Innovate Ideas in Developing National Integrated Surveillance Programs for Monitoring AMR in the Food Chain: The Caribbean – Latin America Experience

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Director, Veterinary Public Health Program
Where to Start?
Caribbean Integrated Surveillance System on Antimicrobial Resistance in Agriculture (CISARA) Pilot Projects
TRAINING ON ANTIMICROBIAL USE AND ANTIMICROBIAL RESISTANCE IN AGRICULTURE

33 Participants
14 Caribbean Countries

THE 10TH EUROPEAN DEVELOPMENT FUND ADS PROJECT

The Ohio State University
COLLEGE OF VETERINARY MEDICINE

Caribbean Regional Fisheries Mechanism
Where is the Innovation?
Phase 1: Multi-country Pilot Studies in Primary Production Caribbean countries

Integrated Surveillance of Antimicrobial Resistance
Guidance from a WHO Advisory Group

From Design to Implementation
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

- Standard Operating Procedures
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

➢ Webinar Training on Field and Lab SOPs

➢ >200 Participants
➢ 7 Caribbean Countries
PILOT STUDIES ON PRE-HARVEST AND RETAIL POULTRY

- Pilot 1: 100%
- Pilot 2: 100%
- Phenotyping and MIC: 100%
- WGS: 100%

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Antimicrobial Resistance Profiles

<table>
<thead>
<tr>
<th>PILOT 1 Pre-Harvest</th>
<th>PILOT 2 Retail</th>
</tr>
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<tbody>
<tr>
<td>Susceptible</td>
<td>24.4%</td>
</tr>
<tr>
<td></td>
<td>14.6%</td>
</tr>
<tr>
<td>Multidrug Resistant</td>
<td>13.3%</td>
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<tr>
<td></td>
<td>14.6%</td>
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<tr>
<td>Prevalence of MDR</td>
<td>0 – 28.6%*</td>
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<tr>
<td></td>
<td>0 – 42.2%**</td>
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</table>

Prevalence

- PILOT 1 Pre-Harvest: 1% - 15%
- PILOT 2 Retail: 2% - 38%

Samples Collected across the region

- PILOT 1 Pre-Harvest: 700 samples across the region
- PILOT 2 Retail: 700 samples across the region

Salmonella Positive

- PILOT 1 Pre-Harvest: 7.6% (all countries have positives)
- PILOT 2 Retail: 14.3% (all countries have positives)
Whole Genome Sequencing

CLONAL CLUSTERS
How to Design and Implement National Integrated AMR Monitoring Programs?
Where is the Innovation?
16 steps Systematization Tool
## Selection and Prioritization of Production Systems

<table>
<thead>
<tr>
<th>Paraguay*</th>
<th>Priority Level</th>
<th>Action</th>
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<tbody>
<tr>
<td>Beef</td>
<td>High</td>
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<tr>
<td>Poultry</td>
<td>High</td>
<td>Include in National Plan</td>
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<tr>
<td>Fresh Cheese</td>
<td>High</td>
<td>Include in National Plan</td>
</tr>
<tr>
<td>Swine</td>
<td>High</td>
<td>Include in National Plan</td>
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<tr>
<td>Wild Caught Fish</td>
<td>High</td>
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</tr>
<tr>
<td>Eggs</td>
<td>High</td>
<td>Include in National Plan</td>
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<tr>
<td>Aquaculture</td>
<td>Moderate</td>
<td>Targeted Studies</td>
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<tr>
<td>Small Ruminants</td>
<td>Moderate</td>
<td>Targeted Studies</td>
</tr>
<tr>
<td>Buffalos</td>
<td>Moderate</td>
<td>Targeted Studies</td>
</tr>
<tr>
<td>Quail (Eggs)</td>
<td>Moderate</td>
<td>Targeted Studies</td>
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</tbody>
</table>

* Preliminary Description
Sistema Integrado Nacional de Monitoreo de la Resistencia Antimicrobiana en la Cadena Agroalimenticia (SINMRA-Paraguay)

Paraguay de la gente

Miembros principales:

- Olivia S. Almeida
- Cecilia López
- Matias Ramírez
- Víctor Malbunado
- Fernando Pérez
- Lísa Gutiérrez
- Ana María Vizcaya
- Virginia B. Linares
- Gabriela Martínez
- Cynthia Guessi
- Mirtam Arístides
- Silvia Ramírez
- Frank Caballero
- Dina Ortez
- Patricia Malbunado
- Laura Pineda
- María Martínez

Miembros asociados/adjuntos:

- Facultad de Ciencias Veterinarias, Universidad Nacional de Asunción
- Asociación Rural del Paraguay
- Viceministerio de康查

Equipo asesor:

- Dra. Edna Carolina S. Institución Interamericana de Cooperación para la Agricultura
- Dña. Ofelia Carrasco, Institución Interamericana de Cooperación para la Agricultura
- Dra. Armanda E. Ford, Ohio State University
Where is the Innovation?
Belize
National Antimicrobial Resistance Monitoring System
NARMS

Design and Development

1. Selection and prioritization of industries
2. Selection of critical points to monitor
3. Selection of populations to monitor & order of implementation
4. Selection of microorganisms to monitor
5. Sampling
   - Type collected
   - Sample size and allocation
   - Collection frequency
   - Epidemiological information
6. Periodicity and frequency
7. Assignment of roles and responsibilities
8. Protocol development
9. Logistics and implementation
10. Estimation of costs and budget
11. Epidemiological analysis
12. Reporting of results
13. Application of intervention and risk communication
14. System evaluation and expansion
15. Writing NARMS plan into agricultural food sector

Key:
- In Progress
- Completed
- Not Started
Systematization and Implementation of AMR Monitoring Programs
What do you do with the Data/Results? Interventions?
<table>
<thead>
<tr>
<th>General Assembly</th>
<th>SECTION 1: Drug Residues</th>
<th>SECTION 2: Antibiotic Use</th>
<th>SECTION 3: Antimicrobial Resistance</th>
<th>SECTION 4: Risk Communication</th>
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</tbody>
</table>
Where is the Innovation?
Objectives:

- Socialize results from surveillance programs
- Evaluate and discuss identified gaps and/or issues
- Identify innovative solutions and interventions in a multidisciplinary setting
- Prioritize potential solutions to develop an action plan

Focus Forward

GAP:
<40% of Swine farmers use/keep ABX records
How to Integrate Surveillances Programs into National Plans and Operationalize them?
Progressive Management Pathway for AMR

**Awareness**
- Stage 1: Overall 0%, KPI 0%
- Stage 2: Overall 0%, KPI 0%
- Stage 3: Overall 0%, KPI 0%
- Stage 4: Overall 0%, KPI 0%

**Practice**
- Stage 1: Overall 75%, KPI 100%
- Stage 2: Overall 60%, KPI 50%
- Stage 3: Overall 67%, KPI 100%
- Stage 4: Overall 71%, KPI 100%

**Governance**
- Stage 1: Overall 75%, KPI 67%
- Stage 2: Overall 43%, KPI 50%
- Stage 3: Overall 67%, KPI 50%
- Stage 4: Overall 60%, KPI 50%

**Evidence**
- Stage 1: Overall 83%, KPI 80%
- Stage 2: Overall 0%, KPI 0%
- Stage 3: Overall 0%, KPI 0%
- Stage 4: Overall 0%, KPI 0%
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