



## **Global collaborations in tackling antimicrobial resistance**

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There has been a relentless increase in antimicrobial resistance in recent years. This resistance is seen in both gram-positive and gram-negative organisms. Unfortunately there are few new promising antimicrobial agents in the pipeline. This is especially so for multi-resistant gram negative organisms. There is also good evidence to show that antibiotic overuse is a leading driver of resistance. Good antibiotic prescribing practices are therefore required to prolong the useful lives of existing agents.

Stewardship is the careful and responsible management of something entrusted to one's care. Antibiotic stewardship is a programme comprising various strategies and interventions designed to preserve the usefulness of antibiotics. Antibiotic stewardship is now an important public health function as antibiotic resistance has become one of the most important clinical challenges today.

There is a crucial need for international collaboration and the political will to put in place interventions to overcome this formidable challenge. Stewardship programmes should be established at international, as well as national and institutional levels. At the international level the World Health Organisation has played a key role in encouraging all countries to adopt national strategies to contain antibiotic resistance. As early as 1998 a World Health Assembly approved a resolution urging all member states to develop measures to encourage appropriate and cost-effective use of antimicrobials. In this respect the WHO published a document for a global strategy to contain antimicrobial resistance. This document describes a comprehensive multi-faceted strategy to be adopted by nations to counter the threat of antimicrobial resistance. Measures included strengthening antibiotic resistance surveillance, developing and implementing antibiotic guidelines for practitioners, improving access to and upgrading the quality of microbiological diagnostic facilities, increasing public awareness of antibiotic resistance and

controlling and regulating the use of antibiotics for both medicinal and non-medicinal purposes. More recently the WHO launched its Third Global Patient Safety Challenge focusing on tackling antimicrobial resistance. The WHO also has a programme in antimicrobial resistance monitoring.

As a regional grouping, the European Union has probably achieved the most in the containment of antimicrobial resistance. In 2002, the ARPAC (Antibiotic Resistance; Prevention and Control Concerted Action) project was launched with funds from the European Commission. Coordinated by the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) 4 Study Groups were established namely; Antibiotic Policies (ESGAP), Antimicrobial Resistance Surveillance (ESGARS), Nosocomial Infections (ESGNI) and Epidemiological Markers (ESGEM). The European Centre for Disease Prevention and Control (ECDC) organizes an annual European Antibiotic Awareness Day to promote more appropriate use of antimicrobial agents among both prescribers and the public. The EU also regularly publishes resistance data through the EARS network as well as antibiotic consumption data in the region.

There have been several international collaborations in the Asian region. An initiative has been started under the auspices of APEC with the aim of preventing and control of antimicrobial resistance in the Asia Pacific region. The Asia Pacific Society for Clinical Microbiology and Infection organizes a forum at its biennial scientific meeting for the sharing of resistance data among its member countries. Similar initiatives are also being undertaken by WPRO and SEARO of the WHO. There are also industry-driven surveillance networks targeting specific organisms. However these efforts are largely uncoordinated and there is a need for standardization of methods and reduction of duplication.

Antimicrobial resistant clones can spread across national boundaries at alarming speeds. A recent example is that of NDM 1. It was first reported in a Swedish patient of Indian origin in April 2009. This patient had been admitted to a hospital in New Delhi in December 2008. By November 2010, NDM-1 cases were reported in 20 countries around the world. In many of these cases the patients have been previously hospitalized in India, Pakistan or Bangladesh.

The emergence of resistance is a crisis of global proportions. A concerted effort employing a multifaceted strategy is essential at international, national and institutional levels. As resistance can spread rapidly between countries, an Improved global surveillance with early warning systems is required. It is clear we need to work together to meet this challenge.