

TACKLING ANTIMICROBIAL RESISTANCE: MEETING THE GLOBAL CHALLENGE OF AMR

Conference Report

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This week (13-19 Nov 2017) the World Health Organization recognizes World Antibiotic Awareness Week. On 9-10 November, a two-day conference on “Tackling Antimicrobial Resistance (AMR): Meeting the Global Challenge of AMR” was organized by the University of Hong Kong (HKU) Centre for Medical Ethics and Law in collaboration with the HKU School of Public Health.

This conference included four sessions: The Challenge, Emergent Threats - The Experience, The Community Context, and Making It Work. The meeting featured a diverse interdisciplinary group of local and international experts who contributed to the discussion, including lawyers, policy makers, physicians, microbiologists, basic scientists, animal health scientists, community intervention specialists, pharmaceutical association representatives and epidemiologists. The Hong Kong Secretary for Food and Health of the Government of the Hong Kong Special Administrative Region, Professor Sophia Chan, gave the opening remarks, and described how the Hong Kong government of Hong Kong has been working together with international experts to launch the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2017-2022), which was announced in July 2017. Professor Chan commented that Hong Kong is uniquely positioned to implement a One Health approach to AMR because food, agriculture and health are all organised under her policy purview.

Professor Dame Sally Davis, the Chief Medical Officer for England, gave a keynote talk and described the UK’s strategies to address AMR. Importantly, she stated that the concept of intergenerational fairness/equality is relevant to AMR, which like climate

change, is the result of human behaviours that will affect future generations. She suggested that, as with climate change, AMR may require an international treaty for the coordination of global efforts among countries at the international level.

Professor Lawrence Gostin, Faculty Director of the O'Neil Institute for National and Global Health Law at Georgetown University, gave a second keynote talk and indicated that from the global security perspective, international law and health regulations do apply to threats like AMR.

Professor Keiji Fukuda, the Director of the University of Hong Kong (HKU) School of Public Health, and former WHO Assistant Director General and Special Representative to the Director-General for AMR, described how revising strategic directions and combining political and technical initiatives through international organizations like WHO and the UN have been necessary to respond the global AMR challenge.

Mr Jeremy Knox, policy lead from the Wellcome Trust presented AMR as an economic case to drive and engage the global response and policy makers. Mr. Knox reviewed the findings of the O'Neill Report, which found that global economic production could be decreased by 100 trillion US dollars by 2050, and that annual mortality could increase to 10 million in the same time frame. He noted that while some have questioned these projections, additional economic analysis by the World Bank found similarly significant impacts and further indicated that AMR could threaten the Sustainable Development Goals driving an additional 28 million people into extreme poverty.

Professor Kwok-Yung Yuen, an internationally recognized microbiologist from HKU described the current AMR situation in Hong Kong and the efforts made by local experts and government against AMR. He showed, for example, that rates of methicillin resistant *Staphylococcus aureus* are considerably higher than in the UK or Sweden.

Professor Tong Zhang, from the HKU Department of Civil Engineering, discussed a meta-genomic approach to assess the presence of AMR genes in drinking water and sewage in China to reveal the AMR status in the environment.

Professor Hongzhe Sun of the Department of Chemistry, HKU, noted that the rate of approvals for new antibiotics had slowed down since the 1980s. He suggested that other approaches ought to be explored, and described their work on an adjuvant approach to fight AMR.

Associate Professor Hsu Li-Yang of the National University of Singapore gave a presentation focusing on strategies for the containment of re-emergent and multidrug-resistant tuberculosis. He also gave an overview of Singapore's National Strategic Action Plan on Antimicrobial Resistance, which brings together several governmental agencies for a coordinated national effort against AMR.

Setting laws and regulations to ban antibiotics in farming is extremely difficult, without offering alternative approaches for farmers to make a living. Dr. Howard Wong, Executive Director of Veterinary Medicine, City University of Hong Kong commented that the success seen in reducing antimicrobial use in European farms was accompanied by large initial capital investments that are beyond the means of most Chinese farmers. He explained that antibiotic-free production has to be integrated into changes in animal husbandry, veterinary care and a re-design in the way of raising animals for food in Hong Kong.

Christy Feig is Senior Advisor for Global Health Strategies, an NGO that uses communication strategies and advocacy to improve health and wellbeing around the world. Prior to joining GHS Ms. Feig was Director of Communications for the WHO. In her address Ms. Feig described how communications, when strategically implemented, can change behaviour. She, emphasized using a positive approach, focusing on the good rather than the bad, and using a behaviour change model. A successful strategy is one that emphasizes 4 stages: raising visibility and awareness, reinforcing social norms, illustrating how action can be successful and instituting environmental changes to ensure sustainability.

The increased pipeline of new antibiotics and new diagnostic technology is the near-term goal. Nevertheless, to make health systems work, other long-term goals are also very important along with effective global governance. Dr. Timothy Jinks from Wellcome Trust's Drug Resistant Infections Priority Program emphasised that resistance is only one aspect of the fundamental problem of infection, and that preventing infections is an essential component to the overall strategy. As such, a pipeline for preventatives is also a priority.

Governments must also tackle the overuse of antibiotics in people especially in heavy-use countries like China and India. Dr. Christopher Kimming Hui, Chief Medical Officer, HKU Shenzhen Hospital, described how the antibiotic use rates and appropriate antibiotic use in the cross-border city of Shenzhen in Mainland China are similar to those in Hong Kong

with the implementation of appropriate stewardship and control measures. This indicates that the experience and stewardship practices from his hospital might be applied to other hospitals or cities in China. Experts from Japan, Singapore and Australia also discussed their countries' national AMR-related plans and activities.

Professor Paul Turner's account of the situation in Cambodia was provided as an example of the impact of AMR in a poor country. He described how in the Khmer language the same words represent the function of antibiotics as anti-infectives, painkillers and anti-inflammatories to speed up healing of injuries, leading to broad misconceptions about their appropriate use. He also reported high rates of antibiotic use in uncomplicated diarrhea among children under 5 years old.

Professor Ben Marais showed us the epidemiology and control of multi-drug resistant tuberculosis (MDR-TB) in the Asia-Pacific region, and how an effective preventive therapy program and integrated approach for controlling MDR-TB might be useful for controlling of other drug-resistant pathogens regionally and globally.

Dr. Ditto Leila Luheshi's presentation on the use of pathogen genomics illustrated how this new technique may be deployed for surveillance and outbreak control in public health, and for rapid diagnosis of potentially drug resistant infections.

Experts agreed that combatting AMR requires multidisciplinary collaboration between different sectors responsible for humans, animals and the environment, with an integrated One Health approach, along with international regulations, awareness of the public, politicians and policy makers. It is insufficient to wait and rely solely on new antibiotic development to treat resistant infections. High-level organizations such as WHO, OIE, FAO and the UN must work jointly to establish examples of how a coordinated and complementary approach to technical activities, such as surveillance, can be achieved so the world can move beyond discussion and agreement and achieve real progress.

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