CHAPTER

4

Antimicrobial Resistance (AMR) - A Scientific Challenge with Political Repercussions

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Antibiotic resistance coupled with a lack of new antibiotics, is a major threat to health care system, global economy and the civilisation. Although some countries (for e.g. Scandinavian countries) are successful in maintaining very low rates of antibiotic resistant bacteria; globally the numbers of resistant bacteria continue to increase in both humans and animals.[1]

The sharp increase in resistance and lack of new treatment options are especially serious in the case of infections caused by Gram-negative bacteria. Gram-positive superbug issue (such as MRSA) is serious problem in North America and some European countries. South Asian countries and Mediterranean countries are seriously hit by the Gram-negative superbug crisis. Now, even the North American and European countries are catching up fast with the Gram-negative bacterial resistance problem.[2]

Antimicrobial resistance issue has been considered a scientific and technical issue. This is one of the main reasons for the global failure in tackling resistance.[1] Antibiotic resistance is a scientific topic with very serious political implications. Antibiotic resistance issue can only be tackled if politicians and policy makers get directly involved and take ownership.

Antibiotic resistance was raised at the World Economic Forum meeting in 2013 and 2014 as well as at the 2013 G8 meeting of Finance Ministers in London and at G20 meetings.[1] As per the statement by World Health Organisation in May 2014, antibiotic resistance is one of the most serious public health issues of our time.[3] AMR is considered by the WHO to be one of the three greatest threats to human health and was the focus of World Health Day in 2011. The Transatlantic Taskforce on Antimicrobial Resistance (TATFAR) was created in 2009 by U.S. President Obama, Swedish Prime Minister and the then-European Council President Reinfeldt, and European Commission President Barroso at the 2009 U.S. – EU summit.

Indiscriminate usage of antibiotics in veterinary practice is one of the most important derivers of antibiotics resistance. For instance, 80% of the total antibiotics produced in USA are used in veterinary practice. These antibiotics are not used to treat or prevent infections in animals, instead used as growth promoters to make animals grow fat and fast. Excessive pressure by the pharmaceutical industry and veterinary lobby is a serious obstacle in banning the use of antibiotics as a growth promoter, even in US. Many European countries have banned this usage in 2006. In India, extent of the usage is unknown. OIE (World Organisation for Animal Health) and The Food and Agriculture Organization of the United Nations (FAO) have worked actively to promote the appropriate use of antibiotics in animals.

Till recently, WHO actions on AMR were partial and without coordination. This inertia resulted in many non-Governmental organisations taking the much-needed lead in the field of AMR.[1] Well known initiatives in the international arena are ReAct (Action on Antibiotic Resistance, Sweden), Antibiotic Action Led by BSAC (British Society for Antimicrobial Chemotherapy), GARP aimed at LAMIC (Low and Middle income countries), The World Alliance Against Antibiotic Resistance (WAAAR, France) and Alliance for the Prudent Use of Antibiotics (APUA, USA).

Indian Health Ministry published National policy for containment of AMR, in 2011. Unfortunately for various reasons the implementation was delayed. This was the main inspiration for the development of Chennai declaration.

Chennai declaration: An initiative by medical societies and other stakeholders in India, since its publication in 2012, has received widespread national and international acclaim. The "Chennai declaration"[4] was published in Indian Journal of Cancer in 2012 and the "Chennai declaration- Five year plan"[5] the follow up document was published in Indian Journal of Medical Microbiology in 2014.

India needs "An implementable antibiotic policy" and not "A perfect policy" was the basic principle of Chennai declaration.[4-6] Step- by- step regulation of antibiotic usage, concentrating on higher end antibiotics first and then slowly extending the list to second and first line antibiotics seemed to be a more viable option.[4,5]

Chennai declaration document and initiative created serious attitude change among Indian medical community, politicians and bureaucrats.[6] Chennai declaration played a significant role in speeding up various initiatives by Indian Health Ministry towards tackling AMR. It is not surprising that Chennai declaration received entry to the "brief history of antibiotics", a compilation of the most important events in the history of antibiotics. Chennai

declaration has been discussed in dozens of reputed medical journals, prestigious policy meetings including World Health Assembly and Parliaments including British Parliament. Chennai declaration can be a role model for initiatives in other developing countries as well.

Drugs Controller General of India, in 2013, published a modified rule (H1 rule) to rationalize over the counter (OTC) sales of antibiotics in the country and the rule came into effect in 2014.[7] In 2016 Indian Health Ministry released a National Antibiotic guideline.[8]

After the early inertia, WHO has definitely found a new and forceful momentum over the last three years. In 2013, WHO established the Strategic and Technical Advisory Group (STAG) on antimicrobial resistance chaired by the UK Chief Medical Officer Dame Sally Davies. In 2014, WHA (World Health Assembly) resolution on AMR decided to prepare a global action plan for AMR.

Concerned about the rising levels of drug resistance whereby microbes evolve to become immune to all known drugs, the UK Prime Minister (former) David Cameron commissioned economist and the British Treasury minister Lord Jim O'Neill to analyse this global problem of antimicrobial resistance (AMR) and propose concrete actions to tackle it internationally.[9] According to Jim O'Neil report, the AMR crisis will cost the global economy 100 trillion US dollars by 2050 and ten million additional deaths will happen across the world every year.

Longitude prize is a £10 million prize announced by the British Prime minister, to create an affordable, accurate, rapid, and easy-to-use point of care test for bacterial infections that will allow health professionals worldwide to administer the right antibiotics at the right time. Longitude prize has created wide spread enthusiasm among scientists across the globe.[10]

UN assembly meeting in September 2016 will organize detailed discussion on AMR and hopefully will lead to legally binding agreements between countries.

We will not be able to tackle AMR without coordinated action by doctors, scientists, politicians, bureaucrats and various organisations like WHO. Doctors, the most knowledgeable community on the impact of AMR must take the leadership role in convincing politicians on the need for efforts to tackle this serious menace. If we don't demonstrate this leadership, our future generations will not have the blessing of antibiotics-the miracle molecules-that revolutionized the modern medicine and civilization.

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