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ANTIMICROBIAL RESISTANCE

Antimicrobial resistance (AMR) is a global public health concern. The first WHO global report in 2014 on AMR surveillance points to a rapid increase in the rates of resistance to common bacterial pathogens and last-resort, broad-spectrum antimicrobials often required for life-threatening diseases. High resistance rates are reported from the Western Pacific Region with 77% of methicillin-resistant *Staphylococcus aureus* (MRSA), 38-49% of *Escherichia coli* and up to 90% of gonorrhoea isolates. Widespread emergence of AMR together with the diminished flow of new antimicrobials potentially means simple infections such urinary tract infections could become untreatable. Patients with an AMR infection might experience prolonged illnesses with a greater risk of death. The main drivers of AMR include: weak health systems with poor prescribing practices; inadequate regulation and enforcement to curb overuse of antimicrobials in humans and animals; and insufficient public health measures to contain the spread of infections.

In 2011, resolution WPR/RC62.R3 urged Member States to adopt the WHO six-point policy package to combat AMR. While some countries have taken significant steps, the local and national responses to contain AMR have been insufficient in most Member States. The *draft Action Agenda for Antimicrobial Resistance in the Western Pacific Region* was developed in response to analyses in 2013. The action agenda also reflects resolution WHA67.25, stressing the need for a global action plan. The action agenda for AMR is based on technical expert consultations on AMR surveillance in 2013 and a regional consultation of Member States held in 2014 on priority actions for AMR in the Western Pacific Region.

The Regional Committee is requested to consider for endorsement the draft *Action Agenda for Antimicrobial Resistance in the Western Pacific Region*.

1. CURRENT SITUATION

Antimicrobial resistance has become a major public health problem that requires urgent action both globally and in the Western Pacific Region. In 2014, the first global report on antimicrobial resistance surveillance, *Antimicrobial Resistance: Global Report on Surveillance*, highlighted high levels of resistance in common bacteria in the Western Pacific Region.

In the region there is a high prevalence of drug resistance reported in clinically important pathogens including serious hospital acquired skin infections. For example, the Republic of Korea and Viet Nam report methicillin-resistant *Staphylococcus aureus* prevalence rates of 77.6% and 74.1% respectively. Pneumonia infections resistant to first line antibiotics (macrolide and penicillin) are also on the rise. Two main causes of urinary tract infection; *Escherichia coli* and *Klebsiella spp*, have shown increased resistance to extended-spectrum β -lactamase antibiotics. The prevalence of *Escherichia coli* resistant to third-generation cephalosporins was reported as 49% in Cambodia and 38% in the Lao People's Democratic Republic. Prevalence rates of 68–90% of gonorrhoea infections with reduced susceptibility and resistance to quinolones were reported in Japan, Malaysia and Singapore.

Patients with infections caused by drug-resistant pathogens generally require extended hospital stays and have worse outcomes than those infected with non-resistant strains. In some countries, including Japan and Singapore, only the last-resort, broad-spectrum antimicrobials are effective for treatment of some life-threatening diseases including gonorrhoea and pneumonia. AMR infections in the community setting are also on the rise, with 30.1% of community-acquired skin infections caused by *Staphylococcus aureus* resistant to methicillin in the Philippines and Viet Nam. Multiple failures of existing systems contributed to this situation. Weak health systems, with lax regulations cannot check widespread overuse of antimicrobials in humans and animals; insufficient public health measures cannot contain the spread of infections, while market failures for new antimicrobial drug research and development reduced the pipeline for new antibiotics. The emergence of widespread resistance to these agents is also assisted by international travel and cross-border migration. Emergence of antimicrobial resistance together with the diminished flow of new antimicrobials is moving us closer to a post-antibiotic era, in which infections now deemed "simple" might become fatal again.

In 2011, the Regional Committee emphasized antibiotic resistance as a priority, with resolution WPR/RC62.R3 urging Member States to adopt the WHO six-point policy package to combat antimicrobial resistance and to develop comprehensive national plans. This policy package highlighted the need to:

- commit to a comprehensive, financed national plans with accountability and civil society engagement;
- strengthen surveillance and laboratory capacity;
- ensure uninterrupted access to essential medicines of assured quality;
- regulate and promote rational use of medicines, including in animal husbandry, and ensure proper patient care;
- enhance infection prevention and control; and
- foster innovations and research and development of new tools.

In 2013-2014, country situational analyses on antimicrobial resistance showed that only five Member States in the Region had developed national plans to contain antimicrobial resistance.

Member States renewed their commitment to contain antimicrobial resistance in May 2014 at the Sixty-seventh World Health Assembly (resolution WHA67.25), calling for a global action plan to combat antimicrobial resistance, including antibiotic resistance. The global action plan must ensure that all countries, especially low- and middle-income countries, have the capacity to combat antimicrobial resistance using all available evidence and best practices.

In response to the urgent need to contain antimicrobial resistance in the Western Pacific Region, and in support of resolutions WPR/RC62.R3 and WHA67.25, the draft *Action Agenda for Antimicrobial Resistance in the Western Pacific Region* (Annex 1) was developed using rapid country situational analysis conducted in 2013. Discussions were held during technical expert consultations on antimicrobial surveillance in 2013 and during the Regional Consultation for Priority Actions on Antimicrobial Resistance with Member States in 2014.

2. ISSUES

A rapid country situational analysis, carried out in the Western Pacific Region in 2013, identified the major gaps for containing antimicrobial resistance. The following issues were identified as requiring actions to contain antimicrobial resistance in the Region:

2.1 The need to develop or strengthen and implement national multisectoral plans

Few Member States in the Western Pacific Region have comprehensive national antimicrobial action plans. There is a need for integrated, collaborative strategies to contain antimicrobial resistance in most countries, with coordinated actions in both human and animal health sectors. Most Member States in the Region need to develop or strengthen multisectoral national plans and strategies as well as develop international and regional collaboration for the containment of antimicrobial resistance.

2.2 The need to develop or strengthen antimicrobial resistance surveillance and monitoring of antimicrobial use

While about two thirds of Member States reported having an active surveillance system for bacterial resistance, only half reported having an antimicrobial resistance report in the past five years. There is an urgent need to monitor the extent of antimicrobial resistance, with a focus on bacterial resistance, to understand better patterns of evolving resistance and develop appropriate plans and actions. In addition, monitoring the use of antimicrobials, especially antibiotics by Member States, is necessary to inform decision-makers to develop policies and actions in their countries.

2.3 The need to strengthen the health systems responses to improve antimicrobial use, infection control and prevention

Health systems, including pharmaceutical management and health-care service delivery systems, need to be strengthened to change the driving forces, including supply and demand issues, underlying the emergence of antimicrobial resistance. Improved regulatory systems and other actions are needed to reduce the unnecessary overuse and misuse of antimicrobials. There is also a need to develop and strengthen infection prevention, control and hygiene measures, as well as implement effective interventions to reinforce these in all health-care facilities and communities to prevent the spread of drug-resistant infections and infectious diseases.

Based on the situational analyses, regional consultations were held to identify priority actions regarding strengthening national strategies and developing action plans, as well as improving antimicrobial surveillance and health systems responses to contain antimicrobial resistance.

3. ACTIONS PROPOSED

The Regional Committee is requested to consider for endorsement the draft *Action Agenda for Antimicrobial Resistance in the Western Pacific Region*.

DRAFT

**Action Agenda for
Antimicrobial Resistance
in the Western Pacific Region**

World Health Organization
Western Pacific Region

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ACRONYMS

| | |
|------|--|
| AMR | antimicrobial resistance |
| CSA | country situation analysis |
| ESBL | extended-spectrum beta-lactamase |
| IPC | infection prevention and control |
| MDR | multidrug-resistant |
| MRSA | methicillin-resistant <i>Staphylococcus aureus</i> |
| NDM | New Delhi metallo-beta-lactamase |
| OTC | over the counter |
| OXA | oxacillinase |
| TB | Tuberculosis |
| WHA | World Health Assembly |
| WHO | World Health Organization |

Executive Summary

The rapid emergence and spread of antimicrobial resistance (AMR) presents health-care systems with serious challenges and threatens their ability to effectively treat severe bacterial infections. Without effective antimicrobials to treat and prevent infections, the success of modern medicine such as organ transplantation, cancer chemotherapy and major surgery could be compromised. Immediate and coordinated measures must be taken by Member States in the Western Pacific region as well as globally to safeguard the effectiveness of existing antimicrobials and facilitate the development of new antimicrobial medicines.

Antimicrobial resistance was first addressed at the World Health Assembly in 1998, with resolution WHA51.17 and numerous other resolutions highlighting this problem and the required solutions. However there has been limited progress in slowing down the emergence and spread of drug resistance in key pathogenic microorganisms. The need for urgent actions to combat antimicrobial resistance was highlighted again at the sixty-seventh World Health Assembly with resolution WHA67.25 in May 2014.

In the Western Pacific Region, the Regional Committee meeting in 2002 identified antimicrobial resistance as a regional priority, which was re-emphasized in 2011 with resolution RC62.R3 on antibiotic resistance. The resolution urged Member States to adopt the 2011 WHO six-point policy package to combat antimicrobial resistance as well as the development of comprehensive national plans. However, antimicrobial resistance continue to spread and an increasing a public health threat in the region.

In 2014 the WHO released the first global report on antimicrobial resistance surveillance, *Antimicrobial Resistance: Global Report on Surveillance*, which found that resistance to common bacteria was reaching very high levels and there was a lack of effective treatment option.

A country situation analysis conducted in 2013-2014 on antimicrobial resistance highlighted major gaps and challenges in addressing antimicrobial resistance in the Western Pacific Region. These gaps and challenges include 1) poor awareness and the lack of national comprehensive policies for antimicrobial resistance, 2) lack of national and regional surveillance systems to monitor antimicrobial resistance and use of antimicrobials, and 3) poor regulation and implementation of health systems responses to antimicrobial resistance.

Following a Technical Consultation in 2013, and a Regional Consultation with Member States in 2014 the Action Agenda was developed for review and endorsement at the sixty-fifth Regional Committee meeting in October, 2014. The *Action Agenda for Antimicrobial Resistance in the Western Pacific Region* is:

- (1) Strengthening development and implementation of comprehensive national plans to contain antimicrobial resistance and raise awareness in multiple sectors.
 - a. Increase awareness, leadership and financial commitments to contain antimicrobial resistance in all relevant sectors.
 - b. Change attitudes and behaviours of the general public through intensified public education campaigns on antimicrobial resistance and responsible use of antimicrobials.
 - c. Develop and implement comprehensive, multisectoral policies and actions for containment of antimicrobial resistance at local and national levels supported by regional and global strategies and collaborations.
- (2) Improve surveillance of antimicrobial resistance and monitoring of antimicrobial use.

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- a. Develop and implement harmonized standards and methodologies for improved monitoring of antimicrobial resistance and antimicrobial use in human and emerging pathogens in alignment with the globally agreed approaches, and guidance by regional coordinating mechanisms.
- b. Incorporate the use of reliable evidence to inform policy and action through coherent, national systems and regional networks and collect, analyse, share and disseminate data generated from monitoring of antimicrobial resistance and antimicrobial use through these networks.
- c. Develop and strengthen national surveillance systems including laboratory capacity to monitor trends of antimicrobial resistance and antimicrobial use in supported by regional surveillance networks.

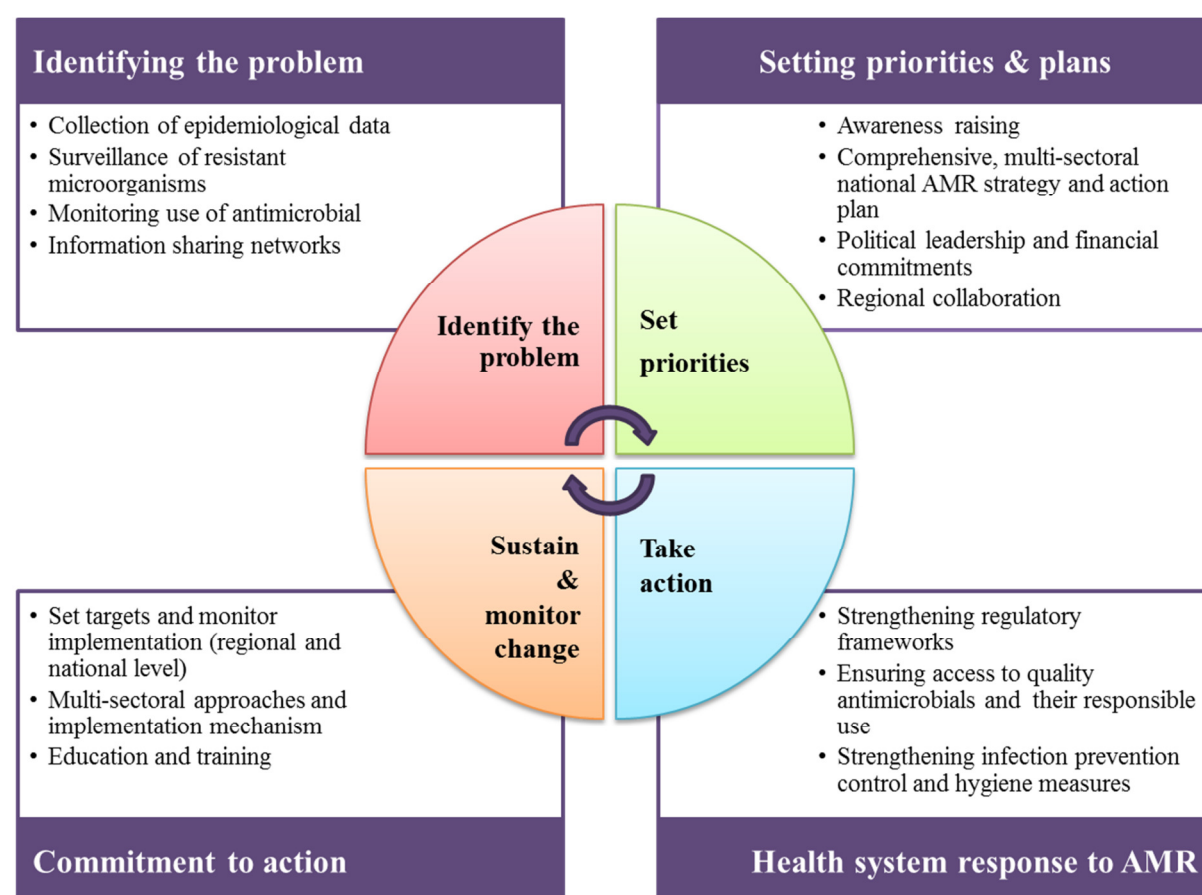
(3) Strengthen health system's capacity to contain antimicrobial resistance.

- a. Adapt and institute good practices regarding effective regulation and enforcement to ensure availability of effective, safe and quality antimicrobials.
- b. Implement antimicrobial stewardship programs with full national coverage to improve prescribing practices of health care providers and responsible use of antibiotics.
- c. Ensure equitable and universal access to 'prioritised' antimicrobials by strengthening financing and procurement mechanisms for antimicrobials.
- d. Implement infection prevention and control programs at all health-care and key congregate settings.
- e. Enhance education in the health-care setting for good hygiene and infection prevention and control practices and ensure access to infrastructure such as washing and waste disposal facilities.

1. Introduction

The rapid emergence of antimicrobial resistance (AMR) over the past decades together with the lack of availability of new antimicrobial medicines presents health-care systems with serious challenges and threatens their ability to effectively treat serious bacterial infections both in the near and further future. In the Western Pacific Region, AMR is an increasing public health threat. This document provides a brief summary of the current situation and the existing gaps and challenges that limit containment of AMR in the Region.

Figure 1. Priority actions for containment of antimicrobial resistance



In order to effectively respond to and prevent the further spread and emergence of drug-resistant infections, there is a need for reliable information on the scale, contributing factors and consequences of this problem. Reliable information can help to identify effective national strategies and inform national, regional and global action plans to implement priority actions to contain the spread of AMR. In addition to strengthen health systems responses as well as responses by all other sectors (animal health, agriculture and environment). To achieve and sustain the changes needed to reverse trends on the spread of drug-resistant diseases and prolong the effectiveness of existing and future antimicrobials, the monitoring of these changes will be critical. Monitoring and evaluation is also necessary to assess the effectiveness of interventions implemented to tackle AMR, and further refine and improve the interventions over time. As identified in figure 1, surveillance for AMR and antimicrobial use are essential for the containment of AMR at the global, regional and national levels. There is a need to strengthen AMR surveillance activities in all sectors. Surveillance for AMR is discussed in companion document *Surveillance of Antimicrobial Resistance in the Western Pacific Region*. In conjunction with surveillance for AMR, there is also a need to monitor the consumption

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and use of antimicrobials, particularly those used for human health, agriculture and animal husbandry. Surveillance of antimicrobial use is discussed in companion document *Monitoring of antimicrobial use in the Western Pacific Region*. The health systems response needed for the containment of AMR, including ensuring responsible use of antibiotics, regulatory issues and infection prevention and control (IPC), are discussed in companion document *Health Systems Response to Support Containment of Antimicrobial Resistance in the Western Pacific Region*.

2. The global threat of antimicrobial resistance

AMR is the ability of a microorganism, including bacteria, fungi, viruses and parasites, to withstand attack by antimicrobial medicines, such as antibacterials, antifungals, antivirals and antimalarials, so that standard treatment becomes ineffective.

Infections caused by resistant microorganisms often fail to respond to standard treatment; there may be prolonged illness, risk of spread of resistant microorganisms to others, and a higher risk of death. The death rate for patients with serious infections caused by resistant bacteria treated in hospitals is about twice that in patients with infections caused by non-resistant bacteria.¹

The achievements of modern medicine are put at risk by AMR. Many infectious diseases are now at risk of becoming untreatable and uncontrollable, which could derail the progress made towards reaching the targets of the health-related United Nations Millennium Development Goals set for 2015.²

When infections become resistant to first-line medicines, more expensive therapies must be used. The longer duration of illness and treatment, often in hospitals, increases health-care costs and the economic burden to families and societies. Without effective antimicrobials to treat and prevent infections, the success of therapies such as organ transplantation, cancer chemotherapy and major surgery could be compromised. The growth of global trade and travel allows resistant microorganisms to spread rapidly to distant countries and continents through humans, animals and food.

3. WHO's response to antimicrobial resistance

3.1 WHO's global response

WHO has identified AMR as a global public health threat. Multiple resolutions from the WHO World Health Assembly over the past 28 years have also highlighted the threat of AMR and called for immediate efforts to contain AMR on a local, national, regional and global scale.

There have been numerous World Health Assembly (WHA) resolutions addressing AMR, including the most recent resolutions, combating antimicrobial resistance (WHA67.25/2014), substandard/spurious/false-labelled/falsified/counterfeit medical products (WHA65.19/2012), and prevention and control of multidrug-resistant tuberculosis and extensively drug-resistant tuberculosis (WHA62.15/2009). In addition, resolutions on the progress in rational use of medicines (WHA60.16/2007), prevention and control of sexually transmitted infections (WHA59.19/2006), improving the containment of antimicrobial resistance and antimicrobial resistance as a global health threat (WHA58.27 and WHA58.14/2005), emerging and other communicable diseases, and resolutions WHA47.13/1994 and WHA39.27/1986 on the rational use of drugs all highlighted the global health threat of AMR.

The 2001 WHO *Global Strategy on Containment of Antimicrobial Resistance* presented 87 prioritized recommendations oriented towards clinicians, laboratory and infection control staff, industry, researchers, media, patients' representatives and national authorities, along with a package of technical and advocacy materials to support action.³ The Global Strategy identified two fundamental priorities: (1) a national commitment to containment of AMR as a public health priority; and (2) surveillance to generate the data required to support the development, implementation and evaluation of resistance-containment efforts.

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In 2010, WHO identified AMR as an Organization-wide priority by adopting it as the theme of the World Health Day 2011 with the slogan “Antimicrobial Resistance – No action today, No cure tomorrow”.⁴ The WHO six-point policy package to combat antimicrobial resistance was published on World Health Day in 2011 and asked Member States to:

1. commit to a comprehensive, financed national plan with accountability and civil society engagement;
2. strengthen surveillance and laboratory capacity;
3. ensure uninterrupted access to essential medicines of assured quality;
4. regulate and promote rational use of medicines, including in animal husbandry, and ensure proper patient care;
5. enhance infection prevention and control;
6. foster innovation and research and development for new tools.

A recent major publication by WHO was released in April 2014: *Antimicrobial Resistance: Global Report on Surveillance*.⁵ This report found that resistance to common bacteria has reached alarming levels in many parts of the world and that in some settings, few, if any, of the available treatments options remain effective for common infections.

3.2 WHO’s regional response in the Western Pacific

The WHO Regional Office for the Western Pacific was the first regional office to implement the recommendations of the 1982 WHO Consultation group for surveillance of antimicrobial resistance.⁶ In 1985, the Region initiated a series of regional AMR workshops, which led to the establishment of a regional AMR surveillance network from 1990 through 2000.

The publication of the WHO *Global Strategy for Containment of Antimicrobial Resistance*³ was followed by a regional resolution WPR/RC53.R5/2002 of the fifty-third session of the Regional Committee meeting in 2002, which identified AMR as a regional priority. The 2005 “Bi-regional workshop on antimicrobial resistance surveillance and containment in Asia and the Pacific” defined national and regional priorities for action, including collaborative strategies to advance AMR containment in the WHO Regions of the Western Pacific and South-East Asia.⁷

In August 2010, the cross-divisional Antimicrobial Resistance Working Group was formed at the Regional Office for the Western Pacific. Its terms of reference include information-sharing, providing technical support, identifying linkages to increase synergies and impact, recommending future activities, conducting advocacy and resource mobilization efforts, and liaising with other relevant stakeholders.

The Regional Committee resolution RC62.R3 on Antibiotic resistance in 2011.⁸

Urged Member States:

- 1) to take urgent steps to address the issues and challenges of antibiotic resistance;
- 2) to use the policy package, as appropriate; and
- 3) to develop and implement comprehensive and effective national and subnational plans for preventing and controlling antibiotic resistance, as appropriate.

Requested the Regional Director:

- 1) to take urgent steps to address the issues and challenges of antibiotic resistance;
- 2) to provide technical cooperation to Member States upon request to prevent and control antibiotic resistance and its consequences; and
- 3) to monitor and assess the antibiotic resistance situation across the Region and report regularly thereon.

Annex 1**4. Antimicrobial resistance in the Western Pacific Region**

4.1 Prevalence of antimicrobial resistance in the region

AMR is becoming an increasingly urgent challenge for the Region. A wide variety of infectious pathogens are showing resistance to single and multiple antimicrobials. Penicillin- and macrolide-resistant *Streptococcus pneumoniae*, as well as methicillin-resistant *Staphylococcus aureus* (MRSA) and multidrug-resistant (MDR) enteric pathogens are among the community-acquired pathogens that cause the greatest concern in Asian countries. MRSA, glycopeptide-resistant *Staphylococcus aureus*, glycopeptide-resistant enterococci and extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae are responsible for nosocomial infections.

An increasing prevalence of New Delhi metallo-beta-lactamase (NDM)-producing Enterobacteriaceae has been reported in countries through the global spread associated with international travel, medical tourism, and exposures in the Balkan region and the Indian subcontinent. *Klebsiella pneumoniae* carrying *bla*_{NDM-1} was first isolated in the Western Pacific Region from a patient in Chinese Taipei in 2010.⁹ In 2011, an *Escherichia coli* isolate carrying the NDM-1 producer was identified in the Philippines.

ESBL-producing pathogens are also on the rise, with the first report of expanded-spectrum oxacillinase (OXA)-48 carbapenemase-producing *Klebsiella pneumoniae* and *Escherichia coli* isolated in Japan in 2012 from a patient returning from South-East Asia.¹⁰

There is a high prevalence of antibiotic resistance among clinical *Streptococcus pneumoniae* isolates in Asia. Resistance to erythromycin is high in the region, with China (96.4%) and Viet Nam (80.7%) reporting the highest rates in 2012.¹¹ *Streptococcus pneumoniae* isolates have been found to be increasingly resistant to fluoroquinolones and multiple drugs, and extensively drug-resistant (XDR) *Streptococcus pneumoniae* isolates also on the rise.¹¹

In 2010, reduced susceptibility and resistance to quinolones was reported in more than 90% of isolates of *Neisseria gonorrhoeae* examined in Brunei Darussalam, Cambodia, China, Republic of Korea, Philippines and Viet Nam.¹² Japan, Malaysia and Singapore reported resistance rates of 68 - 90%, though lower rates were observed in Australia, Mongolia and New Zealand. Less than 11% of isolates were resistant to quinolones in Fiji and New Caledonia.¹²

Resistance of *Neisseria gonorrhoeae* to penicillin and ciprofloxacin is widespread in the Western Pacific Region, with 99% and 96% resistance reported from China and Viet Nam, respectively (mean resistance 57%).¹³ Susceptibility to ceftriaxone is also decreasing, with 6.7% resistance reported from the Region.¹³

The prevalence of hospital-acquired MRSA varies throughout the Western Pacific Region. Lower rates were reported in the Philippines (38.1%) compared to the Republic of Korea and Viet Nam, which showed very high prevalence rates of MRSA; 77.6% and 74.1%, respectively.¹¹

Other hospital-acquired pathogens showing increasing rates of resistance are *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. In a surveillance study in the Asia-Pacific region, 29.8% of *Pseudomonas aeruginosa* and 73.0% of *Acinetobacter baumannii* isolates were not susceptible to any carbapenems.¹⁴ The resistance of *Pseudomonas aeruginosa* isolates to ceftazidime, cefepime, piperacillin-tazobactam, imipenem and ciprofloxacin is also rising. In China, 56.9% of *Pseudomonas aeruginosa* isolates tested was resistant to imipenem. *Acinetobacter* spp. with high rates of imipenem resistance have been reported from Malaysia (86.7%) and China (58.9%).¹⁵

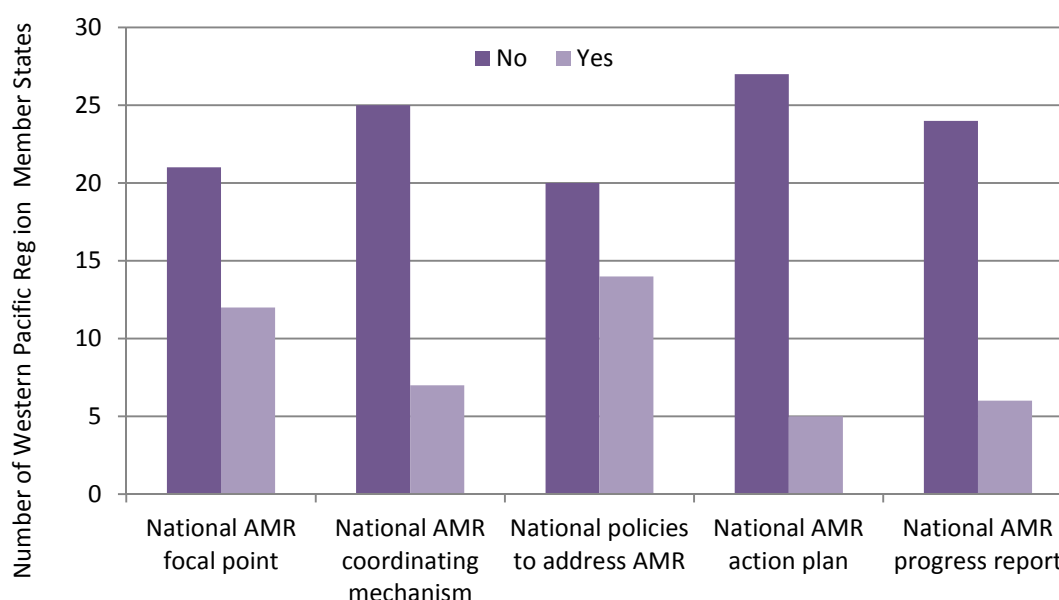
4.2 Gaps and challenges identified to contain antimicrobial resistance in the region

The WHO Global Task Force identified country situation analysis (CSA) on AMR as a priority action to initiate and enhance policy dialogue at the Member State level, and to provide an overview of the AMR situation in Member States. The CSA, using a WHO rapid assessment tool was completed by 35 out of the 37 Member States in the Western Pacific in 2013 and 2014.

The results from the CSA of the 37 Member States in the Western Pacific Region highlight the gaps in and challenges to containing AMR. There is a need to develop a comprehensive, multi-sectoral, national plan to contain AMR, including all relevant sectors through a “One Health” approach which brings together human and animal health, and the agriculture and environment sectors. This includes the facilitated exchange of information, and region-wide analysis of trends and drivers of antibiotic resistance.

The CSA found that active, comprehensive, national programmes and policies to combat AMR are lacking in many countries the Western Pacific Region (Figure 2).

Figure 2. CSA results on the commitment to a comprehensive national plan on AMR in the Western Pacific Region.



Source: World Health Organization. Rapid assessment tool for country situation analysis on antimicrobial resistance in the Western Pacific Region. Unpublished data, 2013.

Of the Member States that responded to the specific question on having a national plan, only 36% (out of 33 responding Member States) report having a national AMR focal point, with 16% (32 responding Member States) having a currently valid national AMR action plan. The development and/or strengthening of national multi-sectoral plans with identified priority actions are key for the containment of AMR, along with political commitment and sufficient financial resources for implementation.

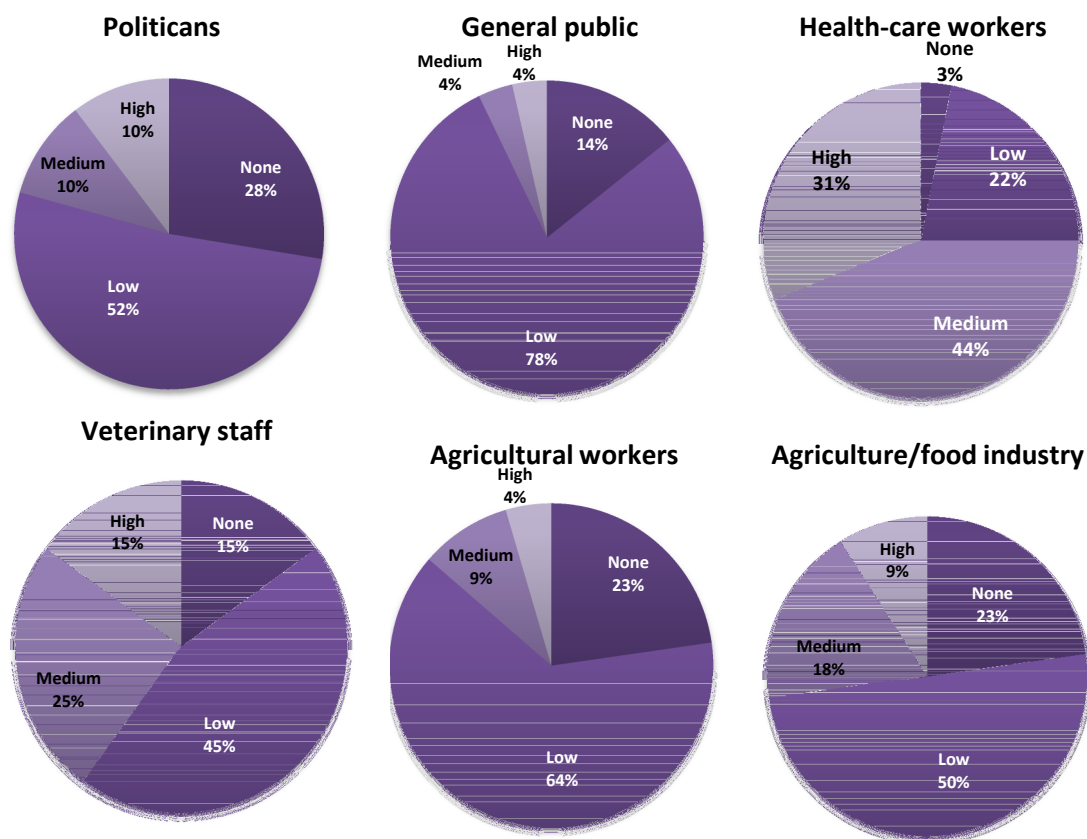
Other gaps and challenges identified are as follows:

- **Lack of national AMR surveillance programmes.** Fifty per cent of the 25 responding Member States in the Western Pacific Region reported having an AMR surveillance report in the past five years and 69% reported having an active AMR surveillance system for bacteria;

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- **Lack of awareness of AMR** among the general public and among all sectors. Only 10% of 29 responding Member States identified politicians as having a high awareness of AMR, whereas 31% of 32 responding Member States indicated that health-care workers had a high level of awareness (Figure 3);
- **Lack of a comprehensive “One Health” approach** to combating AMR across relevant sectors, including people, animals, agriculture and the environment;
- **Lack of national policies on antibiotic use** in all sectors. Only half of the 32 responding Member States in the Western Pacific Region reported recent monitoring of antimicrobial use in humans, and 29% in animal husbandry and/or the food industry (Australia, Malaysia, New Zealand, Singapore and Viet Nam);
- **Unregulated distribution and sales of antimicrobials** over the counter (OTC). Thirty per cent of Member States reported that antimicrobials were frequently or always sold over the counter, without a prescription;
- **Lack of a comprehensive IPC programmes.** While 60% of 35 responding Member States have national IPC programmes, and 74% (of 31 respondents) have specific measures to control AMR in hospital-level IPC programmes, IPC policies are lacking in the animal husbandry sector (only 32% of the 28 responding Member States have IPC policies for animal husbandry).

Figure 3. Awareness of AMR in the Western Pacific Region from the CSA on AMR



Source: World Health Organization. Rapid assessment tool at for country situation analysis on antimicrobial resistance in Western Pacific Region. Unpublished data, 2013.

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Current financial investment for AMR surveillance and containment are limited. Only Malaysia, New Caledonia and Singapore reported in the CSA that they had dedicated funds for an AMR containment plan.

In the Western Pacific Region, the CSA reported major pathogens and infectious diseases as posing serious public health challenges included dengue, HIV/AIDS, malaria, tuberculosis (TB) and MDR-TB, influenza, microorganisms causing sexually transmitted infections, leptospirosis, filariasis and diarrhoea (caused by *Shigella spp.*, *Salmonella spp.*, etc.), MRSA and carbapenem-resistant *Enterococcus*. Many of these pathogens are now drug resistant, and are a major public health concern.

It is important to note that the CSA only provided brief information from self-reporting. Therefore, it is essential that actual practices or implementation of policies are more accurately monitored and measured by countries, and data regularly shared to better understand the real situation and identify areas where most urgent actions are needed

5. The action agenda

5.1 Regional priority actions to contain antimicrobial resistance

The World Health Assembly resolution WHA67.R25/2014¹⁶ recognizes that the main impact of AMR is on human health. It also recognizes that a coherent, comprehensive and integrated response is needed at the global, regional and national levels through a “One Health” approach.

Urgent action is needed to reduce the impact of AMR on morbidity, mortality and related direct and indirect costs and burden on health systems. A draft list of summary priority actions to contain AMR in the Region was identified by Member States during the Consultation for Priority Actions on Antimicrobial Resistance in the Western Pacific held at the WHO Western Pacific Regional Office in Manila, 30 July – 1 August. Three priority areas were identified 1) Strengthening development and implementation of comprehensive national plans to contain antimicrobial resistance and raise awareness in multiple sectors, 2) improving surveillance of antimicrobial resistance and monitoring of antimicrobial use, and 3) strengthening health systems capacity to contain antimicrobial resistance. These priority areas are outlined below, including more detailed implementation timelines for review and endorsement at the sixty-fifth Regional Committee meeting in October 2014.

- 1) **Priority Action One: Strengthening development and implementation of comprehensive national plans to contain antimicrobial resistance and raise awareness in multiple sectors:**
 - a. Increased awareness, leadership and financial commitments to contain antimicrobial resistance in all relevant sectors.
 - b. Change attitudes and behaviours of the general public through intensified public education campaigns on antimicrobial resistance and responsible use of antimicrobials.
 - c. Change attitudes and behaviours of the general public through intensified public education campaigns on antimicrobial resistance and responsible use of antimicrobials.

The implementation steps, milestones and where applicable, key indicators for priority action one are listed in table 1.

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Table 1: Implementation steps for priority action one

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|---|---|
| 1. Increase awareness, political leadership and financial commitment on AMR in all relevant sectors. | |
| Year 1: Convene national AMR working groups and have high level multi-sectoral national and international meetings. Identify resources required for adequate national AMR plans. | Indicators: Percentage of Member States with designated budget for AMR plan and national coordinating mechanism. Percentage of Member States with active implementation of national AMR plan. |
| Year 3: Develop legislation on multi-sectoral AMR plans and develop funding mechanism. | |
| Year 5: Develop a national strategy plan. | |
| 2. Increase AMR awareness and change attitudes and behaviours of the general public through public education campaigns on AMR. | |
| Year 1: Undertake a needs assessment survey and develop national campaign strategies. | Indicators: Percentage of Member States reaching the milestones. |
| Year 3: Implement campaigns. | |
| Year 5: Evaluate, revise and update strategies and campaigns. | |
| 3. Prioritise AMR on the national agenda of key stakeholders. | |
| Year 1-3: Establish national coordinating mechanism. | Indicators: Inclusion of AMR in post 2015 millennium develops goals. Inclusion of AMR on agenda of international forums (APEC, ASEAN). |
| Year 5: Develop a national action plan for AMR. | |
| 4. Establish and implement comprehensive, multi-sectoral policies and actions for containment of AMR at local and national levels supported by regional and global strategies and collaborations. | |
| Year 1: Define feasible policies and actions at all levels and identify participating Member States within the regional collaborative network. | Indicators: Percentage of Member States with defined policies and actions. |
| Year 3-5: Monitor and implement AMR strategy. | |

2) Priority Action Two: Improving surveillance of antimicrobial resistance and monitoring of antimicrobial use:

- a. Develop and implement harmonized standards and methodologies for improved monitoring of antimicrobial resistance and antimicrobial use in human and emerging pathogens in alignment with the globally agreed approaches, and guidance by regional coordinating mechanisms.

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- b. Incorporate the use of reliable evidence to inform policy and action through coherent, national systems and regional networks to collect, analyse, share and disseminate data generated from monitoring of antimicrobial resistance and antimicrobial use.
- c. Develop and strengthen national surveillance systems including laboratory capacity to monitor trends of antimicrobial resistance and antimicrobial use in supported by regional surveillance networks.

The implementation steps, milestones and where applicable key indicators for priority action two are listed in table 2.

Table 2: Implementation steps for priority action two

| | |
|---|--|
| 1. Develop and strengthen laboratory capacity, establish harmonized standards and methodology as well as quality assurance for AMR surveillance testing. | |
| Year 1: Identify national laboratory focal points and champions for AMR surveillance. | Indicators: Percentage of Member States identifying focal points. Percentage of Member States establishing minimum laboratory capacity for AMR surveillance. Percentage of Member States in the regional AMR surveillance system. |
| Year 3: Establish internal and external quality assurance of at least one reference laboratory through regional support from established AMR networks in the region (establish minimum capacity to test for key AMR pathogens). | |
| Year 5: Establish a regional AMR surveillance system. | |
| 2. Set up a coordinating network to collect, analyse, share and disseminate AMR surveillance data at the national and regional level. | |
| Year 1: identify national focal points. | Indicators: Percentage of Member States reaching the milestones. Regional AMR surveillance coordinating mechanism is in place |
| Year 3: Establish national coordinating mechanism. | |
| Year 5: Establish regional coordinating mechanism. | |
| 3. Conduct a situational analysis of antimicrobial use in humans and animal husbandry. | |
| Year 1: Baseline report from Member States on what data exists in antimicrobial use. | Indicators: Percentage of Member States completing the reports. |
| Year 3: Monitor and implement AMR strategy. | |
| Year 5: Establish regional reporting mechanism. | |

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| 4. Monitor antimicrobial use in all relevant sectors using harmonized standards and methodology. | |
| Year 1: Establish a methodology working group for monitoring antimicrobial use. | Indicators: Percentage of Member States that have adopted the common methodology and are monitoring antimicrobial use. |
| Year 3: Agree on common methodology and begin to build capacity in Member States. | |
| Year 5: Member State adoption of methodology and implementation of monitoring of antimicrobial use. | |
| 5. Generate and link AMR surveillance and antimicrobial use data with additional epidemiological and economic data to assess the health impact, economic burden and increase awareness and influence policy. | |
| Year 1: Develop tools to assess the prevalence and economic burden of AMR. | Indicators: Development of the tools. Percentage of Member States adopting the tools. Percentage of Member States having a report on AMR prevalence and economic burden. |
| Year 3: Assess the impact of AMR at national level through use of tools. | |
| Year 5: Share findings at national and regional level on AMR economic burden and prevalence to increase awareness and influence policy. | |

An in-depth discussion of surveillance of antimicrobial resistance is provided in companion document *Surveillance of Antimicrobial Resistance in the Western Pacific Region*. The document describes the progress in the region on surveillance of antimicrobial resistance in the region and the existing gaps in regard to laboratory capacity and a harmonized, standard methodology. In addition companion document *Monitoring of Antimicrobial Use in the Western Pacific Region* described the need for monitoring antimicrobial use through common methodologies and indicators. This document goes hand in hand with the document on surveillance of antimicrobial resistance to inform important policy changes to contain antimicrobial resistance.

3) Priority Action Three: Strengthening health systems capacity to contain antimicrobial resistance:

- d. Adapt and institute good practices regarding effective regulation and enforcement to ensure availability of effective, safe and quality antimicrobials.
- e. Implement antimicrobial stewardship programs with full national coverage to improve prescribing practices of health care providers and promote responsible use of antibiotics.
- f. Ensure equitable and universal access to ‘prioritised’ antimicrobials by strengthening financing and procurement mechanisms for antimicrobials.
- g. Implement infection prevention and control programs at all health-care and key congregate settings.

- h. Enhance education in the health-care setting for good hygiene and infection prevention and control practices and ensure access to infrastructure such as washing and waste disposal facilities.

The implementation steps, milestones and where applicable key indicators for priority action three are listed in table 3.

Table 3: Implementation steps for priority action three

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| 1. Strengthen financing and procurement mechanisms for antimicrobials to ensure equitable and universal access for all. | |
| Year 1-3: Conduct situational analysis of the supply chain (including API) of antimicrobials and ensure effective regulation for production and dispensing of antibiotics (including API). | Indicators: Percentage of Member States that have completed the situational analysis Establishment of the regional mechanism. |
| Year 5: Establish regional mechanisms to monitor and ensure security of the supply chain for antimicrobials. | |
| 2. Conduct situation analysis on regulatory systems for antimicrobials in all relevant sectors and between Member States to strengthen regulatory capacity and enforcement. | |
| Year 1: Review work that has been conducted by existing bodies (APEC, ASEAN). | Indicators: Report published on situation analysis. |
| Year 3-5: Establish national coordinating mechanism to strengthen regulations and regulatory capacity in multiple sectors. | |
| 3. Review and strengthen existing guidelines and increase political commitment to the procurement of quality antimicrobials with a monitoring mechanism and clear and transparent guidelines for procurement. | |
| Year 1: Review existing guidelines | Indicators: Percentage of Member States reaching the target milestones. |
| Year 3: Update existing guidelines. | |
| Year 5: Monitor and implementation of guidelines by Member States. | |

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| 4. Implement antimicrobial stewardship (AMS) programs with full national coverage by increasing awareness and training of health-care professionals to improve prescribing practices and responsible use of antimicrobials. | |
| Year 1: Establish standard module for AMS and convene AMS committees. Survey knowledge of health-care professionals on AMS. | Indicators: Percentage of Member States with AMS programs, AMS committees and AMS in medical education programs. |
| Year 3: National AMS awareness campaign and incorporate AMS in basic and continuing medical education. | |
| Year 5: Develop hospital policies to improve responsible and prudent use of antimicrobials including standardizing a code of conduct on AMS. | |
| 5. To develop and /or strengthen strategy and implementation of infection, prevention and control (IPC) programs in health-care facilities. | |
| Year 1: Country Situational Analysis on IPC. | Indicators: Report on Country Situational Analysis on IPC. Survey data to reflect knowledge, attitude and practices among health care workers and policy makers. Number of Member States with IPC plans. Percentage of hospitals and/or institutions with IPC programs in place. Regular reports on the state of the local goals (outcomes and processes) and strategies and the impact of the IPC activities. |
| Year 3: Exchange of different country experiences and formation of national and hospital/institutions plan for IPC with inclusion of WHO 8 Core Components for IPC programmes. | |
| Year 5: Implementation and monitoring. | |

The health systems response to antimicrobial resistance varies across the region. Companion document *Healthy Systems Response to Support Containment of Antimicrobial Resistance in the Western Pacific Region* highlights the urgency to strengthening regulation of pharmaceutical systems, antimicrobial stewardship and infection prevention and control to contain antimicrobial resistance in the region.

There is an urgency to adopt a national multisectoral approach and to implement and monitor the proposed action agenda to contain AMR in the 37 Member States of the Western Pacific Region.

ANNEX 1 APPENDIX 1

Key definitions in antimicrobial resistance

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| Antimicrobial agent ⁱ | Any substance of natural, synthetic or semi-synthetic origin which at low concentrations kills or inhibits the growth of micro-organisms but causes little or no host damage |
| Antimicrobial resistance ⁱ | The ability of a microorganism to multiple or persist in the presence levels of therapeutic levels of an antimicrobial agent |
| Antimicrobial stewardship ⁱⁱ | The use of co-ordinated interventions to improve and measure the use of antimicrobials by applying appropriate diagnosis, promoting optimal drug regimen, dose, duration and route. |
| Containment of antimicrobial resistance ⁱ | Infectious disease control measures that minimize the emergence and spread of antimicrobial-resistant micro-organisms. |
| Disease burden ⁱⁱ | This includes the economic costs like treatment costs for hospital admissions and the cost to health in terms of mortality and morbidity and the direct patient burden |
| Empirical therapy ⁱ | Therapy that is initiated based on observation of clinical symptoms and patient history only, without previous confirmation of diagnosis by laboratory or other methods |
| Healthcare Associated Infections ⁱⁱ | Infections acquired via the provision of healthcare in either a hospital or community setting. |
| "One Health" approach ⁱⁱ | Collaborative multi-disciplinary work at local, national, and global levels to attain optimal health for humans, animals and the environment |
| Monitoring ⁱⁱⁱ | Reviewing, on a continuous basis, the degree to which program activities are completed and performance targets or milestones are being met. Typically monitoring focuses on tracking program inputs such as funding, staff, facilities, supplies, and training. As such, monitoring is part of the operational management of the program. Monitoring also tracks outputs such as availability of medicines and supplies, number or percentage of trained staff, and quality of services. Systematic monitoring of inputs and outputs can help identify potential problems and corrective actions can be taken during program implementation. |
| National surveillance network/institution ^{iv} | Refers to networks (a group of surveillance sites) doing surveillance within a country, or institutions such as single hospitals, laboratories or similar sites that provide data directly or through national institutions |
| Prescribing practices ⁱ | The behaviour of licensed medical or veterinary practitioners regarding their prescription of medicines, including such aspects as high or low propensity to prescribe such medicines, compliance to diagnostic procedures and treatment guidelines and procedural aspects such as readiness to delegate to non-medically-qualified staff decisions on repeat prescriptions and other routine demand |
| Prudent use of antimicrobials ⁱ | Usage of antimicrobials, which maximizes therapeutic effect and minimizes the development of antimicrobial resistance |

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| Rational use of medicines ^v | Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community |
| Regulatory authority ⁱ | A government agency responsible for codifying and enforcing rules and regulations as mandated by law. |
| Responsible prescribing ⁱ | The use of antimicrobials in the most appropriate way for the treatment or prevention of infectious diseases |
| Stakeholder ⁱ | A person or group of persons, or an industry, association, organization, etc. with an economic or professional interest/responsibility in an area or (involuntarily) affected by the developments in the same area. In the field of antimicrobial usage in food animals the farmers, veterinarians, animal feed manufacturers, food processors and distributors, retailers, relevant government organizations, pharmaceutical companies, consumers, public health officials, academic and other related groups are recognized as stakeholders. |
| Surveillance ^{vi} | The process of systematic collection, orderly consolidation and evaluation of pertinent data with prompt dissemination of the results to those who need to know, particularly those who are in a position to take action. |
| Surveillance of antimicrobial resistance ^{vi} | It should involve the collection and collation of both clinical and microbiological data. By establishing surveillance systems that integrate clinical and laboratory data, not only can the necessary data be captured but the strengths of both data sets can be combined. |

ⁱ Adapted from World Health Organization. WHO global principles for the containment of antimicrobial resistance. Geneva: World Health Association. 2000.

ⁱⁱ Adapted from Department of Health. UK five year antimicrobial resistance strategy 2013 to 2018. London: Crown. 2013

ⁱⁱⁱ Management Sciences for Health. MDS-3: Managing Access to Medicines and Health Technologies. Arlington, VA: Management Sciences for Health. 2012.

^{iv} Adapted from World Health Organization. Antimicrobial resistance: global report on surveillance 2014. Geneva: World Health Organization. 2014.

^v World Health Organization. The rational use of drugs. Report of the conference of experts. Geneva: World Health Organization. 1985.

^{vi} Adapted from Report of the Technical Discussions at the twenty-first World Health Assembly on National and Global Surveillance of Communicable Diseases, 18 May 1968 – A21/Technical Discussion/5. Geneva: World Health Organization. 1968.

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