

## Multidisciplinary research in epidemic preparedness and response, 2- 3 October 2019, London, UK

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The 21st Century has already seen a number of devastating epidemics of diseases including Ebola, MERS, Zika and Nipah. Epidemics are defined by the complex interactions between microbes, people, animals and ecosystems, and factors such as increased global mobility, population density and climate change are contributing to the rise of epidemics caused by emerging and re-emerging infectious diseases. They have serious social and economic consequences and recent examples serve as a timely reminder of the need to prioritise epidemic preparedness, which will in turn strengthen epidemic response.

In its first annual report 'A world at risk' published on 18 September 2019, the Global Preparedness Monitoring Board recognised that preparedness can be viewed through several different lenses including governance and coordination, country preparedness capacities, research and development, community engagement and trust, and finance.<sup>1</sup> It is now widely accepted that research is a key component of epidemic preparedness and response, and developments over recent years, which build on lessons learnt from recent outbreaks, include several initiatives to prioritise and coordinate epidemic research.

It is also recognised that many research disciplines including fundamental scientific research, social sciences, ethics, epidemiology, ecology, 'One Health' approaches, product development and clinical research – to name a few – contribute to understanding and stopping these infectious disease outbreaks, and that currently the different disciplines and the insights they identify are not well-integrated.

This two-day workshop of key LMIC, UK and other international stakeholders will stimulate thinking around the **vital research evidence** required to better **prepare, prevent and respond to epidemics**, particularly where these arise in poorly resourced countries (LMICs). The workshop will **focus on ensuring that coherent, multidisciplinary research informs** integrated, multisector **epidemic preparedness and response**.

By bringing together expertise from all regions of the world, especially from LMICs at risk of epidemics, the aims of the workshop are to:

- Provide the opportunity for networking between key stakeholders from different geographical regions and sectors including policy makers, researchers (across a disciplinary spectrum), clinicians, funders and NGOs, and a platform to share experiences and lessons learned.
- Identify the challenges and barriers to effectively prevent and manage epidemics and consider where and what research evidence is necessary to help address these challenges.
- Agree on a list of multidisciplinary research priorities and solutions to the identified challenges and gaps, which can be taken forward to improve epidemic preparedness and response on a global, country and regional level.

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<sup>1</sup> The World Health Organization (2019). *A World at risk: Annual report on global preparedness for health emergencies* [http://apps.who.int/gpmb/annual\\_report.html](http://apps.who.int/gpmb/annual_report.html)

## Day 1: The opportunities and challenges of multidisciplinary research to promote epidemic preparedness, prevention and response

<b>08:30-09:00</b>	<b>Registration &amp; Morning tea</b>
<b>09:00-09:05</b>	<b>Welcome</b> <i>Professor Dame Anne Johnson DBE FMedSci, Vice President (International), The Academy of Medical Sciences</i>
<b>09:05-09:20</b>	<b>Aims, Objectives and Format of the Workshop</b> <i>Professor Jimmy Whitworth FMedSci, Workshop chair</i>
<b>9:20-10:00</b>	<b>Keynote presentation</b> <i>Professor David Heymann CBE FMedSci, Chatham House</i> <i>Chair: Professor Dame Anne Johnson</i> This session will provide an overview of the contribution of research to epidemic preparedness and response, giving consideration to the role and impact of multidisciplinary research.
<b>10:00-11:00</b>	<b>Session 1: Assessing the current state of research contributing to epidemic response and preparedness</b> <i>Chair: Professor Jimmy Whitworth</i>  This session will introduce existing international initiatives to coordinate epidemic-relevant research (3x15 min).  <ul style="list-style-type: none"> <li>• <i>Dr Ana Maria Henao Restrepo, World Health Organization</i></li> <li>• <i>Dr Juliet Bedford, Anthrologica and Dr Young Su Park, University College London</i></li> <li>• <i>Dr Ludovic Plée, Food and Agriculture Organization of the United Nations</i></li> <li>• <i>Discussion 15 min</i></li> </ul>
<b>11:00-11:30</b>	<b>Refreshment Break</b>
<b>11:30-12:45</b>	<b>Session 2: Country specific examples of research initiatives contributing to epidemic response and preparedness</b> <i>Chair: Dr Zahida Fatima</i>  Provide country-specific examples describing the experiences of incorporating (multidisciplinary when existing) research into epidemic preparedness and response; speakers from Asia, Africa and Latin America and from a high-income country will provide a breadth of experience to stimulate discussions in the subsequent breakout session (3x15 min).  <ul style="list-style-type: none"> <li>• <i>Professor Sosten Chiotha, Leadership for Environment and Development</i></li> <li>• <i>Dr Gustavo Matta, Oswaldo Cruz Foundation</i></li> <li>• <i>Dr Armand Sprecher, Médecins Sans Frontières</i></li> <li>• <i>Discussion</i></li> </ul>
<b>12:45-13:45</b>	<b>Lunch</b>

<p><b>13:45-15:15</b></p>	<p><b>Session 3: Breakout session to identify the challenges for multidisciplinary epidemic preparedness research and research and evidence gaps</b></p> <p>Participants will be broken down into groups by geographical location (Asia, Africa and Latin America) to identify the challenges and barriers facing multidisciplinary epidemic research.</p> <ul style="list-style-type: none"> <li>• Group 1: Africa Chair: Professor Jimmy Whitworth; Facilitators: Professor Massimo Palmarini FMedSci, Dr Kerrigan McCarthy and Professor Sosten Chiotha</li> <li>• Group 2: Asia Chair: Dr Juliet Bedford; Facilitators: Dr Bach Tran, Dr Zahida Fatima and Professor Rosanna Peeling</li> <li>• Group 3: Americas Chair: Dr Gail Carson; Facilitators: Professor Nick Loman and Dr Gustavo Matta</li> </ul> <p>Questions:</p> <ol style="list-style-type: none"> <li>1. What is the current 'state of play' for epidemic preparedness and response research in your country and are research disciplines integrated/connected?</li> <li>2. Are there success stories and/or failures we can learn from?</li> <li>3. What barriers and challenges exist to carrying out multidisciplinary research in epidemic preparedness and response?</li> <li>4. What research gaps can be addressed by multidisciplinary epidemic preparedness and response research?</li> </ol> <p><b>Session Outcome</b></p> <p>Participants should have established the 'state of play' of epidemic research within the countries represented in the group. Furthermore, participants should have identified and agreed the current research gaps and challenges facing multidisciplinary research on epidemic preparedness and response. The discussions should be summarised in a presentation. The group should agree upon a participant to present the breakout discussion during the following plenary feedback session.</p>
<p><b>15:15-15:45</b></p>	<p><b>Refreshment Break</b></p>
<p><b>15:45-16:45</b></p>	<p><b>Feedback Session</b></p> <p><i>Chairs: Professor Jimmy Whitworth, Dr Gail Carson and Dr Juliet Bedford</i></p> <p>This session is an opportunity for breakout groups to share their discussions and identified challenges and research gaps back to all workshop participants. Each group will have 10 minutes to present the key discussion points followed by 5 minutes for clarifying questions. All workshop participants will then be asked to identify shared challenges and research gaps across different regions, to highlight unique challenges/gaps and share examples (where they exist) of where some challenges in a certain region may have been addressed in a different one.</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• Africa Group (10 mins)</li> <li>• Asia Group (10 mins)</li> <li>• Americas Group (10 mins)</li> <li>• <b>Plenary Discussion (30 min)</b></li> </ul>

<b>16:45-17:00</b>	<b>Daily Wrap up</b> <i>Professor Jimmy Whitworth, Dr Zahida Fatima and Dr Juliet Bedford</i>
<b>17:00-18:00</b>	<b>Drinks reception</b>
<b>18:00-20:30</b>	<b>Discussion dinner</b> The dinner will be an opportunity for participants to continue discussions held during day one. It also offers the chance for further networking amongst participants.

## Day 2: Multidisciplinary research to improve epidemic preparedness, prevention and management

09:00-09:10	<p><b>Welcome</b> Professor Jimmy Whitworth FMedSci, Workshop chair</p>
09:10-11:00	<p><b>Session 4: Spotlight on new innovations and technologies</b> Chair: Professor Jimmy Whitworth</p> <p>This session will discuss what technologies and innovations are in the pipeline and how multidisciplinary research can improve their design, development, evaluation and uptake (5x10 mins).</p> <ul style="list-style-type: none"> <li>• <b>HAIRS</b> Dr Dilys Morgan, <i>Public Health England</i></li> <li>• <b>Diagnostics</b> Professor Rosanna Peeling, <i>London School of Hygiene and Tropical Medicine</i></li> <li>• <b>Social Sciences and AI</b> Rhys O'Neill, <i>Novetta</i></li> <li>• <b>Dengue model forecasting satellite-based System</b> Dr Gina Tsarouchi, <i>HR Wallingford</i></li> <li>• <b>Health Analytics</b> Dr Chrissy h. Roberts, <i>London School of Hygiene and Tropical Medicine</i></li> <li>• <b>Innovative platform technologies to improve the development of vaccines</b> Dr Mike Whelan - <i>The Coalition for Epidemic Preparedness Innovations</i></li> <li>• <b>Panel Discussion (50 min)</b></li> </ul>
11:00-11:30	<p><b>Refreshment Break</b></p>
11:30-13:00	<p><b>Session 5: Breakout session to identify opportunities for multidisciplinary research to improve epidemic preparedness and response and identification of solutions to tackle the recognised challenges and gaps.</b></p> <p>Within their groups, participants are asked to discuss and existing mechanisms and potential solutions to better support and facilitate multidisciplinary research on epidemic preparedness and response.</p> <ul style="list-style-type: none"> <li>• Group 1: Africa Chair: Professor Jimmy Whitworth; Facilitators: Professor Massimo Palmarini, Dr Kerrigan McCarthy and Professor Sosten Chiotha</li> <li>• Group 2: Asia Chair: Dr Juliet Bedford; Facilitators: Dr Bach Tran, Dr Zahida Fatima and Professor Rosanna Peeling</li> <li>• Group 3: Americas Chair: Dr Gail Carson; Facilitators: Professor Nick Loman and Dr Gustavo Matta</li> </ul>

	<p>Questions:</p> <ol style="list-style-type: none"> <li>1. What are the key elements that are required to support multidisciplinary research?</li> <li>2. Are there examples of existing mechanisms at the national and local level and funding opportunities that successfully support multidisciplinary research and information sharing? Further, what makes these successful (or not)?</li> <li>3. What challenges exist within established research networks that make them prohibitive to multidisciplinary research?</li> <li>4. How can the challenges identified during breakout session one and Q3 of breakout session two be addressed, including country and regional solutions?</li> </ol> <p><b>Session Outcome</b> Participants should have agreed upon existing and potential new mechanism to address the barrier facing multidisciplinary research on epidemic preparedness and response. Breakout groups will be asked to present the agreed list of solutions and opportunities for multidisciplinary research back to the whole group for a group-wide discussion to 'test' whether proposed solutions cross disciplinary boundaries.</p>
<b>13:00-14:00</b>	<b>Lunch</b>
<b>14:00-14:30</b>	<p><b>Feedback Session</b> <i>Chairs: Professor Jimmy Whitworth, Dr Gail Carson and Dr Juliet Bedford</i> This session is an opportunity for breakout groups to share their discussions and solutions to the challenges and barriers facing multidisciplinary research on epidemic preparedness and response. Each group will have 10 minutes to present the key discussion points followed by 5 minutes for clarifying questions.</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• Africa Group (10 mins)</li> <li>• Asia Group (10 mins)</li> <li>• Americas Group (10 mins)</li> </ul>
<b>14:30-15:30</b>	<p><b>Session 6: Plenary discussion: Agreeing the research priorities and short/long term actions to strengthen multidisciplinary epidemic research to improve preparedness, prevention and response</b> <i>Chairs: Jimmy Whitworth, Dr Gail Carson and Dr Juliet Bedford</i> During this session, participants have the opportunity to discuss what epidemic research gaps exist globally, regionally and nationally. Furthermore, participants should discuss and reach consensus on what should be done in the short- (1-2 years) and long- (2-10 years) term to ensure these research priorities can be addressed.</p>
<b>15:30-15:45</b>	<p><b>Conclusions from across the two days:</b> <i>Professor Jimmy Whitworth, Dr Gail Carson and Dr Juliet Bedford</i></p>
<b>15:45</b>	<b>END</b>

## Steering committee

### **Co-chairs**

- Co-chair: Professor Jimmy Whitworth FMedSci, London School of Hygiene and Tropical Medicine, UK
- Co-chair: Professor Rajae El Aouad, Hassan II Academy of Science and Technology, Morocco

### **Members**

- Dr Kerrigan McCarthy, National Institute for Communicable Diseases, South Africa
- Professor Nick Loman, University of Birmingham, UK
- Dr Bach Tran, Hanoi Medical University, Vietnam
- Professor Massimo Palmarini FMedSci, University of Glasgow, UK
- Dr Juliet Bedford, Anthrologica, UK
- Dr Gail Carson, University of Oxford, UK
- Professor Nyovani Madise, African Institute for Development Policy, Malawi
- Dr Hannah Brown, Durham University, UK
- Dr Zahida Fatima, Agricultural Research Council, Animal Sciences Division, Pakistan