Summary Report on Carbapenemase Producing Enterobacterales (CPE)

April 2023

This is a summary report on CPE in Ireland for the period April 1st 2023 to April 30th 2023

1. THE REPORT IS BASED LARGELY ON DATA RELATED TO THE HSE ACUTE HOSPITAL OPERATIONS BUT ALSO INCLUDES DATA RELATED TO ISOLATES FROM OTHER ACUTE HOSPITALS AND THE COMMUNITY.

RESIST

Antimicrobial Resistance & Infection Control Programme

Key points.

- There were **86** new CPE patients identified in April 2023.
- 26,823 CPE surveillance samples were reported tested in HSE laboratories in April 2023
- The provisional total of new patients for the first 18 weeks of 2023 is 336. The total for the corresponding period in 2022 was 267.

Additional details

Week 15-Week 18 (3rd April 2023-30th April 2023)

- Total of 104 CPE patient isolates were received, **86** were newly identified CPE patients in this period.
- 4 environmental isolates were received.

Figure 1 – Number of newly detected patients with CPE by the National CPE Reference Laboratory Service per week.

This figure is based on data from the National CPE Reference Laboratory Service. It is intended that it be updated monthly.
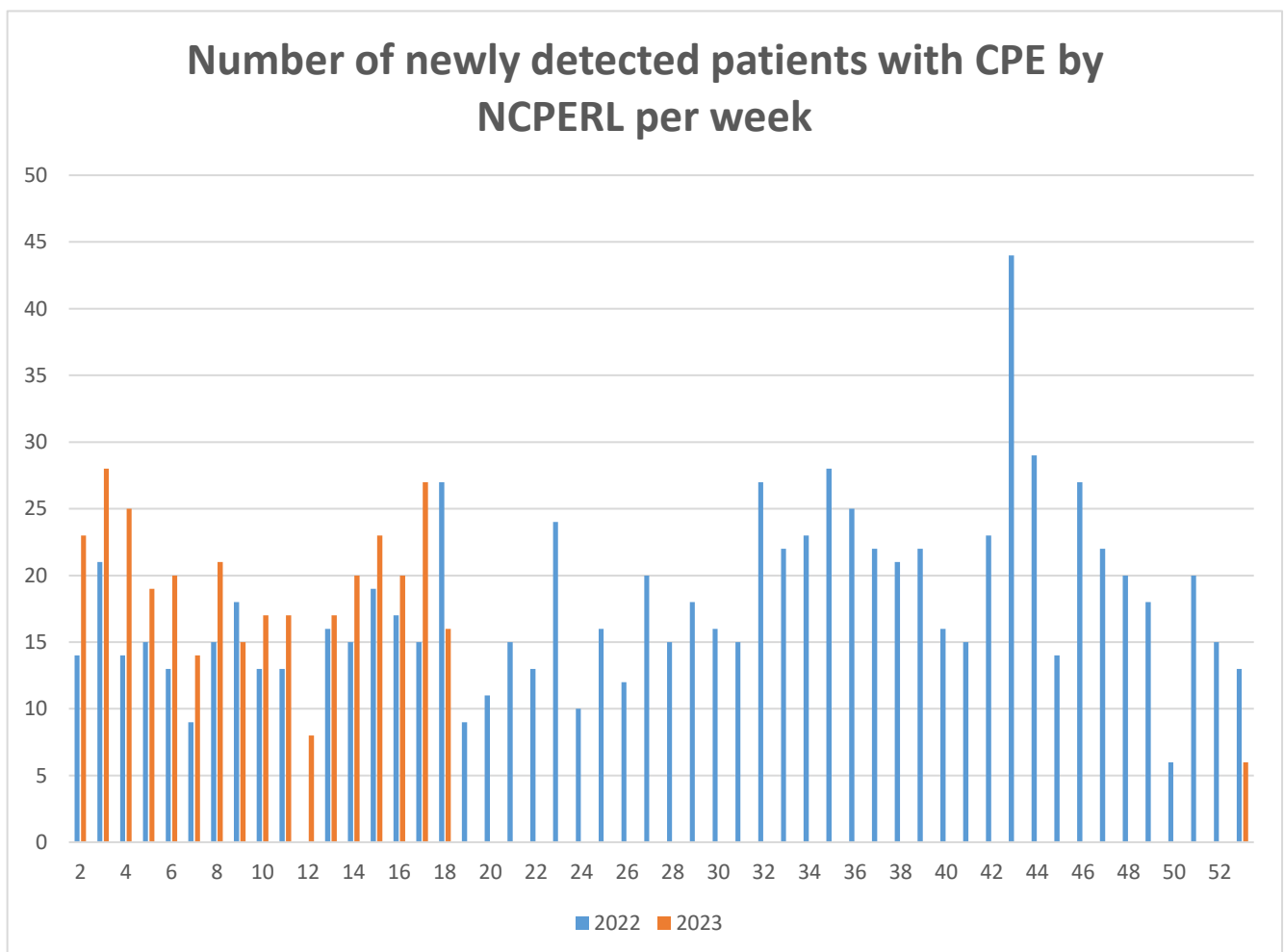
This figure illustrates the total number of people newly detected with CPE each week in 2022 (blue) and 2023 (orange).

Table 1 - Hospitals with current outbreaks (as per April 2023 return for Business Information Unit (BIU), HSE)
This figure is based on data collated by the HSE Business Information Unit (BIU). It is intended that it be updated monthly.

HOSPITAL GROUP	HOSPITALS REPORTING CPE OUTBREAKS
Children's Hospital Group	No outbreaks reported
Dublin Midlands Hospital Group	Tallaght University Hospital
Ireland East Hospital Group	St. Luke's General Hospital Kilkenny St. Vincent's University Hospital
RCSI Hospital Group	No outbreaks reported
Saolta Hospital Group	Galway University Hospital Mayo University Hospital Portiuncula University Hospital
South / South West Hospital Group	Tipperary University Hospital
University Limerick Hospitals Group	University Hospital Limerick

(NOTE: **47 of 50 hospitals** have provided data returns to the question "Do you have an active/current CPE outbreak in your hospital during this month?")

Figure 2 – Number of CPE patients by year by sample site (& Number of invasive CPE cases notified to Public Health)

This figure is based on data from the National CPE Reference Laboratory Service. It is intended that it be updated annually.
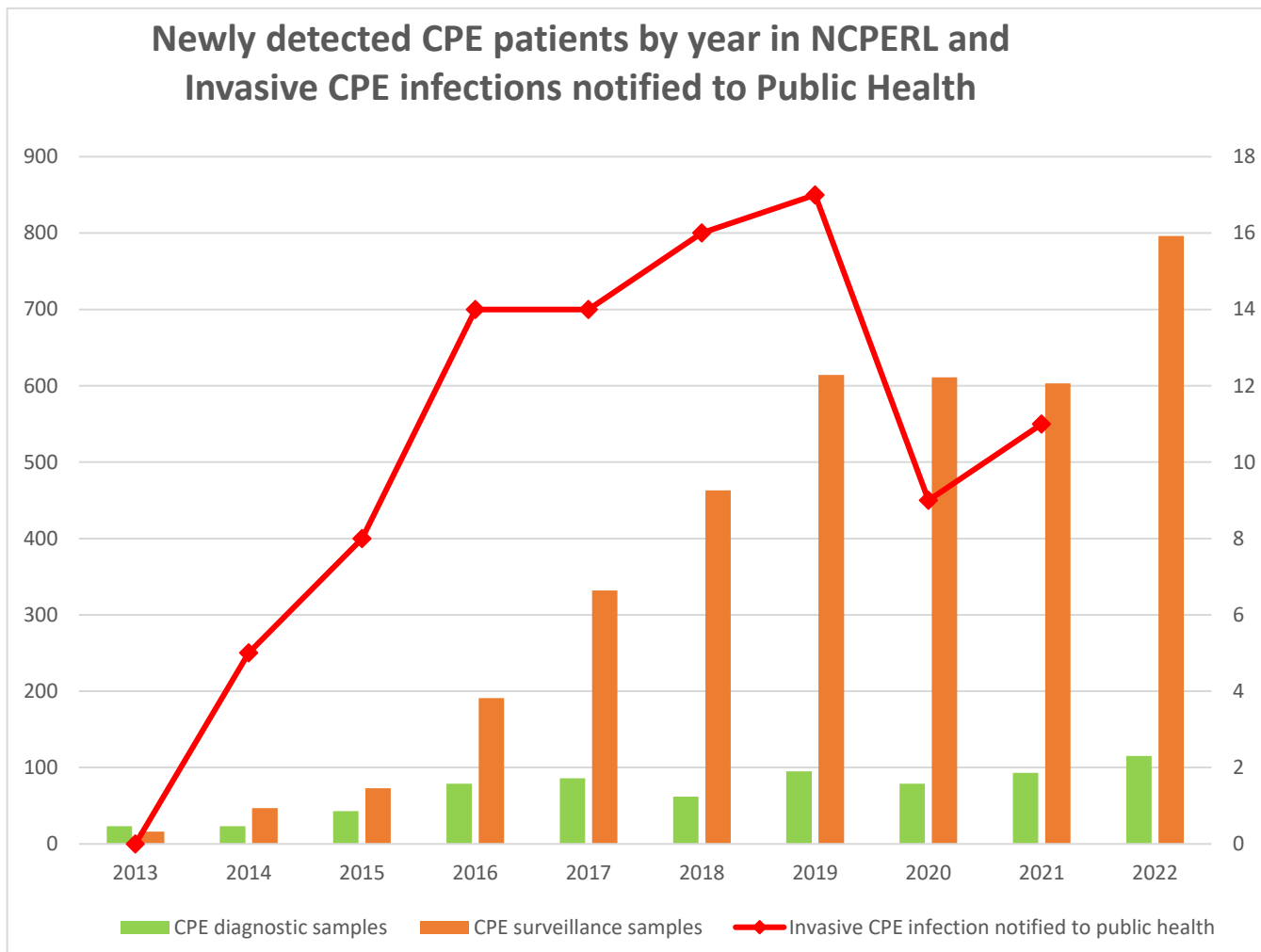
Newly detected CPE patients by year in NCPERL and Invasive CPE infections notified to Public Health

Legend: CPE diagnostic samples (green) · CPE surveillance samples (orange) · Invasive CPE infection notified to public health (red line)

Comment: This figure illustrates the number of newly detected people with CPE from surveillance samples (orange) and diagnostic samples (green) each year since 2013. The red line illustrates the number of CPE invasive infections (mainly blood stream infections) based on notifications to CIDR. <u>Note</u> that invasive CPE infection data notified to public health is not yet available for the year 2022.

The number of people with CPE first detected from surveillance samples increased each year from 2013 to 2019 and remained relatively stable from 2019 to 2021. The year 2022 saw an increase in new cases.
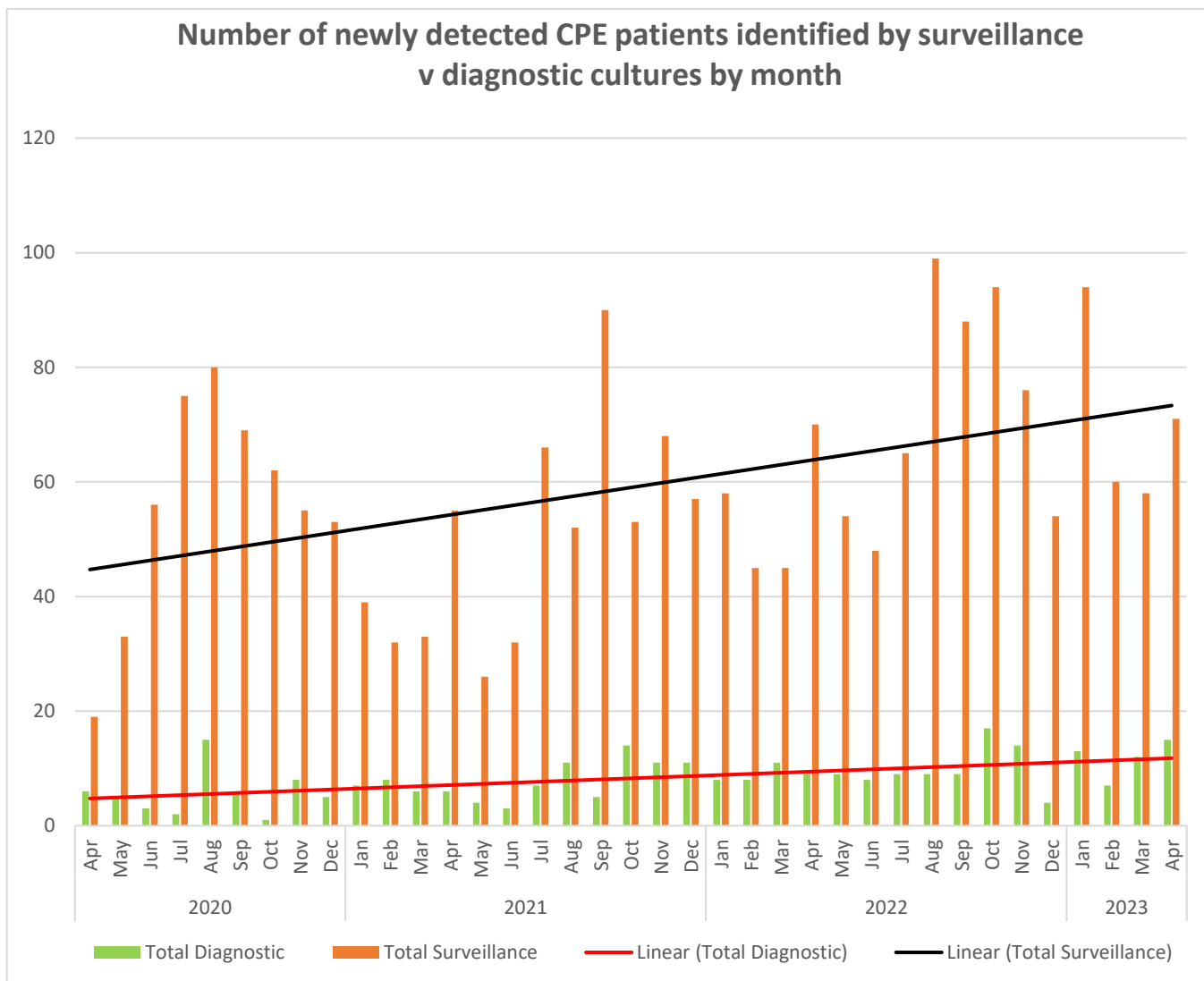
In general isolates from diagnostic samples are likely to reflect clinical infection. Isolates from surveillance samples reflect detection of CPE gut colonisation in the absence of clinical CPE infection.

If most cases of CPE are detected from diagnostic samples this reflects a system in which relatively late detection of people with CPE in the context of clinical infection is the norm because the preceding asymptomatic colonisation is not detected. This would suggest that interventions to control spread are being applied late in most cases.

Detection of most cases of CPE in surveillance samples, <u>as is currently the case</u>, reflects a system in which most people with CPE are detected relatively early in their contact with the healthcare system allowing early application of measures to control spread.

Figure 3 – Total numbers of CPE patients identified by Surveillance and Diagnostic samples for the 3 most recent years.

This figure is based on data from the National CPE Reference Laboratory Service. It is intended that it be updated monthly.

Comment: This figure illustrates the number of newly detected people with CPE from surveillance samples (orange) and diagnostic samples (green) each month since April 2020. The red line illustrates the trend for number of people with newly detected CPE from diagnostic samples. The black line illustrates the trend for number of people with newly detected CPE from surveillance samples.

The trend line for people with CPE first detected from surveillance samples shows an upward trend. The number of people with CPE first detected from diagnostic samples shows a slight upwards trend.

In general isolates from diagnostic samples are likely to reflect clinical infection. Isolates from surveillance samples reflect detection of CPE gut colonisation in the absence of clinical CPE infection.

If most cases of CPE are detected from diagnostic samples this reflects a system in which relatively late detection of people with CPE in the context of clinical infection is normal because the preceding asymptomatic colonisation is not detected.

Detection of most cases of CPE in surveillance samples reflects a system in which most people with CPE are detected relatively early in their contact with the healthcare system allowing early application of measures to control spread.

Figure 4 – Proportion of CPE isolated from people identified by Surveillance and Diagnostic samples for the 3 most recent years.
This figure is based on data from the National CPE Reference Laboratory Service. It is intended that it be updated quarterly.
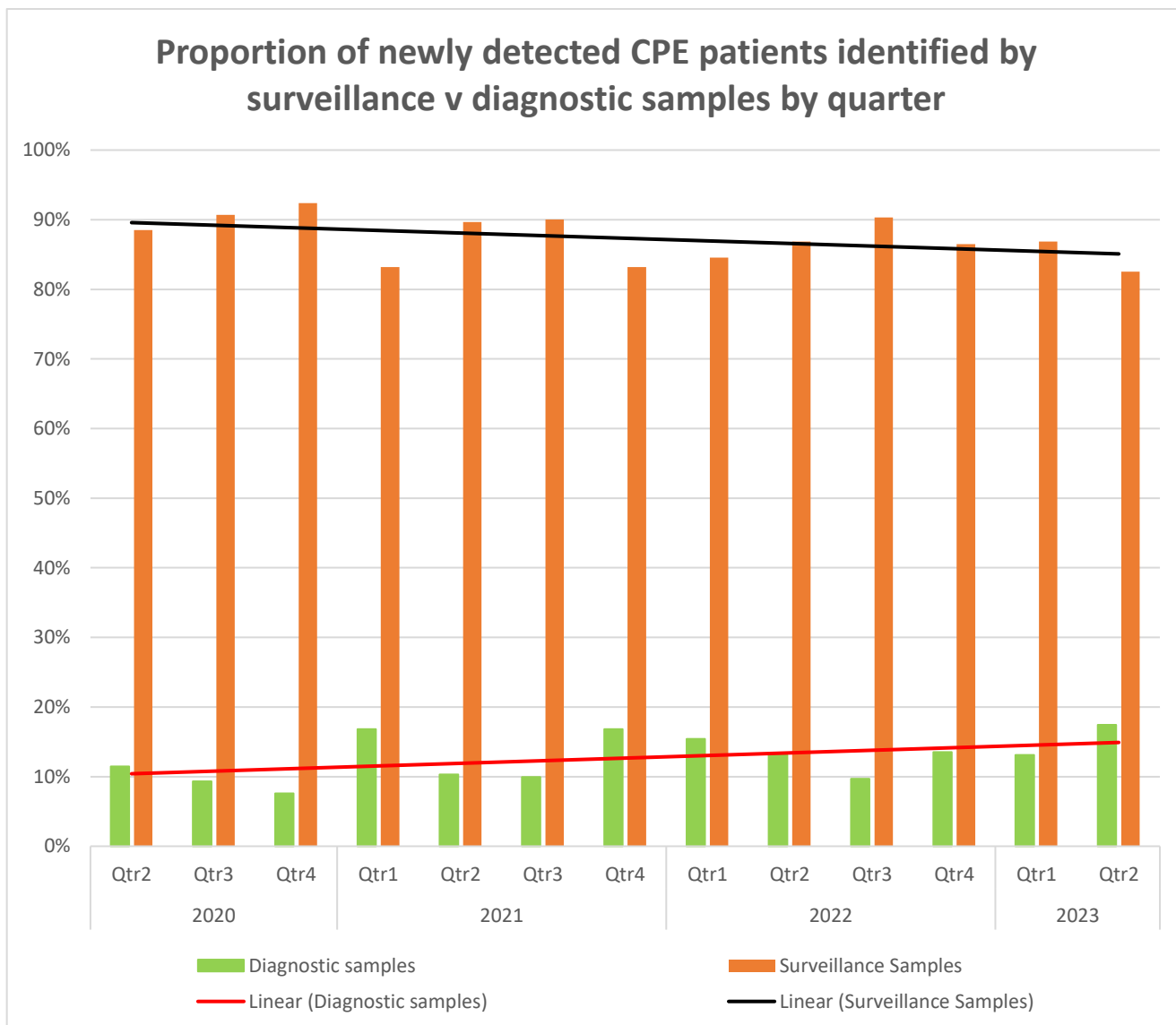
Comment: This figure illustrates the percentage of newly detected people with CPE from surveillance samples (orange) and diagnostic samples (green) each quarter for the last 3 years. The red line illustrates the trend for percent of new detections of CPE from diagnostic samples. The black line illustrates the trend for percent of new detections of CPE from surveillance samples.

The proportion of first isolates from diagnostic samples declined with increased surveillance consistent with improved control of CPE. This now appears to be stable around 10 to 15% of isolates from diagnostic samples with some quarter to quarter fluctuation.

Figure 5 - Number of CPE surveillance samples per hospital group & (Rate per 10,000 Bed Days Used)

This figure is based on data collated by the HSE Business Information Unit (BIU). It is intended that it be updated quarterly.


Number of CPE screens Q2 2022

- Saolta Hospital Group
- University Limerick Hospitals Group
- South/South West Hospital Group
- Ireland East Hospital Group
- Dublin Midlands Hospital Group
- RCSI Hospitals Group

14,182 (907)
12,683 (803)
14,953 (1,079)
6,469 (836)
15,857 (769)
12,370 (737)
1,953 (782) Children's Hospital Group

Number of CPE screens Q3 2022

- Saolta Hospital Group
- University Limerick Hospitals Group
- South/South West Hospital Group
- Ireland East Hospital Group
- Dublin Midlands Hospital Group
- RCSI Hospitals Group

15,923 (997)
12,811 (791)
15,838 (1,000)
7,038 (925)
15,995 (742)
10,692 (667)
2,037 (786) Children's Hospital Group

Number of CPE screens Q4 2022

- Saolta Hospital Group
- University Limerick Hospitals Group
- South/South West Hospital Group
- Ireland East Hospital Group
- Dublin Midlands Hospital Group
- RCSI Hospitals Group

18,857 (1,148)
12,911 (730)
16,189 (1,005)
6,448 (832)
15,127 (703)
13,024 (836)
2,086 (705) Children's Hospital Group

Number of CPE screens Q1 2023

- Saolta Hospital Group
- University Limerick Hospitals Group
- South/South West Hospital Group
- Ireland East Hospital Group
- Dublin Midlands Hospital Group
- RCSI Hospitals Group

18,708 (1125)
13,518 (745)
16,308 (992)
6,657 (829)
15,737 (720)
11,416 (723)
2,119 (739) Children's Hospital Group

Figures 6 & 7: Number of Environmental isolates of CPE by location and by type of variant (2018-2023)

These figures[1] are based on data from the National CPE Reference Laboratory Service.

Comment: The transmission and spread of CPE in the acute hospital setting remains the key driver of new CPE detections. Since late 2018, there has been an increasing recognition that, in addition to direct and indirect person-to-person spread, environmental reservoirs of these organisms in acute hospitals represents a significant source. Environmental testing can inform control measures in hospital wards that are deemed potential high risk areas. Moist areas, for example showers, sinks and toilets are the most common locations from which CPE have been detected. This figure provides a summary of CPE from acute hospital environments by site. The increase in 2019 was likely to be largely related to increased awareness and testing. The low number of isolates 2020 is likely to be related to reduced sampling activity in the context of COVID-19.
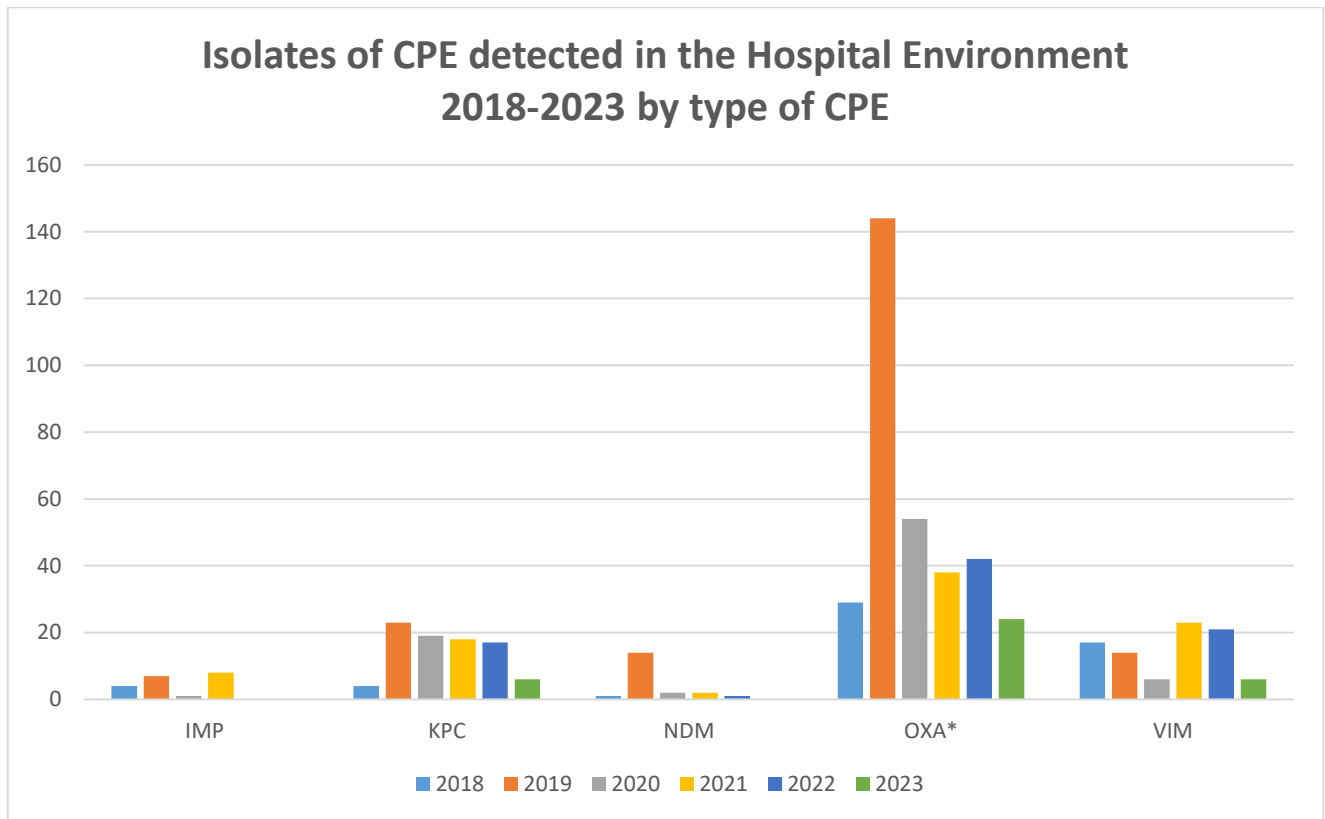
> *2023 data in Figure 6 & 7 up to the end until 30th April 2023*

Figure 6

Isolates of CPE detected in the Hospital Environment 2018-2023 by type of site

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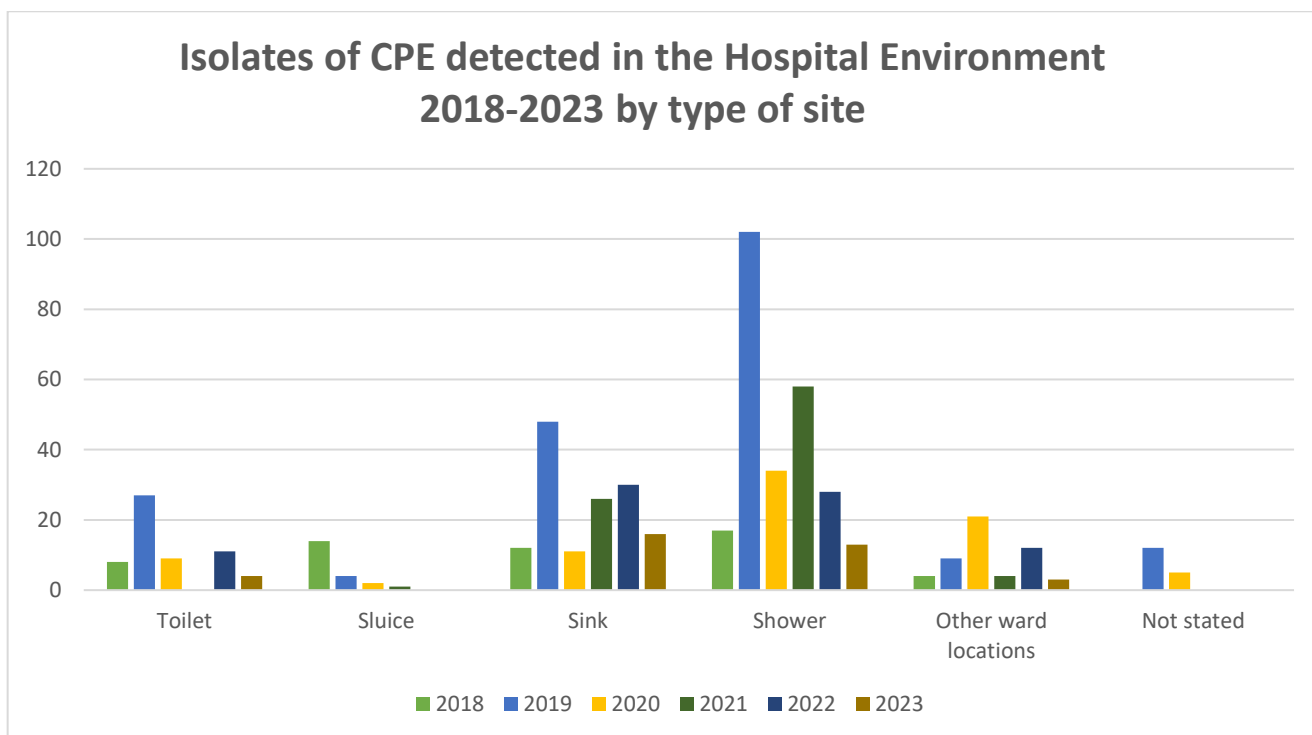
[1] Note: From March 2023, a subgroup of isolates that were previously reported under 2019 were, upon review re-categorized to 2018.

Figure 7

Isolates of CPE detected in the Hospital Environment 2018-2023 by type of CPE

* 16 isolates are dual producers (6=OXA-48+VIM-1, 1=OXA-48+GES-5, 4=OXA-48+NDM-1, 1=OXA-48+NDM-5, 2 2=OXA-48+KPC-2 & 1=OXA-48+IMP-4, 1=OXA-24+OXA-58).

(Figures 6 & 7 excludes carbapenemase producing organisms other than Enterobacterales and excludes CPE detected from sewage sampling)

ENDS