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联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Alimentación y la Agricultura | منظمة الأغذية والزراعة للأمم المتحدة

CONFERENCE

Thirty-ninth Session

Rome, 6-13 June 2015

Status Report on Antimicrobial Resistance

Executive Summary

The 150th Session of Council (December 2014) requested for its 151st Session a document outlining the role of FAO and its partners in relation to antimicrobial resistance (AMR). It also requested a related draft Resolution to be submitted to the 39th Conference in June 2015. This report provides background on current and proposed activities for FAO and its partners in relation to AMR. The draft Resolution is appended to this document hereto.

Suggested action by the Council

The Council is invited to review the document and provide any guidance deemed appropriate.

Suggested action by the Conference

The Conference is invited to review the conclusions of the 151st Session of the Council on AMR, and consider the draft resolution on AMR in food and agriculture as set out in Appendix A for approval.

Queries on the substantive content of the document may be addressed to:

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I. Background

1. The availability and use of antimicrobial drugs in terrestrial and aquatic animals and in crop production is essential for their health and productivity and contributes to food security, food safety and animal welfare, and in turn, the protection of livelihoods and sustainability of animal production. Growing global concerns however about resistance to antimicrobial drugs, including antibiotics, threaten to reverse these benefits. In humans, antimicrobial resistance (AMR) also threatens to reverse decades of improvements in human healthcare outcomes with direct impacts on the ability of people to live full and productive lives.

2. AMR refers to situations whereby microorganisms that cause infections or diseases in humans and animals become resistant to antimicrobial agents that they were previously sensitive to, in such a way that infections or diseases become more difficult or impossible to treat. AMR is a natural phenomenon of adaptation of microorganisms in the presence of antimicrobial agents and is the consequence of any use of antimicrobial drugs, exacerbated by inappropriate use. It is now widely acknowledged that the rate at which AMR is developing and spreading far outstrips the rate at which new antimicrobial drugs are being developed and, moreover, investment in research and development of new drugs is costly with diminishing incentives.

3. The consequences of AMR include the failure to successfully treat infections, leading to more severe or prolonged illness, death, production losses and negative consequences for livelihoods and food security. The indirect impacts of AMR extend beyond health risks or reduced productivity, and include higher costs for treatment and healthcare, and drain national and global economies. The health consequences and economic costs of AMR are estimated at 10 million annual human fatalities and a 2 to 3.5 percent decrease in global Gross Domestic Product (GDP), or 100 trillion USD by 2050,[i] although real consequences of AMR remain unpredictable.[ii]

4. Terrestrial and aquatic animal and plant production practices and human behaviour play important roles in AMR development and spread, and resistance organisms can develop and move between food producing animals and humans by direct exposure or through the food chain and the environment. AMR is therefore a multi-sectorial problem encompassing the interface between humans, animals and the environment.

5. AMR is also a global problem as resistant microorganisms and genes do not recognize geographical, species or ecological borders. Resistance arising in one geographical location or species can spread with ease to other geographical locations or spill-over into other species and impact developed and developing countries alike. The containment of AMR requires a global approach combined with concerted actions at the national level that span the policy and regulatory spheres, preventive actions and engagement with producers and other food value chain stakeholders.

6. In May 2014, the WHO Resolution[iii] called for the development of a Global Action Plan (GAP) on antimicrobial resistance and strengthened collaboration between FAO, the World Organisation for Animal Health (OIE) and WHO to combat antimicrobial resistance within the context of the "One Health" approach. FAO has actively contributed to the development of the draft GAP, to be submitted to the WHO World Health Assembly in June 2015. The draft GAP reinforces the need for collaboration on AMR between FAO, OIE, WHO and other intergovernmental organizations, partners and stakeholders, and calls upon FAO to support the implementation of a number of AMR prevention and control measures in food and agriculture. This report highlights the need for an augmented role for FAO towards global efforts to combat AMR. The proposed draft Resolution to be submitted to the 39th Session of the FAO Conference in June 2015 is aligned with and complements the WHO Resolution, and underlines FAO support for the implementation of the GAP.

7. The Rome Declaration on Nutrition[1] also recognizes that food systems need to contribute to preventing and addressing infectious diseases, including zoonotic diseases, and tackling antimicrobial resistance; and endorsed a Framework for Action (FFA) with recommended actions on food safety and antimicrobial resistance, as follows: (i) raise awareness among relevant stakeholders on the problems

[1] www.fao.org/3/a-ml542e.pdf

posed by antimicrobial resistance, and implement appropriate multi-sectoral measures to address antimicrobial resistance, including prudent use of antimicrobials in veterinary and human medicine. [FFA - Recommendation 56]; and (ii) develop and implement national guidelines on prudent use of antimicrobials in food-producing animals, according to internationally recognized standards adopted by competent international organizations, to reduce non-therapeutic use of antimicrobials and to phase out the use of antimicrobials as growth promoters in the absence of risk analysis, as described in the Codex Code of Practice CAC/RCP61-2005 [FFA - Recommendation 57].

8. The 150th Session of the Council endorsed the conclusions and recommendations contained in the Report of the 24th Session of the Committee on Agriculture (September 2014)[2] and requested that AMR be on the provisional agenda of its 151st Session, supported by a document setting out the role of FAO and its partners, and that a related draft Resolution be submitted to the 39th Session of the FAO Conference.

9. The available knowledge and evidence shows that the risk of AMR development and spread is closely correlated with increased use of antimicrobial drugs, particularly inappropriate use in agriculture and in human health. Generally the prevalence of resistance is higher in animal species that are reared under intensive production systems, in workers and the environment of such systems as compared to animal species, workers and the environment of more extensive production systems. It also shows that the risks of AMR development in particular pathogens are reduced in the cases where policy changes have led to reduced or controlled usage of certain antimicrobial drugs. In order to meet the growing future demands for food of animal origin, however, the trend towards more intensive and integrated production systems is likely to lead to increased usage of antimicrobial drugs and likely increase of AMR development and spread.

10. This report acknowledges the existence of gaps in knowledge on AMR dynamics, epidemiology and mechanisms of development and spread in different agriculture production and agro-ecological systems, in the environment and in humans. These gaps will require further study and research in coming years and the issues will be better understood with the benefit of improved molecular techniques. Overall, the gaps do not detract from the compelling evidence that underlines the need for preventive actions to protect human and animal health and livelihoods, and to preserve the efficacy and availability of antimicrobial drugs and the implementation of preventive actions on a precautionary basis.

11. There is also recognition that measures to combat AMR must be informed by sound science and risk analysis principles. This report further outlines the capacity building roles that FAO in collaboration with its partners can play, particularly in developing and middle income countries, to: i) strengthen capacities to reliably generate and analyze data on antimicrobial use and AMR; and ii) to inform the development and implementation of risk-based policies and risk management decisions.

II. Antimicrobial Resistance in Food, Agriculture and the Environment

12. The following paragraphs provide more detailed information on the importance of antimicrobials in agriculture especially, but not limited to food producing animals, their use, the links between agriculture practices and AMR development and spread, and the options, costs and benefits of preventive interventions, including improved management practices in food production, food safety and in the environment.

13. AMR is an issue of global concern and one of the greatest threats to public health worldwide[iv] and is reflected in relevant literature over the last 10 years on the prevalence of AMR in selected bacteria-associated with livestock, aquatic animals and plants, based on sources including official government documents, journal articles and online news articles. The review of this literature shows that in some bacteria, selection of resistant strains is so rapid that clinical efficacy of the antibiotics is lost,[v] with the result that in the past two decades, the rate of emergence of antimicrobial resistance (AMR) has far surpassed progress in the development of new and effective antimicrobials for

[2] CL 150/REP, para 12

therapeutic and lifesaving purposes. Furthermore, the available literature cites information and data on global AMR occurrence, the impacts of AMR in humans and animals, antimicrobial usage and types of applications in agriculture, the relationship and linkage between antimicrobial use in agriculture and AMR, the types of antimicrobials and resistance mechanisms, clinically important antimicrobials for animals and humans that could be rendered ineffective as a result of AMR development, and the consequences for public health, animal health and food safety.

14. An overview and analysis of the current and expected trends and distribution of AMR in zoonotic and non-zoonotic animal pathogens, considering developments in food production and consumption over the next 40 years, provides information on the use of antimicrobials in agriculture for therapeutic purposes,[vi] as well as non-therapeutic uses of antimicrobials for prevention of disease (prophylaxis). Prophylactic use involves administration of antimicrobial to animals that are not showing signs of disease, but are thought to be at risk of infection, through the administration of low, sub-therapeutic doses of antibiotics in feed or drinking water.[vii] Antimicrobials are also utilized for growth promotion, which also involves giving low sub-therapeutic doses of antibiotics to animals through feed or water to increase growth-rate and productivity.[viii]

15. Case studies highlight trends in emergence and spread of resistance in the main pathogens and against antimicrobial agents of concern at a global level. Surveillance data from available sources such as WHONET,[ix] a WHO and partners' AMR database that also serves as a surveillance tool and platform for the development of standards for AMR surveillance, provides valuable information on global AMR distribution and trends. Lastly, case studies also highlight the impact of AMR for farmers, animal husbandry and the food industry where, the loss of effective antimicrobial agents to treat sick animals damages food production and family livelihoods.[x] The risk of exposure of livestock keepers and workers to animals carrying resistant bacteria is also covered.

16. With regard to the drivers, dynamics and epidemiology of AMR emergence, spread and circulation at the human-animal-environment interface, the main factors that drive development and spread in agriculture and food systems include the widely recognized excessive use and misuse of antimicrobials as two of the major drivers for acquired antimicrobial resistance.[xi] The emergence of antimicrobial resistant strains is dependent on different factors: the antimicrobial substance (dosage, frequency and duration) and the organism involved and whether it carries genes that are resistant to that particular antimicrobial agent.[xii] There are also evident links between the use of antimicrobials in agriculture and the occurrence of resistance in foodborne pathogens and commensal bacteria, transmitted through the food chain.[xiii]

17. The food chain and the environment are extremely important factors in the development and spread of resistant organisms. Resistance genes in both pathogenic and non-pathogenic bacteria can be transmitted from food producing animals to humans via food consumption, or via direct contact with animals or their waste in the environment.[xiv] Transmission via food has a potential for widespread dissemination and is quantitatively the most important pathway from livestock to consumers.[xv]The presence of antimicrobial contaminants in the food chain, the environment and water may result in the occurrence of resistance in pathogens and commensal bacteria which are part of the human gut flora[xvi] and in environmental bacteria.[xvii] Antimicrobial resistance has also been detected in environmental bacteria, linked to the use of antimicrobials in agriculture, such as the finding of tetracycline-resistant genes in bacteria recovered from groundwater underlying pig farms.[xviii]

18. Changes to agricultural systems in response to global and local demands include: intensification, which involves changes in livestock/fish numbers, feed type and quantity used; husbandry methods; and animal densities. Intensive livestock production systems are also characterized by frequent, localized contact between livestock and humans involved with production and can be associated with increased risk for transfer of AMR genes and resistant bacteria between animals, humans and the environment. These factors can influence disease dynamics[xix], which in turn may drive changes in antimicrobial usage, and in many cases involve increased use of antimicrobials for prophylaxis for prolonged periods, and increased likelihood of selection for antibiotic-resistant bacteria. FAO data[xx] highlights the country to country variability into how the types of agricultural

systems and basic infrastructure and services also influence the risk of animal-human-environmental transmission of pathogens.

19. Additional impacts of intensive livestock production systems on dissemination of resistant organisms arise from the discharge of large quantities of waste which is disposed of on nearby land[xxi]. This may lead to the transference of AMR genes to bacteria in the environment and to pathogenic or commensal bacteria in wildlife.[xxii] This is of particular concern in agro-ecological systems where the environment may have historically low exposure to AMR pathogens and genes, although significant gaps in our knowledge remain.[xxiii] It is also observed that the prevalence of resistance found in wild animals is still low in areas where the use of antimicrobials in agriculture has historically been low.[xxiv] This indicates that the release of AMR genes into the environment, from a wide range of possible sources, is a critical point for control[xxv] and a valuable area for continuous monitoring, surveillance and governance.

20. Interventions and approaches to reduce AMR occurrence show some impressive reductions in veterinary antimicrobial use and resistance levels observed over the last two decades in some countries, indicating that intervention programmes targeting usage can successfully be implemented.[xxvi] Successful interventions are, however, not restricted to major national programmes in developed countries; small scale local initiatives can also be successful[xxvii] as can interventions in resource poor countries, although these sometimes face other challenges in terms of public health priorities, financial resources and government capacities.[xxviii]

21. There is a general consensus that risk management decisions on AMR need to be taken on the basis of sound science and risk analysis principles. Several risk management options are also available.[xxix] Policy and regulatory interventions provide powerful and effective means of minimizing the risks of development and spread of AMR, as well as controlling and promoting prudent usage. Efforts to regulate and effect policy changes are, however, often marked by competing or conflicting paradoxes that vary widely around the world. Political and economic factors, organization of the food chain, social conditions and others influence mechanisms for approval and use of antimicrobials in humans and animals,[xxx] and antimicrobial stewardship programmes.[xxxi] Moreover, antimicrobial use (AMU) in high-income countries will probably be different from AMU dynamics in low- and middle-income countries, thus requiring different approaches.[xxxii]

22. There are currently several successful antimicrobial stewardship programmes, as well as proposed programmes in low resource countries.[xxxiii] Options for interventions in different geographical and socio-economic settings, including strengths and pitfalls, and effects on AMR indicators are evaluated and recommendations for implementation of antimicrobial stewardship programmes are provided, both at institutional and at field level.

23. The different types of existing interventions in animals and humans should also be considered, including controlling antimicrobial drug use, the application of agreed metrics, analysis of approaches requiring mandatory reductions in veterinary AMU or restrictions on certain types of antimicrobial drugs for veterinary use, particularly those that are critically important for human use, measures to control spread of resistant bacteria through infection control programmes and other approaches, improving/assuring quality of veterinary antimicrobial drugs, improving prudent use of veterinary antimicrobial drugs, altering prescribing behavior by veterinary personnel, improving prudent application of antimicrobial drugs (i.e. right drug for the diagnosis, proper handling, proper dosing and proper application).

24. The costs and benefits of preventive measures including improved agriculture, animal husbandry, health management, food safety, hygiene and biosecurity practices also require consideration. It is proposed that there is need for a balance between the appropriate use of antimicrobials in agriculture and the need to address the increased risks of AMR emergence. This leads to questions on how to balance the benefits of antimicrobial drugs against the possible negative impacts due to misuse or overuse. Such trade-offs are not simple as there are different types of antimicrobials, different uses of these drugs in livestock, different policy and regulatory systems and food systems, and a wide variability in systems for management of animals and control of transmission of AMR bacteria through the food chain. Economists have explored these trade-offs in

animal health over the last forty years and there are some valuable lessons learned on how they relate to AMR and AMU.

III. FAO Roles and Activities to Mitigate the Global Threat of AMR

25. Within FAO, AMR activities are coordinated between a number of technical divisions/units, including animal production and health, fisheries/aquaculture diseases and safety, food safety and the *Codex Alimentarius* Secretariat. FAO has developed an approach that is characterized by a whole food chain approach to minimize the risk of AMR emergence at source and applies risk-based approaches to the prevention of spread of resistant pathogens at all stages of the primary food production to consumption continuum. The approach is very much focused on enhancing capacities of national authorities, producers and value chain stakeholders. It has been tested in a number of countries in recent years and provides a framework and template for future capacity development under five pillars as follows: (i) strengthening national policies and regulatory capacities related to the use of antimicrobials in agriculture; (ii) building and strengthening capacities for AMR surveillance and AMU monitoring in terrestrial and aquatic animal value chains; (iii) improved awareness and advocacy on AMR and related food safety threats; (iv) providing guidance and support to food value chain producers and stakeholders on good animal husbandry, health, biosecurity, management, food safety and hygiene practices; and (v) promoting responsible and prudent use of antimicrobial drugs.

26. FAO has a unique role in supporting producers and value chain actors as important partners in addressing AMR risks within the broader framework of improved food safety and sustainable agriculture. Promoting prudent and responsible use of antimicrobials in agriculture and support to primary producers to adopt good animal husbandry and health management, as well as biosecurity practices to reduce the need for antimicrobial drugs in animal production are essential components. These interventions also support producers and value chain operators to meet requirements for safe national and international trade, to access external markets and contribute to FAO's core role in reducing poverty and ensuring safe food and nutrition security.

27. The main objectives of strengthening AMR surveillance and AMU monitoring are to build country capacities to generate national data on AMR prevalence and trends to inform risk-based management decisions, as well as to support the formulation of appropriate policies. Strengthening regulatory frameworks based on internationally agreed principles and standards is also a core FAO function. In tandem are activities to carry out value chain analysis and to collect value chain information on different production chains, including practices being applied, drugs used, etc., in support of the design of interventions.

28. At the international level, FAO provides scientific advice that guides food safety policies and underpins the work of the joint FAO/WHO *Codex Alimentarius* in the elaboration of international food safety standards and guidelines. The Codex *Code of Practice to Minimize and Contain Antimicrobial Resistance (CAC/RCP 61-2005)*[xxxiv] provides guidance on the responsible and prudent use of antimicrobials in food-producing animals, and its objectives are to minimize the potential adverse impact on public health resulting from the use of antimicrobial agents in food-producing animals, in particular the development of AMR. In addition, the Codex *Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance (CAC/GL 77-2011)*[xxxv] provide a structured risk analysis framework to address the risks to human health associated with the presence in food and animal feed, including aquaculture, and the transmission through food and animal feed of AMR microorganisms or determinants linked to non-human use of antimicrobial agents.

29. Future FAO work will include supporting Member Countries to implement these and related Codex texts, as well as related work on supporting capacities and systems for the detection, monitoring, regulation and management in the use of veterinary drugs, based on internationally agreed standards, principles and guidelines.

30. In relation to aquatic animals, FAO's roles focus on: (i) strengthening national aquatic health strategies to improve aquatic animal health management practices in aquaculture and to implement *Good Aquaculture Practices* to reduce transboundary diseases and to reduce the use of antimicrobials;

(ii) developing national veterinary drug regulatory frameworks to improve prudent use of antimicrobial in aquaculture; (iii) building national capacities on risk-based health management, including transboundary movement of aquatic species, so that the need to use antimicrobials are reduced; (iv) assisting countries to improve compliance with international requirements on the use of antimicrobials; and (v) providing information and guidance to producers and aquaculture value-chain operators.

31. A number of FAO guidelines and publications[xxxvi] aimed at improving biosecurity through prudent and responsible use of veterinary medicines in aquatic food production have also been developed, including *Technical Guidelines on the Prudent and Responsible Use of Veterinary Medicines in Aquaculture* and on aquaculture certification.[xxxvii] The guidelines support FAO's *Code of Conduct for Responsible Fisheries* (CCRF) with recommendations targeting governments, private sector, including small-scale producers and aquatic animal health professionals.

32. In addition to the foregoing, FAO aims to develop a 'step-wise, progressive management pathway' (PMP) for addressing AMR issues in food and agriculture for use in country settings to assist Member Countries to set targets and to develop a pathway for progressive achievement of improved management of AMR risks and antimicrobial use, in line with international requirements and the objectives of the GAP on AMR.

33. The overarching intra/inter-departmental and inter-agency work and assistance to the membership require the identification of existing gaps and synergies for the strengthening of AMR activities within FAO's reviewed Strategic Framework. The scope of FAO's global and regional work on AMR falls mainly within the purview of SO5, and is also related to SO2 and SO4.

IV. Partnership and FAO/OIE/WHO Tripartite Collaboration

34. The multi-sectoral and multi-disciplinary nature of AMR means no one organization has all the answers or can go it alone on combatting the global threat of AMR. FAO has established strong and effective collaboration on AMR within the framework of the FAO/OIE/WHO tripartite agreement and with other public and private sector organizations. FAO is also an active partner and contributor in the development of the GAP led by WHO; a participant in the WHO Strategic and Technical Advisory Group (STAG) on AMR and the WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance (AGISAR). In addition, FAO contributes to the development and periodic review of relevant standards on AMR in the OIE *Terrestrial Animal Health Code*,[xxxviii] which sets out standards for the improvement of animal health and welfare and veterinary public health worldwide, including through standards for safe international trade in terrestrial animals (mammals, birds and bees) and their products; and the *Aquatic Animal Health Code*[xxxix], which sets out standards for the improvement of aquatic animal health and welfare of farmed fish worldwide, including through standards for safe international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products. In recent months FAO has also contributed to the ongoing development of the OIE global database on monitoring the use of antimicrobial agents in animals.

35. In support of tripartite dialogue and partnership, FAO, OIE and WHO have developed a Tripartite Concept Note (2010), which emphasizes sharing of responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces. Technical focal points for AMR have been designated by each of the organizations and have jointly elaborated a tripartite work plan, which is aligned to the GAP. The work plan prioritizes advocacy, awareness, training, AMR surveillance, monitoring the use of antimicrobial agents, promotion of prudent use of antimicrobial agents and the development and implementation of the GAP on AMR.

V. The Global Health Security Agenda

36. FAO has an important role in the implementation of the country-led Global Health Security Agenda (GHSA) whereby FAO, OIE and WHO are advisors. One of the Action Packages is dedicated exclusively to AMR and recognizes the need for dialogue among the public health, veterinary and agriculture authorities. FAO has shared with the GHSA the FAO platforms for prevention, detection

and response, as well as capacity development tools and guides that can serve donor and recipient countries, should such requests be forthcoming.

VI. FAO Strategic Framework and Programme of Work and Budget (PWB)

37. Within FAO, AMR-related activities cut across Strategic Objectives (SO) and contribute to increased food security and sustainable diets (SO1), and the transition to sustainable agricultural sector production systems (SO2). In addition, their results will also support the reduction of rural poverty (SO3), more inclusive and efficient agricultural and food systems at local, national and international levels (SO4), and the resilience of agri/aqua-dependent livelihoods (SO5).

VII. Conclusions

38. As the lead international agency with the mandate to achieve global food and nutrition security, FAO is well placed to provide leadership in addressing emerging issues and threats to global food and agriculture, including the rising global threat of AMR. Mitigating AMR risks against the backdrop of world population growth and urbanization, and the attendant upward trends in the demand for food of animal origin will require that FAO provide guidance on the balance between sustainable production growth and the need to adopt sustainable models for production intensification, policy and regulatory measures that create the enabling environment for better animal husbandry, hygiene, health and management practices, and promote responsible and prudent use of antimicrobial agents in agriculture.

39. The international community stands to benefit from an enhanced and coordinated FAO role in the global efforts to combat the rising threat of AMR in the form of opportunities for sharing of information on AMR threats and approaches to prevention and control, which are adapted to regional and national contexts, early warning of AMR emergence and trends in agriculture, and patterns of spread. This dedicated body of work will support and enhance the contribution of the livestock, fisheries and aquaculture sector to sustainable food and agriculture, global food security and health, equity and growth.

Appendix A

Resolution ___/2015

Antimicrobial Resistance

THE CONFERENCE,

Having considered the Secretariat's report on antimicrobial resistance[3] in food, agriculture[4] and the environment;

Recalling the Rome Declaration on Nutrition, 2014 and accompanying Framework for Action and also recalling request by the Council at its Hundred and Fiftieth Session to the Secretariat;

Recognizing the role of FAO as the lead intergovernmental agency with the mandate to improve agriculture, forestry, fisheries, management of natural resources and to achieve global food and nutrition security;

Noting also the relevant and globally agreed FAO/WHO Codex Alimentarius Commission[5] guidance and Codes to address antimicrobial resistance;

Aware that access to effective antimicrobial agents constitutes a prerequisite for productive and sustainable agriculture, particularly animal husbandry and aquaculture and safe food, on which countless livelihoods depend throughout the world, but that hard-won gains in animal and human health and development are at risk due to increasing resistance to antimicrobials;

Aware that the health and economic consequences of antimicrobial resistance constitute a heavy and growing burden on high-, middle- and low-income countries, requiring urgent action at national, regional and global levels, particularly in view of the limited development of new antimicrobial agents;

Recognizing that there is need for a coherent, comprehensive and integrated approach at global, regional and national levels in a 'One Health' approach and beyond, involving different actors and sectors such as human and veterinary medicine, agriculture, food safety, environment and consumers;

Recognizing that antimicrobial resistance involves a wide range of pathogens including bacteria, viruses, fungi and parasites but that the development of resistance to antibiotics, is of particular urgency and most in need of immediate attention;

Emphasizing the importance of policy recommendations being based on sound scientific evidence and risk analysis principles;

Noting the evidence of the transmission and spread of antimicrobial resistance between animals, humans, in the food chain and the environment;

Welcoming the tripartite collaboration on antimicrobial resistance between FAO, the World Health Organization (WHO) and the World Organization for Animal Health (OIE), as well as other international collaboration;

Noting the adoption by the Sixty-seventh World Health Assembly of a resolution on antimicrobial resistance,[6] including its request to the WHO Director-General to strengthen the tripartite collaboration between FAO, OIE and WHO for combating antimicrobial resistance in the spirit of the 'One Health' approach;

Welcoming the publication by WHO of the draft Global Action Plan on antimicrobial resistance,[7] into which FAO provided input, and noting the reports and guidance to and by the Executive Board[8] of WHO at its Hundred and Thirty-sixth Session;

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[3] C 2015/28

[4] Includes the growing of crops and the rearing of terrestrial and aquatic animals.

[5] Codex Guidelines on Risk Analysis of Foodborne Antimicrobial Resistance - CAC/GL 77- 2011 and Code of Practice to Minimize and Contain Antimicrobial Resistance - CAC/RCP 61-2005

[6] WHA67.25, 24 May 2014

[7] WHO document EB136/20, 12 December 2014

[8] WHO documents EB136/19, 5 December 2014 and EB 136/20, 12 December 2014

Aware that the draft global action plan reinforces the need for collaboration on AMR between FAO, OIE and WHO and other intergovernmental organizations, partners and stakeholders and calls upon FAO to support the implementation of antimicrobial resistance prevention and control measures in food and agriculture;

Noting the Secretariat's report to the Council at its Hundred and Fifty-first Session, set out in document C2015/28 and the deliberations of the Council;

Strongly supporting the ongoing work by the Secretariat, in collaboration with Members and others, to assess the evidence of antimicrobial resistance in food and agriculture systems, identify knowledge gaps, and provide recommendations based on sound evidence to Members,

1. **Urges** Members to:

a) **increase** political awareness, engagement and leadership to ensure continued access to antimicrobial drugs through, the rational and responsible use of antimicrobials in agriculture, in particular those on the OIE and WHO lists of Critically Important Antimicrobials of veterinary and human health importance;
b) **facilitate** efforts to strengthen analysis and the international evidence base for development, transmission and control of antimicrobial resistance in food, agriculture and the environment;
c) **take evidence-based urgent action** at national, regional and local levels to mitigate risks posed by antimicrobial resistance in food, agriculture and the environment;
d) **develop or strengthen** national plans, strategies and international collaboration for the surveillance, monitoring and containment of antimicrobial resistance in food, agriculture and the environment, in close coordination with related plans for human health;
e) **mobilize** human and financial resources in order to implement plans and strategies to strengthen surveillance and to minimize development and transmission of antimicrobial resistance in food, agriculture and the environment;
f) **monitor** trends of antimicrobial resistance, in food, agriculture, and the environment and to share such information;
g) **improve** among all relevant stakeholders awareness of i) the threat posed by antimicrobial resistance; ii) the need for responsible use of antimicrobial drugs in agriculture and iii) good animal husbandry, health, biosecurity, management and hygiene practices;
h) **support** low- and middle-income countries to develop systems for detection, surveillance and monitoring of antimicrobial resistance and antimicrobial use and related policies to achieve progressive management of antimicrobial resistance risks in food, agriculture, and the environment;
i) **encourage and support** research and development to combat antimicrobial resistance and promote responsible use of antimicrobials in agriculture; and
j) **support** development of antimicrobial resistance surveillance systems in agriculture.

2. **Requests** the Organization to:

a) **ensure** that all relevant parts of the Organization, at headquarters, regional and country levels, are actively engaged and coordinated in promoting work on combatting antimicrobial resistance, within the parameters of the FAO Strategic Objectives;
b) **help strengthen** the tripartite collaboration between FAO, OIE and WHO for combating antimicrobial resistance in the spirit of the 'One Health' approach and to maximize synergies with OIE in animal health;
c) **support** efforts to explore with the United Nations Secretary-General options for a high-level initiative, including a high-level meeting, to increase political awareness, engagement and leadership on antimicrobial resistance;
d) **support** implementation of the Global Action Plan to combat antimicrobial resistance, which seeks to address the need to ensure that all countries, especially low- and middle-income countries, have the capacity to combat antimicrobial resistance and which takes into account existing action plans and all available evidence and best practices; and

e) **keep Members regularly apprised** of the Secretariat's work in this area, through reports to the Committee on Agriculture.

(Adopted on …. 2015)

Appendix B

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