Antimicrobial resistance (AMR) is recognized as one of the principal threats to public health throughout the world. A regional strategy for prevention and containment of AMR was developed by the WHO Regional Office for South-East Asia in 2010. The strategy was endorsed by the Sixty-third Session of the Regional Committee through resolution SEA/RC63/R4 in 2010. AMR was the theme of World Health Day in 2011 to enhance global advocacy on the subject. Health ministers of countries of the South-East Asia Region deliberated upon this subject and adopted the “Jaipur Declaration on Antimicrobial Resistance” in 2011. AMR is a flagship priority identified by the Regional Director.

In the last five years, the South-East Asia Region has made substantial progress in this area using the regional strategy as a guidance document, but more work is needed. The Sixty-seventh World Health Assembly, through resolution WHA67.25, requested WHO to develop a draft global action plan (GAP) to combat AMR which was endorsed at the Sixty-eighth World Health Assembly in 2015. GAP is in line with the regional strategy and the Jaipur Declaration and Member States are requested to prepare their national action plans in accordance with GAP in the next two years.

The High-Level Preparatory (HLP) Meeting held in the WHO Regional Office in New Delhi from 29 June to 2 July 2015 reviewed the attached working paper and made the following recommendations.

**Actions by Member States**
- Draft a national action plan for AMR as urged in resolution WHA68.7 on Global action plan on AMR.
- Implement and monitor progress in line with GAP and adapted to national priorities.

**Actions by WHO**
- Provide technical support to Member States in drafting and implementing national action plans.
• Draft indicators for the Member States to help them in monitoring and evaluation of progress made in the development and implementation of national action plans.

• Provide technical support to build capacity for laboratory-based surveillance and forge regional laboratory networks to understand the magnitude and trend of resistance, prepare standard treatment guidelines, and analyse impact of national interventions.

• Advocate for development and enforcement of regulations for therapeutic and non-therapeutic use of antibiotics in human, veterinary and other relevant sectors.

The working paper and the HLP recommendations are submitted to the Sixty-eighth Session of the Regional Committee for its consideration.
Introduction

1. The discovery of antibiotics in the early part of the twentieth century led to spectacular success in combating infectious diseases. However, wide and indiscriminate use of common antibacterial drugs has contributed substantially to the development of resistance, persistence of infections and treatment failure, thus causing morbidity, mortality and economic loss.

2. AMR is a drain on the global economy with economic losses due to reduced productivity caused by sickness and higher costs of treatment. According to a study conducted in Thailand, hospital-acquired infections by multidrug-resistant bacteria cause around 30 000 deaths annually in Thailand, and the annual cost due to antibiotic-resistant infections has been estimated to be US$ 2 billion.

3. A recent forecast of the potential human and economic cost provides an estimate of 10 million deaths per year and a global gross domestic product 2–3.5% less than it otherwise would be by 2050, if AMR continues to rise.

Regional situation

4. Resistance to antibiotics against most of the important pathogens that cause infections in hospitals and communities is widely prevalent. Though systemic surveillance systems are being put in place in Member States, numerous published studies in peer-reviewed scientific journals provide invaluable information on prevalence of resistant organisms.

5. Almost half of all isolates of *Staphylococcus aureus* in health settings are methicillin-resistant and commonly called methicillin-resistant *Staphylococcus aureus* (MRSA). Multidrug-resistant *Acinetobacter* are now important killer pathogens in intensive care units. This organism, in addition to multi-resistant *Klebsiella* and *Pseudomonas*, is causing substantial nosocomial infections. The status of resistance to seven common pathogens of public health importance in the South-East Asia Region as per Antimicrobial Resistance - Global Report of Surveillance 2014 is shown in Table 1.

6. Among community-acquired infections, several reports on resistant typhoid fever in children in the Region have been published. Outbreaks of bacillary dysentery due to resistant *Shigella* have been documented. In this interconnected world, resistant organisms rapidly move from one part of the world to another. Some outbreaks due to MRSA in Canada have been traced back to the South-East Asia Region.

7. Globally, it is well recognized that unless immediate action is taken, the world is heading towards a post-antibiotic era which would not only negate the achievements made in prevention and control of communicable diseases, but would also make it difficult to achieve expected outcomes from modern complex surgeries and management of several chronic illnesses, especially cancers.
Table 1: Status of resistance to common pathogens of public health importance

<table>
<thead>
<tr>
<th>Organism</th>
<th>Resistant to antibiotics</th>
<th>National resistance data (%)</th>
<th>Published resistance data (%)</th>
<th>Resistance in invasive strains (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) <em>Escherichia coli</em></td>
<td>• Third generation Cephalosporins</td>
<td>16–68</td>
<td>20–95</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>• Fluroquinolones</td>
<td>32–64</td>
<td>65–86</td>
<td>–</td>
</tr>
<tr>
<td>(2) <em>Klebsiella pneumoniae</em></td>
<td>• Third generation Cephalosporins</td>
<td>34–81</td>
<td>5–56</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>• Carbapenam</td>
<td>0–8</td>
<td>0–40</td>
<td>36–39</td>
</tr>
<tr>
<td>(3) <em>Staphylococcus Aureus-MRSA</em></td>
<td>• Methicillin</td>
<td>10–26</td>
<td>46</td>
<td>–</td>
</tr>
<tr>
<td>(4) <em>Neisseria gonorroheae</em></td>
<td>• Third generation Cephalospirins</td>
<td>0–5</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>(5) <em>S. pneumoniae</em></td>
<td>• Penicillin</td>
<td>47–48</td>
<td>0–6</td>
<td>–</td>
</tr>
<tr>
<td>(6) <em>Non-Typhoidal Salmonellae</em></td>
<td>• Fluroquinolones</td>
<td>0.2–4</td>
<td>1.4</td>
<td>–</td>
</tr>
<tr>
<td>(7) <em>Shigellae</em></td>
<td>• Fluroquinolones</td>
<td>–</td>
<td>0.6–86</td>
<td>–</td>
</tr>
</tbody>
</table>


Regional response

8. AMR has been a high priority for the Region for the past several years. A Regional strategy for prevention and containment of AMR was developed in 2010 through extensive consultations. This subject was discussed at the Regional Committee session in 2010 and resolution SEA/RC63/R4 on prevention and containment of antimicrobial resistance adopted.

9. AMR was the theme of the World Health Day in 2011 for enhanced global advocacy on this subject. Health ministers of countries of the Region deliberated upon this subject and adopted the “Jaipur Declaration on Antimicrobial Resistance” in 2011.

10. Since 2011, WHO has been working with all countries to implement the Jaipur Declaration with a focus on strengthening their capacities, especially in governance, and understanding the disease burden through efficient laboratory-based surveillance, for which several capacity-building activities were undertaken. As part of its normative functions, the Regional Office developed several guidelines that can be adapted at the national level for advocacy, technical capacity enhancement as well as education of communities.

11. The Regional Director has identified AMR as a flagship priority with focus on clear deliverables at both regional and country levels. A regional technical advisory group has been established, which met in June 2015. All national focal points on AMR also met in June 2015 to familiarize themselves with GAP and discuss mechanisms for developing respective national action plans.
Progress made by Member States (2011–2015)

12. Several Member States have initiated establishment of comprehensive and integrated national approaches to combat AMR.

- National focal points have been designated in almost all Member States. Multisectoral steering committees have either been constituted or are in the process of being formed.
- Drafting and finalization of national antibiotic policies is on the agenda of Member States. A national antibiotic policy has either been formulated or is at the draft stage in almost all countries.
- Regional and national training courses have been organized to build capacity for undertaking laboratory-based surveillance of AMR. This would be utilized not only in generating evidence-based treatment guidelines, but also in understanding the impact of national efforts on mitigating AMR.
- Networks for laboratory-based surveillance of resistance are in operation in many Member States to determine the magnitude and trend of resistance.
- A few operational research studies have been initiated.
- Special attention is being paid to reduce health-care associated infections by improving infection control practices.
- Building capacity of prescribers for rational and evidence-based use of antimicrobial agents in humans as well as animals is under consideration.
- Community awareness campaigns are being launched and information, education, and communication material has been developed and distributed.

Challenges

13. The problem of resistance is complex and encompasses biological, behavioural, technical, economic, regulatory and educational dimensions that require a comprehensive response. Action is required for establishing better AMR surveillance; providing information on the magnitude and trends in resistance; informing treatment protocols; and monitoring the effects of interventions. Education of prescribers, caregivers and patients on the need for rational and prudent use of antibiotics is essential. There is currently insufficient emphasis on the development of new medicines, diagnostics, and other tools to detect and control infections and on new models for research and development.

14. These challenges and possible solutions have been articulated in GAP to combat AMR that was endorsed by the Sixty-eighth World Health Assembly in May 2015. The key elements of GAP are to:

- improve awareness and understanding of AMR;
- strengthen knowledge through surveillance and research;
- reduce the incidence of infection;
- optimize the use of antimicrobial agents; and
- ensure sustainable investment in countering AMR.
15. GAP aligns completely with the regional strategy on prevention and containment of AMR (2010) and the Jaipur Declaration on AMR (2011).

16. The most important action for all countries is to draft national action plans and to implement them.

**Conclusions/recommendations**

17. In consonance with GAP, all Member States need to develop their respective national action plans against AMR during 2016–2017 and address all key elements in the national context.

18. The Regional Director has identified AMR as one of her seven flagship priorities. The Regional Office will support Member States through the country offices in developing AMR deliverables in a time-bound action plan.

19. WHO will work closely with all Member States and provide technical support in enhancing national capacity in development and implementation of national plans on AMR.