

Rapid detection and prompt, effective isolation to prevent infection caused by CPE

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- **Increased morbidity**
- **Increased mortality**
- **Increases length of stay**
- **Anxiety**

Carbapenemase Producing Enterobacteriaceae

Gram negative bacteria –colonises the gut

Various types – VIM, **OXA-48**, NDM, IMP, KPC

Extremely resistant organism - limited treatment option –
mortality rate unacceptably high

Carbapenamase Producing Enterobacteriaceae

11 August 2010 Last updated at 14:14

New 'superbug' found in UK hospitals

By Michelle Roberts
Health reporter, BBC News

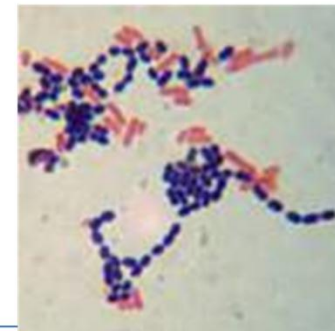
A new superbug that is resistant to even the most powerful antibiotics has entered UK hospitals, experts warn.

They say bacteria that make an enzyme called NDM-1 have travelled back with NHS patients who went abroad to countries like India and Pakistan for treatments such as cosmetic surgery.

Although there have only been about 50 cases identified in the UK so far, scientists fear it will go global.



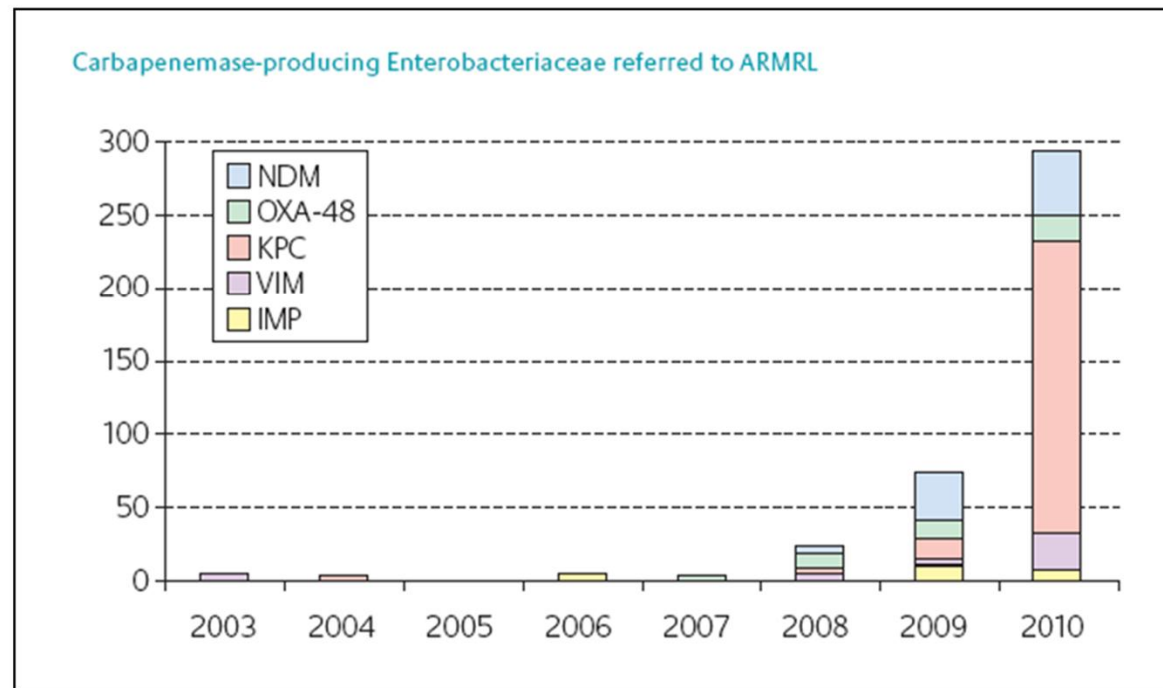
NDM-1 has been found in E.coli bacteria



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INCREASING PREVALENCE OF CARBAPENEMASES



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Advice on Carbapenemase Producers: Recognition, infection control and treatment

ARHAI

Department of Health
Advisory Committee on Antimicrobial Resistance
and Healthcare Associated Infection



Advice on Carbapenemase Producers: Recognition, infection control and treatment

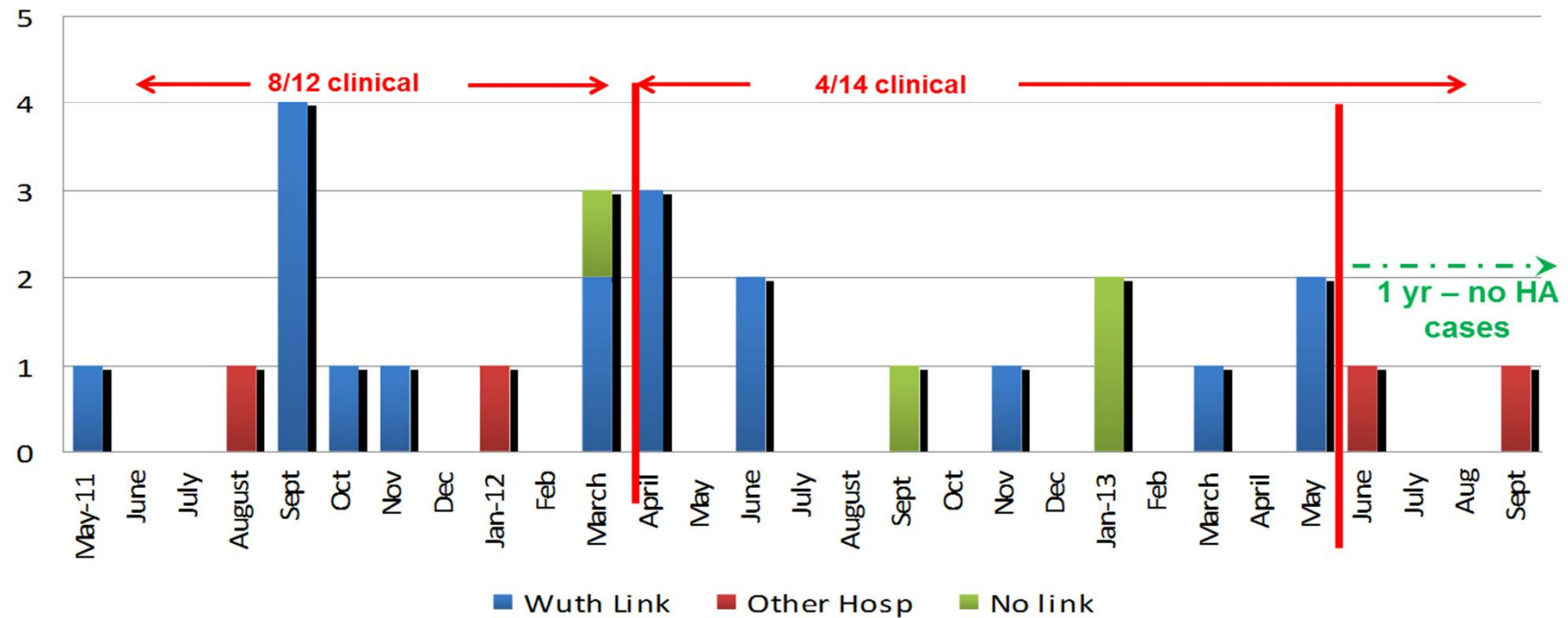
Carbapenems (imipenem, meropenem, ertapenem and doripenem) are invaluable for the treatment of infections due to multi-resistant gram-negative bacteria, including those with extended-spectrum β -lactamases. Carbapenem-resistant Enterobacteriaceae remain rare but are emerging. Their transmission characteristics and pathogenesis resemble those of more sensitive Enterobacteriaceae, but the infections are much more difficult to treat. For this reason, it is vital that NHS Trusts prevent their spread. Carbapenem resistance in Enterobacteriaceae can involve:

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VIM-4 Outbreak

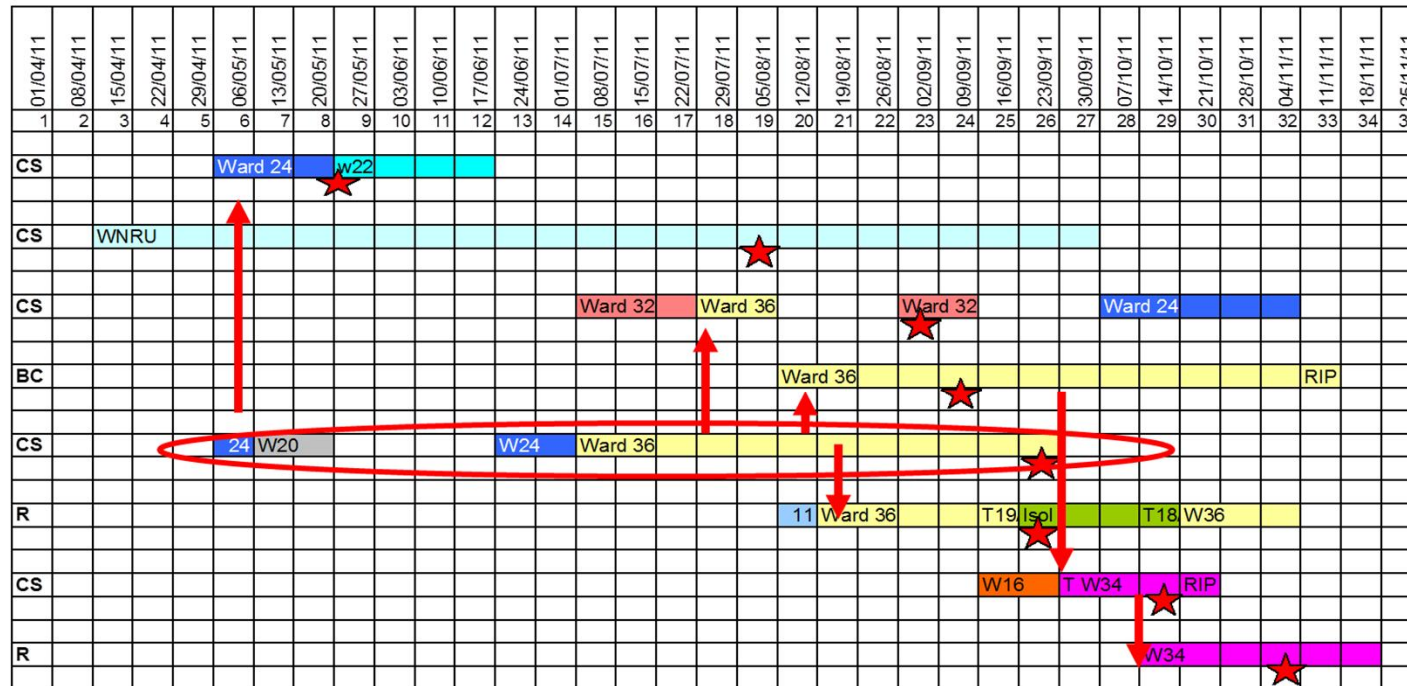
Number of VIMS
May 2011 to Sept 2013



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VIM Outbreak 2011



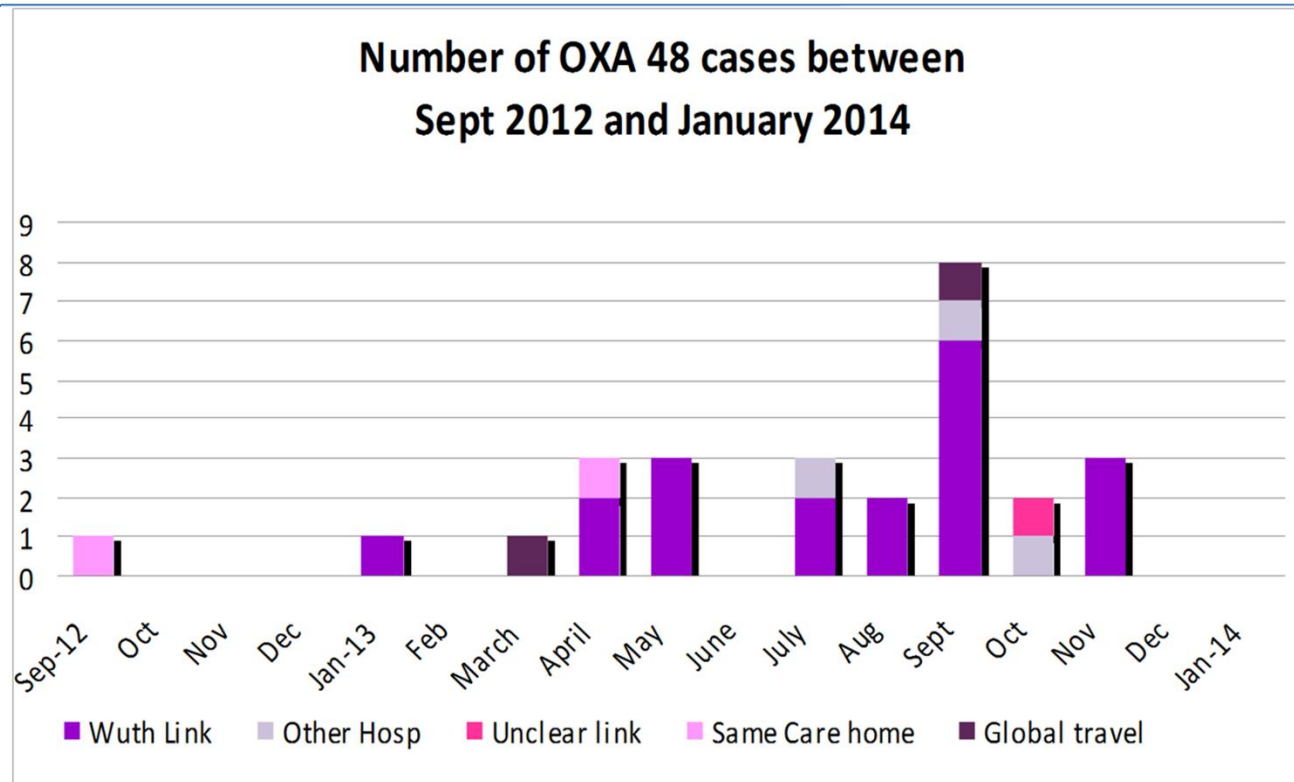
10 wards implicated!

Unidentified case

Collected
R Rectal Screening specimen
C Clinical Sample
BC Blood Cultures

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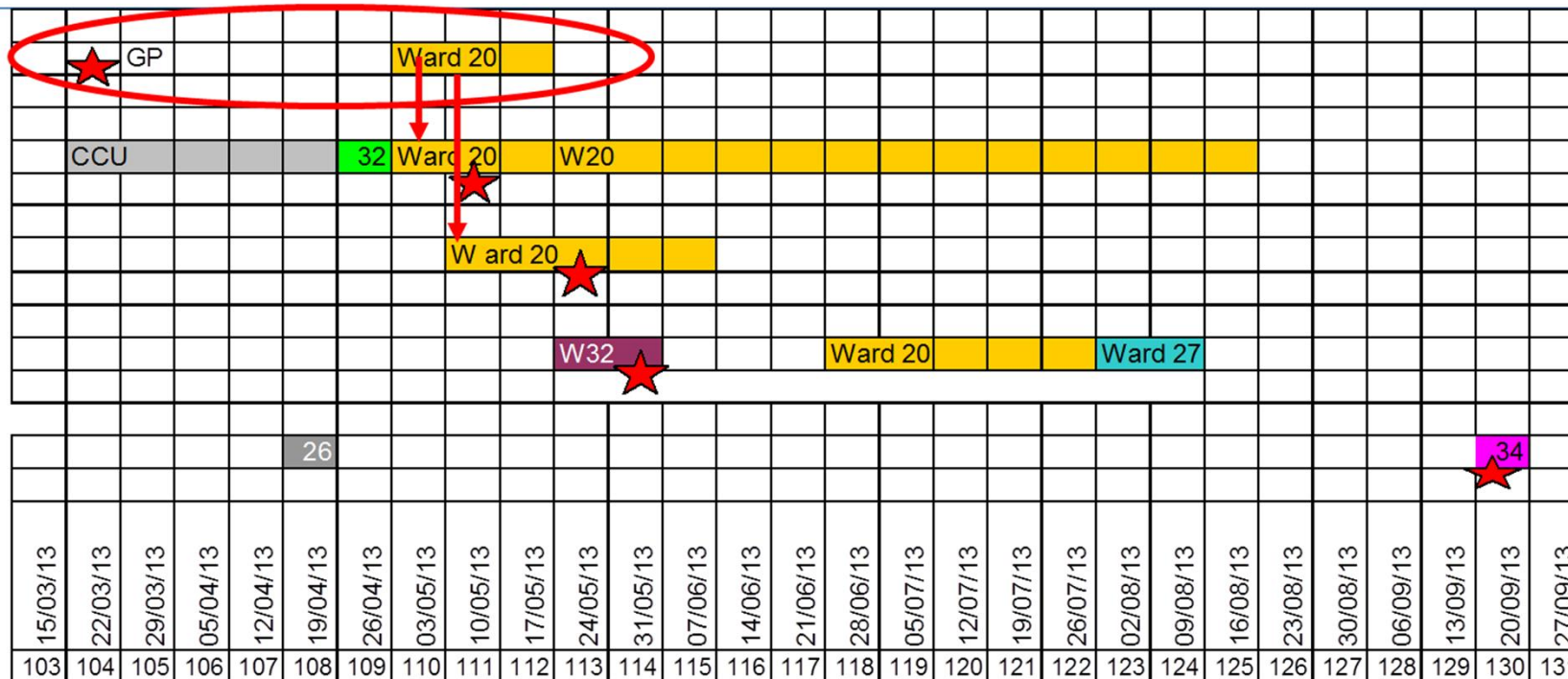
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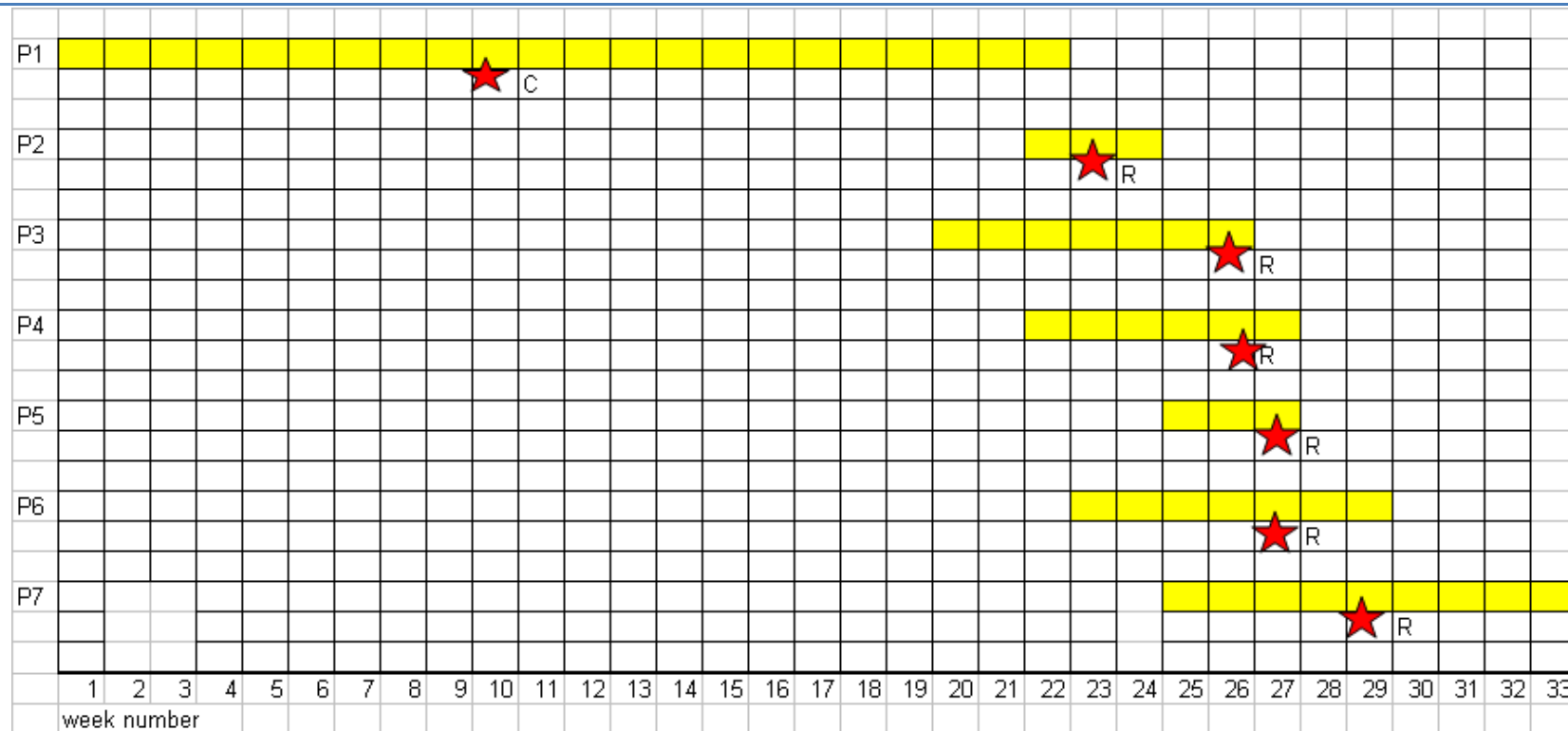
Infection Prevention and Control



- Known CPE case, isolated, but still spread

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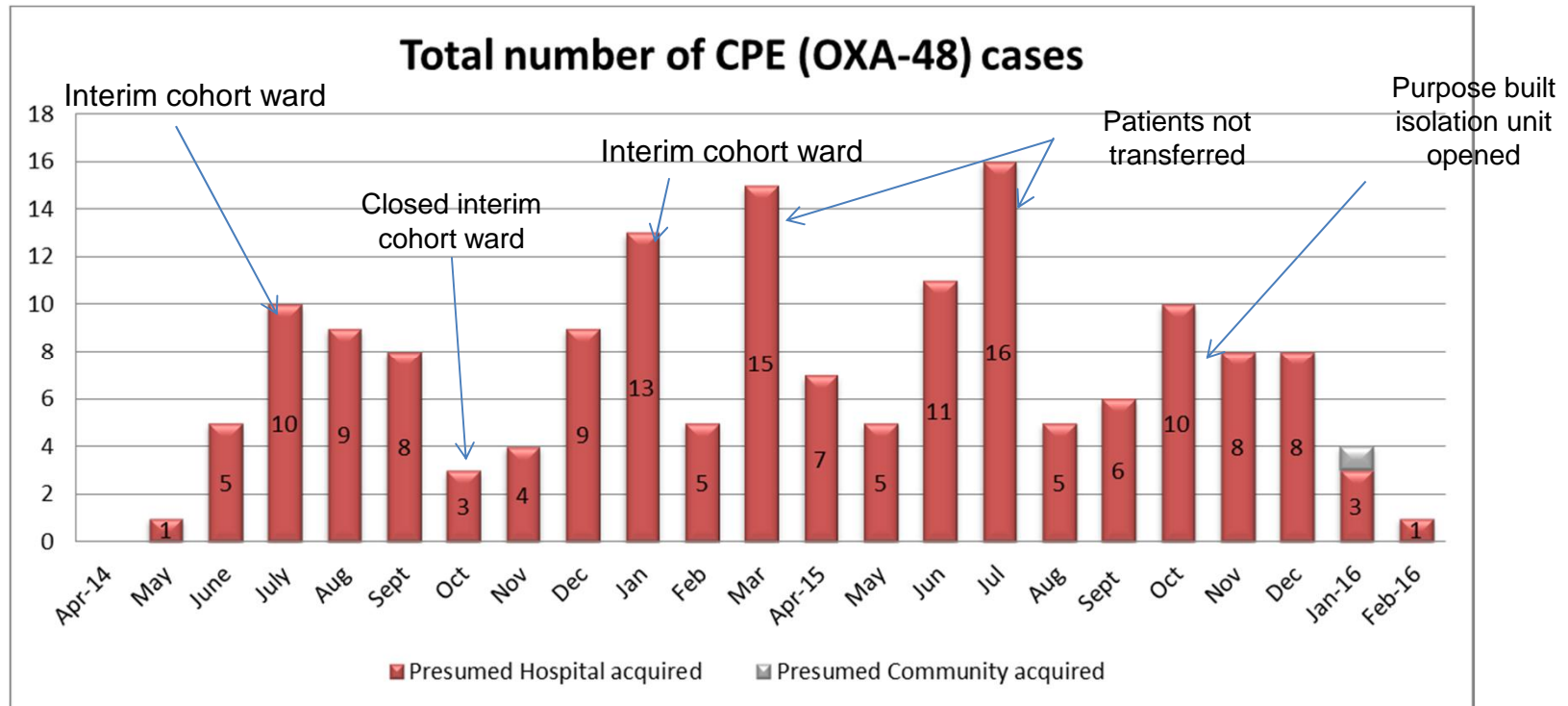
Preventative Strategies

Early Identification

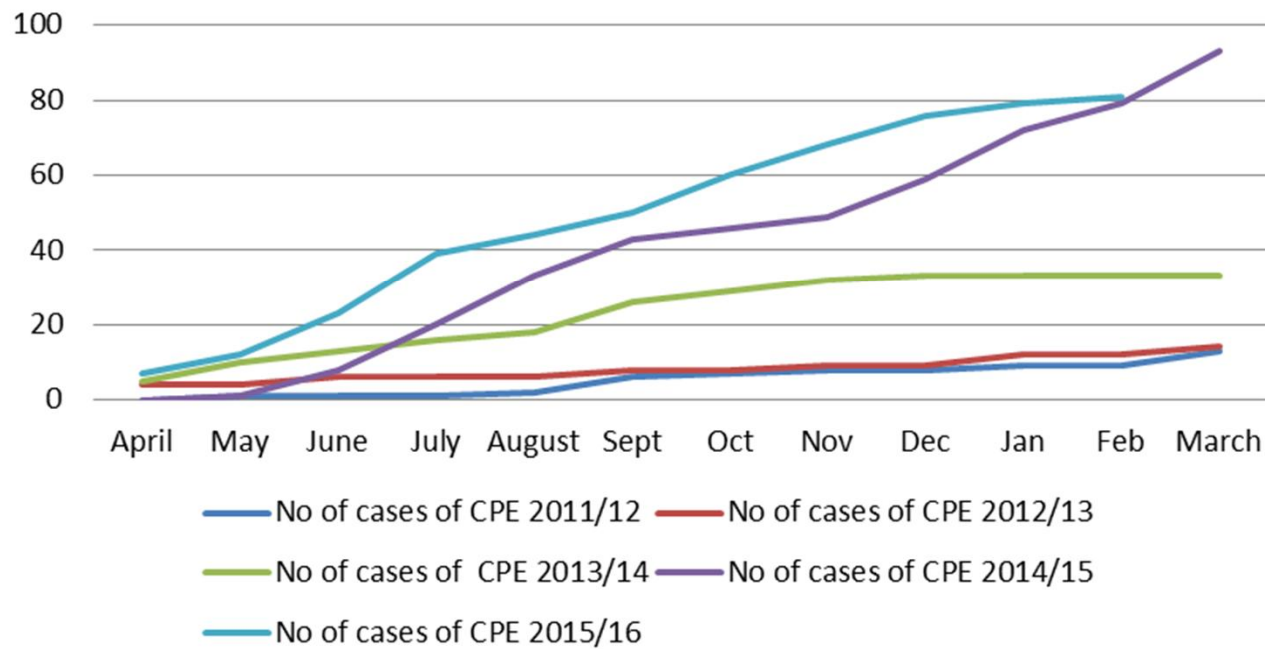
- **Electronic Alert – positive and exposed**
- **Targeted screening**
- **Rapid testing**

Prompt Effective Isolation

- **Interim cohort ward**
- **Purpose built isolation unit**



Cumulative no. of confirmed cases of CPE

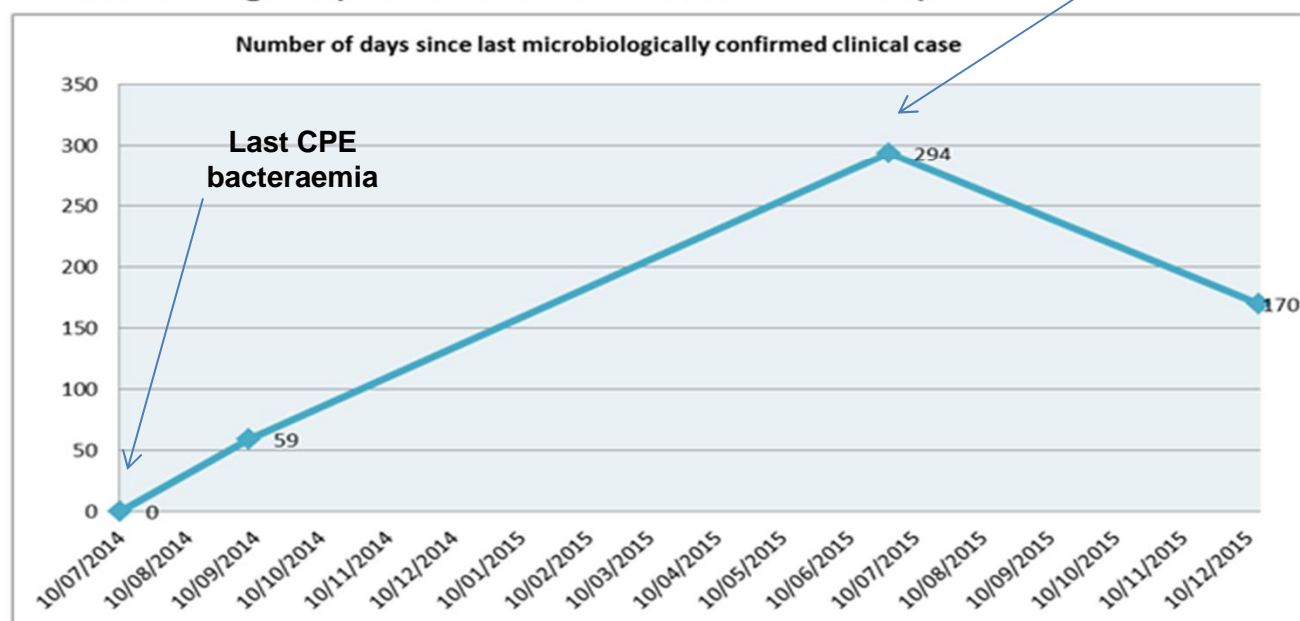


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CPE

- Successful preventative strategy
- Zero tolerance CPE bacteraemia – 464 days
- Microbiologically confirmed clinical case – 170 days



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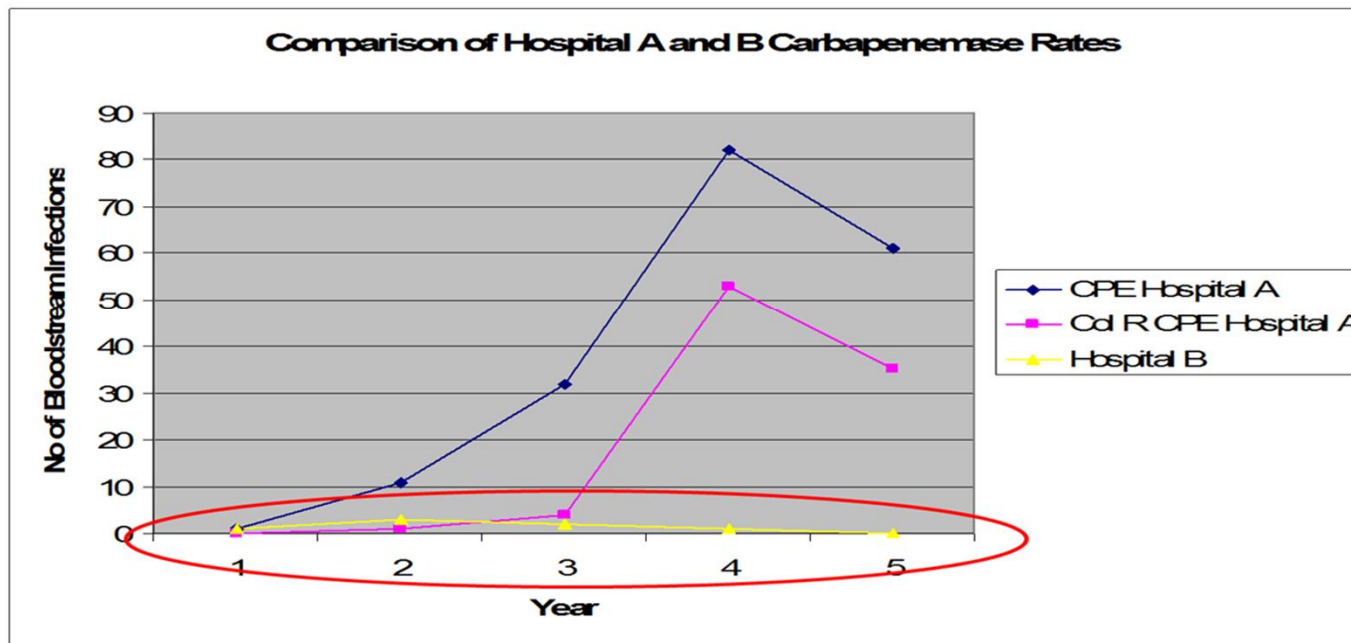
Ref lab susceptibilities

Amikacin	Ampicillin	Aztreonam	Cefotaxime	Cefoxitin	Cefpirome	Ceftazidime	Ciprofloxacin	Colistin	Ertapenem	Gentamicin	Imipenem	Meropenem	Piperacillin	Pip/tazo	Tigecycline	Tobramycin
8	>64	>64	256	>64	64	>64	>8	1	8	32	16	4	>64	>64	2	32
4	>64	>64	256	64	64	256	>8	1	8	32	8	2	>64	>64	2	nt
4	>64	>64	256	>64	64	256	>8	1	8	>32	8	2	>64	>64	2	nt
8	>64	64	>256	>64	64	128	>8	2	16	>32	16	8	>64	>64	1	32
16	>64	>64	256	>64	>64	256	>8	1	8	>32	16	4	>64	>64	1	32
8	>64	64	>256	>64	>64	32	>8	2	4	>32	8	2	64	64	1	16
16	>64	>64	>256	>64	>64	>256	>8	2	>16	1	32	16	>64	>64	1	16
8	>64	>64	>256	>64	>64	>256	>8	1	>16	1	16	8	>64	>64	1	16
8	>64	64	256	>64	16	64	>8	1	16	>32	16	8	>64	>64	0.5	32
8	>64	64	128	>64	64	64	8	1	8	32	8	4	>64	>64	1	16
8	>64	64	256	>64	64	64	>8	1	16	>32	8	4	>64	>64	0.5	16

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Spreading and Worsening?



Giani et al. Large Nosocomial Outbreak of Colistin-Resistant, Carbapenemase-Producing *Klebsiella pneumoniae* Traced to Clonal Expansion of an *mgrB* Deletion Mutant J Clin Microbiol 53:3341–3344

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**Thank you for Listening
Any Questions?**