Background
Following the endorsement of the global action plan to tackle antimicrobial resistance at the sixty-eighth World Health Assembly (WHA) in May 2015, efforts have focussed on implementation of the plan at all levels of the Organization and in countries as Member States develop their own national action plans.

Development of the plan was guided by the Strategic and Technical Advisory Group on antimicrobial resistance (STAG-AMR), together with the advice of countries and key stakeholders. The STAG-AMR continues to play a critical role in advising the Director-General on progress and challenges in implementation.

The STAG-AMR met on 26-27 February 2018 in Geneva, Switzerland, to discuss the implementation of the global action plan to tackle antimicrobial resistance.

Welcome and Introduction
Dr Rima Khabbaz, Chair of STAG-AMR
Dr Ranieri Guerra, Assistant Director General, Special Initiatives, WHO Geneva

Dr Khabbaz warmly welcomed participants and set the tone for a productive meeting
Dr Guerra welcomed all participants pointing out that the new Global Programme of Work (GPW) recently approved by WHO will help drive the organisational budget based on public health objectives, lives saved, profile in countries etc rather than programme areas. This change to how the Organisation works and should usher in a new management style at all levels.

The outcome of the recent meeting of the Tripartite agencies in Paris strengthened their collective stance on guidelines in food producing animals, and directors of all three organizations are committed to strengthening collaborations.

Introduction of New members and Declarations of interest
Dr Marc Sprenger, Director, Antimicrobial Resistance Secretariat, WHO Geneva welcomed the new STAG members

Professor Yongning Wu
Chief Scientist, National Center for Food Safety Risk Assessment
Beijing China

Professor Rumina Hasan
Professor, Department of Pathology
Aga Khan University, Karachi, Pakistan

Professor Masoud Mardani
Professor of Infectious Diseases, Shaheed Beheshti University
Tehran, Iran

Professor Helen Lambert
Professor of Medical Anthropology
University of Bristol, Bristol, UK

Dr Mirfin Mambwe Mpundu
Head of ReAct Africa
Nairobi, Kenya
Declarations of Interest from STAG members
STAG-AMR members completed the standard WHO forms for declaration of interests and these were reviewed by WHO Secretariat, against the purpose and agenda, in advance of the meeting. It was concluded that none of the members’ declared interests presented any conflict in relation to the objectives of the meeting and their role on the STAG-AMR and as such did not warrant the exclusion of any members from any part of the meeting, including those sessions leading to formulation of recommendations or advice.

Overview of Programme Area 1.6 and follow-up on 2017 STAG recommendations
Dr Marc Sprenger, Director, Antimicrobial Resistance Secretariat, WHO Geneva
Dr Sprenger briefly reviewed the previous recommendations from 2016 and noted that the technical team would discuss these issues in detail. They included:

- How to embed NAPs in development agenda
- Scale up of evidence based interventions
- Increased engagement with other partners (including UNICEF, Fleming Fund, African CDC and others)
- Collaboration with the Tripartite partners has resulted in some excellent results (AGISAR, WAAW, M&E framework and questionnaire, GLASS) even as the collaboration at country level remains a challenge
- Using the Global Antimicrobial Resistance Surveillance System (GLASS) report to better understand burden and consumption (among other issues)
- The new AWaRe model of essential antibiotics
- Various initiatives in Awareness, Behaviour Change and Education (including World Antibiotics Awareness Week) for greater outreach

Key Discussion points- Awareness and Behaviour Change (ABC)
Ms Karen Mah (Team Lead for Awareness and Behaviour Change) presented this topic- Key discussion points included:

- Focus on narrative and different target groups for ABC including media
- Keep differences between the public and private health sector in mind with respect to behaviour change
- Fine tune industry interactions based on “first do no harm”
- Consider alternatives to antibiotics, while recognizing that for some conditions (e.g. sepsis) will always require effective antibiotics
- ABC Competency framework represents a solid first step but must be linked with strengthening continuing education which in many instances is optional
- Mainstreaming ABC with the teaching and certification curricula of medical and other healthcare professional associations including continuing professional points would be beneficial

Key Discussion points- Strengthening national surveillance systems
Dr Carmem Pessoa da Silva (Team Lead for Surveillance) presented this topic- Key discussion points included:

- The STAG congratulated the Secretariat on the activities GLASS conducted and results reached so-far
- Need for guidance on using surveillance data to drive global, national and local actions
GLASS acknowledges the importance of a wider approach including surveillance of antimicrobial consumption, antimicrobial use and integration of data from other sectors (animal and environment – One health approach)

- Need to find ways for data to be more representative
- The methodology to conduct Point Prevalence surveys developed. Work on designing protocols for AMR health burden estimation has started
- Importance of addressing resistance mechanisms, genetic markers for surveillance purposes and moving the data downward for local action

**Key Discussion points- Infection Prevention and Control (IPC) and AMR**

*Dr Benedetta Allegranzi (Coordinator for Infection Prevention and Control)* presented this topic. Key discussion points included:

- There is increasing awareness about IPC, however improved communication to policy makers who do not think that IPC is important is a key next step
- While IPC core components are important for any country, LMICs would benefit from guidance on minimum IPC requirements (which is not always as expensive as we think)
- Antimicrobial stewardship and IPC should go hand by hand as they reinforce each other to achieve better results
- Cost of not preventing HAIs is very high. Need more research and data on the economic case and cost of HAIs, and cost-benefit and cost-effectiveness of IPC interventions. Need to develop the case to demonstrate that IPC can be low-cost
- Reliable and detailed evaluation of NAPs implementation is needed. Most NAPs include IPC in documents but then little effort is made to translate this in IPC action plans and to prioritize IPC implementation
- Showing local success/ patients’ stories and civil society mobilization is very helpful.
- The IPC implementation in hospitals differs; think of a method to be able to score them regarding IPC implementation
- Important to perform qualitative research to understand why interventions work or do not work, what are the facilitators and the barriers

**Key Discussion points- AMR and the Environment**

*Dr Astrid Wester, Environmental AMR Focal Point* and *Dr Joakim Larsson, Professor in Environmental Pharmacology* and Director, Centre for Antibiotic Resistance Research at University of Gothenburg presented this topic. Discussion focused on the following:

- Support better fecal management/sewage infrastructure in low resource setting
- Endorse WASH initiatives from an AMR standpoint
- Support research to explore links between antibiotics concentrations and sewage bacteria with antibiotic resistant human infections
- Development of sewage bacteria as indicator of regional clinical resistance, particularly in low resource gs (as part of the Tricycle surveillance project)
- Refine and promote an environmental research agenda to encourage governments and funding bodies to allocate resources to fill critical knowledge gaps
- Manage high level manufacturing discharges via:
  - Increased transparency throughout production chains
  - Encouragement of regulatory agencies (FDA etc) to publicise production site information found in registration dossiers
- Endorsement of the value of such transparency in procurement criteria
- Increase awareness of environmental dimensions of AMR
• Managing high level manufacturing discharges, and intensify work on environmental criteria for procuring drugs

Key Discussion points- Country Level NAP implementation
Dr Elizabeth Tayler, Team Lead for National Action Plans and Monitoring presented this topic- Key discussion points included:
• LMIC’s lack established surveillance, IPC or stewardship and this is reflected in minimal targets to track progress, funding, accountability structures, political mandate and/or successful programs to showcase one health. IHR and JEE at the country level to be considered in countries when they designate NAP activities
• High priority to organise countries at the sub regional and regional levels to help define priorities and allow for a methodical, step-wise pathway with realistic country objectives
• Many priorities are donor- not country- driven and there is a need for new/better prioritisation and activity mapping tool(s) and a stronger collaborative model with FAO and OIE to support linking activities across sectors and mandates (such as the SDGs)
• Important to directly address issues at STAG, IACG and tripartite levels to make more progress while retaining focus on burden and preventing diseases

Key Discussion points- WHO’s role in shaping the Research, Development, Access and Stewardship agenda
Dr Sue Hill (Director of Essential Medicines and Products) presented this topic- Key discussion points included:
• WHO’s upstream (priority pathogens list, pipeline review) product definition (TPPs based on the R&D blue print experience of public health needs and downstream functions (regulatory function on the assessment of the quality of product) as well as funding opportunities are all important
• There is a need to combine access and resistance levels to understand what is really happening and needed in countries while balancing access and conservation particularly in LMICs with weak regulatory systems.
• LMICs can commit to AWaRe categorization but implementation will be challenging requiring further deliberations
• It is important not to restrict access during stewardship initiatives

Key Discussion points- Antimicrobial use in Food
Dr Awa Aidara-Kane, Coordinator Department of Food Safety and Zoonoses presented this topic- Key discussion points included:
• Implementing the guidelines as a tripartite is a challenging but key step forward, that has been strongly endorsed from the leaderships of three organizations
• There is widespread concern about the WHO guidelines among veterinarians. Further discussions particularly on antimicrobial agents used only for animals including aquatic animals would be instructive
• As discussed at the FAO/OIE/WHO tripartite executive meeting, FAO looks forward that WHO revises the guidelines on a regular basis, taking into account the new science.
• Recognizing the common interest to have a joint guidance with OIE and WHO, it was reaffirmed that FAO has a special role to play in working directly with agriculture sector
The roles of these partners should be strengthened and their actions should be fully explained in the spirit of tripartite collaboration with an emphasis on implementation.
Meeting procedures
The meeting was chaired in its entirety by Dr Khabbaz. The Chair welcomed members and other participants and thanked them for their work on the global action plan that was adopted in May 2015 by the World Health Assembly. She also drew attention to the commitment of the G7 leaders to tackle AMR and on-going efforts to push AMR on the agenda of the G20 forum.

There was extensive input from the technical leads within the AMR Secretariat to inform the STAG recommendation process. Colleagues from UNICEF, FAO, OIE, invited observers and WHO Colleagues.

STAG Members met in closed session on day 2 to formulate its advice and recommendations for the Director-General (Annex 1).
Strategic and Technical Advisory Group on Antimicrobial Resistance
Recommendations to the WHO Director-General
26-27 February 2018

The WHO Strategic and Technical Advisory Group (STAG) for Antimicrobial Resistance held its eighth meeting from 26 to 27 February 2018. The main purpose of this meeting was to seek guidance on how to optimize effective implementation of the global action plan on antimicrobial resistance, including how to strengthen one health elements, and the process of engaging the Tripartite partners (among others) on AMR.

During the first day and a half of the meeting, the Advisory Group heard updates from WHO staff followed by discussions that included the views of representatives of permanent missions in Geneva and organizations, including civil society, nongovernmental organizations, public health and regulatory agencies and industry associations.

On the final day, the members met in closed session to formulate its advice and recommendations for the Director-General which are provided below:

The STAG:

- Congratulates WHO on the progress made across all work streams including on ensuring guidelines and activities are evidence based.
- Reiterates the importance of ensuring a one health approach in all aspects of AMR and is pleased that WHO is committed to work closely with FAO and OIE under the tripartite at all levels of the Organization.
- Requests WHO to invite FAO and OIE to attend future meetings of the STAG to present their work in AMR.
- Highlights the importance of leveraging other global health initiatives such as health systems strengthening, and Universal Health Care (UHC) given the critical role of access to effective antimicrobials in achieving these goals and encourages the AMR Secretariat to advocate for a focus on AMR in these agendas.
- Urges WHO to develop the investment case for AMR and to work with the World Bank and other development banks to develop templates or models to estimate investment needs to implement national actions plans on AMR.
- Urges WHO to articulate an organization-wide vision and strategy to address AMR under a one health banner that facilitates a coherent and aligned approach and avoids fragmentation. The STAG recalls the emphasis in the UN political declaration on AMR on antibiotics, as the greatest and most urgent global risk
- Recommends that the WHO organization-wide strategy clarifies the role of the AMR Secretariat with respect to other programmes, such as TB, HIV and malaria.

Awareness, behaviour change and education

- Recommends that WHO define objectives for the awareness and behaviour change agenda with an emphasis on segmentation of prioritized target audiences and contextual analyses to define potential interventions and tools to influence behaviour change; recognizing specific barriers will vary according to context and that further research may be required.
- Stresses the importance of incorporating monitoring and evaluation into behaviour change strategy implementation so a baseline can be set for countries to better understand positive shifts in behaviour change within segmented, target audiences.
- Urges WHO to continue and intensify its work with a broad spectrum of professional and international health professional and educational organizations to embed use of the WHO AMR competency framework and the forthcoming prototype modules in country-level teaching curricula and accreditation processes.

**Global surveillance**
- Welcomes progress in implementing the Global Antimicrobial Resistance Surveillance System (GLASS) and offered its support in the further revisions. The STAG encourages WHO to advocate strongly for the importance of surveillance and to clarify how data generated can best be used at local level to guide action, decision making.
- Endorses the need for development of rapid affordable POC infectious diseases diagnostics and rapid tests for AMR detection, which would further facilitate AMR surveillance.
- Re-emphasizes the need for WHO to support the development of laboratory capacity and the establishment of laboratory quality management systems, including proficiency testing, in countries.
- Urges WHO, when appropriate, to develop surveillance strategies to assess AMR at community level such as point prevalence studies to guide the national understanding of resistance which can be used as rapid means of providing useful data.
- Encourages GLASS to work towards broadening the evidence base beyond the public health sector and to improve sample representativeness by facilitating the inclusion of data from external research studies, private and civil society sectors.

**Infection prevention and control**
- Recommends WHO to provide guidance on the minimum requirements for Infection Prevention and Control (IPC) that should be implemented in settings with limited resources.
- Encourages WHO to work with UNICEF, UNDP and other agencies such as CDC to integrate IPC into programmes for implementation and monitoring at the country level, including in the context of UHC.
- Encourages research and data collection on the economic case and cost of hospital-acquired infections, and the cost-benefit and cost-effectiveness of IPC interventions, to be used in advocacy efforts to convince policy makers to prioritize IPC.
- Highlights the importance of hand hygiene in resource limited countries for better infection prevention and control in hospital settings and encourages development of a more systemic indicator for IPC (such as the existence of certain IPC components) in addition to the hand hygiene indicators currently in use.
- Urges WHO to stress the critical role that improving access to clean water and safe sanitation can play in containing AMR in low-resource settings as an essential infection prevention and control measure.

**Environment**
- Endorses a focus on the environment to understand how/where it contributes to AMR
- Embraces exploring the role of the environment in the development and transmission of AMR.
- Welcomes the work WHO is undertaking to collate and synthesize new evidence on the development and spread of AMR in the environment; as evidence matures, encourages work towards the development of antibiotic pollution standards.
- Encourages WHO to work with relevant stakeholders (e.g. FDA, EMA, industry) to improve transparency with regards to the sites of manufacturing of active ingredients and associated environmental emissions.

---

1 The STAG were unanimous in their support for the revision of GLASS. Profs Hasan, Lambert, Mpundu, Otaiza-O’Ryan and Perovic volunteered to support the next phase of the GLASS technical revision
National action plans

- Welcomes the progress made in implementing national action plans (NAPs) and encourages WHO to work with partners and champions from all sectors of society.
- Urges WHO to continue working with donors and other partners to form sustainable partnerships and encourages regional and country offices to work with regional economic communities to support countries to access partnerships and funding.
- Supports the institutionalization and scaling up of the AMR Communities of Practice and encourages the sharing of success stories and lessons learned.
- Recommends the development of relevant guidance and/or tools to support country prioritization and collaboration across the human and animal health sectors, with FAO, OIE and other relevant organizations.
- Recognizes that the integration of NAPs into broader development mandates is essential to success and recommends that a narrative be developed to articulate how AMR fits into other agendas and areas of work, including health systems strengthening. The STAG also recommends that guidance and tools be developed that support country mapping of activities relevant to AMR to identify linkages with other mandates such as the Sustainable Development Goals.
- Encourages WHO to support regional and sub-regional country collaboration to share experiences and help advance common approaches and practical objectives.
- Supports the development of a monitoring framework with clear goals to track progress.

Research and development, and stewardship

- Supports WHO in its leadership role in public health needs driven research and development including addressing the vulnerable situation with respect to the production of and access to old antibiotics.
- Welcomes the introduction of the AWaRe categorization of antibiotics and its potential as a tool, both to address the misuse of antibiotics and to focus attention on access issues.
- Encourages WHO to include and assessment of financial incentives towards prescribers and dispensers in the global development and stewardship framework.

Food production

- Recommends WHO works closely with FAO and OIE to develop a roadmap to help implement the guideline on Use of medically Important Antimicrobials in Food-Producing Animals and revise it as needed.