Med-Alexa; October 2024

Approaching Towards a Silent Pandemic: The Looming Threat of Antimicrobial Resistance

The world as we know it is on the verge of a disaster, a silent pandemic, the likes of which nobody sees it coming threatens to take millions of people and undo all of technology's advancements in medicine. Infection control or their treatment with antibiotics has become a major concern as microorganisms increase their capability to resist the antibiotics that once eradicated them, a situation known as AMR or antimicrobial resistance. This slow-moving disaster through negligence with antibiotics and inaction from the world can escalate to be even more devastating than any disease known within the recent past.

Leaving AMR unmanaged could result in it unraveling healthcare as people known it with minor injuries turning into deaths, surgeries, and cancer treatments becoming too dangerous to perform effectively, and erasing all the advancement made through the years. This lack of action has disastrous implications, and time is fast running out.

Amid the struggle against different diseases that swept over the world, there is a covert and dangerous tendency that is gradually unfolding — the tendency that is threatening to turn the grown historical clock back in medicine. Antimicrobial resistance or AMR is gradually turning such diseases and even simple injuries into conditions that cannot be treated, future scenarios where basic surgeries and chemotherapy or even transplants will become a lot more dangerous have been painted by international health bodies.

AMR is a process where microorganisms like bacteria, fungi, virus, and parasite are resistant to drugs used to eliminate them or to kill them. The repercussions are severe: patients take longer time to recover from illnesses, the costs of treatment increase and deaths occur more frequently. The world is buzzing on an edge where the AMR could claim more lives than cancer and heart diseases combined. Unfortunately, a majority of the public still lack knowledge of these projections. Nevertheless, it is critical to combat AMR since the consequences of global inaction are that we will move to a post-antibiotic world.

Life in a Post-Antibiotic World

Picture this, a world in the future, most of this can be explained by what researchers have already mapped out as the likely scenarios of the globe just a few decades from now. You get up one day with a normal throat ache, go to see your doctor, only for him to give you a prescription to get well. What you hear instead is that there is no cure; the bacteria that led to your infection is immune to all the antibiotics. Days go by and become weeks and your health declines further and the bacteria enters your bloodstream. The illness was contained earlier and was controllable but is now lethal; the doctors can do nothing.

Hospitals have turned out to be new battlefields. Hemorrhagic surgeries – appendicitis, hip replacement, C-section – are potentially lethal because no antibiotics can guard against an infection that may occur after surgery. Fatality increases due to diseases that cannot be treated to hit wards with high impacts, meaning that instead of seeking improved health, patients go to hospitals to find nothing but despair.

Congest and cancer patients who use antibiotics to support weakened bodies during chemotherapy are among those that have been affected. Some must forgo potentially life-saving treatments because they also risk being infested with germs. In fact, such things as organ transplants which were once considered major medical breakthroughs have become a thing of the past; getting an infection during the transplant procedure outweighs any possible gains.

Newborns who once were immunized for polio, measles, whooping cough, and meningitis are in danger of bacterial sicknesses that were once not an issue. This is so because pneumonia, tuberculosis, and even strep throat become major causes of mortality amongst the children. Mothers are afraid of childbirth fully understanding that such things as infections may well prove deadly in the absence of antibiotics.

The social fabric of society starts disintegrating because of the AMR crisis. The global economy is in drastic loss as millions of employees are affected by diseases that have no known cure. They become more dangerous as strains develop resistant to them and quickly cross borders setting pace for uncontrollable outbreaks. The global health system is overburdened because even the developed countries are stretched to capacity, from managing untreatable diseases.

This type of distant future is not only present in science fiction films anymore. This is the world we are headed to if we do not deal with it expeditiously: a world in which all the great advances that have been made in medical science disappear, and simple disease, which can be prevented by taking simple vaccines and immunizations claim lives.

The Sorry Figure: A World Without Antibiotics

This doesn't mean the future has to look like this. However, every day that will go by without corresponding measures taken are the days leading us to a future where antibiotics will no longer be effective. AMR is a stealth organism; it works silently and gradually claiming more and more lives. It is not the big media event of the month like the flu or a hurricane, but its results are catastrophic.

However, the lethargy which accompanies the lack of time frames cannot be ignored. Governments are reactive, pharma companies are reluctant, and the majority of people have no clue what is going on. The sorry figure is this: people are headed straight towards the unsavable that could be avoided but again are in denial.

In not doing something about it, then the effects are disastrous. But it is not a closed chapter yet – not quite, and that is enough to still change things. To do this, people will need to work together from all over the world, to use antibiotics properly, to spend billions of dollars on research, and to devote their efforts to changing the way they and everyone else look at medicine and medical treatment. But if no such measures are taken, the future is bleak, and the invisible disease will cease to be invisible; it will literally pulverize everything.

The growing threat of AMR has far-reaching consequences for global health:

Increased Mortality: These are conditions that can be treated by simple antibiotics, for instance, pneumonia, tuberculosis, urinary tract infections become severe infections if proper antimicrobials are not available. Secondary infection after surgery or during childbirth is also growing more severe due to new strains of bacteria that are resistant to antibiotics.

Longer Hospital Stays and Higher Medical Costs: Infections due to resistant organisms are longer to manage, they call for less effective, more expensive and potentially more toxic drugs. This results in longer time that patients spend in the hospital; increased pressure on the health facilities, and also the overall cost of treatment being incurred by the patient, and or government.

Risk to Medical Procedures: Antibiotics are said to be the basis of largely of today's medical practices including organ transplant, chemotherapy, and routine surgeries. In the absence of good antibiotics, these procedures are even more dangerous because the patient could develop an infection and die from it.

Potential for Global Health Crises: But if AMR spreads, we are able to experience a recurrence of unchecked infectious diseases internationally. This can be extrapolated to mean that what was once considered endemic diseases can break out at one time and strain the health facilities and put as many people's lives as possible at risk.

The Drivers of AMR

The rise of antimicrobial resistance can be traced back to several key drivers:

***Overuse and Misuse of Antibiotics*:** Antibiotics are important weapons in the medical arsenal, but resistance is advancing rapidly. In many cases people are given antibiotics when they do not need them at all, for example, for viral illnesses like a cold or flu. This is especially so most patients do not complete the regimen even if antibiotics are needed, thus creating room for partially resistant organisms.

Agricultural Practices: This is especially the case with the routine use of antibiotics as feed additives or growth promoter in animal farming, and for disease control in these animals. Some of the strains can then find their way into humans through ingestion of food or contaminated environment making it even harder to combat resistance.

Lack of New Antibiotics: However, there is growing resistance to the drugs already available [...] the discovery and production of new antibiotics has come to a standstill. High research and development costs are detrimental to the pharmaceutical business, and the financial profits derived from sales are comparatively low concerning antibiotics than chronic diseases medications due to which there is ineffective research on the antibiotics. This factor contributes to the AMR crisis since we depend on additional, yet less effective treatment medications.

Global Travel and Spread of Resistant Strains: Given the fact that today the globe is interconnected, it was not a surprise that resistant bacteria would spread across different countries. People visiting areas with a tendency towards AMR can easily develop resistant

infections and transfer them back to their home countries and therefore are potent carriers of the resistance. Movements of food items across countries also transport resistant organisms from one country to the next.

Strategies to Combat AMR

Despite the daunting challenge, there are steps that can be taken to mitigate the threat of AMR:

Improved Antibiotic Stewardship: Patients, doctors and other staff should agree to use antibiotics rightly to avoid the development of antibiotic resistance. These include appropriate use of antibiotics and more specifically, patients' compliance to the full prescribed course treatment. Hospital acquired precautions should be enhanced to reduce the transmission of such resistant organisms.

Investing in Research and Development: Thus, there is a need to foster innovation in the development of new antibiotics, vaccines, diagnostics. State authorities, pharmaceutical companies and universities must encourage research into new treatments and other treatment options to deal with the persister cells.

Enhancing Global Surveillance and Data Sharing: Resistant infections do not respect geographical boundaries and hence cooperation is very important in their management in the global society. Enhancing surveillance to track resistance patterns and sharing such information across national borders can go a long way in noting new threats thereby helping to manage them adequately.

Reducing Antibiotic Use in Agriculture: Changing consumers' habits is not easy, and the treatment of their use in farming to eliminate antibiotic resistance requires multi-sectoral efforts. Measures of writing the prescription drugs only to animals that require it or not at all besides advocating for better health practices and immunization can go a long way in preventing both animal and human use of antibiotics in producing livestock.

Public Education and Awareness: AMR is not everyone's expertise; however, educating the public about the risks associated with MAP will help reduce antibiotic misuse. Informing the general populace should be the most important aspect of any public health campaign through educating the public on the proper use of antibiotics, the dangers of administering antibiotics on the Dow self and the importance of completing treatment courses.

Addressing the problem of AMR requires a burning platform approach towards an all-encompassing global effort from the sectors of healthcare and agriculture together with the environment. Improved use of antibiotics, introducing new drugs, proper control of infections, and international collaboration all form parts of a good strategy. Should the necessary measures not be taken quickly and in tandem, people will see stooping back common diseases and procedures can mean a deadly danger again, threatening the very base of contemporary medicine. Previous sicknesses the world has had to live through are little compared to this one; if nothing is done, this one could very well be the end. The clock is ticking.