Conference Synthesis: Summary & Recommendations
Saturday 3 February 2018
Conference programme structure

• Pre-conference: 29 – 31 January 2018
  • 40 side meetings
  • 6 field trips
• Main conference 1 – 3 February 2018
  • 4 Keynote addresses
  • 4 plenary sessions
  • 20 parallel sessions
  • 5 Book launches
  • 60 E-poster presentations
  • World Art Contest: 468 entries from 14 countries participated
• Total registered participants
  • 1,263 participants from 85 countries (F 48%, M 52%)
24 Plenary and parallel sessions
142 Moderators/speakers/panelists

Gender

WHO Regions

Expertise
Problem streams

Source: Slide from PS 2.4, Kohl K.
Examples

Yellow Fever, Angola 2016
• 2016 (January – July): 3,552 Yellow Fever cases from all provinces of Angola, 355 deaths
• International spread: from Angola to the DRC (59 confirmed cases), Kenya (2 confirmed cases) and China (11 confirmed cases)

MDR TB
• MDR-TB is a public health crisis and a human security threat. WHO estimates 600,000 new cases globally with resistance to rifampicin – the most effective first-line drug - of which 490,000 are MDR-TB.
• Cost of treatment (USD per patient)

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<th>UMIC</th>
<th>LMIC</th>
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<tr>
<td>Drug Sensitive TB</td>
<td>14,659</td>
<td>840</td>
<td>273</td>
<td>258</td>
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<td>MDR TB</td>
<td>83,365</td>
<td>5,284</td>
<td>6,313</td>
<td>1,218</td>
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<td>Ratio MDR:DS</td>
<td>5.7</td>
<td>6.3</td>
<td>23.1</td>
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Examples

Artemisinin resistant Malaria

- Southeast Asia is the epi-centre of anti-malarial drug resistance and one of the most popular travel destinations, with 104 million international travellers in 2015, facilitating international spread
- 38 and 90% of the artemisinin medicines on the market were substandard or falsified

**Figure** Map of prevalence of K13 mutations from K13 Molecular Survey, accessed 16 November 2016.

Source: Lancet Infect Dis 2017; 17: 491–97 [https://goo.gl/3uYa9w](https://goo.gl/3uYa9w)
Examples

ART drug resistance

• Prevalence of virologic failure was 10.4% after one year of antiviral treatment in China [BioMed Research International, 2016]
• Overall prevalence of primary HIV drug resistance was 7.9% in Thailand [PLOS One].

AMR challenges

• In OECD in 2014, 15% of overall admissions had an AMR infection, and for the top three countries this was 25%, 11 times higher than the lowest three countries [OECD 2016];
• most common pathogens
  • 3rd generation cephalosporin-resistant E. Coli
  • Carbapenem-resistant K. pneumoniae
Objectives of PMAC2018

**ACTION FOCUSED addressing EID and AMR**

1. **Problem stream**
   - Understand the drivers of EID and AMR

2. **Solution stream**
   - Accelerate progress on multi-sectoral actions
   - Advocate evidence-based priority setting and policies
   - PMAC as learning and sharing platform

3. **Evidence for policy decisions**
   - Underscore the security, socio-economic and development benefits from One Health action

**Structure of the synthesis**
- Drivers, consequences, cost of inaction for EID and AMR
- Solutions
- Cross cutting recommendations
I. Emerging Infectious Diseases

Main drivers

Source: Slide from PLoS, Fineberg H.

Source: Terrolio Z. et al. 2015. from PS4.5
Main drivers continued

• Increased contacts between humans and animals
• More outbreaks of emerging or re-emerging infectious diseases affect more people. Urbanization has led to more urban outbreaks (e.g. yellow fever in Angola) which pose significant challenges in terms of scale of response and potential international amplification
• Poor and marginalized populations particularly affected, e.g. people on the move—internal, international displaced persons, pastoralists
• UNICEF’s response to potential Cholera outbreak [https://youtu.be/FvCexK18hiU](https://youtu.be/FvCexK18hiU)
Cost of inadequate surveillance and response

- The cost of preparedness is at least 10 times less
- “Preparedness costs millions, response costs hundreds of millions and recovery costs billions”.
- The impact is not only financial or economic it is also social and political

Examples

- MERS-CoV outbreak in the Republic of Korea, 2015
  - a total of 186 persons have been infected, 38 of whom have died
  - Foreign tourists decreased by 41% compared with May 2014. Total economic loss of US$10 billion; 0.1% reduction in GDP growth in 2015. [Euro Surveill. 2015; 20(25)]
Ebola affected countries: Guinea, Liberia and Sierra Leone (2014-16)

- 11 thousand deaths from Ebola epidemic, although Ebola was diagnosed in 1976
- Inadequate capacity to respond
  - Fragile health systems
  - Lack of investment in health and health systems
  - Poor health delivery infrastructure
  - No vaccine had been developed

Source: Slide from Yamamoto N. (PS1.4)
Thailand’s responses to MERS-CoV

• An Omani patient (2015)
  • Day 1: with heart condition was diagnosed with pneumonia on hospital admission
  • Day 2 and 3: two false negative tests on upper respiratory tract samples
  • Day 3: subsequent sputum exam confirmed MERS-CoV
  • Patient was moved back into the negative pressure unit and transferred to Infectious Disease Institute, MOPH

• Over 170 contacts were traced; 48 were quarantined and 122 self-monitored symptoms. High-risk close contacts exhibiting no symptoms, and those whose lab test on 12th day after exposure was negative, were released on the 14th day

• The Omani Ministry of Health (MOH) was notified using IHR 2005 mechanisms. Outbreak investigation was conducted in Oman and findings were published on WHO intranet and shared with Thailand’s IHR focal point

• Key to successful infection control, with no secondary transmission, was collaborative efforts among hospitals, laboratories and MOHs of both countries
Solutions to EID

• Improve and sustain the **IHR core capacities**
• Strengthen interventions at the **human animal interface**
• **People centered** responses including community and civil society engagement, leaving no one behind, focus on the most vulnerable populations
• **Renewed governance**
  • Transparency and accountability of national government for preparedness and response
  • Trust and collective commitment
  • Coordination: multi-partner, multi-disciplinary and multi cultural response teams
• **Optimize partnerships**: incentivize collaboration; joint objectives based on local needs
• **Build capacities** dealing with existing threats and epidemics to ensure adequate systems
• **Approaches**
  • Invest in systems not projects
  • 2 faces of the same coin: health security and primary care
  • Engage politicians and financial stakeholders, increase their awareness before
Lessons of experience and good practices

• Engage the media proactively and at an early stage of the response, shape the narrative, remain flexible in message development (e.g. Brazil Yellow fever)
• Prepare the health system to respond, train health workers to cope with unexpected outbreaks, improve infection prevention and control
• Improve general public literacy about the risks and prevention measures
• Learn from other countries’ experience
• Integrate surveillance data sources (human, animal, community surveillance)
• Use big data for surveillance but focus on quality analysis (“reduce noise”)
• Produce economic metrics on health systems preparedness to raise and sustain awareness of politicians and decision makers
• Include private sector in preparedness and response
• Include pastoralists and nomadic populations in surveillance, biosecurity and policy dialogue to find innovative and cost efficient solutions
II. AMR
The key drivers of AMR

• Antimicrobial misuse and overuse
• Environmental contamination
• Health-care transmission
• Suboptimal rapid diagnostics
• Suboptimal vaccination
• Suboptimal dosing
• International travel facilitating spread of AMR pathogens
• Substandard and falsified antimicrobials
Global consumption of antimicrobials in food animal production

- 2010: Estimated at 63,151 (±1,560) tonnes
- 2030: Projected to rise by 67%, to 105,596 (±3,605) tonnes
- Increased consumption is driven by the growth in consumer demand for livestock products in middle-income countries, and shift to large-scale farms where antimicrobials are used routinely.

Consumption of antimicrobials in food animals

- Hotspots such as India where areas of high consumption (30 kg per km²) for industrial poultry production are expected to grow by 312% by 2030

Source: Slide from PL0; Fineberg H.
Antibiotic consumption in livestock, top ten countries 2010–2030 (projected for 2030)

Source: Van Boeckel et al., 2015, PNAS (slide from PS4.5, Laxminarayan R.)

Drug Binge

China consumes half the world’s antibiotics, with the majority administered to animals

Source: Slide from PS4.5, Laxminarayan R.
Use of antimicrobial agents for Growth Promotion

In 2015, a total of 96 out of 130 (74%) OIE Member Countries did not authorize antimicrobial agents for growth promotion in animals; increased from 77 out of 151 (51%) in 2012

Authorisation of Antimicrobial Growth Promoters in 130 OIE Member Countries, 2015

Source: OIE Annual Report on the use of antimicrobial agents in animals. 2016
Substandard and falsified antibiotics: not adequately addressed by GAP-AMR

Cost of inaction
• Of the 48,000 samples of medicines tested for quality (66% Antimicrobials)
  • 10.6% failure rate, equivalent to annual spend of $30.5 billion on SF products

Impacts of substandard and falsified antibiotics and antimicrobials
• Estimated 72,430-169,271 deaths of childhood pneumonia due to SF antibiotics
• Additional 116,000 deaths from malaria in Sub Saharan Africa due to SF anti-malarial drugs, and $38.5 m. additional treatment cost due to failure of initial treatment.

Root causes
• Poor governance: corruption, unethical practices, poor procurement
• Weak National Regulatory Authority capacity
What do we know?

- Availability
- Affordability
- Acceptability

Constrained access to medicines

Weak technical capacity

SF medical products

Poor governance practices

- Poor oversight
- Limited awareness
- Lack of resources

- Poor procurement
- Unethical practice
- Corruption

Source: Slide from PS1.3, Bond K.
Solutions for AMR

1. Active implementation of national action plan on AMR, strengthen institutional capacities on two major fronts

2. Monitoring strand: surveillance for policy:
   - Antimicrobial consumption in human and animal sectors
   - AMR in human and animals
   - Integrated surveillance in food chain
   - AB residues and AMR in environment
   - Point prevalence surveys to capture prevalence of healthcare associated infections and AMR, AMU in health facilities, AMR attributed mortality and economic loss as %GDP
   - Post-marketing quality of medicines, recall of SF products and legal action
   - Disposal of expired antibiotics
Action Strand

1. Redesign livestock production systems e.g. breeds and vaccines; husbandry – stocking densities; quality of water and feed

2. Improve antibiotic stewardship
   - Develop and enforce clinical practice guidelines, dispensing and prescription audits, peer support, counselling and continued professional education
   - Improve antibiotic literacy and AMR awareness
   - Strengthen antibiotic literacy in professionals
   - Regulation: reclassification of antibiotics into three groups: access, watch and reserve; and limited use of reserve group
   - Regulate by capping antimicrobials per ‘population correction unit’

3. Strengthen infection prevention and control in healthcare facilities

4. Research and Development
   - Health policy and systems research on AMR
   - Public investment in R&D in novel molecules and diagnostics
   - Research for alternatives, e.g. autogenous vaccines

Need to address huge implementation capacities gap
III. Cross Cutting Recommendations
1. Raise EID and AMR to the national human security agenda
2. Good governance, accountability and transparency to address corruption
   • Multisectoral action for health
   • Public-private-community-civil society engagement
3. Role of Leadership

LEADERSHIP NEEDED FOR MANAGING EMERGING INFECTION DISEASES OF THE 21ST C

WHAT ARE GAPS AND OPPORTUNITIES TO RESPOND?
4. Trust among partners

- trust building before disease outbreak
- shared vision, shared understanding
- common values
- acting wisely
5. One Health System Strengthening: human, animal and environment

Efficiently raised, healthy animals are critical to healthy people and a healthy planet.

Source: Slide from PS4.4, Policarpio S.L.
6. Risk communications during epidemics/ pandemics
7. R&D and evidence based policy
8. Health security financing: size, sources, flow of fund

• Donors need to invest more in national preparedness
• Innovative approaches to maximize efficiency of spending—digital, new technology, building on human genome project
• Political commitment to secure domestic resources
• Integration of health security financing process into country budgeting process

Source: Slide from PS4.5, Yamey G.
Summary

• Economic investment for preventing EID and AMR
• **Strengthen economic evidence base**, e.g. cost of inaction (“hidden losses”), calculate Return on Investment
• **Scale economically informed innovations**, e.g. land-use planning that accounts for economic impact of disease emergence from disrupted landscape
• **Incentivize risk mitigation**, e.g. incorporate epidemic risk profiles into macro-economic analyses and bond ratings
• **Mobilize funds**: domestic and ODA
• **Keep pandemics and AMR at top of the agenda**: G7, G20, Global Health Security Agenda
Special thanks

Mr. Sam Bradd, from Drawing Change for the wonderful graphic recording.
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<th>Rapporteur coordinator: Walaiporn Patcharanarumol, Warisa Panichkriangkrai, Angkana Sommanustaweechai</th>
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<td>12. Chutima Akaleephan</td>
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<td>16. Inthira Yamabhai</td>
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Saturday, February 3, 18