Summary Report on Carbapenemase Producing Enterobacterales (CPE)

February 2021

This is a summary report on CPE in Ireland[1] for the period February 1st 2021 to February 26th 2021

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 40 new CPE patients identified in February 2021.
- 18,803 CPE surveillance samples were reported tested in HSE laboratories in January 2021.
- The provisional total of new patients for the first 9 weeks of 2021 is 94. The total for the corresponding period in 2020 was 106.

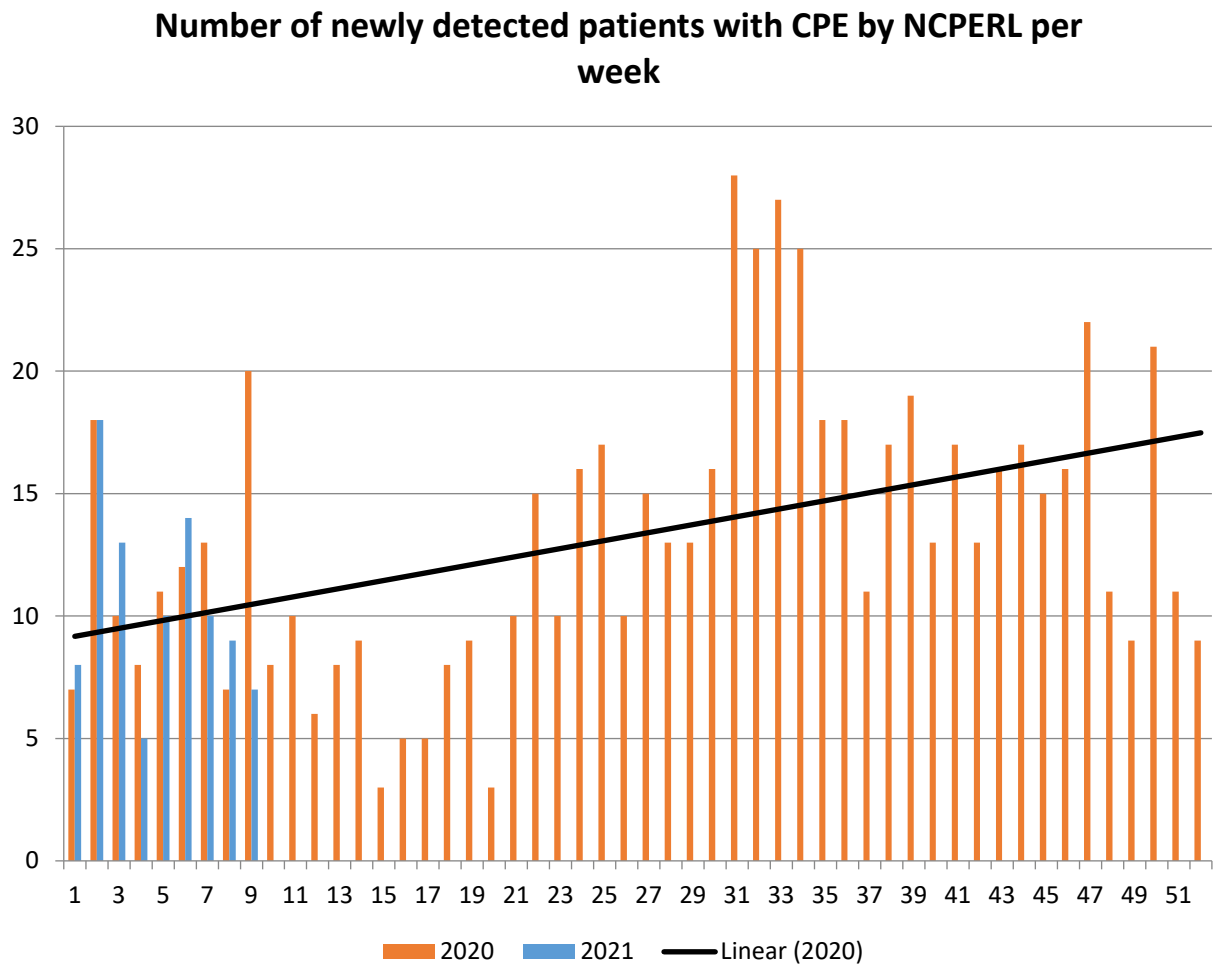
Additional details

Week 6-9 (1st February 2021-26th February 2021)

- Total of **64** CPE isolates were received, **40** were newly identified CPE patients in this period.
- No 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 2020 (orange) and 2021 (blue). The black line represents the trend in weekly numbers through 2020.

Table 1 - Hospitals with current outbreaks (as per January 2021 return for Business Information Unit (BIU), HSE)

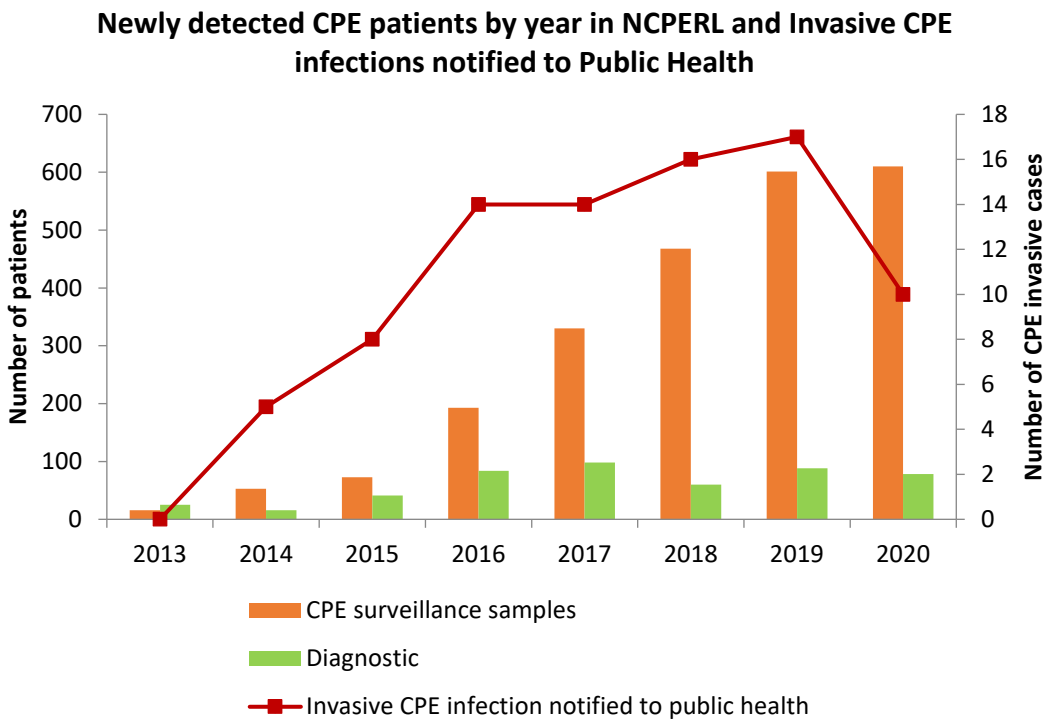
This figure is based on data collated by the HSE Business Information Unit (BIU). It is intended that it be updated monthly.

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

(NOTE: **48 of 49 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.



NOTE: THE DATA ON INVASIVE CPE INFECTION NOTIFIED TO PUBLIC HEALTH ARE PROVISIONAL AND SUBJECT TO CHANGE

Comment: The total provisional number of CPE detected from blood stream infections in 2020 was 10. However healthcare provision in 2020 was very atypical in the context of the Covid-19 pandemic therefore this change should be interpreted with caution particularly as the number of positive surveillance and diagnostic samples does not show a corresponding decline.

Overall the data to the end of 2019 support a conclusion that measures to control the spread of CPE have been generally effective. The number of invasive CPE (provisional) has fallen and the number of CPE from diagnostic samples is at or close to a plateau level.

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. The total number of CPE detected from blood stream infections in 2020 (provisional) was 10 compared with 17 in 2019.

The number of people with CPE first detected from surveillance samples increased each year from 2013 to 2019. The number of people with CPE first detected from diagnostic samples peaked in 2017. Some year to year fluctuation is expected.

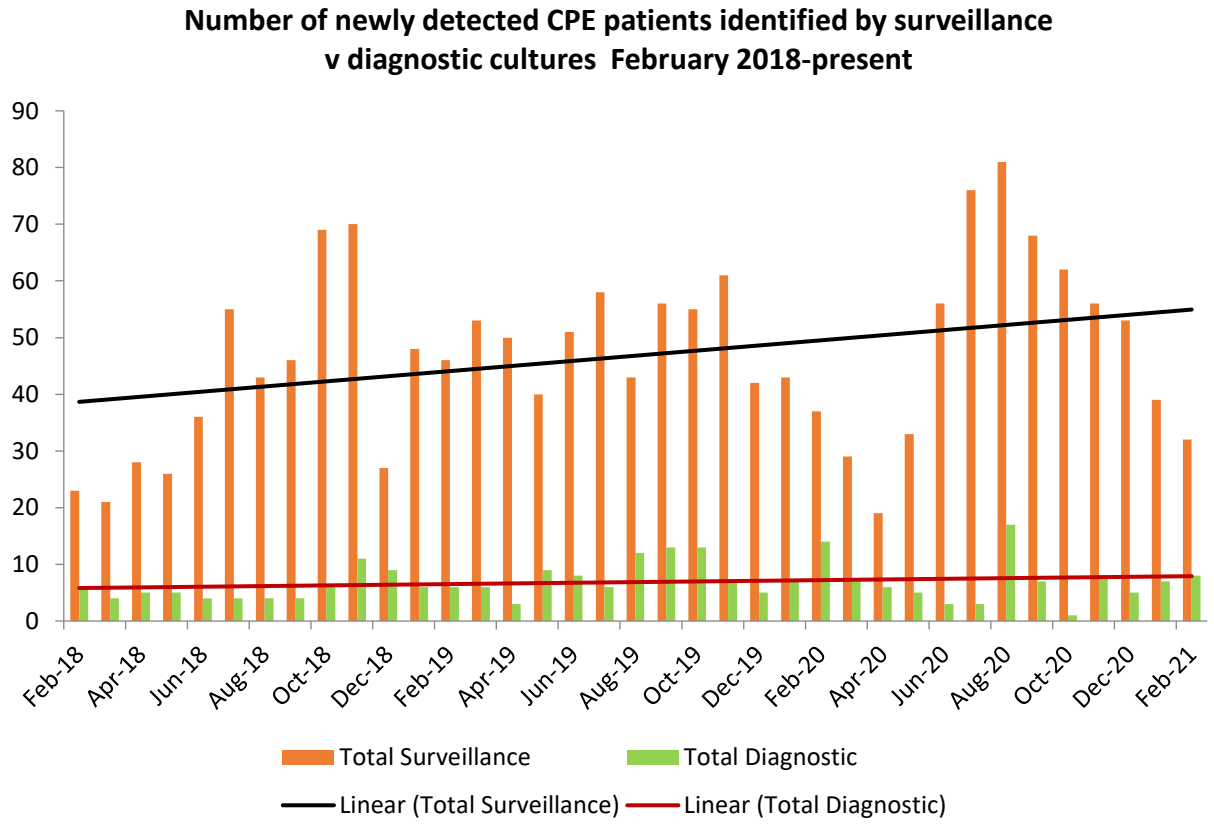
In general isolates from diagnostic samples are likely to reflect clinical infection. Isolates from surveillance samples reflect detection of CPE gut colonisation in the absence of clinical CPE infection.

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, as is currently the case, 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 February 2018. 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 although note that in Figure 4 with data presented by quarter rather than by month the trend line is essentially flat. The number of people with CPE first detected from diagnostic samples is essentially stable.

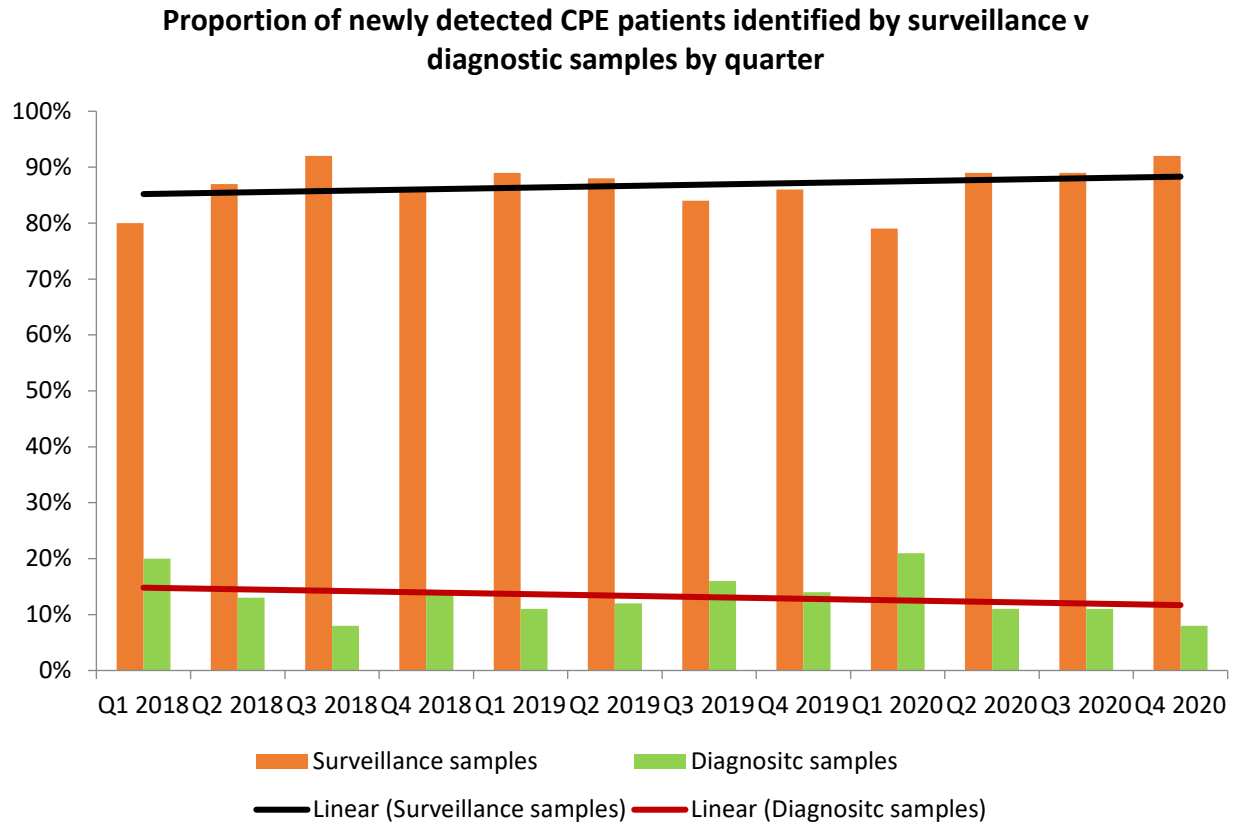
In general isolates from diagnostic samples are likely to reflect clinical infection. Isolates from surveillance samples reflect detection of CPE gut colonisation in the absence of clinical CPE infection.

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.

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.

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.

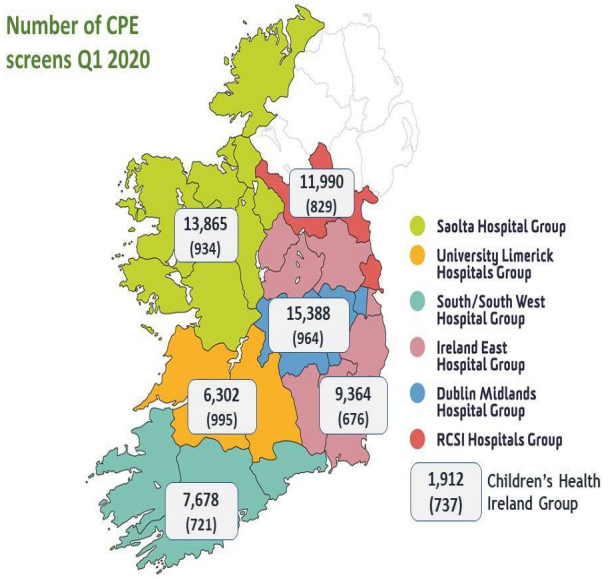
If most cases of CPE are detected from diagnostic samples this reflects a system in which relatively late detection of people with CPE in the context of clinical infection is the norm because the preceding asymptomatic colonisation is not detected.

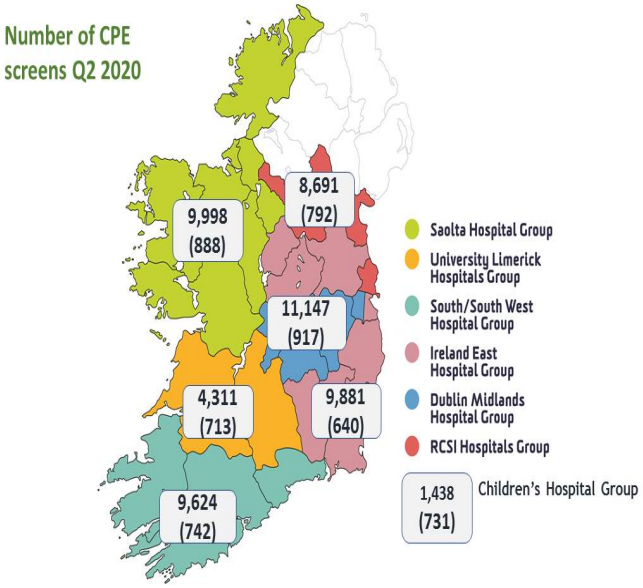
Detection of most cases of CPE in surveillance samples reflects a system in which most people with CPE are detected relatively early in their contact with the healthcare system allowing early application of measures to control spread.

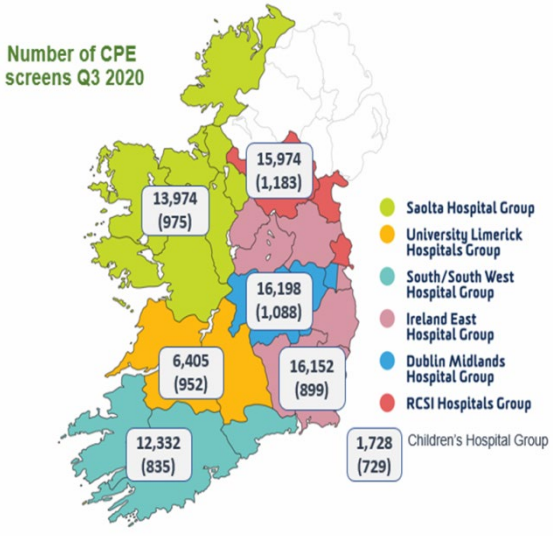
The proportion of first isolates from diagnostic samples declined with increased surveillance consistent with improved control of CPE. This now appears to be stabilising around 10 to 15% of isolates from diagnostic samples with some quarter to quarter fluctuation.

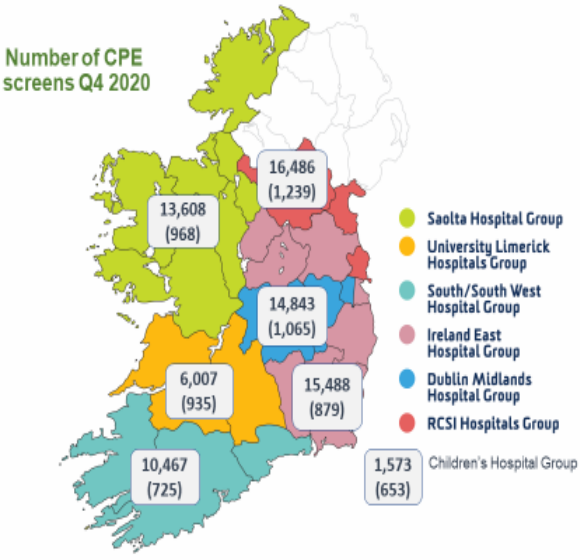
Figure 5 - Number of CPE surveillance samples per hospital group & (Rate per 10,000 Bed Days Used)

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









Figures 6 & 7: Number of Environmental isolates of CPE by location and by type of variant (2018-2020)

This figure is 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. Increasing numbers of hospitals are undertaking environmental testing in 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.

Figure 6

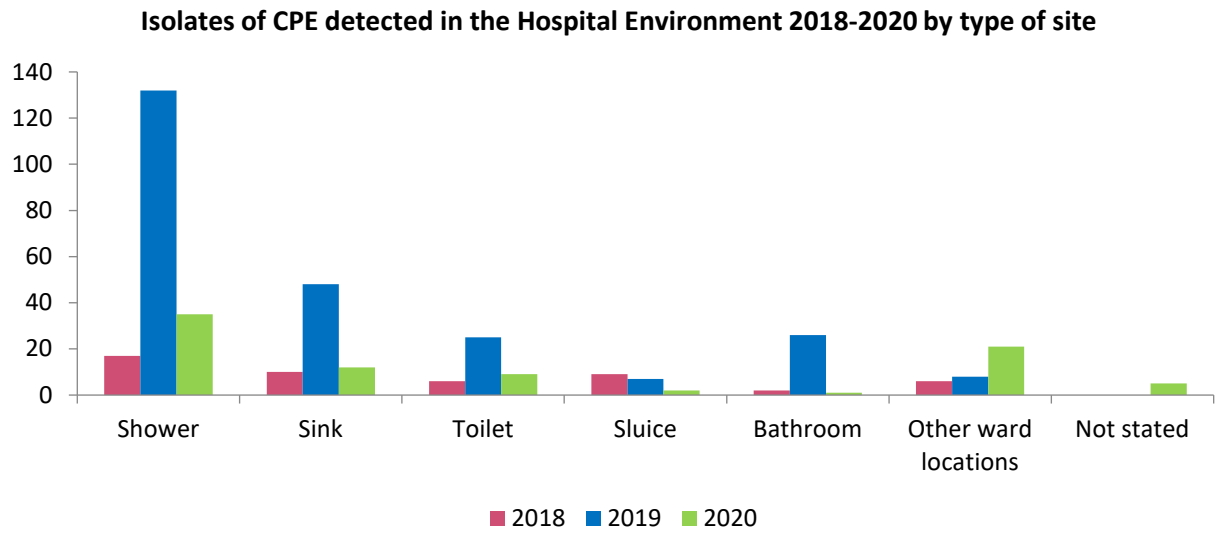
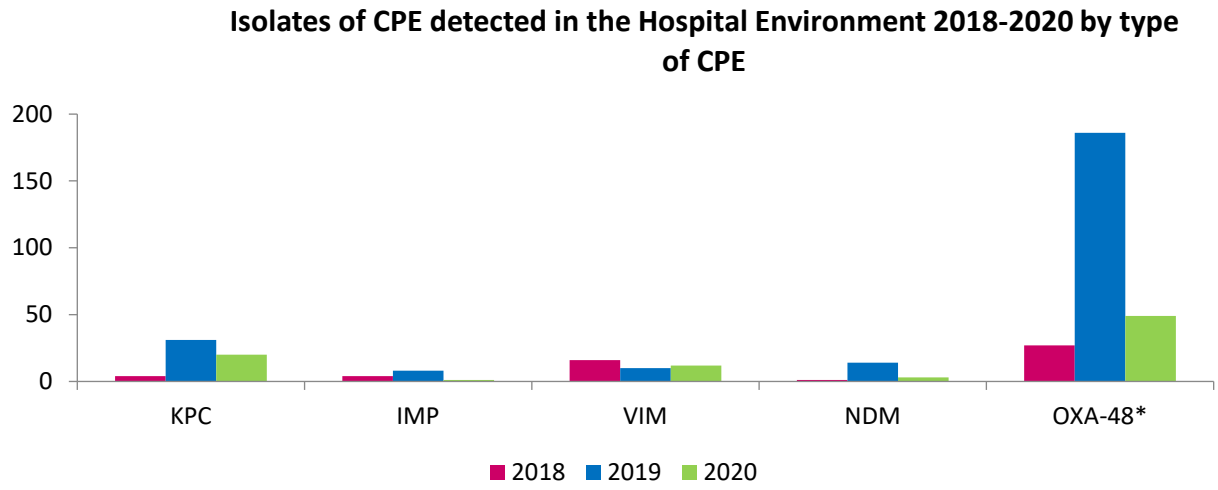


Figure 7



*** 8 isolates are dual producers (6=OXA-48+VIM-1, 1=OXA-48+GES-5 & 1= OXA-48+NDM-1).**
(Figures 6 & 7 excludes carbapenemase producing organisms other than Enterobacterales and excludes CPE detected from sewage sampling)

ENDS