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Perspective

A Road-map to Tackle the Challenges of Antimicrobial Resistance: Act Today for Better Tomorrow

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Background and Current Scenario

The ecosphere of pathogenic microorganism is versatile with pressures that vary habitat to habitat, region to region and by practice setting. Unfortunately for mankind, it is very likely that the antibiotic resistance problem that we have generated during the last 60 years because of extensive misuse and/or overuse of antibiotics, strong policy of governance, public funds spending on health improvements, poverty, education, awareness and community infrastructure. Hospital settings of developed and developing countries are facing an increasing incidence of antibiotic resistant, which is global challenges and it's hard to manage due to lack of addressed real time challenge. At present, antibiotic resistance is known to be the cause of over 7 lakh deaths annually across the globe, and if we don't act now, this number is expected to rise to 1 crore by 2050. There is a reported rate of prevalence of superbugs is too high and there is an identical drop in the number of new antibiotics available. The research roadmap of antibiotic and its development is almost dry, specifically when it comes to effectiveness of active antibiotics against gram-negative bacteria. As a result, that could be a return to the pre-antibiotic era, where many people could suffer or die due to unavailability of diseases managements. To tackle the challenges posed by antibiotic resistance, a global action plan was endorsed by World Health Assembly in May 2015, consisting of five strategic objectives:

1. Advancement of alertness and thoughtful of AMR through effective communication, education and training
2. Strengthen the knowledge and evidence base through surveillance and research
3. Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures
4. Optimize the use of antimicrobial medicines in human and animal health
5. Develop the economic case for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions.

Indian perspective

The Indian clinician and research community is seriously concerned about the high resistance rate issue and joining the global fight against AMR and the problems of AMR and its managements is not easy task at all. However, it can be optimistic challenges but possible to control with joint efforts using integrative model and implementation and came up with roadmap. The integration of diversified area of expertise on AMR issue must came up with action plan and design integrative model to tackle the public health concern in the Indian perspective. The aim of the road map will be to initiate efforts to formulate a national policy to control the rising trend of antimicrobial resistance after extensive and productive discussion with all relevant stake holders and to take all possible measures to implement the strategy.

India's action plan

Growing AMR is a serious issue not for the India only but across the globe. At this stage, urgent need to introduce real-time estimation to tackle the challenges and efforts to control this risk. For the achieving addressed task; competent authority, policymakers, politician and media will need to take urgent initiatives to build a national integrated policy to control the rising trend of AMR and implement the national policy. Once a national policy is design and developed, whole hearted support for this policy will implement on national, state and district levels by the department of health.

Authority associated with medical education and practices with research should broaden the AMR surveillance network, incorporating hospitals from national to district label including private hospital. Funding Agencies from India's governments and other funding agency provide funds for extensive research on AMR, diagnostics, drug development and vaccines. Hospital administration and practitioners take responsibilities' to initiating minimizing the hospital acquired infection including antibiotic stewardship awareness among the paramedical staff and other closely associate. Scientific publishing houses and Media should make effective and accessible ways of communication attempts to educate and aware readers on infection control with national antibiotic policy-related issues including public awareness campaigns on the risk of misuse of antibiotics.

Antibiotic policy

Its high time country needs a harsh and effective antibiotic policy which is ideal to Indian law and order system and build a join hands of multidisciplinary committee of eminent experts who explore the options available for managements of antibiotic use. In addition, harsh rule and monitoring systems on antibiotic use in the population and/or community-based studies and enforcement of quality of infection control system.

Regulate over the counter sale of antibiotics

Ban of over the counter sale of antibiotics without prescription will be the ideal step. Unfortunately, it is fact that, all antibiotics including injectables can be purchased over the counter without remedy. It is simple as simple to issue an order for ban over the counter sales of all antibiotics without remedy, but real-time situation is different and implemented policy is questionable. So, its high time to increased drug inspectors and infrastructure to close monitoring over the counter sales of all antibiotics.

In-hospital antibiotic usage monitoring

In current situations, there is urgent demands of justify antibiotic usage in clinical setup. Equipped hospital staff with infrastructure, make sure availability of potential diagnostic services for confirmed and accurate diagnostics on timely delivery. But this is an impossible task based on patients load in hospitals of India because of lack of resources in primary and secondary hospitals. At the same times, allow to them who serving life-saving drug time of emergencies with close and control monitoring system.

Review and feedback

Hospital pharmacy in-charge should keep track on the usage of antibiotics and should provide a d list of daily use antibiotics use to the hospital infection control team.

Equipped laboratory facilities

Make sure availability of advanced equipped microbiology laboratories with skilled clinician and paramedical staff in major cities. Estimation of consumption of antibiotics should be validate time to time by the network of accredited laboratories. To minimize the cost of the test and/or unwanted burden financial constraints in a resource-limited setting, develop and explore ASSURED based available assays.

National antimicrobial resistance surveillance system

Concerned Authority should establish a national antibiotic resistance surveillance system with representation from all regions in the country including government and private hospitals, hospitals of varying bed strengths and facilities included.

Concluding Remark

Antibiotic Resistance, a natural consequence of evolutionary selection by infectious diseases and it has been accelerating in recent decades due to overuse and misuse of antibiotics due to plethora of reasons. The current crisis is a perfect storm of neglected attention to the repeated warning from researchers and clinicians about antibiotic resistance dating to the early $1960_{s.}$ In current situation, integrated design model for control should demonstrate the futility of subjective judgments and strongly propose the use of laboratory-based diagnosis before the patient is given antibiotic treatment. In addition, All the stake holder audits their implementation and monitoring arena and update s per demand and gap.

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