



## FAO-APHCA-DLD ASEAN Regional Training Workshop on “Antimicrobial Susceptibility Testing (AST) of Bacteria Isolated from Farm Animals”

Bangkok, 7 and 8 October 2014

### Background

Many bacteria are increasingly becoming resistant to antimicrobial compounds commonly used to control bacterial infections in humans and animals and antimicrobial resistance (AMR) has become one of the main public health issues in many parts of the world, including the Asia-Pacific region.

Based on data from the Study of Monitoring Antimicrobial Resistance Trends (SMART), the prevalence of antimicrobial resistance varies across geographic regions but is highest in Asia-Pacific countries where AMR-food borne diseases are increasingly emerging as public health challenge. Unfortunately, systematic testing of pathogens and commensals from livestock for antimicrobial susceptibility (AST) has not yet been established as a routine task of public veterinary services while the results of AST studies carried out by academic institutions are often difficult to compare due to methodological differences.

The above shortcomings have been highlighted in the past APHCA Sessions and animal health services of APHCA members are taking steps to address the issue. The intention of the 2-day training workshop is to familiarize **laboratory staff** with different AST methods, to provide a forum for the exchange of professional experience, to develop an initial sampling plan and to work towards a degree of standardization of AST protocols in Southeast Asian countries.



CLINICAL AND  
LABORATORY  
STANDARDS  
INSTITUTE®



## Training Objectives

Upon completion of the workshop, the participants will be able to:

1. Identify and discuss various antimicrobial agents used in veterinary medicine.
2. List and describe various types of susceptibility testing.
3. Utilize and discuss quality control practices in susceptibility testing.
4. Perform a variety of dilution procedures.
5. Perform susceptibility testing quality control procedures.
6. Perform various antimicrobial susceptibility testing procedures.

## Workshop Agenda

Topics
<ul style="list-style-type: none"><li>• Introduction</li><li>• Terms and Definitions</li><li>• Selection of Antimicrobial Agents</li><li>• Broth and Agar Dilutions Susceptibility Testing</li><li>• Antimicrobial Agents</li><li>• Quality Control</li><li>• Agar Dilution Procedure</li><li>• Broth Dilution Procedure</li><li>• Broth Dilution Susceptibility Testing of Fastidious Organisms</li><li>• Specific Antimicrobial Resistance Tests</li></ul>

## Venue

Chulalongkorn University, Centre for AMR Monitoring of Foodborne Pathogens

## Instructors

**Lead instructor and course supervisor:** Dr. S. Simjee, Co-Chair of the Clinical and Laboratory Standards Institute (CLSI) Veterinary Sub-Committee on Antimicrobial Susceptibility Testing.

**Co-instructor:** Ass. Prof. R. Chuanchuen, Director of the Centre for AMR Monitoring of Foodborne Pathogens, Chulalongkorn University



## Day 1: (Tuesday 7 October)

Morning lectures to introduce:

- Clinical Laboratory Standards Institute (CLSI) overview
- AST: what is being measured and why standardized methodology is needed
- The 3 AST methods (agar, broth and disk)
- Quality Control (QC): why it is important and why it must be included
- CLSI documents overview
- AST materials and methods: the need for sterility and pure cultures
- Health and safety in the laboratory

Afternoon hands-on:

- Prepare antibiotic incorporated agar plates
- Prepare 0.5 McFarland of all isolates and QC bacteria
- Inoculate disk plates and apply disk
- Inoculate agar plates
- Prepare micro-titre plates with antibiotics
- Inoculate micro-titre plates

## Day 2: (Wednesday 8 October)

Start the day with a reminder of health and safety in the laboratory

Morning hands-on:

- Read zones of inhibition and discuss results
- Read agar dilution plates and discuss results
- Read broth panels and discuss results
- Discuss QC ranges and interpretive criteria
- Discuss the pros and cons of each method and hold Q&A session on methodology

Afternoon:

- Discuss AST of Fastidious Organisms
- Discuss detection of resistance by AST assays (possibly incorporate into one of the assay methods)
- Troubleshooting and common mistakes made in AST
- Interpretive criteria: how they should be used and what should be done in the absence of veterinary specific interpretive criteria



CLINICAL AND  
LABORATORY  
STANDARDS  
INSTITUTE®



## Participants

Key laboratory staff tasked with carrying out AST  
max 20 / 24

## Materials

Representatives from each country will be provided one copy of the CLSI Vet 01-A4 and S2 to take back to their home laboratory. This is the CLSI standard on veterinary antimicrobial susceptibility testing methodology and QC and data interpretation.