WHO Global Workshop on Strengthening Integrated Surveillance of Foodborne Diseases and Antimicrobial Resistance through Whole Genome Sequencing and AGISAR Thematic Working Groups meetings

Venue: Faculty of Public Health, Thammasat University, Rangsit Campus, Pathumthanee Province, Thailand
Date: 4-8 April 2016

Concept Note

1. WHO Global Workshop on Strengthening Integrated Surveillance of Foodborne Diseases and Antimicrobial Resistance through Whole Genome Sequencing

1.1 Background

The Food Safety and Zoonoses Department of the World Health Organization, in collaboration with the Thammasat University of Thailand, and the WHO Collaborating Centres at the Technical University of Denmark and the Utrecht University of the Netherlands, will conduct the WHO Global Workshop on Strengthening Integrated Surveillance of Foodborne Diseases and Antimicrobial Resistance using Whole Genome Sequencing. The workshop participants will include laboratory technicians and epidemiologists from National Reference Centers at Ministries of Health and Ministries of Agriculture from selected countries from five WHO Regions. The Food and Agriculture Organization of the United Nations (FAO) and World Organisation for Animal Health (OIE) will be represented. The emphsis of the workshop will be that control and prevention of diseases caused by foodborne bacteria, and their antimicrobial resistance determinants, requires a "One Health" approach involving multisectoral collaboration between persons working in human and agricultural sectors.

As described in the recently released WHO Global Action Plan (GAP) on antimicrobial resistance, antimicrobial resistance is a critical public health threat and its control is a WHO priority. Two of the objectives of the WHO GAP are strengthening the knowledge and evidence base through surveillance, and optimizing the use of antimicrobial agents in human and animal health. Meeting these objectives requires Member Countries to stregethen their capacity to identify, monitor and characterize foodborne pathogens and their antimicrobial resistance determinants.

Whole Genome Sequencing (WGS) is a new tool to characterize foodborne bacteria and their antimicrobial resistance determinants. WGS enables global, regional and national level surveillance and other studies on antimicrobial resistance. For example, PulseNet International, the international network for subtyping of foodborne disease pathogens, is increasely using WGS to characterize foodborne pathogens and thereby enhancing the knowledge of the foodborne pathogens globally.

This Global Workshop aims to:

- create a valuable learning opportunity by providing an introduction to the application of WGS in foodborne disease surveillance and exploring examples of how countries from around the world have utilised the technology

• exchange of experience for, and increase networking among, professionals, from different WHO Regions and from multidisciplinary backgrounds, who play a substantial role in national surveillance systems for foodborne diseases and antimicrobial resistance.

1.2 Objectives

1. Strenghten foodborne diseases and antimicrobial resistance surveillance at national and regional level
2. Train participants on WGS method as a tool to identify and characterized foodborne pathogens and antimicrobial resistance determinants
3. Promote communication, collaboration and data sharing between microbiologists and epidemiologists from food, animal and human health sectors within and between countries

1.3 Expected outcomes

1. Increased knowledge about WGS and how it can be used to identify foodborne pathogens and antimicrobial resistance
2. Hands-on training for the different methodologies to determine antimicrobial resistant determinants including the detection of the most important resistance mechanisms in foodborne pathogens (ESBL, CRE) and quality control of the process.
3. Training in epidemiological methods applied in integrated surveillance for antimicrobial resistance, such as risk assessment, burden of illness, attribution to source of origen.
4. Exchange information and experiences, and improve networking, among various national foodborne disease surveillance programs in the WHO Regions
5. Promote One Health approach for addressing animicrobial resistance among a network of professionals in human, animal and environmental health
6. Fostering the interaction and efforts of WHO, the Food and Agriculture Organization of the United Nations (FAO), and the World Organization for Animal Health (OIE) for addressing antimicrobial resistance

1.4 Structure of the workshop

The working language will be English and the workshop will include the following types of sessions:

- *Plenary session*: presenting papers and lectures of methods to determine antimicrobial resistance, sharing experiences through discussion
- *Working Group session*: groups of participants work thourgh practical case studies on the implementation of foodborne disease surveillance and antimicrobial resistance using the One Health approach
- *Laboratory session*: Working in the laboratory for isolation, identification and characterization of foodborne pathogens and antimicrobial resistance determinants, WGS.
- *Computer session*: Working in the computer laboratory using WGS and other tools.

1.5 Expected participants: 17 countries

AFRO (5): Gambia, Kenya, Malawi, Senegal, South Africa.

PAHO/AMRO (7): Argentina, Colombia, Chile, Mexico, Paraguay, Peru, Venezuela

EMRO (2): Bangladesh e Iran.

SEARO (2): India, Thailand

WPRO (3): Philippines, Vietnam, Malaysia, China.

From each country, 1 microbiologist/molecular specialist and 1 epidemiologist (countries where identify).

2. AGISAR Thematic Working Groups meeting

2.1 Background

The WHO Advisory Group on Integrated Surveillance of AntimicrobialResistance (AGISAR) was established in 2008 to support WHO to minimize the public health impact of antimicrobial resistance (AMR) associated with the use of antimicrobials in food-producing animals. AGISAR advises WHO in aspects of AMR related to the food chain, including: advocating for improved control of antimicrobial use in the food chain using the 'One Health' approach; promoting and facilitating integrated surveillance for AMR through development of guidance and national capacity building projects; and maintaining the WHO List of Critically Important Antimicrobials for Human Medicine (WHO CIA List). AGISAR members maintain communication through regular teleconferences, email exchanges and face-to-face meetings. FAO and OIE participate in AGISAR meetings to streghten the tripartite collaboration.

The sixth face-to-face meeting of AGISAR held in Korea in June 2015 established the terms of reference of AGISAR for the period 2015-2019, including a new membership and approached the adoption of the Global Action Plan on AMR. AGISAR will support WHO and countries in the implementation of GAP on 1) activities on the containment of antimicrobial resistance from the food chain (GAP objective 2), 2) Provide advice and support to WHO capacity-building activities related to integrated surveillance of antimicrobial resistance and collection of antimicrobial usage data (GAP objectives 1, 2 and 4), 3) Review and maintain the WHO list of critically important antimicrobials (CIA List) for human medicine (GAP objectives 2 and 4), 4) Support WHO in the implementation of FAO/OIE/WHO tripartite activities and activities of Codex Alimentarius on antimicrobial resistance (GAP objectives 1, 2, 3, 4, and 5).

Based on the AGISAR Five-year Strategic Framework, five AGISAR thematic working groups were identified : 1. Knowledge management and communication, 2. Critically important antimicrobials list, 3. Optimal use of antimicrobial agents in food production, 4. Laboratory methods in antimicrobial susceptibility testing and 5. Data Integration and analysis.

Working Group 4 supports the implementation of GAP strategic objective 2 to ensure the access to laboratories capable of conducting quality assured antimicrobial susceptibility testing on animal, food and clinical samples, and which participate in an external quality-assurance programme.

Working Group 5 supports the implementation of GAP strategic objectives 2,4,5 and will focus to develop and design guidance on data-collection methods on usage (human and animal) to support data management in the integrated surveillance of antimicrobial resistance and antimicrobial consumption and how to integrate surveillance data from the food chain into economic models.

This meeting will provide the update on laboratory procedures, methods and technology including susceptibility testing, quality control and Whole Genome Sequencing in the different sectors, human,

animal, food and enviroment, and update to be used in a new version of the AGISAR Guidance on Integrated surveillance of AMR including.

2.2 Objectives

2.2.1 Laboratory methods and Antimicrobial Susceptibility Testing Thematic Working Group

1. Keep updated the list of priority monitored foodborne bacteria isolated from human clinical cases, food animals, and animal-derived food products
2. Keep updated the list of priority antimicrobials to be tested (for the AGISAR Guidance on Integrated Surveillance of AMR)
3. Propose steps to incorporate quality assurance into antimicrobial susceptibility testing and Monitoring
4. Propose steps to incorporate WGS into monitoring

2.2.2 Data Integration and Analysis Thematic Working Group

1. Revise/update the AGISAR Guidance on Integrated Surveillance of AMR (usage and data management sections)
2. Develop the integration, analysis and reporting chapter of the surveillance guidance document based on appropriate methods
3. Provide guidance on a chapter for conducting country and regional capacity-building studies on integrated usage and resistance surveillance
4. Provide guidance for informing economic and risk analyses, based on data arising from integrated surveillance systems

2.3 Expected outcomes

7. Complete review and update of laboratory procedures and standards to identify and characterized foodborne pathogens with a One Health approach
8. Plan of activities to strenghten the laboratory capacities, standarization and use of WGS on Member States to support the implementation of GAP
9. Establishment of a plan to update the AGISAR Guidance on Integrated Surveillance on AMR that includes guidance in capacity building and tools to inform economic and risk analyses on integrated surveillance.
10. Fostering the interaction and efforts of the tripartite collaboration between WHO, FAO and OIE.

2.4 Structure of the meeting

The meeting will include the following types of sessions:

- *Plenary session*: presenting lectures to update the laboratories procedures and the Integrated Surveillance of AMR of the foodborne pathogens in the food chain
- *Sub-Working Group session*: Discussion of specific thematics to standardize procedures for laboratory and surveillance

3. Venue

Faculty of Public Health, Thammasat University, Pathumthanee Province, Thailand.

4. International facilitators and organizers

4.1 Experts AGISAR members

Rene Hendriksen, Technical University of Denmark (DTU) WHO Collaborating Centre, Denmark.
Jaap Wagenaar, Utrecht University WHO Collaborating Centre, The Netherlands
Fred Angulo, Center for Global Health, Centers for Disease Control and Prevention, USA.
Sam Kariuki, Kenya Medical Research Institute (KEMRI), Kenya.
Marcelo Galas, National Institute of Infectious Diseases, Argentina.
H. Morgan Scott, College of Veterinary Medicine and Biomedical Sciences

4.2 Thailand organizers

Orasa Suthienkul, Faculty of Public Health, Thammasat University, Rangsit Campus
Achiraya Siriphap, Department of Microbiology and Parasitology, Faculty of Medical Science, University of Phayao

4.3 OIE

Dr Mary Joy Gordoncillo

4.4 FAO

Katinka DeBalogh

4.5 WHO

Awa Aidara-Kane, Food Safety and Zoonoses Department, WHO.
Enrique Perez, Pan American Health Organization, WHO.
Jorge Matheu Food Safety and Zoonoses Department, WHO.