

# Observational study of the epidemiology and impact of carbapenemase producing Gram negative rods in South West England from 2006-2014

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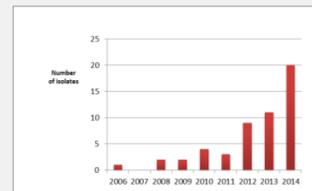
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## Background

The number of carbapenemase producing bacteria isolated from clinical samples in SW England - population approximately 5 million - has gradually increased since the first isolate was submitted to the national Antimicrobial Resistance and Healthcare Associated Infections Reference Unit (AMRHA) from this region in June 2006

Figure 1:  
Carbapenem resistant isolates received by AMRHA from SW England 2006-2014



## Objectives

- Determine the incidence of carbapenemase-producing bacteria isolated from clinical samples in SW England between June 2006 and October 2014
- Identify whether application of national guidance (PHE, 2013) can identify the risk factors for acquisition, and scope the associated clinical burden

## Methods

Patient identifiers were sourced from the database of AMRHA. Clinical information was collected via telephone interviews with Medical Microbiologists and Infection Control nurses

## Results

### Isolates

27 patients were colonised or infected with 35 carbapenemase-producing Enterobacteriaceae

	Carbapenemase (number of isolates)
<i>Klebsiella pneumoniae</i>	NDM (6), OXA-48 (6), KPC (6), IMP (1), VIM (1), NDM+OXA-48 (1)
<i>Klebsiella oxytoca</i>	OXA-48 (1)
<i>Enterobacter cloacae</i>	NDM (2), OXA-48 (1) IMP (1)
<i>Escherichia coli</i>	NDM (5), KPC (1), IMP (1), OXA-48 (1)
<i>Citrobacter sp.</i>	NDM (1)

## Conclusions

- Carbapenemase- producing bacteria remain rare across SW England relative to other UK regions
- Risk factors for colonisation/infection are **foreign travel to endemic areas** and **healthcare exposure** in the preceding year, but *risk stratification based on these factors will fail to identify all patients*
- Infection/ colonisation was associated with an extended length of stay (44 days)
- Regional surveillance including determination of risk factors will be crucial to control the spread of resistance and facilitate prompt effective antimicrobial therapy

## Results

### Isolates

4 patients were colonised or infected with 5 carbapenemase- producing *Pseudomonas aeruginosa*

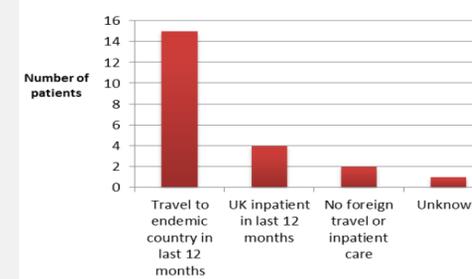
	Carbapenemase (number of isolates)
<i>Pseudomonas aeruginosa</i>	NDM (2), VIM (3)

### Patient location

Of 31 patients, 22 were admitted to hospital, 8 remained in the community and for 1 patient location was unknown.

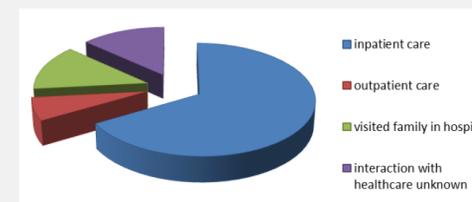
### Risk factors

Figure 2:  
Risk factors for infection/ colonisation in inpatients



The endemic countries were India (6) Greece (2), Sri Lanka (2), Barbados (1), Egypt (1), Macedonia (1) Morocco (1) and USA (1)

Figure 3:  
Activity in endemic country



### Clinical implications

14 of 31 (45%) were treated for infection  
7 of 31 (23%) were colonised  
10 of 31 (32%) implication uncertain  
Length of stay (available in 18 of 22 cases) averaged 44 days

## References

Public Health England. Acute Trust Toolkit for the early detection, management and control of carbapenemase producing Enterobacteriaceae. Crown copyright 2013.