



**PMAC** | PRINCE MAHIDOL  
AWARD CONFERENCE **2018**



## **PARALLEL SESSION 3.3**

**CLIMATE CHANGE AND EMERGING DISEASES: THE IMPORTANCE OF RESILIENT  
SOCIETIES**



## | BACKGROUND

During the long processes of human cultural evolution, population dispersal, and subsequent inter-population contact and conflict, several distinct transitions in human ecology and inter-population interactions have changed profoundly the patterns of infectious disease in human populations. As we move further into the 21st century, the spread and increased lability of infectious diseases, new and old, reflects the impacts of demographic, environmental, technological and other rapid changes in human ecology. Climate change, one of the global environmental changes under way, is anticipated to have a wide range of increased impacts upon the occurrence of infectious diseases affecting human, animal, and plant populations.

Climate and weather patterns affect the distribution and risk of many infectious diseases, including vector-borne diseases such as malaria, Rift Valley fever, plague, encephalitis and dengue fever. Weather patterns also affect the distribution of food- and water-borne diseases and emerging infectious diseases such as West Nile virus, Hantavirus, and Ebola hemorrhagic fever and the sporulation of diseases such as anthrax and other clostridia.

The effect of climate variability on infectious diseases is determined largely by the unique transmission cycle of each pathogen. Transmission cycles that require a vector or non-human host are more susceptible to external environmental influences than those diseases which include only the pathogen and human. Important environmental factors include temperature, altitude, precipitation and humidity. Several possible transmission components include pathogen nature (viral, bacterial, etc.), vector (mosquito, snail, etc.), abiotic physical vehicle (water, soil, etc.), non-human reservoir (mice, deer, etc.), and human host.

Humans are more than passive recipients of climate change-induced health effects. We can play a significant and active role through proactive adaptation and mitigation measures in order to control and alleviate the negative health impacts of climate change. The magnitude of changes in climate variables varies across the globe, posing more challenges and stresses for some groups, societies and populations than others. Given the same magnitude of climate change, some population groups and areas are more vulnerable to the elevated risks due to their lack of the ability and resources to effectively respond to the stresses and challenges, including nutrition, immune status, and access to goods, services, and clean water. Inadequate public policies may be perpetuating the marginalization that increases vulnerability to adverse events or change processes. Given that infectious diseases do not confine themselves within a vulnerable population group, these diseases pose a shared global risk and require a coordinated global effort to reduce their vulnerability to climate change-induced health risks. Importantly, human vulnerability to the changing risks for infectious diseases driven by climate change may be altered through proper adaptation measures. Examples include the continuous evolution of public health programmes, the cyclical re-allocation of financial and health care resources and the pre-emptive alteration of policies following scientific projection of spatial-temporal changes in health risk for human infectious diseases. Early warning systems based on such projections have been proven effective in helping societies take proactive measures to prevent or alleviate the possible health impacts.

## | OBJECTIVES

- Explore projected trends in climate change over the 21st century, and their expected impact on infectious disease emergence/re-emergence and AMR
- Highlight practical, evidence-driven policy and approaches to defining and mitigating human-driven emerging disease risk



## Panelist

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Dr Md. Iqbal Kabir is Associate Professor of Epidemiology at National Institute of Preventive and Social Medicine (NIPSOM), under the Ministry of Health and Family Welfare of Bangladesh. He has been working as the Coordinator of the Climate Change and Health Promotion Unit (CCHPU) of the Health Ministry since 2010. An Epidemiologist with Doctoral degree from Australia having more than 20 years' experience of teaching, research and project management in public health and applied epidemiology. Dr Iqbal has also worked in WHO Bangladesh for more than 7 years (2002- 2009) as Surveillance Medical Officer, Communication Officer, Technical Officer (Tobacco Control) and as International Consultant in WHO India. Scientific research papers published in several national and international journals, like Lancet, Plos One, Global Health Action, BMC Public Health etc. Scientific papers presented at Global Climate Change Adaptation Conferences. He supervised thesis of more than 20 MPH and MPhil students. Completed 2.5 m \$ Climate Change and Health adaptation project as the Project Director in Bangladesh. Dr Kabir is International Steering Committee member of an ongoing WHO-DFID multi country climate resilient WASH project. He also provided technical support for a multi-country GEF-UNDP project. Participated as a member of Bangladesh delegation in several UNFCCC COPs, World Health Assemblies in Geneva, WHO Regional Meetings of SEARO, UN High Level Meeting etc. In addition to the scientific endeavors he also hosts weekly Health Shows on National TV channels. His doctoral thesis was on "Use of adaptive measures to reduce the impact of climate change on health sector in Bangladesh." Dr Iqbal Kabir has special interest in Biometeorology and Advanced Epidemiology with a focus on Climate Change and Health.