Project for “Determining the Outbreak Mechanisms and Development of a Surveillance Model for Multi-Drug Resistant Bacteria.”

AMR in food chain : Situation and Pilot solutions

A comprehensive report

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Actions to combat AMR in Vietnam

NATIONAL ACTION PLAN TO COMBAT DRUG RESISTANCE

21st June 2013: The Minister of Health approved a National Action Plan to Combat Drug Resistance from 2013 to 2020

24th June 2015: MOH organized the high level meeting to fight against AMR issues in Vietnam with multi-stakeholder engagement

AMR Week


ĐỂ BẢO VỆ
TÍNH MẠNG
VÀ TƯƠNG LAI
GIỐNG NÒI


LỄ MÍT TINH
HƯỞNG ỨNG TUẦN LỄ TRUYỀN THÔNG VỀ KHÁNG SINH
từ 16 đến 22 tháng 11 năm 2015
ANTIBIOTICS AWARENESS WEEK 2015


WAAW
ỦY BAN NHÂN DÂN THÀNH PHỐ HÀ NỘI
LỄ MÍT TINH
TRUYỀN THÔNG VỀ PHÒNG, CHỐNG KHÁNG THUỐC NĂM 2016


ỦY BAN NHÂN DÂN THÀNH PHỐ HÀ NỘI
LỄ MÍT TINH
TRUYỀN THÔNG VỀ PHÒNG, CHỐNG KHÁNG
ANTIBIOTICS AWARENESS WEEK
Together and stronger in the fig
Hà Nội, ngày 30/11/201
WAAW


WAAW
LỄ MÍT TINH

Outlines of SATREPS project

AMR in food chain : Situation and Pilot solutions

Project Design

The Project Super Goal

The spread of multi-drug resistant bacteria is prevented in Vietnam.

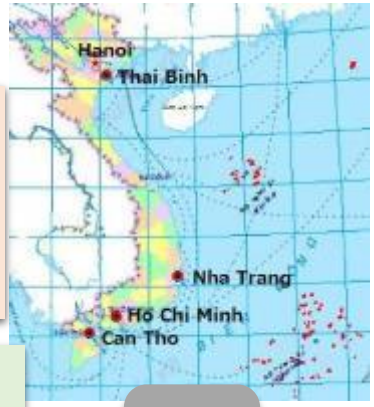
The Project purpose

Research capacity to continuously monitor the multi-drug resistant bacteria is strengthen.

Output

1. The widespread mechanisms of multi-drug resistant bacteria in Vietnam are clarified microbiologically, pharmacologically and anthropologically.
2. A comprehensive monitoring system for antibiotics residues and antibiotic-resistant bacteria over the process from food production to intake is developed.
3. Researchers and technical staffs related to food safety monitoring at the member institutes are trained.

Organization of the project



Joint Coordinating Committee (JCC)

National Institute of Nutrition (PI)

Osaka Univ. (PI)

- Microbiology WG
- Pharmacology WG
- Anthropology WG
- Human Resource Dev. WG

Regional Modules

- National Institute of Nutrition
- Thai Binh Univ. of Medicine & Pharmacy
- Nha Trang Pasteur Institute
- Institute of Public Health HCMC
- Binh Dien Wholesale Market Com.
- Can Tho Univ.

Functional Working Group

Project Activities

1) To assess actual situations of multi-drug resistant bacteria in targeted area in Viet Nam.

2) To clarify the wide spread mechanisms of multi-drug resistant bacteria.

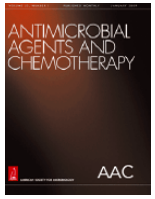
3) To prevent multi-drug resistant bacteria from spreading in local communities with a public health population approach.

4) To develop a model of monitoring multi-drug resistant bacteria/antibiotic residues in foods.

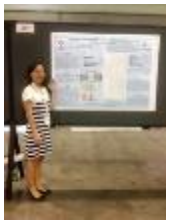
5) To develop research capacity of researchers related to food safety monitoring in Viet Nam.

Achievements as 2016

(1) Original articles in international journal, oral/poster presentations



22 articles published.
Among 8 are by Vietnamese first authors.



21 oral/poster presentations.
Among 11 are by Vietnamese researchers.

(2) Degree

1 PhD completed, 4 PhD candidates are studying in Japan.

4 Master Degree students completed in Vietnam

(3) Award

Excellent Poster Presentation Award and Osaka Prefecture University President Award by a Vietnamese researcher.

Findings

Wide dissemination of drug-resistant bacteria in the community of Vietnam

1. More than 60% of the residents are colonized with ESBL-producing bacteria.
2. More than 50% of the livestock and aquatic food products are contaminated with ESBL-producing bacteria.
3. Most of ESBL-producing bacteria are multi-drug resistant.
4. Residual antibiotics have been found in more than 10% of the food
5. In rural areas, β-lactam and colistin antibiotics are supplied for treatment of human and backyard chicken, respectively

Dissemination mechanisms of resistant bacteria

1. Clonal expansion of resistant bacteria is occurred in food/humans and food/patients.
2. Similar resistant plasmids are found in resistant bacteria isolates from different sources.
3. Resistant genes, including CTX-M-55, CTX-M-14 and CTX-M-27, are frequently found in resistant bacteria isolates from different sources, such as food, human and patients.

Communication intervention to protect AMR's spreading in community

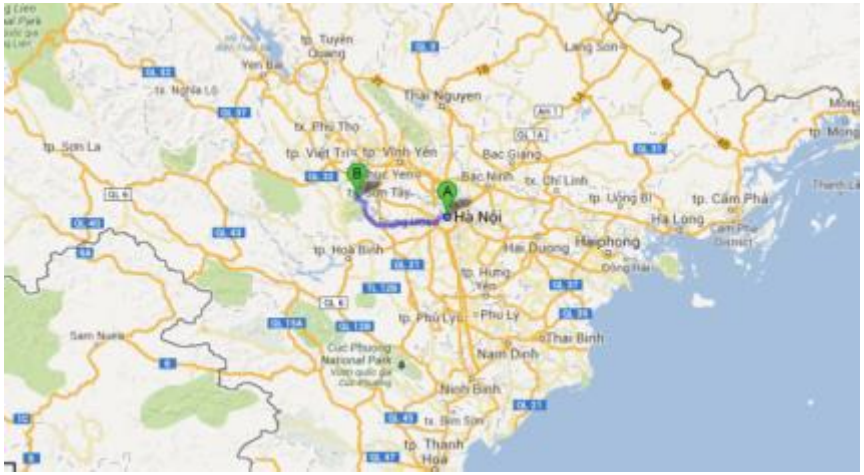
Public health interventions -population approach-

Communication interventions to reduce risk factors of outbreak and spread of antibiotic-resistant bacteria in the community are significantly reduced the prevalence of ESBL-producing bacteria in residents of the community.

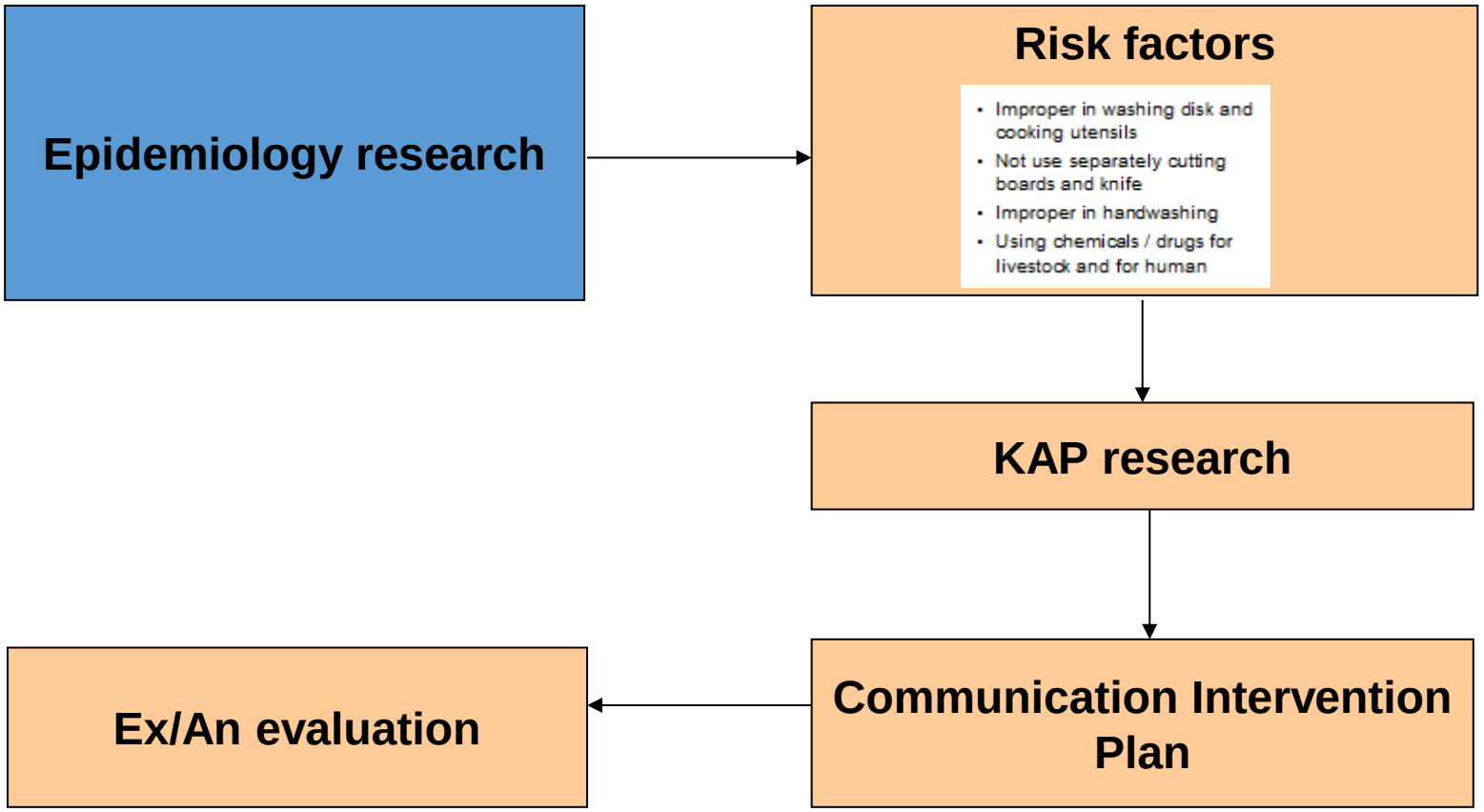
Public health intervention to reduce risk factors of outbreak and spread of antibiotic resistant bacteria in the community

Study site: Trai hamlet, Chu Minh comm., Ba Vi Dist., Hanoi

- Population Bavi district: 265,000; Chu Minh commune: 7,918; Trai Hamlet: 1,000 people
- Targeted population: 52 households
- 1 commune health station
- Period of intervention: Seven months, Aug. 2015 – Mar. 2016



Intervention research protocol



Epidemiology research

Finding the risk factors

1. Improper in washing disk and cooking utensils
2. Not use separately cutting boards and knife
3. Improper in handwashing
4. Using chemicals / drugs for livestock and for human

Result of initial KAP survey

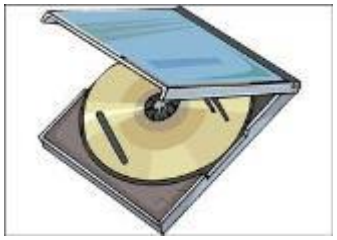
1. KAP about handwashing
2. KAP about using knife / cutting board
3. KAP about washing dish
4. KAP about management / use of livestock manure
5. KAP about management / use human excrement
6. KAP about the use of antibiotics for people
7. KAP about the use of antibiotics for livestock
8. Communication channels available and eager of people to participate with intervention activities.

Communication intervention plan

1. Organize 4 training courses for target groups: household; community leader; stakeholder and 1 TOT course for teacher.
2. Demonstration for hand washing practice, with the supportive from microbiology laboratory staff (NIN).
3. Develop IEC material: Leaflet; In-door poster; Out-door poster; CD/VCD (Audio/Video);
4. Organize the Knowledge / Practice contest about antibiotic resistant bacteria, personal hygiene, environmental sanitation, to use antibiotics properly (for all community and for 2 schools: primary school; secondary school)
5. Socio mobilization: Advocacy meeting; Group discussion and Register participating to the project activities by signing to Commitment Letter.
6. Monitoring/Evaluation: Home visit by health worker using the check list (weekly); Monitoring by NIN and District Health Center (monthly)

Information, Education and Communication (IEC) materials and communication activities

- Out-door and in-door posters to promote proper hygiene practices
- Through public speaker systems, messages from the audio disk has been disseminated to all remaining households in the commune.



- Video/audio materials to disseminate knowledge about bacteria, antibiotic resistant bacteria, personal hygiene, environmental sanitation for residents.

Raising awareness of the community through direct communication

- For school pupils, hold a contestabout knowledge. practice about antibiotic resistant bacteria, personal hygiene, environmental sanitation, to use antibiotics properly.

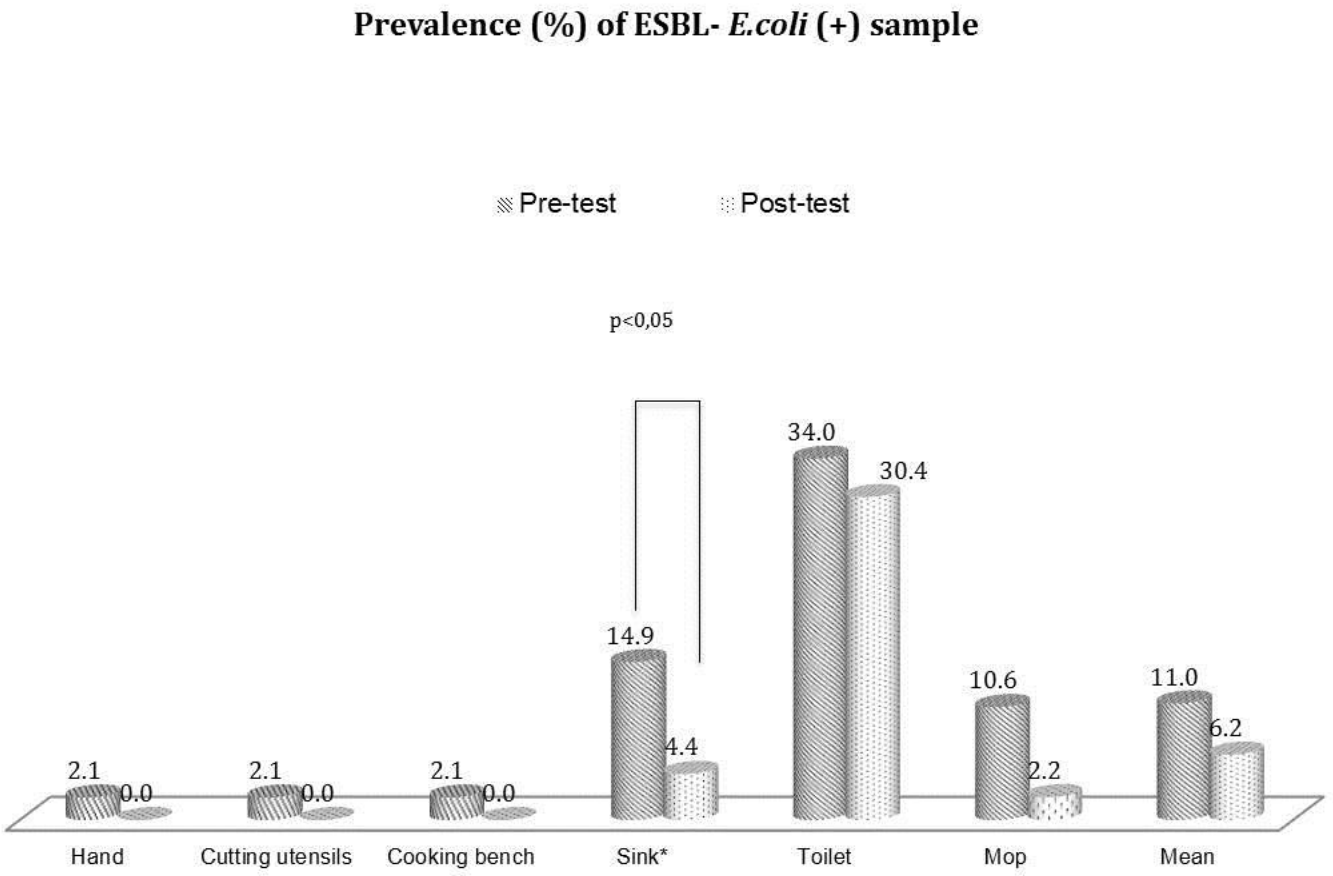
- For adults, demonstrate a right hand washing practice (to show and explain what is dirty hand and cleaning hand)

Evaluation survey after 7 months intervention

Knowledge on washing hand

When should we washing hand (N=52)	Before intervention (%)	After intervention (%)	Note
After using the toilet (WC)	65.4	86.5	
Before meal	78.8	84.6	
After meal	19.2	25.0	
Before cooking	19.2	51.9	
After cooking	9.6	36.5	
At any time feel hand dirty	61.5	75.0	
After gardening	80.8	57.7	
After cleaning the cage (animal lodging place), houses	38.5	42.3	

Improvement of bacteriological conditions



Prevalence of ESBL-*E. coli* at each sampling site was assessed by swab-sampling method.

Reduction of ESBL-*E. coli* carriers

Prevalence of ESBL-*E. coli* in residents

	Number of participants	ESBL-*E. coli* positive samples	
		N	%
Pre- intervention**	197	118	59.90
Post- intervention***	193	68	35.23

*, Indentified by double disc difusion test, confirmed by PCR

**, as June 2014

***, as Feb 2016

A pilot model surveillance system of antibiotic resistant bacteria for food administration

A model surveillance system of antibiotic resistant bacteria for food administration

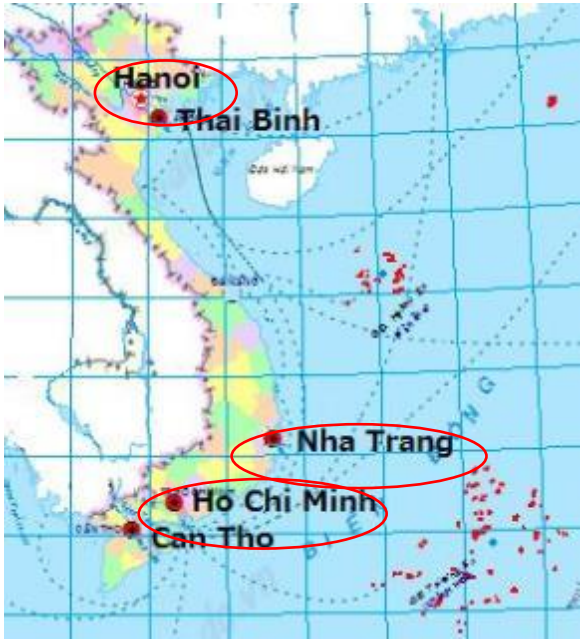
1. The surveillance system of ESBL-producing *E. coli* and residual ampicillin in food has been established at 3 national institutes, including National Institute of Nutrition, Pasteur Institute Nha Trang, and Institute of Public Health, Ho Chi Minh city, as a model system.
2. The system is ready to expand a full-scale system covered multidrug resistant foodborne bacteria in food administration.

A food monitoring system on multi-drug resistant bacteria/antibiotics residues

Responsible institutions

- National Institute of Nutrition, Hanoi
- Pasteur Institute, Nha Trang
- Institute of Public Health, HCMC

- Quarterly sampling (4 times per a year) chicken, pork, fish and shrimp from wholesale markets, supermarkets and retail markets.
- Check ESBL-producing *E.coli* and antibiotic residues (ampicillin) in foods.



Multi- drug resistant bacteria surveillance model

- Sampling quaterly
- Sample preparation
- Analysis
- Result
- Data entering/ summarization

Laboratory of Microbiology





Laboratory of Chemistry

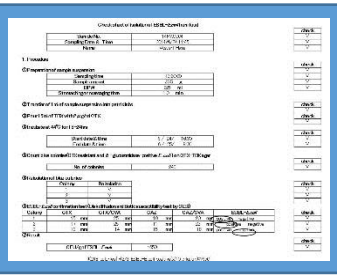




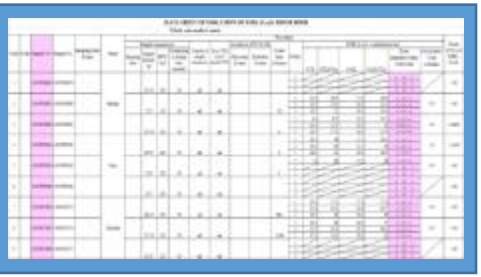
Manual and worksheets

- Manual

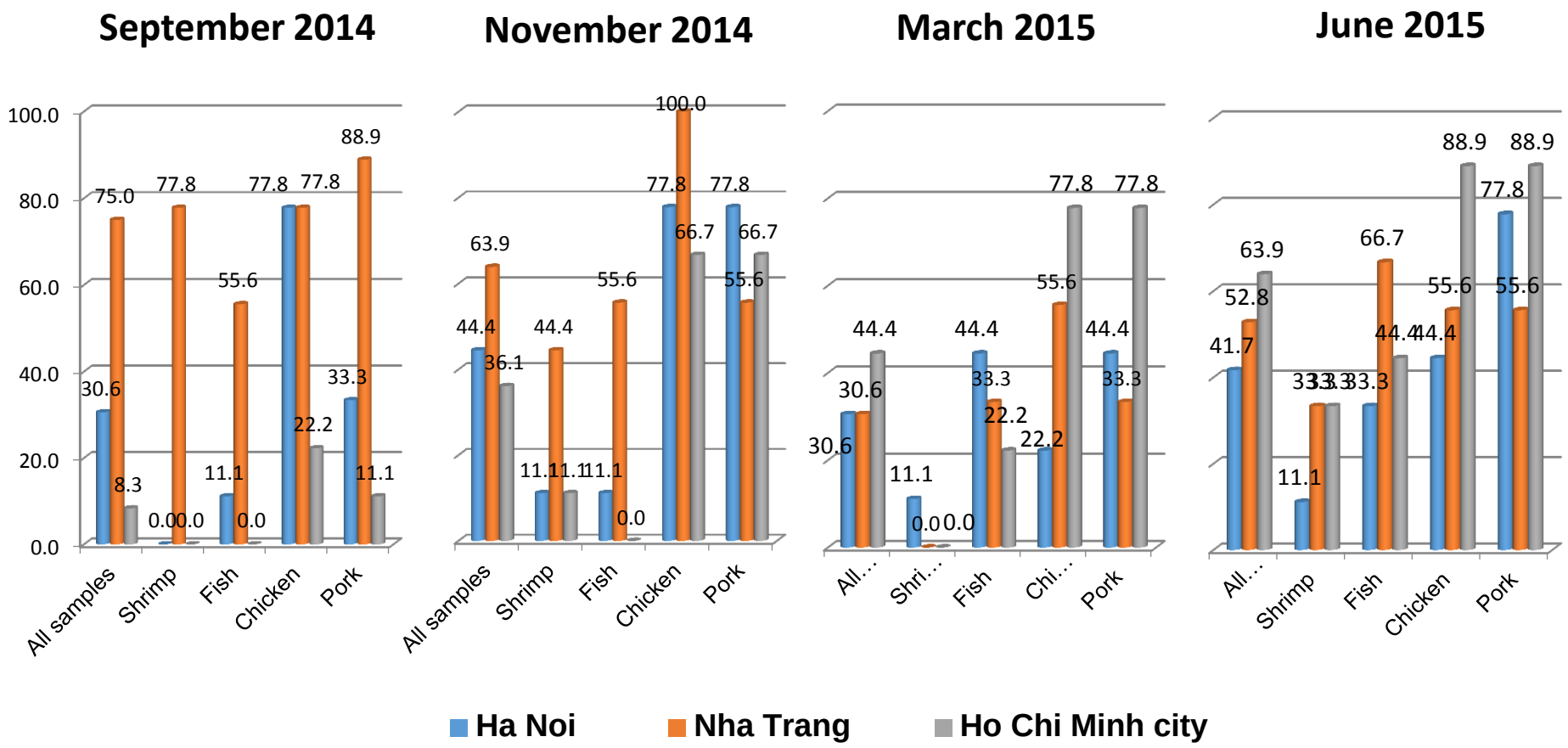
- Checklist



- Data sheets



Prevalence (%) of ESBL producing *E. coli* in food



-Determining the Outbreak Mechanisms and Development of a surveillance Model for Multi-Drug Resistant Bacteria

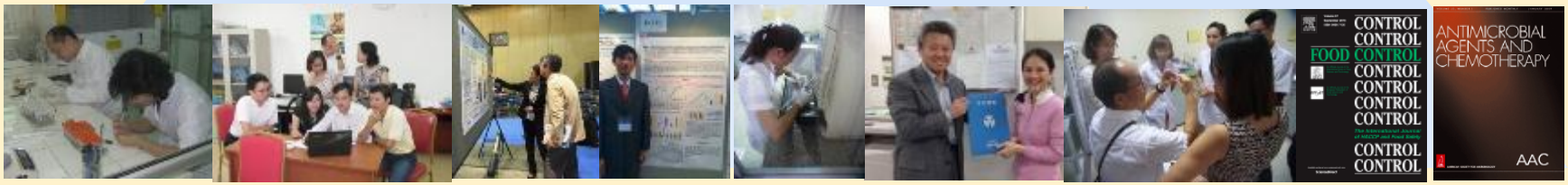
National Action Plan to Combat AMR in Viet Nam

Scientific evidences, recommended models for policy makers

Community People Raising Awareness：Reduce AMR bacteria , Avoid antibiotics abuse, Hand washing, etc.

Develop a model of monitoring AMR/Antibiotic Residues in Foods: Manual, Data archive, Training.

Research Networking Viet Nam-Japan: Collaboration laboratory, Publications, Degrees, Training Courses.



Acknowledgement!

We would like to express our heartfelt thanks to:

- MOH, VFA, MSA, CDC Vietnam, STTA, ICD
- JICA, AMED
- Japanese institutions and experts
- Vietnamese counterpart members
- Local stakeholders, health workers and people in Bavi, Thaibinh, Nhatrang, Cantho, Hochiminh city.

Thank you for your kind attention!