Global Strategies to Address AMR

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Disclosures

No conflicts of interest
Growing Awareness & Political Commitment

Mortality & Economic impact

- By 2050, lead to 10 million deaths/year
- Reduction of 2 to 3.5 percent in GDP
- Costing the world up to $100 trillion

Deaths attributable to AMR every year by 2050

Economic Impact

- Economic Costs of AMR May Be as Severe as During the Financial Crisis
- AMR could reduce GDP substantially, but unlike in the recent financial crisis, the damage could last longer and affect low-income countries the most.

UN agenda for 2030: 17 sustainable development goals

AMR threats 7 out of 17 goals!
AMR is now considered a major threat to modern medicine & global economy

- Profound worldwide adverse health consequences
- Long-term threat with no end in sight unless fundamental changes are made
- Economic implications
- A true intersectoral issue
AMR: Need for a One Health strategy
AMR Global Action Plan

- Adopted by World Health Assembly in May 2015
- One Health approach
  - Close collaboration with FAO and OIE: Tripartite Collaboration
- Blueprint developed by the international community
  - Countries
  - International organizations, civil society and others
- Stepwise approach to implementation
  - as countries have different starting points and priorities
- Provides framework actions
  - By Member States
  - By WHO
  - By international partners
Five strategic objectives

1. Improve awareness and understanding
2. Strengthen knowledge through surveillance & research
3. Reduce incidence of infection
4. Optimize use of antimicrobial medicines
5. Ensure sustainable investment for R&D and implementation of control measures

National Action Plan AMR
Country Progress with Development of National Action Plan

No response
No national action plan
Under development
Plan approved
Operational plan with monitoring arrangements
Plan with fund, is being implemented
Five strategic objectives

1. Improve awareness and understanding
2. Strengthen knowledge through surveillance & research
3. Reduce incidence of infection
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Awareness Week

Materials
- Infographs
- Websites
- Videos
- Press releases
- Presentations

Activities
- Country events (press conferences, seminars, workshops)
- Social media (incl. global twitter chat)
Five strategic objectives

1. Improve awareness and understanding
2. Strengthen knowledge through surveillance & research
3. Reduce incidence of infection
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5. Ensure sustainable investment for R&D and implementation of control measures
WHO Global AMR Surveillance System (GLASS)

• To capture and integrate information needed to inform strategies to tackle AMR locally, regionally and globally.
Status of countries enrolled in GLASS
As of 21 July 2017*

- Enrolment completed (n=47)
- Enrolment in progress (n=9)

* Call for country enrolment issued on 21 March 2016
AMR surveillance in the food chain

- GLASS promotes multisectoral approach
- Guidance on Integrated Surveillance of AMR in the food chain provides a framework for integrated surveillance
- Harmonized protocol on integrated surveillance of ESBL-producing *E. coli* in humans, the food chain and the environment being developed.

http://apps.who.int/iris/bitstream/10665/255747/1/9789241512411-eng.pdf?ua=1
Surveillance of antimicrobial consumption

- Monitoring of antimicrobial consumption
  - Methodology developed
  - Training for 27 countries
  - Monitoring in 36 countries

- Monitoring of antimicrobial use
  - Ongoing development of protocols for:
    - Surveys of antimicrobial use in hospitals
    - Surveys of antimicrobial use in community settings
Expanding AMR surveillance throughout Europe

European Antimicrobial Resistance Surveillance Network (EARS-Net)

Central Asian and Eastern European Surveillance of AMR (CAESAR)

European Centre for Disease Prevention and Control

World Health Organization Regional Office for Europe

- Countries submitting data to CAESAR
- Countries building capacity for CAESAR
- Countries participating in EARS-Net
Expanding AM consumption monitoring throughout Europe

European Surveillance of Antimicrobial Consumption Network (ESAC-Net)

WHO Antimicrobial Medicines Consumption network (AMC)

European Centre for Disease Prevention and Control

World Health Organization Regional Office for Europe

- Countries which reported 2013 data to WHO
- Countries in the process of collecting AMC data
- Countries participating in ESAC-Net
Five strategic objectives

1. Improve awareness and understanding
2. Strengthen knowledge through surveillance & research
3. Reduce incidence of infection
4. Optimize use of antimicrobial medicines
5. Ensure sustainable investment for R&D and implementation of control measures
Promoting rational use of antibiotics in humans

- **WHO Model List of Essential Medicines** (first in 1977)

- Updated 2017 Version:
  - Treatment of 21 infectious syndromes reviewed
  - Added 30 medicines for adult and 25 for children
  - Antibiotics are now grouped to 3 categories:
    - **ACCESS** Antibiotics that should be available at all times
    - **WATCH** Antibiotics recommended as first- or second-choice treatments for a small number of infections
    - **RESERVE** Antibiotics that are last-resort options
Promoting rational basis for non-human use of antibiotics

- 5th revision of the list of critically important antimicrobials (CIA list) for human health to be published end March 2017
Five strategic objectives

1. Improve awareness and understanding
2. Strengthen knowledge through surveillance & research
3. Reduce incidence of infection (IPC)
4. Optimize use of antimicrobial medicines (Stewardship)
5. Ensure sustainable investment for R&D and implementation of control measures
WHO Priority pathogen list for R&D of new, effective medicines

Priority 1: CRITICAL
- *Acinetobacter baumannii* carbapenem-resistant
- *Pseudomonas aeruginosa* carbapenem-resistant
- *Enterobacteriaceae* carbapenem-resistant, ESBL-producing

Priority 2: HIGH
- *Enterococcus faecium* vancomycin-resistant
- *Staphylococcus aureus* methicillin-resistant, vancomycin-intermediate and resistant
- *Helicobacter pylori* clarithromycin-resistant
- *Campylobacter spp.* fluoroquinolone-resistant
- *Salmonella*
  - fluoroquinolone-resistant
- *Neisseria gonorrhoeae*
  - cephalosporin-resistant, fluoroquinolone-resistant

Priority 3: MEDIUM
- *Streptococcus pneumoniae* penicillin-non-susceptible
- *Haemophilus influenzae* ampicillin-resistant
- *Shigella spp.* fluoroquinolone-resistant

New medicines against MDR gram-negative bacteria urgently needed.
2023 Objectives

- **four new treatments** through improvement of existing antibiotics and new chemical entities
- **Build a robust pipeline** of pre-clinical and clinical candidates
- **Support appropriate use and access** of new antibiotic treatments

**Neonatal Sepsis**: global consortium to conduct preclinical/clinical studies. By 2023, develop 1 treatment for empiric use, and 1 treatment for highly drug-resistant infections to clinical development.

**Sexually-transmitted Infections**: portfolio with private and academic partners. By 2023, develop 1 new treatment for gonorrhoea (incl. MDR) and explore use for syndromic management of STIs

**Paediatric Antibiotic Platform** to optimize current and new antibiotics for children through dose, duration of treatment, formulation, or combinations. By 2023, develop 1 new treatment.

**Exploratory/Upstream/Memory Recovery**: Antibiotic Memory Recovery Initiative; combinations; carbapenem-resistant organisms; ESBLs; possibly fungal infections & enteric infections; other upstream opportunities.

[www.gardp.org](http://www.gardp.org)
Costs of containment: USD 9 billions/year
Can the world afford?

**TABLE 2.** Cumulative Costs of Measures Cumulative to 2050, Present Discounted Values

<table>
<thead>
<tr>
<th>Under AMR Impact Scenario</th>
<th>1.4%</th>
<th>3.5%</th>
<th>5.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Costs (results of simulations)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low AMR-impact scenario</td>
<td>30</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>High AMR-impact scenario</td>
<td>85</td>
<td>54</td>
<td>36</td>
</tr>
<tr>
<td>2. Benefits if 50% of costs averted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low AMR-impact scenario</td>
<td>15</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>High AMR-impact scenario</td>
<td>42</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>3. Costs AMR action plan (Table 1)</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>4. Net benefits (2.–3.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low AMR-impact scenario</td>
<td>14.7</td>
<td>9.8</td>
<td>5.8</td>
</tr>
<tr>
<td>High AMR-impact scenario</td>
<td>42.2</td>
<td>26.8</td>
<td>17.9</td>
</tr>
</tbody>
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2016 UN General Assembly resolution

Resolution in support AMR Global Action Plan implementation
Creation of an AMR Inter-Agency Coordination Group (IACG)

IACG

- Chaired by UN Deputy Secretary-General and WHO DG
- Composed of individual experts and representatives of agencies
- Secretariat housed at WHO in close collaboration with FAO and OIE
Concluding Points

- AMR has evolved into one of world’s major health dangers with serious economic and multisectoral implications

- Global & concerted action is needed
  - AMR Global Action Plan provides a technical blueprint

- Multisectoral national action plans are fundamental
  - Sustainable implementation is a major challenge: global investment is needed!

- Global Monitoring should assess progress in tackling AMR
Community of Practice

187 members
74 countries

https://ezcollab.who.int/amr-nap
Thank you!