

APST**Asia-Pacific Journal of Science and Technology**<https://www.tci-thaijo.org/index.php/APST/index>Published by the Research Department,
Khon Kaen University, Thailand**The antimicrobial resistance (AMR) scenario in Malaysia: A review of current trends, perspectives and strategic action**Deebadarishani Sathasivan¹, Mazlin Mohideen², Mohd Hafidz Jaafar³, Ana Masara Ahmad Mokhtar^{3,4} and Nur Azzalia Kamaruzaman^{1,*}¹National Poison Centre, Universiti Sains Malaysia, Penang, Malaysia²Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur Royal College of Medicine Perak, Perak, Malaysia³School of Industrial Technology, Universiti Sains Malaysia, Penang, Malaysia⁴Green Biopolymer Coating and Packaging Centre, School of Industrial Technology, Universiti Sains Malaysia, Penang, Malaysia

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Abstract

Fast becoming a global health crisis, antimicrobial resistance (AMR) is causing numerous deaths and having economic implications worldwide. This review paper highlights the AMR scenario in Malaysia, primarily in regard to the clinical implications of common bacterial pathogens. Other highlights of the study include the perspectives of public and private healthcare professionals, as well as consumers, on the knowledge, attitudes, and practices (KAP) associated with AMR and antibiotics usage, the aim being to identify gaps in the way AMR is addressed in Malaysia. In addition to the human factor, the agriculture and aquaculture sectors also contribute to AMR. The crucial role of the antimicrobial stewardship program (ASP) in Malaysia is also discussed here, with its implementation outlined chronologically. Furthermore, Malaysia's AMR strategic action is assessed against the policies of other Southeast Asian countries to obtain a more comprehensive understanding of various international efforts to mitigate AMR issues. Alongside government measures, many non-governmental organisations (NGOs) are also actively involved in various AMR initiatives through international workshops and meetings, the creation of task forces, and heightening AMR awareness through publications, social media, and toolkit development. These efforts and more are necessary to raise awareness of AMR and address the related issues effectively.

Keywords: Antimicrobial resistance (AMR), Antibiotics, Antimicrobial stewardship program (ASP), Healthcare professionals, Public awareness, Agriculture, Aquaculture, Non-governmental organisation (NGO)

1. Introduction

An antibiotic is an agent that destroys bacteria by inhibiting their growth through various mechanisms of action, including inhibiting the synthesis of bacterial cell walls and the synthesis of proteins and deoxyribonucleic acid (DNA) [1]. Since being discovered by Alexander Fleming in the late 1920s, penicillin has been widely considered a panacea for treating bacterial infectious diseases. This revolutionary discovery also became a historical turning point when antibiotics were used as life-saving agents during the world wars. However, Fleming himself warned that if antibiotics were readily available and people were exposed to suboptimal doses, the health consequences could one day be fatal [2].

After decades in which antibiotics have saved countless lives, antimicrobial resistance (AMR) has now become an alarming global threat [2]. The continued and indiscriminate use of antibiotics in humans and animals has led to an unbalanced increase in AMR because no new antibiotics have been discovered since the late 1980s, when medical advances began to focus on other non-communicable diseases like cancer, diabetes, cardiovascular disease, and chronic respiratory disease [3]. This worsening situation is often associated with human behaviours