



Global
**Antibiotic
Resistance**
Partnership

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Quality issues in resistance testing and data in Vietnam

Doan Mai Phuong
Department of Microbiology - Bach Mai hospital

**Quality issues
in microbiology laboratory
in Vietnam**

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- 2. Situation of the microbiology laboratory system**
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1. The role of microbiology laboratory in Viet Nam

Evidence based medicine

The data of antibiotic resistance in microbiology laboratory are medical evidence for reasonable antibiotic use policies

II. Situation of the microbiology laboratory system in Viet Nam

- 1. Situation of quality assurance**
- 2. Situation of quality management**
- 3. Situation of investment policy for quality management and quality control**

II. Situation of the microbiology laboratory system in Viet Nam

1. Situation of quality assurance

- Human resources
 - Lack of human resources
 - Lack of comprehensive training
 - Disparities in ability
- Professional technical procedure
 - No standard guideline
 - Lack of professional reference materials
- Equipment:
 - Lack, out of date, non-uniform, non-calibration
- Reagents, test kits:
 - Of assorted kinds coming from too many sources with different technical standards and without calibration

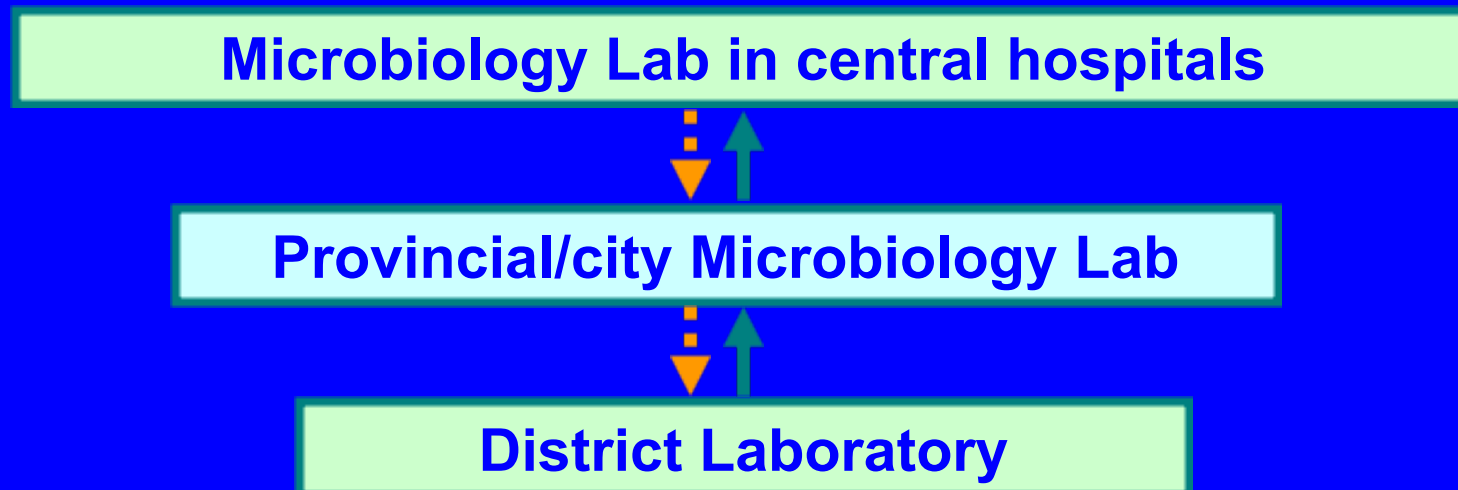
II. Situation of the microbiology laboratory system in Viet Nam

2. Situation of quality management

There are:

- More than 1,000 public hospitals
- 88 private hospitals
- Thousands of clinics and laboratories

Microbiology laboratory system in Vietnam



II. Situation of the microbiology laboratory system in Viet Nam

2. Situation of quality management of microbiology lab

- **Lack of comprehensive guideline on quality management**
- **Lack of competent and specialized experts in microbiology quality management**
- **Lack of standard procedures**
- **Quality assurance**
 - **Internal quality control: Most have not performed or cursory**
 - **External quality control:**
 - **National: No national quality control center**
 - **International: On spontaneous basis**
- **No system of information technology in microbiology management**

II. Situation of the microbiology laboratory system in Viet Nam

3. Situation of investment policy for quality management and quality control

- Microbiology laboratory activities depend on the budget of the hospital, just enough for professional activities such as buying test kits, equipment, maintenance machines**
- No funding for quality assurance, training activities and professional quality management**

III. Activities of “Antibiotic resistance surveillance program” - Ministry of Health

1. Organization

Established Steering Committee of “Antibiotic resistance surveillance program” based on decision 3226/QĐ-BYT 27/12/2007 Ministry of Health

1. Professional activities

- Completed training program package**
- Specified Labo members: 10 hospitals**
- Specified Reference Labo: Bach Mai hospital**

2. Antibiotic resistance data managements

Expectedly, Guide data management to be based on WHONET 5.4 program

3. Budgets

Unidentified

IV. Orientations

Activities of “Antibiotic resistance surveillance program” should be associated with National medical laboratory strategic plan - NLSP (2009-2020) Ministry of Health - Viet Nam

1. The aim of the strategy:

To develop and improve medical laboratory system to meet the national standards and toward international standards.

2. Implementing organizations:

- Ministry of Health - Vietnam specified NLSP**
- Specialized Committees together with MOH Vice Minister are responsible for writing NLSP**
- CDC (US) provides technical assistance**

Antibiotic resistance data in Vietnam

Antibiotic resistance of Gram (-) bacteria

E. coli

1. **ESBL - Extended spectrum beta-lactamase**

K. pneumoniae

1. **ESBL**
2. **Carbapenemase**

P. aeruginosa

1. **MDR - multi-drug resistance**
2. **Carbapenemase**

A. baumannii

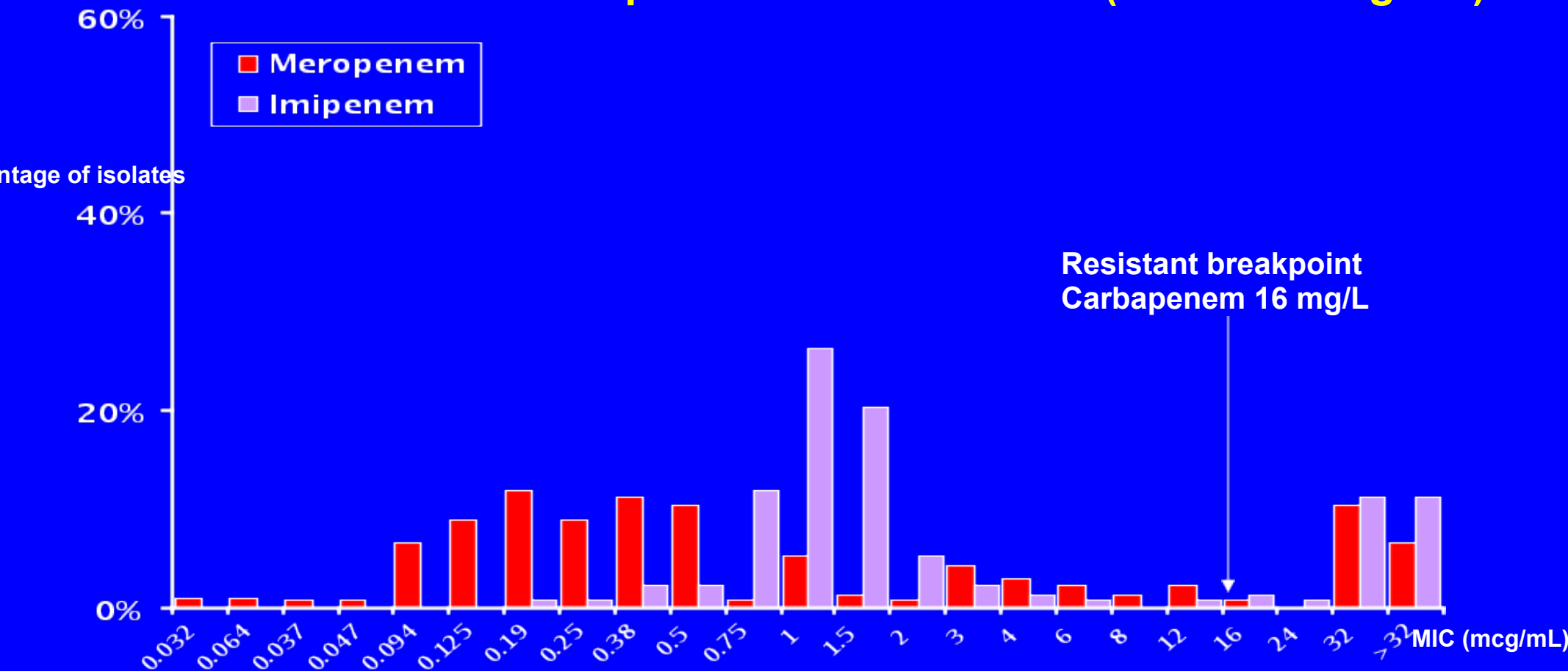
1. **MDR - multi-drug resistance**
2. **PDR - pan-drug resistance**

Rates of *E. coli* and *K. pneumoniae* producing ESBL in Viet Nam

	<i>K. pneumoniae</i>	<i>E. coli</i>
ASTS program - MOH (2004)	23.7 (n = 485)	7.7 (n = 548)
Cho Ray hospital (2005)	61.7 (87/141)	51.6 (145/281)
Viet Duc hospital (2005)	39.3 (55/140)	34.2 (66/193)
Binh Dinh hospital (2005)	19.6 (29/148)	36.2 (51/141)
Viet Tiep hospital (2005)	25.7 (09/35)	36.1 (22/61)
Bach Mai hospital (2005)	20.1 (37/184)	18.5 (28/151)
Bach Mai hospital (2006)	28.7 (99/347)	21.5 (77/359)
Bach Mai hospital (2007)	32.5 (105/323)	41.2 (136/330)
Bach Mai hospital (2008)	33.6 (85/253)	42.2 (97/231)

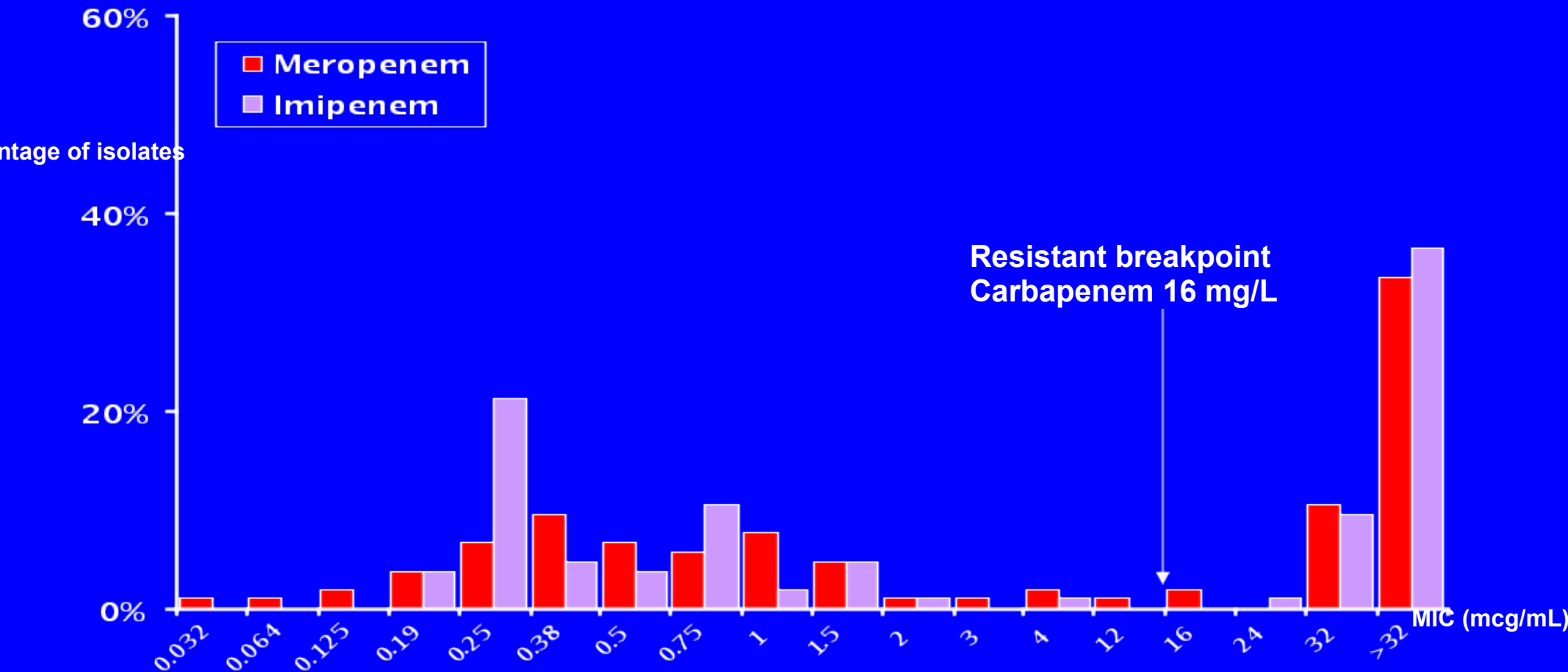
Carbapenem MIC distributions of *P. aeruginosa* (133 strains isolated in 6 hospitals - 2008)

- Meropenem resistance 18% (MIC \geq 16 mcg/mL)
- Imipenem resistance 25% (MIC \geq 16 mcg/mL)



Carbapenem MIC distributions of *A. baumannii* (104 strains isolated in 6 hospitals - 2008)

- Meropenem resistance 46.2% (MIC \geq 16 mcg/mL)
- Imipenem resistance 47.1% (MIC \geq 16 mcg/mL)



Antibiotic resistance of Gram (+) bacteria

Staphylococcus aureus

1. **PRSA** - Penicillin resistant *S. aureus*
2. **MRSA** - Methicillin resistant *S. aureus*
3. **VISA** - Vancomycin intermediate *S. aureus*
4. **hVISA** - heterogenous VISA: MIC 1 - 4 mg/L
5. **VRSA** - Vancomycin resistant *S. aureus*

Enterococci

1. **VRE** - Vancomycin resistant *Enterococci*

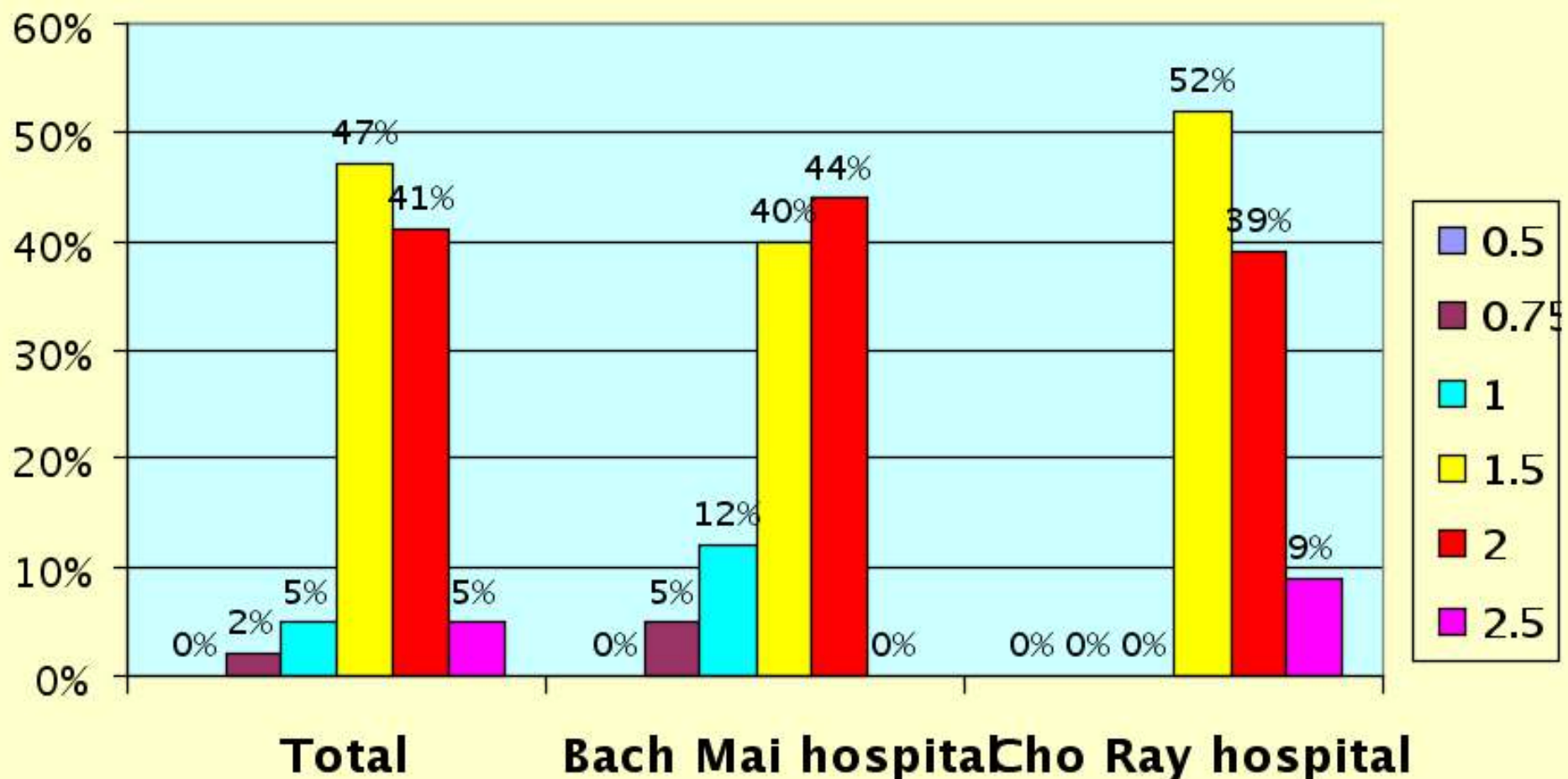
Streptococcus pneumoniae

1. **PRSP** - Penicillin resistant *S. pneumoniae*

Vancomycin MIC distributions of 200 *S. aureus* strains in Bach Mai and Cho Ray hospitals - 2008

		N	Mean	SD	Geometric mean	% VSSA (MIC \leq 2 mg/L)
Total	<i>S. aureus</i>	200	1.63	0.41	1.57	96%
	MSSA	100	1.55	0.44	1.47	97%
	MRSA	100	1.72	0.36	1.67	95%
Bach Mai hospital	<i>S. aureus</i>	100	1.47	0.43	1.39	100%
	MSSA	57	1.34	0.42	1.27	100%
	MRSA	42	1.63	0.39	1.57	100%
Cho Ray hospital	<i>S. aureus</i>	100	1.80	0.32	1.77	92%
	MSSA	43	1.81	0.31	1.79	93%
	MRSA	57	1.78	0.33	1.75	91%

Vancomycin MIC distributions of 100 MRSA strains in Bach Mai and Cho Ray hospitals - 2008



Thank you for attention