Catalyzing the Potential of Regional Action to Combat AMR

Critical Insights on Data Sharing and Use of One Health Data in South East Asia
Context and Rationale

• Why is this a critical time point for regional action and to develop a framework?

• As surveillance improves, the solution and plan becomes more tailored

• In many countries, initial plans to combat AMR have been established (NAPs)

• Initial global plans and initiatives have set AMR as a priority, established guidance for NAPs, increased awareness and data quality, and more.

• Now that national level surveillance systems are increasing in quality, we are now at a time point where the role and utility of the regional level needs to be established
• Coordinated approaches and policies, regulations, and behavior change across countries is the only way for AMR to be controlled.

• Each region operates in its own unique manner, internally intertwined through their economies and trade, animal husbandry practices, and health practices.

• Therefore, the role and utility of the regional level in control of AMR needs to be tailored to each region to maximize its impact.

• Today and over the next few days, we want to explore what the role and framework of the regional level, based on the insights from experts in the countries, at the regional level, and global experts.
Assessment Goal

- Is to gather the necessary information to establish or enhance regional data sharing and further the establishment of a regional One Health framework for AMR and AMU/C.

Assessment Objectives

- Depict current AMR and AMU/C data sharing pathways and networks at the national, regional and global levels
- Assess the status of surveillance systems and the availability of human and animal health AMR and AMU/C data on the national and regional levels
- Identify information gaps at the national and regional level, where regional level activities could potentially fulfill such gaps and impediments.
- Identify stakeholders’ perceived benefits and expectations of a regional framework and data foundation
- Identify barriers and facilitators to sharing of data into a regional data foundation
- Gather insights on trusted organizations, both technically and in leadership
- Provide conclusions drawn from the information above to inform the regional framework and data foundation
Frameworks drawn upon and reviewed in building one health data sharing assessment framework:
Overview of Methods

KII Global Level

**KII - Regional Level (Africa)**
- Malawi, Uganda, Tanzania, Zambia, Zimbabwe, Kenya, Eswatini, Nigeria, Ghana, Senegal, Sierra Leone

**KII - Regional Level (S. Asia)**
- Nepal, Bangladesh, Pakistan, Bhutan, Sri Lanka

**KII - Regional Level (S.E. Asia)**
- Timor Leste, Vietnam, Lao PDR, Myanmar, Indonesia, Papua, New Guinea

**KII - National Level (Malawi)**
- Malawi Report

**KII - National Level (Nepal)**
- Nepal Report

**KII - National Level (Timor Leste)**
- Timor Leste Report

**KII - National Level (Bangladesh)**
- Bangladesh Report

**KII - National Level (Vietnam)**
- Vietnam Report
National KII Participants- Vietnam (n=13) and Timor Leste (n=7)
• Government administrations of animal and human health
• Leaders of public health and veterinary laboratories
• Experts from WHO and FAO local offices

Global and Regional KII Participants (n = 22 relevant for SEA)
• WHO-HQ, WHO-GLASS, and regional offices of WHO with backgrounds in human health
• FAO-HQ and OIE-HQ and other regional offices of FAO and OIE with backgrounds in animal health, aquaculture and fisheries and plant health, UNEP
• Regional organizations working on AMR (e.g., CDDEP, CAPTURA)
• Multinational pharmaceutical companies (e.g., Pfizer and Health for Animals)

SEA Country-Level Questionnaire Participants (n=40 in SEA, 20 HH/ 20 AH)
• 6 countries represented
Findings were summarized in national level reports and a questionnaire was developed to validate the findings. A regional report was developed (by a cross-sectoral research team) to guide the regional framework.

Methods

**Coding**
- Codebook developed
- Key Informant Interview notes were coded

**Thematic Analysis**
- Codes were grouped into themes
- Themes were then summarized by research question

**Generation of Findings and Report**
Existing (& future) networks in South East Asia

Key Findings

Global level

Regional level

National data

AMC/U  AMR
Humans

AMC/U  AMR
Animals

AMR
Food

AMC/U
Plants & crops

AMR
Environment
Existing networks in South East Asia

Key Findings

Global level

Regional level

National data

13 A/P.
WPRACS
WHO-WIPRO

11 A.
CAPTURA
UKAID-Fleming F.

AMC/U
AMR

AMC/U
AMR

AMR
AMC/U
AMR

Humans
Animals
Food
Plants & crops
Environment

Existing networks in South East Asia
Existing networks in South East Asia

Key Findings

Global level
- GLASS -AMC/WHO
- AMR
- 107 18 A/P
- Global AMC/U collection OIE
- 152 19 A/P.

Regional level
- IQVIA MIDAS
- > 90
- 8 SEA
- WHO
- EGASP WHO
- 66
- GRAM BDI-IHME
- 198
- CDDEP B&M Gate F.
- 75
- WPRACS WHO-WIPRO
- 13 A/P.
- CAPTURA UKAID-Fleming F.
- 11 A.

National data
- AMR/U/C data collection FAO - RAP

AMC/U
- AMR

AMR
- AMC/U

Humans
- Animals
- Food
- Plants & crops
- Environment
Existing networks in South East Asia

Key Findings

- **19** 4 A/P
  - GLASS - AMC
  - GLASS - AMR
  - WHO

- **>90**
  - IQVIA
  - MIDAS

- **66** 8 SEA
  - EGASp
  - WHO

- **107**
  - GRAM
  - BDI-IHME

- **198**
  - CDDEP
  - B&M Gate F.

- **13 A/P.**
  - WPRACS
  - WHO-WIPRO

- **11 A.**
  - CAPTURA
  - UKAID-Fleming F.

Global level

- **152** 19 A/P.
  - Global AMC/U collection
  - OIE

Regional level

- **AMR data collection**
  - FAO - RAP

National data

- Existing (& future) networks in South East Asia

- 11 A.
  - AMR
  - - - AMR

- Existing networks in South East Asia

- 13 A/P.
  - AMR
  - - - AMR

- Humans
  - Animals
  - Food
  - Plants & crops
  - Environment

- AMR
  - AMC/U
  - AMC/U
  - AMR

- Key Findings
Utility of generated feedback in informing decision making

Key Findings

DATA ANALYSIS/GENERATION OF INFO.

DATA AGGREGATION

DISSEMINATION OF INFO.

INFO. USE FOR REGIONAL:
1) SURVEILLANCE
2) ADVOCACY & AWARENESS
3) POLICY, REGULATION & PLANNING

Translation into action
Utility of generated feedback in informing decision making

**Key Findings**

**Regional data sharing**

- **DISSEMINATION OF INFO.**
- **DATA ANALYSIS/GENERATION OF INFO.**
- **DATA AGGREGATION**

**INFO. USE FOR REGIONAL:**
1) SURVEILLANCE
2) ADVOCACY & AWARENESS
3) POLICY, REGULATION & PLANNING

**National data sharing**

- **DISSEMINATION OF INFO.**
- **DATA ANALYSIS/GENERATION OF INFO.**
- **AMR/C/U DATA COLLECTION & COLLATION**

**INFO. USE FOR NATIONAL:**
1) SURVEILLANCE
2) ADVOCACY & AWARENESS
3) POLICY, REGULATION & PLANNING

Translation into action
Utility of generated feedback in informing decision making

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**DISSEMINATION OF INFO.**

**DATA ANALYSIS/GENERATION OF INFO.**

**DATA AGGREGATION**

**AMR/C/U DATA COLLECTION & COLLATION**

**National data sharing**

**Regional data sharing**

**Feedback**

**Information**
Technical support
Guidance ...

**Data quality improvement**

**Actions**

Existing (& future) networks in South Asia

Utility of generated feedback in informing decision making

**Key Findings**

**INFO. USE FOR NATIONAL:**
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**AMR/C/U DATA COLLECTION & COLLATION**

**National data sharing**

**Regional data sharing**

**Feedback**

**Information**
Technical support
Guidance ...

**Data quality improvement**

**Actions**
If data were submitted to a regional or global program were feedback and technical assistance provided by the program coordinators?

- **AMR data sharing Human sector**: 20% (Formal feedback AND technical support provided), 20% (Not aware of any formal feedback BUT technical support provided), 60% (Not aware of any formal feedback and technical support), 11% (No answer/don't know)
- **AMC/U data sharing Human sector**: 20% (Formal feedback AND technical support provided)
- **AMC/U data sharing Animal sector**: 44% (Formal feedback AND technical support provided), 11% (Not aware of any formal feedback BUT technical support provided), 11% (Not aware of any formal feedback and technical support), 55% (No answer/don't know)
“It is a powerful impetus regardless of the data sharing (...). Every country will try to do better than other countries”
(national stakeholder, AH)

“The aim is awareness at the beginning. Because it’s clear that the data collected are not of very high quality. But the most important thing is that countries start to do something. To start and to progress.”
(OIE AMC/U, global stakeholder, AH)

“We don’t have any structured evidence of changes in the national or local policies based on the GLASS data. It’s happening gradually”
(global stakeholder, HH)

“I would suggest to countries to be more demanding towards WHO”
(global stakeholder, HH)
Main uses of the generated feedback at national level? (TOP 3)

- **Advocacy and awareness**
  - Global (n=11)
  - Animal sector (n=8)
  - Human sector (n=3)

- **Enhancing existing surveillance system**

- **Improvement in data quality**
Critical gaps where a regional hub would be advantageous

Key Findings

DISSEMINATION OF INFO.
DATA ANALYSIS/GENERATION OF INFO.
DATA AGGREGATION

INFO. USE FOR NATIONAL:
1) SURVEILLANCE
2) ADVOCACY & AWARENESS
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Regional data sharing

Translation into action
Critical gaps where a regional hub would be advantageous

**Key Findings**

**Global OR Regional**

**Regional data sharing**

**National**

**Regional data sharing**

**Actions**

**Info. use for Regional:**
1. Surveillance
2. Advocacy & Awareness
3. Policy, Regulation & Planning

**Info. use for National:**
1. Surveillance
2. Advocacy & Awareness
3. Policy, Regulation & Planning
**Key Findings**

- **AMR data**
  - Human pathogens
  - Animal pathogens
  - Food-borne/commensal Healthy animals/foods

**Country median**

- **Data not systematically collected**
  - Level 1

- **Data systematically collected**
  - Level 2

- **Data analyzed**
  - Level 3

- **Findings shared routinely to decision makers**
  - Level 4

- **Information routinely used by decision makers**
  - Level 5

**Critical gaps where a regional hub would be advantageous**
Critical gaps where a regional hub would be advantageous

Key Findings

Country median

1 country

Region median

SEA = 3

SEA = 1.75

SEA = 1.75

Information *routinely used* by decision makers

Findings *shared routinely* to decision makers

Data analyzed

Data *systematically collected*

Data not systematically collected

AMR data

Human pathogens

AMR data

Animal pathogens

AMR data

Food-borne/commensal Healthy animals/foods

Level 5

Level 4

Level 3

Level 2

Level 1
Critical gaps where a regional hub would be advantageous

Key Findings

Human AMC data
AM sold/purchased/imported

Animal

Data not systematically collected

Data systematically collected

Data analyzed

Info. shared routinely to decision makers

Info. routinely used by decision makers

Level 1
SEA = 1

Level 2
SEA = 2

Level 3

Level 4

Level 5

Region median
Critical gaps where a regional hub would be advantageous

Key Findings

Human

Animal

AMC data
AM sold/purchased/imported

AMU data
Hospital/pharmacy/farm-level

Data not systematically collected

Data systematically collected

Data analyzed

Info. shared routinely to decision makers

Info. routinely used by decision makers

Region median

SEA = 1

SEA = 2

SEA = 1.25

SEA = 2
Critical gaps where a regional hub would be advantageous

1. DATA COLLECTION

**Key Findings**

**Low quality and representativeness (AMR)**
- Low human capacity, lack of QA, SOPs, equipment
- Lack of adequate IT systems / time to digitize the data
- Weak network (mainly central level lab.)
- Only few passive data for terrestrial animal’s pathogens
- Prioritization of pathogens, clinical breakpoints to be defined (reg. FAO guideline in process)

**Low quality and representativeness (AMR)**
- Low human capacity (lab/management)
- Network cluster around large cities
- Private lab. not yet included
- Conflicting guidelines (variable/metadata)
- Limited nb of pathogens collected
Critical gaps where a regional hub would be advantageous

**Data Collection**

AMR

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AMC/U

**First basic national estimates (AMC)**
- Only based on basic sources (import, sales), no /few species-specific farm-level data (AMU)
- Lack of coordination/cooperation with MOH and private sector (no mandatory reporting)
- Lack of formal reproducible collection process
- Weak AM regulation/enforcement
- Paper-based records
- Lack of dedicated staff/turn-over

**Insufficient quantity of AMC data**
- Lack of cooperation /private sector (no mandatory reporting)

Some AMU data collected from point prevalence surveys
- Paper-based data (health facilities/pharmacy records)
- AMU data not linked to clinical or microbiology data
Critical gaps where a regional hub would be advantageous

Key Findings

1. DATA COLLECTION

AMR

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  - AMU data not linked to clinical or microbiology data

- No systematic data collection
  - Lack of standards and guidelines ...

- Low quality and representativeness (AMR)
  - Low human capacity (lab/management)
  - Network cluster around large cities
  - Private lab. not yet included
  - Conflicting guidelines (variable/metadata)
  - Limited nb of pathogens collected
Data Collection & Aggregation

Ad hoc (or no) data sharing between sectors

Lack of formal process, harmonized IT system/platform, dedicated budget ...

Reported by 94% of stakeholders (n=40)
Critical gaps where a regional hub would be advantageous

Key Findings

1. **Data partially and poorly analyzed**
   - Lack of dedicated skilled human resources
   - Lack of adequate IT and visualization tool

2. **Lack of “integrated” analysis**
   - AMR/C/U associations
   - Integration between sectors

3. **Limited info. dissemination**
   - Unclear format/frequency/channels for dissemination to policy-M
   - Inadequate “packaging” (policy briefs, visualization, economic arg.)

4. **Generated info. rarely translated into action**
   - Inadequate capacities for policy-making
   - Low “appetite” for AMR (low priority)
   - Research data exist but are not used

Lack of efficient mechanisms for **TIMELY actions**
Values and support of a regional network/hub?

In synergy with existing/future GLOBAL & REGIONAL initiatives

**National capacity building**
- Quality and timeliness improvement
- Progressive involvement of other sectors
- Integrated surveillance

**Generating regional evidence**
- Regional baselines for AMC/U & AMR trends
- Emerging resistance in the region
- AMR cross-border surveillance
Critical gaps where a regional hub would be advantageous

Surveillance

Key Findings

“We have all the data, but we have no ability to mine the data. That’s a particular weakness. For most systems, whether it is AMC or AMU, you need trained professionals that can understand data and make sense of it. You need to capture the salient points that matter to policy-makers.”

(Regional stakeholder, HH)

“People are always talking about integrated surveillance... But how do you do this exactly? Nobody is focusing on preparing real guidance that is practically applicable in the field [...] then you need some capacity building.”

(Global stakeholder, aquaculture)
**Critical gaps where a regional hub would be advantageous**

**Values and support of a regional network/hub?**

In synergy with existing/future
GLOBAL & REGIONAL initiatives

- Providing more **useful and regular feedback**, technical support
- Enhancing **regional networking/exchange** of best practices
- Providing **facilitating IT tool** (analysis, visualization, automated reports ...) **that meet country needs**
- Supporting “**operationalization**” of integrated analysis (regional guidance, pilot countries ...)

- Creating an **official regional pathway** for AMR/C/U data to **struggle against high data fragmentation**
- Convergence of **all data sources** (research, private sector etc.)
- Supporting efforts for **regional harmonization and prioritization**, filling the gap in **regional guidance**

**National capacity building**
Quality and timeliness improvement
Progressive involvement of other sectors
Integrated surveillance

**Generating regional evidence**
Regional baselines for AMC/U & AMR trends
Emerging resistance in the region
AMR cross-border surveillance
Values and support of a regional network/hub?

*In synergy with existing/future GLOBAL & REGIONAL initiatives*

Generating national evidence
- To raise awareness
- To strengthen investment case for AMR

Generating regional evidence
“When you know those economic data then you can really go to the politicians and the regional stakeholders to show them the reality which they couldn't see because we didn't have the data. And it's the way you can help them, encourage them, or themselves can initiate the development of the right policies” (Global stakeholder, AH).

If we have evidence showing that AMR really an emerging policy issue in the plant sector, then we can convince member countries to take action on AMR. We expect that a regional program will provide support for these issues. (Global stakeholder, plant sector)

“We need technical science to tell us the problem, but social science to give us the solutions for policy. In the end it is all human behavior.” (National stakeholder, HH)

“If you don’t have that awareness, massive campaign with a champion, who can really talk about it, (...) do people realize that they might run out of water?

(Global stakeholder, Environmental sector)
Values and support of a regional network/hub?

In synergy with existing/future GLOBAL & REGIONAL initiatives

Generating national evidence
To raise awareness
To strengthen investment case for AMR

- Supporting the evaluation of the economic burden of AMR
- Supporting the development of sociological approaches to understand the drivers of AMU
- Improving “data packaging” (tailored guidance on how to persuade strategic policy-makers...)

Generating regional evidence

- Supporting political buy-in with regional evidence (economic burden, AMR/U causal relationship ...)
- Supporting awareness raising for AMR issue in environment and plant sectors (global knowledge gap)
- Facilitating “whole society” approach to AMR (civil society & media)
Values and support of a regional network/hub?

In synergy with existing/future GLOBAL & REGIONAL initiatives

Generating national evidence

Generating regional evidence
“The banning of colistin from pig farming: the economic consequences of removal without replacement, this is a knowledge gap for them... It’s possible to say to a country, you need to ban this antibiotic and you will have less AMR, but this is ignoring the economic factors, the business case, the sustainability.”

(global stakeholder, research sector)

“A database or repository for the intervention could give a lot of ideas (...) adaptable to every country”

(national stakeholder, AH)

“AMR is not usually a priority and some countries struggle to use the data to improve their legislation”

(Regional expert, AH)
Values and support of a regional network/hub?

In synergy with existing/future GLOBAL & REGIONAL initiatives

- Supporting the establishment of treatment guidelines etc.
- Supporting the development of evidence-based policies enforceable in local context
- Supporting the evaluation of socio-economic impact of interventions

- Conducting regional analyses that brings together a large set of experts (including economists etc.)
- To identify regional issues (AMR/U correlation between countries)
- Supporting the development of AMR regional strategies (including trade/export for animals and products ...) and regionalization of GAP
Countries' expectations for sharing AMR/C/U data

What could motivate you to submit AMR/U/C data to a regional network? TOP 5

- Help understand cross-border surveillance to understand emerging resistance and monitoring trends across the region
- Helpful in networking and learning from experiences of countries more advanced in surveillance
- Improve competencies in data analysis, interpretation, and visualization
- Provide useful and directly applicable feedback for enhancing country level decision and policy making
- Support development of AMR mitigation strategies at the regional level
- Support enhancement of national capacities
Major barriers & facilitators to sharing AMR/C/U data

**Key Findings**

**DISSEMINATION OF INFO.**

**DATA ANALYSIS/INFO. GENERATION**

**DATA COLLATION**

**National data sharing**

**INFO. USE FOR NATIONAL:**
1) SURVEILLANCE
2) ADVOCACY & AWARENESS
3) POLICY, REGULATION & PLANNING

**Regional data sharing**

**INFO. USE FOR REGIONAL:**
1) SURVEILLANCE
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3) POLICY, REGULATION & PLANNING

**ACTIONS**

**Translation into action**
Major barriers & facilitators to sharing AMR/C/U data

Key Findings

- Cross-sectoral coordination
- Current/previous network and ties
- Legal & ethical framework
- Data privacy & access
- Political will
- Trust
- Perceived benefits and expectations
- Data sharing processes
- Data availability, quality and form
- Perceived risks
- Trained workforce
- Funding and sustainability

Perceived benefits and expectations

Key findings

- Major barriers & facilitators to sharing AMR/C/U data
Major barriers to sharing AMR/C/U data

Key Findings

What barriers do you foresee/experience to sharing AMR/C/U data at the regional level? TOP 5

<table>
<thead>
<tr>
<th></th>
<th>Animal</th>
<th>Human</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence of central database and adequate software</td>
<td>16 (80.0%)</td>
<td>14 (70.0%)</td>
</tr>
<tr>
<td>Difficulties due to unclear/inexistent legal framework and authorization process</td>
<td>12 (60.0%)</td>
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<tr>
<td>Lack of time and skills required to manage and provide the data to required standards</td>
<td>8 (40.0%)</td>
<td>9 (45.0%)</td>
</tr>
<tr>
<td>Low availability of data and/or insufficient quality and coverage of the data</td>
<td>6 (30.0%)</td>
<td>7 (35.0%)</td>
</tr>
<tr>
<td>Ownership right concern and/or potential for misuse of the data</td>
<td></td>
<td>5 (25.0%)</td>
</tr>
<tr>
<td>Restrictive data format (data not yet digitalized/incompatible electronic format etc.)</td>
<td></td>
<td>5 (25.0%)</td>
</tr>
</tbody>
</table>
Major barriers & facilitators to sharing AMR/C/U data

Key Findings

Strongly interconnected:

Data availability, quality and form
- Low AMR data *quantity*, quality, timeliness, format and structure, etc.
- Data scattered (+private, research data...)

Data sharing processes
- Insufficient IT resources, varied dataset structures, few automated processes
- Work duplication for reporting (many templates and systems)

Trained workforce
- Insufficient workforce capacity with adequate skills, for data management and analysis

Funding and sustainability
- AMR is a low priority, surveillance mostly partner driven, sustainability issue

- Quantity, quality & standardization enhanced through donor-funded programs
- Participation in GLASS, CAPTURA, WPRACS, OIE collection act as catalysts
- Future platforms, all using WHONET software
- Database improvement (online OIE AMC/U ...)
- Automated analyses
- Harmonization and streamlining in progress
- Tripartite and other entities improve workforce capacity and receptiveness for AMR issues

Key Findings
Major barriers & facilitators to sharing AMR/C/U data

Key Findings

Strongly interconnected:

Perceived risks
- Negative economic consequences/export (AH) [/tourism (HH)]
- Misinterpretation, misuse/abuse of the data, discreditation/criticism

Data privacy & access
Key concerns/ownership & confidentiality: mainly due to trade implications (AH) (> ethical issue (HH))
- Countries maintain ownership
- Privacy issue to be addressed/type of data/sector (Ex. OIE non-disclosure of national-level AMC/U data: aggregated by region)

Legal & ethical framework
Lack of legal precedents to build upon in some countries (not participation in GLASS etc.)
When precedents exist, MOUs are the preferred tools

Political will to share data reg.
Might be affect by the lack of feedback and tangible benefits
Globally present, as long as it is beneficial for the country (no economic damage)

Trust
Lack of trust between ministries/private sector
Trust in global and glob/regional partners is generally high
A regional framework could **enhance national-level capacity** to improve the quantity, quality, and representativeness of data by providing active technical assistance and feedback.

Regional framework could facilitate active AMR and AMU/C surveillance activities at a country level.

A regional framework should focus on **providing technical assistance guidelines**, which allow countries to sustainably realize benefits in exchange for data sharing.

A regional framework could **set a precedent for integrated analysis**

A regional framework should **support the countries to translate and utilize the data in a manner to better inform policy and decision-making**.

A long-term goal of a regional framework should include the **monitoring of advanced parameters to quantify transmissions pathways between sectors**.

An effective regional framework must **enhance the advocacy capacity of national stakeholders**.
Key Recommendations for Consideration

- A regional framework must be **composed of a range of organizations** which expertise in data management and analysis, advocacy and policy, and research.
- A regional framework must demonstrate sufficiently broad and deep expertise to **fill a range of knowledge gaps noted by national stakeholders**.
- An effective regional framework must seriously consider **utilizing data from the pharmaceutical industry/private sectors**.
- Providing **access to an IT tool for data analysis and visualization** would be an attractive asset for a regional data foundation.
- **Confidentiality and privacy concerns need to be carefully addressed** to overcome trade-related barriers.
- A regional framework should support countries to **assess the economic AMR burden in animal health sector**.
- **Inclusion of private sector(s) (Veterinarians, industry) in the regional framework** is key for the success of AMR and AMU/C data foundation.