War Against CRE: Who will be the Winner

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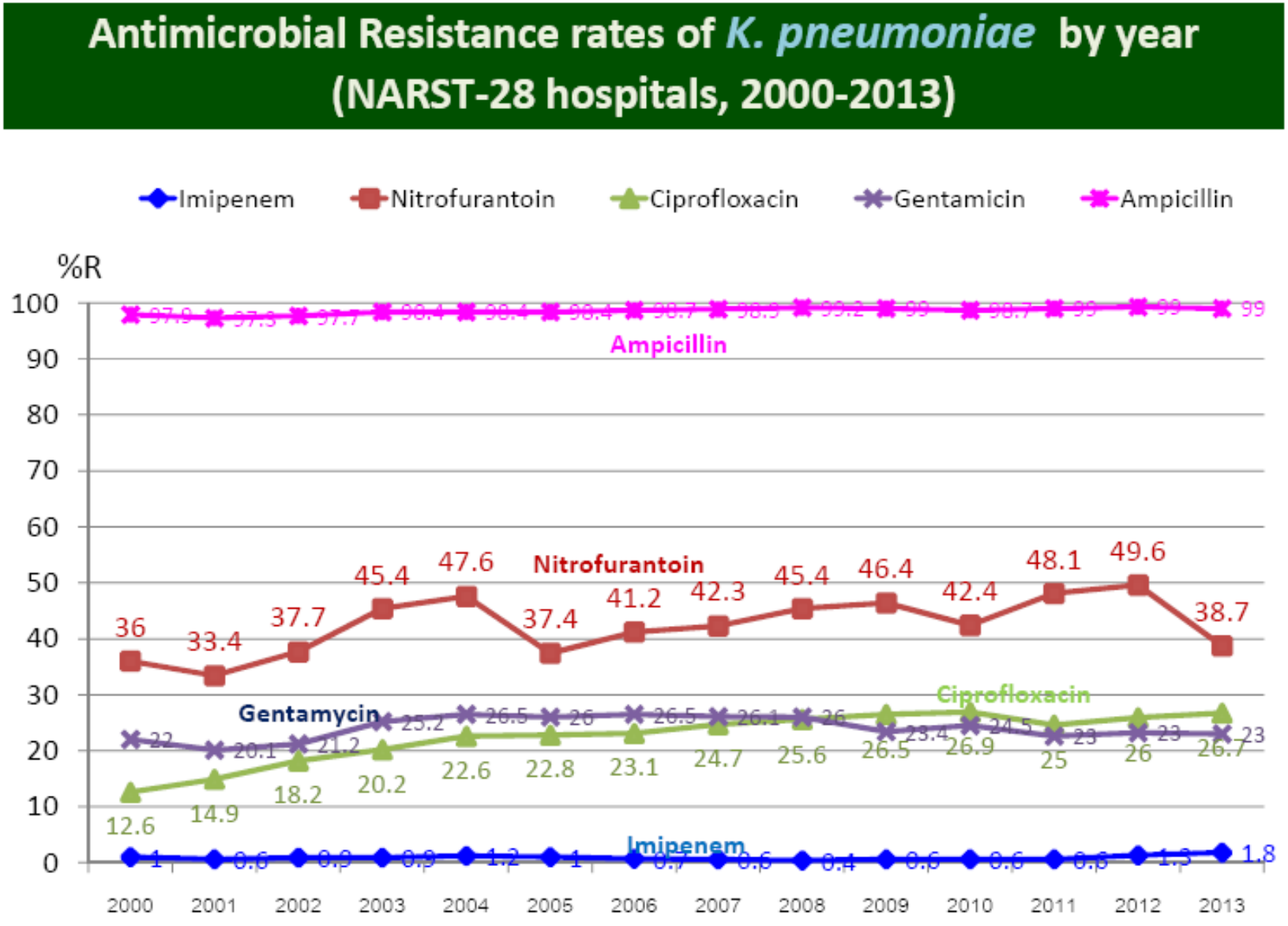
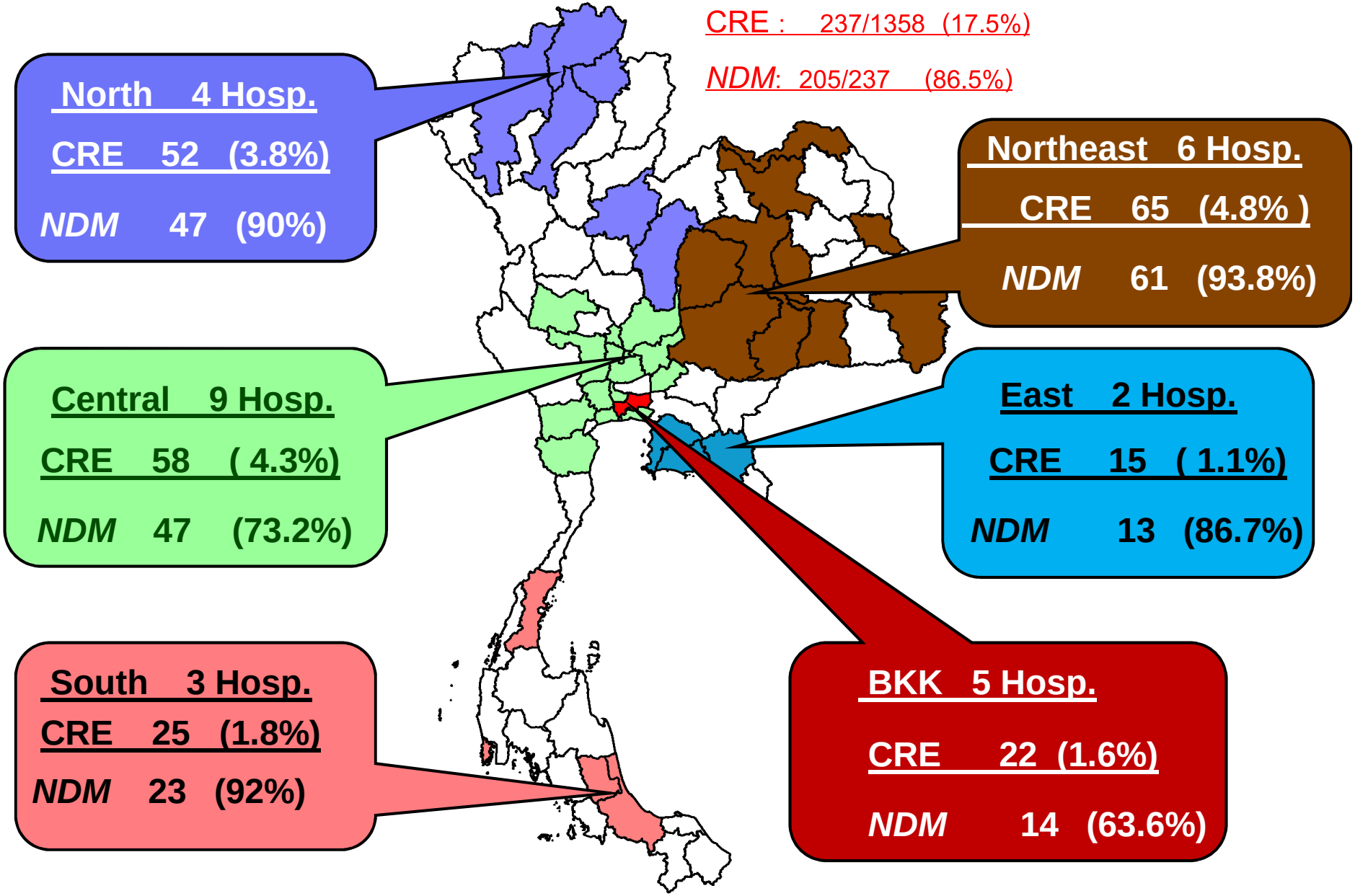
Website IC Rama http://med.mahidol.ac.th/ic/

National Antimicrobial Resistance Surveillance, Thailand: Trend of susceptibility of *K. pneumoniae*



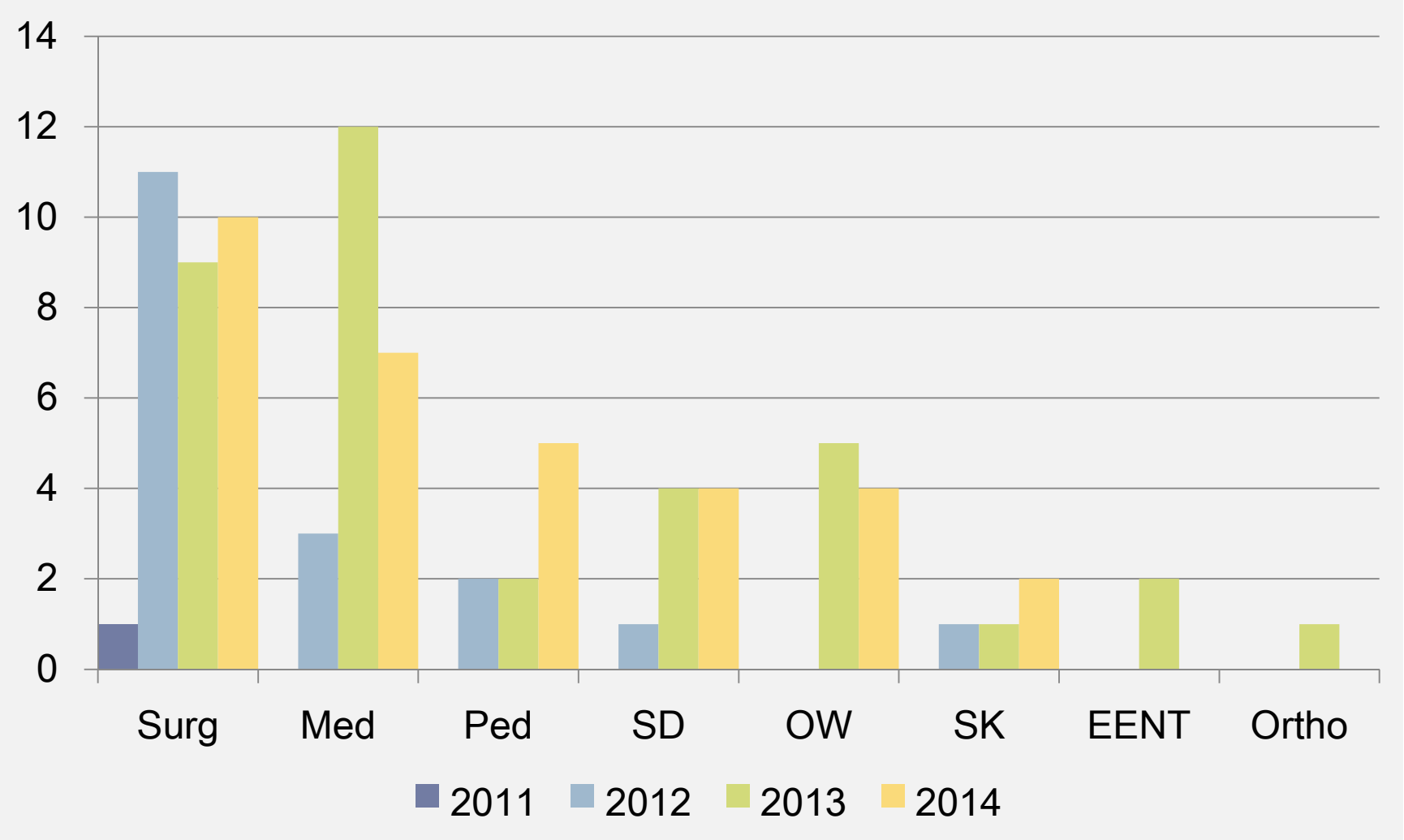
NDM-1 producing bacteria, 2012-2013



Most common species

- *Enterobacter* sp.: 6.8%
  - The worst is *E. cloacae* – 7.4%, and it is the most common species found in clinical specimens
- *Klebsiella pneumoniae* : 2.7%
- *E. coli* : 1.1%

Number of CRE clinical isolates



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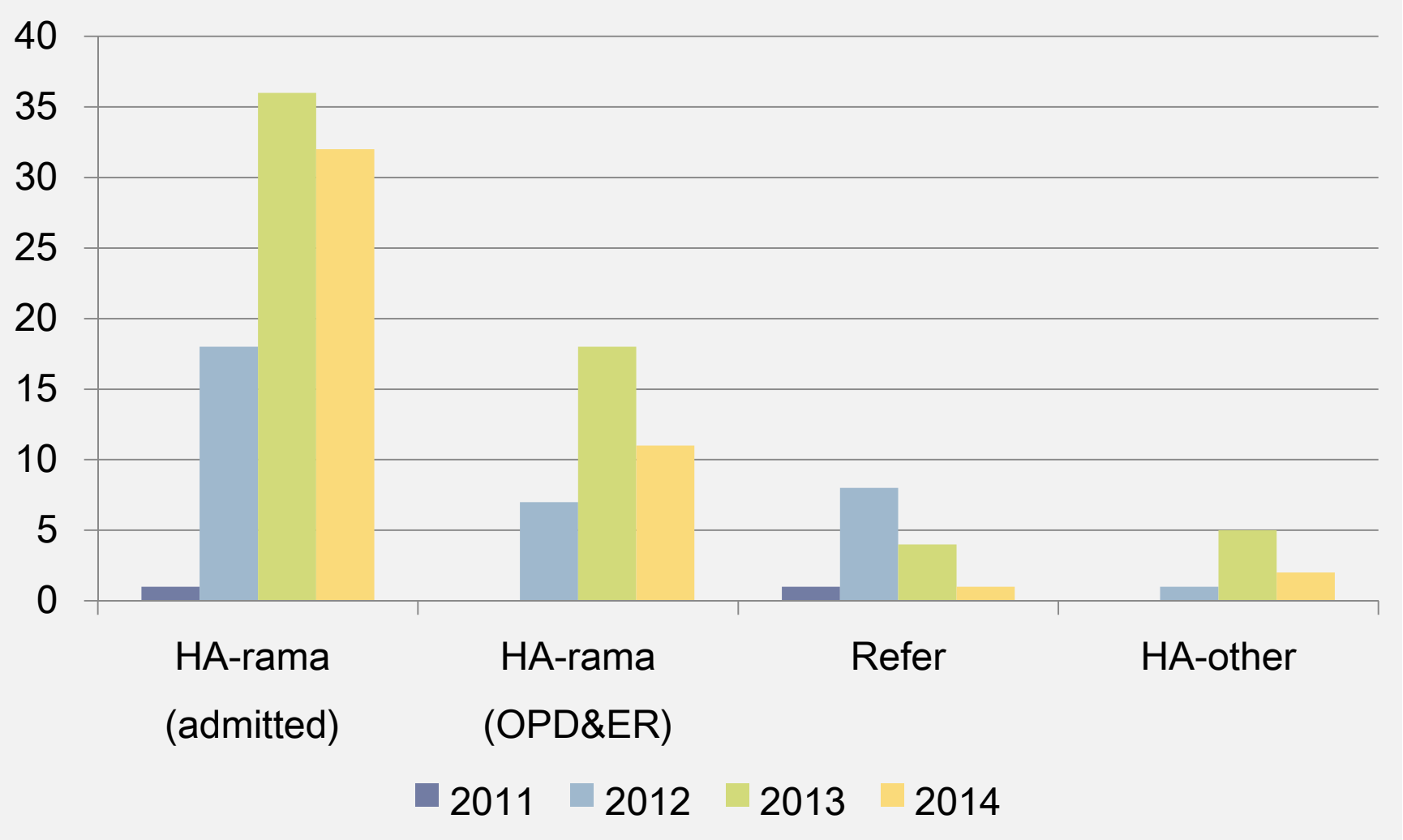
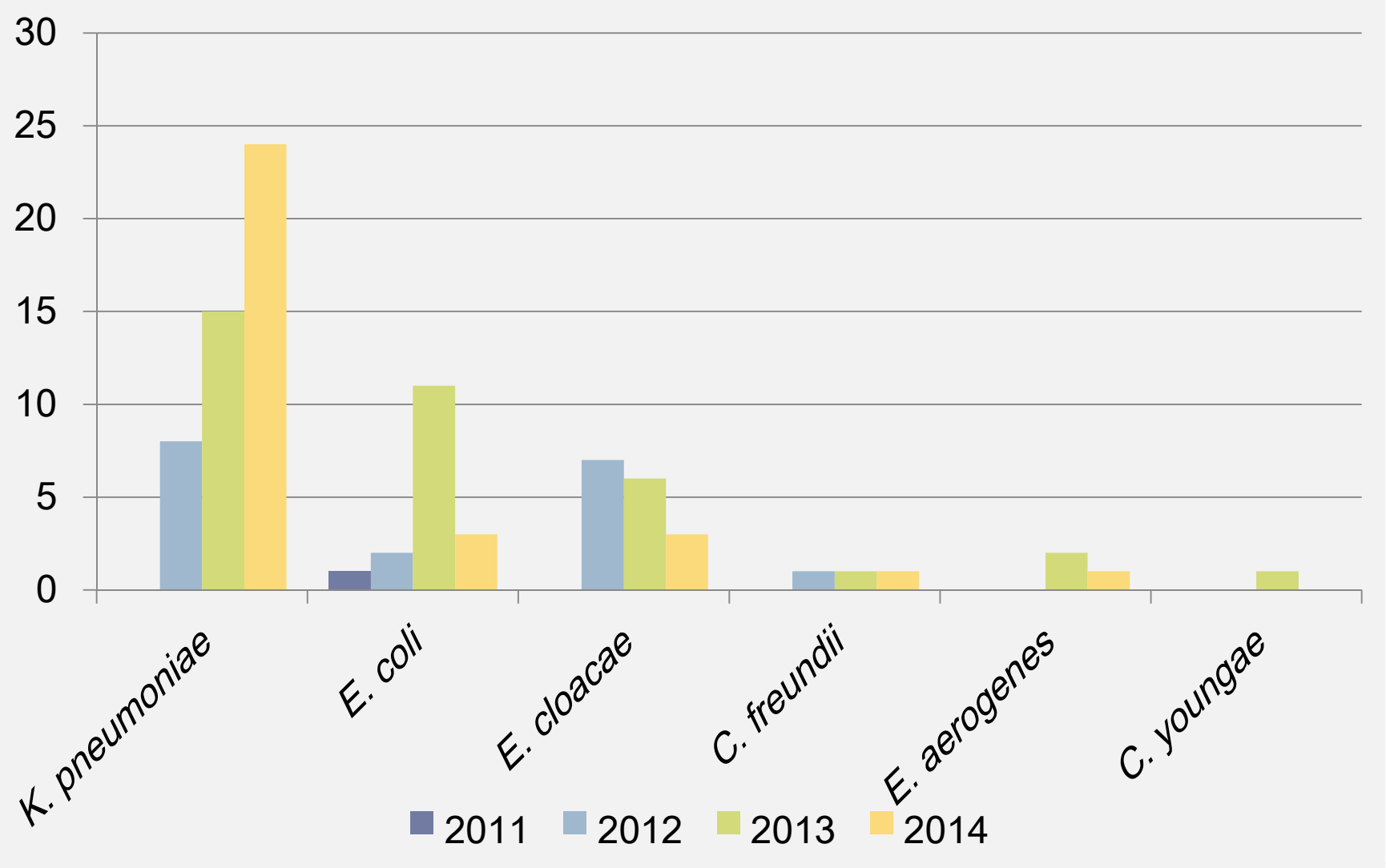


HA-rama (admitted)

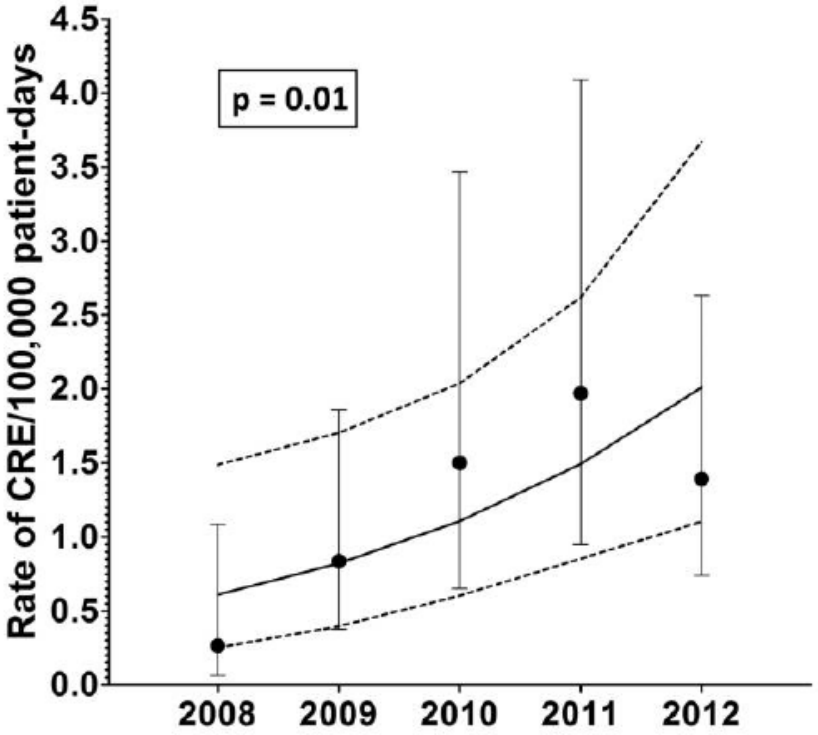
CRE

Specimens	2554	2555	2556	2557	Total	2557(%)
Urine		7	17	11	35	34.4
Sputum		3	1	5	9	15.6
Blood			3	4	7	12.5
PCD		1		2	3	6.3
RSC			1	3	4	9.4
Wound		3	7	3	13	9.4
abdomen		2	4	2	8	6.3
BM				1	1	3.1
SD	1		1	1	3	3.1
bile		2	1		3	0
Pleura			1		1	0
Total	1	18	36	32	87	100

Number of CRE clinical isolates



CRE in Southeast USA



- 305 CRE at 16 hospitals
- Symptomatic, 180 (59%)
- Asymptomatic, 125 (41%)
- Healthcare associated, 288 cases; 94%

Joshua T. Thaden Infect Control Hosp Epidemiol 2014;35(8):978-983

Example of successful control

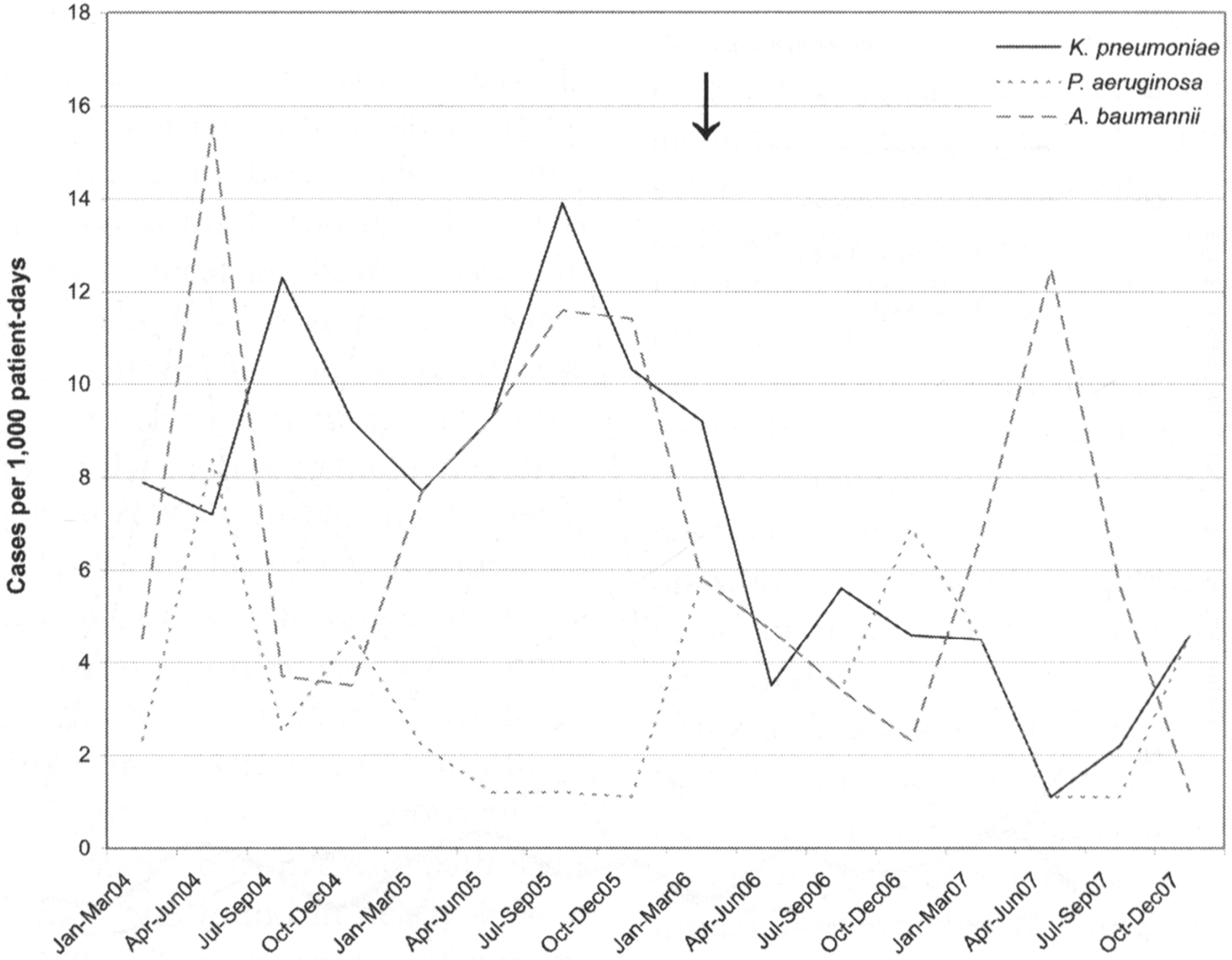
- *Enhanced infection control measures with screening for gastrointestinal colonization on limiting the spread of carbapenem-resistant Klebsiella pneumoniae in a New York City hospital endemic for this pathogen.*

Kochar S, et al. Infect. Control Hosp. Epidemiol. 2009; 30:447– 452

Example of successful control

Baseline	Additional	Outcome
1. Contact isolation of CPE patients	1. Active surveillance for CPE on admission to ICU and weekly thereafter	Incidence decreased from 9.7 ± 2.2 to 3.7 ± 1.6 CPE cases per 1,000 patient-days
2. Environmental cleaning	2. ICU closure and disinfection	
3. Infection control supervising	3. Cohorting of CPE patients	
4. Active surveillance for VRE and CRAB	4. Dedicated nursing staff 5. Promotion of hand hygiene	

- Kochar S, et al. Infect. Control Hosp. Epidemiol. 2009; 30:447– 452



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Control of Simultaneous Outbreaks of CRE and XDR *A. baumannii* Infection in an ICU

In early January 2010, a patient with known CPE colonization was admitted to the ICU. Concurrently, a second patient, who had recently been transferred from an outside hospital, was found to have XDR-AB bacteremia secondary to a large soft-tissue abscess. Despite reinforced infection control education with an emphasis on hand hygiene, contact isolation, and environmental cleaning, which had previously reduced rates of CPE in the ICU after the initiation of perirectal (PR) carbapenem-resistant Enterobacteriaceae (CRE) screening in April 2009, additional cases of CPE and XDRAB colonization and infection were identified in patients in the ICU over the next several weeks.

- Enfield KB, et al. Infect Control Hosp Epidemiol 2014;35(7):810-817

Control of Simultaneous Outbreaks of CRE and XDR *A. baumannii* Infection in an ICU

- Hand hygiene *(Enhanced; increased hand hygiene audits and feedback)*
- Contact precautions
- HCWs education
- Preemptive isolation
- Monitor contact precaution adherence and provide feedback

Enfield KB, et al. Infect Control Hosp Epidemiol 2014;35(7):810-817

Control of Simultaneous Outbreaks of CRE and XDR *A. baumannii* Infection in an ICU

- Patient and staff cohorting
- Minimize use of invasive devices
- Promote antibiotic stewardship
- Conduct active surveillance testing
- Screen at-risk patients
- Chlorhexidine bathing

Enfield KB, et al. Infect Control Hosp Epidemiol 2014;35(7):810-817

Control of Simultaneous Outbreaks of CRE and XDR *A. baumannii* Infection in an ICU

Additional prevention measures not included in the CDC

- CRE prevention strategy toolkit
- Limit public access to rooms and common areas
- Enhance environmental cleanliness
  - Environmental cleaning education

  - Enhanced cleaning of common areas
  - Terminally clean rooms
  - Monitor environmental cleaning and provide feedback

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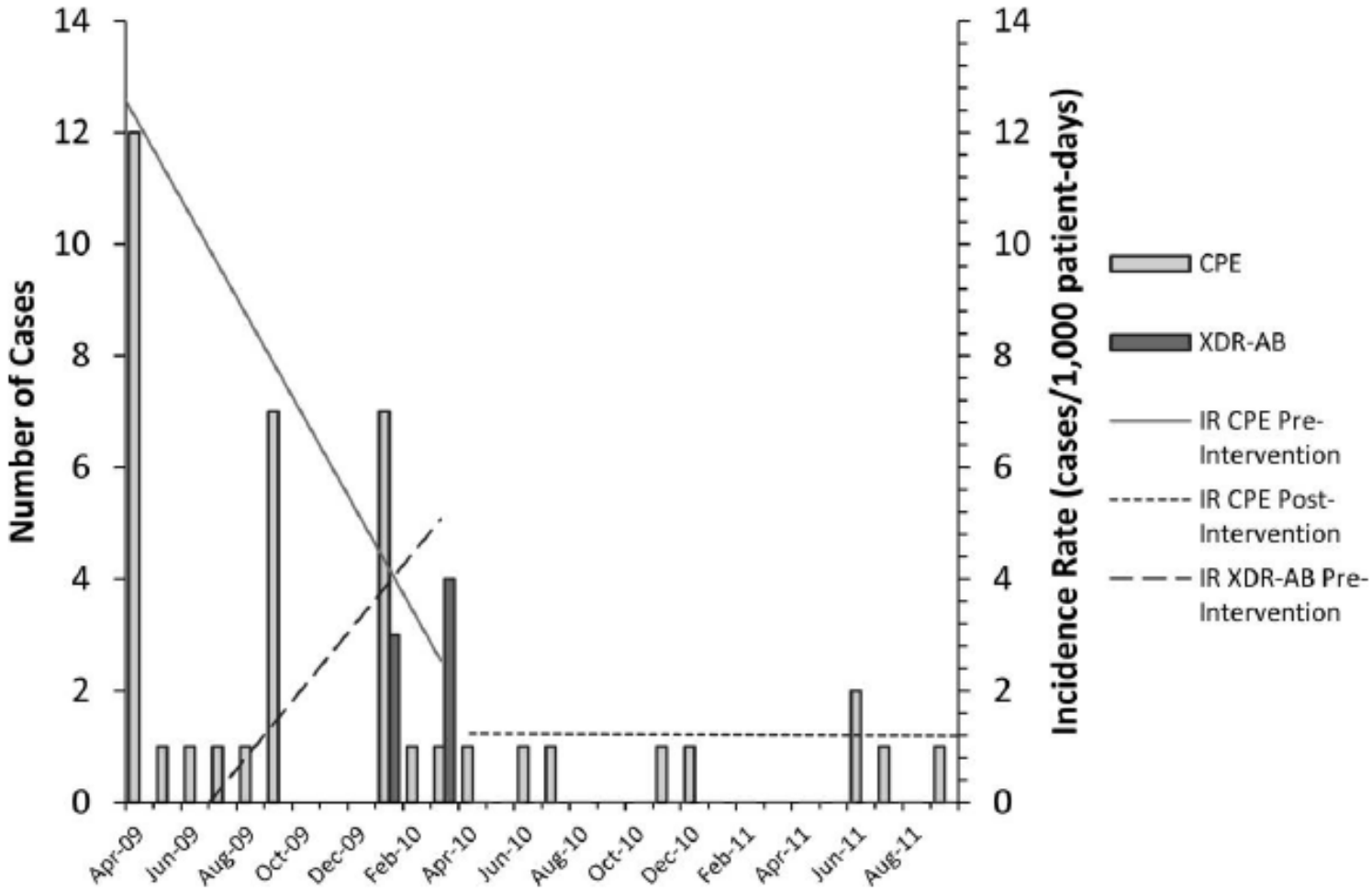
Control of Simultaneous Outbreaks of CRE and XDR *A. baumannii* Infection in an ICU



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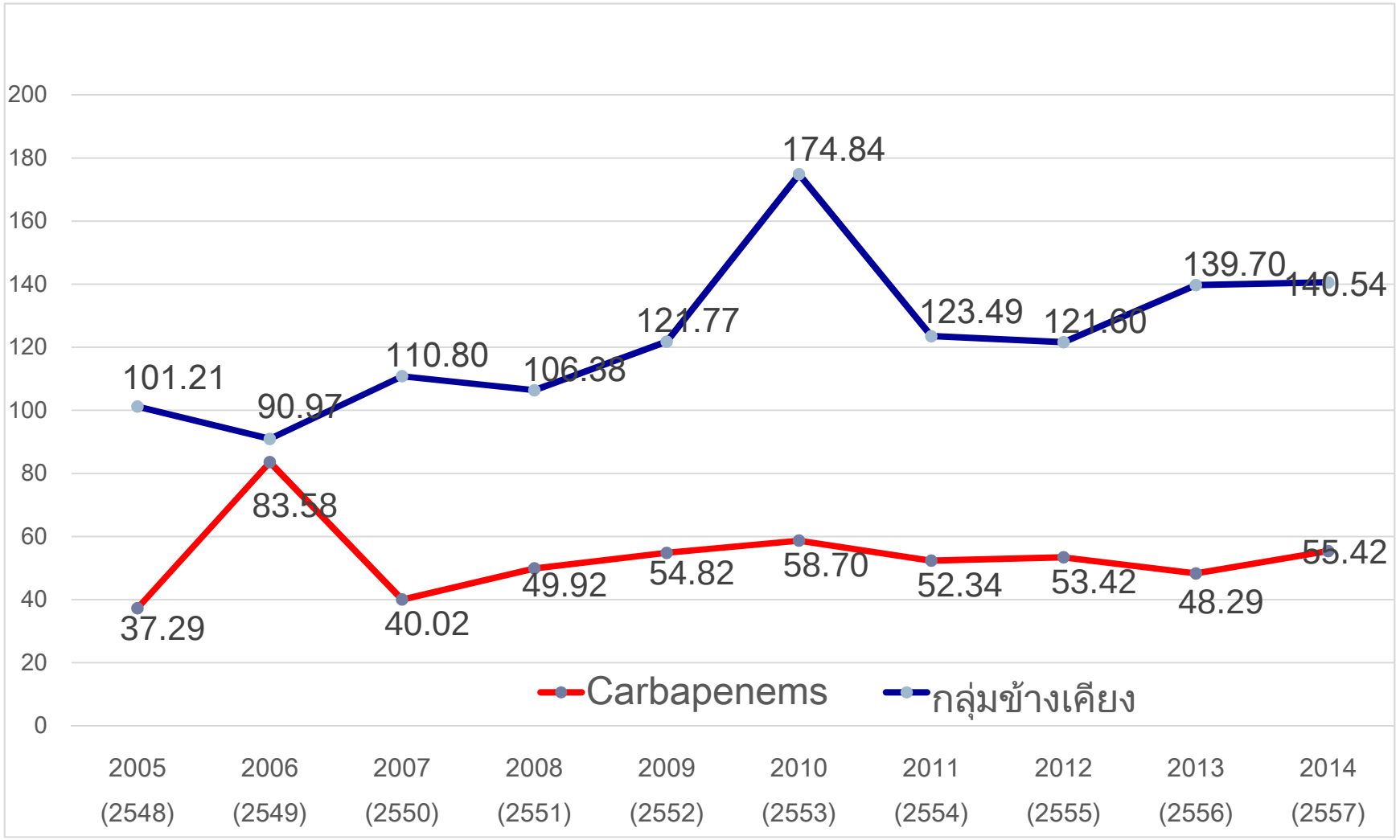
Challenges

DDD/1000 Patient-day ของยากลุ่ม Carbapenems และกลุ่มใกล้เคียง ในแต่ละปี



Are you ready?