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Fighting the enemy within!

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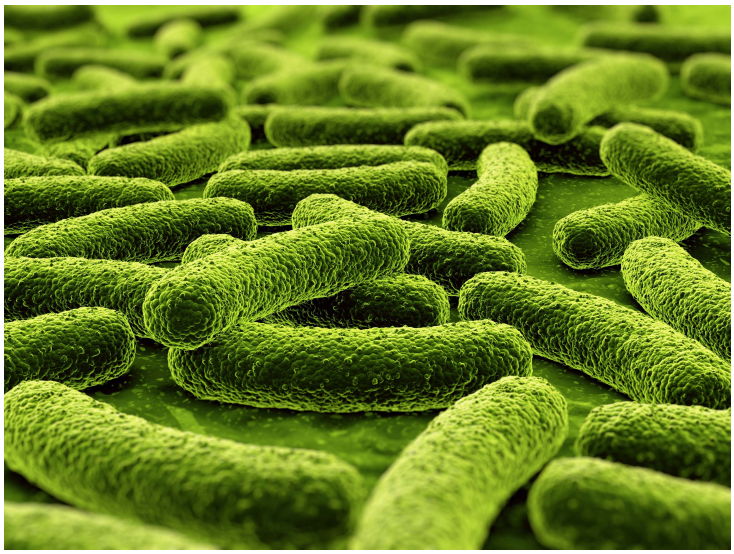

Truly a case of friend turned foe, the increased power of resistance shown by the microbes against the antibiotics can assume dangerous proportions. And this worry is not just on paper. The recent declaration of antibiotic resistance as one the three greatest global threats by the world health organisation (WHO) sounds highly ominous. Additionally, the rising cost of hospitalization in India along with resistant bacteria can make things further worse. While the researchers ought to engage themselves in containing it before it becomes a menace, the industry too is expected to take up its share of responsibility.

"We must act urgently. The world is heading for a post-antibiotic era which will be devastating in this age of emerging infectious diseases. If we do not use antibiotics rationally, we will lose the power to fight common infections and minor injuries. We need to step up efforts to prevent antimicrobial resistance and change how we prescribe and use antibiotics," said Dr Poonam Khetrapal Singh, WHO Regional Director for South-East Asia, at the launch of a four-day regional meeting on antimicrobial resistance (AMR) recently in Jaipur. As per WHO's definition, the antibiotic resistance refers specifically to the resistance to antibiotics that occurs in common bacteria that cause infections while antimicrobial resistance (AMR) is a broader term, encompassing resistance to drugs to treat infections caused by other microbes as well, such as parasites (e.g. malaria), viruses (e.g. HIV) and fungi (e.g. Candida).

Overexposure is the culprit

Sold with or without prescription openly and easily, the unabated access to antibiotics has increased the risks. Within the past couple of years, new drug-resistant patterns have emerged and resistance has increased drastically putting more economic burden on the entire health care system. Resistant infections are often more severe, leading to longer hospital stays and increasing overall costs for treatment.

"Now we had a problem for a while but we have not responded appropriately. Recently in a study, we found that between the years 2000-2010, the total antibiotic consumption went up by 36 percent globally. Out of that, 3 quarters were just from

BRICS and India was on top. India is largest consumer of antibiotics in the world. Is that justified? Partially as we have huge population with disease .Not fully because we use the extreme drugs for common ailments," says Prof Ramanan Laxminarayan, vice president- research and policy, Public Health Foundation of India who suggests the need of balance as the antibiotics are very important too. He explains further, "Lack of antibiotics for children in rural pockets has led to death cases. At the same time, over the counter sale of antibiotics has caused overexposure. Especially in rural areas, children don't have access to antibiotics while in urban areas, it can be otherwise."

"Antimicrobial resistance till date is most often associated with nosocomial infections (hospital based infections), and reports on these are limited in India. But there have been reports on emergence of superbug, NDM-1 which in itself is a disaster as it is resistant to even high-end drugs like carbapenems.," says Dr B R Das, president - Research and Innovation and mentor - Molecular Pathology and Clinical Research Service, SRL Diagnostics. "We being a private diagnostic setup and based on our internal data, would be considered as community acquired AMR data also seems worrisome. High level and continuously increasing levels of resistance has been noted for most of the gram negative and gram positive organisms. Yes, such data hints at the seriousness of the issue and should be considered as a threat ."

"Of course it's an alarming concern," says Mr Arjun Juneja, head- Research & Development, Mankind Pharma, adding further, "All good intentions to control excessive antibiotic usage but with limited deed, has led to the situation where antibiotic resistance is grim. Resistance mechanisms are epidemic and create an enormous clinical and financial load on health care systems worldwide. There are no simple solutions to the problem. Fortunately, not all bacterial pathogens are resistant all of the time and many respond to first line treatment with antimicrobial agents administered in the community."

Industry can play a significant role

Experts point towards an urgent need of a powerful alliance comprising partners across the country from academic institutions, research organizations, pharmaceutical and biotechnology industries as well as most importantly medical fraternity that includes suppliers as well as heath care providers. All the partners must combine their experience, expertise and capabilities to create and test new economic models for antibiotic R&D to revive investments in this vital area. Simultaneously, we should examine how the efficacy of existing and new drugs can be maintained and preserved by defining their responsible and appropriate use.

"Companies would be producing drugs and selling them since there is a need. Doctors are the best to decide and differentiate between the true need and estimate the chances of overexposure. While drug manufacturing companies can only be regulated in the presence of released governmental ordinance only. For eg. The recent pricing policy regulation on certain essential drugs for treatment of certain disease conditions like diabetes cancer which have badly hit the society, believes Dr B R Das.

Mr Arjun Juneja feels that most of the pharmaceutical companies are now shirking away from the responsibilities of their own business missions. He says, "Regardless of the recognized and growing need for new antibiotics, only few new classes of antibiotics have been brought to the market in the last three decades, as industry has withdrawn from the antibiotic R&D arena because it is considered a high-risk, low-return market with little to satisfy stakeholder expectations. The onus is on academia to furnish information on the multifunctional aspects of microbial network interactions that will provide the discovery tools of the future."

"The twin crisis of antibiotic resistance and the near empty antibiotic pipeline pose a very real threat to human health. Only biopharma companies in collaboration with stakeholders worldwide will be sufficient to address the crisis," rightly pointed out an expert. Health care providers can prevent antimicrobial resistance by ensuring prompt diagnosis and treatment of infections, prescribing antibiotics appropriately, and following infection prevention techniques to prevent the spread of drug-resistant infections in health care facilities. So role of patient, government bodies as well as health care providers comes equally in maintaining the balance between overexposure and dire need.

Regulations are a big headache?

Stringent regulations to control over the counter sale of drugs have been under the governmental agenda over a long time. The government of India constituted a 13 member task force under Dr R K Srivastava, then director general of health services, ministry of health to review the situation and subsequently the national policy on the AMR is available on the National Centre for Disease Control website. But immediate control and regulation seems difficult. Also the influence, role and reliability on private sector doctors needs to be taken into consideration to effectively lay down such regulations.

Laws must be strict but nothing can be achieved until the number of medical doctors is not increased, believes Dr Virender S Chauhan, former director, International Centre for Genetic Engineering and Biotechnology (ICGEB). He adds, "We are sitting on a huge concern area. For people living in large numbers in big concentration, this will be biggest killer one time. All the poor countries are a hub of antibiotic resistance. We can just go forward and get the antibiotic drug. . Infact, the tribals of far off states don't have access to healthcare but the fact remains they have access to antibiotics. The condition is worse in China and India. Infrastructure is the major issue. While the harsher laws are very important, we have to produce large numbers of doctors."

The World Health Assembly has now urged WHO to develop a global action plan against AMR by 2015. The plan is being organized around five main areas of concern: awareness; information on the magnitude of the problem; economic impact; rational use of antimicrobials and preventing infection. Surely the engagements with multiple stakeholders to ensure expertise should be harnessed, shared and used to greatest
advantage.