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ReAct

Action on Antibiotic Resistance



Moving Beyond Antimicrobial
Resistance (AMR) National
Action Plans Development to
Implementation

**Action on Antibiotic
Resistance (ReAct)
Africa Annual
Conference 2017**

CONFERENCE REPORT
SEPTEMBER 2017

The Action on Antibiotic Resistance (ReAct) Africa Annual Conference brought together 60 Antimicrobial Resistance (AMR) Champions from 14 African countries, India and Sweden, to Nairobi, Kenya to share experiences and updates on the progress African countries have made in developing and implementing of AMR National Action Plans. The theme for the conference was ‘Moving beyond the development of National Action Plans on Antimicrobial Resistance to implementation’.

Conference participants came from the various government Ministries; Ministries of Health, Animal, Agriculture and Livestock, Civil Society Organizations (CSOs), non-governmental organizations (NGOs), academia and Faith-based Organizations (FBOs). African countries represented included Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, South Africa, Uganda, Zambia, Cameroon, Liberia, Rwanda, Zimbabwe. The African countries presented their progress updates on the NAPs development and implementation.

CONFERENCE OBJECTIVES

1. Provide an opportunity for engagement and sharing updates on the progress of NAP Development in African countries and how countries are approaching implementation (costing of the NAPs, prioritization and implementation)
2. Discuss challenges experienced, lessons learned and how the One Health Approach will be actualized through the interventions
3. Explore collaborations, involvement and roles of Civil Society Organizations, NGOs and Faith-Based Organizations among others in moving the global AMR agenda forward
4. Discuss effective approaches to raising awareness, AMR Stewardship Programs at country level that will leads to behavioral changes that are sustainable from previous campaign
5. Consider options for future action at the national level, regional and explore opportunities for co-operation internationally, including taking AMR forward on the global agenda.

Video Message – Otto Cars ReAct Founder & Senior Adviser

In the last 2-3 years, there has been impressive progress made on AMR awareness globally as demonstrated by: the global AMR National Action Plan from the WHO where member countries have now begun to develop AMR National Action Plans and the formation of the UN Interagency Coordination Group that places AMR at the highest level of political consideration. These developments should aid countries in the development of NAPs on AMR and then also to transition from AMR awareness-raising programs to implementation of this plan. The implementation stage of NAPs on AMR require the involvement of all critical stakeholders i.e. governments, professional organizations, CSO, UN-agencies etc. to get involved

The ReAct Africa conference is not only instrumental in paving the way for collaboration, knowledge sharing and building strong interactions in the region but also necessary to define the bottlenecks and to address funding needs for capacity building. However, unless AMR is considered a truly global problem and the rich countries refrain from supporting LMICs countries in coping with the threat of AMR, the adverse global effects of AMR will not be combated.

Solutions to controlling global AMR lie in:

- Strengthening all the components in health and agriculture systems relevant to AMR because preservation of antibiotics should be considered as preserving an important global resource.
- Framing AMR needs within the context of SDGs as AMR threatens several SDGs goals. In this way, countries can mainstream the NAP on AMR into that country's SDG development agenda.

While Africa disproportionately experiences the adverse consequences of AMR than other continents, the efforts in fighting the threat of AMR by individual countries are making a difference globally.

KEY NOTE ADDRESS

Updates on the Global Picture - Marc Sprenger, Director AMR Secretariat, WHO

AMR is the greatest threat to modern medicines. Though being a natural phenomenon, what is concerning is the rate at which it is occurring and the lack of new drugs in the antibiotic pipeline. The main drivers of AMR are the human and animal use. Some of the implications of AMR, is its threat on the achievement of several SDGs. The overview of AMR in Africa in a recent survey, showed 3 important findings,

1. More than a than a third of the countries on the continent did not have recent AMR data published in the public domain and only a few of those were surveillance data.
2. A high level of drug resistance exists to commonly prescribed antibiotics in the African continent— here we can see the levels of resistance to *E. coli* and *S. pneumoniae* to frequently prescribed antibiotics in all areas where there was data.
3. The standardization and quality of the microbiological identification and susceptibility testing methods needs to be improved to allow national and international organizations to monitor the extent of the AMR problem

WHO working with partners OIE and FAO (tripartite collaboration) have been promoting the One Health approach in combating AMR and supporting member countries develop NAPs. 19 countries have NAPs in Africa, 6 countries have an operational fund with monitoring arrangements while 2 countries have funding and have started the implementation process. The tripartite collaboration has also included training materials for NAPs, linking surveillance systems – GLASS (human) and ATLASS (livestock), survey for monitoring progress and monitoring framework. Further support is targeted at each of the 5 strategic areas of the GAP.

Countries should focus on implementing their NAPs to make a difference, balance restriction of inappropriate use with scaling up access, addressing AMR as a societal response which cannot be done by government alone and building up health systems to address AMR.

UN Inter Agency Coordinating Group (IACG) – Martha Gyansa-Lutterodt, Member UAICG

The UN General Assembly Resolution A/RES/71/3, Member States requested ‘the Secretary General to establish, in consultation with WHO, FAO and OIE, an ad hoc interagency coordination group, co-chaired by the Executive Office of the Secretary General and WHO, drawing necessary, on expertise from relevant stakeholders to provide practical guidance for approaches needed to ensure effective global action to address AMR’. The framework of the IACG, timelines and the work plan include the following,

- Support implementation of the GAP and link it to SDGs
- Mapping of AMR activities
- Evaluation, goal setting and planning
- Developing global mechanisms
- Reporting
- Provide webcast briefings to member states and publish an online report after each IACG meeting
- Report to the UN Secretary General during the 73rd session of the General assembly (submit an interim report with preliminary recommendations in September 2018)
- Final report in July 2019

African countries should contribute towards the success of the political declaration through the following

- Working with the WHO African Region on AMR
- Working across sectors, animal, human and environment
- Political commitment
- Engaging the IACG with submissions
- Engaging Civil Society Organizations in NAP implementation

It is very important that submissions are made to the IACG if we have to make a difference and sustain the momentum towards AMR goals.

COUNTRY NAP UPDATES

Ethiopia – Haileyesus Wossen, Ministry of Health

Ethiopia conducted its AMR Situational Analysis in 2008/9 and developed the AMR Prevention and Containment Strategies in 2011. This was recently updated in 2015 with a 5- year plan. The document is called

the 'Strategy for the Prevention and Containment of AMR for Ethiopia'. A Multi-sectoral National One Health Advisory Committee for AMR Prevention and Containment has been established to coordinate and steer AMR efforts. A national IPC program has been implemented, complimented with stewardship efforts and awareness raising activities some surveillance activities of both pathogens and consumption is taking place.

Despite the progress made, the following are the challenges: Financing of activities is a major challenge as they have not secured a national budget pool, they intend to mobilize funds from the private sector through public-private partnerships (PPIs) while requesting some partners to incorporate some activities in their current running programs. Human resource capacity is another challenge, competing priorities at the national level, inadequate national surveillance systems and the influx of poor and sub-standard medicines.

Zambia – Otridah Kapona, AMR National Focal Point / Coordinator, Zambia National Public Health Institute

Zambia has a 10- year NAP approved in 2017.

Some AMR results show high levels of resistance to 3rd generation cephalosporins by pathogens causing blood stream infections as high as 60%; Gentamycin and Ciprofloxacin up to 70%. Extended Spectrum Beta-lactamase (ESBL) producing Klebsiella pneumonia to penicillins, 1st, 2nd and 3rd generation cephalosporins is reported and MRSA which is practically resistant to all antibiotics.

While noting the following strengths, strong political will, adoption of the One Health approach, a dedicated multisectoral committee and good relationships with partners WHO, CDC, FAO and ReAct, the following challenges still remain: lack of dedicated staff to spearhead AMR activities across the sectors, limited access to funding to implement priority areas of the NAP and inadequate enforcement of current regulations around the use of antimicrobials.

Malawi – Watipaso Kasambara, AMR Focal Person, Ministry of Health

Malawi has developed its NAP but is waiting for government approval to implement. AMR has been prioritized in Malawi as a major issue, showing very strong government commitment and support. AMR has been incorporated into the HSSP II and the Malawi National Research Agenda. Coordination of AMR activities will be done by the Multi-sectoral AMR Coordinating Unit which will oversee the implementation of NAP. The cost of implementation is estimated to be USD 6.7 million far exceeding the MOH funding of USD 24,000 for the 2017/2018 fiscal year. The major challenge thus for NAP implementation will be financial resources.

Ghana – Kwame Buabeng, Deputy Chair National Policy Platform on AMR, Department of Pharmacy Practice KNUST

Ghana's AMR NAP provides the road map and the requisite strategies to contain the menace of AMR. The NAP formulated on the One Health Concept, and in line with the GAP, has been validated by all stakeholders and sector ministries that include the Ministries of Health, Food and Agriculture, Environment, Science and Technology, as well as Fisheries. The following steps however are remaining,

- Launching of the NAP and Comprehensive AMR policy
- Enactment of appropriate laws and instruments to support the implementation of NAP & the AMR Policy
- Actual implementation with monitoring and evaluation including new evidence to guide policy documents Active surveillance on AMR through the Fleming Fund collaboration, AM consumption and product quality.

Ghana has been active in getting surveillance data, awareness raising and stewardship programs the last few years.

Kenya – Jared Nyakiba, AMR Focal Point, Ministry of Health

Following the endorsement of the GAP at the 68th World Health Assembly in 2015, Kenya embarked on the development of its AMR policy & NAP. The policy provides a framework for NAP implementation. A multi-stakeholder National Antimicrobial Stewardship Advisory Committee (NASAC) was formed that spearheaded this development through a TWG. A Policy and NAP were then approved and signed by the Cabinet Secretaries for MOH & MALF. Implementation has started with the following on going activities

- Piloting of the Point Prevalence Survey of antimicrobial use.

- Development of the AMC system
- Costing of the AMR NAP
- Finalization of the M&E framework
- Developing the Antimicrobial Stewardship Guidelines
- Launching the AMR coordinating mechanism; NASIC

The following however are the challenges encountered with implementation

- Limited resources: Finances, HR, IT etc.
- Integration & coordination of the multi-sectoral & multi-stakeholder responsibilities and efforts.
- Inadequate infrastructure for public health surveillance
- Change of attitude & behaviour by health care professionals, patients, the public e.g. farmer, policymakers, politicians etc.
- Sustaining the one-health approach moving forward.
- Sustainability of the policies outcomes
- Devolved government and decentralized government challenges

Mozambique- Florencia Mageso, GARP

AMR activities have been dinamized by GARP, a multi-sectoral group of more than 15 experts with interest in ABR and AMR, since 2012. The NAP development process began in early 2016 and was finalized in September 2016. Some of the challenges faced include,

- Delays in obtaining approval and endorsement for the NAP from relevant Ministries
- The need to constitute a One Health Committee to ensure the NAP is implemented
- Identification of a focal point for the implementation in each Ministry, as the GARP working cannot be responsible for implementation.
- The major strategic pillars of the NAP are Prevention, Access and Use.

During the NAP development, these are some lessons learned

- In order to have more participation in the NAP development, the first draft should have been in Portuguese
- It would have been desirable that the process of NAP development was centralized and conducted by the Ministry of Health and not by a CSO, GARP. GARP could have supported the process,
- The implementation of NAP doesn't depend on the GARP working group, it's a national level activity

Zimbabwe –Sekasai Zinyowera, AMR Focal Point, Ministry of Health and Child Care

Following a One Health Approach Zimbabwe conducted its Situational Analysis of AMR in 2016 and embarked on the process of developing the NAP, which is ready and will be launched on October 28th 2017. The 3 Ministers of the critical ministries will be signing a pledge of commitment to the Zimbabwe NAP to symbolize and emphasize the joint commitment in addressing AMR.

Nigeria – Oladipo Aboderin, NCDC/AMR TWG, Professor

Nigeria was slow in taking off to develop its NAP. Despite early work in academia and some CSOs, there was no coordination and national effort until November 2016 following a meeting in South Africa organized by DNDi and GARDP. Some participants following recommendations from ReAct attended the meeting and that created a spark. Following this meeting the first working group met in January 2017 and conducted the Situational analysis supported by CDDEP and ReAct. This was followed by the development of the NAP. During this same period, Nigeria enrolled in the Global Antimicrobial Resistance Surveillance System (GLASS), but are yet to submit any surveillance data. We are now harmonizing new projects with the NAP with support from the German government for IPC protocols. The following are the challenges for implementation,

- Costing of activities and prioritization
- Governance issues and involvement of colleagues across sectors
- Actualizing surveillance systems: implementing to scale
- Funding - Nigeria is the most populous nation in Africa.

IMPLEMENTING NAPS – FRAMEWORKS, SUCCESSES AND CHALLENGES

Implementation of the National Action Plan in India: Challenges on the ground & the way forward - Sujith Chandy Head ReAct Asia Pacific & Professor Clinical Pharmacology Christian Medical College, Vellore, India

India has had a long journey to developing its NAP. Early efforts at addressing AMR include a Task Force to formulate a strategy for AMR containment that was set up in 2010, in 2011 a National Policy for Containment and in the same year there was a Jaipur Declaration on AMR by Health Ministers of South-East Asia region. In 2012 a National Program / Project was set up on a pilot basis. This led to many activities that included awareness raising, stewardship and IPC programs and promotion of alternative systems to medicines through the Ayush Programme.

Following the GAP declaration AMR activities continued. In April 2017 it had the Delhi Declaration on AMR that drew a lot of attention, developed its AMR strategy and this August held a National Consultation on operationalizing its action plan for AMR containment.

The Plan addresses all the 5 strategic areas of the GAP in detail adding Leadership.

Some needs and challenges for India to address include:

- R&D Innovation – India is the Pharmacy of the world that could do more pragmatic trials on antibiotic duration etc
- Leadership – Need for inter-sectoral & ministry coordination
- Finance – Dedicated and sustainable finance mechanisms
- Monitoring & Evaluation – Development , acceptance among sectors and compliance
- State Cooperation – Political will, consensus and funding

Integrating and costing NAPs – Reflections from South Africa – Kim Faure, Technical Advisor to AMR Program South Africa

Costing of the NAP is challenging, an intensive exercise and difficulty, however very important. Budgeting the entire NAP is important for getting political buy in from the Ministries, budgeting internally and approval of the NAP but also for donor support requests. In doing this exercise, certain considerations need to be made in the process,

- Defining all the activities now that need to happen.
- Considering activities that need to happen in 5- years time
- If you need to understand the situation first (lab capacity) how do you cost the part after that when you don't know the findings?
- How do you cost rolling out a program when its never been done before?

South Africa cost the entire NAP which resulted in a spreadsheet of 389 lines of costs at USD 3,2 million. A staggering figure that would not attract funding internally and externally. Costing out priorities only for the first 2 years, gave 80 budget lines at USD 500k estimate. 'We realized that no one would fund this huge budget and moved towards an integration of costs into the existing budgets model'. Using this model for example we integrated Governance structures – meetings and secretariat, TWG meetings – surveillance, one Health, education and WAAW general awareness (free), media release into the Ministry of Health – pharmaceutical services.

School health awareness and hand hygiene, IPC strengthening as part of Quality improvement, Extended Programme on Immunization (EPI) and Mother & child health (MCH) and Hospitals and primary health care directorates MOH in the MOH – Environmental services/ hand hygiene, Quality and IPC, EPI, MCH.

Prioritization of activities for AMR for 1-2 years at a time will not be overwhelming to start with. Plan the activities into the budget cycle of the MOH/MOA/MOE. It is also important to map developmental partners those available to help in their areas of interest and be persistent and keep asking.

Mainstreaming AMR into Countries SDG Implementation – Dusan Jasovsky, ReAct Europe

AMR has a great effect on achieving several SDGs by 2030. Countries can act in the following ways, build AMR activities into existing programs and look for specific AMR results. In other words mainstreaming AMR into SDGs initiatives. There is need to get funders understand the dimensions of AMR undermining the health systems - and vice versa how building the AMR components band seeing AMR as a system failure can become

a lever for health systems and beyond. Monitoring of AMR containment within the SDG global indicators framework is key to assure lasting political will.

Aiming to comprehensively cover perspectives of AMR response and its reciprocal interlinkages and assuring greater buy-in from actors previously not involved in AMR work through existing frameworks and initiatives beyond the GAP/AMR will lead to success in achieving SDGs and mainstreaming AMR into SDGs.

RAISING AWARENESS OF AMR TOWARDS UNDERSTANDING THE PROBLEM OF AMR THAT LEADS NOT ONLY TO AWARENESS RAISING BUT BEHAVIORAL CHANGES

Media Engagement in Raising Awareness on AMR – Collins Jaguga, ReAct Africa, EPN

Media are key and strategically positioned for raising awareness on AMR if we are to accomplish the first strategic area in the AMR GAP. ReAct Africa and EPN conducted training for 25 media experts in Nairobi Kenya to interest them in AMR and raise awareness in them. At the end of the training the media experts developed action plans they would implement. The approach was that if media experts understand AMR and its effects, they would play a major role in raising public awareness through media action that would lead to behavioral changes. Some of the results shared included different tweets on AMR, face book posts, a video and newspaper articles.

Lessons Learned – In order to draw interest in AMR for the media, health, veterinary and agricultural professionals should set the agenda for public campaigns on AMR and work with media experts to package and communicate messages in effective ways.

Addressing Anti-Microbial Resistance: FBOs in perspective - Peter Yeboah Churches Health Association of Ghana, Executive Director & Chairman Africa Christian Associations Platform (ACHAP)

Faith-based Organizations (FBOs) play a major role in the provision of health care in Africa, through their health facilities and beyond. Most are members of ACHAP. Some statistics show a contribution of 20 to 60% of health care in most countries concentrated in the hard to reach areas is provided by FBOs. Some examples of the impact of FBOs include the Churches Health Association of Ghana (CHAG) pioneering the National Health Insurance Scheme (NHIS) in Ghana as a financing option for healthcare services.

FBOs have been involved in combatting AMR. These efforts include EPN's response events that concluded with a Call to Action in 2009 and 2016 and current projects promoting AMS and formation of Drug and Therapeutic Committee in Church Health Institutions in Ghana, Cameroon, DRC and Uganda. Each year they support WAAW in several countries.

The baseline studies on the current IPC practices and AMS in Ghana showed some common gaps observed in many countries:

- National Standard Treatment guidelines are not being used routinely.
- Big gaps exist between requirements and numbers available at vantage points.
- Hand hygiene practices are not adhered to properly. Approximately 1 in 5 health workers (all categories) adhere to hand hygiene practices

The FBOs and ACHAP provide strategic vantage point in addressing AMR and need to be involved in addressing AMR. Additionally they provide the following:

- Prominence in Fragile Nations
- Strategic partnerships with Governments
- Noted for innovation and local solutions
- Health system buffers & resilience in emergencies:
 - *mobilization of volunteers, logistics, human capital*
 - ✓ Ebola crises: CHAs in Ebola in Sierra Leone, Liberia & Congo
 - ✓ Pneumococcal meningitis in Ghana-CHAG

Lessons from Ebola public campaigns in Liberia – Patricia Kamara, Churches Health Association of Liberia

Liberia is one of the triad countries that had to deal with the Ebola outbreak besides Sierra Leone and Guinea. It has a population of 4.2 million. Due to the 14- year civil war, it has weak health systems as was evidenced during the Ebola outbreak. The following was the impact of Ebola:

- *Health workers* - As of May 6, 2015 there were 4,716 deaths. 370 health workers were infected, 198 survived EVD infection and 178 died including doctors, nurses, midwives, lab-technicians, pharmaceutical staff, cleaners, ambulance drivers, clerks as a result of the outbreak. Health Service Delivery was affected
- *Health Service Delivery* – Health facilities closed partially, short and long term. Most government hospitals were closed except for Faith-Based facilities which remained open except for 2 facilities.
- *Medicines and medical supplies* – shortages or lack of essential medicines, PPEs and other medical supplies were experienced.
- *Distrust in the health systems* which led to low census at health facilities and is still a problem in some health facilities currently
- *Cultural change* that promoted handwashing and a move away from shaking hands to prevent infection transfer

The Christian Health Association of Liberia (CHAL) an FBO, played a major role during the outbreak through provision of medicines and supplies, capacity building and promoting community engagement and participation.

Lessons learned from Campaigns on infection prevention and control

- Use of various means to reach the community is essential and the use of local languages that most of the population can understand. Posters, megaphones, mobile public address systems in both English and vernacular languages were used.
- Campaigns are expensive and time consuming but effective in health promotion and disease prevention
- Campaigns have to influence the information environment (messages must be simple, straight forward and culturally sensitive)
- A supportive environment is important for a successful campaign
- Use of champions in some campaigns have positive impact
- Messages need to be simple and straight forward

Sustaining IPC practices need continuous reminders, IPC protocols, audits and continuous involvement of general health volunteers in dissemination of health information. **Challenges** include lack of funds for FBOs and sustaining interest to continue IPC practices. Behavioral changes are very hard to sustain.

APPROACHES OF SURVEILLANCE IN NAPS: LESSONS FROM CURRENT SURVEILLANCE PROGRAMS EFFORTS

Antimicrobial Resistance Pandemic and Need for Integrated Surveillance at Devolved Administrative Units – Sam Kariuki, Chief Research Officer and Chair, GARP-Kenya

Kenya like any other African country has been seeing resistance pathogens and some of this is pandemic. The knowledge and information is not shared or known which is one reason we need integrated surveillance across sectors. Invasive salmonellosis for example, are a major cause of mortality and morbidity in Africa with invasive nontyphoid Salmonella (iNTS) causing severe bacteraemic illnesses among adults with human immunodeficiency virus (HIV) and especially among children under 5 years of age coinfecting with HIV or malaria or who are compromised by sickle cell diseases or severe malnutrition. Multi Drug Resistance (MDR) *Salmonella* H58 is now well established in the region. Antibiotic susceptibility patterns for *E. coli* isolated from poultry in small scale farmers in Thika showed 4% resistance to ceftazidime, co-amoxiclav 7% and ciprofloxacin 4%.

AMU in Veterinary Practice – KAP survey conducted in Marsabit in Northern region of Kenya among 10 camel farmers had three quarters acknowledge self-treatment of their animals upon sighting any illness and without reference to a veterinarian. Most commonly purchased and used antimicrobial was oxytetracycline followed by penicillin-streptomycin combination.

In Dairy Farming most of the antibiotics commonly used by these dairy farmers were oxytetracycline for nonspecific diagnosis, penicillin-streptomycin and gentamycin.

Improving Surveillance In order to improve surveillance the following can be done at country level

- Surveillance networks at different levels of healthcare system coordinated through the Human and Vet National Microbiology Laboratory Services,
- Unified protocols and SOPs, at least up to County level. Later on it may be expanded up to Peripheral Facility level also to obtain community based data on AMR
- Identification of microbiology laboratories based in medical institutions or medical colleges for AST testing to generate data on the identified bacterial pathogens should also be prioritized.

Surveillance for AMU and AMR is possible at all levels of One-Health paradigm in local and National settings, however some innovation will be required. AMR in any region is of national and global threat. In order to improve surveillance we need a policy implementation framework that includes an M&E and Communication strategy. The objective of M&E will be to ensure prudent AMU and reduction of AMR against set targets and document useful lessons for planning purposes through integrated surveillance. A communication strategy is essential for creating awareness, influencing behavior change through adopting of surveillance strategies.

Implementation of AMR surveillance in the agriculture & animal sector – Emmanuel Kabali, FAO

The FAO Resolution adopted by the 39th session of the FAO conference, was preceded by active FAO involvement in the GAP development and preparation of a status report on AMR in food, agriculture and the environment. It welcomed the GAP, recognized the importance of the One Health Approach, a science based approach, the role FAO needed to play and urged member countries to increase awareness, engagement and leadership and apply international standards.

The resolution was comprehensive and urged members to strengthen monitoring of AMR and AMU in agriculture, take actions, including phasing out of antimicrobials as growth promoters and raise awareness of the risks to both human health and to food and agriculture.

The overall objective is to minimize (bilateral human – animal) transmission of antimicrobial resistant organisms and or determinants via the food chain and environment with the following outputs,

1. Multi-sectoral NAPs aligned with global recommendations and standards in place in targeted countries
2. Regulatory frameworks assessed and strengthened
3. Laboratory capacities and related infrastructures of the food and agriculture sector are strengthened to collect and share data on AMR and antimicrobial residues and actively contribute to integrated surveillance on AMR
4. Good practices in the food and agriculture sector, based on international instruments, are available and are implemented in target countries

FAO has developed important tools such as the Assessment Tool for Laboratory and Surveillance System (ATLSS), to assess individual laboratory capacities for pathogen isolation and identification and for antimicrobial susceptibility testing (AST). The challenges implementing the GAP and FAOs recommendations include the following:

1. Challenging scope of surveillance among multiple species, production systems and related livestock-human-environment interfaces.
2. There is need to prioritize - At the moment intensive Poultry, aquaculture and pig production are prioritized for AMR surveillance because of high selection pressure as a result of high usage of antimicrobials
3. Challenges of Collaboration under One Health Approach - What does One Health really mean in the country context? Need a Regional Strategy to facilitate synergistic approach to surveillance

Measuring Antibiotic Use: Daily Defined Dose – Ruth Lancaster, Ministry of Health South Africa

The South African AMR strategic framework was launched in 2014 and has 4- strategic objectives: AMR Governance, Diagnostic stewardship, Enhance surveillance, Antimicrobial Stewardship, Prevention including IPC and vaccinations. These are supported by Strategic framework that includes,

- **Legislative and policy reform for health systems strengthening** to support the quality of antimicrobials and to enable control over prescribing of antimicrobials in the animal health sector
- **Education** of all levels of health providers in human health and agriculture in the critical concepts of antimicrobial stewardship, infection control, infectious diseases, microbiology and pharmacology

- **Communication** to educate the public, create awareness and enhance patient advocacy of the dangers of inappropriate antimicrobial use
- **Research** into novel diagnostics such as point of care testing and clinical trials of treatment duration, antimicrobial consumption plus new antimicrobials.

SA monitors antimicrobial use under the strategic area focusing on improving appropriate use of diagnostics and optimization of new antimicrobials – stewardship. The Anatomical Therapeutic Chemical Classification (ATC) and Daily Defined Doses (DDD) are being used.

Day 2

PROMOTING ANTIMICROBIAL STEWARDSHIP IN BOTH THE ANIMAL AND HUMAN SECTOR USING THE NAPS

Establishing Governance structures across the health system - Kim Faure, Technical Advisor to AMR Program South Africa

The role of governance structures for AMR include:

- Accountability
- Sets the policy agenda
- Implementation of systems and processes
- Monitors and evaluates progress
- Ensures One Health context is applied

Some challenges experienced in South Africa included addressing the following

- How to roll out a One Health governance structure down to hospital level?
- Is One Health necessary all the way down or does it hinder implementation?
- Who should be the key members of these governance structures?

The One Health Approach becomes more difficult to attain as you move from the national to the district level. This is important to keep in mind. It is also important to consider the changing roles that occur as you move from the national, provincial and facility levels and see how well to link the activities. Primary roles at each level include the following:

- National
 - Policy setting
 - Advocacy and collaboration
 - Guidelines development
 - Feedback on progress
- Provincial/regional
 - Applying the policy into practice
 - Implementation of programs
 - Training/ mentoring
 - Funding
 - Feedback on progress
- Within Facilities– hospital/ clinics
 - Surveillance and monitoring
 - Changing practices and behaviors
 - Implementation testing and roll out

Antimicrobial Stewardship in Animals in Animal Health – Jane Walyero, Directorate of Veterinary Services

Antimicrobial Stewardship (AMS) involves coordinated interventions designed to promote, improve, monitor, and evaluate the judicious use of antimicrobials to preserve their effectiveness, promote and protect human and animal health. It ensures access to needed treatment and is multidimensional and involves:

- Control of stakeholders to commit to stewardship of antimicrobial use in animals to manage antimicrobial resistance
- Promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration.

- The concept of responsible and prudent use emphasizes prevention of animal diseases.

Use of antimicrobials can be reduced through various infection and disease control strategies at the farm level for example, hygiene at farm, processing and marketing levels, farm biosecurity, routine vaccination schedules for flocks, herds, or aquaculture farms.

An effective AMS program should include

- Product development, marketing authorization and regulatory requirements to end-users
- Veterinarians and veterinary paraprofessionals well qualified and proficient.
- Disposal of unused or expired medicines

It also requires a regulatory framework at country level of which OIE has provided guidance that includes, responsible and prudent use of antimicrobial agents in veterinary medicine, a list of antimicrobial agents for veterinary importance (to watch out for) and a global database on the use of antimicrobial agents in animals.

Registration of veterinary professionals at country level is also key in regulating prescribing and use plus other laws and policies in place. One of the challenges in some countries is enforcement of laws and regulations despite having them in place. Challenges in stewardship include

- Lack of a national strategy to address antimicrobial stewardship – governance and coordination
- Easy access of antimicrobials without prescription- use in hygiene compromised settings – weak enforcement of regulations
- Lack of systems to monitor quality of antimicrobials and Residues in food.
- Overall sales data is not equal to actual consumption by different animal spp.

Lessons Learned in Kenya

- Coordination among the many groups addressing stewardship is important
- Affordable access to quality essential medicines, vaccines, and diagnostics is key for stewardship
- Need for continuous awareness creation and education on AMR and AMS to professionals and farmers and
- AMS is a shared responsibility involving many stakeholders along the different livestock production systems

Antibiotic Stewardship – Strategies for Establishment and Rollout: Sujith Chandy Head ReAct Asia Pacific & Professor Clinical Pharmacology Christian Medical College, Vellore, India

The impact of AMR is now known and evident, treatment with more expensive drugs, the stress on health systems, post surgical or post transplantation infections, longer duration of illness and treatment are but some. With these effects it is clear that implementing stewardship programs that improve patient outcomes and optimizes selection of dose and duration of treatment is the way to go. Antimicrobial Stewardship stakeholders in hospitals include a number of departments that include Microbiology, Clinical, Pharmacy, Nursing, Administration and Pharmacology/ Clinical Pharmacology departments. The following are needed in setting up an AMS Program

- **A team**
 - ✓ ID physician, microbiologist, clinical pharmacist/pharmacologist, infection control personnel, nurse
- **Administrative support**
 - ✓ HR- trained, protected time, finance
 - ✓ Quality assurance/ patient safety
 - ✓ Monitoring use
- **Collaboration & authority**

The framework implemented should include, treatment, guidelines and policies to guide antimicrobial use, prospective audits with feedback, IV to PO conversion and dose optimization. Antimicrobial use reports should be generated, clinical outcomes discussed to improve use and outcomes.

At country level for the human sector, the way forward is to,

- Harmonize & update national guidelines
- Ratification & dissemination of national guidelines
- Use of similar guidelines at district level facilities
- Develop resources for AMS programs and implement training
- Establish M&E framework for antimicrobial stewardship

In the animal sector key components for AMS include:

1. Surveillance of practice & antibiotic use patterns
2. Implementation of biosecurity measures and farm management practices
3. Standard treatment guidelines – for therapeutic use
4. Phase-off non-therapeutic use
5. Assessment and adoption of antibiotic alternatives
6. Reserve antibiotics critically important for humans

AMR Surveillance, A Local Perspective – Revathi Gunturu, Associate Professor & Consultant Microbiologist, The Aga Khan University Hospital

Today, antibiotic resistance surveillance remains a key issue for clinical microbiology departments. Unfortunately not many hospitals or healthcare facilities have microbiology departments. Surveillance of AMR needs data to be generated, collected, stored, analyzed, made available for decision makers and acted upon. Unfortunately this does not happen in most health facilities. Quite often too routine hospital data is confused with surveillance data. These two are not the same.

For surveillance to succeed the Ministries of Health in each country should drive it. It should be accepted as a critical public health function worthy of total support. This should be followed with translation of surveillance data into local decisions. In Kenya and East African countries the challenges in obtaining accurate surveillance data is attributed to some of the following,

Staffing issues:

- Few qualified clinical microbiologists
- Many laboratories are unsupervised by qualified pathologists
- Result: inadequate quality control or quality assurance programs for antibiotic susceptibility testing

Laboratory issues

- Unsuitable (irrelevant) clinical specimens may be processed
- Normal flora mistakenly identified as pathogens by technologists
- Use of non-standardised antibiotic susceptibility tests
- Problems in isolation / identification of important pathogens
 - *H. influenzae*, *S. pneumoniae*, *Salmonella* sp. and *Shigella* sp.
- Lack of reliable standard discs at reasonable price
 - drug companies are the only source for a many laboratories
 - disastrous consequences

Surveillance can be strengthened through standardization and using internationally recognized methods. There is need to strengthen data collection. Current data comes from researchers with grants for publication, researchers without grants, student dissertation projects, Institution level data collected by Health Care workers for various purposes. This data is not usually publicized and not published in peer reviewed Journals

PREVENTING INFECTIONS IS ONE KEY ELEMENT IN ALL NATIONAL ACTION PLANS

Infection Prevention and Control Practices in the animal sector - Samuel Wakhusama Representative OIE Sub-Regional Representation for Eastern Africa and the Horn of Africa

The Mandate of the OIE is “to improve animal health, animal welfare and public health protection world-wide”. Unfortunately animal welfare in most countries and settings is compromised. The world population growth has increased demand of animal source food. By 2050 the world’s population will reach 9.1 billion, 34% higher than today. Nearly all of this population increase **will occur in developing countries**, and about 70% of the world’s population will be urban (compared to 49% today). This will increase demand for animal protein for human consumption. Already gains in meat consumption are outpacing those of developed countries. One result of this is intensive farming in which antibiotics are used as growth promoters and routinely to prevent infections.

Modern animal production practices are **associated with regular use of antimicrobials**, potentially increasing selection pressure on bacteria to become resistant. It is therefore of crucial importance to develop **sustainable animal production practices** where high productivity is reached **without inappropriate use of antibiotics**. The key element is to **focus on animal health**, as this has the potential to support both high productivity and

diminish use of antibiotics. Animal movements and trading in live animals have been identified as major risk factors important in the spread of infectious diseases and antibiotic resistance. In Africa, the largest proportion of all reported antimicrobial classes used in food-producing animals were Tetracyclines and Macrolides. Farmers should be encouraged to use alternatives to antibiotics such as probiotics, phages, immune modulators and Phytochemicals.

Reflections on infection prevention and control pillar from NAP-AMR operationalization meeting in India – Jyoti Joshi Head South Asia & GARP Asia Coordinator New Delhi, India

Hospital infection prevention in India is a huge task. Very high “COLONIZATION PRESSURE” in acute care health facilities. One out of two (53%) ICU patients have resistant (ESBL and MBL) bacterial colonization¹. There is an increase in the use of third generation cephalosporins and Faropenem. There are 4- out of hospital factors that contribute to the high colonization pressure, antibiotics in livestock, environmental sanitation, antibiotic use in the community and compromised access to clean water and sanitation.

Mitigation can be achieved through implementation of IPC programs in health facilities, and strategies across all tiers of healthcare system, use of vaccines such as *Hib conjugate vaccine* (as Pentavalent vaccine) which is now part of the Universal Immunization Program and India has recently introduced *Pneumococcal Conjugate Vaccine* in select districts. In the animal sector the focus is on IPC programs setting in farms and the role of vaccines.

In setting up national IPC programs the following are the recommendations:

1. Standardize definition of HAIs and disseminate information
2. Conduct IPC assessments and gap analyses
3. Streamline hand hygiene and sanitation as components
4. Define IPC standards
5. IPC in curricula
6. Surveillance and M&E Plan for HCAI

Integrating and Scaling Up IPC Programs into other Public Health programs – Rachel Kamau, Head Patient and Health Workers Safety Unit Ministry of Health, Kenya

In Kenyan health facilities the burden of health-associated infections (HAI) is unknown due to lack of data though estimates are at 10-25% of hospital admissions. Knowledge of infection prevention and control (IPC) is lacking at all levels of healthcare system and among healthcare workers. Past IPC efforts focused solely on injection safety and medical waste management.

Kenya has IPC programs in health facilities focusing on HAIs as a priority patient safety goal with activities around hand washing, Catheter Associated Urinary Tract Infection (CAUTI), Central Line Associated Blood Stream Infections (CLABSI), Ventilator Associated Pneumonia (VAP) and Surgical Site Infections (SSI) care and prevention of AMR. IPC practices have also been integrated in the national programs such as HIV & AIDS, TB, Quality Control, Environmental Health and AMR programs. The program is organized as a national, county and health facility based programs.

Further IPC has been incorporated as a module in the following trainings: Reproductive health, HIV integrated curriculum, PMTC, Injection Safety, Safe Phlebotomy and TB.

Priority areas include

- Management, leadership and governance of IPC services
- Advocacy, behaviour change and communication for IPC
- Health Worker education and capacity-building for IPC
- Patient and HCWs safety in the healthcare settings
- Availability of IPC supplies, equipment and infrastructure
- IPC Surveillance, notification and research
- Monitoring and evaluation for IPC Program

Despite some measure of success the following are the challenges still

- Extended health workers strike
- Inadequate knowledge of IPC across disciplines

- Inadequate resources for scale up to all healthcare facilities

ADDRESSING R&D IN NAPS

Strengthening Capacity for Research and Development in Developing Countries: The DNDi Experience – Monique Wasunna, Head DNDi Kenya

There are some lessons that countries can learn from Drugs for Neglected Diseases *initiative* (DNDi's) approach to R&D. DNDi is a collaborative, patients' needs-driven, non-profit drug research and development (R&D) organization that is developing new treatments for neglected diseases. The fatal imbalance for NTD R&D exists. Until recently:

- R&D for neglected diseases was stagnant.
- The R&D landscape for neglected diseases was not evolving
- In endemic regions, there was little or no capacity for R&D for neglected diseases
- Pharmaceutical companies lacked interest in producing drugs for NTDs

One of the results of NTD R&D evolution was the not-for-profit PDPs e.g. DNDi, which aimed to fill R&D gaps and address the needs of neglected patients. The priority of DNDi was and is to focus on neglected patients. The DNDi portfolio as at June 2017 has 7 new treatments available and up to 16 new chemical entities in the pipeline. These products are easy to use, affordable, field adaptable and non-patented. DNDi's success is only possible through innovative partnerships.

GARDP was launched in 2016 whose vision is to develop new antibiotic treatments addressing AMR, and promote responsible use for sustainable access in cooperation with the public and private sectors. The guiding principles are that scientific relevance should guide choice and that R&D should focus on significant bacterial infections, with an emphasis on global needs. It is a joint initiative between WHO and DNDi. The 2023 objectives are to,

- Develop 4 new treatments through:
 - Improvement of existing antibiotics
 - Development of new chemical entities
- Build a robust pipeline of pre-clinical and clinical candidates
- Actively support appropriate use of and access to new antibiotic treatments

GARDP Business Model

Funds raised from public and private sources will be directed in two ways:

- Active R&D programmes driven, sponsored and directly executed by GARDP
- Equal partnerships on agreed principles to which GARDP brings appropriate funding, direction, and support

Operational models

- Product development and management
- Key role in R&D strategy, target product profiles (TPPs)
- Point of entry (ideally postIND) to patient delivery
- Sustainable access (affordable, equitable, stewardship)
- In house scientific and R&D capacity
- Clinical trials/networks, CMC, regional capacity
- Sponsor role

Lessons Learnt from DNDi's R&D Model(s)

- Partnerships are crucial for R&D; more can be done with less resources.
- Partnerships lead to ownership of R&D process and results at all levels; (pharma companies, Ministries of Health, communities etc)
- Patients needs in endemic countries must be put upfront, at the start of the innovation process to ensure seamless R&D process & delivery of new treatments
- Health R&D monitoring, coordination, and financing must be integrated for successful delivery of new treatments
- Regional platforms are crucial for the development of regional clinical trials capacities i.e. human resource and infrastructure targeting neglected diseases

- The gaps between R&D, Registration and access of much needed new treatments is reduced through the virtual models

Challenges

- Overcoming regulatory barriers - Different regulatory processes in the countries make it difficult to conduct studies
- Access to treatments - Transforming regulatory approval to country adoption and implementation;
- Ensuring sustainable production of treatments for neglected diseases;
- Policy environment - Securing an enabling policy environment including clear global norms on IP management;
- Ensuring sustainable financing for R&D towards NTDs
- Research Capacity - Lack of/different levels of capacity
- Tough terrain - Endemic regions are difficult to work in

The Importance of Country Experiences in Global R&D Debate – Helle Aagaard, Policy Advisor ReAct Europe

The UNGA Declaration has given guidance on what it wants to see in the field of R&D ‘Underline also that all research and development efforts should *be needs-driven, evidence-based and guided by the principles of affordability, effectiveness and efficiency and equity, and should be considered as a shared responsibility*: in this regard, we acknowledge the **importance of delinking the cost of investment in research and development on antimicrobial resistance from the price and volume of sales** so as to facilitate equitable and affordable access to new medicines, diagnostic tools, vaccines and other results to be gained through research and development...’. The current framework include G20 Innovation Hub, DRIVEAB, OECD, World Economic Forum and WHO Development and Stewardship Framework. Unfortunately most of these initiatives do in fact not take these principles as their starting point – with the exception from the WHO D&S framework. They also do not take into consideration needs and ability of the LMICs.

There is a lot of talk around the issue of access, conservation and innovation and striking a balance. Unfortunately there is a disproportionate focus on the innovation part. To restore the balance it is critical to build a new sustainable system where access, conservation and innovation work together synergistically. With the disproportionate approach, there is

- Disproportionate focus on fixing the market in high income countries (HICs)
- HIC perspective starting point e.g. R&D priorities following HIC health need
- Stewardship solutions that are not suited in LMICs
- Overlooking or underestimating the access challenge

Way forward

- National action plans have been drawn up in most countries – including situation analyses.
- Bring data on lack of access, on challenges for implementing stewardship
- Insist that these challenges and realities in LMICs must inform innovation incentives to deliver products that are affordable, suitable and are accessible in a sustainable manner.
- R&D Efforts and funding done without tailoring to LMICs run a risk of being in vain.
- Strengthening Capacity for Research and Development in Developing Countries:

Role of Quality of Medicines in AMR – Mirfin Mpundu, Head of ReAct Africa & Executive Director Ecumenical Pharmaceutical Network (EPN)

Unfortunately not much emphasis has been placed on the role quality of antimicrobials and play in AMR. In the GAP there are only 2- goals that seem to cover it indirectly, strengthening knowledge through surveillance & research and optimizing the use of antimicrobial medicines. However, neither speak of the need to establish or **strengthen surveillance systems to monitor quality of medicines** on an ongoing basis (as opposed to monitoring the rise of resistant pathogens), which is essential to better understanding the scope and evolution of the issue, as well as to ensure good stewardship of antimicrobials.

Poor quality of medicines is a major challenge in most LMICs. Poor quality means that ‘a medicine does not do what it says on the box, either because it does not have the correct amount of the correct ingredients -- it never did, or they have degraded with time -- or because it is badly formulated so that the ingredients don't reach the

blood stream as intended'. Poor quality antimicrobials provide sub-therapeutic levels that can lead to AMR as resistant pathogens survive.

Action priorities

Reducing the risk of resistance arising from poor quality medication should include,

- Improving the transport and storage of legitimate medicines,
- Promotion of verifiable good manufacturing practices (GMP) among registered producers.
- Tackling the criminal production of products with deliberately sub-therapeutic levels of active ingredients.

Current AMR containment efforts often focus on, boosting innovation to develop new medicines, enhancing access to affordable medicines, and ensuring stewardship of existing antimicrobials. Quality should be a major priority.

Medicine quality is a critical factor in all three of these:

- *Innovation*: Medicine quality enables government and company research sponsors to derive maximal clinical and financial return on their R&D investments by slowing the development of resistance to the newly developed medicines.
- *Access*: The objective should be to ensure access to affordable, **quality assured medicines**. Otherwise, making low-quality medicines broadly available may actually result in harm and accelerate the emergence of AMR.
- *Stewardship*: Typically, this is about getting the right medicine in the right dose to the right person at the right time. Quality ensures that medicines are what they purport to be and that they are of the expected dose. Good stewardship of existing medicines cannot be achieved without them being quality-assured.

Countries' key success factors

Key success factors in addressing medicine quality include

- Resilient health-system, supported by a strong regulatory authority regulating and monitoring medicine development, manufacturing, distribution (e.g., track and trace), etc
- Regulatory transparency (e.g., several countries publicly report on inspections) to bolster citizen trust in the system, and to enable providers and citizens to examine and interpret data
- Advocacy and awareness, including of front-line health workers and regular citizens through multiple channels, including technology, media, etc

MONITORING & EVALUATION OF NATIONAL ACTION PLANS

Monitoring for Accountability National Action Plans on Antimicrobial Resistance – Anthony So, Head ReAct North America, Professor John Hopkins Bloomberg School of Public Health

NAPs will need to be monitored and be evaluated to measure progress using indicators and whether they are in line with the plan. Additionally Funders will be interested to see if they are getting value for their money. WHO has recommended a process for developing and implementing NAPs that includes conducting the situation analysis and assessment, strategic planning and prioritization, operational planning and costing, which will lead to outputs: strategic plan, operational plan & an M&E framework. Cutting across in this process is implementing, monitoring and evaluation (M&E). For M&E, priority steps recommended by WHO include the following:

1. Select priority strategies and activities from the
2. National Action Plan to be implemented first, Identify a manageable number of indicators /measures of progress for these actions, and sources
3. Capture progress not directly under AMR that may happening in other projects and programs
4. Agree on a timeline including how often to monitor and review progress
5. Draw on standard tools and information systems already available

The draft Tripartite M&E approach has 3- levels of indicators

1. Outputs: Global level monitoring of outputs
2. Specific Outcomes: Proposed indicators for specific outcomes of the Global Action Plan on AMR
3. General Outcomes and Goals: Proposed General Outcome and Goal Indicators

To be effective and value added, the scope of evaluation coverage should include

- A = Innovation of Health Technologies for Human and Animal Use
- B = Access to Health Technologies for Human and Animal Use
- C = Conservation – Promoting the Rational Use of antimicrobials in Human Health
- D = Conservation – Ecological Responsibility of Non-Human Use of antimicrobials and
- E = Sustainability Systems Thinking

How should we define Indicators? Answering this series of questions might help,

- Is it most strategic for the indicator to focus on the magnitude of the problem or the progress made - the gap or the gain?
- Is the indicator useful in spurring action at the national or international level?
- How will the results motivate accountability and by whom?
- Are the data available? What process and infrastructure must be put in place for the data to be collected?

In as much as the implementing agencies/ governments will do its own M&E, civil society organization will play a vital role of ensuring accountability.

GROUP DISCUSSIONS

Group discussions were held to discuss priority gaps, feasible and sustainable solutions and monitoring and evaluation priorities i.) Antimicrobial stewardship and use, ii.) Surveillance iii.) Infection prevention and control and iv.) Access

Appropriate Antimicrobial Use and Stewardship		
Priority gaps	Feasible and sustainable solutions	Monitoring and Evaluation Indicators
<ol style="list-style-type: none"> 1. The absence of structures and systems to provide leadership and governance for stewardship programs in both human and animal sectors. 2. Institutions lacking or not using standard treatment guidelines and protocols as well as inadequate laboratory capacity to guide the development of AMS guidelines in both animal and human health. 	<ol style="list-style-type: none"> 1. Development and implementation of NAPs incorporating appropriate use as well as other strategic elements of the Global Action Plan 2. Having an implementation plan that has sanctions and incentives to compel or encourage the use of guidelines and protocols. For instance, accreditation and claims may be tied to institutional stewardship programmes. 3. There's need to have a subgroup of national TWGs that will drive the implementation of stewardship components of NAP within the one health framework. 	<ol style="list-style-type: none"> 1. Determine which institutions have stewardship committees and developed/adapted STGs and protocols for use. 2. Adapting the WHO M&E template currently undergoing consultations.

Access		
Priority gaps	Feasible and sustainable solutions	Monitoring and Evaluation Indicators
<ol style="list-style-type: none"> 1. Lack of availability and affordability of antimicrobials (AMs). 2. Fragmented, duplicated and weak registration process in the region. 	<ol style="list-style-type: none"> 1. A pooled purchase of key priority AMs to decrease price and increase affordability and availability. 2. Collection of data on consumption of AMs to inform pooled purchasing. 3. Harmonization of regulatory systems for registration of medicines and establishment of a competent registration authority. 4. Strengthening capacity for enforcement against regulatory systems and increased data sharing between countries to improve enforcement capacity. 	<ol style="list-style-type: none"> 1. Consumption data from all countries available 2. Availability of regulators in multi-sectors of the quality of medicines by regional. 3. # of competent registration authorities 4. # of harmonized regulatory authorities in region

Infection Prevention and Control		
Priority gaps	Feasible and sustainable solutions	Monitoring and Evaluation Indicators
<ol style="list-style-type: none"> 1. Problems in implementation 2. Inadequate financing of IPC activities 	<ol style="list-style-type: none"> 1. Need to have an IPC focal person at the national level and down to the primary healthcare facilities. 2. The inclusion of IPC as part of the job description to all healthcare workers and enforce its implementation. 3. The inclusion of IPC module in the curriculum at all levels of training. 4. The inclusion of IPC module in appraisal forms in both public and private healthcare providers. 5. Incentives to those adhering to IPC guidelines. 6. <i>On financing:</i> Costing of IPC activities and incorporation of the costs in the national budget. 	<ol style="list-style-type: none"> 1. IPC audits and feedback. 2. This involves audits on: <ul style="list-style-type: none"> • Financing • Hospital-acquired infections • Rates of antimicrobial use in animals (recurrent use would imply recurrent infections mainly due to poor IPC).

Surveillance		
Priority gaps	Feasible and sustainable solutions	Monitoring and Evaluation Indicators
1. Lack of funding 2. Weak laboratory capacity in all sectors 3. Lack of standards and their enforcement. 4. Lack of data management capacity 5. Lack of EQA, there are priority organisms. 6. Lack of research 7. Lack of quality management systems 8. Lack of policies	1. Development of policies and strategy for integrated AMR surveillance 2. Development of a national surveillance plan/guidelines 3. Clear roles and responsibilities. 4. Clear coordination, reporting mechanism and accountability under One Health approach	1. Develop harmonised M&E tools for AMR and AMU

Key Outcomes and Recommendations

Frameworks:

- National Action Plans require collaborative efforts with involvement of all relevant stakeholders across human, animal, agriculture and environmental sectors in the process of development. Failure to do this pose challenges for the buy in needed for implementation. This process of NAP development should be government led, as the NAP is ultimately a government document and commitment. Where a relevant AMR Policy instrument will be needed to facilitate and enable implementation, it should be developed at the same time.
- NAP implementation is resource intensive beyond what African countries are able to afford or invest and will require the global community to find ways of supporting through different initiatives that might include setting up a Conservation Fund and involvement of HICs and multilateral partners.
- Some countries may need to develop an AMR policy and a legal framework that will support implementation. Failure to do this might result in many activities and strategies failing to be implemented. It is important to consider and check country specific legal structures.
- Current National Agendas include running activities and projects focused on achieving SDG goals. AMR activities can be streamlined, mainstreamed and included in already existing country efforts on SDGs as a way of getting more value from these projects but also as one mechanism of gaining political will and mobilising funds at the national level.
- Maintaining the integrity of the implementation process outside of political influences is critical and allows for objective monitoring and evaluation.
- Strengthening regulatory frameworks that include enforcement should be not be excluded. Finally, explore targeted incentives, unique to these sectors, to conjure change behavior.

Raising Awareness:

- Raise awareness on AMR through culturally-sensitive public campaigns that “put a face” to AMR and address behaviour change i.e. a mix of traditional media and an exploration of innovative synergies with e.g. faith-based organizations, local celebrities etc.
- Target various stakeholders, including farmers, feed-millers, veterinary practitioners, doctors, prescribers, pharmacists, policy makers and consumers.

- Form a network across countries (regionally is possible) of AMR focal point persons as a “support group” that shares experiences at various stages of the implementation stage.

Surveillance:

- Surveillance for AMU and AMR at all levels of One-Health paradigm in local and National settings should be adopted and implemented.
- Surveillance networks at different levels of healthcare system should be coordinated through one agency or department.
- Strengthening laboratory capacities, standards, policies, infrastructure and equipment
- Perform an objective evaluation that grades the functionality and comprehensiveness of the current Surveillance Programs in place. A few countries like Kenya, South Africa, Zambia, Malawi, and Ghana have however joined the Global AMR Surveillance System (GLASS).
- Map and consult academic institutions with research capacities and explore how they could be involved in surveillance across sectors.
- Continuous surveillance to understand both available products on the market and consumption data should be routine.
- AMR containment and surveillance efforts should include quality of antimicrobials.
- Post marketing surveillance of antibiotics is especially important to assure the quality of products beyond registration. Any failures should be communicated not only nationally but regionally and to the WHO Quality Assurance Program.

Antimicrobial Stewardship:

- Beyond setting up AMS programs, coordination of these programs across sectors will be vital.
- Improve antibiotic stewardship through empowering and educating key-point persons at decentralized-government institutions, hospitals and lower-level stakeholders such as community workers, healthcare workers, retail-pharmacists, public health officers in other disciplines and technicians
- Mainstream AMR Stewardship (AMS) committees within existing stewardship committees e.g. Medicines and Therapeutic Committees (MTC) avoiding creation of new structures and spreading thin the same staff to sit on these committees.

Infection, Prevention, and Control:

- Dedicate a focal point person that continuously monitors adherence to guidelines as an Infection Preventative Measure (IPC) program.
- Integrate IPC to include AMR in more established existing preventive programs such as HIV, Tuberculosis, and Malaria.
- Develop IPC programs to be implemented in the animal, environment and agriculture sectors beyond the human sector and collect actionable data that promote good IPC practices. IPC programs are not common in the non-human sector and most NAPs do not contain such an IPC module.

R&D

- Deepen collaboration among continent-based R&D laboratories and global research efforts on new antibiotics, vaccines and diagnostics as well as innovation of practice in tackling ABR. Research to include the potential alternatives to antibiotics such as probiotics, traditional medicines etc.
- Adherence to the government agreed principles that relate to R&D as outlined in the UNGA Declaration should form a basis of all R&D initiatives including promoting delinkage models.
- Capitalize on the current projections of the growth of the pharmaceutical industry in Africa, projected to be a 40 US billion industry by 2030. African governments will need to invest in R&D and engage in global discussion on R&D to ensure that that African public health priorities and needs are addressed.
- National Action Plans need to highlight and focus on ensuring the quality of antimicrobials through promotion and adherence to GMPs. Action priorities here include: Improving transport and storage of legitimate medicines, promoting verifiable GMP among registered products, tackling the production of falsified and substandard products, strengthen regulatory authorities, and ensure regulatory transparency, increase awareness on the topic with policy makers and the public.
- Cost AMR interventions and programs to accurately develop an economic case for AMR containment to policy makers at national level as well as with international development funders.

Monitoring and Evaluation

- Monitoring and Evaluation should cut across all strategic areas of the GAP adapted in the NAPs. Indicators should be carefully selected, communicated and allow for comparison within the country, region and globally and in line with WHO, OIE and FAO recommendations. They should equally foster accountability.
- There are a number of programs running under the SDG agenda with indicators already. The existing indicators should be taken into consideration and integrated where applicable in the NAP M&E Framework.

- **CLOSING REMARKS**

WHO AFRO Congo Brazzaville AMR FOCAL POINT - Laetitia Gahimbare,

Uncontrolled AMR cannot be solved, by one country, in one sector or discipline but through a “One Health” approach i.e. inclusion of human health, animal health, agriculture and any relevant sector. There were common bottlenecks in both development and implementation stages. Aligning the NAP implementation to the five strategic objectives of the Global Action Plan (GAP) is needed. Key considerations from the conference moving forward include:

- Awareness messages - focus on behavior change of all implementing stakeholders.
- Surveillance systems - leverage existing programs in order to expedite monitoring of AMR. This is a step towards ensuring collection of accurate, quality data and also working through the integration and coordination efforts across sectors.
- Stewardship programs – identification of the barriers to adherence as well as facilitators to appropriate use is required in manning the inappropriate use of antibiotics.
- Infection, Prevention, and Control (IPC) programs cannot be effectively implemented in low resource settings. An inventory or mobilization of resources is required for implementation. This makes implementation more realistic than idealist.

WHO AFRO remains very committed to support member countries developing and implementing their NAPs.



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