Reflections from GARP Phase 1

Vietnam

Nguyen Van Kinh, M.D, Ph.D

Chairman, GARP-Vietnam

Director of National Hospital for Tropical Diseases

On behalf of GARP-VN National Working Group

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Global Antibiotic Resistance Partnership

Overview

- Background on Vietnam, antibiotic use and antibiotic resistance
- GARP-VN
  - Activities and achievements
  - Research projects
  - Future directions

Background on Vietnam, antibiotic use and antibiotic resistance

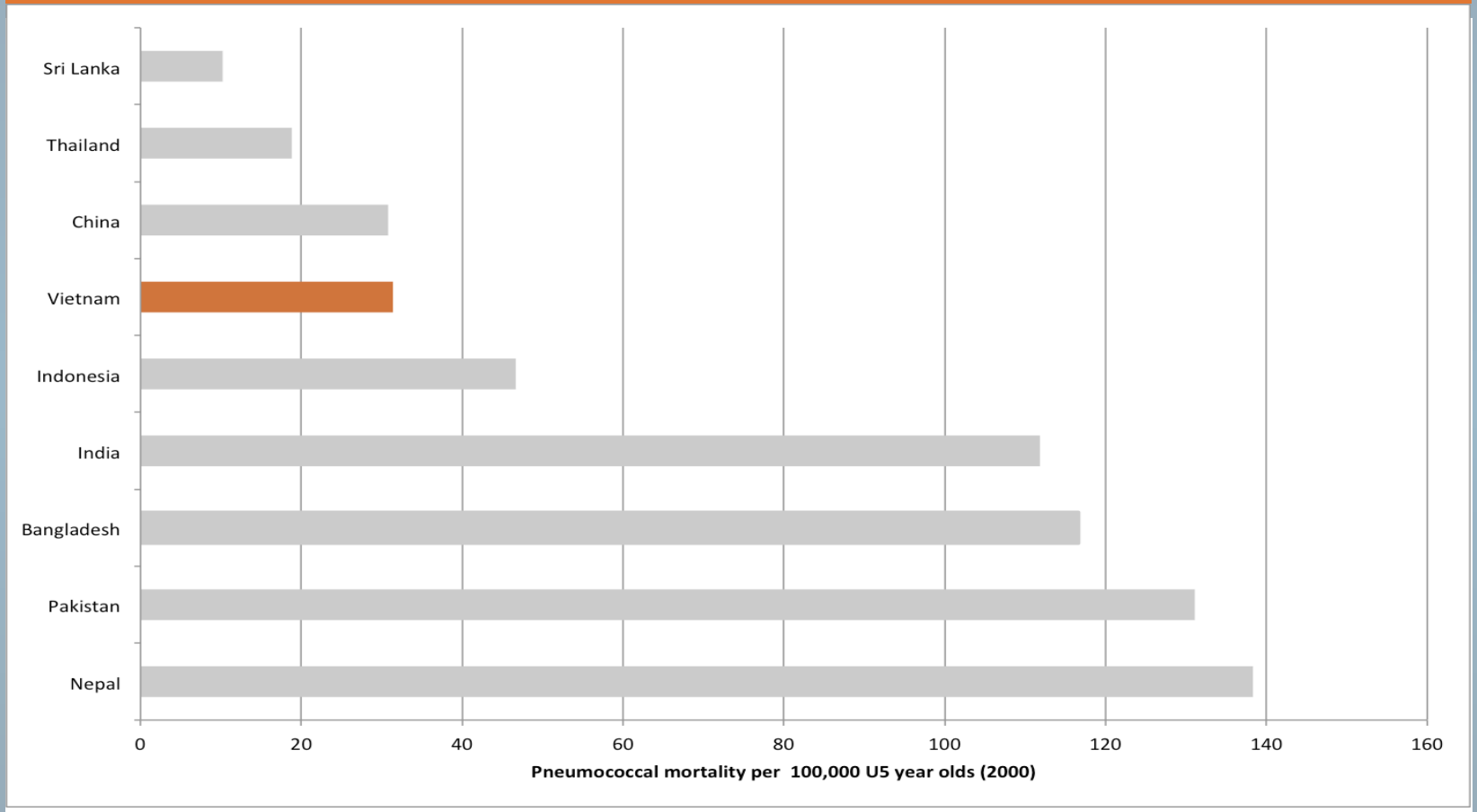
Source: http://ambassadors.net/archives/images/vietnam_map_southeast_asia.gif

Vietnam Statistics

Population	89,571,130
GDP per cap $	3,100
Median age – y	27.4 y
Literacy	92.5%
Life expectancy	72 y
Hospital beds/1000 people	2.7
Doctors/1000 people	0.6

Source: CIA factbook

Pneumococcal Mortality Rates in Children <5 Years: Vietnam and Neighboring Countries (2000)

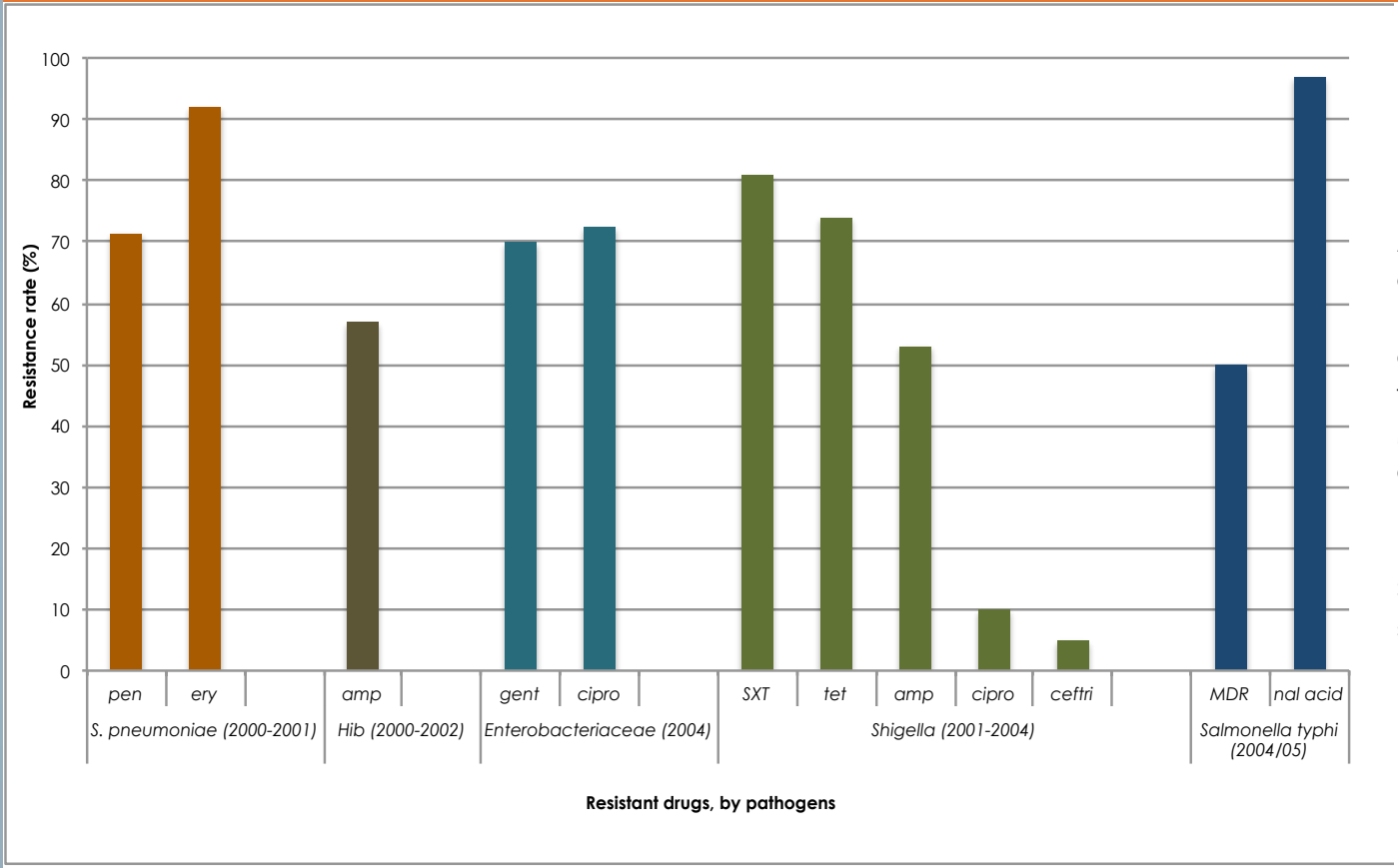


Source: World Health Organization, 2000

Drivers of Antibiotic Consumption in Vietnam

- High out-of-pocket health expenditure - 60%
  - Self-medication is cheaper and quick
- Despite regulation, antibiotics dispensed without prescription
  - No enforcement
- Financial incentives
- Lack of knowledge
- Lack of doctors' time
- Lack of good (rapid) diagnostics

Antibiotic Resistance in Vietnam



Amp- ampicillin
Gent- gentamicin
Pen- penicillin
Ceftri- ceftriaxone
Tet-tetracycline
MDR- multi drug resistant
Cipro- ciprofloxacin
Nal acid- nalidixic acid
Ery- erythromycin
SXT- trimethoprim-sulfamethoxazole

Source: Van Kinh, Nguyen. Situation Analysis: Antibiotic Use and Resistance in Vietnam. 2010. Washington, DC: Center for Disease Dynamics, Economics & Policy

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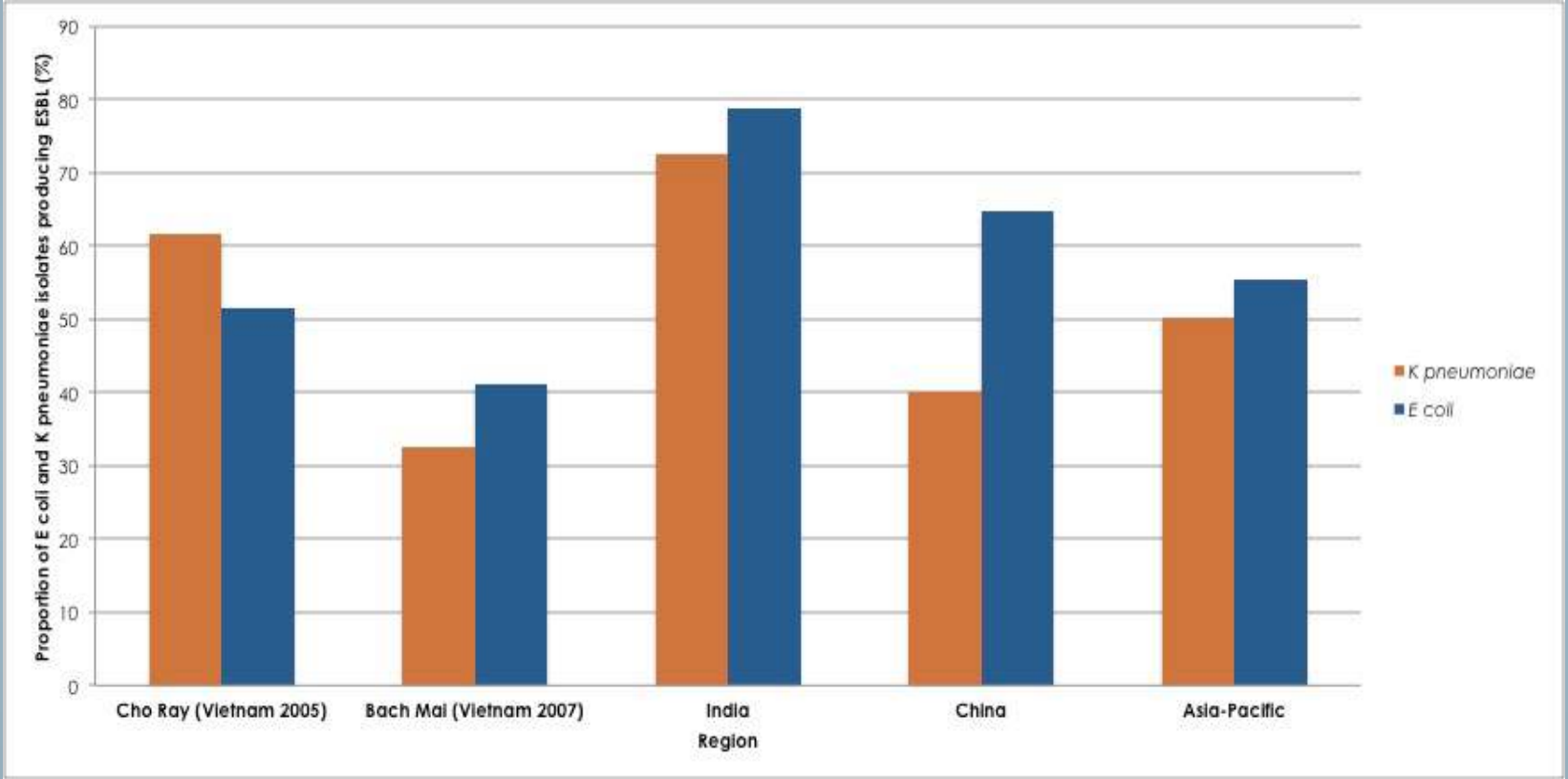
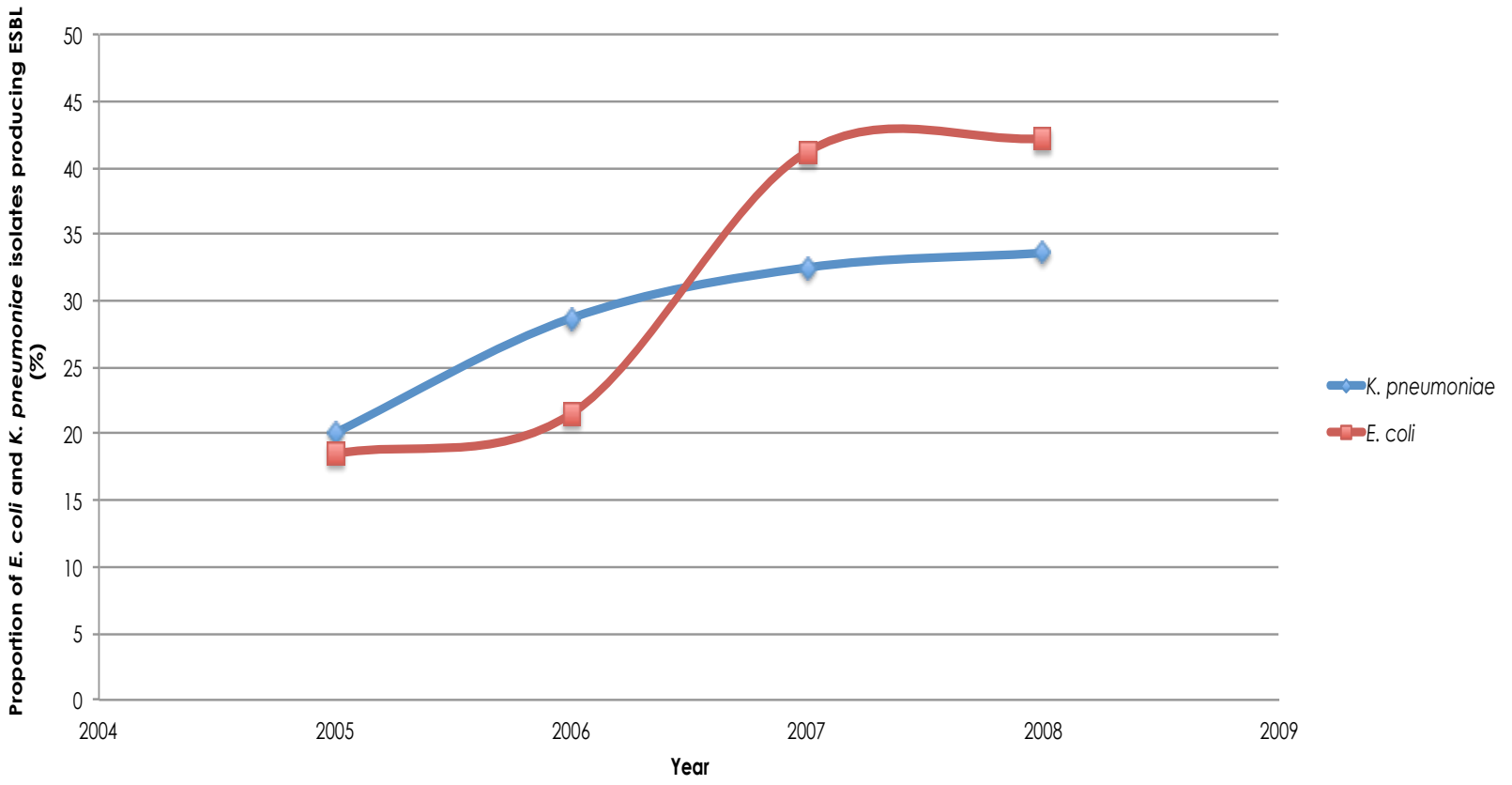
Proportion of hospital-acquired *E. coli* and *K. pneumoniae* isolates producing ESBL in Vietnam (2005, 2007), India, China and Asia-Pacific (2007)



Source: Van Kinh, Nguyen. Situation Analysis: Antibiotic Use and Resistance in Vietnam. 2010. Washington, DC: Center for Disease Dynamics, Economics & Policy

SP Hawser, SK Bouchillon, DJ Hoban, RE Badal, PR Hsueh and DL Paterson, Emergence of high levels of extended-spectrum-beta-lactamasa-producing gram-negative bacilli in the Asia-Pacific region: data from the Study for Monitoring Antimicrobial Resistance Trends (SMART) program, 2007. Antimicrob Agents Chemother, 53 (2009), pp. 3280-3284

Proportion of *E. coli* and *K pneumoniae* Isolates Producing ESBL in Bach Mai Hospital, Vietnam (2005-2008)

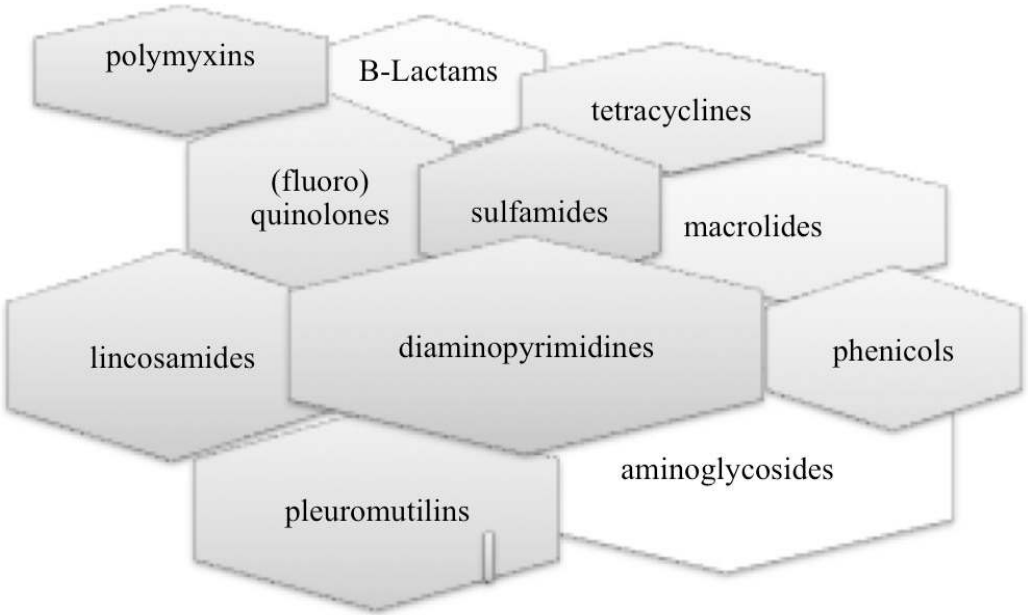


Source: Van Kinh, Nguyen. Situation Analysis: Antibiotic Use and Resistance in Vietnam. 2010. Washington, DC: Center for Disease Dynamics, Economics & Policy

Treatment Guidelines

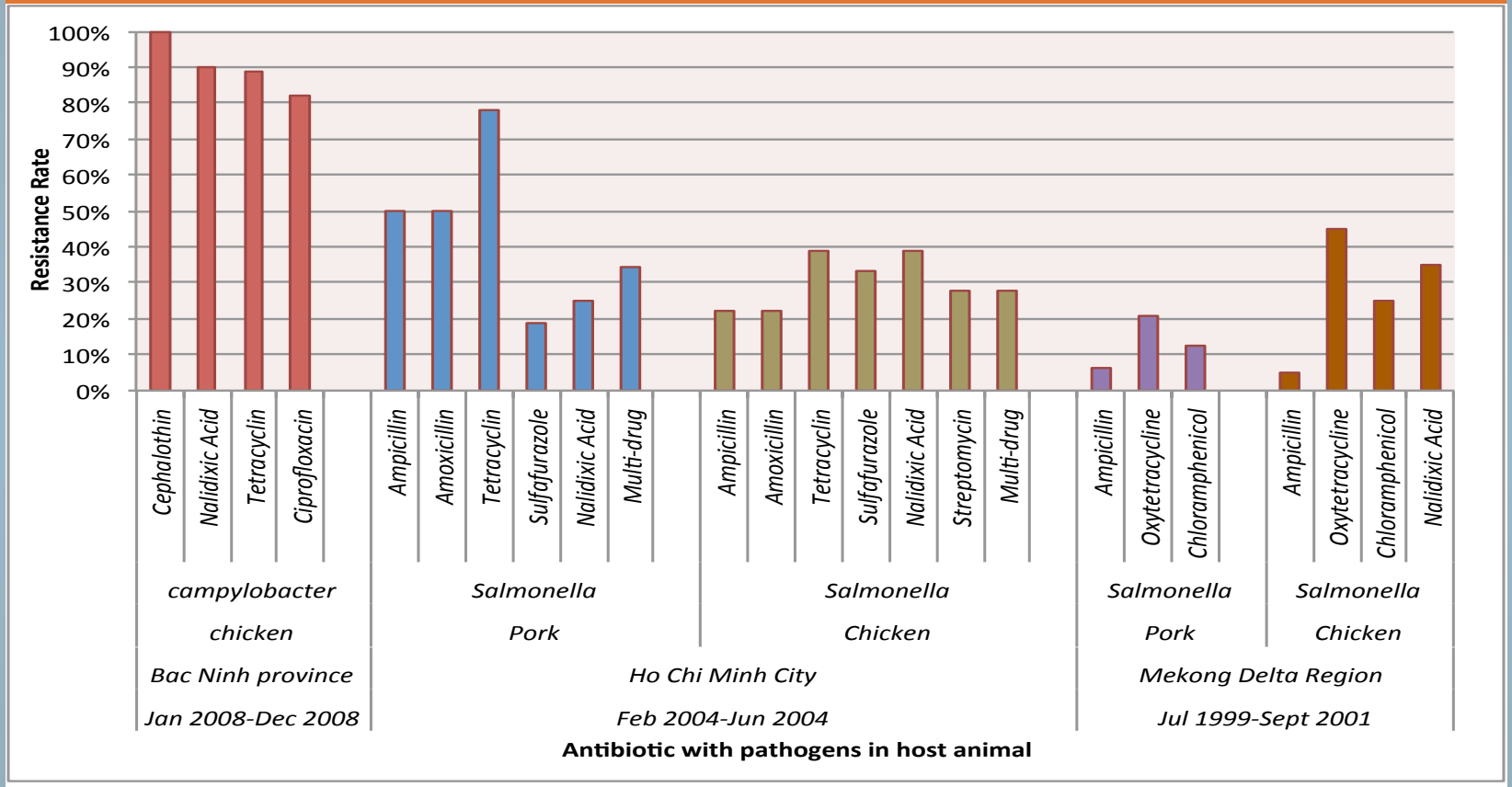
- Most treatment guidelines outdated
- Recommendations for antibiotics do not take into account current resistance profiles
- Guidelines use ‘Western’ data, not Asian
- Must take into account local epidemiology, e.g.,
  - *S. suis* common cause of meningitis
  - *K. pneumoniae* common in severe pneumonia

Antibiotic Use in Agriculture in Vietnam



Source: Van Kinh, Nguyen. Situation Analysis: Antibiotic Use and Resistance in Vietnam. 2010. Washington, DC: Center for Disease Dynamics, Economics & Policy

Antibiotic Resistance in Animals, by Region



Source: Van Kinh, Nguyen. Situation Analysis: Antibiotic Use and Resistance in Vietnam. 2010. Washington, DC: Center for Disease Dynamics, Economics & Policy
Natsue Ogasawara, *et al*. "Antimicrobial Susceptibilities of *Salmonella* from Domestic Animals, Food and Human in the Mekong Delta, Vietnam". *J. Vet. Med. Sci.*. Vol. **70**: 1159-1164. (2008)
Van, T T H. "Antibiotic resistance in food-borne bacterial contaminants in Vietnam "*Applied and environmental microbiology*. Vol: 73(24)

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Vietnam:
Situation analysis report released in January 2011

Available at:
www.cddep.org/publications/

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NHTD

SITUATION ANALYSIS:

Antibiotic Use and Resistance in Vietnam

The GARP- Vietnam National Working Group

Dr. Nguyen Van Kinh, Chairman

October 2010

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GARP-Vietnam Activities and Achievements

Gap-filling research:

- Antibiotic use and resistance in 15 hospitals (MoH)
- Audit pharmacy and lab in participating hospitals
- AB dispensing in community (in collaboration with HMU)
- AB use in aquaculture (in collaboration with HAU)
- Cholera resistance study – NHTD
- Multi drug resistant *Acinetobacter baumannii* study – NHTD
- NDM-1 hospital environmental study: ongoing (NIHE)
- ESBL screening in vegetables: ongoing (NHTD/HMU)

GARP-Vietnam Activities and Achievements [2]

Other achievements:

- Translated international guideline on proper antibiotic resistance testing (CLSI 2011)
- Contributed to the Joint Annual Health Review Vietnam for 2009.
- Held national infection control meetings
- World Health Day meeting, April 7th 2011: Data from MoH study was used to characterize antibiotic resistance in Vietnam

GARP-VN RESEARCH PROJECTS

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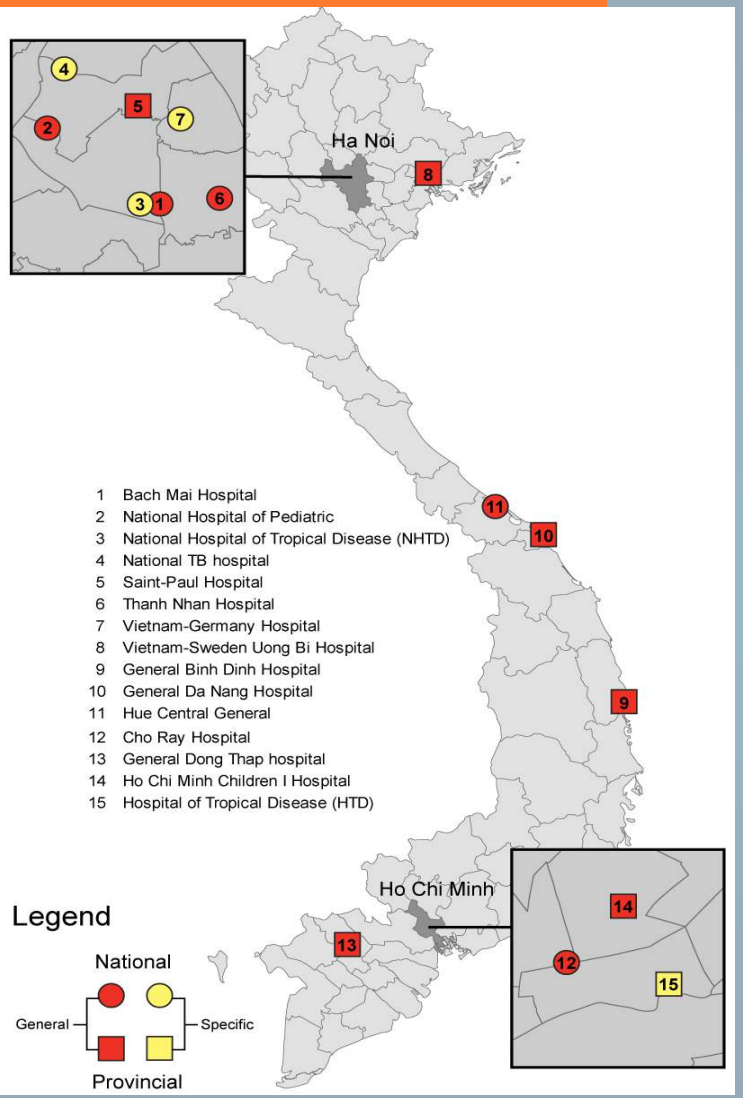
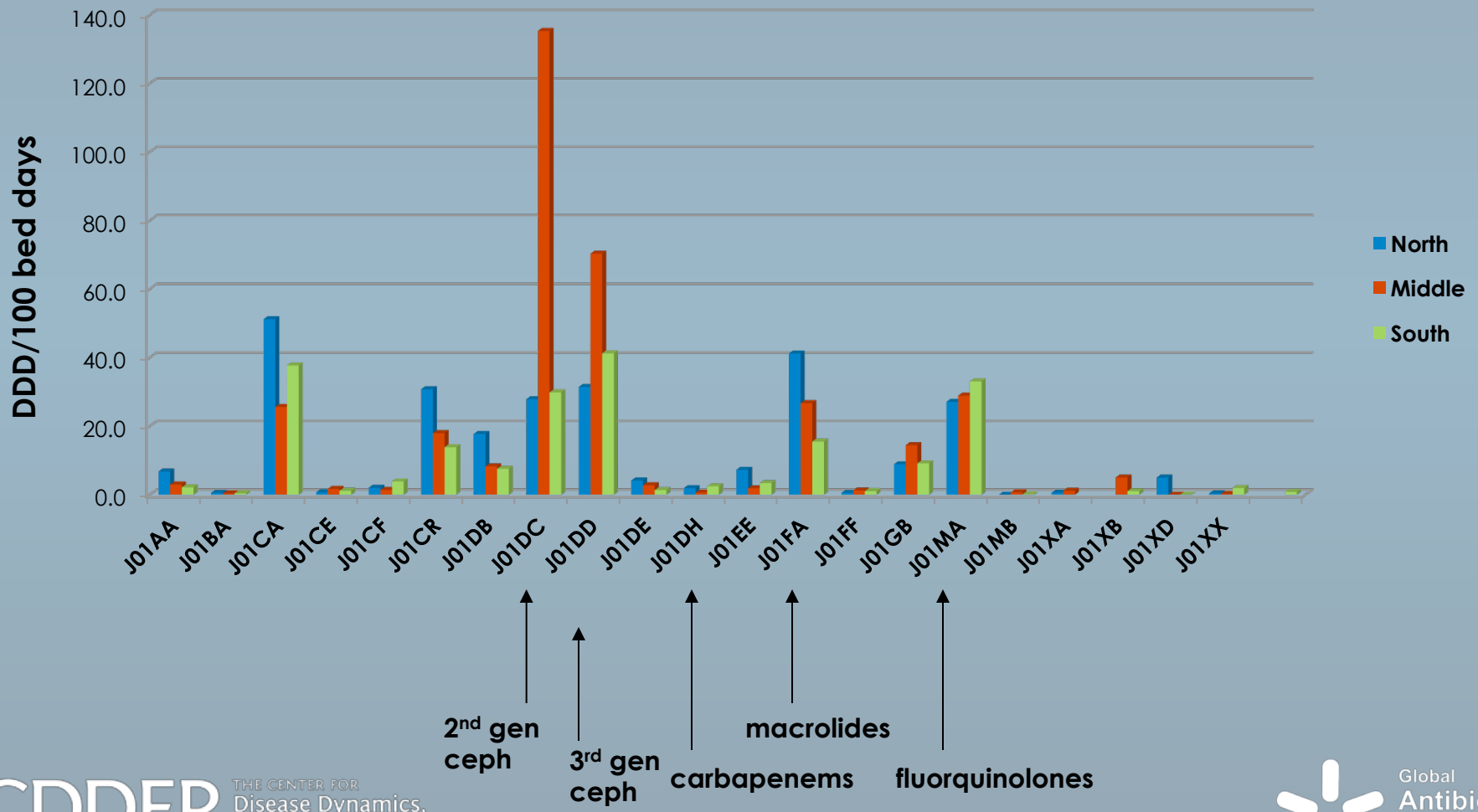
1. Resistance and Antibiotic Use Surveillance

- **Antibiotic consumption surveillance**
  - DDD/100 bed-days in 15 hospitals
- **Antibiotic resistance surveillance**
  - Monitor resistance in same 15 hospitals by MoH
  - WHO net
  - Auditing labs and data quality
  - Sharing CLSI guidelines among participating hospitals (Vietnamese version)
- **Annual reporting**



Antibiotic Consumption per Hospital per Year (DDD/100 bed-days)



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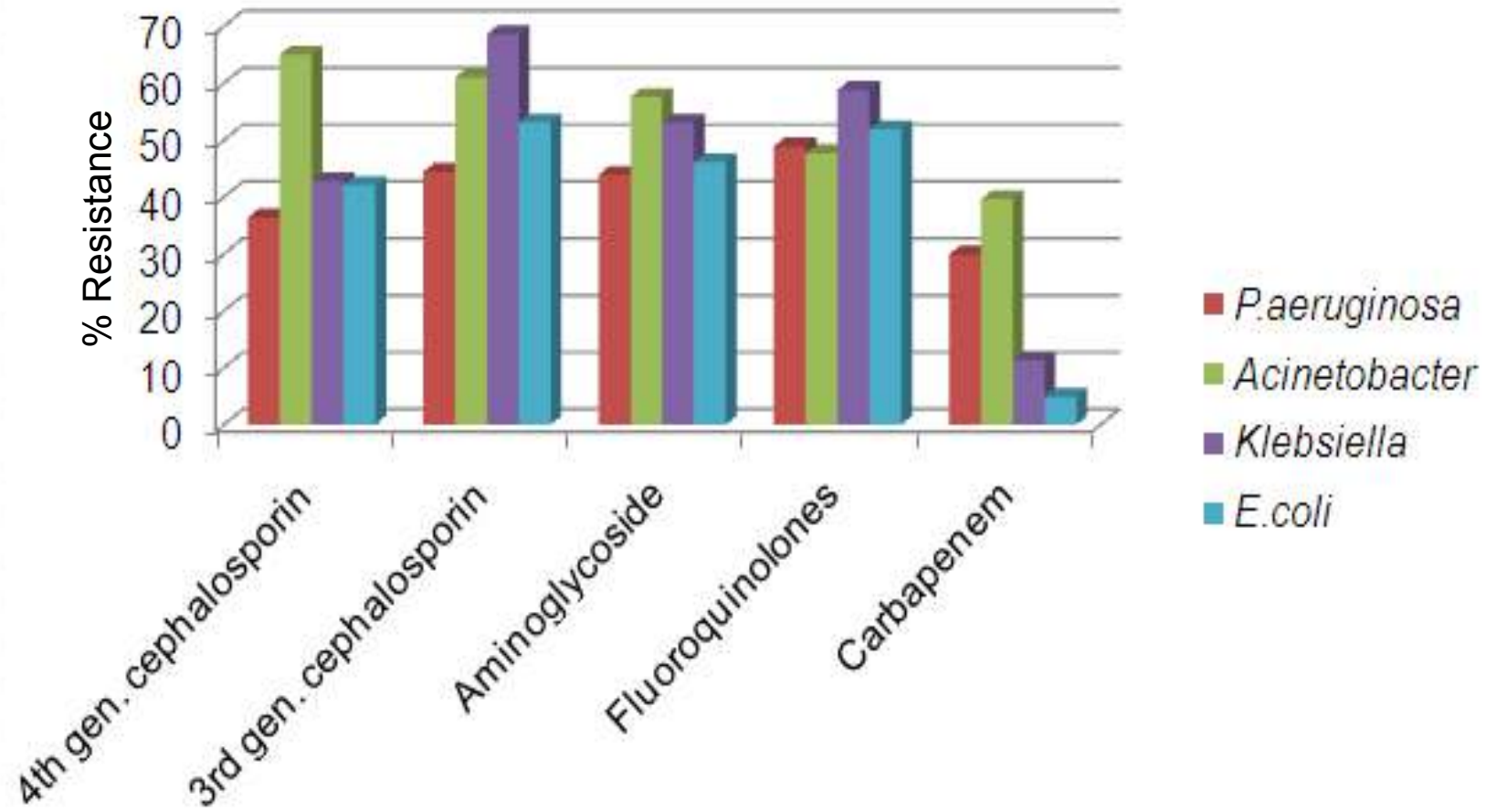
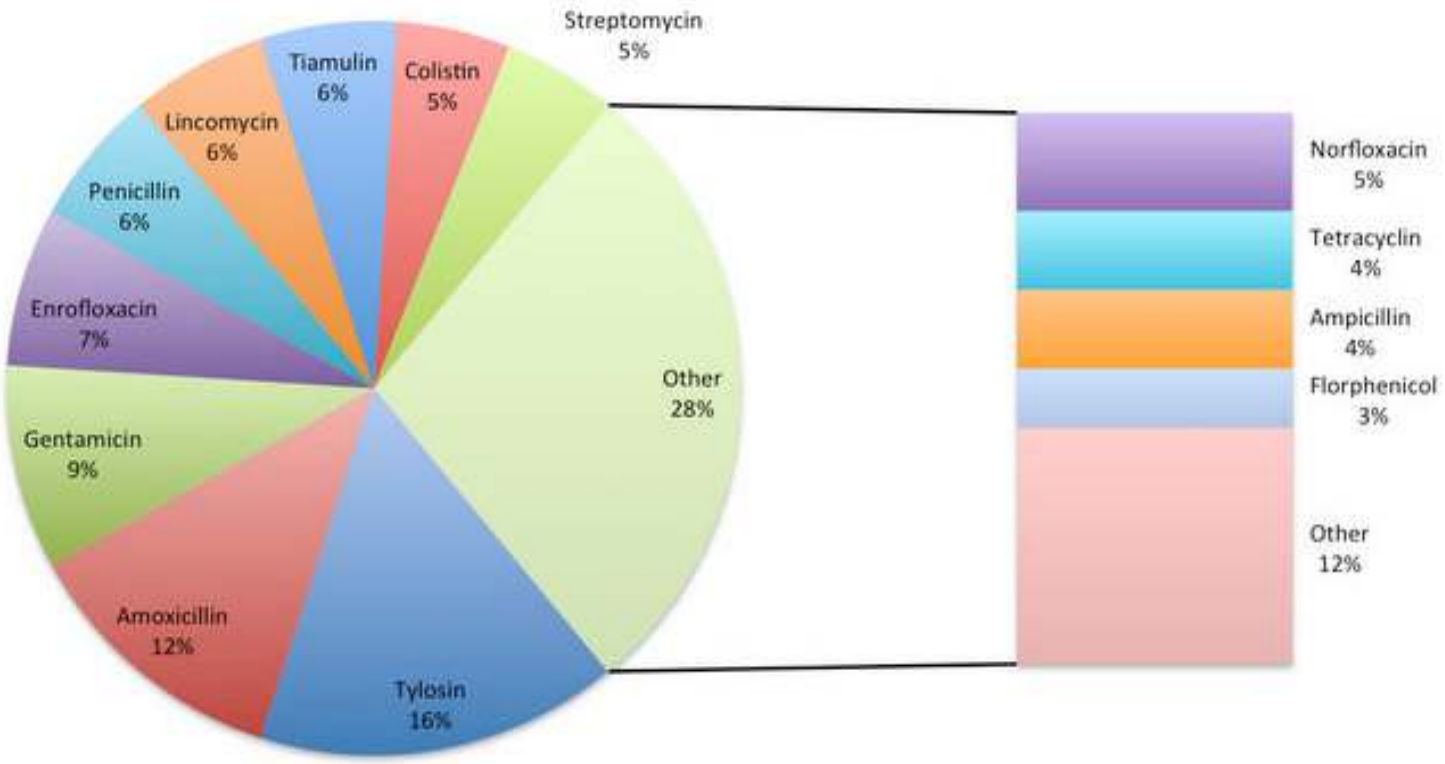
Resistance to Antibiotics to 4 Common Gram-negative Bacteria



2. Community Pharmacy Study

- 90% antibiotics are sold without prescription
- Drugs are often dispensed by inexperienced staff
- 25% of TOTAL sales are antibiotic sales
- Domestically manufactured drugs are sold more in rural than urban areas
- High demand from buyers illustrates the need for public awareness campaigns

Antibiotic Use in Agricultural Animals in Vietnam



Source: Van Kinh, Nguyen. Situation Analysis: Antibiotic Use and Resistance in Vietnam. 2010. Washington, DC: Center for Disease Dynamics, Economics & Policy

3. Surveillance of Antibiotic Use in Fresh Aquaculture in Vietnam

❖ Survey 94 farms:

- 47 in Red River Delta

- 47 in Mekong River Delta

Exclude: farms for export

❖ 100 samples for screening of antibiotic residue

❖ Time: July-September 2011

North: 2 provinces

South: 2 provinces

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Aquaculture Study Results

- In fish production, 81% (51/63) farms used antibiotics
- In shrimp production, 55% (17/31) used antibiotics
- Some banned drugs are still being used, e.g., chloramphenicol
- Type of antibiotic, dosage and administration were mainly based on breeder's experience, not on evidence-based guidelines
- Breeders lack knowledge about antibiotic regulation, e.g., requiring them to stop antibiotic use before harvesting their products

GARP-VN: FUTURE DIRECTIONS

Stakeholder Meeting 2011: Policy Directions

- Enforcement of existing regulations: hospital, community and agriculture
- Antibiotic stewardship program (ASP)
- National Surveillance Program with National Reference Laboratories to ensure the availability and quality of testing
- Improve access to non-medicated animal feed for farmers.
- Limit use of colistin in agriculture
- Education
  - Doctors, pharmacists at universities and later through 'permanent (continuing) education'
  - Farmers through chief animal health worker; vets, para-vets, animal health workers and drug sellers
- Recommendation: MoH and Ministry of Agriculture and Rural Development to develop joint action plan

Remaining Challenges

- **National level**
  - Enforcement of regulations and policies
  - Collaboration between MoH and Ministry of Agriculture and Rural Development in limiting antibiotic resistance
- **In community**
  - High out-of-pocket expenditures encourage people to bypass providers and purchase drugs—including antibiotics—directly, without a proper diagnosis.
- **In hospital**
  - Inadequate infection control and overcrowding
  - Lack of adequate microbiology services
  - Lack of surveillance
  - Lack of evidence-based infectious disease treatment guidelines
- **In agriculture**
  - Regulating antibiotic consumption


THANK YOU