iGEM IIT Roorkee

Policy Review Report

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Policy Review Report for Healthcare Development

Ever wondered, what is the most sought treatment prescribed by doctors? If you thought about antimicrobials or antibiotics, then that is correct! 12.9 billion units of antibiotic consumption, as of 2010. They also seem like a miracle, saving patients from fatal diseases. Naturally, it does have a cost known as Antimicrobial Resistance (AMR), where our body develops resistance to such antibiotic treatment.

So, **Antimicrobial Resistance** (AMR) is a global health and development threat. When bacteria, viruses, fungi, and parasites no longer respond to medicines and change over time, it makes infections harder to treat, increasing the risk of disease spread, severe illness, and death. The effective prevention and treatment of an ever-increasing range of infections caused by microorganisms become difficult. A subset of AMR is Antibiotic Resistance, a branch focusing on the "antibiotics" part and germs like bacteria and fungi. It happens when these germs develop the ability to defeat the drugs designed to kill them. Defeating the purpose as the germs are not killed and continue to grow. It is essential to know that the body does not become resistant to antibiotics; it is that bacteria have become resistant to the antibiotics designed to kill them. However, the real question is, how is this a threat to everyone? Antibiotic-Resistant Infections not only have the potential to affect people at any stage of life, but the healthcare, veterinary, and agriculture industries. No one can altogether avoid the risk of resistant infections, but some people are at greater risk than others (for example,

people with chronic illnesses). If antibiotics lose their effectiveness, we lose the ability to treat infections and control public health threats. Accepting antibiotics as miracle medicines, many medical advances became dependent on its ability to fight infections successfully, including joint replacements, organ transplants, cancer therapy, and treatment of chronic diseases like diabetes, asthma, and rheumatoid arthritis.

One question that arises inside us is, what is the Government doing in taking preventive measures? Well, as we know, AMR is a global threat, and hence WHO had come up with a "**National Action Plan**" under which India had taken up to form many policies and strategies in prevention. However, the majority of Indian citizens are unaware of this 'Action Plan.' All must know what it consists of and how we can contribute and play our parts. The National Action Plan (NAP) 's framework includes **six strategies**; one of its main priorities is to increase awareness by communication.

It is evident from reports that **India is the largest consumer of antibiotics** in the world, followed by China. Over the years, the rate of prescribing antibiotics by physicians has increased to a very high rate. In a country where antibiotics do maximum treatment, it becomes essential for us to know what other problems we are facing and how the Government is helping us. Not only misuse and overuse but also underuse due to lack of access is common in India. Due to lack of access to good quality, affordable antibiotics leads to significant mortality; an urgent need to maximize access and limit excess antibiotic use is needed. Hence we should be fully aware of AMR and NAP along with the implications.

Released in 2017, NAP's primary purpose is to prioritize AMR, focusing on antibiotics and its problem. The current NAP comprehensively aligns well with the World Health Organization's (WHO's) GAP for Antimicrobial Resistance. There are six strategic priorities included in it for Indian Health Authority to work on, and they are –

- **Improved awareness of antimicrobial resistance through effective communication**
- **Strengthening knowledge and evidence through surveillance**
- **Reducing the incidence of infection through adequate infection prevention and control**
- **Optimizing the use of antimicrobial agents in health, animals, and food**
- **Promoting investments for antimicrobial resistance activities, research, and innovations**
- **Strengthening India's commitment and collaborations on antimicrobial Resistance at international, national, and sub-national levels**

The first strategic priority focuses on measures to increase awareness and understanding through **communication**. It also proposes revising students' professional curriculum (medical, veterinary, and schools) and developing modules for promoting awareness. Besides, it offers training courses for people from various sectors and industries. According to varied surveys, many groups, like school students, teachers, and pharmacists, are not fully aware of AMR and its consequences thereof. Improvement of awareness is a must in all sectors. The need for campaigning, organizing workshops, and training centers is necessary. It could also be clubbed with different other initiatives like the Swacch Bharat, India's National Immunization Programme, Redline campaign, etc. This objective's foremost step is promoting awareness; however, awareness isn't necessarily behavioral change, and hence this also must be optimized to our culture and developed.

The second strategic priority focuses on **strengthening microbiology laboratories for antimicrobial susceptibility** testing in medical labs, quality assurance, community data, and establishing standards for AMR surveillance in humans, animals, food, and the environment. For effective control, adequate oversight of issues and knowledge is the critical factor. NAP also mentions publishing surveillance data annually and the need to define the standards and assessments for antibiotic residues in industrial effluents, healthcare settings, and farms. The Indian Council of Medical Research (ICMR) has initiated the "Antimicrobial Resistance Surveillance Network," where the data on microbes is collected from more than twenty laboratories. India's enrollment in GLASS – Global AMR Surveillance System is also under the same goal. Improvement of the quality of laboratories by ensuring increased availability of trained personnel, adequate infrastructure, reinforced quality controls, and hands-on training support from care institutions. On a large scale, laboratories should strengthen hospitals' networks for a better picture of the country's resistance pattern.

The third strategic priority is to **reduce infection incidence through adequate infection prevention and control**—the inclusion of Infection Prevention and Control (IPC) in healthcare, veterinary settings, and animal husbandry. National Coordinating Unit (NCU) to be set up for infection prevention and control. One motive of IPC is that Hospitals should have a mandatory license to ensure compliance. IPC should run collaborations with initiatives like "Swachh Bharat Abhiyan" and "Kayakalp Programme." Hygiene and immunization are the next steps in preventing diseases; hence, maximum efforts in the establishment of hygienic public places and immunizing are needed. The environmental spread of AMR is an issue. NAP includes ways to reduce environmental contamination with resistant genes, pathogens, and antimicrobial residues, making policies on the farm, factory registration, and implementation mechanisms on extended producers responsibility for expired/unused antibiotics. These ways may not eradicate but reduce environmental factors for Antibiotic Resistance.

The fourth strategic priority **emphasizes optimizing and developing regulatory frameworks for the antibiotics used**, formulating regulations concerning hospital waste, preventing contamination, and antibiotic stewardship in all sectors. The National Centre for Disease Control has published the National Treatment Guidelines for Antimicrobial Use in 2016, emphasizing the proper use of antibiotics. The strategy proposes improving diagnostic tools as most healthcare facilities face a challenge in it. Sometimes, doctors start antibiotic treatment before diagnostics. Special efforts on guidance and monitoring on

those interns are needed, who manage outpatients often without supervision due to heavy workload, relying on clinical judgments to initiate antibiotic therapy. Treatment guidelines should be improved according to the local antibiogram, pre-authorization for restricting high-end antibiotics and measuring antibiotic uses. Prescription auditing by pharmacologists and pharmacists can be done to ensure adherence to hospital antibiotic guidelines, measure consumption, implement antibiotic stewardship measures, and carry out therapeutic drug monitoring. Proper support, guide, and professionalism are expected in the medical sectors.

The fifth strategic priority **focuses on investment promotions for activities, research, and innovations**. It first proposes financing for AMR. This can start with assessing the impacts of resistance, morbidity, mortality, and cost. The assessment should follow the implementation of the resource mobilization plan. Promotions of research and innovation are needed; hence, the review of new medicines, vaccines, diagnostics, and other innovations should follow—development of new antibiotics, alternative tools, and diagnostics supported by NAP. The concept of de-linking returns from the pharmaceutical volume of sales has been discussed widely but has not yet been fully implemented. Hence encouragement for research should be a priority.

The last strategic priority is to **strengthen India's commitment, coordination, and inter/intra-country collaboration for AMR** related activities. It proposes associations, supporting it by promoting India's way of tackling it and integrating AMR containment in alignment with vertical disease programs. Additionally, sub-nationals collaborations tackling AMR should be strengthened.

Hence, with this, the **framework of NAP-AMR** is seen. The goals of the Government are **quite clear and comprehensive**, yet elaborate objectives are seen. Implementation of this would be slow and time taking but is very necessary. Apart from NAP, an important step was taken by the **Food Safety and Standards Authority of India (FSSAI)** in 2018, where it **introduced maximum permissible antibiotic residue limits for meat, fish, and milk.** There is no standardized testing of animal products before the sale, so the FSSAI hopes to rely on periodic surprise testing. As a result, frequent investigations by private watchdog groups throw up concerning results. Then, one of the most important steps taken by the Government was in January 2020. The Ministry of Environment, Forest and Climate Change (MoEFCC) **published draft standards for antibiotic residues in pharmaceutical industry effluents** under the proposed Environmental (Protection) Amendment Rules 2019. The measures offer stringent limits for 121 antibiotics and apply to both standalone manufacturing units and common effluent treatment plants (CETPs) catering

to the pharmaceutical industry. If finally notified, India will become the first country globally with such standards, a significant development since India, along with China, accounts for 90 percent production of the world's antibiotics.

We all want to live a happy, disease-free healthy life. Even WHO and the UN have planned this in the upcoming years; however, AMR has put many fields at risk, preventing us from attaining our goal. One of the places seen at stake is the SDG, Sustainable Development Goals.

The United Nations **Sustainable Development Goals** are 17 goals with 169 targets that all UN Member States have mutually agreed to achieve by the year 2030. It has **a vision of a world eradicated of hunger, poverty, and diseases.** The SDGs aim to be relevant to all countries, irrespective of economic status, to promote prosperity while caring for the environment and climate change. They have a strong focus on their motto **"no one is left behind"** by working to meet the needs of women, children, and disadvantaged populations, in particular. Health has a central standing place in SDG3; "Ensure healthy lives and promote well-being for all ages," with **13 underpinned targets** that cover a broad spectrum of WHO's work. Other goals are one way or other related to health or contributing to it.

However, it also must be noted that AMR is a considerable threat to SDG. This is due to being a missing topic in the Sustainable Development Goals. It threatens humankind as it undermines modern medications' effectiveness, and there is a rise of resistant bacteria. Several of the goals of SDG would be impossible to attain without effective antibiotics. **Resistance to antibiotic drugs already causes an estimated 700,000 deaths annually. Without significant action, it is predicted to cause a whopping number of 10 million deaths annually and cost up to the US $100 trillion by 2050.** If antibiotics fail, SDG-3 will not be possible to attain.

Modern medicine and SDGs 1, 2, 3, and 8, among others, depend on ensuring that life-saving drugs continue working. **According to the World Bank, if we do not contain the AMR issue, by 2030, another 24 million people are on the verge of being pushed into extreme poverty,** threatening SDG-1 to end poverty in all its forms everywhere. Apart from the impoverishment of illness, another area that is particularly vulnerable to these shocks is livelihoods reliant on livestock production. **The interconnectedness of more SDGs with AMR quickly becomes apparent.** Tracking progress on AMR alongside the other SDG indicators is vital for enabling policymakers to understand how AMR affects their own nation's health, well-being, and development.

The world deserves to be free of such ailments, and everyone should receive proper treatment. The goals are very optimistic and promising, and all countries are striving hard to attain them. Hence, AMR should also be dealt with immediately to seem more feasible and attainable in a few years.

The need of the hour is to tackle the ongoing rise of AMR, making it under control on national and global levels. Properly implementing the NAP, **authorities should lay greater emphasis on monitoring and evaluating all the objectives, establishing appropriate mechanisms, and accountability to strategize how well these outcomes can be achieved in the respective settings and future amends.** Hospital staff and professionals should promote antibiotic stewardship interventions and infection prevention and control measures as these are strategies that are entirely under their command. **A strong political commitment and support from many of the private stakeholders are essential for the successful implementation of the NAP**. As AMR's issue gets resolved, SDGs will not fail extensively, though amendment of goals relating it to AMR is a must. **In conclusion, it must be said that in the future, we may have a substantial global threat where human life takes a toll, and hence a firm, reliable solution to AMR is required soon.**

Reference:

India's National Action Plan for antimicrobial resistance

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