



**World Health
Organization**

Regional Office for South-East Asia

Antimicrobial resistance

Report of a Regional meeting
Jaipur, India, 10–13 November 2014



USE ANTIBIOTICS RATIONALLY

Antimicrobial Resistance

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Regional Director's message on Regional Meeting on Antimicrobial Resistance

Jaipur, India, 10–13 November 2014



The discovery of antimicrobials, commonly known as antibiotics, is hailed as one of the most significant discoveries in medical sciences. During the past seven decades, these agents have played a significant role in reducing the global burden of communicable diseases. Antibiotics also paved the way for the unprecedented medical and societal developments, and are today indispensable in all health systems.

Unfortunately, these achievements and the potential of antibiotics to benefit mankind are now at risk. Due to extensive and inappropriate use of antibiotics in both human and animal health sectors, the microorganisms have adapted to survive by becoming resistant to these antimicrobials. This is threatening the progress made in containing communicable diseases. Emergence of antimicrobial resistance (AMR) and its rapid spread is also impacting negatively on our ability to benefit from modern technologies such as advanced surgical procedures, organ transplantation, treatment of pre-term babies, and cancer chemotherapies, to mention just a few.

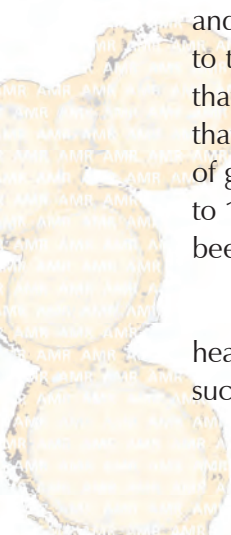
Unlike disease-specific control programmes, despite its widespread occurrence, its insidious development and a lack of focus on it makes it difficult to obtain accurate data on AMR. WHO's recent global report on AMR surveillance has revealed the gaps in information on pathogens of major public health importance. The report also points out the significant disparities in surveillance quality, varying methods of data collection and lack of common platform for data-sharing, as well as the lack of common standards on such issues.

Although we have inadequate information on the magnitude of the problem in the South-East Asia Region, we do have some data that indicate a significant burden of drug resistance in our Region. Outbreaks of drug-resistant salmonellae causing typhoid fever, and shigellosis causing bacillary dysentery, have been frequently reported from the Region.

Before the advent of antibiotics, typhoid fever had mortality as high as 30%. And that fell to almost insignificant levels with the advent of antibiotics. Now, in some of the settings, mortality in children suffering from typhoid fever has risen to almost 10%. Likewise, resistance is seen in several important infectious agents giving it a new dimension to the problem of hospital-associated infections. Reports seem to indicate that mortality can be as high as 52% in hospital-associated infections caused by resistant *Acinetobacter*. With multiple resistance becoming the norm in several pathogens of public health importance, the threat from these “superbugs” is to take us back to pre-antibiotic era.

Apart from health, the economic consequences of antimicrobial resistance represents a heavy and growing burden on countries, requiring urgent action at national, regional and global levels. AMR is a drain on the global economy and building a business case for long-term sustainable investment is imperative to tackle the problem. In January 2013, the World Economic Forum warned that antimicrobial resistance is one of the major global health security risks that the world needs to confront and called attention to the fact that losses of gross domestic product from antimicrobial resistance can range from 0.4% to 1.6%. The annual cost due to antibiotic-resistant infections in Thailand has been estimated to be around two billion dollars.

It is well known that diseases due to resistant organisms take longer to heal, require expensive and, at times, toxic drugs for longer periods. In addition, such resistant organisms can also move across countries through travel and



trade. Combating the problem of antimicrobial resistance warrants concerted efforts at national and international levels if we are to preserve the efficacy of available antimicrobial agents.

An effective response to AMR is possible through treatment policies such as combination therapy, rational prescription, patient adherence, strong regulatory mechanism and educational activities, along with an efficient surveillance system that monitors the emergence and spread of resistance, as well as the pattern of use of antimicrobial agents.

Many developed countries have initiated effective steps in tackling AMR. However, AMR is a global risk beyond the capacity of any single organization or nation to manage or mitigate alone. Governments, agencies, professional organizations, NGOs, industry and academia have important roles in generating useful information on AMR and translating it into practice.

For the last several years, WHO has been strongly advocating for greater and focused attention and actions against the growing problem of AMR. Such actions include building national capacity in regulatory, surveillance, rational use of drugs and educating communities to obtain their participation in the prevention and control of AMR. The WHO Regional Office developed a Regional Strategy for Prevention and Containment of AMR in the Region in 2010 that was endorsed by the Regional Committee. Globally, the theme of World Health Day 2011 was AMR. The Health Ministers of all Member States in our Region gave a comprehensive call in 2011 in the form of Jaipur Declaration on AMR to combat this menace. The Sixty-seventh World Health Assembly endorsed the resolution, WHA67.25, on AMR charging WHO to develop a global action plan against AMR before May 2015.

Recognizing the importance of this subject, I have declared it as one of the six flagship projects of the Regional Office. WHO is committed to work closely with Member States to mitigate the impact of AMR on human health.



Dr Poonam Khetrpal Singh
Regional Director

Executive summary

The WHO Regional Office for South-East Asia organized the SEA Regional Meeting on Antimicrobial Resistance (AMR) at Jaipur, India from 10–13 November 2014. The meeting was attended by participants from all 11 Member States and experts from Sweden, UK, South Korea, Switzerland, India, Sri Lanka, Bangladesh and Thailand. The meeting was opened by Dr Poonam Khetrpal Singh, WHO Regional Director for South-East Asia. In her inaugural address she highlighted the importance of AMR and said that this was one of her flagship priority areas.

Meeting was organized to review the status of development and implementation of national action plans on AMR, to advocate with Member States for acceleration of national efforts to build capacities needed for implementation of the Jaipur Declaration on AMR and the SEA Regional Strategy on AMR, to discuss the gaps and challenges hampering national efforts and suggest the way forward.

Presentations by Member States of the Region revealed that antimicrobial resistance is increasingly being recognized as a major public health issue by all Member States and substantial work has been done in the last five years in accordance with the Jaipur Declaration on AMR. There is growing awareness and understanding that containment of antimicrobial resistance depends on coordinated interventions. Steady and good progress is being made in this regard. Member States are adopting a comprehensive and integrated national approach using WHO regional strategy on AMR as a guidance document. National focal points have been designated in almost all Member States. Multisectoral steering committees to steer the process have either been formed or are in the formation process. National antibiotic policy is either formed or is

being drafted in almost all SEAR Member States. Member States are working on strengthening regulations to govern rational use of antimicrobials in different sectors and also to control quality of drugs. Regional and national training courses have been organized to build the capacity for undertaking laboratory-based surveillance of AMR. This is important for generating evidence-based treatment guidelines, understanding the magnitude and trend of resistance, and impact of national efforts on mitigating AMR. Special attention is being paid to reducing health care-associated infections by improving infection control practices. Community awareness campaigns are being launched. Information, education, and communication material (IEC) has been developed and distributed.

The Jaipur Declaration on AMR in 2011 initiated work on AMR in the Region but considering the seriousness of the problem and the need for early response, AMR necessitates additional concerted efforts by the Member States. Estimating the burden and trend of antibacterial resistance through national representative data using quality laboratory services and national network of labs is crucial. Operational research in AMR to find out practical solutions to local challenges/issues is also needed to successfully address this problem. It is important to involve professional bodies and civil society in the national action plan and add an awareness component to improve awareness among prescribers, dispensers, and consumers. It is important to strengthen national regulations to ensure quality of drugs, availability of standard treatment guidelines, ensure proper distribution, sale and utilization of antibiotics, develop mechanisms to test and assure quality of drugs, and consider banning or restricting nontherapeutic use of antibiotics in veterinary practice. National action plans should incorporate the aforementioned areas to adequately address this problem.

Participants requested WHO for continuous advocacy at the highest level to bring AMR higher on the national health agenda and to provide standards for and assistance in capacity building on various elements of AMR in consonance with the Regional Strategy, gaps identified and the proposed global action plan. WHO has also requested to establish a minimum set of data for national surveillance of AMR and provide technical assistance to initiate the activity, and support conduct of national meetings to bring together various stakeholders to develop/review/and accelerate national action plans.

Background

During the past six decades antimicrobial agents have played a critical role in reducing the burden of communicable diseases all over the world. The emergence of resistance and its rapid spread is negating the impact of these drugs thus obstructing successful control of communicable diseases and hindering effective application of modern technologies in mitigating human misery. While appearance of resistance is a continuous phenomenon in microorganisms, its amplification and spread is through an array of practices conducted by human beings. Improper utilization of antimicrobial agents especially in high disease-burden settings and for nontherapeutic use as in the veterinary sector result in strong selection pressure that allows the resistant strain to grow and rapidly replace the susceptible isolates. Diseases due to resistant organisms take longer to cure, require expensive and at times toxic drugs for longer periods, often making the disease untreatable. The resistant organisms can also move across countries through travel and trade and are a threat to global health security. As per a study conducted in Thailand, hospital-acquired infections by multidrug-resistant bacteria cause around 30 000 deaths annually in Thailand and the annual cost due to antibiotic-resistant infections has been estimated to be US\$2.0 billion. In January 2013, the World Economic Forum warned that antimicrobial resistance (AMR) is one of the major global health security risks that the world needs to address and called attention to GDP losses from AMR ranging from 0.4% to 1.6%. An effective response to AMR is possible through treatment policies such as combination therapy, rational prescription, patient adherence, strong regulatory mechanism and educational activities, along with an efficient surveillance system that monitors the emergence and spread of resistance, as well as the utilization of antimicrobial agents.

Several resolutions have been adopted by the World Health Assembly to advocate for rational use of medicines, equitable access to quality drugs and strengthening infection control. In 2011 health ministers of the South-East Asia Region adopted the Jaipur Declaration on antimicrobial resistance, agreeing to institute a comprehensive approach to combating antimicrobial resistance.

Also, the Sixty-third session of the Regional Committee for South-East Asia adopted a resolution on prevention and containment of AMR and endorsed the Regional Strategy on AMR. AMR was discussed in the 134th WHO Executive Board meeting and a resolution on AMR was adopted by the Sixty-Seventh World Health Assembly, which calls upon WHO to lead the development of a global action plan on AMR. Accordingly, through a number of meetings and extensive consultations, WHO has developed a global action plan. These meetings involved organizations, civil society, Member States and WHO. The Plan has captured capacity roles and responsibilities of relevant stakeholders and partners and has shared ownership. The draft global action plan aligns completely with the SEA regional strategy on containment of antimicrobial resistance and the Jaipur Declaration on AMR (2011). The regional strategy aims to give particular attention to interventions involving the introduction of legislation and policies governing the use of antimicrobial agents, establishing laboratory-based networks for surveillance of resistance and ensuring the rational use of these drugs at all levels of healthcare settings. Member States are expected to develop their own national action plans based on the global plan and implement it within two years of the adoption of Global Action Plan by the Sixty-eighth World Health Assembly in 2015.

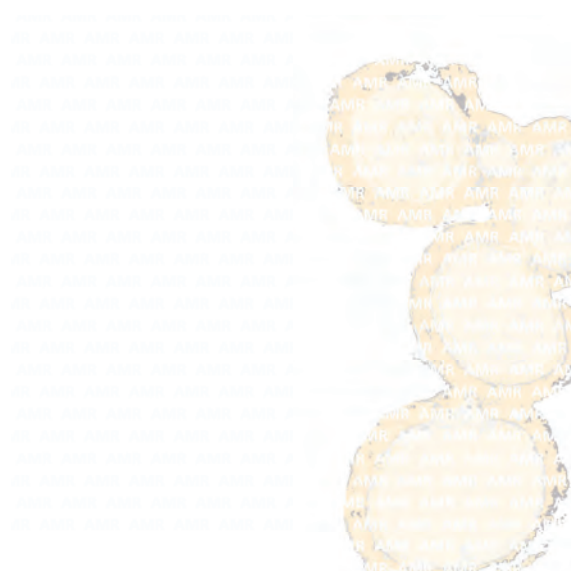
The WHO South-East Asia Regional Meeting on Antimicrobial Resistance commenced on 10 November at Jaipur to review the work done in the Region, collate progress made and suggest appropriate actions for preparation and implementation of time-bound national action plans. All 11 Member States of the Region deputed their officials for this meeting, which was facilitated by 11 experts from all over the world.

The agenda of the meeting and the list of participants can be seen at Annexes 1 and 2.

2

Objectives

- (1) To review status of development and implementation of national AMR action plans and global initiatives
- (2) To advocate for acceleration of national efforts to build capacities needed for implementation of the Jaipur Declaration on AMR and SEA Regional Strategy on AMR
- (3) To identify gaps and challenges hampering national efforts
- (4) To discuss and suggest the way forward.



3

Inaugural and plenary sessions

The meeting was opened by **Dr Poonam Khetrpal Singh**, Regional Director, WHO South-East Asia Region. In her opening address she highlighted the growing importance of antimicrobial resistance throughout the world but more so in developing countries with its devastating impact on human health, economy and national wellbeing. She gave an overview of the WHO initiatives on AMR and informed that “combating AMR” is one of her six flagship projects for concerted regional response.

The Keynote address was delivered by **Dr Jeremy Farrar** who described the implications of AMR not only in management of patients with infectious diseases but also for several other NCDs, cancers and the overall health system. Prof Farrar stressed that extensive use of antimicrobials in agriculture and veterinary practices need to be curbed. He also emphasized the need for strengthening basic microbiological and pharmacological services and revisiting the concepts of these sciences for improving the management of patients with infectious diseases. The importance of accessibility to clean water and sanitation was emphasized and reducing the disease burden by appropriate infection control practices was highlighted.

Dr Otto Car highlighted the work done by Sweden for containment of AMR. In the early 1990s increasing incidence (~2% to 8–15%) of penicillin-resistant pneumococci were reported in Southern Sweden. Sweden has successfully controlled AMR by strong political commitment, coordinated national policy and strong health system. In 1995 the Swedish strategic programme against AMR (STRAMA) was developed. The STRAMA programme involves public health agencies, the STRAMA advisory board, board of health and welfare, European Centre for Disease Prevention and Control (ECDC),

professional organizations, Swedish Veterinary institutes etc. Surveillance of antibiotic resistance is notifiable according to the Communicable Disease Act. Routine diagnostic microbiological laboratories are participating in the network using standard uniform surveillance methodology. EQAS and electronic data sharing are in place. Appropriate treatment guidelines, behaviour of prescribers, consumers, audit and follow-up of compliance is needed for sustained effect. In Sweden, use of antibiotics as a growth promoter in animals was banned in 1986 and it has been reduced to a great level for group treatment in animals. Various challenges are being faced by countries in the European Region in the implementation of the AMR action plan. Drug-resistant bacteria in the European Union cause approximately 25 thousand deaths, approx. 2.5 million extra hospital days, and approximately a cost of US\$ 1.5 billion.

Dr Martin Khor from South Centre, Geneva, discussed the needs and challenges of developing countries in combating AMR. Developing countries have special needs and challenges viz. lack of awareness, expertise, funds and personnel to tackle the AMR problem within the health sector and in other related sectors. AMR is perceived by some as a ticking time bomb, gradually building up, but not a very obvious crisis compared to other crises. It is important to review the work done in the Region, collate progress made and suggest appropriate actions for preparation and implementation of time-bound national action plan. Boosting the capacity of developing countries is the key action needed. Without political commitment, financing and action by stakeholders, the AMR crisis cannot be effectively addressed. It is critical for patients in developing countries to have affordable access to new drugs to treat resistant diseases. Promoting new business models that delink the price of the medicines from the cost of research and development (R&D) is important and can form the basis for innovation.

Dr Myint elaborated on the mandate of OIE with respect to AMR, the normative functions performed to establish standards as well as providing information and technical assistance to its 180 Member States on animal health. She also emphasized the need for stronger collaboration between the focal points in the veterinary sector and human health on AMR.

Dr Penn Charles gave a briefing on the Global report on AMR based on the national data on resistance for selected bacteria/antibacterial drug combinations that had revealed significant gaps in availability of data and standard of surveillance. To overcome these gaps, the World Health Assembly

adopted resolution WHA67.25 on AMR requesting WHO to prepare a draft AMR action plan. The draft AMR Plan has been prepared by WHO in extensive consultation with relevant stakeholders, which will be discussed at the Sixty-eighth World Health Assembly in 2015. The guiding principles of this Action Plan were elaborated.

Dr Rajesh Bhatia described the regional status of AMR and progress made by the Member States following the guidance from the regional strategy on AMR and the points enunciated in the Jaipur Declaration on AMR. His presentation also highlighted the global spread of resistance in the face of international travel and trade, and elaborated on the social and economic impacts of AMR. Data on the impact of AMR in community acquired infections, hospital associated infections and diseases for which vertical programmes are in operation were shared. He emphasized on the need for innovation in diagnostics, drugs and treatment modalities to combat AMR.

Dr Aparna Singh Shah briefly highlighted the important points of the plenary session. She reiterated that antibiotics have revolutionized treatment of communicable diseases and have contributed successfully to significant reduction of these diseases. Antibiotics are also an essential component of success of transplantation, chemotherapy for cancer and hip replacement surgery. She emphasized on the role of laboratories in detection of antimicrobial resistance, quality surveillance of AMR, and importance of forging laboratory network in the region to combat AMR.

The WHO global report on AMR surveillance 2014 produced in collaboration with Member States revealed very high rates of resistance in all WHO regions in common bacteria (for example *Escherichia coli*, *Klebsiella pneumoniae*, and *Staphylococcus aureus*) that cause common health care associated infections and community-acquired infections (urinary tract infections, wound infections and blood stream infections and pneumonia). Many gaps exist in information on pathogens of major public health importance. There are significant gaps in surveillance, and a lack of standards for methodology. In SEAR 16–68% of *E.coli* are resistant to Third-generation Cephalosporins (national data) and 20–95% (published data). *E.coli* resistance to fluoroquinolones is 32–64% (national data) and 65–86% (published data). In invasive isolates it is around 20%. Resistance of *Klebsiella* to Third-generation Cephalosporins is 33–80% (national data) and 5–56% (published data). *Klebsiella* resistance to Carbapenam is 0–8% (national data) and 0–39.4%

(published data). In invasive isolates it is 37–40%. 0–4.9% *Neisseria gonorrhoeae* were resistant to Third-generation cephalosporins as per GASP data. Methicillin-resistant *Staphylococcus aureus* is found to be 10–26% (national data) and 46% (published data). Fluroquinolones resistance in non-typhoidal *Salmonella* was 0.2–4%. 0–82% *Shigella* were resistant to fluroquinolones as per published data. 48% *Streptococcus pneumoniae* were resistant to penicillin as per reported national data.

Country presentations

Bangladesh

There is an increasing trend of resistance in Salmonella typhi, Vibrio cholera, and methicillin-resistant Staphylococcus aureus (MRSA).

There is a draft comprehensive plan and a designated focal point for AMR. A national multisectoral steering committee for AMR has been constituted and is headed by the Minister, Ministry of Health and Family Welfare (MoHFW). The national technical committee is headed by DG, DGHS, and the core working group is headed by the Director Disease Control, DGHS. The national programme for surveillance of AMR is not yet operational in the country and there is no national network on AMR surveillance. Some labs in the public and private sector are capable of doing lab surveillance of AMR. There is no legislation banning over-the-counter sale of selected antimicrobial agents. There are limited institutional guidelines for antibiotic use. There is a policy for rational use of drugs (prescribing and dispensing) in the national drugs programme (NDP) but not specifically on antimicrobials. Health education officers in districts do some activities in outpatient departments of hospitals for creating awareness amongst communities. Educational products/material have been developed and disseminated to educate communities. Lack of national AMR surveillance and inadequate lab capacity is leading to absence of relevant data for empirical treatment and thus results in irrational use of antibiotics. Lack of legislation for regulating prescription and sale of antimicrobial agents, difficulty in development and implementation of institutional and national antibiotic policy, inadequate multisectoral coordination, lack of community awareness on antimicrobial use, and inappropriate use of antibiotics in agriculture, veterinary and fisheries are major issues being faced by the country.

Bhutan

Availability of national data on AMR is limited and is only reported by the national referral hospital and two regional referral hospitals. Only three referral hospitals have microbiology culture facilities. Drug resistance in *Acinetobacter*, *E.coli*, *Pseudomonas*, *Salmonella*, *staphylococcus aureus* are increasingly being reported. A national comprehensive plan on AMR has been drafted and a national focal point on AMR has been designated. The Drug Technical Advisory Committee (DTAC) functions as a multisectoral steering committee. A national programme for surveillance of AMR has been initiated in the three regional referral hospitals and is slowly picking up since Jan 2014. The need is being felt to expand microbiology laboratory network to produce evidence-based data and strengthen national AMR surveillance. There is no nationally coordinated collective mechanism for regular data collection, analysis, and dissemination. Though it is done it is not very regular. Educational activities for prescribers have been initiated. Physicians were trained on writing rational prescriptions. There is a system of prescription audit at tertiary hospitals but it is not antibiotic-specific. As per a drug usage study, expenditure on antibiotics prescribed through form II is quite high. Approximately 30% of the drug budget is on antibiotics. Every third prescription coming to the pharmacy has an antibiotic. The Drug Regulatory Authority (DRA) of Bhutan through legislation regulates the production, distribution, prescription and sale of antimicrobial agents. There is legislation banning over-the-counter sale of selected antimicrobial agents. No antibiotics are sold without prescription. Hospitals have a policy for rational use of antimicrobials. There is a draft national policy for antibiotic use in humans. National guidelines on antibiotics were developed in 2007 and revised in 2012. Educational products are being distributed to communities, consumers, and prescribers. Laboratory capacity infection control practices and antimicrobial stewardships in hospitals need further strengthening.

Democratic People's Republic of Korea

A national focal point for AMR has been appointed (Director of the Medical Supply & Control Dept, MoPH) and the constitution of the national multisectoral steering committee for AMR is underway. There is no comprehensive plan on AMR.

The country has a central reference lab. Labs from central to provincial level have capacity to perform lab detection of AMR. Educational activities for health

staff are being conducted through a telemedicine system. Regular monitoring of the prescription of antimicrobials at tertiary-care hospitals by the MoPH and drug regulatory section of hospitals is in place. The rational use of antimicrobials in the near future will be included as an essential requirement of the medical service standardization of hospitals. A law of medical supplies management, Regulations on issuing prescriptions and the guideline for pharmacy regulate the production, distribution, sale and prescription of antimicrobial agents. The national treatment guidelines for some infectious diseases are available. Hospital infection prevention control committees are constituted at all levels of hospitals. IEC material has been developed and distributed. AMR, IPC, hygiene, and preparation of rational prescriptions have been included in the curriculum of medical students. Research projects are being supported to develop new antimicrobials in order to substitute antimicrobials of high resistance such as penicillin. There are challenges to further strengthen laboratory capacity and lab network to capture the magnitude and trend of resistance. Educational activities to improve prescription quality and rational use of medicine are also needed.

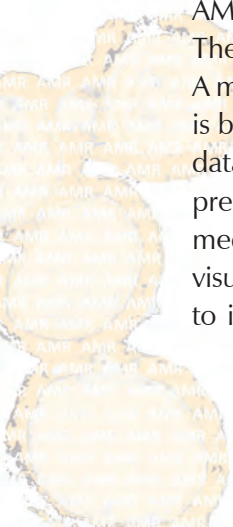
India

Increasing trends of resistance are being reported in common diseases of public health importance. Inappropriate use (overuse, underuse and misuse) in human health, veterinary health and the agriculture sector, poor IPC, inadequate surveillance for magnitude and trend of AMR, and usage of antibiotics, quality and access to drugs, lack of awareness among policymakers, practitioners, patients, pharmacists and the public in general about AMR, and lack of standard treatment guidelines for most diseases are some of the contributory factors. After the adoption of the Jaipur Declaration in 2011 the country has taken several steps to combat AMR. An integrated and comprehensive national plan/alliance on AMR has been formulated. A National task force was set up in August 2010 to review and develop a national antibiotic policy. The National Antibiotic Policy & infection control was formulated in 2011. As per the national policy, a National Programme on AMR was developed and approved for implementation during the 12th Five Year Plan. Activities have been initiated under the National Programme on Containment of Antimicrobial Resistance under the 12th Five Year Plan (2012–17). The National Centre for Disease Control, Delhi is the nodal institution for implementation of the national programme on containment of AMR. A national multisectoral committee has been constituted to steer national efforts against AMR. A national network on surveillance of AMR and

monitoring the use of antibiotics has been established. DCGI regulates the production, distribution, sale and prescription of antibiotics. The department of animal husbandry is developing its policy on use of antibiotics in animals, which is still in the process of finalization. NCDC, Delhi is in the process of finalizing the National Treatment Guidelines for infectious diseases. Most of the diagnostic laboratories are currently carrying out antimicrobial resistance testing but there is no proper system for quality check and national data collection. Under the national programme for containment of AMR, NCDC being the nodal reference laboratory has initiated setting up a network of 30 laboratories for AMR surveillance. This programme also has a mechanism for data collection and analyses to get the exact burden of AMR. Educational material is being developed for creating awareness amongst communities on AMR. There is a provision for prescription audit at tertiary care hospitals under DCGI. Most of the hospitals have their own guidelines on infection control, which needs revision /implementation. ICMR has undertaken operational research projects to ascertain the impact of AMR on public health and to improve rational use of antibiotics. CSIR has undertaken research projects to develop new antibiotics and to improve the existing agents.

Indonesia

The proportion of households storing antibiotics without prescriptions in provinces is approximately 86%. There is a national programme and national committee on Antimicrobial Resistance Control. The Strategic Plan of AMR Control in Indonesia 2015–2019 has been prepared to improve public health through AMR control. The Director-General of Health Care, MoH has been designated as the focal point on AMR. A multisectoral steering committee for AMR is being established. National AMR surveillance has not been established. There are 20 pilot projects in 20 hospitals contributing to AMR surveillance. A majority of laboratories detecting AMR use standard methodology. WHONET is being used by some laboratories for reporting and analysis, though national data on AMR surveillance is not available. Training for health workers including prescribers (physicians), pharmacists, nurses, and midwives for rational use of medicines including antibiotics is conducted regularly. IEC materials (audio visual, video, talk shows, banners, posters) have been developed and distributed to improve community awareness. Data collected from primary health care



centres show that use of antibiotics for URT infections and non-specified diarrhoea has decreased from 58% to 44%. A community-based integrated approach is being practiced to improve use of medicines by the community. Regulations for quality of medicines, therapeutic and non-therapeutic use are in place. Guidelines for antibiotic use are also available. Drug audits are in place to keep a record of use of antibiotics. Coordination among relevant key players, commitment of funds, need for enforcement and implementation of existing regulations, training of personnel, laboratory strengthening and forging of networks, and community awareness are some of the areas that need constant evaluation and support.

Maldives

Antibiotics are prescribed widely. Regular surveillance for AMR is not yet established; however, tertiary referral hospitals have some guidance for antibiotic prescription. Prescription analysis in 2014 compared with 2011 showed an increase in antibiotic prescription. Discussion is ongoing to develop a comprehensive plan on AMR. A national focal point for AMR has been designated and a national multisectoral steering committee for AMR is being finalized. Formulation of a national programme on AMR is in progress. The national network for surveillance of AMR is not functional. Majority of labs are competent to ascertain AMR using standard methodology. There is no coordinated mechanism for data compilation and analysis. Consumption data on antibiotics are available through prescription audits. Training is regularly organized on rational use of medicines. There is legislation to regulate the import, production, distribution, sale and prescription of antimicrobial agents. A national medicines policy and national Medication Practice Standards are in place. A permit is required for import and use of veterinary medicines. A national Infection Control Committee is being established and national guidelines are being developed. Even though antibiotic resistance is a problem, inadequate evidence is available on its burden and impact. There is no regular surveillance at the national level, coordination among the relevant stakeholders is lacking, and proper legal framework needs empowerment. Standard treatment guidelines in health care facilities are either not available or not followed. Not enough funds are available for a dedicated AMR workplan.

Myanmar

National data on AMR show a constant increase in bacteria of public health importance. To curb AMR an integrated and comprehensive national plan on antimicrobial resistance is being developed. A focal point for AMR (Director, Laboratory) has been designated. A national network on surveillance of AMR and monitoring of use of antibiotics has been established. There is legislation to regulate the production, distribution, sale and prescription of antibiotics. There is no national policy on use of antibiotics both for therapeutic and nontherapeutic purposes in animals. Standard treatment guidelines for infectious diseases are available. The national surveillance mechanism and laboratory facilities detecting resistance need strengthening. Though data are collected by various labs, sharing of data, collection, collation, analysis, and dissemination is limited. Infection prevention and control guidelines are available. While community awareness campaigns have been launched, educational activities for educating prescribers, users, and the community are needed.

Nepal

The AMR programme was started in Nepal in 1999. An increasing trend of resistance in bacteria of public health importance is being reported. The national Public Health Laboratory (NPHL) is the focal point for coordination of AMR activities. It works in coordination with 18 other governmental and public hospital/laboratories covering almost all regions of the country. Guidelines and standard operating procedures on surveillance of AMR among selected bacterial pathogens in Nepal is being followed by the labs in AMR network. AMR data are collected, collated, analyzed, and disseminated regularly. The national drug policy was developed in 1995 and was revised in 2001 and deals with rational use of antibiotics in human health, animal health, and agriculture.

A multisectoral steering committee for AMR is yet to be constituted. There is no regulation restricting nontherapeutic and therapeutic use in animals. There are no community awareness programmes in place. Availability of trained staff for AMR surveillance, laboratory supplies, EQAS, and sustained finance to continue surveillance are major concerns.

Sri Lanka

The Antimicrobial Resistance Surveillance Programme (ARSP) is coordinated by Sri Lankan clinical microbiologist (SLCM) and MoH. All the participating labs use standardized methodology for detecting bacteria of public health importance. Data show an increasing trend of resistance in both gram positive and gram negative organisms isolated from adult and paediatric samples. The country does not have a comprehensive plan on AMR. Deputy Director General of Laboratory Services is designated as the focal point on AMR. A national Alliance of Antimicrobial Resistance was formed in 2010 including members from different disciplines. A national network for surveillance of AMR through quality laboratory services is present. A majority of labs can ascertain AMR using standard methodology. There is a mechanism for data collection and analyses at the national level and data are being used for preparation of standard treatment guidelines. Symposiums such as educational activities on rational use of antibiotics have been organized. A number of personnel have been trained in prescription writing, IPC, and GPs. There is no prescription audit at tertiary care hospitals. Rational use of medicine is not a requirement of hospital accreditation schemes. There are no regulations directly related to the use of antibiotics but there are indirect controls. At the time of drug registration, registration is granted as schedule 11 B drug for all antimicrobials (i.e. only to be prescribed by a registered medical practitioner). Legislation banning over-the-counter sale of selected antimicrobial agents are under consideration. National antibiotic guidelines are in the pipeline and are to be released soon. Use of antimicrobials in animals for therapeutic purpose is restricted; however there is no restriction on nontherapeutic use of drugs. Major issues include prescribing by unqualified prescribers, over-the-counter sale, insufficient resources (infrastructure, trained personnel, consumables, and sustained funding), and inadequate community awareness in combating AMR.

Thailand

The national antimicrobial resistance surveillance centre, Thailand (NASRST) was established in 1997 involving 23 ministry of public health (MoPH) hospitals. Now it has 51 MoPH hospitals, private hospitals and university hospitals. It is monitoring the magnitude and trend of AMR, in bacteria of public health importance using standard technology and using a minimal required data format. Collected information is being disseminated regularly to relevant users and is

helpful in informing policy, detection of emergence and reemergence of AMR and efficacy of antimicrobials. It also helps in evidence-based management of patients and in infection prevention and control, development of treatment guidelines, and empirical treatment. Government commitment, allocation of funds, coordination committee, referral lab, and formation of network, timely collection of data, community awareness campaigns and quality overarching are all contributing to Thailand's successful mission on control of AMR.

Timor-Leste

Testing for antimicrobial resistance is available only in the national laboratory. A national focal point on AMR has been appointed. A national action plan on AMR has not been developed and a multisectoral steering committee for AMR is yet to be constituted. There is no national AMR surveillance system. Treatment guidelines for some communicable diseases are available. Legislation on distribution, sale, and prescription needs to be empowered. Prescription audits at tertiary care hospitals are in place. There are some educational activities being conducted on AMR. Recently the national hospital organized three seminars on antibiotic resistance and rational use of antibiotics. National guidelines for infection prevention and control are available.

Plenary sessions

There were also deliberations on research priorities in SEAR and existing basic and operational research programmes; need for AMR stewardship and infection control in controlling AMR in healthcare settings, sharing of experiences from networks (Asian network for surveillance of resistant pathogens; (ANSORP); role of policy, programme and regulations in control of AMR; critical role of national drug regulatory authority in rational use of antibiotics; implementation of regulations to make them effective; and role of professional bodies in ensuring rational use of medicine.

Dr Ranjit Roy Chaudhury's presentation on research priorities in SEAR and existing basic and operational research programmes highlighted the need to initiate research programmes to improve surveillance, infection prevention and control, rational use of medicine, preventive measures to reduce burden

of disease, and new therapeutic strategies. He emphasized the need of clinical trials with existing antibiotics (comparative trials of different drugs, trials with lower doses vs existing doses, trials with newer combinations, trials for shorter duration), community-based studies on AMR, rational use of drugs, prescription patterns and basic research to understand mechanism of resistance. He also drew attention to the current scenario of almost no investment in development of new drugs and the need for alternative incentive models delinking product price from the cost of R&D.

Dr Doo-Ryon Chung spoke about surveillance of AMR done by the Asian Network of Surveillance of Resistant Pathogens (ANSORP), which is one of the AMR control initiatives of Asia Pacific Foundation of Infectious Diseases (APFID). Network data have shown an increasing trend of resistance in bacteria of public health importance causing hospital-acquired and community-acquired resistance. Some of the examples include macrolides resistance in *S.pneumoniae*, methicillin resistance in *Staphylococcus aureus*, and Carbapenem resistance to *Acinitobacter*, which are on a continuous rise as per network data. He also explained the six major action plans (surveillance, rational use, infection control, vaccination, policy and regulation) of the AMR project of Asia Pacific Economic Corporation (APEC) strategy to control AMR and Campaign 4, which is a new international awareness AMR campaign in Asia.

Dr Visanu (antimicrobial resistance focal point, Thailand) in his presentation on country status mentioned that the AMR action plan is in accordance with the SEA regional strategy on prevention and containment of AMR. The plan receives generous support from both national and international agencies. Thailand's AMR containment programme is using measurable indicators to achieve the targets set in the regional strategy on AMR. He reviewed several methodologies for estimating AMR burden in terms of health and economic burden. The methodology of estimation of AMR burden in Thailand using the national data in 2010 was presented. The AMR burden in Thailand revealed that the country had nearly 90 000 AMR infections, more than 30 000 deaths, 3.2 million days of additional length of hospital stay due to AMR infections, and more than US\$ 1 billion loss (0.6% of GDP) each year. The logo and motto of Thailand AMR containment programme is STOP AMR i.e. Stop Producing AMR by promoting responsible use of antibiotics; Stop acquiring AMR and Stop transmitting AMR by promoting good sanitation and hygiene as

well as compliance to infection control measures in health care settings. Several success stories and campaigns on AMR containment in health care facilities and in the community according to the aforementioned motto were illustrated.

Dr Abul Faiz deliberated on the importance of national policy programmes and regulations in order to control AMR. Many directives and commitments have been made to address different facets of antimicrobial resistance but implementation and empowerment are required to control unprecedented development and spread of AMR.



4

Group work

In group work session participants discussed reasons for lack of national representative data and information on trends on AMR and poor understanding of national burdens, reasons for the rampant and irrational use of antibiotics, behavioural and economic factors contributing to the problem and role of community mobilization in preventing emergence and spread of infection. Groups also discussed possible solutions to overcome gaps and challenges. Outcome of the group work has been included in recommendations of the meeting.

Antimicrobial Resistance (AMR) is a global health threat. It occurs when microorganisms develop resistance to the drugs used to treat them. This means that the drugs no longer work, and the infections they were meant to treat can spread and become harder to control. AMR is caused by the overuse and misuse of antibiotics, which can kill the bacteria that the antibiotics are meant to fight. This allows the bacteria to survive and pass on their resistance to other bacteria. AMR is a major public health problem because it can lead to the death of millions of people each year. It is a global health threat because it affects people everywhere. AMR is a complex problem that requires a coordinated response from governments, healthcare providers, and the public. We need to take action now to prevent AMR from becoming a worse problem than it is today.



5

Conclusions

Antimicrobial resistance is increasingly being recognized as a major public health issue by all Member States in the Region. The Jaipur Declaration in 2011 catalyzed commitment of Health Ministers of all 11 Member States for priority prevention and containment of AMR. The Regional Strategy (2010) provides a framework to implement actions enunciated in the Jaipur Declaration. Identification of AMR as one of the flagship priority areas of the WHO Regional Director for South-East Asia has given further impetus to combat AMR in this Region. Eminent global experts on AMR, leading partners and participants from all 11 Member States representing various relevant sectors discussed global regional and national status of AMR, shared gaps, challenges, success stories and also formulated the next steps to take this initiative forward through recommendations to Member States and WHO.



Recommendations

Recommendations to Member States

- ⦿ Develop time-bound action plan in accordance with the Jaipur Declaration.
- ⦿ Estimate disease burden and trend of antibacterial resistance through national network of quality laboratory services.
- ⦿ Undertake operational research in AMR to find out practical solutions to local challenges/issues.
- ⦿ Involve professional bodies and civil society and improve awareness in prescribers, dispensers, and consumers.
- ⦿ Strengthen national regulations to ensure quality of drugs, preparation of standard treatment guidelines, and ensure proper distribution sale, and utilization of antibiotics.
- ⦿ Develop mechanisms to test and assure quality of drugs.
- ⦿ Consider banning or restricting nontherapeutic use of antibiotics in veterinary practices.
- ⦿ Strategically use mass media, social media, community leaders, NGOs, CHWs and practitioners of alternative systems of medicine to educate communities on compliance with prescribed regimen and avoiding self-medication.

Recommendations to WHO

- ◉ Continue advocacy at the highest level with the focus on individual countries (including national focal point) to bring AMR higher on the national health agenda.
- ◉ Provide standards for and assistance in capacity building on various elements of AMR in consonance with the Regional Strategy, gaps identified and proposed Global Action Plan.
- ◉ Establish a minimum set of data for national surveillance of AMR and provide technical assistance to initiate the activity.
- ◉ Support/conduct national meetings to bring together various stakeholders to develop/review/accelerate national action plans.
- ◉ Develop and disseminate strategies and tools for community awareness and education.
- ◉ Facilitate possible incorporation of recommendations of this meeting in the proposed Global Action Plan.

The meeting concluded with an open session in which participants asked several questions from the experts in moving forward their respective national plans. All the questions and technical queries raised by the participants were addressed.



Annex 1

Agenda

- ◉ Inauguration and introduction
- ◉ Overview of global and regional status of AMR
- ◉ Member States' response to AMR, country status reports, best practice success stories, challenges, gaps in capacity to combat antimicrobial resistance (AMR), implementation of regional strategy and Jaipur declaration
- ◉ National multisectoral governance approach to combat AMR, programme implementation, research needs
- ◉ Understanding national burden of AMR, possible mechanism for establishment of national surveillance for monitoring of drug resistance, regional needs
- ◉ Regulatory aspects of AMR: role of regulatory authorities and status of implementation of regulations. Role of professional bodies in rational use of antibiotics
- ◉ Community mobilization and behaviour change to combat AMR
- ◉ Conclusions and formulation of recommendations
- ◉ Closing session



Annex 2

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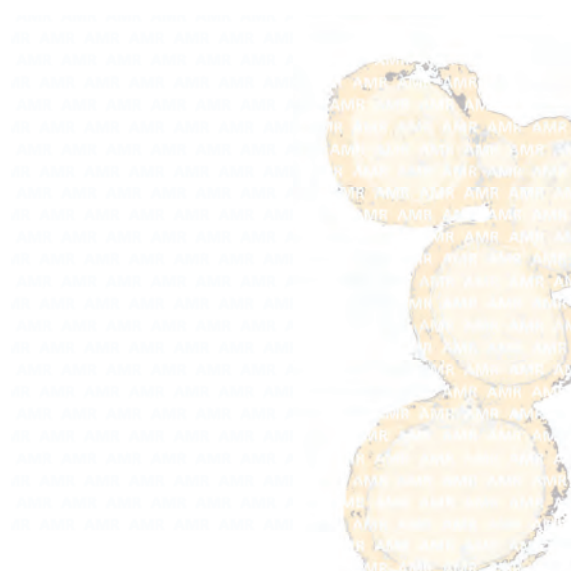
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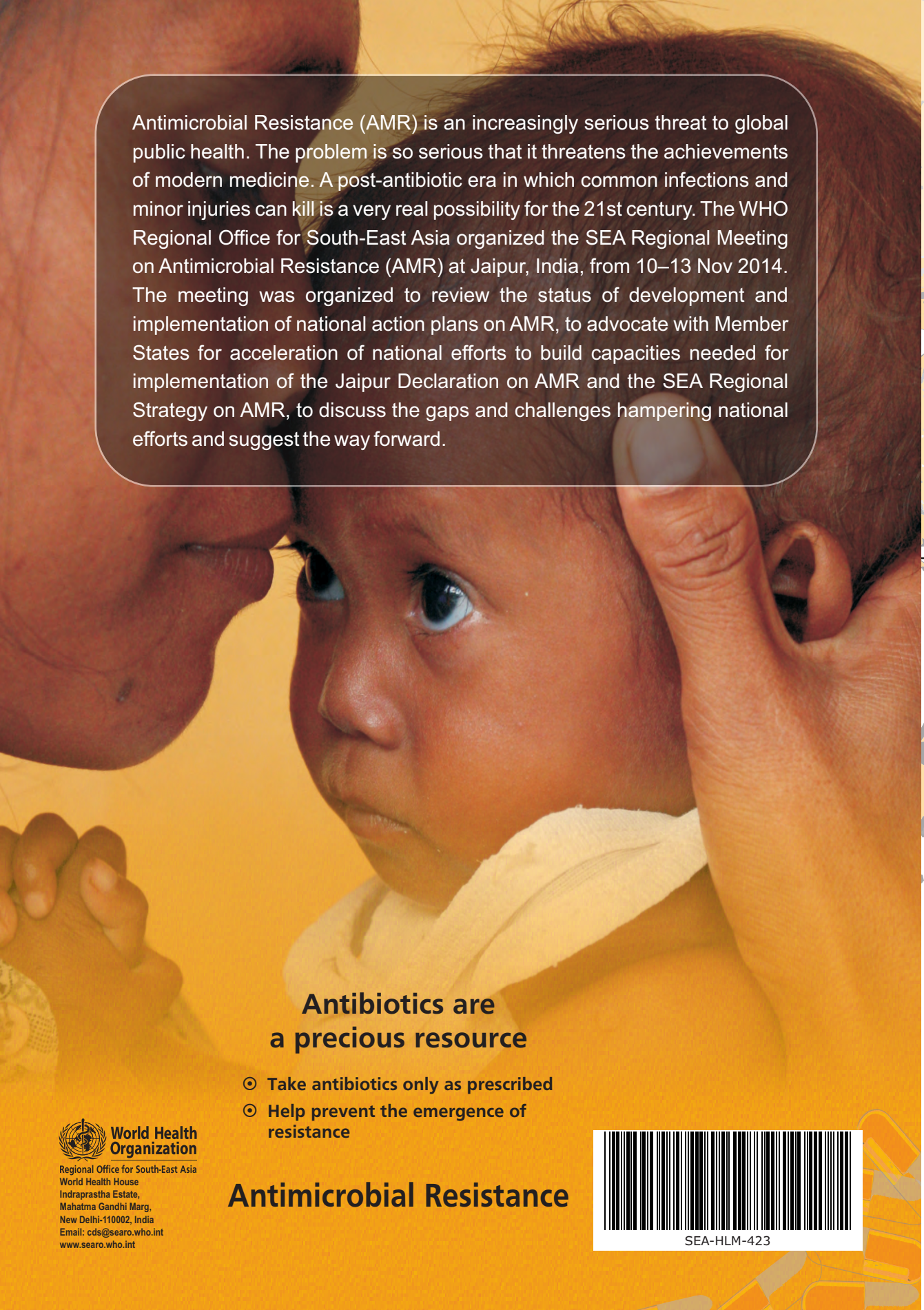
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Antimicrobial Resistance (AMR) is an increasingly serious threat to global public health. The problem is so serious that it threatens the achievements of modern medicine. A post-antibiotic era in which common infections and minor injuries can kill is a very real possibility for the 21st century. The WHO Regional Office for South-East Asia organized the SEA Regional Meeting on Antimicrobial Resistance (AMR) at Jaipur, India, from 10–13 Nov 2014. The meeting was organized to review the status of development and implementation of national action plans on AMR, to advocate with Member States for acceleration of national efforts to build capacities needed for implementation of the Jaipur Declaration on AMR and the SEA Regional Strategy on AMR, to discuss the gaps and challenges hampering national efforts and suggest the way forward.

Antibiotics are a precious resource

- ⊙ Take antibiotics only as prescribed
- ⊙ Help prevent the emergence of resistance



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Antimicrobial Resistance



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