Caribbean Integrated Surveillance System on Antimicrobial Resistance in Agriculture (CISARA) Pilot Projects
1. Antimicrobial Use and Antimicrobial Resistance in Agriculture Training

2. Technical Missions and Sensitization Talks

3. CISARA Project
   - SOPs
   - Webinar Training
   - Field Team Training

4. CISARA Preliminary Results
Antimicrobial Use and Antimicrobial Resistance in Agriculture Training
Pilots were created during 2-week training program.
Phase 1: Multi-country Pilot Studies in Primary Production Caribbean countries

33 Participants
14 Caribbean Countries**
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<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
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<tr>
<td>8:00 - 9:00 AM</td>
<td>Workshop: Science and Society of Microbial Resistance</td>
<td>Epidemiology and Surveillance</td>
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<td>9:00 - 11:00 AM</td>
<td>Workshop: Science and Society of Microbial Resistance</td>
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**Current status of antimicrobial use and antimicrobial resistance – Trinidad and Tobago**

Antimicrobial resistance has become a major public health concern worldwide. In Trinidad and Tobago, the situation is no different. The latest data from the Ministry of Health indicates that the prevalence of antimicrobial resistance is increasing, with antibiotic-resistant infections causing significant morbidity and mortality. The government has implemented various measures to address this issue, including the ban on the use of certain antibiotics in animal feed, increased surveillance, and education campaigns for healthcare professionals and the general public. However, more concerted efforts are needed to combat antimicrobial resistance effectively.

Shameem Hussain, PhD
Vice President, Public Health, Ministry of Health
Ministry of Health, Trinidad and Tobago

Animal Production and Health, Ministry of Food and Agriculture.
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<th>Time</th>
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<tr>
<td>8:00 AM</td>
<td>Lab Meeting &amp; Material Review</td>
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**Notes:**
- Microscopy Review includes discussions on sample preparation, imaging techniques, and image analysis.
- Lab Meeting & Material Review involves reviewing the latest research papers and discussing upcoming projects.

**Images:**
- A group of people in lab coats standing in front of a laboratory setup.
- Students working on microscopes.
- A whiteboard with handwritten notes and diagrams.
- A classroom setting with students and instructors.

**Lab Equipment:**
- Microscopes
- Computers
- Test tubes
- Pipettes

**Lab Procedure:**
1. Prepare samples for microscopy.
2. Image samples under different magnifications.
3. Analyze images for bacterial identification.
4. Discuss findings and project directions.

**Student Feedback:**
- The lab is informative, and the instructors are very helpful.
- The hands-on experience is valuable for understanding theoretical concepts.

**Future Plans:**
- Continue with microscopy studies.
- Introduce new techniques in upcoming sessions.
- Collaborate with other labs for joint projects.
Caribbean Integrated Surveillance System on Antimicrobial Resistance in Agriculture (CISARA) Pilot Projects
Phase 1: Multi-country Pilot Studies in Primary Production Caribbean countries

- Selection of Target Study Population
- Targeted Microorganism
- Sampling Design
  - Type and source of Sample
  - Representativeness
  - Sample Size
  - Sampling Scheme
  - Sample Collection (Methods)
- Laboratory Testing Methodology
  - Bacterial Culture, Isolate Identification and Storage of isolates
  - Antimicrobial Susceptibility Testing
- Reporting / Confidentiality
Selection of Target Study Population

=> Main commodity: **Poultry**

- One of the most consumed sources of protein of animal origin in the Caribbean
- With per capita consumption of 46 kg per annum, the poultry sector accounts for 80% of meat consumption in the Caribbean
- Locally produced
Phase 1: Multi-country Pilot Studies in Primary Production Caribbean countries
Phase 1: Multi-country Pilot Studies in Primary Production Caribbean countries

- Selection of Target Study Population

Poultry Production
- Breeders / Hatcheries
- Poultry Farms
- Processing Plants
- Distribution Chain
- Retailers
- Consumer

- Critical Point “1” or preslaughter
  Poultry Production Systems Baseline Study or Pilot 1

- Critical Point “2” or retail
  Retail Poultry Baseline Study or Pilot 2
Targeted Microorganism

=> The targeted pathogen: 

*Salmonella* spp

- One of the most common microorganisms associated with foodborne illnesses in the region
- Excellent marker to monitor antimicrobial resistance
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

- **Sampling Design**
  - **PILOT 1**
    - Pre-Harvest
  - **PILOT 2**
    - Retail

**Type of Sample**
- Standard ceca sample
- Locally produced (non-imported) raw chicken parts

**Sample Source**
- Licensed/commercial slaughter plants
- Retail points (supermarkets, butcher shops, wet markets, etc.)

=> The Country Logistical Teams selected such locations trying to maintain the representativeness
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

- **Sampling Design**

**PILOT 1**
- **Pre-Harvest**
  - Sample Size: 700 samples across the region
  - 100 cecal per country
  - Sampling Scheme: One bird/Farm 10 farms/week

**PILOT 2**
- **Retail**
  - Sample Size: 700 samples across the region
  - 100 chicken parts per country
  - Sampling Scheme: 1 - 4 packages/store 10 - 12 samples/week
Technical Missions and Sensitization Talks
Technical Missions and Sensitization Talks

➢ Laboratory Capacity
Technical Missions and Sensitization Talks

- **AMR Talks**

>100 Participants
7 Caribbean Countries
CISARA Project

- SOPs
- Webinar Training
- Field Team Training
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

- Standard Operating Procedures

**SAMPLING PROTOCOLS FOR CHICKEN CECAL SPECIMENS AND RAW CHICKEN PARTS FOR SALMONELLA SCREENING**

**ISOLATION AND IDENTIFICATION PROTOCOLS FOR DETECTION OF SALMONELLA IN Ceca SAMPLES AND RAW CHICKEN PARTS**

[Images and diagrams related to the poultry studies]
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

- Webinar Training on Field and Lab SOPs

>87 Participants
7 Caribbean Countries

7 Participants
2 Countries
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

➢ Field Team Training

6 Direct Trainees
>24 Indirect Trainees*
6 Countries
CISARA Pilot Projects

Current Status
Phase 1: Current Status

- Pilot 1: 100%
- Pilot 2: 100%
- Phenotyping: 100%
- MIC Confirmation: IP

- Pilot 1: 100%
- Pilot 2: 100%
- Phenotyping: 100%
- MIC Confirmation: IP

- Pilot 1: 100%
- Pilot 2: 100%
- Phenotyping: 100%
- MIC Confirmation: IP
Phase 1: Current Status

- Prevalence

PILOT 1
Pre-Harvest

700 samples across the region
IP
(all countries have positives)

Prevalence
2% – 25.6%**
(preliminary)

Samples Collected to date
700 samples across the region
Salmonella Positive
IP
(all countries have positives)

PILOT 2
Retail

700 samples across the region
IP
(all countries have positives)

Prevalence
1% - 37.6%**
(preliminary)
Phase 1: Current Status

- All countries can now perform antimicrobial resistance test

No previous capacity before initiating this pilots
Phase 1: Current Status

- Antimicrobial Resistance Profiles

PILOT 1
Pre-Harvest

- Susceptible: In Progress
- Multidrug Resistant: No Multidrug Resistant Strain Yet
- Prevalence of MDR: In Progress

PILOT 2
Retail

- Susceptible: In Progress
- Multidrug Resistant: No Multidrug Resistant Strain Yet
- Prevalence of MDR: In Progress
Phase 1: Next Steps

Short Term

1\textsuperscript{st} Confirm results by MIC
   * Whole Genome Sequencing – ODA-ADDL

2\textsuperscript{nd} Analysis of Epidemiological Data from Surveys

3\textsuperscript{rd} Report results
   - Country Level
   - Regional Level
   - WHOnet
Phase 1: Next Steps

Long Term

⇒ Targeted Studies based on Countries’ needs

⇒ Next Target Commodity
  • Imported Poultry Products
Educated and trained over 230 Public and Animal Health Professionals on antimicrobial resistance in agriculture, while generating preliminary data and consolidating their in-country diagnostic and coordination capacity.

This project “made us feel better professionals as we are having an impact not only on public health, but also in protecting our families”
About the Program

The participants will explore firsthand the leading exporting animal food production systems, from farm-to-table, in Chile.

Site visits along the food supply chain will be focused on production, international trade standards and emerging issues in food safety, animal and public health. Direct discussions with key government and private sector leaders and interactive multi-sectorial and cross-culture group activities will be designed to integrate knowledge and skills.

Food production systems will mainly include aquaculture (salmon production), beef (fresh meat and RTE products), and dairy (milk and cheese). Site visits will include primary production systems, processing plants and supermarkets. These production systems are considered key for exportation to the USA, the European Union, and other important markets.

Key Objectives

- Develop awareness, understanding and familiarity of key animal food systems, in exporting countries such as Chile, and recognize the components of the global food production and international trade
- Contrast the similarities and differences among the food systems in Chile, the United States and other countries
- Promote and catalyze collaborative group leadership through networking building opportunities and experiential and structured learning activities
FARM TO TABLE STUDY PROGRAM

- International Commerce – Global Food Systems
- Food Production Systems
- Transboundary Infectious Diseases
- Zoonotic and Foodborne Diseases and Human Health
- Networking
- Team Work
- Interdisciplinary Work
- Cultural Differences
- Language Barriers
- Environmental Impact