Kerala's plans to contain AMR from animals

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KARSAP strategic priorities & focus areas

1. Awareness & understanding
   - Communication & IEC
   - Education & Training

2. Knowledge & evidence
   - Laboratories
   - Surveillance

3. Infection prevention & control
   - IPC in human health
   - Animal feed & food
   - Environment

4. Optimise use of antibiotics
   - Regulations
   - Hospitals & healthcare
   - Veterinary & aquaculture
   - Surveillance of AM use

5. Research & Innovations
   - Research
   - Innovations

6. Collaborations
   - Public private partnerships
   - Disease control programs
KARSAP-One Health-Release by Hon. CM, Kerala
AMR and Animal Health

- In Veterinary Medicine, antimicrobials play a critical role in protection of animal health, animal welfare, and food-safety.
- Humans and animals are often affected by similar, or even the same, pathogens and many of the antimicrobials used to treat these infectious diseases are similar.
- Farm animals are exposed to considerable quantities of antimicrobials and act as an important reservoir of AMR genes, which can be transmitted to humans through the food chain, direct animal contact and the wider environment.
Institutions involved in KARSAP-Animal Health

From the Department
- 1. Directorate of Animal Husbandry, Thiruvananthapuram
- 2. State Institute of Animal Diseases, Palode
- 3. State laboratory for Livestock, Marine & Agri Products, Ernakulam
- 4. Avian Disease Diagnostic Laboratory, Thiruvilla
- 5. Rinderpest Laboratory & RDDL, Palakkad
- 6. Institute of Veterinary Biologicals, Palode

From Veterinary University
- 7. College of Veterinary & Animal Sciences, Mannuthy
- 8. College of Veterinary & Animal Sciences, Pookode
Interdisciplinary One-Health approach

- This complex epidemiology of AMR emphasizes the need for highly interdisciplinary research approaches, comprising humans, animals, and the wider environment.
- This together with the socioeconomical factors make this topic the quintessential One Health issue. Hence reducing the dissemination and transmission of resistant bacteria within and between animal and human populations is central when aiming to fight AMR.
- The ability of bacteria to disseminate from one setting to another, over large geographic distances and among the different populations, makes it difficult to explain the origin of resistant bacteria strains.
Activities undertaken by Animal Health sector under the framework of KARSAP

- (1) Monitoring of Antibiotic Residues in Kerala (Meat, Milk, Poultry)
- (2) AntiMicrobial Resistance in Food and Food Animals (Meat, Milk, Poultry)
- (3) Awareness programs for Farmers/Vets; one in every district
- (4) Distribution of antibiotic sensitivity kits to Veterinary Dispensaries/Hospitals/Polyclinics under AHD by IH & VB, Palode (Aprox 5000 nos)
- (5) AHD dept. manual revised and reissued, this has recommended antibiotics for select disease & AMR expert committee of AHD constituted
AMU/AMR related Projects at SLMAP

Completed Projects (2017-18)
- Residue Monitoring for Antibiotics in Kerala

Surveillance Projects (2018-19)
- Residue Monitoring for Antibiotics in Broiler Chicken (New Districts)
- Antimicrobial Resistance (AMR) in Food and Food Animals: An Integrated Veterinary Surveillance Program for Kerala (Meat, Milk, Poultry)
- Molecular Identification and Resistance Study of Bacteria isolated from Milk, Meat and Eggs
Residue Monitoring for Antibiotics in Kerala

Broiler Meat/Liver Screened for 10 Antibiotics (3 groups)

- **TETRACYCLINES**
  - Oxytetracycline
  - Chlortetracycline
  - Tetracycline
  - Doxycycline

- **FLUROQUINOLONES**
  - Enrofloxacin
  - Ciprofloxacin

- **SULFONAMIDES**
  - Sulfadiazine
  - Sulfadimidine
  - Sulfathiazole
  - Sulfadimetrazole
AMR in IN FOOD AND FOOD ANIMALS ; AN INTEGRATED VETERINARY SURVEILLANCE PROGRAMME FOR KERALA

<table>
<thead>
<tr>
<th>Sample</th>
<th>Sample description</th>
<th>Name of Bacteria</th>
<th>Level of sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Sample</td>
<td>Mastitis Milk</td>
<td><em>Staph. aureus</em></td>
<td>Veterinary Hospitals</td>
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<td></td>
<td></td>
<td><em>E. coli</em></td>
<td></td>
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<tr>
<td>Food Sample</td>
<td>Poultry Meat</td>
<td><em>Salmonella</em></td>
<td>Farms/Retail Markets</td>
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<tr>
<td></td>
<td></td>
<td><em>E. coli</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beef</td>
<td><em>Salmonella</em></td>
<td>Retail Markets</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>E. coli</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Milk (Unpasteurised)</td>
<td><em>Staph. aureus</em></td>
<td>Farms/Milk societies</td>
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<tr>
<td></td>
<td></td>
<td><em>E. coli</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td><em>Vibrio</em></td>
<td>Farms/Retail Markets</td>
</tr>
</tbody>
</table>
AMU/AMR related Projects at SAID, Palode

- Detection of Oxytetracycline & Penicillins in Milk in TVM by screening by Immuno chromatography & Quantification of Oxytetracycline by HPLC
  
  100 samples tested for antibiotics from 5 locations in Thiruvananthapuram district,

- Studies on AMR gene flux between livestock and society, risk assessment and development of management strategies

  Collaboration with Mahatma Gandhi University, Kottayam (New project for 2018-19)
Other Planned future activities (2018-19)

- (1) Awareness programs in all districts for farmers and Veterinarians
- (2) Upgradation of Microbiology div. in Dist. Clinical Labs
- (3) Restricting Veterinary Antibiotic use by making them prescription only medicines by RVP and Conducting a web survey on prescription practice among Veterinary Doctors
- (4) Upgradation in Quality of Veterinary services - ISO 9001 for Veterinary Institutions and ISO 17025 for Labs, Accreditation of Apex Labs SAID, Palode & SLMAP, ADDL Thiruvilla completed; ISO 9001 for Directorate completed & select hospitals in every district is ongoing & Lab Staff training
- (5) AHD + Kudumbashree (State Livelihood Mission) launches Kerala Chicken tested for residues
Govt. of Kerala Animal Resource Management System & Animal traceability-Geo Tagging

- Mapping and geo tagging of all animal farms in Kerala along with individual animal identification
- More than 4000 mobile computing device provided to all field staff of Veterinary Department (BHUMIKA app)
- Already mapped around 2.5 lakhs farms across Kerala, probably first of its kind
Animal Resource Management System

Unnikrishnan
Farmer ID: 73424

Location
9.82587107,76.42045437

FARM IDENTIFICATION

Animal ID: 631498
Type: Cattle
TAG No.: 420024185450

Name: Unnikrishnan
Address: Kuzhiyamalli Arayankavu
Mobile: 9446612277

VIEW MORE
Management of Disease Outbreak --
- Buffer zone estimation
- Vaccination/Insurance
- Farmer Location
Lessons from KARSAP

- As with the human health, the Animal Health aspect of AMR is a complex issue that requires concerted, coordinated action as Drug-resistant infections know no borders.

- The lack of detailed Antibiotic Usage (AMU), epidemiological, molecular data impacts our ability to interpret prevalence/surveillance data on AMR and to design efficient interventions. Therefore, monitoring systems on use and residue monitoring in animal products is essential to fill this knowledge gap is prioritized.

- Finally, the ecology of AMR should be addressed with a holistic, One-Health approach combining expertise from different disciplines, such as medical doctors, veterinary clinicians, Fisheries professionals, public health scientists, microbiologists, wildlife specialists, environmental scientists (ecologists), and epidemiologists. The KARSAP for AMR is a first such endeavor.
Thank You

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We should be concerned that the Health, Veterinary or Drug Controller lacks specific plans to manage the risks associated with antimicrobial resistance transmitted from food animals and lacks credible, scientifically valid methods and criteria to assess the safety of veterinary drugs with respect to antimicrobial resistance and human health.

Our regulatory Authorities do not seem to be very effective as they should be in addressing these deficiencies.

Recognition of problems through surveillance, education regarding the consequences of inappropriate use, greater control of antimicrobial use, guidelines for best practices, and improvements in public laboratories’ and report on emerging drug resistance problems in Animal Health.