



# Chinese Taipei's action plan against antimicrobial resistance

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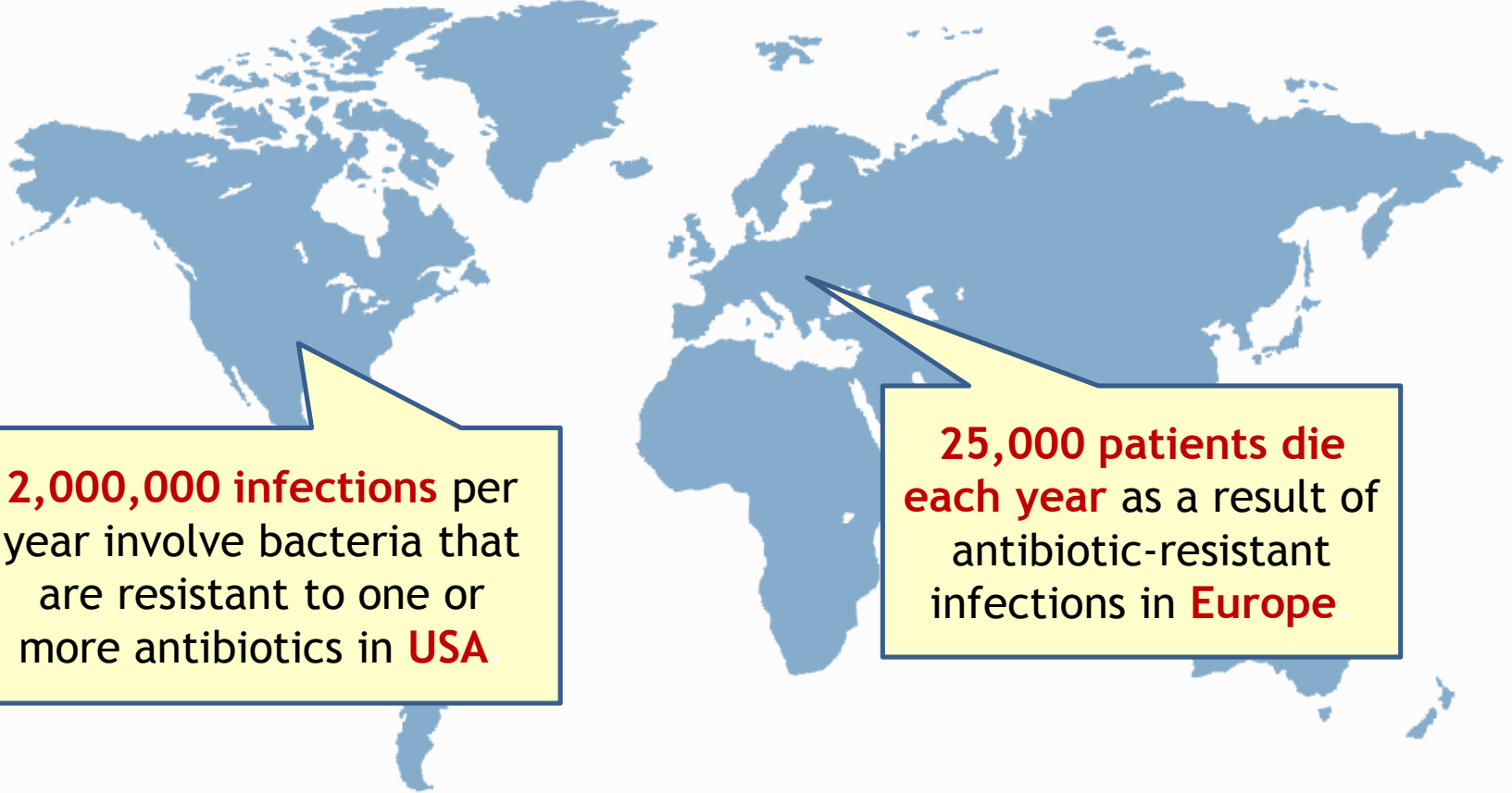
20 September 2018

# Outline

- Global AMR Threat: Today and Future
- Global Action Initiatives
- Chinese Taipei's Framework and Strategies to Combat AMR
- Prospect: Integrate AMR and UHC

# Current Global AMR Threat

Drug-resistant infections cause around 700,000 deaths globally.



**2,000,000 infections** per year involve bacteria that are resistant to one or more antibiotics in **USA**.

**25,000 patients die each year** as a result of antibiotic-resistant infections in **Europe**.

<http://www.myrolematters.com/amr-infographics.html>

# Future Global AMR Threat

If the current trend is not altered and no action is taken to counter these threats...

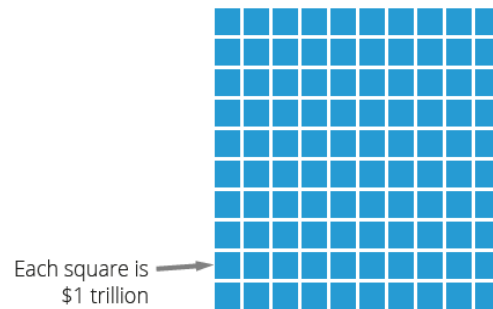
## Health and Economic Impact



**+ 10 m** deaths  
by 2050

**-\$100 trillion**

Cost of antibiotic-resistant infections by 2050



The world's GDP  
**↓ 2 to 3.5%**



# AMR: A Threat to Successful Achievement of the SDGs Targets



AMR strikes hardest on the poor: Treatment of resistant infections is more expensive.



Antibiotic residues from hospitals, pharmaceutical companies, and farms can contaminate waters.



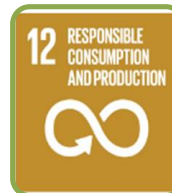
Untreatable infections in animals threaten sustainable food production.



Cost of AMR is predicted to be US\$100 trillion by 2050.



Antimicrobials are a fundamental component in all health systems.



It's crucial to balance access, innovation, and conservation of antimicrobials to contain AMR.



All of the above require multi-stakeholder partnerships and a global response. No single country, sector or organization can address this issue alone.

# WHO Global Action Plan on Antimicrobial Resistance

- At the 68th World Health Assembly in May 2015, the WHO endorsed a global action plan to tackle antimicrobial resistance.

## Five strategic objectives:

- To improve awareness and understanding of antimicrobial resistance;
- To strengthen knowledge through surveillance and research;
- To reduce the incidence of infection;
- To optimize the use of antimicrobial agents; and
- Develop the economic cases for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions.



# Global Action Initiatives - United Nations

- Global leaders met at the United Nations General Assembly in New York in September 2016 to commit to fighting AMR together.
- This is only the fourth time in UN history that a health topic is discussed at the General Assembly.



- World leaders pledged to...
  - ✓ **Strengthen regulations**
  - ✓ **Improve knowledge and awareness**
  - ✓ **Promote best practices**
  - ✓ **Foster innovative approaches**

# Global Action Initiatives - FAO-OIE-WHO Collaboration



## LEGISLATION:

**Regulation is mandatory to promote appropriate use of antimicrobials:** make sure legislation is implemented.



## AWARENESS & EDUCATION:

**Raise public awareness** and educate all stakeholders



## SURVEILLANCE & MONITORING:

**Strengthen national AMR and antimicrobial use surveillance systems** based on global standards.



## RESEARCH:

**Support and finance the development** of methods for the prevention, diagnosis and treatment of disease, to reduce dependence on antimicrobials.



# Global Action Initiatives- GHSA

## Global Health Security Agenda: Action Packages

### 1. Antimicrobial Resistance

2. Zoonotic Disease
3. Biosafety and Biosecurity
4. Immunization

5. National Laboratory System
6. Real-Time Surveillance
7. Reporting
8. Workforce Development

9. Emergency Operations Centers
10. Linking Public Health with Law and Multisectoral Rapid Response
11. Medical Countermeasures and Personnel Deployment

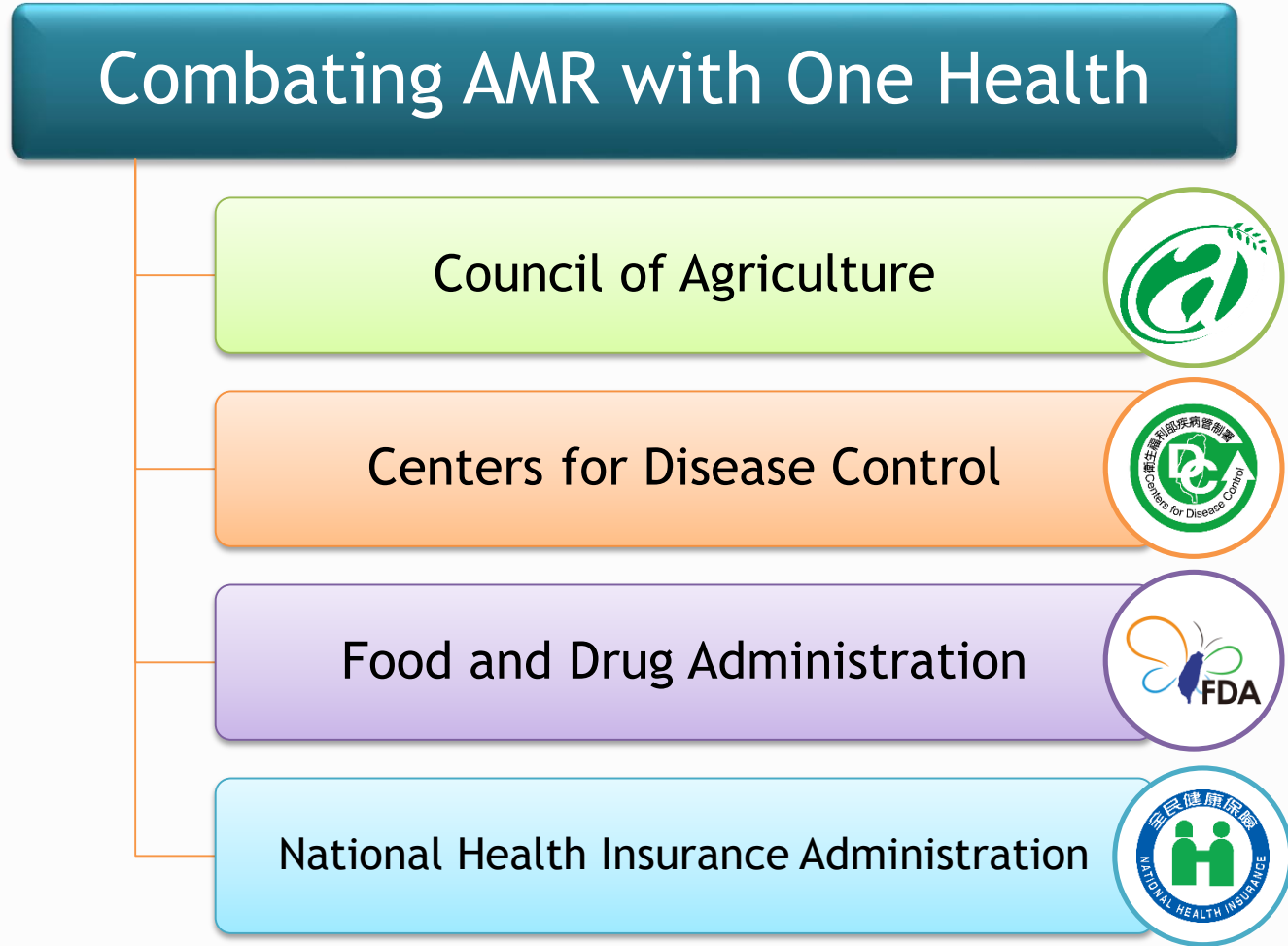


**AMR** action package is the first of all 11 action packages.

GHSA emphasizes “**partnership**”, “**political commitment**”, “**cross-sectoral coordination**”, and “**international cooperation**” to strengthen both the global capacity and nations' capacity to prevent, detect, and respond to infectious diseases threats.

(GHSA Meeting in 2014)

# Chinese Taipei's Framework to Combat AMR



# COA's Strategies to Combat AMR

Survey and monitor AMR in livestock

Survey and monitor veterinary medicines used in livestock

Review and minimize the number of antimicrobials for veterinary use

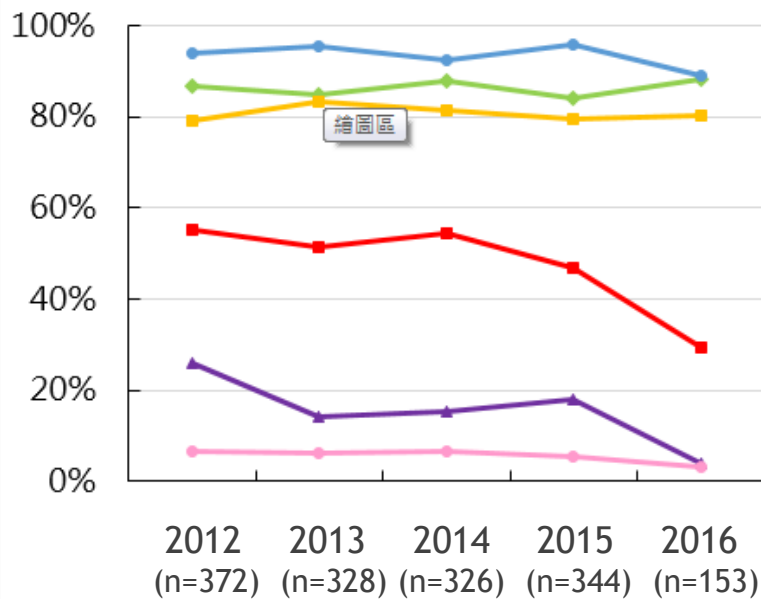
Govern veterinary medicine sales and promote appropriate use of antimicrobials in livestock

# 34 Banned Antimicrobials for Animal Feed

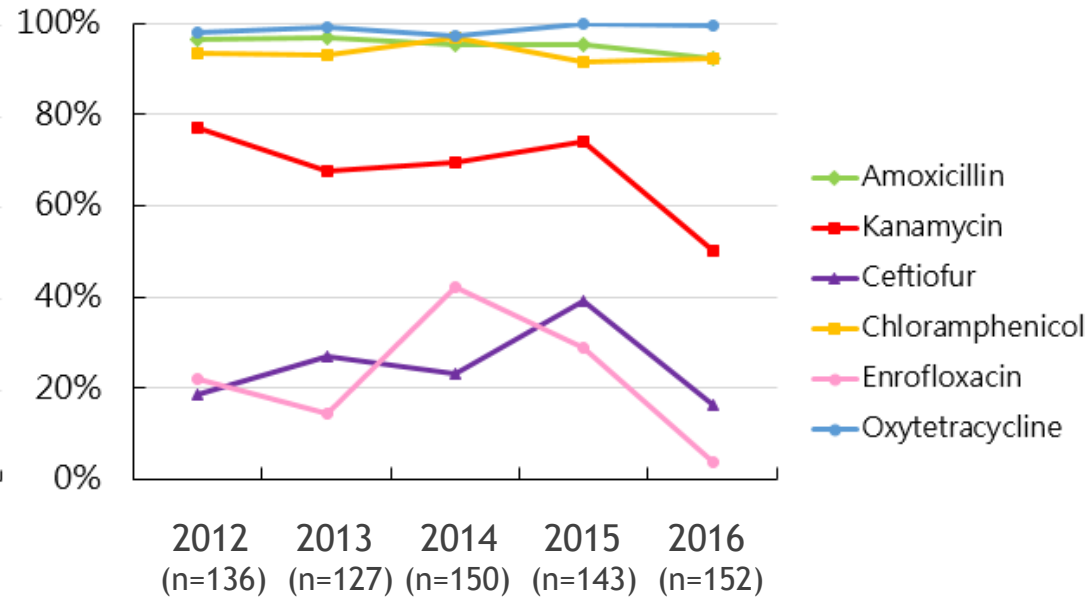
Antimicrobials		Antimicrobials	
1	Avoparcin	18	Ronidazole
2	Kanamycin	19	Thiopeptin
3	Kitasamycin	20	Destomycin A
4	Lasalocid	21	Hygromycin B
5	Salinomycin	22	Morantel citrate
6	Spiramycin	23	Nystatin
7	Streptomycin	24	Lincomycin
8	Sulfathiazole	25	Spectionmycin
9	Arprinocid	26	Virginiamycin
10	Buquinolate	27	Penicillin
11	Halofuginone	28	Bacitracin
12	Levamisole hydrochloride	29	Chlortetracycline
13	Robenidine	30	Colistin
14	Thyropotein	31	Neomycin
15	Halquinol	32	Oxytetracycline
16	Nitrovin	33	Olaquinox
17	Roxarsone	34	Dimetridazole

# Resistance in *E. coli* from Pigs and Chickens, 2012-2016, Chinese Taipei

## • Pigs

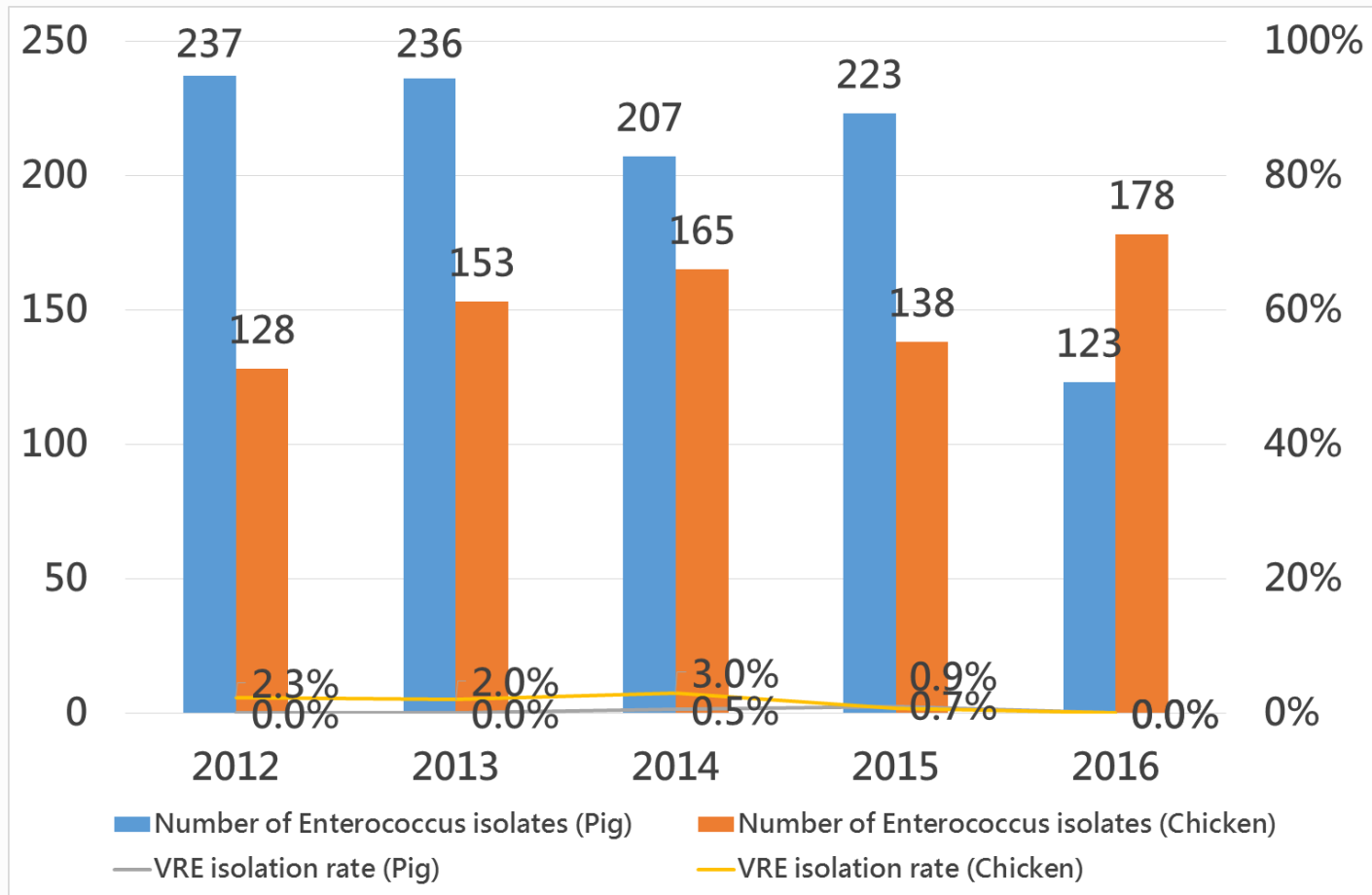


## • Chickens



# Isolation Rates of VRE among *Enterococcus* from Pigs and Chicken, 2012-2016, Chinese Taipei

- VRE



# FDA's Strategies to Combat AMR

- Establish the maximum antimicrobial residue limit for animal products
- Survey and inspect antimicrobial residue in animal products
- Strengthen the detection of illegal sales of antimicrobials
- Promote drug safety education for the general public

# NHI's Strategies to Combat AMR

Establish the reimbursement regulations and restrictions for antimicrobials

Review and audit claims for reimbursement of antimicrobials

Survey and monitor indicators for antimicrobial use

Establish incentives for hospitals with good ASP performance

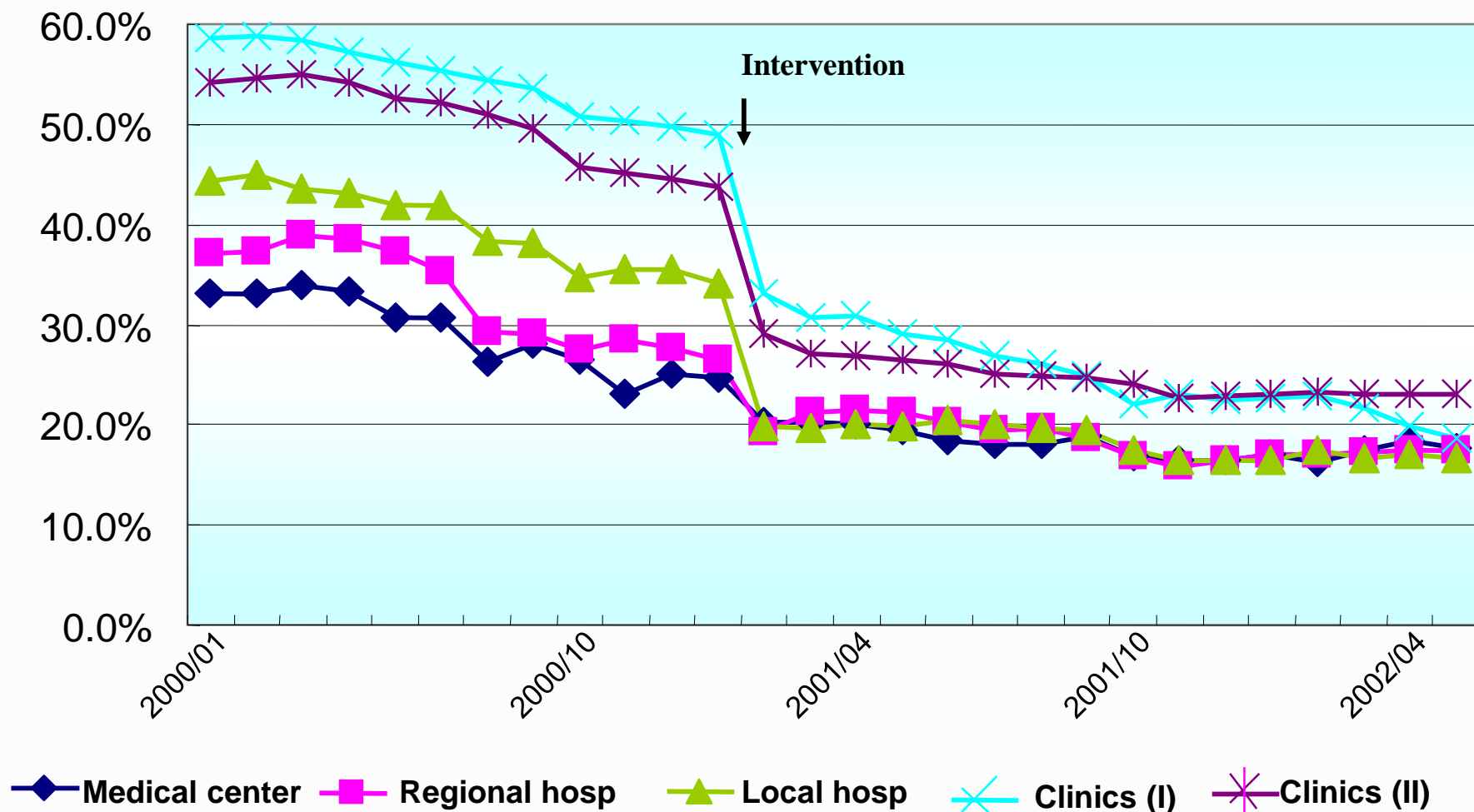


# Regulation of Antibiotic Usage for Patients with URI in NHI

- For patients with upper respiratory tract infections, antibiotics should not be used in patients with common cold or other viral respiratory tract infections. Antibiotics can be used only when there is evidence of bacteria infection, such as evidence of bacterial pharyngitis, bacterial bronchitis, bacterial sinusitis or bacterial otitis media.

(Effective since 2001-02-01)

# Proportion of Patient-visits Prescribed with Antibiotics in Patients with Diagnosis of URI

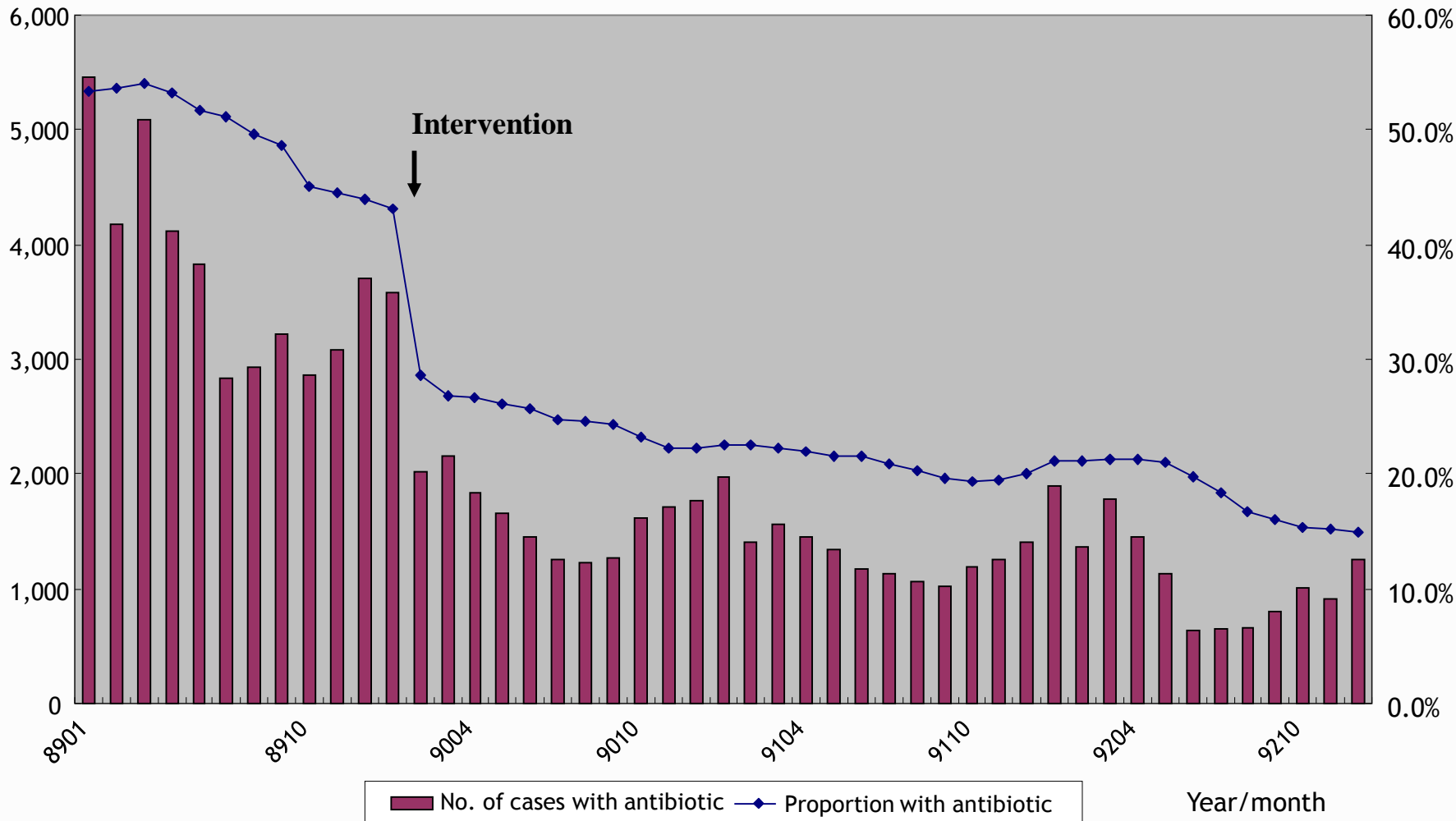


# Proportion of URI Patients in OPD Prescribed with Antibiotics, Jan 2000 ~ Dec 2003

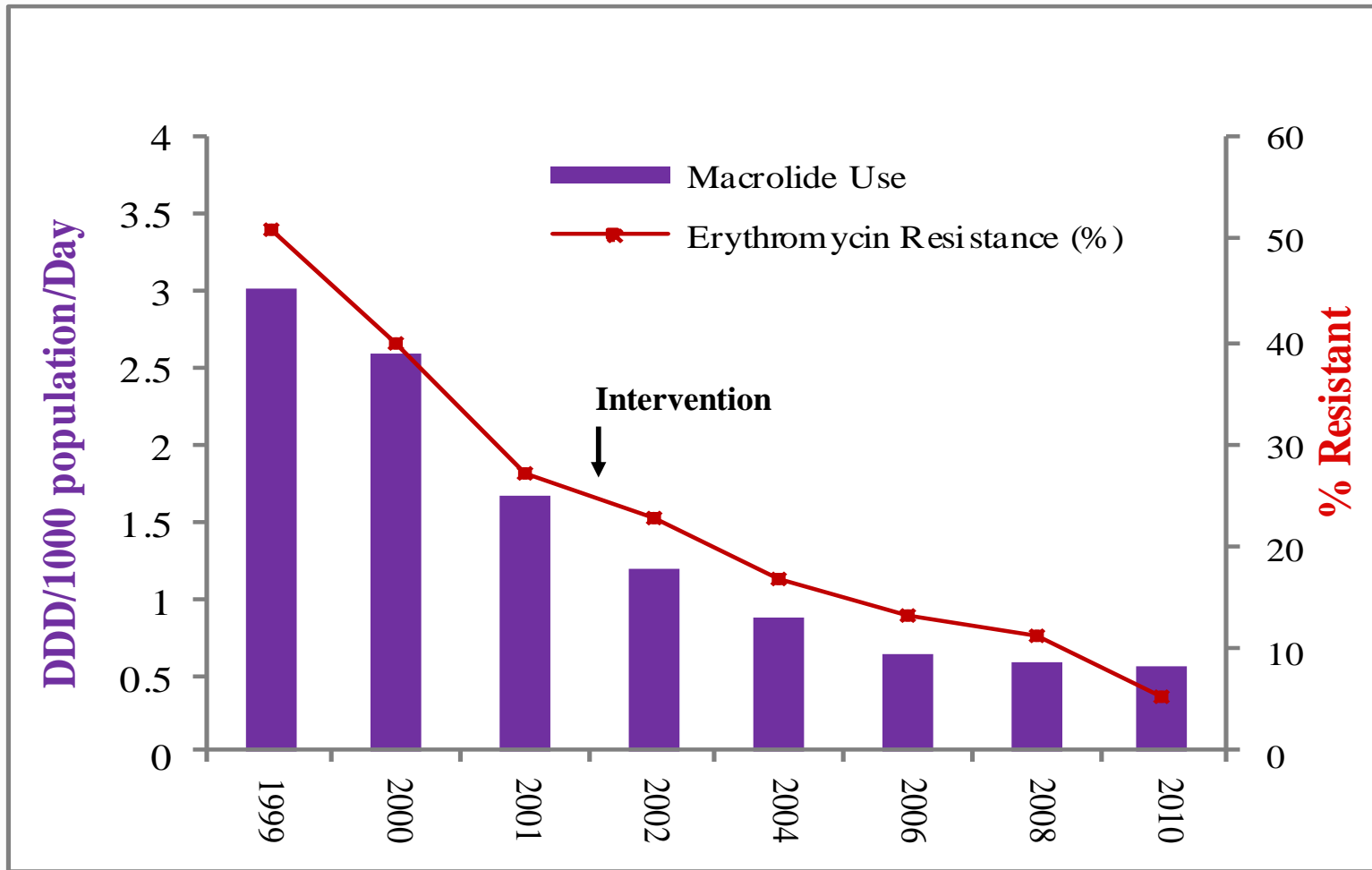
Monthly data of URI patients prescribed with antibiotics

No. of cases x1000

Proportion (%)



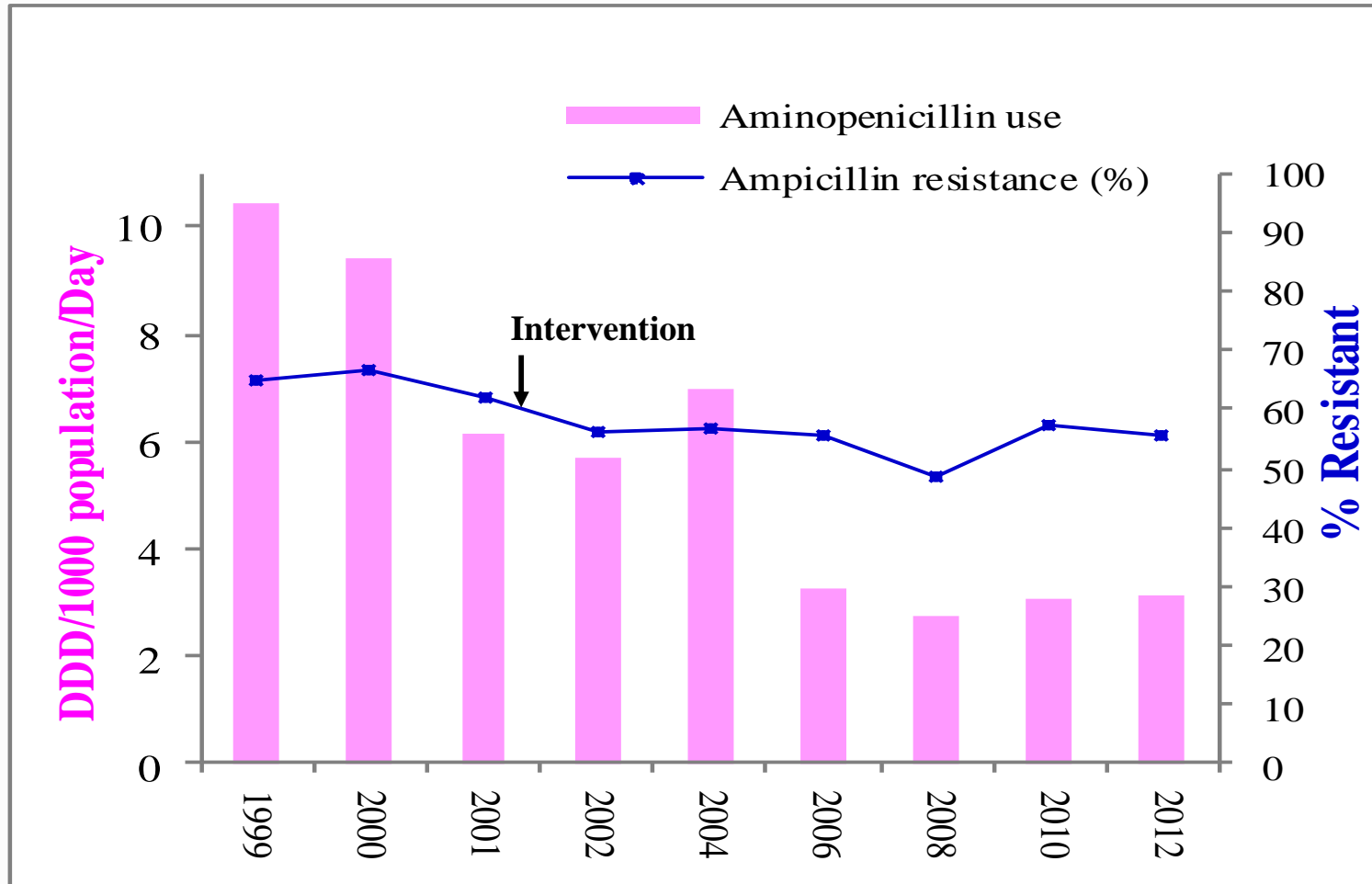
# Erythromycin Resistance in Group A *Streptococcus*



Data source:

- Macrolide consumption: NHIRD sampling database (2006-2010 data provided by Institute of Population Health Sciences/NHRI)
- Erythromycin resistance: 1999-2002, TSAR hospitals annual summary; 2004-2010, TSAR

# Ampicillin Resistance in *Haemophilus influenzae*



Data source:

- Aminopenicillin consumption: NHIRD sampling database (2004-2012 data provided by Institute of Population Health Sciences/NHRI)
- Ampicillin resistance: 1999-2002, TSAR hospitals annual summary; 2004-2010, TSAR

# CDC's Framework to Combat AMR

## National Level ( CDC )

- Formulate AMR policies and strategies
- Establish a national advisory committee
- Promote cross-sectoral cooperation
- Designate qualified and dedicated staffs
- Provide appropriate funds

## Local Level (Health Departments)

- Promote AMR related programs and policies
- Evaluate ASP performance of healthcare facilities within their respective jurisdiction

## Community Level

- Professional associations and societies: Join task force in promoting AMR strategies
- Healthcare facilities: Comply with related laws and AMR prevention and control regulations
- General public: Raise awareness through education

# CDC's Strategies to Combat AMR



Establish multi-channel surveillance mechanisms on drug-resistant organisms



Ensure the appropriate use of antibiotics through AMR-related hospital audits and national ASP

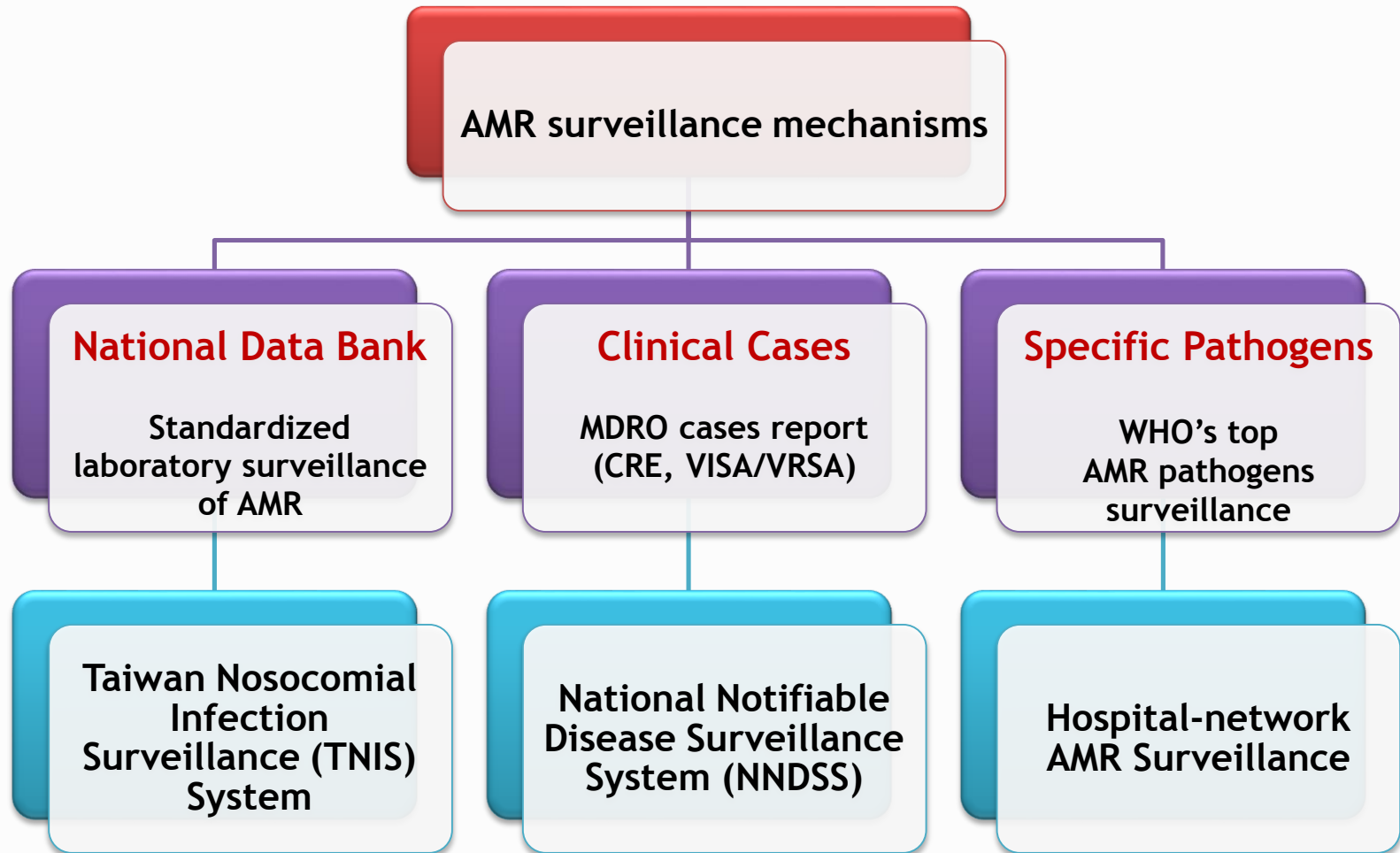


Improve awareness and knowledge of AMR through effective communication, education and training



Promote cross-sectoral cooperation on containing AMR

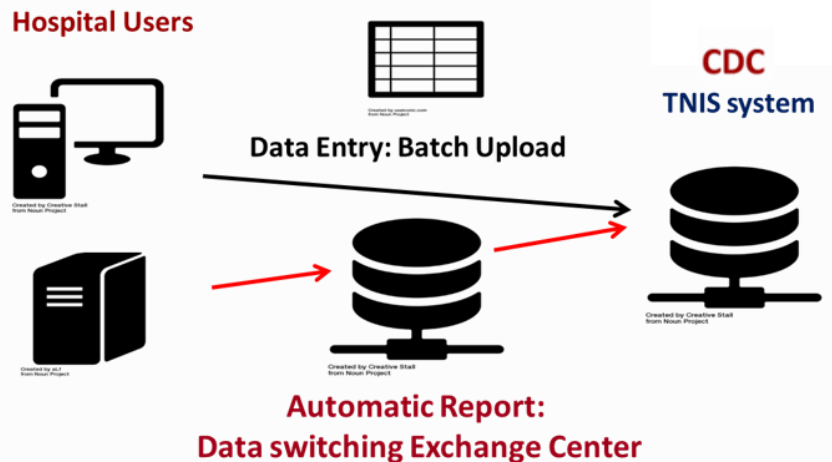
# Multi-channel Surveillance Mechanisms





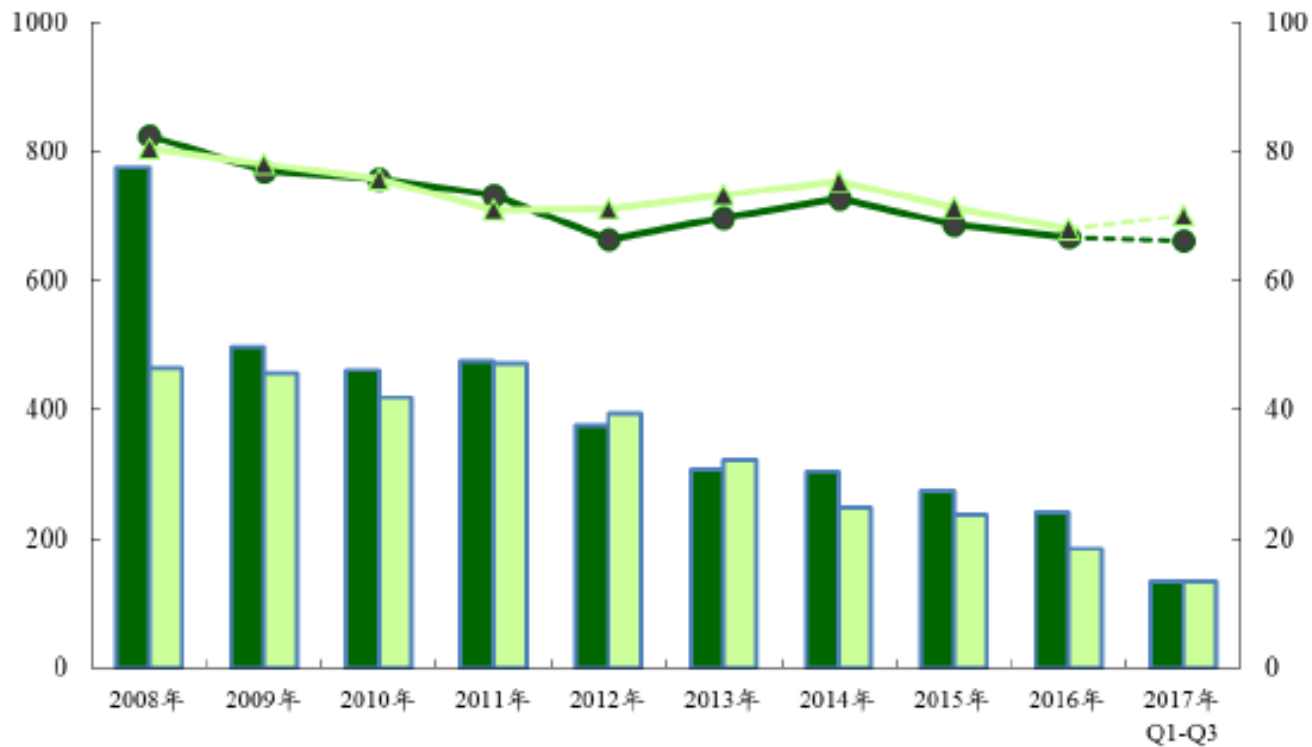
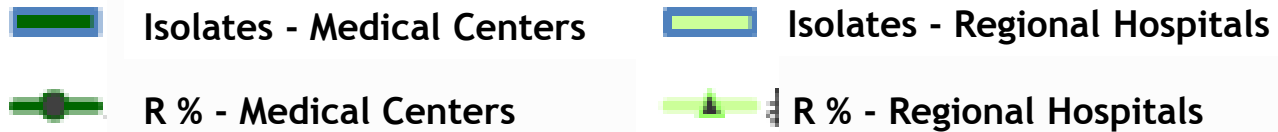
# AMR Surveillance through TNIS

- Hospitals report individual lab test data of clinical isolates to Antimicrobial Usage and Resistance (AUR) Module within the TNIS system.



Surveillance pathogens	
<i>Escherichia</i> spp.	<i>Enterococcus</i> spp.
<i>Klebsiella</i> spp.	<i>Acinetobacter baumannii</i>
<i>Enterobacter</i> spp.	<i>Acinetobacter calcoaceticus</i>
<i>Proteus</i> spp.	<i>Acinetobacter calcoaceticus-Acinetobacter baumannii</i> complex
<i>Salmonella</i> spp.	<i>Pseudomonas aeruginosa</i>
<i>Shigella</i> spp.	<i>Staphylococcus aureus</i>
<i>Citrobacter</i> spp.	<i>Streptococcus pneumoniae</i>
<i>Morganella</i> spp.	<i>Neisseria gonorrhoeae</i>
<i>Providencia</i> spp.	<i>Clostridium difficile</i>
<i>Serratia</i> spp.	<i>Helicobacter pylori</i>
<i>Yersinia</i> spp.	

# National AMR Reports

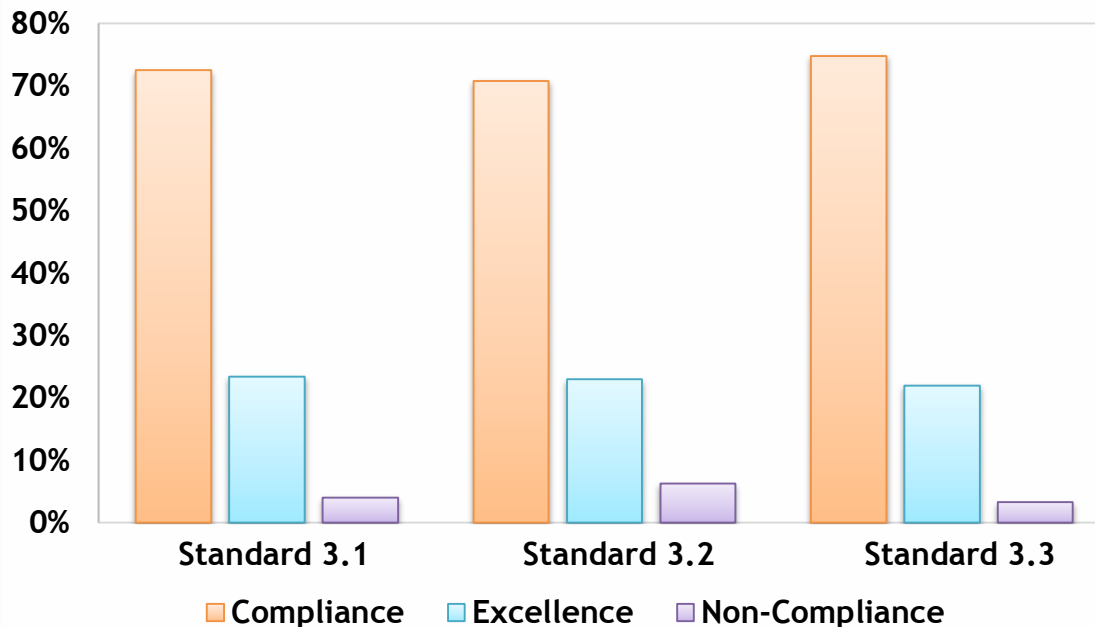


The percentage of MRSA in ICUs

# AMR-related Hospital Audits

## Assessment Standards

- 3.1 Leadership and responsibilities in Antimicrobial Stewardship program
- 3.2 Mechanism for surveillance and management of antibiotic use
- 3.3 Measures for surveillance, diagnosis, and isolation of resistant microbes



A total of 224 hospitals were evaluated in 2017.

# AMR Awareness and Education (1)

## For General Public



Chinese Taipei CDC has initiated “World Antibiotic Awareness Week” and encouraged general public to respond by signing the pledge online.

### 抗生素抗藥性誓言---我宣誓合理使用抗生素

濫用抗生素已導致具抗藥性的「超級細菌」產生，這將會使你或是你的家人，在下次需要使用抗生素可能已經失效。世界衛生組織已將抗生素抗藥性視為嚴重公共衛生的威脅，而你可以透過承諾「合理使用抗生素」來改變現狀！

我宣誓， \* **I declare,**

- 1. 只服用醫生處方之抗生素，並按療程完成服藥。  
**Only use antibiotics when prescribed by a certified health professional and follow medical advice to complete the medication.**
- 2. 養成良好手部衛生習慣以避免病菌傳播。

**Prevent the spread of pathogens by regularly washing hands.**

- 3. 鼓勵我的家人及朋友合理使用抗生素。

**Encourage my family and friends to use antibiotics appropriately.**

宣誓日期 \* **Date**

MM DD YYYY

\_\_ / \_\_ / 2018 **Date**

姓名 \* **Name**

您的回答

# AMR Awareness and Education (2)

## For Healthcare Workers

### Guidebooks on CDC website

最新活動訊息 | 傳染病介紹 | 衛教與教材 | 通報與檢驗 | 國際旅遊與健康 | 預防接種 | 統計資料 | 防疫夥伴 | 出版品類 | 學術研究

首頁 > 傳染病介紹 > 感染管制及生物安全 > 抗生素抗藥性管理 > 抗微生物製劑相關管制措施

傳染病介紹	抗微生物製劑相關管制措施
傳染病介紹	
第一類法定傳染病	CRE(Carbapenem-Resistant Enterobacteriaceae)防治指引 490 2017-12-29
第二類法定傳染病	Candida auris 感染管制建議 739 2017-11-02
第三類法定傳染病	社區型MRSA問與答
第四類法定傳染病	萬古黴素抗藥性腸球菌
第五類法定傳染病	抗生藥管理手冊
其他傳染病	CRAB(Carbapenem-Resistant Acinetobacter baumannii)
人畜共通傳染病	MRSA(Methicillin-Resistant Staphylococcus aureus)
感染管制及生物安全	預防和控制多重抗藥性
	抗微生物製劑使用指引
	清淨手術預防性抗生素

ASP 抗生素管理手冊  
National Action Plan  
Antimicrobial Stewardship Program  
衛生福利部疾病管制署

### E-learning courses on CDC website

Identification, treatment & infection control of common infections

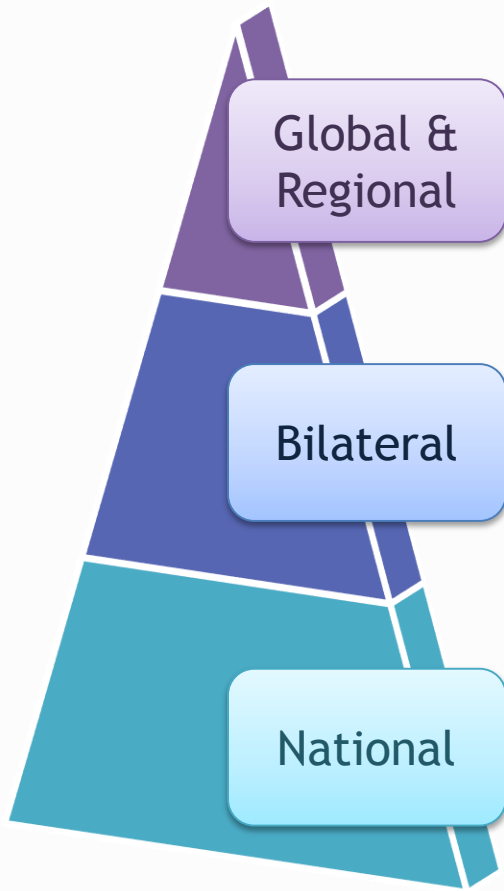
Rational use of antibiotics

Healthcare workers' respective roles and responsibilities in ASP

Infection control of MDROs

Laboratory diagnosis of infections

# Cross-sectoral Cooperation



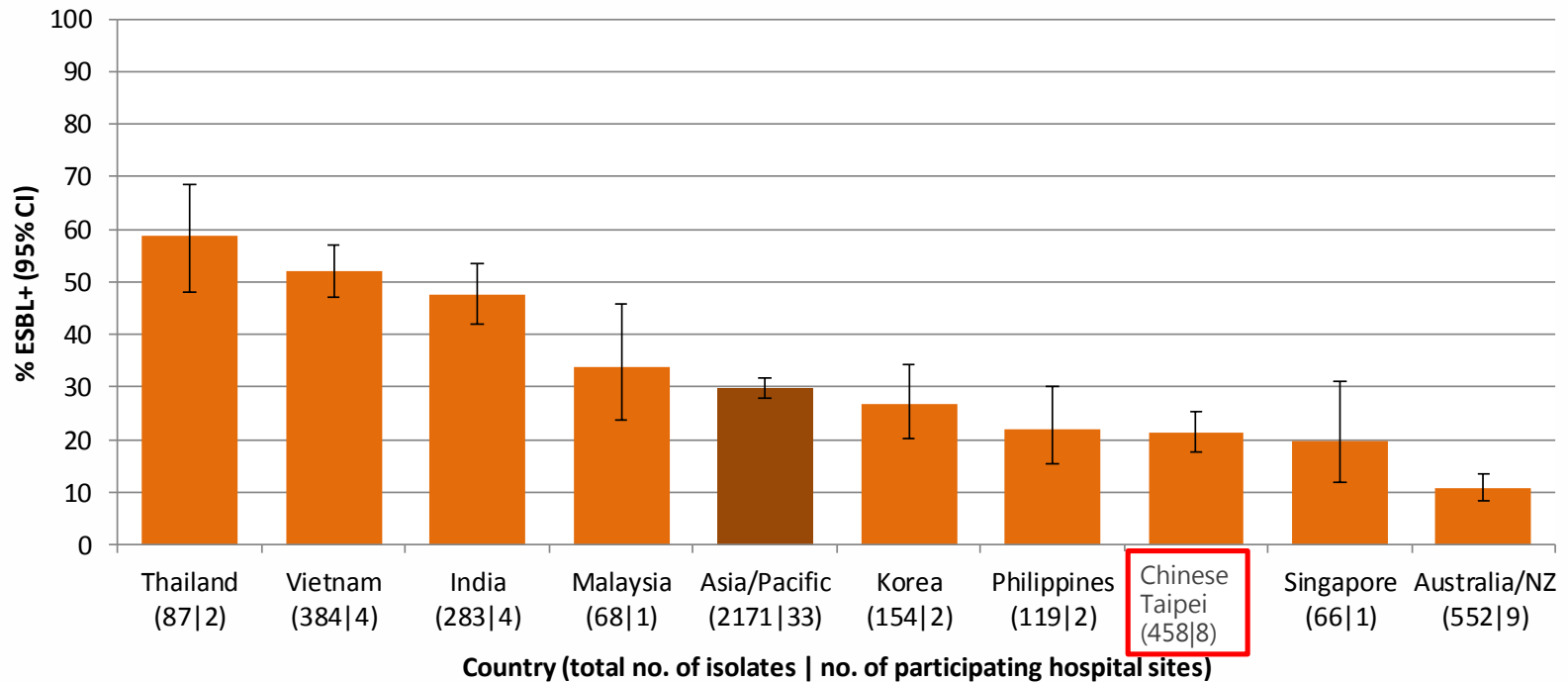
- Host 2018 APEC AMR conference to communicate with APEC economies on AMR prevention, detection, and response strategies
- Collaborate with U.S. CDC to implement active surveillance and isolation for the control of MRSA in our hospitals
- Communicate with National Institute of Infectious Diseases in Japan on drug-resistant infections related issues
- Establish communication channels, spanning human, animal, and food safety sectors, to discuss the AMR prevention and control strategies

# AMR International Comparison(1)

Rate of ESBL production amongst isolates of *E. coli* causing urinary tract infections (UTIs) and Intra-abdominal infection (IAI)

Year 2016

## Asia/Pacific, 2016 (IAI+UTI)



\*\*ESBL: Extended-spectrum  $\beta$ -lactamases

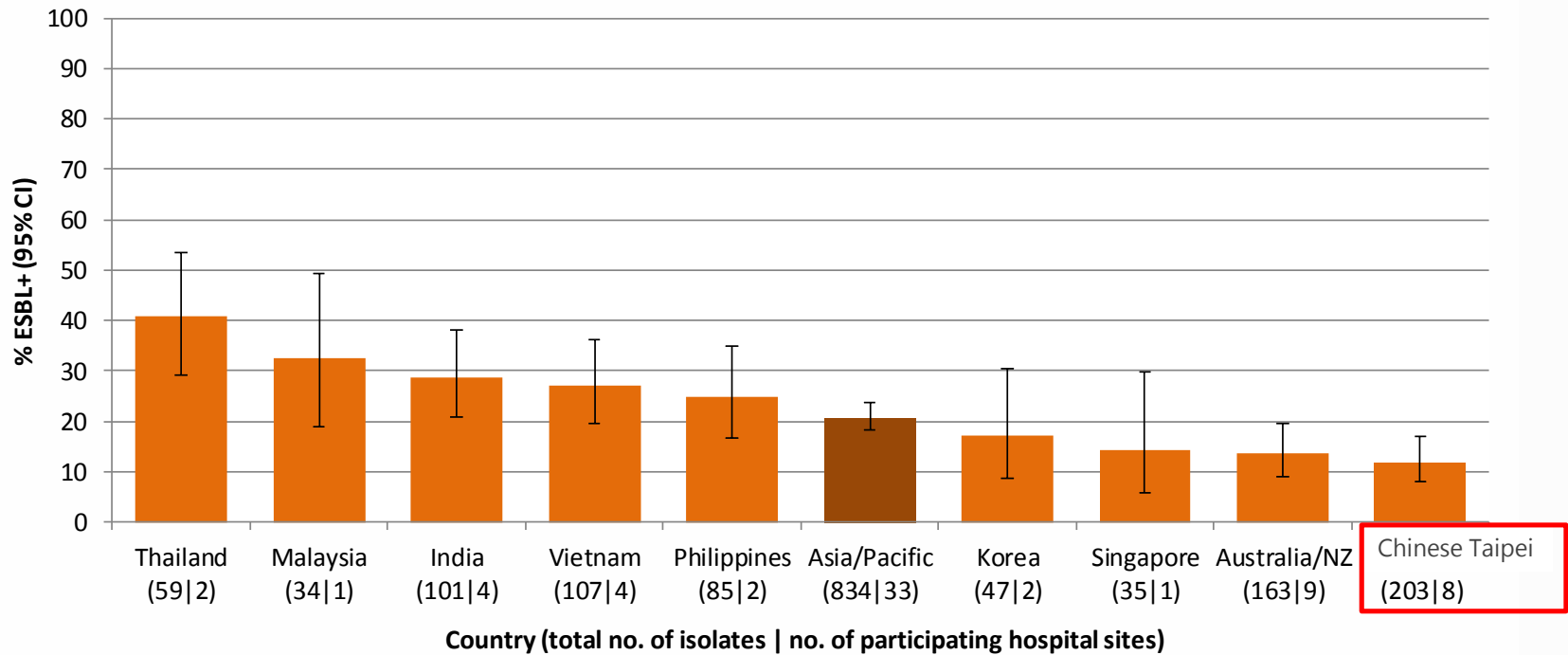
Data from Study for Monitoring Antimicrobial Resistance Trends (SMART)

# AMR International Comparison(2)

Rate of ESBL production amongst isolates of *K. pneumoniae* causing urinary tract infections (UTIs) and Intra-abdominal infection (IAI)

Year 2016

Asia/Pacific, 2016 (IAI+UTI)



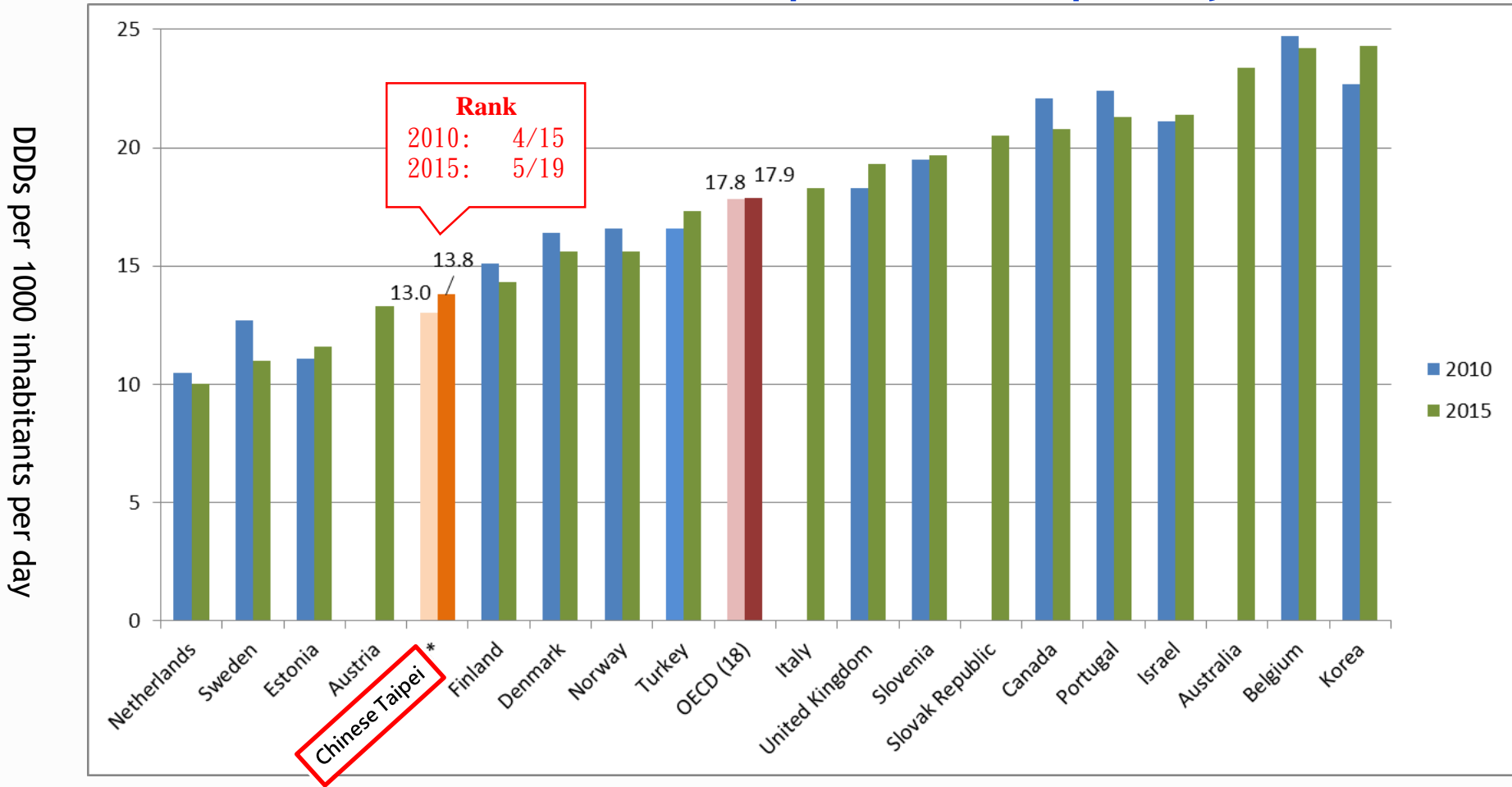
\*\*ESBL: Extended-spectrum  $\beta$ -lactamases

Data from Study for Monitoring Antimicrobial Resistance Trends (SMART)



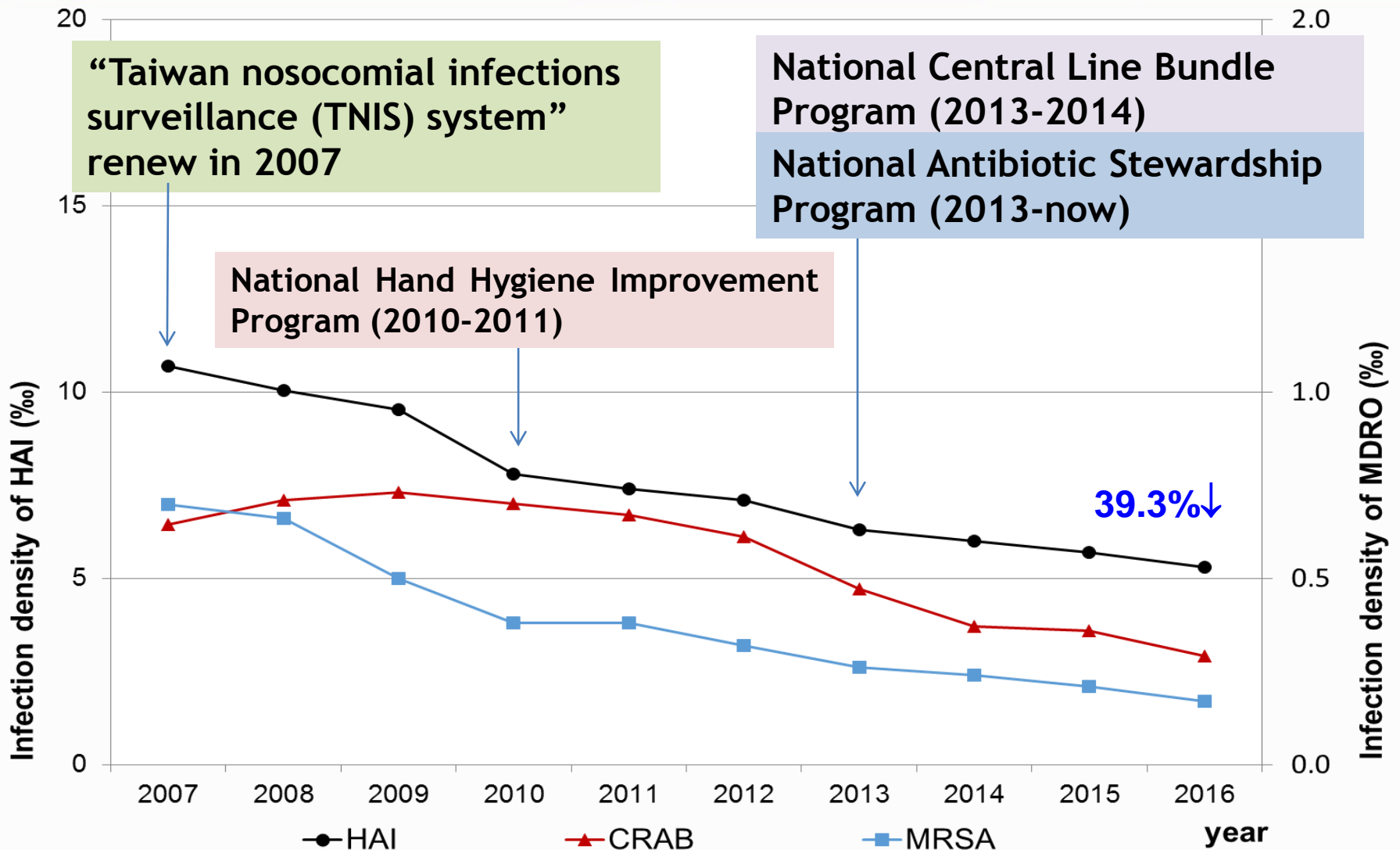
# International Comparison of Antimicrobial Consumption

## Overall amount of antibiotics prescribed in primary care

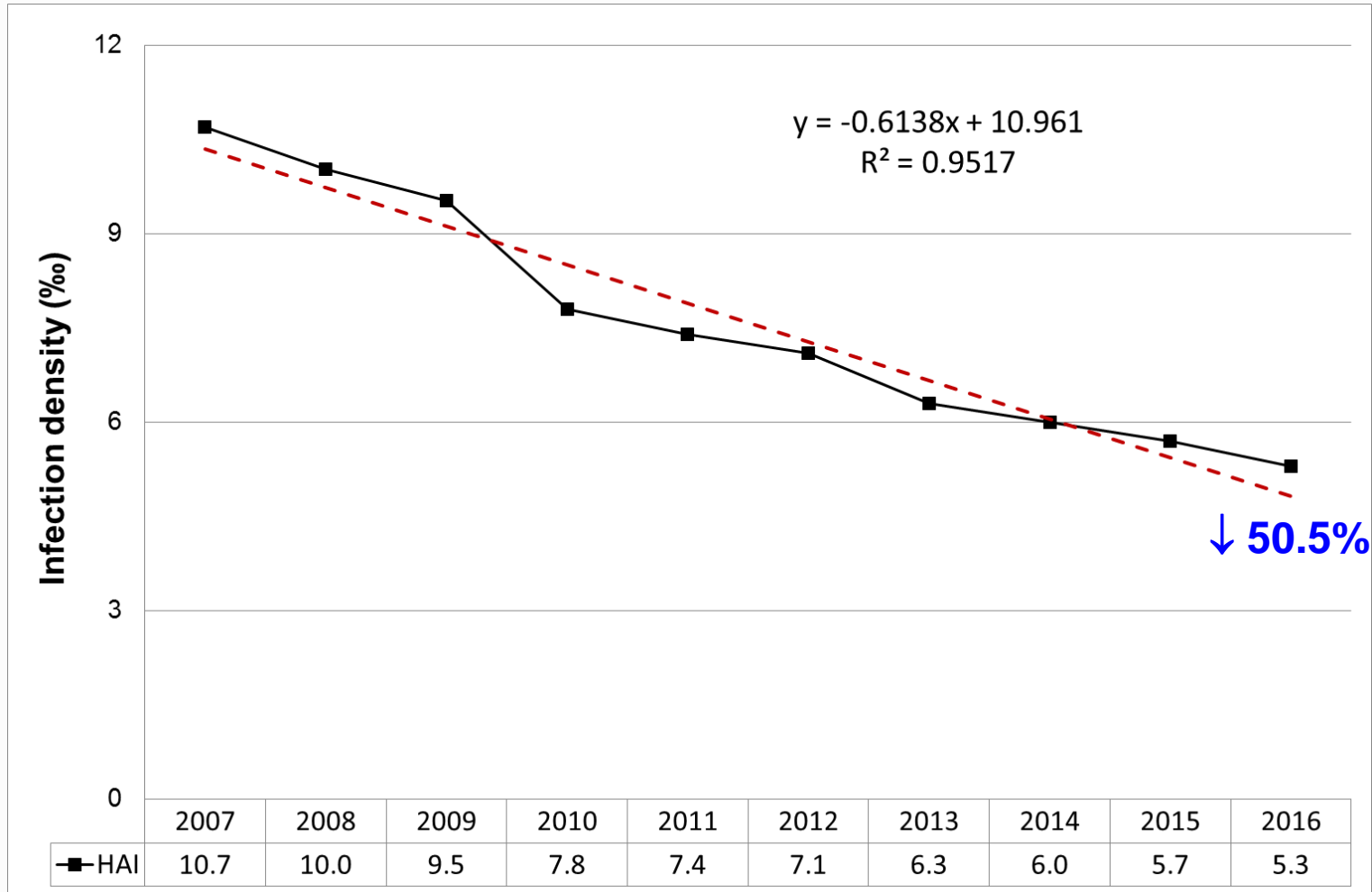


\* non-OECD member  
 OECD Healthy Statistics. 2017

# Outcome of Infection Prevention and Control (Healthcare Associated Infections)

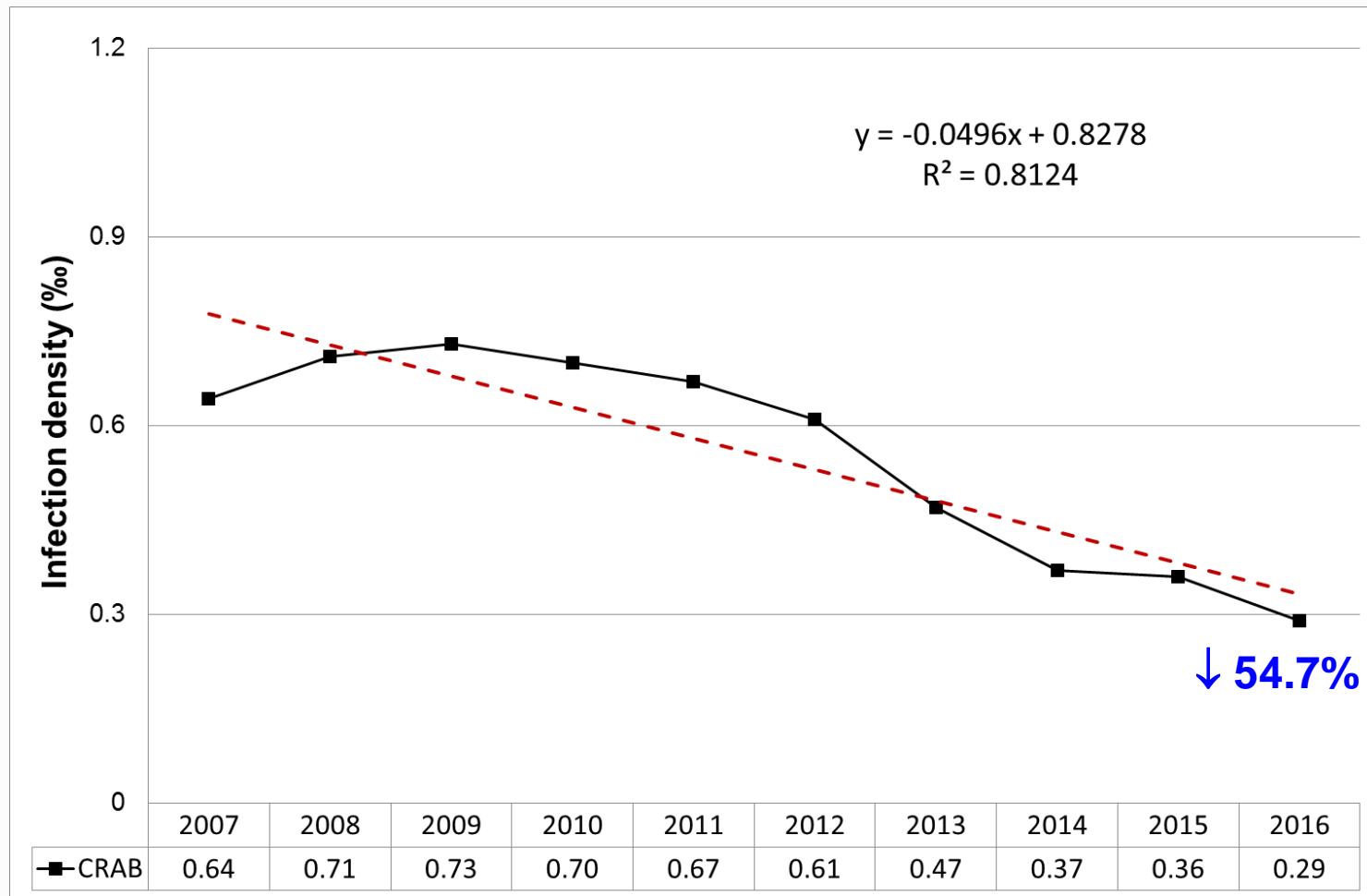


# Infection Density of HAI in ICU (2007-2016)



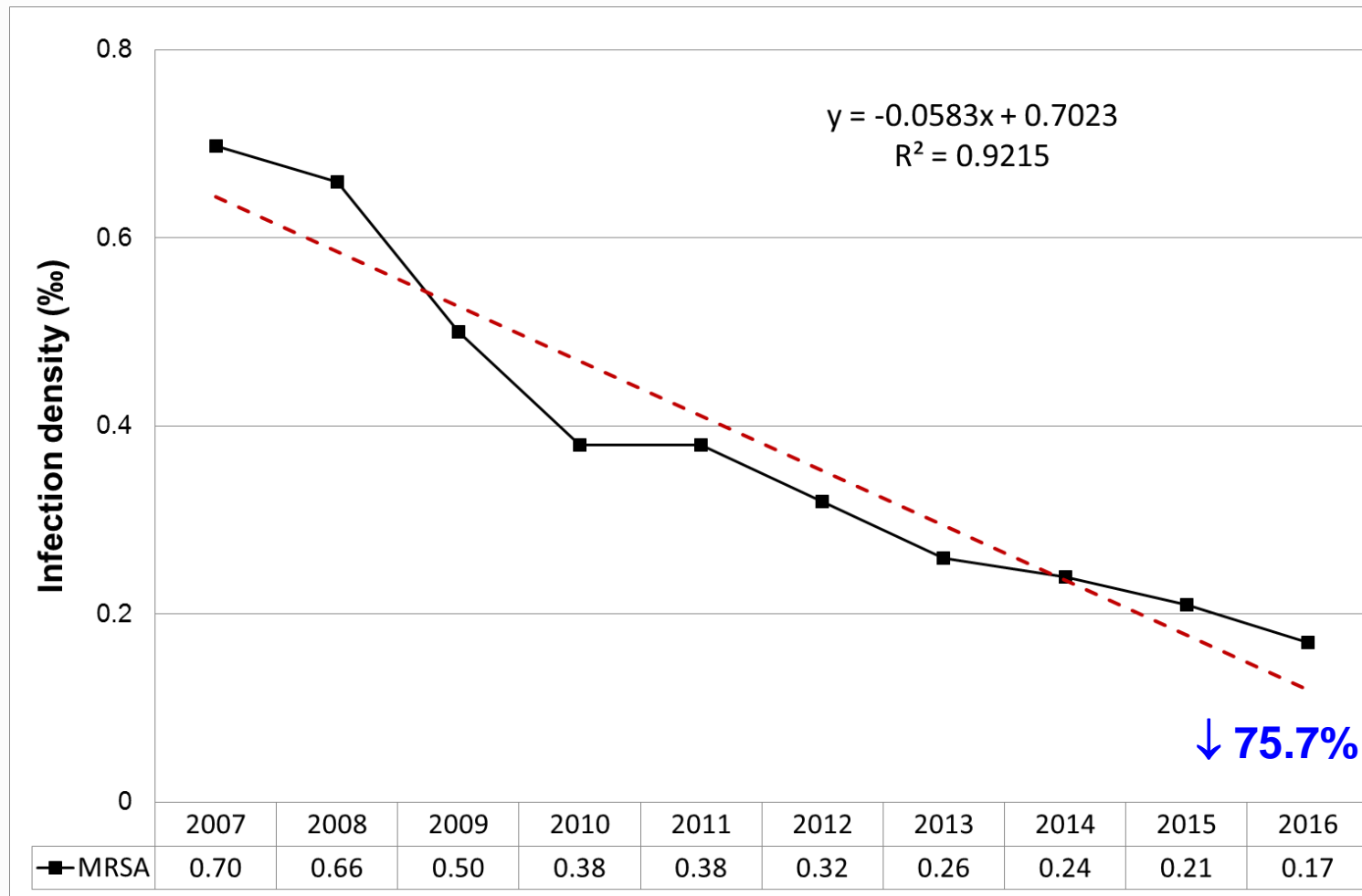
HAI: Healthcare-associated infection

# Infection Density of CRAB in ICU (2007-2016)



CRAB: Carbapenem-resistant *Acinetobacter baumannii*

# Infection Density of MRSA in ICU (2007-2016)

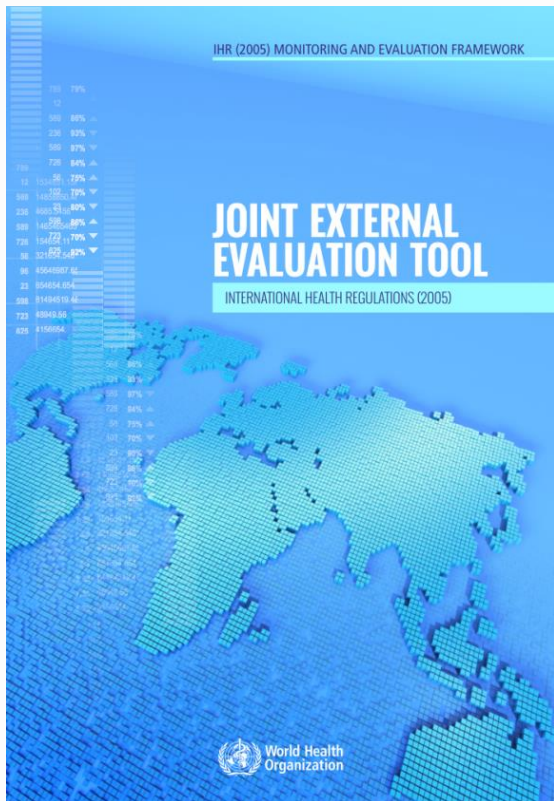


MRSA: Methicillin-resistant *Staphylococcus aureus*

# International External AMR Capacity Evaluation

Using WHO IHR Joint external evaluation tool

Evaluated by team from UPMC Center for Health Security in 2016



Element	Indicator	Score
Antimicrobial Resistance	P.3.1- Antimicrobial resistance (AMR) detection	5
	P.3.2- Surveillance of infections caused by AMR pathogens	5
	P.3.3- Healthcare-associated infection (HCAI) prevention and control programs	4
	P.3.4- Antimicrobial stewardship activities	4

Score	No Capacity 1	Limited Capacity 2	Developed Capacity 3	Demonstrated Capacity 4	Sustainable Capacity 5
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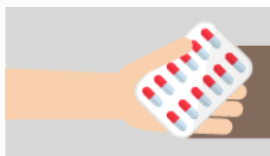
# AMR: A Big Challenge on the Path to UHC



Makes 1st and 2nd line antimicrobials ineffective, thus impacting drugs' efficacy and access.



Heavily diverts scarce medical resources, impacting affordability of health systems.



Very expensive to treat, causing affordability issues and financial risks for patients.



Complicates treatments and impacts quality and effectiveness of services.

**Making progress towards UHC and delaying the emergence and spread of AMR are interconnected.**

# Prospect: Integrate AMR and UHC

## Health System Attributes



## Needed UHC Actions to address AMR

- Strengthen basic public health and prevention
  - Ensure access to appropriate antibiotics at an affordable cost
- 
- Regulate the quality of antimicrobials
  - Include AMR in medical curriculum
- 
- Alter financial incentives that encourage overuse of antimicrobials
  - Reduce need for expensive treatment of infections with resistant organisms
- 
- Provide information on surveillance findings
  - Provide information on appropriate treatments
- 
- Strengthen public health services and immunization
  - Establish partnerships for management of antimicrobials



# Conclusion

- **To combat AMR, Chinese Taipei commit to promoting strategies aligned with WHO.**
- **With those good results in fighting AMR during past years, Chinese Taipei will continue to fight against AMR and strengthen health security together with the world.**
- **To achieve the goal of UHC, Chinese Taipei's actions need to be taken into account regionally and globally.**



Thank you for your attention!

