

Current Policies and Strategies for AMR at Taiwan CDC

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1

Outlines

- AMR Threat in Taiwan
- Surveillance & Responses for bacterial infections and AMR in Taiwan
- Multi-sectoral collaborations for antimicrobial stewardship program (ASP) in Taiwan

2

Global AMR Threat

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

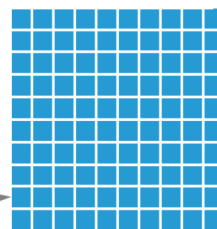


10 m
deaths
by 2050

\$100
trillion

Cost of antibiotic-resistant
infections by 2050

Each square is
\$1 trillion



The world's GDP
2 to 3.5%



Jim O'Neill. (2016) Tackling Drug-Resistant Infections Globally: Final Report and Recommendations

3

AMR Threat in Taiwan

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



33
thousand
deaths per
year by 2050

\$ 10
billion

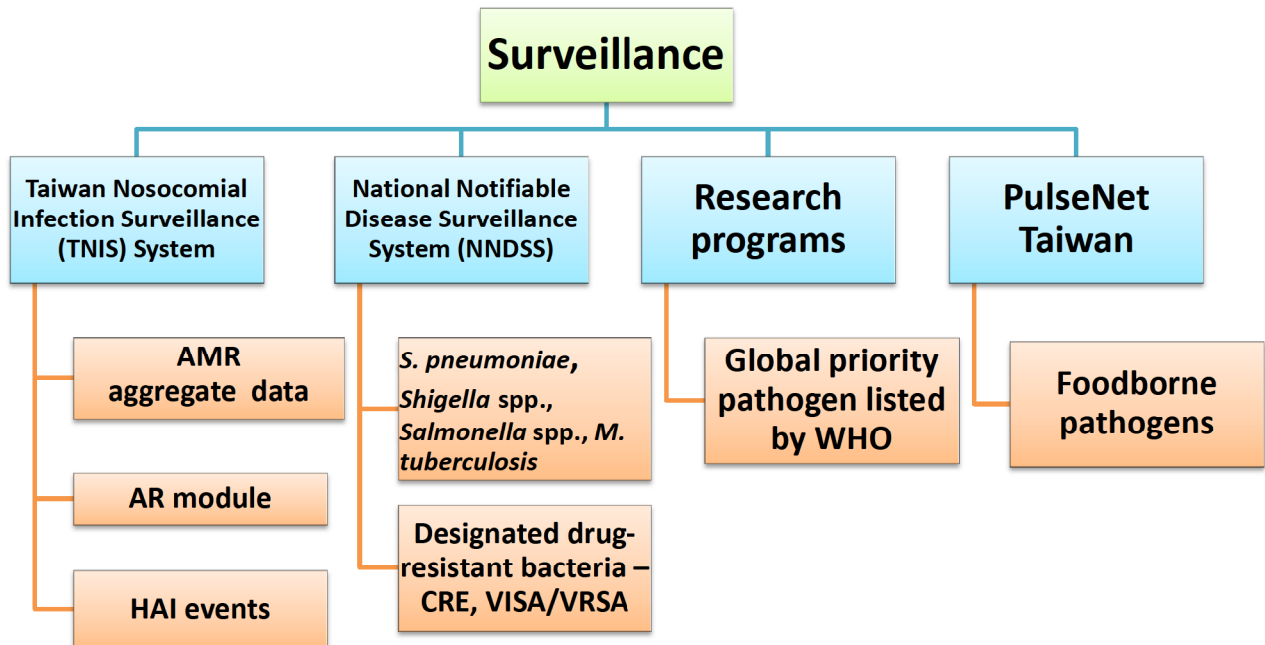
Cost of antibiotic-resistant
infections by 2050



Adapted from Jim O'Neill. (2016) Tackling Drug-Resistant Infections Globally: Final Report and Recommendations

4

Multi-faceted Bacterial Infections & Antimicrobial Resistance Surveillance

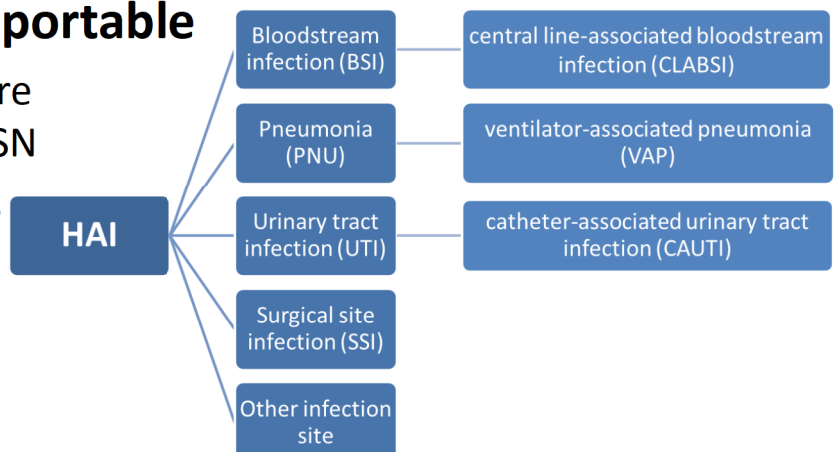


AR, antimicrobial resistance, HAI, Healthcare-associated infection; CRE, carbapenem-resistant Enterobacteriaceae; VISA, vancomycin-intermediate *Staphylococcus aureus*; VRSA, vancomycin-resistant *Staphylococcus aureus*

TNIS System – HAI Events

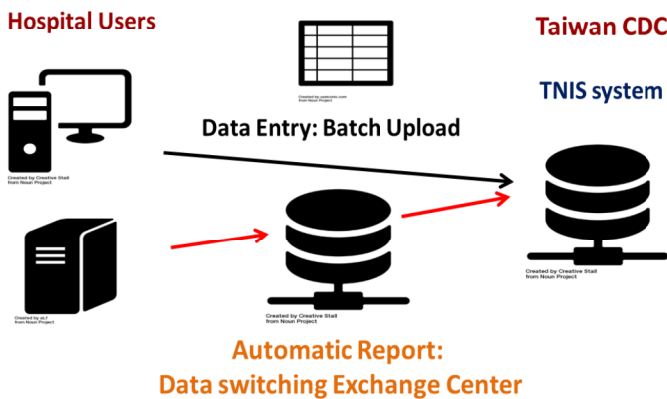
- **Established since 2007**
 - Voluntary, event-based reporting system
 - More than 470 hospitals enrolled
- **Hospitalized patients compatible with case definitions are reportable**

- The definitions were modified from NHSN
- Current definitions were revised in 2018



TNIS System – Hospital-wide Aggregate Data of AMR

- **Established since 2009**
 - Hospital-level reports
 - Specimen: blood, urine



Designated bacteria for secondary aggregate data

Escherichia spp.

Klebsiella spp.

Enterobacter spp.

Proteus spp.

Enterococcus spp.

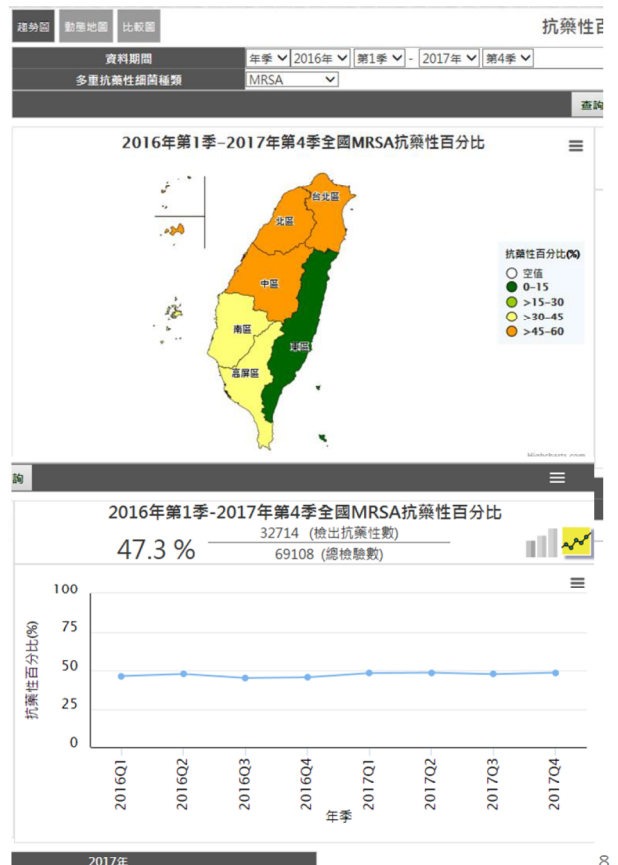
Acinetobacter calcoaceticus-Acinetobacter baumannii complex

Staphylococcus aureus

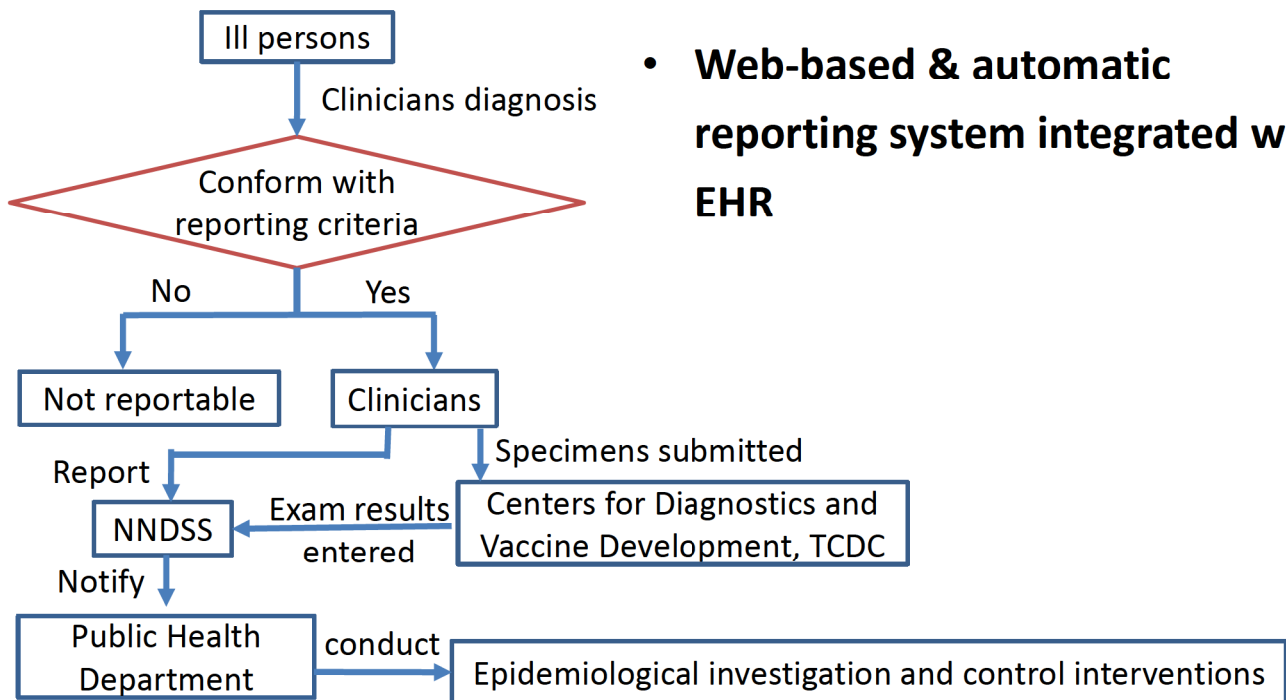
Pseudomonas aeruginosa

TNIS System – AR Module

- **Established since 2017**
 - Isolate-level reports
 - Specimen: all kinds of specimen
 - 23 designated bacteria species
 - Around 130 hospitals participated
- **Data visualization**
 - Inquiry interactive interface



System Flow of NNDSS



- Established since 2001
- Web-based & automatic reporting system integrated with EHR



WHO Priority List for AMR Surveillance in Taiwan, 2017-2020

- Medical centers (N=11)
- ▲ Regional hospitals (N=5)



2017 (n=2,500)

1. *Staphylococcus aureus* (sterile sites)
2. *Streptococcus pneumoniae* (sterile sites)
3. *Escherichia coli* (blood)
4. *Klebsiella pneumoniae* (blood)
5. Non-Typhoid *Salmonella* (any sites)
6. *Shigella* species (any sites)
7. *Neisseria gonorrhoeae* (any sites)

Comparison of CLABSI Incidence in ICUs

Surveillance networks/reviews, study period, country/economy	1,000 Patient-Days	CLABSI/1000 catheter-days	1,000 Catheter-days
TNIS, 2008-2010, Taiwan [§]	4,717	4.3	2,241
KISS, 2005-2009, Germany [#]	5,877	1.3	4,002
NHSN, 2009, USA [#]	9,186	1.7	4,589
NHSN, 2009, USA [*]	774	1.7	447
Systematic review (WHO), high-income countries, 1995-2010		3.5	5,339
INICC, 25 developing countries, 2003-2008		7.4	363

[§] All ICUs in major medical centers and regional hospitals

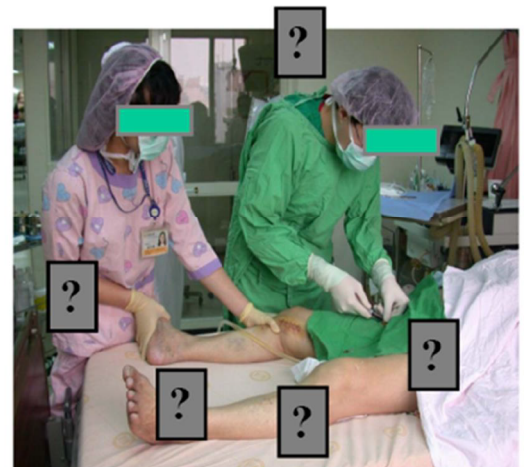
[#] All ICUs

^{*} Medical/surgical ICUs in major teaching hospitals

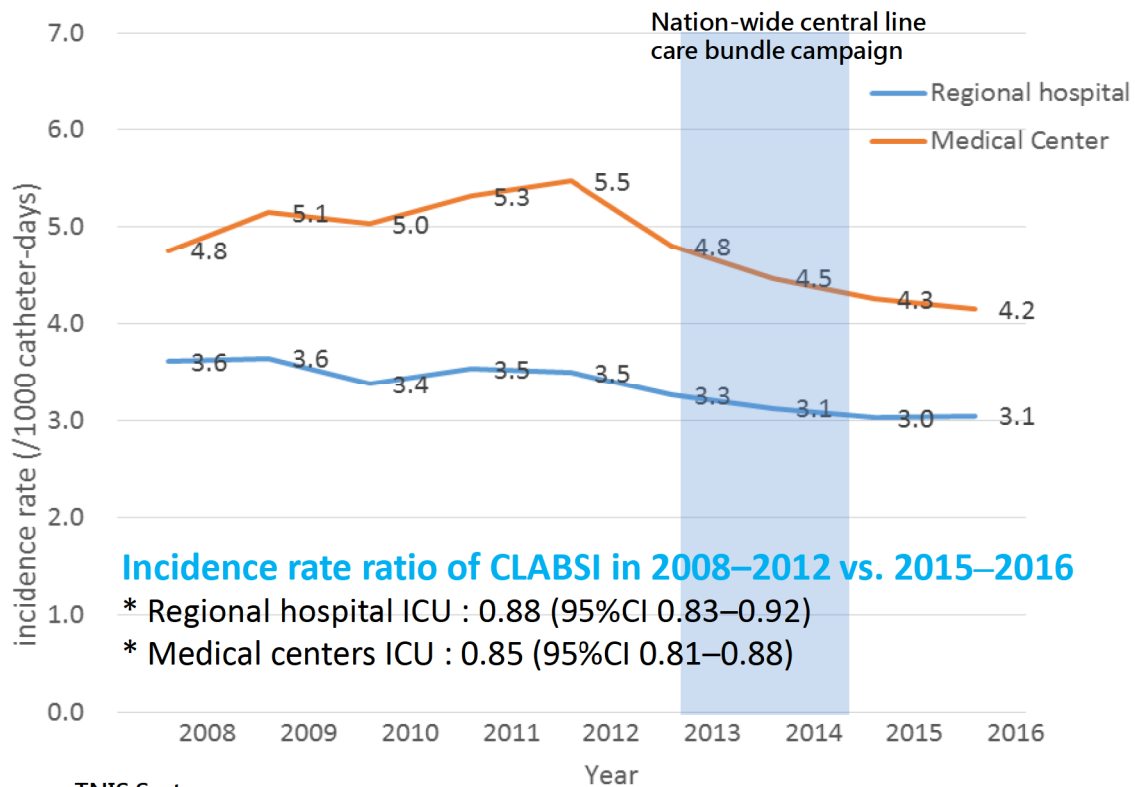
34

National Central-Line Care Bundles Campaign

- **Implemented during 2013 – 2014**
 - More than 110 hospitals involved
- **Bundle elements**
 - Optimal catheter site selection
 - Hand hygiene
 - Maximum barrier precautions
 - Appropriate disinfectant for skin preparation
 - Daily review of line necessity



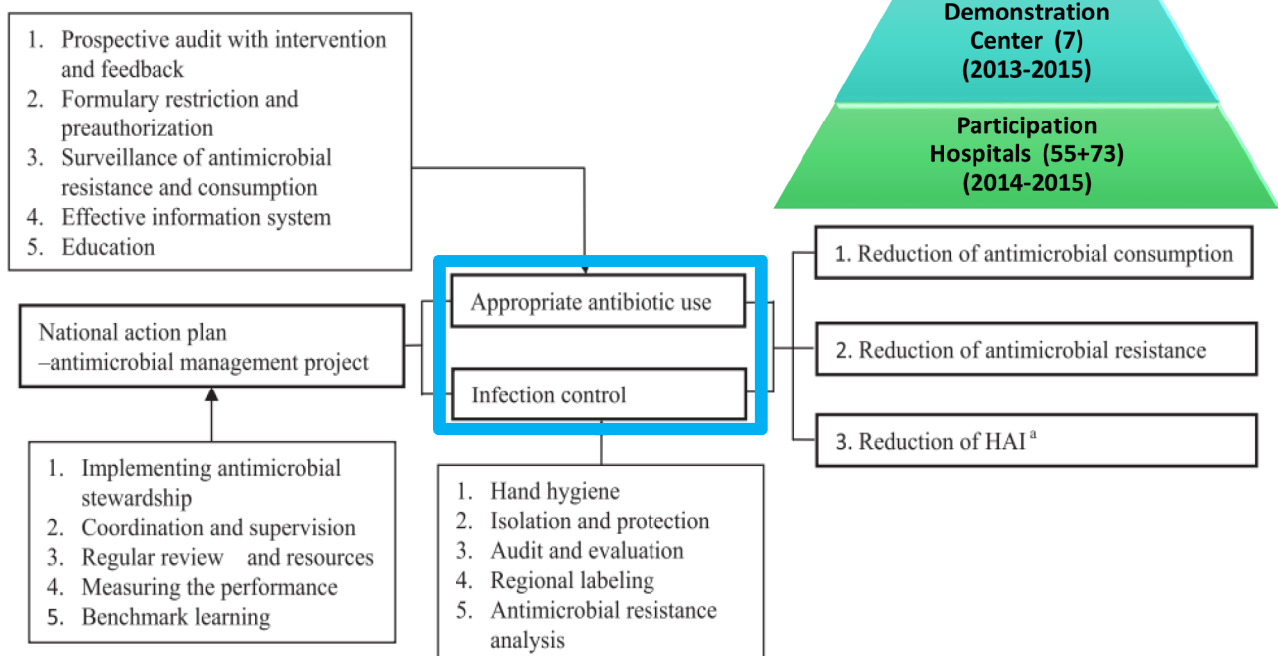
Incidence rates of CLABSI in ICUs , 2008 – 2016



Data Source : TNIS System

National Antimicrobial Stewardship Program, 2013 – 2015

Infrastructure of National ASP program



Outcomes of National ASP Programs

Reduction of AMR



↓ MRSA **5%**
↓ CRAB **10%**

Reduction of HAI



↓ **0.4**
infection per
thousand
patient-days

Reduction of Antimicrobial use



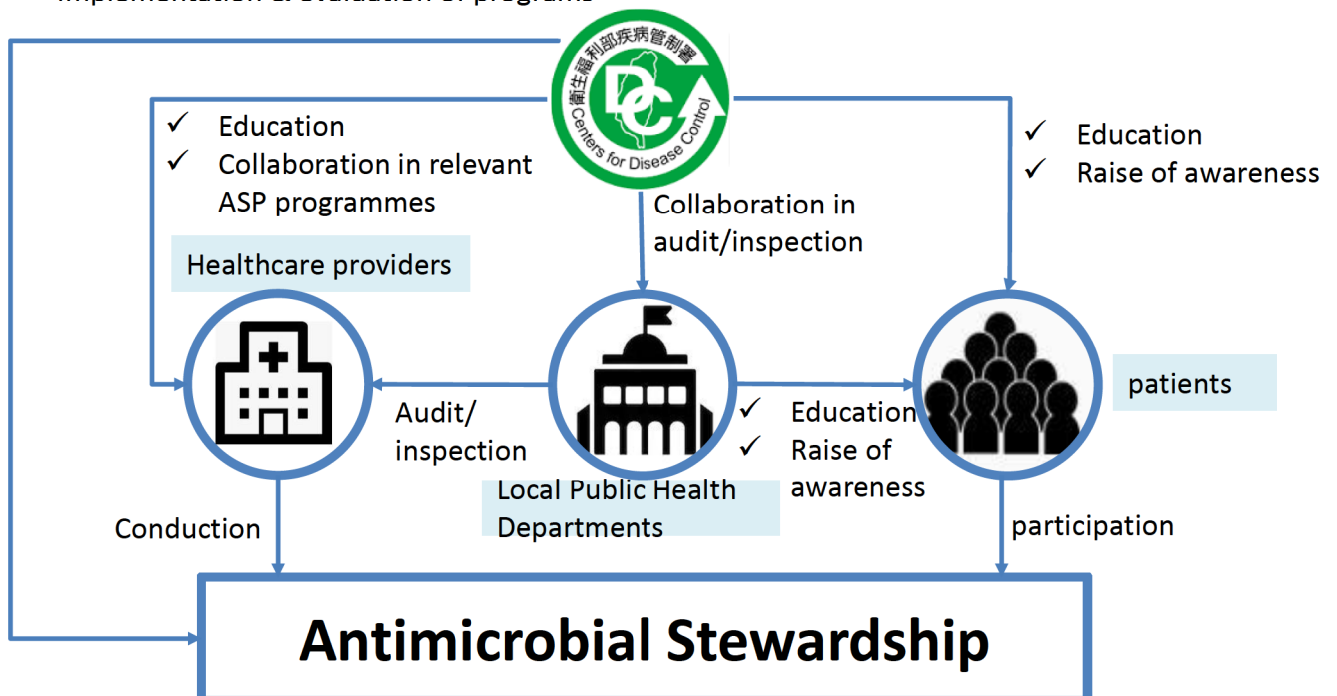
↓ **18%** DDD
per
thousand
patient-days

DDD: Defined Daily Dose

15

Roles of TCDC in Promotion of Antimicrobial Stewardship

- ✓ National policies & strategies making
- ✓ Implementation & evaluation of programs



16

Conclusions

- AMR is one of the ominous threats to Taiwan public health
- To secure more resources for multi-sectoral collaboration to implement multi-faceted interventions to combat AMR