



# Screening for *Carbapenemase*-producing *Enterobacteriaceae* following transmission: Experience at a large Victorian healthcare facility

Stephanie Spilsbury & Denise Del Rosario-Kelly  
CPE Project Coordinators  
Infection Prevention & Hospital Epidemiology  
Alfred Health

The authors of this presentation have nil conflicts of interest.

The latest “superbug” -  
What is *Carbapenemase*-producing  
*Enterobacteriaceae* (CPE)?



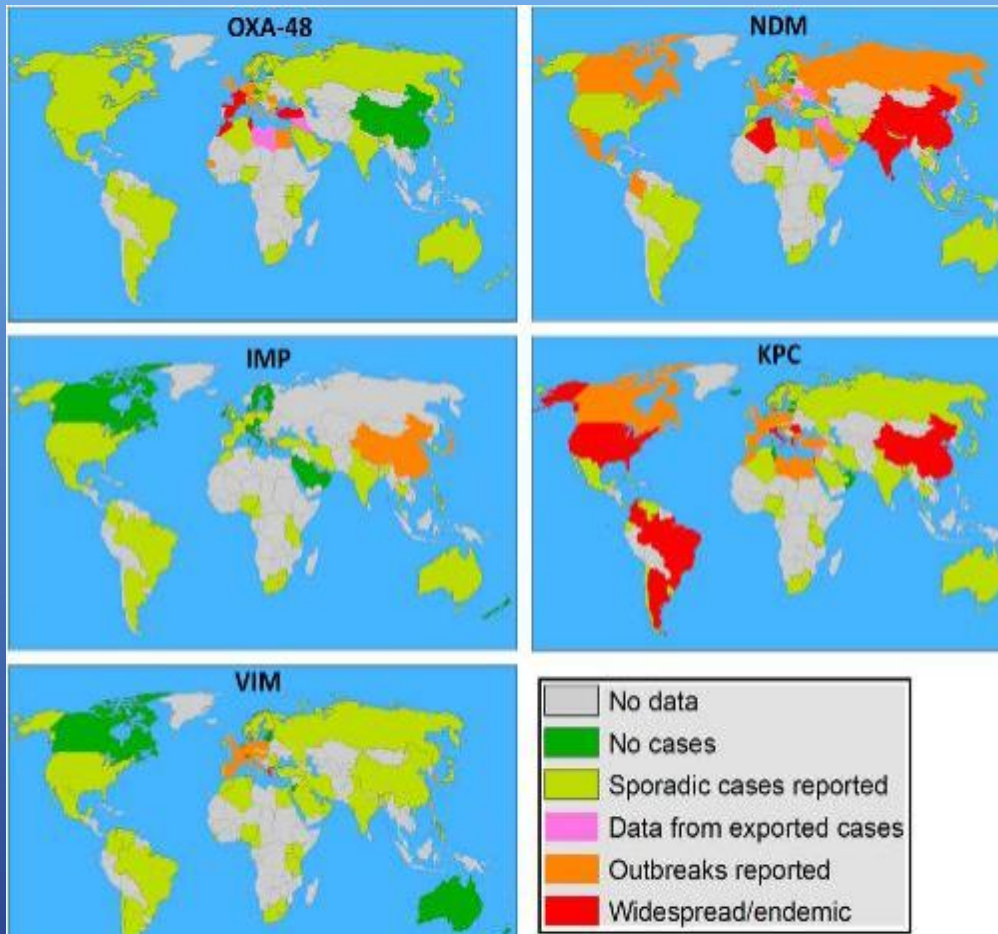
# Overview of CPE

- CPE are Enterobacteriaceae, the largest family of gram-negative bacteria that cause human infection.
- CPE are highly resistant bacteria and are an emerging problem in Australian hospitals.
- CPE are resistant to carbapenems, a class of ‘last resort’ antibiotics for treating serious infections. The most common way that Enterobacteriaceae become resistant to carbapenems is by producing an enzyme called a carbapenemase.

# Overview of CPE

- Enterobacteriaceae are of key importance as human pathogens and as vehicles for the dissemination of antimicrobial resistance because many patients can carry the organism in bowel flora without any adverse harms (colonisation), yet also causing potentially untreatable infections. Furthermore, the carbapenemase resistance gene can easily spread between different species and strains within the Enterobacteriaceae family.
- As most cases represent colonisation, outbreaks are often hidden.
- The increasing resistance of Enterobacteriaceae to most or even all types of antibiotics are a significant global public health threat.


# Global distribution of CPE



(Friedman et al 2017)

- Compared with North America, Europe and the Middle East, the number of CPE cases identified in Australia is significantly lower, due in part to our geographical isolation.

# CPE in Victoria

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 The deadly superbug CRE is also known as Carbapenemase-producing Enterobacteriaceae (CPE). Picture: Centers for Disease Control and Prevention (US)

**VIC NEWS**

## Deadly superbug CRE, kills two in Melbourne, spreads across Victoria, infecting 60

GRANT McARTHUR, HEALTH EDITOR, Herald Sun  
June 17, 2015 11:07am

**UPDATE:** A DEADLY superbug has killed two people and may have claimed the lives of up to 18 Victorians.

NATIONAL VICTORIA **HEALTHCARE**

## New superbug case at St Vincent's Hospital and St George's health service in Kew

By Julia Medew

**Updated** 19 May 2016 – 7:32pm, first published at 6:32pm



- [What is CRE?](#)
- [Patients urged to help combat potentially deadly superbug](#)

NATIONAL VICTORIA

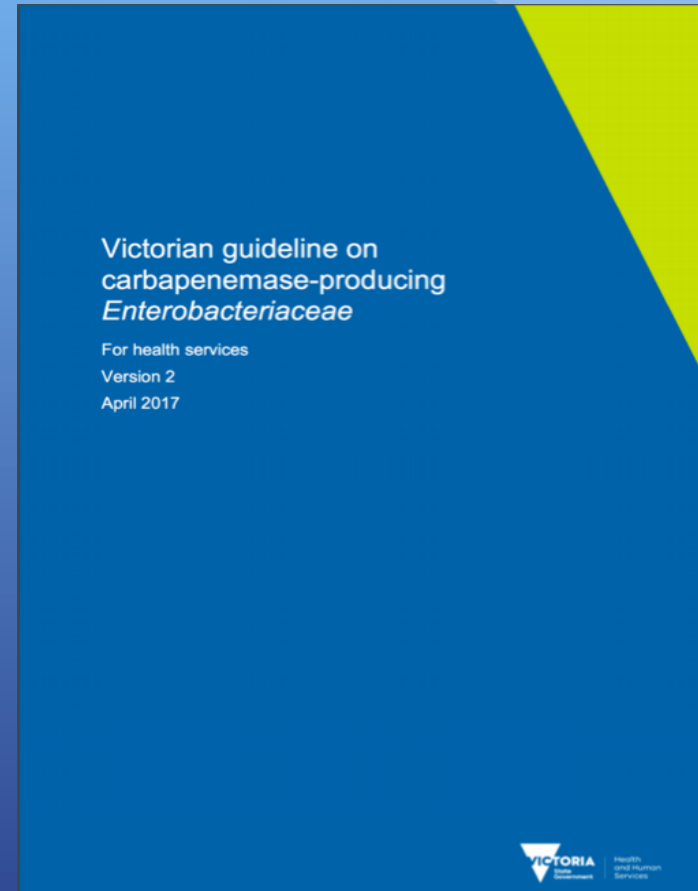
## Deadly superbug found spreading in Victorian hospitals

By Julia Medew

**Updated** 17 June 2015 – 9:17am, first published 16 June 2015 – 3:17pm

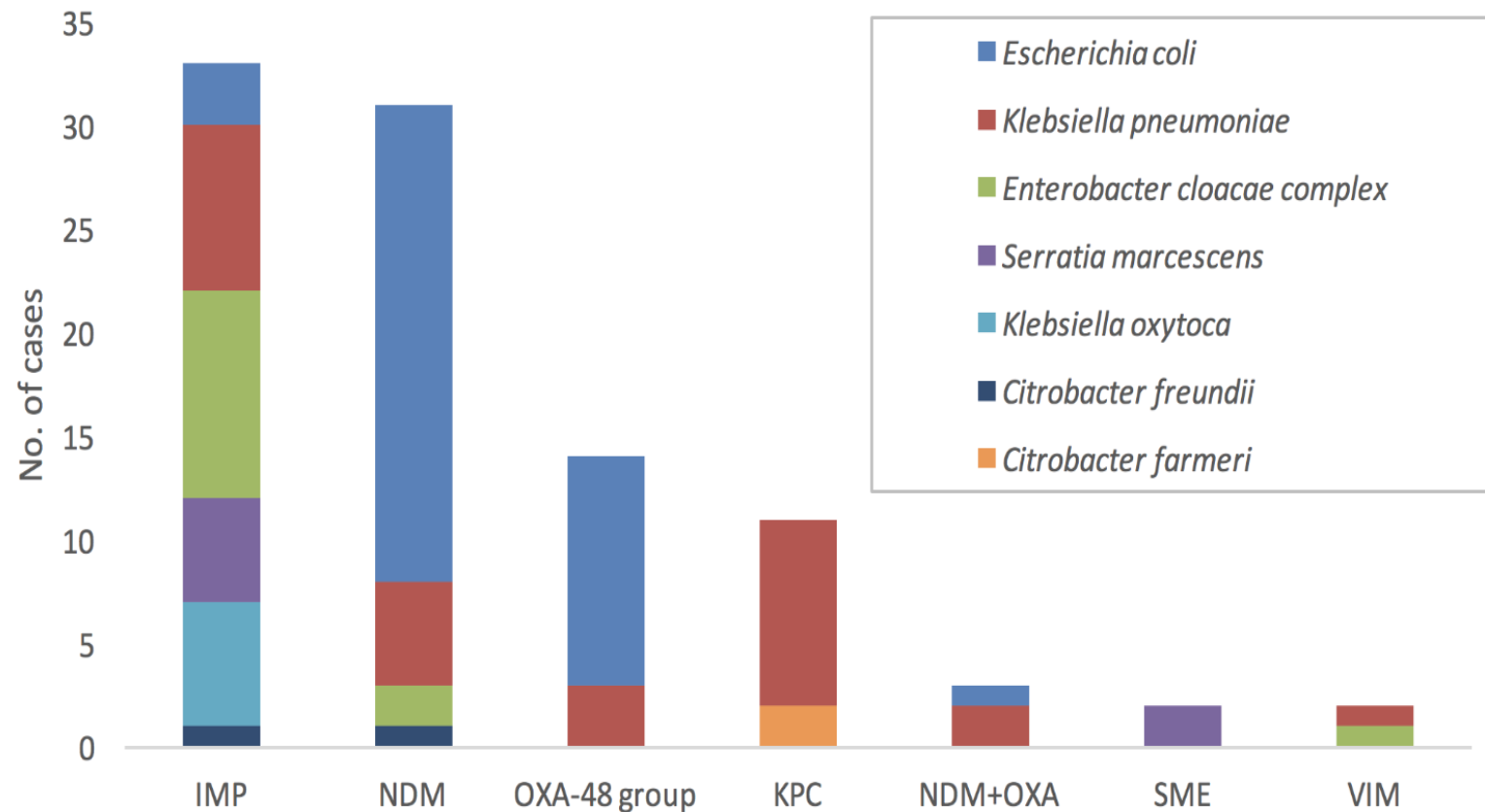
- [What is CRE?](#)

# Victorian State Guidelines on the management of CPE





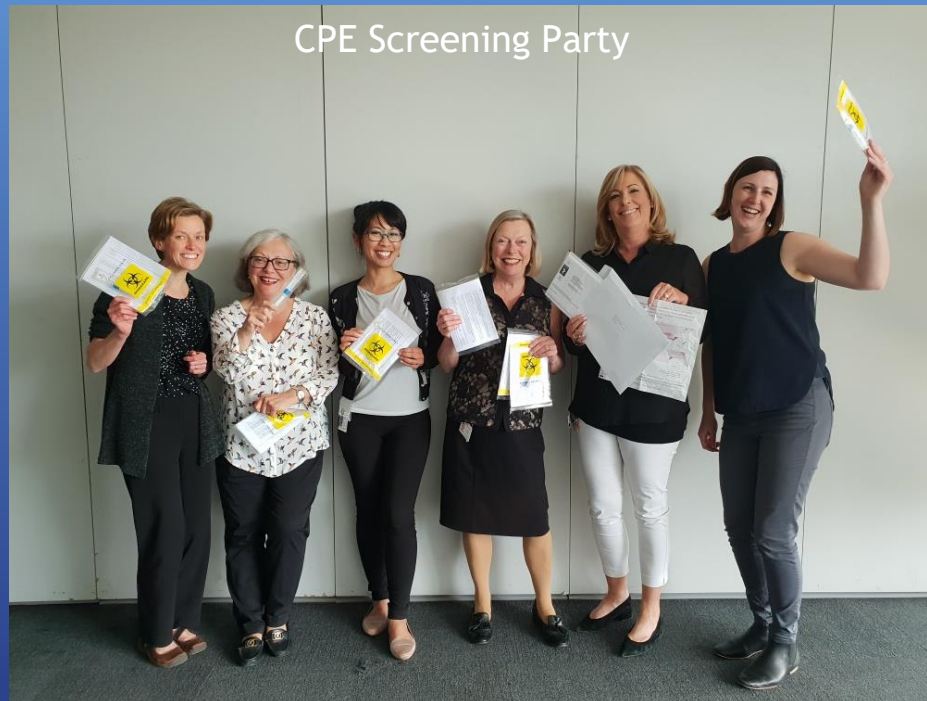
# Victorian State Guidelines on the management of CPE



Cases by genus and carbapenemase gene group Victoria, 2016

# Management of CPE - What did we do?

- At Alfred Health, we have 1.0 EFT purely for CPE management, and all up a team comprising of 14 staff.
- We represent the frontline to this public health threat, and we are acutely aware of how challenging the issues are when managing the risk of CPE.



# TRA - Intensive Care Unit, The Alfred

- In 2017, the Intensive Care Unit at The Alfred was declared a TRA following the detection of *Enterobacter cloacae* IMP4 in 3 patients. Subsequent surveys have detected additional cases of CPE.

<b>Total Patients</b>	<b>980</b>
<b>Deceased</b>	<b>128</b>
<b>Negative</b>	<b>520</b>
<b>Not yet screened</b>	<b>324</b>
<b>Positives</b>	<b>2 (Same organism)</b>

# TRA - Rehabilitation ward, Caulfield Hospital

- A Rehabilitation ward at Caulfield Hospital was declared a TRA following the detection IMP-4-producing *Enterobacter cloacae* complex in 2017 . Following active surveillance for CPE over several weeks, 1 case of CPE was detected.

Total Patients	69
Deceased	1
Negative	54
Not yet screened	14
Positives	1 (Same organism)

# Challenges of CPE Management

- By adhering to the Victorian State CPE management guidelines, our capacity to detect and control CPE has increased enormously. However, whilst our management and responses to CPE at our health care facility have helped contain the problem, the threat remains.



# Ongoing CPE Management 2017-2018

Following further several cases, we initiated a proactive program (outside of Victorian guidelines) of active screening for high-risk patients for CPE colonisation.

Indication (2017 - 2018)	Screened	Positive
ICU Point Prevalence Screening	707	3
ICU Discharge Screening	2476	6
ICU Ward Contacts	952	5
Other Ward Point Prevalence Screening	269	2
<b>TOTAL</b>	<b>4404</b>	<b>16 (0.4%)</b>

# Thank you

