



Policy of Antimicrobial use (AMU) in Livestock in Thailand

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Outline



- **DLD Organization Chart on AMR/AMU**
- **Legislation on Drugs**
- **Antimicrobial Drugs**
- **Antimicrobial Use (AMU)**
- **National Strategic Plan on Antimicrobial Resistance 2017-2021
(NSP on AMR 2017-2021 Thailand)**
- **Control the use of Antimicrobial Drugs**
- **Multi - stakeholders on AMR/AMU**
- **Alternative way to reduce AMU**

DLD Organization Chart on AMR/AMU



Division Animal Feed and Veterinary
Products Control (AFVC)

Bureau of Disease Control and
Veterinary Services (BDCVS)

Bureau of Livestock Standards
and Certification (BLSC)

Lab

- National Institute of Animal Health (NIAH)
- Bureau of Quality Control of Livestock Products (BQCLP)
- Veterinary Research and Development center

Local

- 9 Regions
- 77 Provinces
- 888 District Livestock Offices

Legislation on Drugs



Food and Drug Administration (FDA)

Ministry of Public Health (MOPH)



**Department of Livestock Development
(DLD)**

**Ministry of Agriculture and Cooperatives
(MOAC)**



Antimicrobial Drugs



GR1 : Tetracyclines

- Chlortetracycline
- Doxycycline
- Oxytetracycline

GR 2: Penicillins

- Amoxicillin
- Penicillin

GR 3 : Cephalosporins

- Ceftiofur

GR4: Sulfonamides, Dihydrofolate reductase inhibitors

- Sulfadiazine
- Sulfadimidine
- Trimethoprim

GR5: Macrolides and ketolides

- Kitasamycin
- Lincomycin
- Tilmicosin
- Tylosin
- Tylvaosin (Avilosin)

Antimicrobial Drugs



GR6: Aminoglycosides

- Gentamycin
- Kanamycin
- Neomycin
- Spectinomycin
- Streptomycin

GR7: Fluoroquinolones, Quinolones, Quinolone derivatives

- Chlorhydroxyquinoline (halquinol) 1
- Danofloxacin
- Enrofloxacin
- Marbofloxacin

GR 8 others

- Colistin (polymyxins)
- Tiamulin (pleuromutilin)

Antimicrobial Drugs

Antibiotic Drugs = 2,500 products

Import 700 products (30%)

Producing in Thailand 1,800 products (70%)

Top 5 Products of Antibiotic Drug (Value; Million)

1. Amoxicillin Oral Powder	500
2. Tiamulin Oral Powder	400
3. Tylosin Oral Powder	319
4. Chlortetracycline (CTC) Oral Powder	294
5. Doxycycline Oral Powder	177

Thai FDA ; 2013



Antimicrobial Drugs



Market Share in 2016 : Broiler



Products	Market Share	Market Size (Baht)
Amoxicillin	40%	247,520,000
Tylosin	20%	123,760,000
Doxycycline	15%	92,820,000
Tilmicosin	15%	92,820,000
Colistin	5%	30,940,000
Lincomycin+spectinomycin	2%	12,376,000
Others	3%	18,564,000
TOTAL MARKET	100%	618,800,000

Antimicrobial Drugs



Market Share in 2016 : Layer



Products	Market Share	Market Size (Baht)
Amoxicillin	40%	81,384,349
Doxycycline	15%	30,519,131
Tylosin	25%	50,865,218
Colistin	5%	10,173,044
Fluoroquinolone	5%	10,173,044
Linco+Spectin	5%	10,173,044
Others	5%	10,173,044
TOTAL MARKET	100%	203,460,871

Antimicrobial Drugs



Market Share in 2016 : Breeder



Products	Mkt. Share %	Market Size (Baht)
Amoxicillin	40%	30,917,018
Doxycycline	20%	15,458,509
Tylosin	15%	11,593,882
Colistin	10%	7,729,255
Linco+Spectinomycin	10%	7,729,255
Others	5%	3,864,627
TOTAL MARKET	100%	77,292,545

Antimicrobial Drugs



Market Share in 2016 : Fattening Pig



Products (Feed additive antimicrobial)	Market Share (%)	Total Sales
Tiamulin	35%	778,331,531
Amoxicillin	20%	444,760,875
CTC	15%	333,570,656
Tilmicosin	10%	222,380,438
Colistin	6%	133,428,263
Tylosin	6%	133,428,263
Halquinol	4%	88,952,175
Lincomycin	2%	44,476,088
Others	2%	44,476,088
TOTAL MARKET	100%	2,223,804,375

Antimicrobial Drugs



Market Share in 2016 : Fattening Pig



Products (injections)	Market Share (%)	Market Size (Baht)
Amoxicillin	30%	167,400,000
Cephalosporin	17%	94,860,000
Aminoglycosides	10%	55,800,000
Tiamulin	15%	83,700,000
Pen-Strep	20%	111,600,000
Tylosin	3%	16,740,000
Oxytetracycline	2%	11,160,000
Others	3%	16,740,000
TOTAL MARKET	100%	558,000,000



Antimicrobial Use (AMU)



Calculation on AMU (mg/PCU)



DLD & Animal Health Products Association (AHPA)

Antimicrobial Use (AMU)



Calculation on AMU (mg/PCU)

The consumption of veterinary antimicrobials =
$$\frac{\text{Active Ingredient (AI) ; (mg, kg of active ingredient)}}{\text{Population correction unit (PCU) ; (kg of animal weight)}}$$

• AI = Active ingredient

PCU = Population Correction Unit

1 PCU = 1 kg

PCU = Numbers of livestock animals X Estimated (Average) weights at treatment

Antimicrobial Use (AMU)



Average weights and carcass-to-live-weight conversion factors

Table 3. Average weight (AW), in kilos, used in calculating the population correction unit (PCU)

Animal category	AW at treatment (kilos)	Source
Cattle		
Slaughter cows	425	Montforts (1999) ¹
Slaughter heifers	200	EMA ²
Slaughter bullocks and bulls	425	Montforts (1999) ¹
Slaughter calves and young cattle	140	Montforts (1999) ¹ ; EMA ²
Imported/exported cattle for slaughter	425	Montforts (1999) ¹
Imported/exported cattle for fattening	140	Montforts (1999) ¹
Livestock dairy cows	425	Montforts (1999) ¹ ; EMA ²
Pigs		
Slaughter pigs	65	Montforts (1999) ¹ ; EMA ²
Imported/exported pigs for slaughter	65	Montforts (1999) ¹ ; EMA ²
Imported/exported pigs for fattening	25	M. Goll (Eurostat, personal comm.)
Livestock sows	240	Montforts (1999) ¹ ; EMA ²
Poultry		
Slaughter broilers	1	Montforts (1999) ¹ ; EMA ²
Slaughter turkeys	6.5	Montforts (1999) ¹ ; EMA ²
Imported/exported poultry for slaughter ³	1	Montforts (1999) ¹ ; EMA ²

Antimicrobial Use (AMU)



IMPORT

MANUFACTURE

DISTRIBUTION

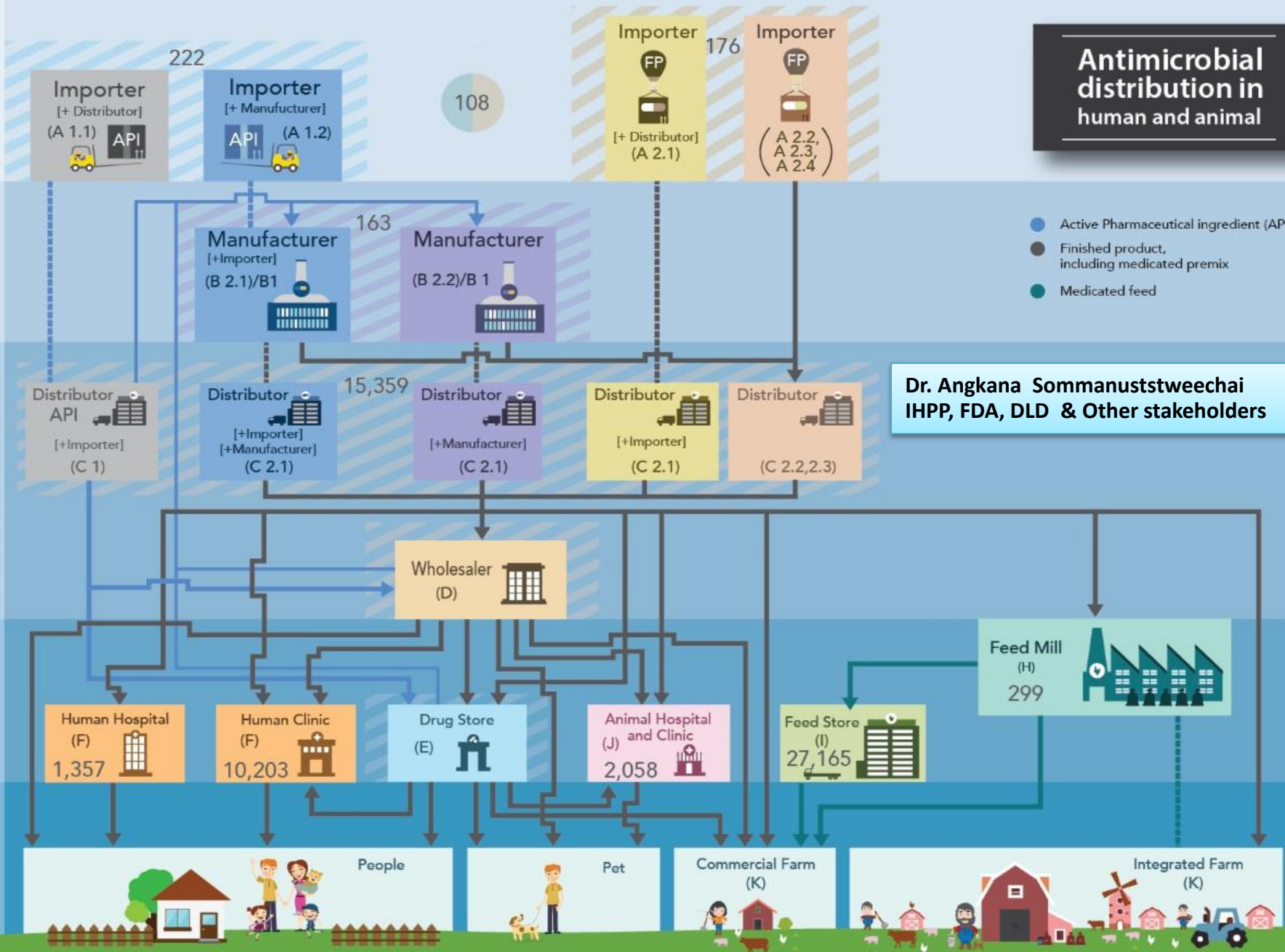
PRESCRIPTION
DISPENSING

USE

Antimicrobial distribution in human and animal

- Active Pharmaceutical ingredient (API)
- Finished product, including medicated premix
- Medicated feed

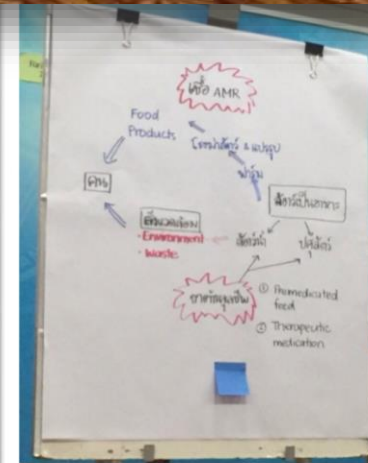
Dr. Angkana Sommanuststweechai
IHPP, FDA, DLD & Other stakeholders



National Strategic Plan (NSP) on Antimicrobial Resistance (AMR) 2017-2021 Thailand



**Brain Storm to develop NSP on AMR
18-19 Aug 2015**



National Strategic Plan (NSP) on Antimicrobial Resistance (AMR) 2017-2021 Thailand



Vision

Reduction of mortality, morbidity and economic impacts from AMR

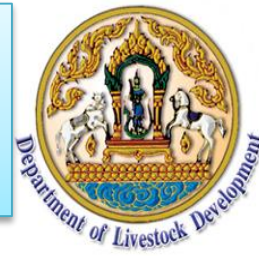
Mission

Establish policies and national multi-sectoral mechanisms which support effective and sustained AMR management system

Endorsement

Have been endorsed by the cabinet on 17 Aug 2016

National Strategic Plan (NSP) on Antimicrobial Resistance (AMR) 2017-2021 Thailand



Goals

- 50% reduction in AMR morbidity
- 20% reduction in antimicrobial use in human
- **30% reduction in antimicrobial use in animal**
- 20% increase of public knowledge on AMR and awareness of appropriate use of antimicrobials
- Capacity of the national AMR management system is improved to level 4*

(* This is measured by the WHO's Joint External Evaluation Tool (JEE) for International Health Regulations (2005))

National Strategic Plan (NSP) on Antimicrobial Resistance (AMR) 2017-2021 Thailand



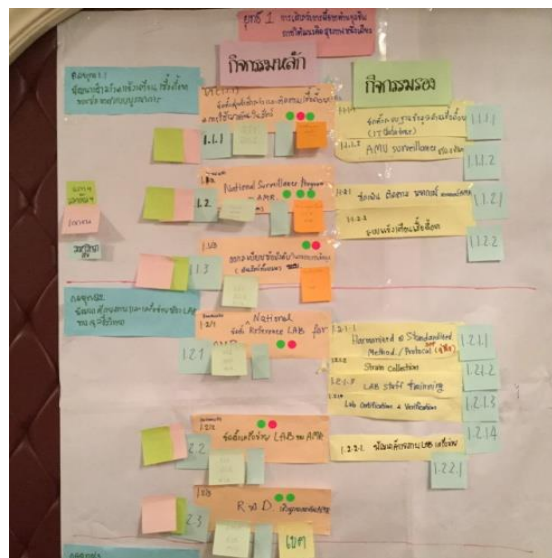
6 Strategies

- AMR surveillance system using **One Health** approach
- Regulation of antimicrobial distribution
- Infection prevention and control and antimicrobial stewardship in humans
- **AMR prevention and control and antimicrobial stewardship in agriculture and companion animals**
- Public knowledge on AMR and awareness of appropriate use of antimicrobials
- Governance mechanisms to develop and sustain AMR-related actions

National Strategic Plan (NSP) on Antimicrobial Resistance (AMR) 2017-2021 Thailand



Livestock sector on NAP on AMR 26-27 Sep 2016



National Strategic Plan (NSP) on Antimicrobial Resistance (AMR) 2017-2021 Thailand



Workshop for NAP on AMR on 9-11 Nov 2016



Control the use of Antimicrobial Drugs



- Improve the regulations to control the use of antimicrobial drugs
- Control distribution channels of active pharmaceutical ingredients (API) by drug Law
- **Restriction on CIA (Treatment : Colistin, Cephalosporins & Fluoroquinolones)**
- Monitor antimicrobial drugs in feed at feed mill and farm mixer
- **Law enforcement of illegal drugs and substances**



Control the use of Antimicrobial Drugs



Drug Act 1967 : Thai FDA : MOPH

- Thai FDA disallows antimicrobials to be registered under the growth promoter
- Reclassification and control distribution channel of antimicrobials
- Thai FDA will reject any application of new antimicrobials that are used in humans (e.g. carbapenems) to be used in animals

Feed Quality Control Act 2015 : (DLD : MOAC)

- In 2006 : The use of antimicrobials as growth promoter was banned in poultry/Partial banned since 2000
- In 2015 : all antimicrobials are prohibited to be used as growth promoters
- Regulation on Medicated Feed

Control the use of Antimicrobial Drugs



Training of Veterinarians who responsible for a mixing of antimicrobial drugs at feed mills.

15-17 Feb 2017

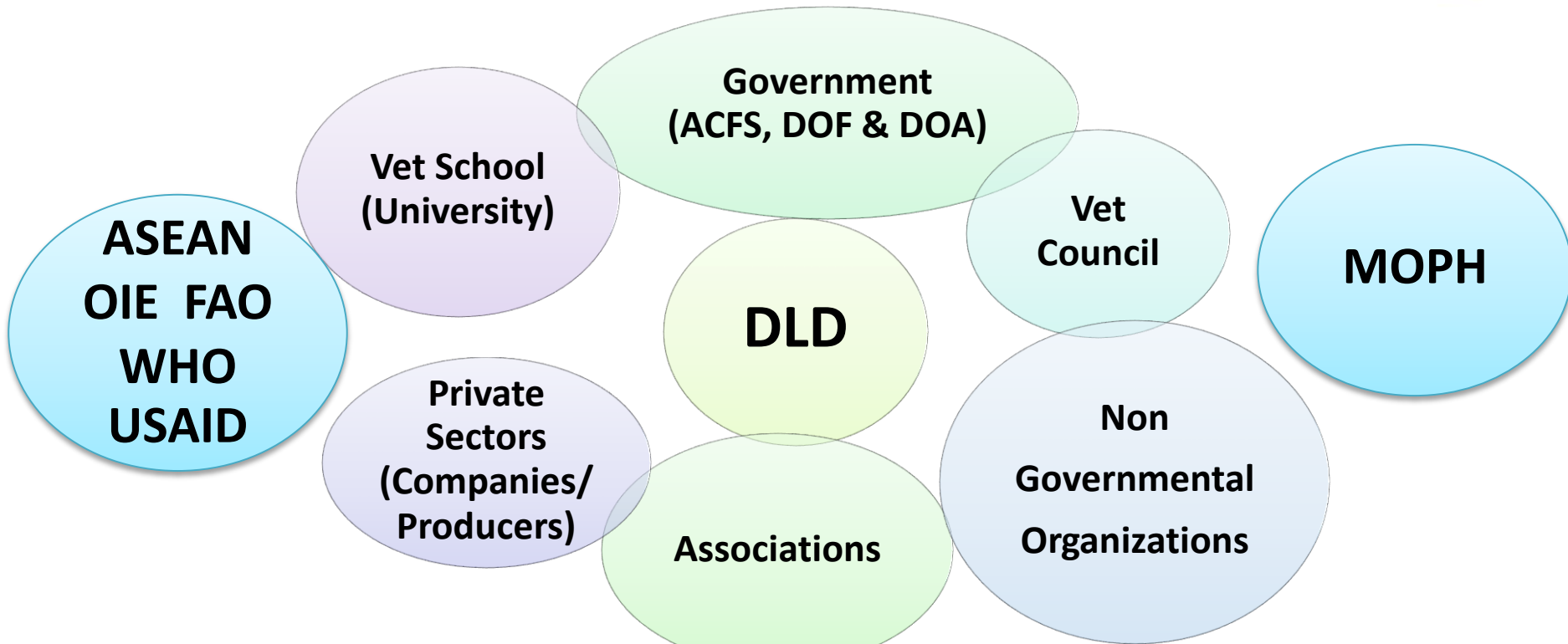
Control the use of Antimicrobial Drugs



The right drug/ The right dose and period/ The right withdrawal time
Vet Prescription



Multi - stakeholders on AMR/AMU



- The Thai Veterinary Medical Association Under Royal Patronage
- The Veterinary Practitioner Association of Thailand
- Thai Swine Veterinary Society
- Thai Poultry Veterinary Association
- The Animal Husbandry Association of Thailand
- Animal Health Products Association
- Thai Feed Mill Association, etc.

Multi - stakeholders on AMR/AMU



Code of practice for control of the use of vet drugs
National Bureau of Agricultural Commodity and Food Standards
(ACFS)



AMU guideline:

Swine

Pet (Dog & Cat)

Farm mixer certification



Multi - stakeholders on AMR/AMU



Technical cooperation with Food and Agriculture Organization (FAO) of the United Nations

TECHNICAL COOPERATION PROGRAMME (TCP)

Enhancing National Capacities for Antimicrobial Resistance Risk Management
in Animal Food Production in Thailand

Pilot project on AMU in swine

Multi - stakeholders on AMR/AMU

MOU with French Agency for Food, Environmental and Occupational Health & Safety
(OIE Collaboration Center for Veterinary Medicinal Products) 11Sep 2015



Collaborate in veterinary medicinal products, medicated feed control system and related issues such as AMR for both regulation and laboratory

Multi - stakeholders on AMR/AMU



World Bank and OIE “The Economic Cost of Antimicrobial Resistance” 23 – 31 May 2016



Multi - stakeholders on AMR/AMU



**Responding to the global challenge of AMR threats: toward a one health approach
15-18 Nov 2016**

Multi - stakeholders on AMR/AMU



Harmonize and implement standard method for AMR testing
Surveillance Resistance bacteria and resistance genes in food chain
Develop National Vet AMR Surveillance System
Residue Monitoring Plan



Alternative ways to reduce AMU



- **Biosecurity**
- **Good nutrition**
- **Vaccination**
- **Autogenous Vaccine**
- **Prebiotic / Probiotic**
- **Herb**
- **Enzyme**



Thank you