Advanced Course

ANTIMICROBIAL RESISTANCE AND ONE HEALTH: IMPLICATIONS FOR AGRICULTURAL SYSTEMS, FOOD SAFETY AND THE ENVIRONMENT

Zaragoza (Spain), 18-22 March 2019

1. Objective of the course

Antimicrobial Resistance (AMR) is a global threat to human, animal, and environmental health, putting food safety, food security and sustainable economic development at serious risk. Antimicrobial resistance occurs when microorganisms causing infections, such as bacteria, fungi, viruses and parasites, evolve resistance to antibiotics and other antimicrobial treatments. While this process can occur naturally through adaptation to the environment, the inappropriate and excessive use of antimicrobials within and across sectors speeds up the development of resistance and the failure of medicines. In countries where legislation and surveillance to monitor the use of antimicrobials and the prevention and control of AMR is weak or inadequate, the risk of AMR is particularly high.

Currently resistant infections kill one person every minute and without action, more lives and livelihoods will be in harm’s way. The health and economic costs of AMR are significant and further compounded by a growing global population with rising food demands. Resistant bacteria also cross borders and move across sectors such that by 2050, AMR may strip the global economy of more than $6 trillion dollars annually – nearly 4% of Gross Domestic Product. The full impact of AMR remains hard to estimate, underscoring the need for swift and preventative action.

Staying ahead of AMR is a cross-sectoral responsibility and requires the coordinated action of all actors involved, including the agri-food chain. Clear priorities for action include ensuring access to quality vaccines, medicines, and veterinary care, and developing good infection prevention practices and prudent antimicrobial use strategies to promote sustainable food production and healthy agricultural systems.

This course will support participants in analysing and understanding the cross-sectoral challenges of AMR, and provide an overview of the public health implications of antimicrobial use in plant and terrestrial and aquatic animal production sectors. This will help participants to identify current gaps in awareness, knowledge, and capacity for change as barriers that must be overcome for sustainable changes against AMR, and to provide foresight on future perspectives.

At the end of the course participants will:
- Understand the relevance of AMR in the food chain and master the relevant steps to combat AMR.
- Be aware of the responses of the international community to curb AMR.
- Have better skills to improve AMR surveillance and monitoring actions to enable more informed decision making.
- Identify the potential role of governments, industry, producers and other stakeholder groups in AMR management and research.
- Be able to participate in the design, implementation and evaluation of activities to tackle AMR.
- Brainstorm and exchange ideas on national and local solutions and identification of gaps to tackle AMR.
- Count on an international professional network in the fight against AMR.

2. Organization

The course is jointly organized by the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (IAMZ), and the World Organization for Animal Health (OIE), with the technical support of the Food and Agriculture Organization of the United Nations (FAO). The course will take place at the Mediterranean Agronomic Institute of Zaragoza and will be given by well qualified lecturers from international organizations, and universities and government departments in different countries.

The course will be held over a period of one week, from 18 to 22 March 2019, in morning and afternoon sessions.

3. Admission

The course is designed for 25 participants with a university degree. It is aimed at professionals from public or private sectors working in animal and plant health or food safety who are involved or interested in the diverse strategies to cope with the antimicrobial resistance problem. The course is also open to livestock and crop producers, environmentalists, researchers, technical advisors, and other professionals concerned with health and risk analysis.

Given the diverse nationalities of the lecturers, knowledge of English, French or Spanish will be valued in the selection of candidates, since they will be the working languages of the course. The Organization will provide simultaneous interpretation of the lectures in these three languages.

4. Registration

Candidates must apply online at the following address: http://www.admission.iamz.ciheam.org/en/

See updated information at www.iamz.ciheam.org
Applications must include the curriculum vitae and copy of the supporting documents most related to the subject of the course.

The deadline for the submission of applications is 14 January 2019. The deadline will be extended for candidates not applying for a grant and not requiring a visa while places are available.

Applications from those candidates requiring authorization to attend the course, may be accepted provisionally.

Registration fees for the course amount to 500 euro. This sum covers tuition fees only.

3. Scholarships
Candidates from CIHEAM member countries (Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Turkey) may apply for scholarships covering registration fees, and for scholarships covering the cost of travel and full board accommodation in the Hall of Residence on the Aula Dei Campus.

Candidates from other countries who require financial support should apply directly to other national or international institutions.

4. Insurance
It is compulsory for participants to have medical insurance valid for Spain. Proof of insurance cover must be given at the beginning of the course. Those who so wish may participate in a collective insurance policy taken out by the Organization, upon payment of the stipulated sum.

5. Teaching organization
The course requires personal work and interaction among participants and with lecturers. The international characteristics of the course favour the exchange of experiences and points of view.

The course has an applied approach. Formal lectures will be delivered with applied examples and complemented with debates, case studies and exercises to familiarize participants with the use of surveillance and project planning tools. Participants will work in groups on the identification of management strategies to cope with AMR under different scenarios.

Participants will be invited to present before the beginning of the course a brief document describing the current actions to cope with antimicrobial resistance and to rationalize the use of antibiotics in the agri-food chains in their countries. These documents will be shared with lecturers and other participants.

6. Programme
1. Antimicrobial Resistance (AMR) as a global public health threat. Global initiatives and responses (1 hour)
2. AMR: the role of the agriculture sector (1 hour)
3. Responsible and prudent use of antimicrobial agents in animals and strategies to achieve implementation (1 hour)
4. AMR in the context of One Health (1 hour)
   4.1. One Health concept and the need of multisectoral cooperation
   4.2. Antimicrobial Use (AMU) in agri-food systems
   4.3. Emergence and dissemination of AMR in bacterial communities
4.4. The role of primary production, food and the environment on AMR dissemination
4.5. Most pressing and emerging types of AMR (e.g. MRSA, ESBLs, Carbapenemase, mcr genes resistance to colistin)
4.6. Pathways of transmission of AMR in the food chain
5. Regional initiatives and regulatory actions: the EU example (1 hour)
6. National responses to AMR (6 hours)
   6.1. The FAO Progressive Management Pathway (PMP)
   6.2. Regulatory areas relevant for AMR and regulatory responses to curb AMR
   6.3. Development of a National Action Plan (NAP)
   6.4. Case study: the Spanish NAP
   6.5. Awareness building strategies and communication campaigns
   6.6. Open debate
7. Surveillance and monitoring of AMR/AMU for generation of evidence (8 hours)
   7.1. Monitoring of AMR and AM residues in the food chain. Examples of existing programmes
   7.2. Monitoring AM quality
   7.3. How to collect AMU information: prescription and sales data, national surveys and associated challenges
   7.4. Integration of surveillance systems and need for harmonized comparable data across sectors, countries and regions
   7.5. Data gaps and challenges in collecting AMR and AMU surveillance information globally
   7.6. Laboratory capacity building and assessment tools: the examples of FAO ATLASS and WHO GLASS
8. Tackling AMR in practice (5 hours)
   8.1. Preventive measures to reduce the need of antimicrobials and unintentional exposure to antimicrobials (e.g. biosecurity, vaccines, nutrition, hygiene)
   8.2. Optimization of AMU procedures according to types of animal and production systems, including application of leveraging technology
   8.3. Sustainable practices in agriculture and food production, and environmental protection (e.g. pesticide and waste management)
   8.4. Examples of countries in transition to more responsible production models
   8.5. Open debate
9. Building evidence through research (4 hours)
   9.1. From phenotypes to genomics and metagenomics
   9.2. Current research in AMR risk assessment: new source attribution models
   9.3. Alternatives to antimicrobials: from phages to new vaccination strategies
   9.4. The microbiome, gut health and animal nutrition
   9.5. Research gaps: role of the environment, plant production and biocides, hot spots for AMR selection and transmission, etc.
   9.6. Future perspectives: new machine learning techniques, new risk attribution model frameworks, new rapid diagnostic methods, etc.
   9.7. International research initiatives on AMR: instruments, outcomes and future needs
10. Practical group work on AMR management based on case studies (5 hours)
   10.1. Introduction to the practical
   10.2. Working session
   10.3. Presentation of results and discussion

GUEST LECTURERS
C. BULLÓN, FAO, Roma (Italy)
B. GONZÁLEZ-ZORN, Univ. Complutense Madrid (Spain)
A. JOHNSON, FAO, Roma (Italy)
E. LIEBANA, EFSA, Parma (Italy)
J. LUBROTH, FAO, Roma (Italy)
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J. PINTO FERREIRA, OIE, Paris (France)
D. RODRÍGUEZ-LÁZARO, Univ. Burgos (Spain)
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