Technical Consultation on Antimicrobial Resistance in the Western Pacific Region

1–3 August 2013
Manila, Philippines
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ANTIMICROBIAL RESISTANCE SURVEILLANCE
IN THE WESTERN PACIFIC REGION

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NOTE

The views expressed in this report are those of the participants in the Technical Consultation for Antimicrobial Resistance Surveillance in the Western Pacific Region and do not necessarily reflect the policy of the World Health Organization.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for governments of Member States in the Region and for those who participated in the Technical Consultation on Antimicrobial Resistance Surveillance in the Western Pacific Region, 1 to 3 August 2013, Manila, Philippines.
SUMMARY

Effective surveillance of antimicrobial resistance (AMR) is the cornerstone of national and international efforts to contain AMR and not only helps patient management, but also guides development of treatment guidelines and other policies. Although effective public health programmes exist to tackle the emergence and spread of AMR in tuberculosis, malaria, HIV/AIDS and several other infectious diseases, data and information about the extent of AMR, especially in bacterial pathogens, is relatively scarce.

The WHO Western Pacific Regional Office prioritized antimicrobial surveillance in alignment with global WHO initiatives to establish or strengthen AMR surveillance and to generate information and evidence to guide action to combat AMR.

The Technical Consultation for Antimicrobial Resistance Surveillance in the Western Pacific Region was held from 1 to 3 August 2013 at the WHO Western Pacific Regional Office in Manila, Philippines with the aim of strengthening and revitalizing AMR surveillance in the Western Pacific Region.

The objectives of the consultation were to: (i) review the current status and identify major gaps in AMR surveillance in the Western Pacific Region, and review best practices from targeted drug resistance surveillance systems for TB, HIV/STI and malaria; (ii) identify available options to effectively plan for cooperation between existing AMR surveillance networks to revitalize the regional AMR surveillance efforts in collaboration with WHO Western Pacific Regional Office; and (iii) identify areas needing WHO support and opportunities for collaboration at the national and regional levels, including strengthening quality assurance and methods used by AMR surveillance systems, establishing linkages between AMR and antimicrobial use in humans and food-producing animals, and reaching agreement on follow-up actions.

Participants reviewed the current regional and national AMR surveillance networks. The consultation proved a forum for sharing experiences and ideas on how to improve data/information-sharing among AMR surveillance networks, and discussed the role of the Regional Office in information dissemination. It was also an opportunity to discuss areas of technical cooperation at the regional level, as well as capacity development needs and opportunities for strengthening collaboration on AMR surveillance in specific countries.

The key opportunities, barriers and major stakeholder groups for the revitalization of a regional AMR surveillance system were identified. The main goals of a regional AMR surveillance system were identified: (a) to provide information to guide efforts for combating AMR in the Western Pacific Region, ultimately to reduce morbidity/mortality from AMR; (b) to establish early detection mechanisms at the regional (and national) level to provide timely feedback towards control of emerging antimicrobial resistance; (c) to support advocacy for AMR prevention and control for policy-makers and all other stakeholders; and (d) to establish a regional network for antimicrobial resistance (with linkages to other AMR surveillance) networks including health (human and animal) and food sectors.

The surveillance data to be included in the regional AMR surveillance system (RAMRSS) will include AMR trends among human, animal and foodborne pathogens; AMR burden of disease, mortality and cost; and linkages to antimicrobial consumption/use surveillance in human, animal and food sectors. The AMR data was proposed to be collected from clinical as
well as public health laboratories, private laboratories, armed forces and the community, with Food and Organization Organization (FAO) and World Organisation for Animal Health (OIE) collaboration for animal and food sectors.

The data type collected would be aggregate-level data for countries (or facilities). A list of antimicrobials and organisms was proposed for the regional surveillance system, and AMR information shall be used to monitor trends and develop resistance maps/charts for benchmarking. For the short term, aggregate annual data shall be collected from countries/facilities, with pilots of isolate-level data submissions and analysis. Identification of reference laboratories (regional/national) for confirmation of priority resistant strains was proposed. In the long term, it was agreed to improve the representativeness of data for all Member States, expand the scope to isolate-level reporting, and to increase the frequency of sharing (to quarterly, monthly or real-time).

It was proposed that WPRO take the lead in coordination of the surveillance network, and that the feasibility of hosting the surveillance data on the Health Information Intelligence Platform (HIIP) be explored. The key recommendation of the group was to establish a steering group/technical working group consisting of regional key experts to finalize the strategic action framework to combat AMR in the Western Pacific Region.
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Keywords: Drug resistance / Microbial Infection control / Data collection / Risk management
1. INTRODUCTION

The Technical Consultation for Antimicrobial Resistance Surveillance in the Western Pacific Region was held from 1 to 3 August 2013 at the WHO Regional Office for the Western Pacific (WPRO) in Manila, Philippines.

1.1 Background information

Many patients around the world suffer harm due to antimicrobial resistance (AMR) because infections caused by viruses, bacteria, fungi and parasites are no longer susceptible to common antimicrobials. This represents a major concern for public health because antimicrobial-resistant infections may kill, can spread to others, and impose rapidly increasing costs on patients and health systems due to prolonged treatment and the need for more expensive and newer antimicrobial agents. Furthermore, there are very few effective antimicrobials that are currently available or in development. Minor infections can lead to life-threatening complications due to AMR, and potentially reverse life-saving medical advances in surgery or transplantation. Unless tackled effectively, common infections may become untreatable, leading to the dawn of a post-antibiotic era.

Effective AMR surveillance is the cornerstone of national and international efforts to contain AMR. Regular surveillance of AMR trends not only informs decisions about the empirical treatment of individual patients, but also guides development of treatment guidelines and other policies. Although effective public health programmes exist to tackle the emergence and spread of AMR in tuberculosis, malaria, HIV/AIDS and few other infectious diseases, data and information about the extent of AMR, especially in bacterial pathogens, is relatively scarce.

AMR surveillance is a major component of the WHO Global Strategy for Containment of AMR (2001). WHO re-emphasized the need to strengthen surveillance capacity in the six-point policy package released on World Health Day 2011.

A WHO technical consultation on AMR surveillance was held in Geneva, Switzerland, in December 2012, where the global task force on AMR (representatives from WHO regional offices and headquarters) and WHO collaborating centres for AMR surveillance and external stakeholders participated. It was agreed that there is a pressing need for a comprehensive overview of the current situation of AMR to raise awareness of the seriousness of the issue among decision-makers, to provide input to estimate the burden of AMR, to inform future planning of global AMR surveillance, to monitor the effectiveness of interventions, to support resource mobilization, and to put adequate structures in place.

The WPRO acknowledged the importance of AMR as a public health challenge and formed an AMR scientific group in 1984. A cross-divisional AMR working group was established in August 2010 (per Information Circular IC/118/10) in order to coordinate AMR related work in the Regional Office. Revitalizing the support for AMR surveillance by the Regional Office and working with Member States were identified as priority tasks for this working group in 2012. A review process was initiated in 2013 to study the AMR surveillance systems in the Region.

In order to strengthen and revitalize AMR surveillance in the Western Pacific Region, an informal expert consultation was proposed. The consultation reviewed the current status of
regional/national AMR surveillance networks and promoted efforts to share information between these networks, with involvement of the WHO Regional Office for the Western Pacific in order to support national, regional and global efforts to monitor and combat AMR.

The consultation provided a forum for sharing experiences and ideas on how to improve data and information sharing among AMR surveillance networks, and the role of the Regional Office in information dissemination was discussed. It also gave an opportunity to discuss areas of technical cooperation at the regional level, as well as capacity development needs and opportunities for strengthening collaboration on AMR surveillance in specific countries.

1.2 Objectives

(1) Review the current status and identify major gaps in AMR surveillance in the Western Pacific Region, and review best practices from targeted drug resistance surveillance systems for TB, HIV/STI and malaria.

(2) Identify available options to effectively plan for cooperation between existing AMR surveillance networks to revitalize the regional AMR surveillance efforts in collaboration with WHO Regional Office for the Western Pacific.

(3) Identify areas needing WHO support and opportunities for collaboration at the national and regional levels, including strengthening quality assurance and methods used by AMR surveillance systems, establishing linkages between AMR and antimicrobial use in humans and food-producing animals, and reaching agreement on follow-up actions.

1.3 Opening session

The meeting was introduced by Dr Klara Tisocki. The welcome address was delivered by the WHO Regional Director for the Western Pacific Region, Dr Shin Young-soo, who emphasised WHO’s working collaboration with its partners and the crucial need to have accurate and up-to-date AMR surveillance data. The emergence of resistant pathogens in one country threatens not only its immediate neighbours but other countries around the world as well, and concerted efforts with more international collaboration are required to face the global AMR threat.

Dr Shin highlighted the need for accurate information on AMR trends in the Region to advise decision-makers about the seriousness of the problem. Systematic monitoring and evaluation of the AMR trends was identified as a fundamental priority for development of effective strategies and interventions to combat AMR. The leading role of WHO and the regional public health community in advocating for implementation of a wide range of interventions to reduce the risk of resistance emergence were acknowledged. The revival and rehabilitation of the earlier collaborative AMR surveillance effort in the Region was identified as an important priority for the WHO Regional Office for the Western Pacific. Dr Shin expressed the need to establish an AMR framework across the entire Western Pacific Region.

After a round of introductions, Dr Tisocki gave an overview of the objectives and the agenda of the consultation. This was followed by administrative announcements and a group photograph.
1.4 Appointment of Chairperson, Vice-Chairperson and Rapporteurs

Dr Shin Young-soo proposed the following names as the Chairperson, Vice-Chairperson and the Rapporteurs for the meeting, and these were approved by all participants after the nominees accepted their roles.

- Chairperson: Professor Hitoshi Oshitani
- Vice-Chairperson: Dr Victor K.E. Lim
- Rapporteurs: Dr Celia Carlos and Mr Russell Terence Cole

2. PROCEEDINGS

2.1 Session 1: AMR global/regional perspective

Dr Carmen Pessoa presented WHO efforts to combat AMR and emphasized the urgency of the AMR threat to progress on TB, HIV and malaria. Reference was made to WHO milestones, especially the Global AMR Strategy that was published in 2001 and the framework it provided, based on which 10 years later the World Health Day (2011) policy briefs were developed. She also noted the creation of the AMR taskforce and the WHO strategic action plan to guide WHO’s work in combating AMR for the next six years.

Dr Pessoa also provided examples of ongoing activities that included work on the Global Report on AMR, global and regional surveillance networks, capacity building in Member States, development of standard surveillance strategies and pilot surveillance studies. The high level of concern and interest within the entire WHO network was also conveyed. Although some work has been done, the action plan needs political support, key partnerships and resources. The expected next steps include development of standard surveillance methodologies, definition of a renewed WHO strategy to tackle AMR in partnership with key stakeholders, and implementation of the action framework developed by WHO taskforce.

This was followed by Dr John Stelling providing a comprehensive overview of AMR surveillance in the Western Pacific Region. After a brief history of the earlier regional AMR surveillance activities coordinated by the Western Pacific Regional Office, the current situation was outlined along with the existing limitations and priorities in the Region. He gave examples of AMR activities in Cambodia and AMR networks in the Region.

He also compared the AMR networks in Europe and the Americas strongly supported by the WHO Regional Offices for Europe and America. The discussions that followed focused on identifying government-led AMR surveillance networks.

Dr Anuj Sharma presented the ongoing activities to combat AMR in the Western Pacific Region, outlining AMR as a regional priority endorsed by World Health Assembly and Regional Committee resolutions. The role and activities of the cross-divisional AMR working group at the WPRO were enumerated. The existing initiatives by the various teams at WPRO on malaria, tuberculosis, human immunodeficiency virus/sexually transmitted infections (HSI), the Gonococcal Antimicrobial Surveillance Programme (GASP), and influenza and infection control were outlined.
Some of the existing networks and regional collaborations were highlighted along with WPRO’s role in combating AMR, which primarily included raising awareness, convening stakeholders, and providing technical support as well as support for regional and national plans to combat AMR.

Although AMR covers the whole spectrum of micro-organisms, the primary focus of the consultation was on bacterial drug resistance and how it can be strengthened in the Region, learning from the disease-specific programs as well as existing national and international initiatives.

2.2 Session 2: Antimicrobial surveillance networks

After the morning break, the experiences of various antibacterial surveillance networks were presented.

An overview of the Asian Network for Surveillance of Resistant Pathogens (ANSORP) was presented by Dr Doo-Ryeon Chung. ANSORP was organized as the first multi-country collaborative study group in Asia for the surveillance of AMR initiated by Dr Jae-Hoon Song from the Samsung Medical Center in 1996. The ANSORP network consists of 230 investigators and 123 centres in 14 countries in Asia and the Middle East, together home to 60% of the world’s population.

ANSORP has engaged in project-based studies on AMR in major bacterial pathogens since 1996 and outlined the six pillars of a strategic plan for control of AMR in Asia: surveillance of AMR and antibiotic use, increased awareness, appropriate use of effective antibiotics, infections control, vaccination, and policy and regulation. Dr Chung also enumerated the challenges faced – effective communication, the need for local reference labs and lack of secure funding for surveillance projects. Future plans include a stronger international network, standardization of laboratory tests and quality control, and securing funding support from international organizations.

The situation of MOHNARIN and bacterial resistance in China was presented by Dr Yonghong Xiao. AMR surveillance in China is carried out by the Ministry of Health National Antibacterial Resistant Investigation Net (MOHNARIN). Started in the 1990s with 128 hospitals, the network has more than 1000 hospitals currently, with 20–2000 hospitals in each province. The MOHNARIN centres collect bacterial isolates and antibacterial susceptibility data for target bacterial species using different automated antimicrobial susceptibility systems as well as manual antimicrobial susceptibility using Kirby Bauer with CLSI (Clinical and Laboratory Standards Institute) breakpoints and WHONET for analysis.

Data is submitted quarterly through e-mail and feedback is provided after manual data review within one month. There are challenges associated with having more than 13,000 hospitals feeding into an online information system and a mix of manual and automated methods for antibiotic testing. The resistance patterns were also summarised, highlighting the gravity of the AMR issue in China.

Dr Celia Carlos presented the Antimicrobial Resistance Surveillance Program (ARSP) – 25 years of promoting rational antibiotic use through surveillance in the Philippines. ARSP was established by creation of the Antimicrobial Resistance Surveillance Committee in December 1988 through a department order by the Ministry of Health. ARSP consists of 22 bacteriology laboratories in tertiary care hospitals in 14 regions across the country. Though it tests all organisms, the Program’s reporting focuses on organisms of public health importance using a
common protocol with CLSI breakpoints, and supported by external quality assurance and WHONET.

ARSP’s achievements include detection of outbreaks, foodborne disease surveillance as part of the Global Foodborne Infections Network, development and evaluation of policies (clinical practice guidelines/antibiotic policies), implementation of quality assurance, and continuing commitment of sentinel site staff. The rapid advances since 2006, in laboratory-based surveillance, including financial and quality-based incentives for laboratories in the first year, were outlined. Future plans include a national AMR control programme to be established by executive order of the President, surveillance of nosocomial infections, vaccine-preventable diseases, antibiotic use, ISO certification, integrated foodborne disease surveillance with other government departments, and fundraising.

Dr Marilyn Cruikshank provided an overview of recent developments in AMR surveillance in Australia. She highlighted the recent groundswell of awareness and concerns driving AMR progress over the last two years, and particularly the last six months. She covered the AMR Summit and AMR Colloquia in 2011. The Australian Government and State territory governments formed the AMR standing committee (AMRSC) in 2012, with representatives from all stakeholders, tasked with the role of identifying national priorities for action to address AMR across the health system. The first major project was the AMRSC Report, covering surveillance of antibiotic usage and AMR, options for a nationally-coordinated approach applicable to the Australian context, and enablers and barriers to establishment of national approach to AMR in Australia.

In February 2013, Secretaries of Health and Agriculture, Fisheries and Forestry formed a high-level steering group to collaborate on national AMR and antibiotic use in humans and animals. A Senate inquiry into the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR) in 2013 recommended an independent body or national centre to develop a strategy, report publicly on resistance data and measures taken to combat antimicrobial resistance and to manage the response to antimicrobial resistance in Australia. Despite the challenges, Australia is looking to include AMR in a communicable diseases framework in 2014, using a One Health approach.

Discussions followed, led by Dr Madeleine de Rosas-Valera commenting on APEC countries’ economic issues and the need for financial support to match topical concerns with AMR.

2.3 Session 3: Lessons learnt from specific AMR surveillance networks in the Western Pacific Region

Dr Eva Christophel presented the surveillance of antimalarial drug resistance in the Western Pacific Region. The role of WHO in monitoring antimalarial drug efficacy was outlined with efficacy data being used as instrument of policy change. The WHO standard protocol for assessment of therapeutic efficacy is the global “gold standard” to monitor drug efficacy and to update drug policy. The need for quality efficacy data to ensure proper implementation of clinical therapeutic studies was highlighted. The malaria drug resistance monitoring networks monitor adequate clinical response and treatment failures.

Cambodia, Thailand, Viet Nam and Myanmar in the Greater Mekong Sub-region (GMS) are the current foci of artemisinin resistance. The WHO Global Plan for Artemisinin Resistance Containment (GPARC) was launched in January 2011 with the goal to protect artemisinin-based combinations as an effective treatment for falciparum malaria. It defines priorities to contain and prevent artemisinin resistance with a focus on mobile and migrant populations to prevent spread.
The joint assessment of the GMS response showed that not enough is yet being done in terms of intensity, coverage and quality. Therefore the emergency response framework was launched to detect emergence of artemisinin resistance early and mount an effective response, increasing coordination, quality and coverage of interventions.

There are lessons learnt from the malaria programme. The existing system to monitor antimalarial drug resistance is based on WHO guidance, implemented by country malaria programmes, with support from donors and networks, and linked with the revision of national treatment guidelines. Networks are very beneficial to support countries and facilitate regional exchange and harmonization. Consequently, the emergence of artemisinin resistance could be detected early and national and regional containment responses mounted.

Dr Tauhid Islam offered an overview of tuberculosis drug resistance surveillance. After a global overview of the TB disease burden, he covered the global project on anti-TB drug resistance surveillance, initiated in 1994, with the objectives of estimating the magnitude of anti-TB drug resistance and determining drug resistance trends. The first global drug resistance surveillance report was published in 1997 and this was incorporated into the 2012 global TB report. The Supranational Reference Lab Network (SRLN) coordinates, identifying synergies among individual SRLs and serving as a platform for disseminating and implementing WHO policy guidance, standardizing susceptibility test procedures and advocacy.

The surveillance data on anti-TB drug resistance had representative anti-TB drug resistance data available from 27 high MDR-TB burden and 22 high TB burden countries, of which China, Philippines, and Viet Nam are from the Western Pacific Region. The estimates of MDR-TB burden in the Region as percentage of TB cases with MDR-TB was 4.8% for new cases and 22% among retreatment cases. The challenges facing anti-TB drug resistance surveillance were covered. The future of TB drug resistance surveillance is linked to the use of molecular technologies to accelerate baseline coverage and measure trends.

The gonococcal antimicrobial surveillance program (GASP) in the Western Pacific Region was presented by Dr Monica Lahra. The need for gonococcal surveillance was underlined by the high and rising gonococcal disease rates and escalating antimicrobial resistance, especially the decreased susceptibility to Ceftriaxone/Cephalosporins, which are the last line of treatment in most countries. The GASP network in the Western Pacific Region was developed by the WHO collaborating centre in Sydney, covering all 37 countries/areas of the Region which as a whole bears 40% of global gonococcal disease burden, despite being home to only 28% of the global population. The core antibiotics include penicillins, quinolones, tetracyclines, spectinomycin, extended spectrum cephalosporins, and azithromycin.

GASP reports are published annually in Communicable Diseases Intelligence (a quarterly publication of the Communicable Disease and Surveillance Branch, Office of Health Protection, Australian Government Department of Health and Ageing) and shared with WHO. The challenges facing GASP include resource limitations, low sample numbers, test methods and validation. The current status of gonococcal resistance in Asia was explained, with widespread high-level resistance to penicillin and ciprofloxacin. The GASP initiatives and future plans include expansion, continued provision of technical support, focus on external quality assurance scheme (EQAS), and molecular surveillance to augment culture-based methods.

Dr Wing Hong Seto presented on the surveillance of multidrug-resistant healthcare associated infections (HAIs) in Hong Kong. Most HAIs are caused by multidrug-resistant organisms. The surveillance programme for HAIs in Hong Kong public hospitals includes a prevalence survey (once every 3 to 4 years), MRSA surveillance, surgical site infections with
surgeon-specific wound infection (SSWIR) feedback, and device-related infections in ICU. The surveillance data is used to decide appropriate infection control interventions.

Key issues that came out during the discussion included the following:

- the Hong Kong surveyors of multidrug-resistant HAIs had undergone training and completed validation studies;
- the GASP EQAS procedure in preparation and distribution of control strains can be used as a model for providing control strains to countries participating in a regional AMR surveillance system in the future;
- the GASP policy of requiring laboratories to pass an EQAS prior to inclusion of their data in a surveillance report could also be used as a model for regional surveillance;
- the key challenge however, is how to standardize methods in all countries and how to implement these standards properly;
- to ensure reliability of surveillance data, it was suggested that only data from accredited laboratories or those enrolled in an EQAS programme be included, although some felt that countries only able to achieve certification (below accreditation) be included;
- it was suggested that the first step is to decide on surveillance objectives, then to look back in time and learn from the experiences of disease control programmes like TB and malaria which have established surveillance systems.
- the importance of monitoring was highlighted to ensure that surveillance is effective in ensuring suitable action.

2.4 Group work I – Review of current situation in Western Pacific Region and objectives of the regional AMR surveillance system (AMRSS)

The experts were divided into two groups.

Group 1A discussed the enablers and barriers for revitalizing the regional AMRSS.

(1) Key opportunities and potential barriers to the revitalization of a regional AMRSS

(a) The opportunities identified for a regional AMR surveillance system were:

- the timing is right;
- most countries in the Region have existing AMR programmes/networks;
- most countries in the Region use the Kirby Bauer technique and CLSI breakpoints that will aid standardization of antimicrobial susceptibility testing;
- most hospitals in the Region use electronic laboratory reporting systems.
model systems for AMR reporting are available (e.g. Japan, New Zealand);

- WHONET is widely used, which can facilitate data analysis and sharing;

- agriculture’s new “farm-to-table” approach can bring together the human health, livestock and the food sectors.

(b) The barriers identified for a regional AMR surveillance system were:

- the wide disparity of laboratory infrastructure in different Member States;

- the unwillingness of some countries and facilities to share their data;

- community-based and/or private sector AMR data is lacking or not well-reflected in the public health system;

- the cost of updating CLSI standards is an economic barrier;

- many hospitals have their own information systems; and

- there is lack of coordination in the government (“silicon effect”) between different government departments/ministries/agencies (especially human health and agriculture), with a consequent lack of data from the animal/food sector.

(2) Major stakeholders for potential regional revitalization of AMRSS in WPR

(a) The following data generators were identified:

- Laboratories under the Ministry of Health

- University/medical college laboratories

- Public health/hospital laboratories

- Private laboratories

- Military laboratories

- Animal/food sector laboratories

(b) Data users:

- Ministry of health

- Healthcare professionals

- Health financing groups (e.g. insurance)
(c) Policy-makers/influencers

- Ministry of Health and other involved ministries (e.g. agriculture, finance)
- Governments
- Regional bodies (e.g. Association of Southeast Asian Nations (ASEAN), and Asia-Pacific Economic Cooperation (APEC))
- Media, advocacy groups (including patient safety groups)
- Donors and partners

(3) Can the existing systems be connected into a network of networks? The simple answer to this question was a qualified “yes” that it can be done technically, but overcoming the barriers/challenges, especially the willingness to share will be important.

Group 1B discussed the objectives of a regional AMRSS, under the following headings:

(1) What are the main goals/objectives of a regional AMRSS?

(a) To provide information that will guide efforts to prevent and control AMR and ultimately reduce mortality and morbidity from AMR in WPR.

(b) To establish early detection mechanisms at the regional level which will provide timely feedback towards control of emerging resistance.

(c) To provide information to advocate for AMR prevention and control for policy-makers and all other stakeholders.

(d) To establish a regional network on AMR surveillance to include the human and animal health sectors.

(2) Priority needs for data collection and dissemination in the Region

(a) Resources and the capacity for data collection, collation and analysis.

(b) Standard tools for lab and data management.

(3) Type of surveillance data that should be included in the regional AMRSS

There is a need to define the scope and type of AMR surveillance data for the Region in the following areas:

(a) AMR trends among human and foodborne pathogens;
(b) AMR burden of disease, mortality and cost; and
(c) antibiotic consumption and use surveillance data for human and animals.

An issue that was highlighted during discussions was that “no data, no funds”, and vice versa, is a vicious cycle that needs to be broken by the establishment of a regional AMRSS to guide evidence-informed/effective action to combat antimicrobial resistance.

Day 2 started with a recap of the previous day’s proceedings by the Rapporteurs, Dr Celia Carlos and Mr Russell Cole.

2.5 Session 4: Surveillance of AMR and antimicrobial use

Dr Klara Tisocki gave a presentation on strengthening the surveillance of antimicrobial use. She quoted Lord Kelvin’s words, “If you cannot measure it, you cannot improve it” to underline the importance of measuring antimicrobial use for improving antimicrobial usage. The monitoring of antimicrobial consumption and use is important as it is closely linked with resistance development. She showed comparative antibiotic consumption data for Organisation for Economic Co-operation and Development (OECD) countries, highlighting the relatively high antibiotic consumption in Australia and Republic of Korea compared to European countries. The IMS 2012 report mentioned that US$500 billion may be saved through better responsible medicine use.

When measuring antimicrobial use, data on the total quantity of antibiotic consumption and patterns of use are needed. The total quantity can be measured using different metrics. The WHO indicators for measuring patterns of use include percentage of patients prescribed antibiotics and percentage of any specific disease cases prescribed antibiotics. Point prevalence surveys can also be carried out for measuring patterns from the various sources of data. The methodology can include both patient- and population-level surveillance. The challenges in the Western Pacific Region were discussed, as well as examples of surveillance networks in Europe, Australia and Viet Nam. Dr Tisocki covered the various options for collection of data on antimicrobial use and she concluded with key lessons, policy implications and the future agenda in WPR for surveillance of antimicrobial use, including integrated surveillance of AMR, use of sustainable practical approaches/methods, and use of antimicrobial consumption data for regional/national advocacy.

Use of antimicrobials in the food sector in WPR was covered by Dr Carolyn Benigno, FAO. She highlighted the importance of AMR amongst emerging disease risks in three interconnected categories: emerging infectious zoonotic diseases, established zoonoses/foodborne diseases and emergence of resistance of microorganisms to antimicrobials used in animal production. The FAO approach to zoonotic diseases includes development of better health systems, a chain approach (with empowered consumers and certification systems), emergency preparedness/response, and antimicrobial residues/resistance. The mission of the Animal Production and Health Commission for Asia and Pacific (APHCA) is to enhance the level of nutrition and standard of living of livestock keepers, especially smallholders, livestock value-chain actors, and communities at large through equitable, sustainable and safe livestock sector development, in its 18 APHCA Member Countries in the Asia-Pacific region. The meetings on antimicrobial use and resistance in Sri Lanka and Thailand focused on AMR activities. The objective of the Veterinary Antimicrobial Resistance Risk Management Working Group (VARRM) was to advocate for increased national and regional policy development and action in APHCA Member Countries on the issue of AMR in bacteria of food animal origin.
Dr Hnin Thidar Myint spoke about OIE activities to combat AMR in the animal/veterinary sector. She covered AMR and veterinary practice, monitoring of quantities of antimicrobial agents used in animals in OIE Member Countries, recommendations of the OIE global conference and country examples. Nearly 50% of the animal population is in Asia, making Asia an important source of food animals in the world. The actions of OIE in promoting the responsible and prudent use of antimicrobial agents in veterinary medicine include reinforcement of good governance, development/updating of standards, international coordination, supporting capacity building and condemning the marketing of fake products.

Examples were given of OIE standards and guidelines that cover AMR and antimicrobial use, including the terrestrial animal health code, aquatic animal health code, and the manual of diagnostic tests and vaccines for terrestrial animals. The results of the questionnaire on monitoring of the quantities of antimicrobial agents used in animals in OIE Member Countries were presented at the OIE Global Conference on the Responsible and Prudent Use of Antimicrobial Agents for Animals, in Paris (March 2013). Surprisingly, only 51% the OIE Member Countries (57% in the Asia-Pacific) ban the use of antimicrobial agents as growth promoters. The most common antimicrobial agents used as growth promoters included polypeptides (e.g. Bacitracin), Bambermycins (e.g. Flavophospholipol) and macrolides (e.g. Tylocin). Two-thirds (67%) of OIE Member Countries in the Asia-Pacific have no official system for collecting quantitative data on antimicrobial agents used in animals. The recommendations of the OIE global conference that covered antimicrobial resistance and use were listed. The OIE list of antimicrobial agents of veterinary importance identifies third and fourth generation cephalosporins and fluoroquinolones as critically important to human and animal health and restricts their use severely. She ended by giving examples of OIE and FAO work on AMR surveillance in Cambodia, Malaysia and Viet Nam.

Key issues that came out during the discussion:

- Data that only half of countries have banned use of antibiotics as growth promoters and observations showing an increase in antimicrobial prophylactic use are disturbing. The antibiotic doses may be lower than for therapeutic use but usually the duration of prophylactic use is the whole lifetime of animal.

- Clarification was sought on measuring the quantity of antimicrobial use in animals, since in human antimicrobial use, data has denominators; for animals, there are only whole numbers (i.e. tons). The usage data reflect sales which need to be analysed with size of the flock, though it may be measured per kilogram of meat produced as in Europe.

- There are initiatives in WHO to formalize establishment of antimicrobial use with resistance similar to initiatives in FAO and OIE. Under a tripartite arrangement, there have been discussions on what types of surveillance to initiate in low-middle income countries. The Advisory Group on Integrated Surveillance for AMR (AGISAR) is conducting pilot studies focused on these countries in particular.

- Better intersectoral communication is needed between the human health and animal/food sectors.

- The health and agriculture sectors in the Philippines are working together on the preparing the national AMR prevention and control programme through formation of a technical working group, with joint efforts on preparing policy notes and the draft executive order.
Small farmers may strongly believe that they need to use antibiotics as growth promoters in their animals and this may be true all over the world. Since these small farmers mainly use low-level antimicrobials, Dr Hnin proposed that AMR control programmes focus their advocacy work on discouraging use of higher-level antibiotics rather than low-level antibiotics. An alternative approach was to restrict use of antibiotics by antibiotic class. Since there is a need to monitor cheaper, lower classes of antimicrobials in low-income countries, the decision on which antimicrobials to monitor should be country-specific.

An alternative to encourage farmers not to use antimicrobials as growth promoters was to develop incentives for farmers who do not use antimicrobials as growth promoters, such as tagging their produce as antimicrobial-free meat products. The surveillance of antimicrobial use and resistance should also extend beyond hospitals to the community as a whole.

It was also suggested that studies be conducted on the food sector in centres with subpar animal hygiene and care, since studies from centres with good animal hygiene and care are already available.

The need for more information on antimicrobial resistance and use in food and animals in the Western Pacific Region was highlighted.

2.6 Group work II – Methodological issues and regional AMRSS database development and dissemination of information

Group II A focused on methodological issues.

(1) What AMR data should be collected?

(a) Data content

○ Which laboratories?
The laboratories should include hospital and public health laboratories, as well as laboratories in the private sector, the military and the community; regarding animal/food sector laboratories, the FAO/OIE laboratories, and the WHO AGISAR:DTU database were also suggested.

○ What species and samples?
The proposed list of organisms for data collection and analysis was proposed to expand to fungi. Collection of all routine specimens was suggested. Newer microbiological information/techniques are becoming available (bionumbers, MALDI-TOF, sequencing, etc.) that may be used in future.

(b) Data type

○ Data collection type?
At the aggregate level, it was proposed to collect data by facility (most countries probably could), and by country if this was not possible. At the isolate level, data availability depends on technical capability and willingness to share (disaggregated/sensitive data not to be shared without consent). Feedback to facilities, outbreak detection/alert
organism tracking, and retrospective analysis of newly identified problems were also suggested.

(c) Antibiotics to be tested

- Which antibiotics?
The proposed list of routine antibiotics would be the target as suggested. CLSI breakpoints were proposed to be used as it is the predominant methodology used in WPR, though other validated methods could also be used.

- Type of antibiotics susceptibility testing?
For qualitative testing, interpretations should be recorded. For quantitative testing, zone/MIC measurements are to be recorded. Quantitative testing is better for more reliable interpretation, covers changing breakpoints, helps monitor the level of resistance and serves as a better epidemiological marker.

(d) How should data be processed/analysed?

- Aggregate data
This can be used for trends, maps, charts and for benchmarking. Usually it is better to use all specimens for analysis. For some organisms, it may be desirable to stratify by specimen type (e.g. blood/urine) or origin (community/hospital). The CLSI M39A recommendation to select the first isolate per patient per species for preparing antibiograms should be applied.

- Isolate-level data
At the isolate level, measurement distributions, cross-resistance, resistance profiles, outbreak detection and organism alerts can be collected/analysed.
Data subsets to be defined for collection.

(e) What type of data collection is feasible in the short term and over the long term for inclusion in the regional AMRSS?

- Short term
Some countries may be ready to submit data, though aggregate data can also be used. A pilot for isolate-level submissions may be used. Data submission to be on an annual basis. Identification of regional reference/resource labs for confirmation of priority resistant strains will be important.

- Long term
All countries in the WPR to be included. Good facilities to be represented from all Member States. Where technically/legally feasible, it was suggested that the scope of isolate-level reporting be expanded. More frequent reporting (quarterly/monthly/real-time) may also be considered.

- Considerations
Funding needed for data management/analysis/presentation. A legal and
technical framework is also needed. Building trust, experience/expertise, reputation, logistics, and recruitment will be other considerations. Responsibility of data hosting was also discussed.

Key issues that emerged during the discussion included the following:

- Surveillance of selected “alert” microorganisms (carbapenem-resistant enterobacteriaceae, New Delhi metallo-beta-lactamase, *Klebsiella pneumonia* Carbapenemase, vancomycin-resistant *Staphylococcus aureus* etc.) will be important, since this data is likely to catch the attention of policy-makers and the general public, given the media attention they have attracted in the recent past. Such isolate will need to be sent to reference laboratory for confirmation, and information shared/reported at the national level.

- Inclusion of very rare/highly resistant organisms can be given the highest priority as alert organisms, while routine data will provide more general information.

- Start with a coalition of the willing (in situations where not all Member States are willing to participate)

Group II B focussed on how the regional AMRSS database would be developed and maintained, and who would be responsible for data submission and analysis.

1. How will the regional AMRSS database be developed and maintained? Who will be responsible for data submission and analysis?

   a. Organize systems that will centralize and analyse the data at country and regional levels:
      
      At the regional level, the first option was an academic centre (within the Region) with capability for data management with WPRO providing support; the second option was for WPRO to manage the regional database.
      
      At the country level, the government/ministry of health would take responsibility in those Member States with established surveillance systems; an academic centre could guide countries without established surveillance programmes, for primary validation; AMR focal points for Member States would be designated at the national level, which may be the national AMR reference centre.

   b. Development of data management standards
      
      This is needed to ensure quality of data in the AMRSS.

2. How could regional AMRSS data be disseminated or used to support national action for combating AMR?

   a. Annual meetings would facilitate data sharing and dissemination – the responsibility for organizing the annual meeting would rotate around Member States.

   b. A web-based dynamic interactive “dashboard” to increase dissemination with a feedback mechanism for Member States.

   c. Priority alert organism monitoring with real-time data sharing.
(d) High-level meeting of policy-makers (organized by WPRO and other partner organizations) where data, and actions taken to combat AMR can be presented.

(e) Partnership with media will be important for dissemination of results.

(f) Publications like an annual report (technical report and simplified summaries/materials for various target audiences including policy-makers, consumers, medical/technical professionals, etc.) and articles in scientific journals may be useful in dissemination.

(g) Data with a focus on mortality/morbidity due to AMR can be useful as publications.

Key issues that came out during the discussion included the following:

- Member States should be able to have confidence in the data hosting selected. A WHO hosted database would be seen as neutral and might make data sharing/submission easier.

- The global report on AMR is being developed by WHO. A similar publication including AMR data from the animal/food sector for the Region might be useful for advocacy, and identification of possible links for the future – e.g. government/non-government networks.

The group had a late lunch due to the highly charged discussions.

2.7 Session 5: Antimicrobial stewardship, quality and data management

Dr Victor Lim presented his experience on establishing a national antimicrobial stewardship programme including AMR surveillance. He outlined the national programme in Malaysia that was prepared in 2003 by the Ministry of Health, with WHO assistance, involving a multipronged approach. Infection and antibiotic control committees were established at the national, state and hospital levels. It was initiated to establish infection control measures in hospitals and to improve capacity and strengthen laboratory services. A governance structure was established which involved the national committee, chaired by the Director General of Health, meeting twice every year to oversee the national programme.

The AMR surveillance program, established in 1990, is the key initiative of the national programme and the information it generates is used to improve health outcomes. There are 37 public hospitals and universities in the network, with an annual database of >280,000 isolates, CLSI breakpoints and all use the WHONET software. The national “alert organisms” include MRSA, ESBL and CRE, and reports are published monthly. The programme has had limited success in reducing rates of transmission and overall prevalence of MRSA. The national trend of HAI prevalence rate was nearly halved over a five-year period, from 6.3 (in September 2003) to 3.19 (in September 2008). Since 2004, the use of antibiotics has been monitored with data submitted by public and private sectors, using the ATC classification and measuring daily defined doses as recommended by WHO. A national campaign to contain AMR was organized recently. Formularies and guidelines are available in various versions for the government sector, private sector and professional societies. Areas of improvement were also outlined, especially the need to enhanced engagement of public, private and agriculture sectors.
AMR EQAS: Thailand’s experience was presented by Dr Wanatana Paveenkittiporn. National Antimicrobial Resistant Surveillance, Thailand (NARST) network was established in 1997 and underwent two phases of expansion. It has been supported by the government since 2005. The network includes 60 hospitals including four private ones that are involved in the national AMR surveillance programme that aims to monitor the magnitude and trends of AMR in bacteria isolates from humans; disseminate the information regularly; and standardize microbiology techniques and strengthen capacity. Any problems or failings highlighted in the programme are addressed through susceptibility training workshops.

EQAS includes four bacterial cultures for identification and susceptibility testing and runs three cycles every year. It has a set of 100 bacterial strains in its selection bank. Data based on reports from hospital laboratories is analysed and an annual summary report is sent back to all the hospitals. A much larger EQAS is also run by the Bureau of Laboratory Quality Standards (BLQS), which is the national external quality assessment scheme in clinical microbiology and runs three times a year and has >1000 participating laboratories. For culture susceptibility it includes two unknown bacterial strains for identification and susceptibility testing.

Dr Thomas O’Brien presented analyses of AMR surveillance data highlighting the value of analysing and managing surveillance data. He provided an overview of the WHONET software including its capacity to analyse surveillance data using breakpoint histograms, MIC comparisons, scatter plots, cluster analysis and antibiogram patterns for epidemiological typing to identify unusual resistance phenotypes and outbreaks.

2.8 Group work III: Quality assurance in regional AMRSS and capacity development needs

Group III A discussed how to improve quality and data management.

(1) How can the quality of antimicrobial susceptibility testing be strengthened?

(a) Training/methods

- Use of standardized methods (CLSI) was suggested.
- Provision of training on standardized methods.
- EQAS, ensuring inclusion of specific resistance phenotypes. Responsibility to be determined; WPRO?
- Confirmatory testing to be done for priority isolates (vancomycin-resistant enterococcus, vancomycin-resistant Staphylococcus aureus, carbapenem-resistant enterobacteriaceae ), to improve the quality of data and the laboratory skills of surveillance participants.
- Regular training programme to be considered to address the fast turnover of laboratory staff, through in-country training in the local setting. The Southeast Asian Ministers of Education Organization (SEAMEO) offers a medical microbiology course at the Institute for Medical Research, Kuala Lumpur, Malaysia; PAHO also runs a training course, and WPRO may be able to recommend available training on medical microbiology/AST.
- WHO collaborating centres working on AMR could support confirmatory testing of important resistant pathogens.
Networking with groups doing similar work – facilitate procurement of difficult-to-procure or expensive lab supplies/quality control strains.

Extensive support to laboratory participants (supplies, reagents, quality control strains) by the coordinating centre of surveillance.

Ensuring use of reagents/lab supplies of good quality.

Ensuring technical support is readily available (references, technical advice, best practices, etc.)

Review of accumulated data, taking note of unusual occurrences and verification/investigation as required

Strengthening quality control testing

(b) Training

Good reference materials (Basic Bacteriology, WHO)

(i) Make use of translated versions

(ii) Printed materials for resource constrained settings

(iii) Online materials

(c) Laboratory set-up

Implement the Quality Management System in laboratories

Accreditation programs

(2) How to manage AMR data to improve its quality and value?

Regular review of current and accumulated data – preferably using an automated review system like WHONET alerts (SATScan, isolate-level alerts, statistical alerts), protocol alerts like EARSNET; referencing the WHO guidance document on review of AMR data.

Computerization (making use of the microbiological management system – WHONET).

Real-time reporting to ensure confirmation can be done while isolates are still available.

Data are best presented as integrated data.

The representativeness of data is important, especially in resource constrained settings:

(i) Periodic data collection

(ii) Focus on priority specimens/isolates
(3) Considerations:

- Costs/funding are important
  
  (i) Especially implementation of standard methods in resource-constrained settings
  
  (ii) EQAS expenses

- Gather data from “Centres of Excellence”

- WPRO training may include cost of monitoring of participants by trainers

- Improving the test quality of AMR surveillance would have implications for patient care as well

- Guidance needed on how to prioritize microbiology testing in resource-constrained settings.

Group III B discussed needs for national capacity strengthening and opportunities for collaboration.

(1) What are the opportunities for collaboration/skill transfers to strengthen AMR surveillance capacity in resource-constrained countries?

(a) Assessment of national capacity versus acceptable standard

- Laboratory capacity

- Hospital capacity

- Networking at national level

- The WHO laboratory assessment tool has two components – a system assessment tool for judging the national laboratory capacity, and a facility assessment tool for assessing individual laboratories, serving to corroborate the system assessment. The assessment results are available using a traffic light system, and the tool covers all aspects of laboratories including financing. It uses international standards for laboratory accreditation as the base, and can be adapted to the country context with the help of national stakeholders in a stakeholder workshop.

(b) Identification of which capacity to strengthen

(c) Assignment of a reference laboratory by country

- To be responsible for capacity building

(d) Reference labs

- Put resources into this reference laboratory (if resource-constrained)

- Participating hospitals send bacterial strains to reference labs e.g. China
- Local and central
- Double checking, quality control
- Supranational labs, e.g. in TB programme, providing support to national reference lab – genotyping or molecular capability
- Networks
  - Centres of excellence – “big brother” to reference labs
  - Legal considerations: sending samples outside the country – need to build local capacity
  - Questions on financing, explore social health insurance
(e) National policy or laboratory plan/strategic directions in countries
  - Goal: Establish good laboratories in each country
  - Resources and Financing – one of the key problems
  - Partnerships, e.g. OIE laboratory twinning experience
  - Classification of labs
  - Advocacy to upgrade labs to collect AMR data
(f) Limitations, challenges:
  - Laboratory capacity, a big challenge in resource constrained settings
  - Pacific Island Countries (PICs): Human resources, infrastructure, samples, transportation of samples; needs assessments
  - Samples not taken (clinical pathways), behaviour of doctors in requesting specimens
  - Extreme disparities among countries in WPR (ranging from very good to very small capacity) – same situation within large countries (e.g. China)
  - Surveillance programme
  - Guidance to policy-makers
  - Local capacity strengthening
  - Lab information systems, computer systems
  - Quality control
(g) Situation in countries
High-income countries (HICs) have good status, use minimum inhibitory concentrations (MIC) for susceptibility testing – underlining excellent work being done.

Resource-limited settings: Lao PDR, Mongolia, Papua New Guinea, PICs (different set of problems)

Low-income Countries (LICs) – issue of how to set up basic labs

PICs have a laboratory network (LabNet), WHO South Pacific Office supports laboratory strengthening in PICs in collaboration with the Secretariat of the Pacific Community (SPC)

Funding discussions

Possible donor funding

Need health outcomes and impact information (e.g. mortality, morbidity)

Funds and data cycle

Calculating economic impact, cost of AMR is difficult

Modelling

Three sources of funding: government, multilateral organizations and pharmaceutical companies (latter cannot be a source for WHO)

Success stories on international surveillance

Collection of isolates and data takes time

Advocacy – “One specific problem, and one specific data”

eHealth/mHealth? Data transfer

Innovative surveillance methods at national level

How can we strengthen collaboration between existing AMR surveillance networks?

New network

Want to establish network? Purpose?

WPRO to lead

Membership of surveillance network by governments (versus hospitals at national level)

National networks can provide data to WPRO
Do we need active surveillance?

Standardization of data

Purpose: general surveillance versus specific surveillance

Active surveillance, annual surveillance

Existing networks

- MOHNARIN (China) with 1000 hospital laboratories

Quality control, protocols, standards

Step by step

Challenges in collaboration

Collection/sharing of data

Three-pronged strategy, highlighting success stories

Immediate/short term: collate current data from existing networks

- Priority organisms: 8–10 bacteria, important antimicrobials
- Get funding/resources for expansion

Medium term: attract attention of policy-makers, health professionals and public

- Two organisms reported by all countries in the world, carbapenem-resistant enterobacteriaceae and Klebsiella (TB control programme shows XDR-TB presence in countries on a map to highlight its presence, even if a single isolate is reported)
- Disaggregate data: collated annually
- Supported by a communication strategy and social media/marketing
- Related international campaign programme supported by APFID/APEC

Long term: Active surveillance

- Analyse detailed epidemiological data/markers
- Measure economic impact

After a summary of previous day’s proceedings from the rapporteurs, the morning session on Day 3 started with Dr Jae-Hoon Song delivering a brief presentation on the international campaign to promote increased awareness of AMR with the name Campaign 4 and the slogan “For All, For Life”, using the phonetic similarity of “4” and “for”. The campaign consists of four
simple messages targeted at each stakeholder group – the public, health professionals, etc. He outlined the future plan of unveiling Campaign 4 at the APEC expert forum, engaging partners to roll out the international campaign in Asia such as APEC, APFID, WHO and professional societies and governments in Asian economies. Dr Song hoped that this campaign would expand the international collaboration for control of AMR like the European antibiotic awareness day/week, the NPS MedicineWise programme in Australia, US CDC’s “Get Smart” campaign and the Canadian antibiotic awareness initiative.

This was followed by a short video explaining the features of WPRO’s Health Information and Intelligence Platform (HIIP), the information repository hosting data from a number of WHO programmes. The software used on the website provides a snapshot or “dashboard” tool and is capable of depicting changes in demographics, country comparisons, disease prevalence, and mapping capabilities for data from WPRO Member States. The data from AMR networks in the Region could feed into this and create a network of networks.

This was followed by a general discussion in which Dr Song expressed the willingness of ANSORP to join WPRO as a collaborator/partner. However, there is a need to translate data into practical action. The proposed Campaign 4 to raise awareness about AMR throughout Asia would address its advocacy to all stakeholders including the general public, health professionals, policy-makers and pharmaceutical companies. Many networks are owned by the health ministries in WPR Member States and will need persuading to join and share their AMR data with the “network of networks”.

2.9 Group work IV: Summary recommendations

The draft recommendations prepared by the secretariat based on the proceedings of the Technical Consultation were shared in the final plenary session.

(1) Goals and objectives of the regional AMRSS

(a) Overall goal:

- To provide information that will guide efforts to prevent and control AMR to reduce the mortality, morbidity and cost associated with AMR in the Western Pacific region.

(b) Specific objectives:

- To capture data from human and animal health sectors through a regional AMR surveillance network
- To provide information to advocate for AMR prevention and control targeting policy-makers and all relevant stakeholders
- To establish early detection mechanisms at the regional level which will provide timely feedback towards control of emerging AMR
- To provide a platform for intersectoral collaboration
- To enhance capacity of national systems for AMR surveillance
- To link with surveillance of antimicrobial usage and infection control
(2) Scope

- AMR emergence, spread and trends among human, veterinary and foodborne pathogens
- AMR burden of disease, mortality and cost
- Antibiotic consumption and use surveillance data for humans and linking to similar data for animals

(3) Draft operational framework (to include actions/next steps, allocation of responsibilities and time frame)

(a) Data content

- Data from government, non-government and research laboratories, including human/animal/food sectors
- Epidemiological & economic data – to be discussed
- Consumption and antimicrobial use in humans/animals – to be discussed
- Recommended actions:
  (i) Assessment mapping of existing network
  (ii) WPRO to send expression of interest letter to join regional AMRSS
  (iii) Identification of key government agencies
  (iv) Sharing and provision of feedback to countries on AMR surveillance

(b) Data type

- Aggregate-level – can collect now and analyse
- Isolate-level – start sharing if feasible and build capacity for future active surveillance

(c) Antibiotic results

- Qualitative, quantitative (MIC, zone inhibition diameters)

(e) Strategies for establishment of regional AMRSS

- Existing network led by WPRO
- Membership by governments rather than hospitals
- National networks can provide data to WPRO
- Standardization of data
- Active surveillance, annual surveillance
- Need to identify regional reference laboratories

(f) Important considerations
- Funding: for data management, analysis and presentation
- Legal and technical framework
- Trust, experience, reputation, logistics, recruitment
- WPRO should host data

(g) Dissemination strategies
- Annual meeting – responsibility for organizing the annual meeting will lie with one Member State (on a rotational basis)
- Web-based dynamic interactive “dashboard” to increase dissemination with a feedback to Member States
- Priority alert organism monitoring with real time data sharing
- High-level meeting of policy-makers
- Partnership with media
- Publications – annual reports
- Publications focusing on AMR, and mortality/morbidity data
- Professional societies and reference journals
- WPRO journals

(h) Quality assurance considerations
- Training, standardized methods/techniques – CLSI
- Regional and national AMR reference laboratories to conduct confirmatory testing for important resistant pathogens
- Networking with groups doing similar work
- Cost/funding in resource-constrained settings
- Cost of EQAS

(i) Data management
- Regular review and analysis of current and accumulated data
o WHO guidance document on review of AMR data

o Computerization

o Real time reporting to ensure confirmation can be done while isolates are still available

(j) Capacity development needs

o Assessment of national laboratory capacity

o Prioritize capacity development

o WHO Laboratory Assessment Tool (WHO-LAT)

o Countries may nominate reference laboratory

o Identify centres of excellence in the Region

o Development of national laboratory policy, strategy and action plan

(k) Resource Needs and Mobilization

o Identify and apply to funding agencies (e.g. ADB)

o For developed countries?

o For developing countries?

o Earmarking of funds for AMR

o For national?

o For Regional: different strategy for way forward (focus on 10 organisms, 10 drugs; focus on hot topic; active surveillance)

o Agencies?

o Government: help/support to come up with a proposal

o How much do we need? Laboratory capacity building, etc.?

o Identify qualified experts to find own funding

o It’s important to start something!

o Needs assistance for countries

o ASEAN senior officials meeting – to be sensitized

o APEC working group

(l) Recommended action:
Formation of a steering committee/technical working group on AMR to finalize recommendations

After the discussion over next steps and conclusions, Dr Klara Tisocki proposed a vote of thanks. The meeting was closed by the chairpersons – Professor Hitoshi Oshitani and Dr Victor Lim.

3. CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of the conclusion and recommendations:

• Key opportunities/barriers and major stakeholder groups for the revitalization of RAMRSS were identified. The existing AMR surveillance networks can be networked for information sharing with a few qualifiers.
• The mains goals of the proposed regional AMR surveillance system were identified as:
  (a) Providing information to guide efforts for combating AMR in the Western Pacific Region, to ultimately reduce morbidity/mortality from AMR.
  (b) Establishing early detection mechanisms at the regional (and national) level to provide timely feedback towards control of emerging antimicrobial resistance.
  (c) Supporting advocacy for AMR prevention and control for policy-makers and all other stakeholders.
  (d) Establishing a regional network on AMR with linkages to other AMR surveillance networks including health (human and animal) and food sectors.

• Scope and type of surveillance data to be included in the RAMRSS were discussed and include AMR trends among human, animal and foodborne pathogens; AMR burden of disease, mortality and cost; and linkages to antimicrobial consumption/use surveillance in human, animal and food sectors.
• The AMR data shall be collected from clinical as well as public health laboratories, private laboratories, armed forces and the community; with FAO/OIE collaboration for animal/food sectors.
• Data type/collection is proposed to be aggregate level data for countries (or facilities). A list of antimicrobials and organisms was proposed for the regional surveillance system, and AMR information shall be used to monitor trends and develop resistance maps/charts for benchmarking.
• For the short term, aggregate annual data shall be collected from countries/facilities, with pilots of isolate-level data submissions/analysis. Identification of reference laboratories (regional/national) for confirmation of priority resistant strains proposed.
• In the long term, improve representativeness of data for all Member States, expand scope to isolate-level reporting, increase frequency of sharing (quarterly/monthly/real-time).
- AMR surveillance in the Region needs resources and capacity development for data collection, collation and analysis. Funding/resources to be identified.
- WPRO to take the lead in coordination of the surveillance network.
- Feasibility of hosting the surveillance data on the Health Information Intelligence Platform (HIIP) to be explored.
- A steering group/technical working group consisting of regional key experts is proposed to finalize the strategic action framework to combat AMR in the Western Pacific Region.
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### PROVISIONAL TIMETABLE

<table>
<thead>
<tr>
<th>Thursday, 1 August</th>
<th>Friday, 2 August</th>
<th>Saturday, 3 August</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 Registration</td>
<td>08:30 Summary of day 1</td>
<td>08:30 Summary of day 2</td>
</tr>
<tr>
<td>08:30 Opening session</td>
<td><strong>Session 4: Surveillance of AMR and AM use</strong></td>
<td><strong>Introduction to group work IV</strong></td>
</tr>
<tr>
<td>* Welcome and opening remarks (Dr Shin Young-soo)</td>
<td>08:45 Strengthening surveillance of antimicrobial use (K Tisocki)</td>
<td><strong>GROUP WORK IV</strong></td>
</tr>
<tr>
<td>* Self-introductions</td>
<td>09:00 Use of Antimicrobials in food sector in WPR (C Benigno)</td>
<td><strong>Summary recommendations</strong></td>
</tr>
<tr>
<td>* Overview of objectives and agenda (Klara Tisocki)</td>
<td>09:15 AMR in animals/veterinary sector in WPR (HT Myint)</td>
<td></td>
</tr>
<tr>
<td>* Administrative announcements (Klara Tisocki)</td>
<td>09:30 Discussion</td>
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<tr>
<td>* Group photo</td>
<td>10:00 Introduction to group work II</td>
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<tr>
<td><strong>Session 1: AMR – global/regional perspective</strong></td>
<td>10:15 Coffee/Tea Break</td>
<td><strong>GROUP WORK I</strong></td>
</tr>
<tr>
<td>09:30 WHO efforts to combat AMR (Carmem Pessoa)</td>
<td><strong>Group Work II</strong></td>
<td><strong>Operational framework of regional AMRSS</strong></td>
</tr>
<tr>
<td>09:50 Overview of AMR in WPR (John Stelling)</td>
<td>11:00 Group work (contd.)</td>
<td><strong>Plenary: Presentation of group work IV</strong></td>
</tr>
<tr>
<td>10:20 Ongoing activities to combat AMR at WPRO (Anuj Sharma)</td>
<td>11:30 Next steps</td>
<td><strong>Closing session</strong></td>
</tr>
<tr>
<td>10:30 Coffee/Tea Break</td>
<td>11:45 Plenary: Presentation of group work II</td>
<td>* Closing remarks (Vivian Lin)</td>
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<tr>
<td><strong>Session 2: Antibacterial surveillance networks</strong></td>
<td>12:00 Plenary: Presentation of group work II</td>
<td></td>
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<tr>
<td>11:00 ANSORP experience (Doo-Ryeon Chung)</td>
<td>12:15 <strong>Closing session</strong></td>
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<tr>
<td>11:15 MOHNARIN experience (Yonghong Xiao)</td>
<td><strong>Group work (contd.)</strong></td>
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<tr>
<td>11:30 ARSP experience (Celia Carlos)</td>
<td><strong>Plenary: Presentation of group work IV</strong></td>
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<tr>
<td>11:45 AMR surveillance in Australia (Marilyn Cruikshank)</td>
<td><strong>Closing session</strong></td>
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<td>12:00 Discussion</td>
<td><strong>Group work (contd.)</strong></td>
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<tr>
<td>12:30 Lunch Break</td>
<td><strong>Session 5: Antimicrobial stewardship, quality and data management</strong></td>
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<tr>
<td><strong>Session 3: Lessons learnt from specific AMR surveillance networks in WPR</strong></td>
<td><strong>AM stewardship to strengthen AMR surveillance (Victor Lim)</strong></td>
<td><strong>Introduction to group work III</strong></td>
</tr>
<tr>
<td>13:30 Surveillance of Artemisinin resistant malaria (Eva Christophel)</td>
<td><strong>AM stewardship to strengthen AMR surveillance (Victor Lim)</strong></td>
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<tr>
<td>13:40 Laboratory surveillance network of MDR/XDR TB (T Islam)</td>
<td><strong>AM stewardship to strengthen AMR surveillance (Victor Lim)</strong></td>
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<td>13:50 Gonococcal Antimicrobial Surveillance Programme (M Lahra)</td>
<td><strong>AMR EQAS: Thailand experience (W Paveenkittporn)</strong></td>
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<td>14:05 Surveillance of MDR HAI – HK experience (WH Seto)</td>
<td><strong>Managing data from AMR surveillance networks (T O’Brien)</strong></td>
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<td>14:20 Discussion</td>
<td><strong>Discussion</strong></td>
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<tr>
<td>14:40 Introduction to group work I</td>
<td><strong>Introduction to group work III</strong></td>
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<tr>
<td>14:45 Coffee/Tea Break</td>
<td><strong>GROUP WORK I</strong></td>
<td><strong>Quality assurance in regional AMRSS and capacity development needs</strong></td>
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<tr>
<td><strong>GROUP WORK I</strong></td>
<td>15:00 <strong>GROUP WORK II</strong></td>
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<tr>
<td>15:15 Review of current situation in Western Pacific Region and objectives of the regional AMRSS</td>
<td>15:00 <strong>GROUP WORK III</strong></td>
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<tr>
<td>Time</td>
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<tr>
<td>16:45</td>
<td>Plenary: Presentation of group work I</td>
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<tr>
<td>17:30</td>
<td>End of Day 1</td>
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<tr>
<td>19:00</td>
<td>Dinner/reception</td>
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<tr>
<td>16:45</td>
<td>Plenary: Presentation of group work III</td>
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<tr>
<td>17:30</td>
<td>End of Day 2</td>
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