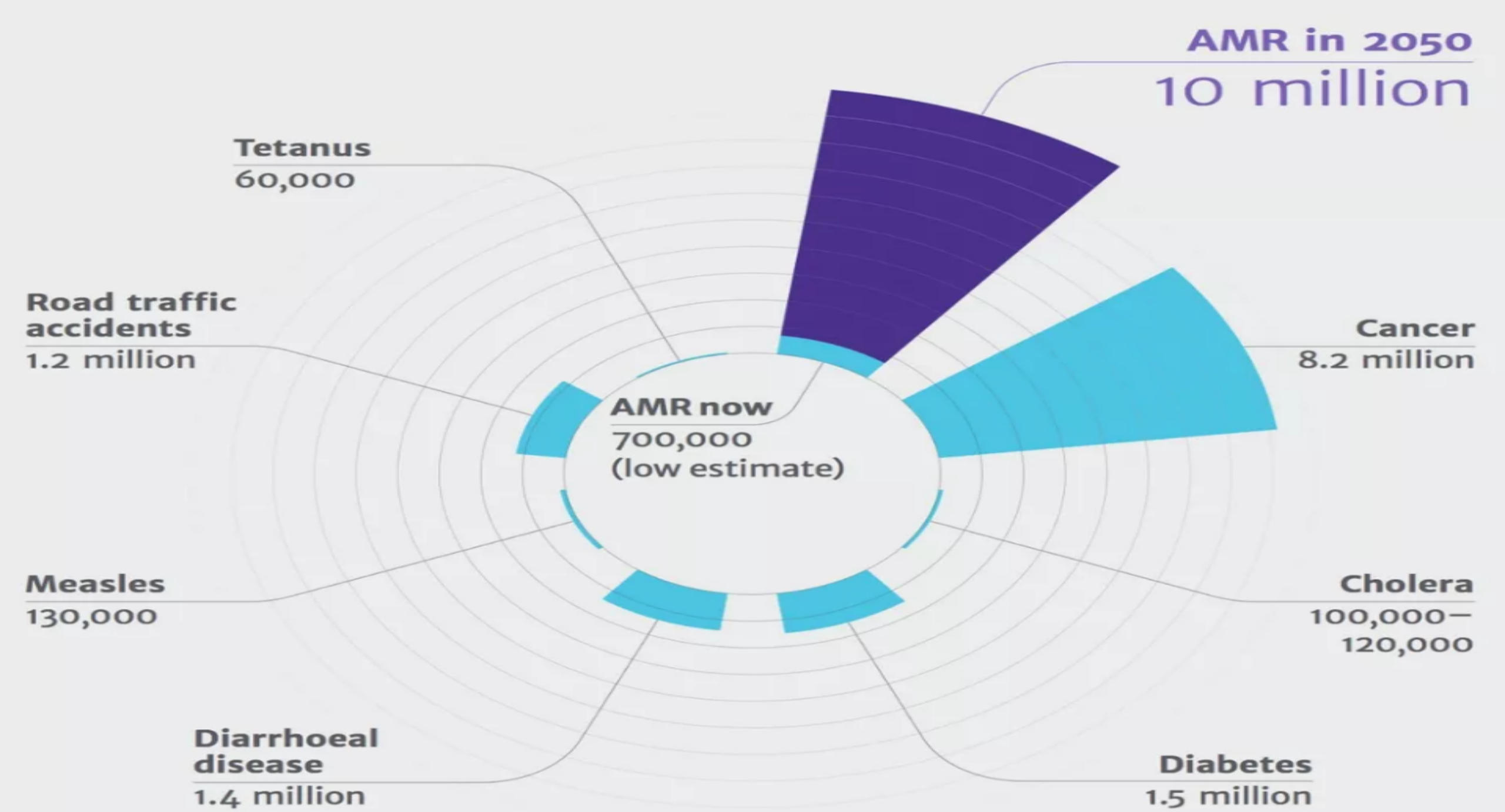
APEIR

Asia Partnership on Emerging Infectious Diseases Research

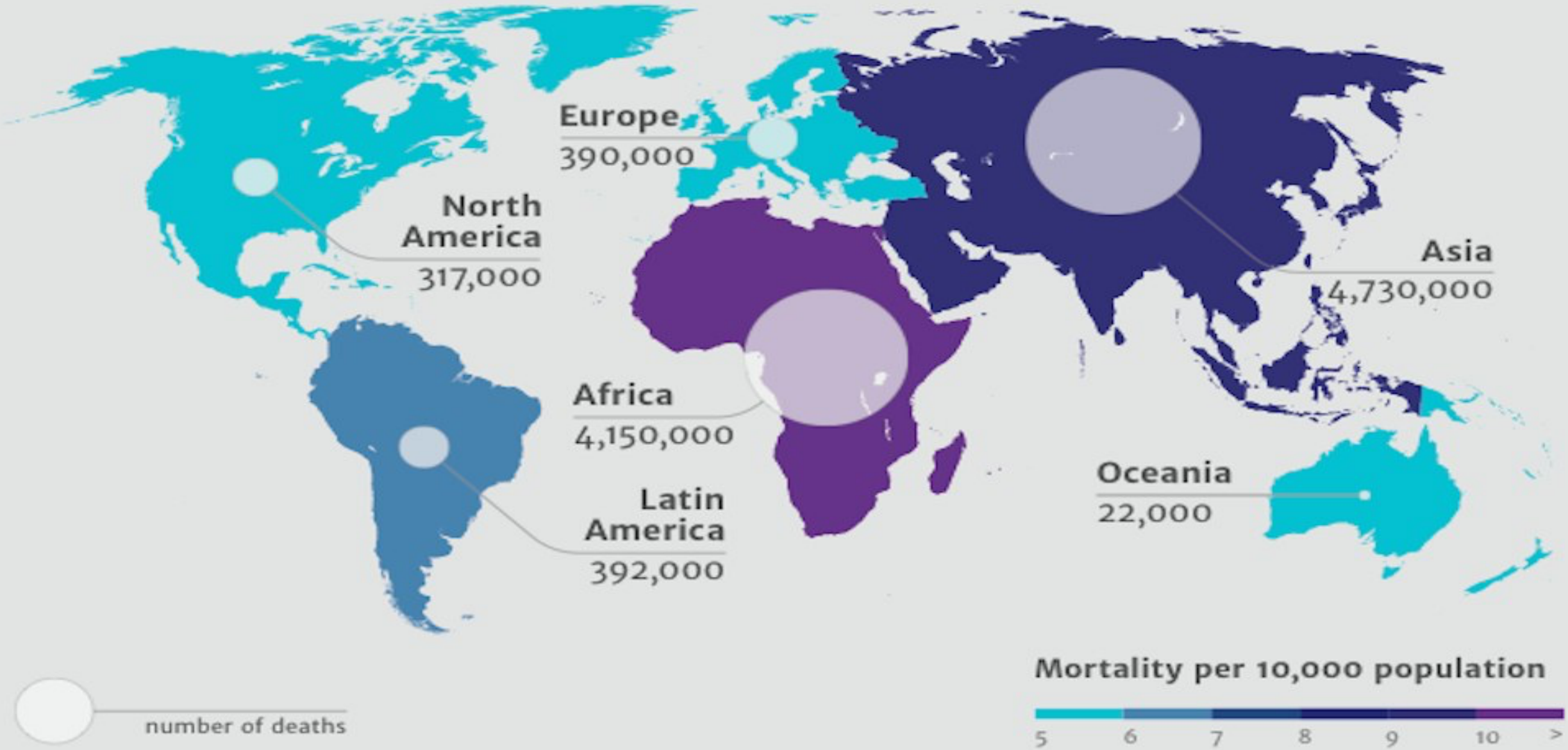
APEIR EXPERIENCE ON 2012 - 2016

STRENGTHENING REGIONAL ROLE ON AMR RESEARCH



Source: Review on AMR, 2014

Deaths attributable to AMR per year by 2050



Source: Review on AMR, 2014

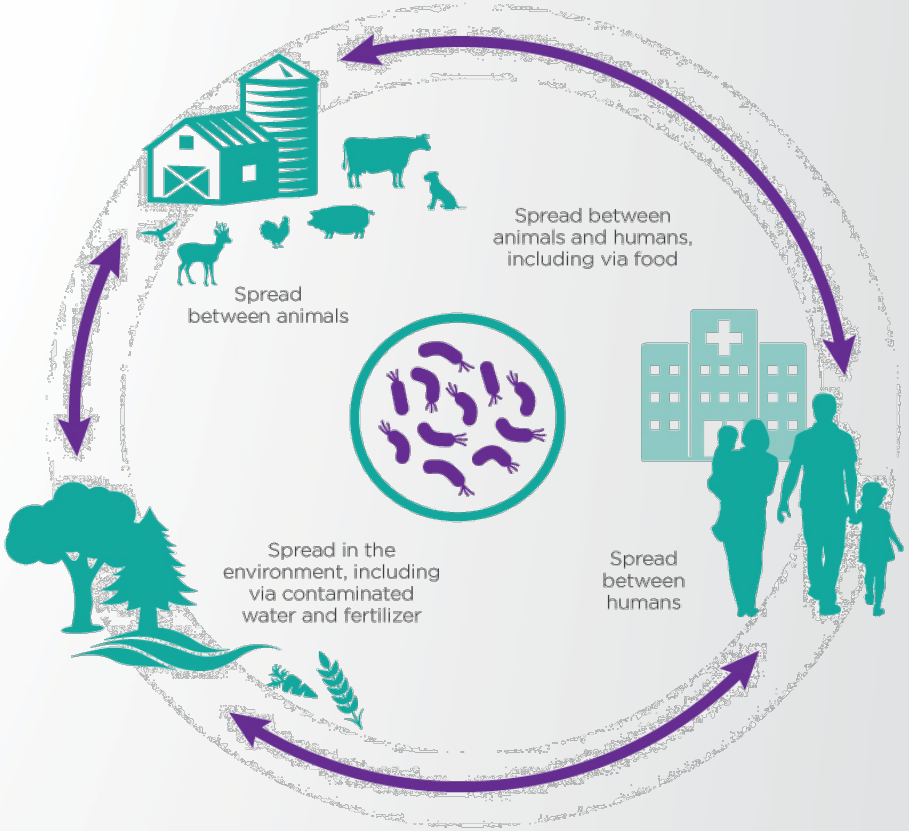
AMR Current Situation in WHO Member Countries

As collected through available surveillance and publication data

Bacteria	Antibiotic	Reported range of Resistant Proportion (%)					
		Africa	East Mediterranean	Europe	Southeast Asia	Western Pacific	America
Eschericia coli	3rd generation of Cephalosporins	2-70	22-63	3-82	16-68	0-77	0-48
Eschericia coli	Fluoroquinolones	14-71	21-62	8-48	32-64	3-96	8-58
Klebsiella pneumoniae	3rd generation of Cephalosporins	8-77	22-50	2-82	34-81	1-72	4-71
Klebsiella pneumoniae	Carbapenems	0-4	0-54	0-68	0-8	0-8	0-11
Staphylococcus aureus	Beta-lactam anti-bacteria	12-80	10-53	0.3-60	10-26	4-84	21-90
Streptococcus pneumoniae	Penicilin	3-16	13-34	0-61	47-48	17-64	0-48
Nontyphoidal Salmonella	Fluoroquinolones	0-35	2-49	2-3	0.2-4	0-14	0-96
Shigella sp	Fluoroquinolones	0-3	3-10	0-47	0-82	3-28	0-8
Neisseria gonorrhoeae	3rd generation of Cephalosporins	0-12	0-12	0-36	0-5	0-31	0-31

Source: WHO, 2014

Current Challenges



Major data gaps =
no precise global prevalence

Transmission
across boundaries

Comprehensive approach and collaborative work among countries are now **crucial**

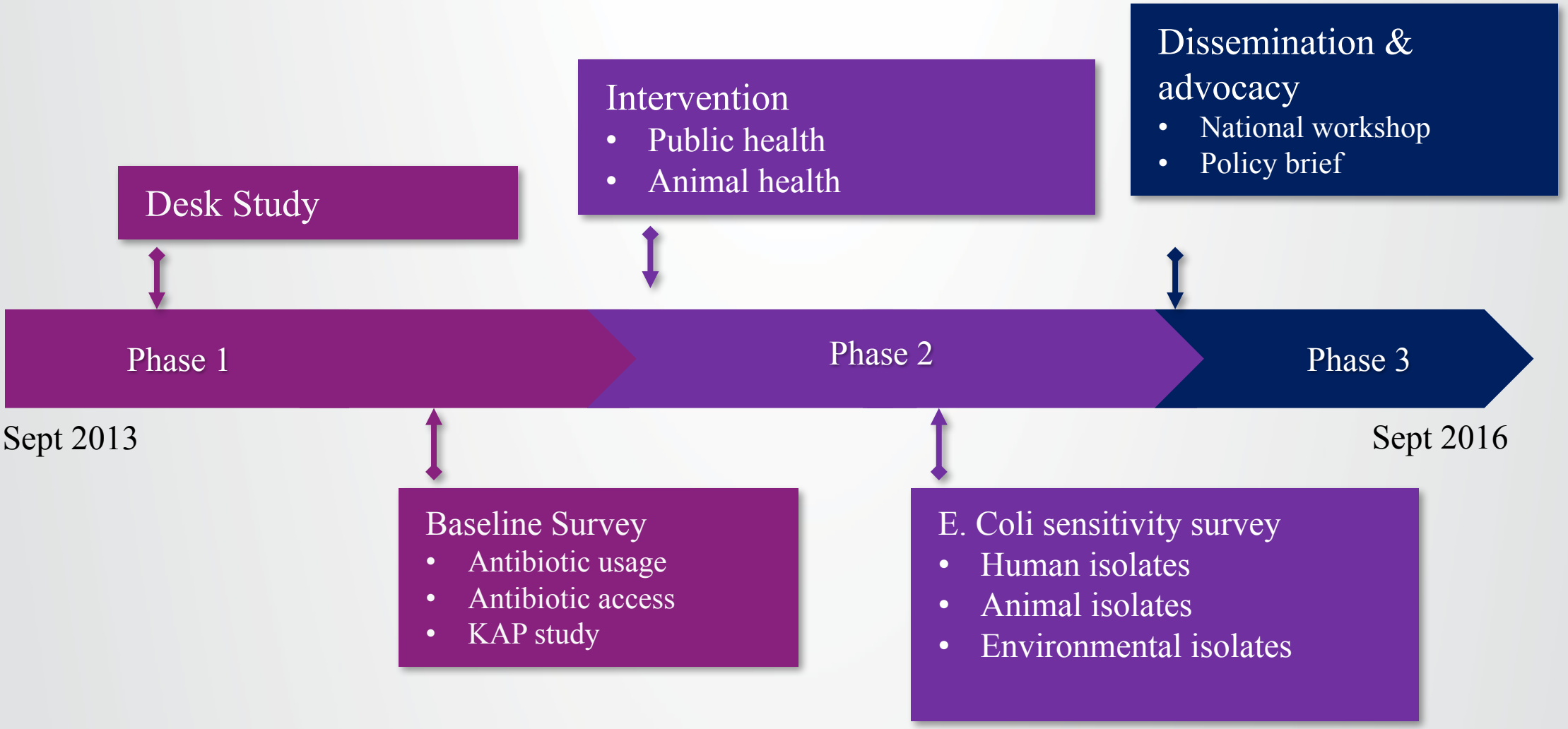
APEIR RESEARCH ON AMR:

Sustaining & Strengthening Capacity of Regional Networks and Partnership to AMR in Indonesia & Thailand

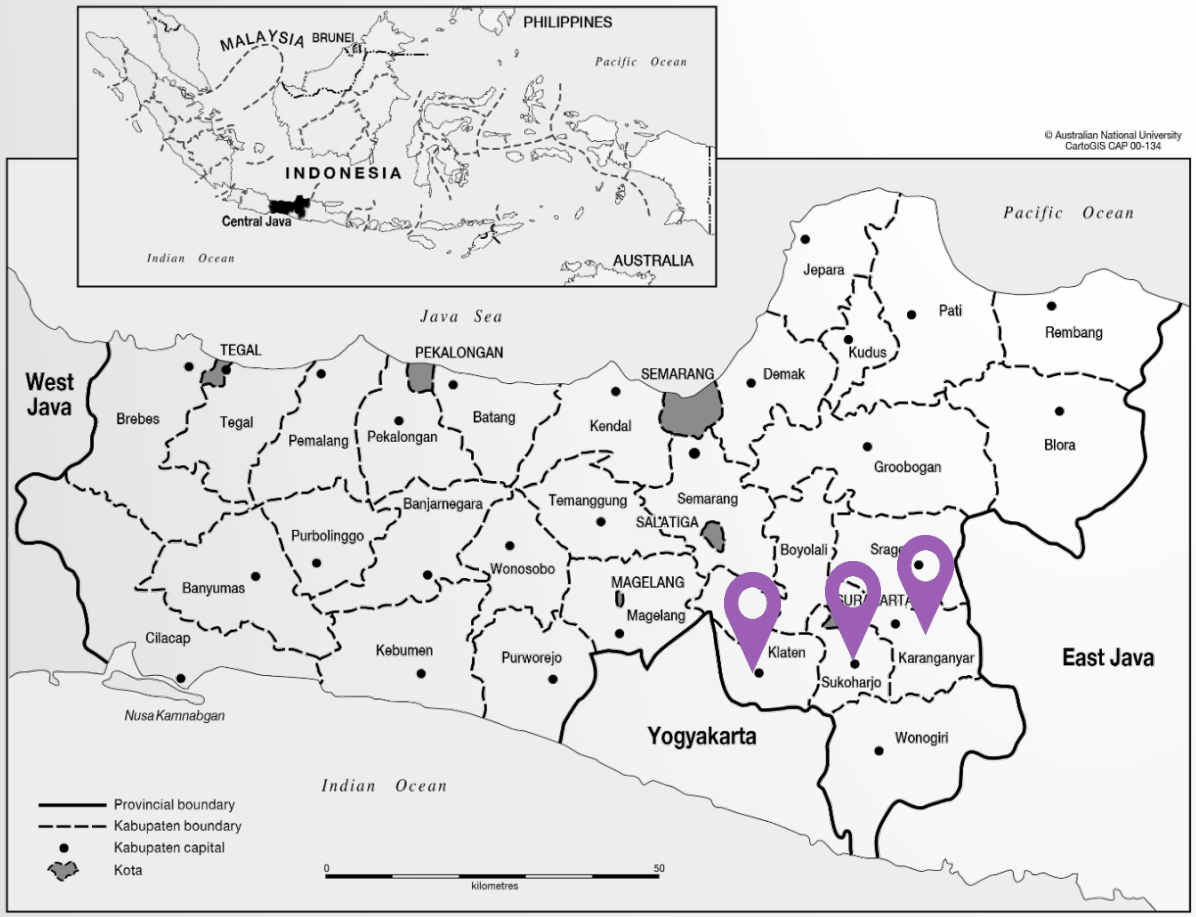
Objectives

- Assess the current AMR situation in veterinary and human medicine
- Gather evidence on AMR of E. coli as the indicator bacteria available at the study sites
- Compare the costs of livestock raising between prudent and imprudent use of anti microbial
- Provide information and recommendation to policy makers based on results of the study on the importance of prudent use of antimicrobial

Approaches


Desk Study
Intervention
• Public health
• Animal health
Dissemination & advocacy
• National workshop
• Policy brief
Phase 1
Phase 2
Phase 3
Sept 2013
Sept 2016
Baseline Survey
• Antibiotic usage
• Antibiotic access
• KAP study
E. Coli sensitivity survey
• Human isolates
• Animal isolates
• Environmental isolates

Study Sites



The study conducted in layer chickens and pig farms

Desk Study Result
Situation Analysis Related to AMR (1)

No	Current Situation	Contributing Factors
Human Health		
1	Improper prescription of antibiotics	▪ Medical practitioners lack of awareness to prescribe antibiotics rationally ▪ Pharmaceutical companies give incentives for antibiotics use
2	Improper consumption of antibiotics by patients	▪ Limited health education by doctors to patients ▪ Incomplete course of antibiotics by patients
3	Antibiotics selling over the counter	▪ Poor supervision by the government ▪ Poor regulation by the government ▪ Market demand through self-medication habit by patients

Desk Study Result
Situation Analysis Related to AMR (2)

No	Current Situation	Contributing Factors
Animal Health		
4	Excessive use of antibiotics in farm	▪ Lack of veterinary services in farm ▪ Poor control over antibiotics use ▪ Aggressive marketing by pharmaceutical companies ▪ Lack of knowledge and awareness on farmers ▪ Poor regulation by the government
5	Antibiotics residue in livestock products	▪ Lack of knowledge and awareness on farmers ▪ Poor surveillance over livestock products by the government ▪ Lack of veterinary services in farm

Baseline Result

No	Aspect	Indonesia	Thailand
1	Antibiotics Usage	▪ Layer and swine farms commonly use antibiotics from the β-Lactam, tetracycline, and sulfonamide group. ▪ **Colistin used in layer farms** ▪ Layer farms use antibiotics for **disease treatment**, disease prevention and production increase. ▪ Swine farms use antibiotics only for disease treatment and prevention.	▪ Layer and swine farms commonly use antibiotics from the β-Lactam, and tetracycline. ▪ **Colistin used in layer and swine farms.** ▪ Layer and swine farms use antibiotics for **disease prevention** and treatment.
2	Antibiotics Access	▪ Farms obtain antibiotics mainly from poultry shops, technical services of pharmaceutical, and government veterinary officers.	▪ Farms obtain antibiotics mainly from poultry shops.
3	KAP Study	▪ The knowledge level of respondents on prudent use of antibiotics for humans and antimicrobial resistance is high in doctors and patients visiting healthcare facilities. ▪ the knowledge of layer farm workers overall is better than general patients or swine farm workers	▪ The knowledge of swine farm workers is better than layer farm workers.

E. Coli Sensitivity Result

Indonesia	Thailand
▪ High resistance was found against antibiotics **ampicillin (AMP), tetracycline (TCY), and Trimethoprim-sulphamethoxazole (SXT)** in isolates from animals, humans, and the environment in swine and layer farms ▪ In swine farms, resistance was also found against antibiotic **chloramphenicol (CHL).** ▪ E. coli isolates from layer chickens and swine are observed to start develop resistance against fluoroquinolone antibiotics **ciprofloxacin (CIP) and levofloxacin (LVX)**	▪ High resistance was found against antibiotics **ampicillin (AMP), and ceftriaxone (SXT**) in isolates from animals, humans, and the environment in swine and layer farms

Intervention

No	Aspect	Indonesia	Thailand
1	Public Health	▪ Training of facilitators for public health workers ▪ Training of antibiotics cadres in pilot villages	▪ -
2	Animal Health	▪ Training of facilitators for animal health workers ▪ Training of antibiotics cadres in pilot villages ▪ Regular visit and education in pilot farms ▪ Training on good farming practices and health management for farms ▪ Training on good farming practices and health management for animal health workers ▪ Training on waste management and composting for farms	▪ Farms biosecurity and management improvement ▪ Vaccination program of newcastle and mycoplasma ▪ Using probiotics and phytobiotics as antibiotics replacement ▪ Develop guideline for veterinarian

Dissemination in Indonesia

National Dissemination Workshop, Jakarta, 14 November 2016

Attended by national and local government officials, FAO, & Indonesia Veterinary Drug Association

Dissemination in Thailand

Collaborate with key stakeholders

- Workshop with drug dealers for proper use of AM in farms
- Workshop with famers and managers on livestock health and production management (>20 times)
- Meeting with The Veterinary council of Thailand and DLD to advocate the results

Recommendation

- Require all drug producers for both animal and human use to put prescribed drug and antibiotic drug label on every drug strips.
- Establish support from local government offices or independent community funding to sustain the intervention activities into the future.
- Ensure a strict reporting system is in place for all businesses involved in the importation, distribution, sale, and prescription of antibiotics for animal and human use.
- Develop national across sector guidelines for prudent and responsible use of antibiotics.
- Similarities in antibiotic resistant patterns of E. coli isolated from animals, human and the environment indicates the need to conduct a more comprehensive research on the impact of using similar antibiotics in animal and public health, and the likely risk of sharing resistant bacteria or genes in a farm environment

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THANK YOU