INTRODUCTION

Overuse and misuse of antimicrobials have resulted in antimicrobial resistance (AMR) emerging as one of the top 10 serious threats to worldwide human health. In this case, education, effective communication and advocacy are important tools for creating public awareness of AMR and facilitating mindset and behavioural change. To fully realise the benefits of Artificial Intelligence (AI) applications, it requires continuous research and training.

AMR has emerged as one of the top 10 global public health threats. More importantly, AMR is anticipated to lead to a drastic increase in death count from 700,000 to 10 million deaths per annum by 2050 without an urgent and effective action plan. Therefore, a comprehensive strategy is called to tackle this issue in both the short and long-term.

What is AMR?

AMR happens when viruses, bacteria, fungi, and parasites adapt over a period and stop responding to medications, making illnesses difficult to cure and raising the risk of disease transmission, life-threatening sickness, and death. Due to drug resistance, it causes treatment with antimicrobial medicines, such as antivirals, antibiotics, antifungals and antiparasitic to become harder or unsuccessful.

Empowering Public Awareness and Advancing AMR Solutions through AI Applications

Given that antimicrobial misuse and overuse are the key factors for AMR, it is imperative to educate and engage various stakeholders, from healthcare professionals and patients to policymakers and the public. This could help to create awareness among them pertaining to the severe impacts and harm of the misuse and overuse of antimicrobials. Firstly, education is prime to provide the basis for understanding the concept of AMR, for instance, by inviting experts to give talks in high school and/or tertiary education. Secondly, effective communication and advocacy assist in enhancing public awareness and thus facilitate mindset and behaviour change towards antibiotic use. To achieve this objective, World AMR Awareness Week (WAAW) is celebrated from 18 to 24 November every year. Nonetheless, it might not be sufficient. To increase the coverage of information to targeted groups, and to maximise the impacts, consistent publicity about the side effects of misuse and overuse of AMR via television programmes and social media is pertinent for the short term. For medium and long-term strategies, educational institutions are encouraged to be the initial platform to allow the student to understand the concept and broader perspectives.

The recent emergence of AI offers hope to combat AMR. This should be exciting news. However, as the role of AI is relatively new in the field of AMR, it poses strengths and weaknesses of practical implementation. Among the positive sides include using the AI approach to learn about new genes, verify mutations, discover new drugs, and discern the optimum environment for proliferation. The negative sides include challenges in comprehending the mechanisms of antibiotics and drugs due to the revolutions of the diseases. AI models are unable to examine and acknowledge the associations between multivariate features, and thus fail to generate specific outcomes. In addition, there are issues related to the classification of AMR and the lack of consistency in definition that affect the accuracy and interpretation of results. On the one hand, we welcome the contribution of AI to AMR such as for researching and inventing new antibiotics as well as identifying the evolution of microbes; on the other hand, more research and training are required to allow us to fully reap the benefits of AI applications in the medium to long term. By using AI, it is possible to identify new potential antibiotic targets, optimise drug discovery, and thereby reduce the costs of clinical trials. Nevertheless, AI development is still in its infancy, and there are many obstacles to be addressed in fighting AMR.

CONCLUSION

Education, effective communication and advocacy are the keys to providing information for a better understanding of the concept of AMR, creating public awareness and hoping for a behavioural change towards antibiotic use. Equally important, continuous research and training specifically in the application of AI are the keys to addressing resistant transmission in line with the advancement of AI. More importantly, public and private partnerships in venturing capital into AI application is welcoming foreseeing the healthcare system benefits that we can tap into.
**REFERENCES:**


2. WHO. Antimicrobial resistance. 2023; [Online]. [cited on 08 September 2023]; Available from: https://www.who.int/health-topics/antimicrobial-resistance. [LINK]


