Microorganisms best suited to withstanding antibiotics are able to survive and reproduce, thus passing on genetic coding for antibiotic resistance to the next generation of microorganisms. This effectively means that microbial infections, which were once easily treatable by a broad range antibiotic such as ampicillin become increasingly difficult to treat as these antibiotics are no longer able to destroy the disease causing microorganism, leading to potentially life threatening symptoms arising.

The term 'superbugs' is often thrown around readily by the media to describe a microorganism which has become resistant to certain antibiotics. A common example of a so-called superbug is the bacterium Staphylococcus aureus which has come to be known more commonly as MRSA. MRSA shows an extreme adaptability to antibiotic pressure, meaning that it is
able to rapidly develop a resistance to many commonly used antibiotics such as penicillin. This makes MRSA an increasingly dangerous problem in hospitals as infections of MRSA are often very difficult to treat and cause great risk to patients who contract the bacterium. The CDC estimates that in the US there are around 80,000 invasive MRSA infections every year and approximately 11,300 MRSA related deaths as a result of this. It is easy to think of this as a relatively small number, however please remember that these statistics are only taken from one antibiotic resistant microbe, of which there are many more, such as Multi Drug Resistant Tuberculosis (MDR-TB), which the WHO estimates causes around 170,000 deaths each year.

**How Did This Problem Arise?**

This problem has been largely created by the overuse and misuse of currently available antibiotics. Reasons for antibiotics being used in such situations may fall significantly due to factors such as; a huge increase in availability of antibiotics in the mid twentieth century, the ability to purchase antibiotics relatively easily over the counter in many countries of low or middle income countries, and the incorrect prescription of many broad spectrum antibiotics. As well as human usage, the use of antibiotics in livestock feed is a common practice in many countries, which is known to lead to an increase in antibiotic resistant microorganisms.

The question is often asked as to whether a patient who received antibiotics should, in fact, have received them. Mis-prescription of antibiotics is a large problem globally as patients will often request being prescribed antibiotics when they are not needed. On the other hand, there is evidence that overly cautious physicians may still prescribe these patients antibiotics. Often this is due to the threat of legal action being taken should antibiotics have been required and were not prescribed. It has been found that most commonly antibiotics are being prescribed to treat the common cold. The common cold is a virus which means that antibiotics have no effect whatsoever. It can be argued that a prescription of antibiotics as treatment is, in fact, exacerbating the issue of antimicrobial resistance.

**What Is Currently Being Done To Solve This Problem?**

In truth, there is little global action currently taking place to help combat the issue of antimicrobial resistance. Largely work on this issue, if being carried out at all, is being performed in such a way as to appear to be exclusively beneficial to the nations carrying out such work.

In 2014, the WHO released a statement which attempted to provide a basic idea of how the general public, health care workers, pharmacists, policy makers and industry can help tackle this problem (see this link for the full report, as it’s well worth a read.)


Research into the discovery and design of new antibiotic medications is ongoing. However, in recent years there has been marked decrease in the research and development of these drugs. This may be down in a large part to the fact that this area of research has seen trouble in gaining the economic funding required to carry out such work.

In October 2015, the American state of California passed a new law banning the use of all human antibiotics in animal feed. This may be a good step in reducing global antibiotic usage, however, antibiotics in livestock feed allow for faster growth rates and healthier animals so there are reasons that this solution may not be as practical as it sounds.
What Else Could Be Done?

There are many things that could be done to help deal with this problem, although many of these solutions aren't without their flaws. The UN seems to be an ideal organisation to help tackle this issue, if only to create a set of guidelines as to how this problem should be tackled. Detailed below are a few possible ideas as to action that could be taken to help stop the ever increasing threat of antimicrobial resistance.

- Discourage the sale of over-the-counter broad scale antibiotics in certain low and middle income nations. Antibiotics being available over the counter removes the process of a physician prescribing these drugs meaning that the chance of antibiotics being misprescribed is far greater.

- Encourage antibiotics to be prescribed only in cases where absolutely necessary. This would reduce the problem of antibiotic overuse and misprescription, however, it may bring up problems if antibiotics are not prescribed when they should have been.

- Further development of vaccines. If vaccines are created for diseases which have previously been treated through the use of antibiotics, these antibiotics will no longer be needed to combat the disease and thus, the problem of antimicrobial resistance in relation to this disease will not arise.

- The use of antimicrobial stewardship teams. Antimicrobial stewardship teams are teams of health care workers who aid practitioners in the prescription of antibiotic medications and the management of patients receiving these medications.

- The development of new antibiotic medications. This is a solution which requires a large investment be put into research and development.

- The reduction of antibiotic usage in livestock feed. This solution potentially greatly limits the growth of antimicrobial resistant microorganisms, however it also causes a decrease in the growth rates of these animals.

To Find out more on this issue please visit...

http://www.who.int/mediacentre/factsheets/fs194/en/

http://www.cdc.gov/drugresistance/


and finally, please endeavour to read the WHO’s 2014 report on the matter;


If this has in anyway sparked an interest in this topic issue 3054 of the magazine “New Scientist” has some interesting points to be made on the over prescription of antibiotics, and the discovery of new antibiotics.
For Country Profiles and lots of other useful information:
http://www.nationsonline.org/oneworld/
http://news.bbc.co.uk/1/hi/country_profiles/default.stm

For issues of current international debate:
http://www.newint.org/
http://www.idebate.org/
http://www.amnesty.org/