Summary Report on Carbapenemase Producing Enterobacterales (CPE)

June 2020

This is a summary report on CPE in Ireland[1] for the period June 1st to June 26th 2020.

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

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Key points.

- There were **59** new CPE patients identified in June 2020.
- 16,527 CPE surveillance samples were reported tested in HSE laboratories in May 2020.
- This is much less than the number of tests per month that were being performed before the COVID-19 pandemic
- The provisional total of new patients for the first 26 weeks of 2020 is 256. The total for the corresponding period in 2019 was 331.
- The reduced number of newly detected patients with CPE and the reduced number of CPE tests are likely to be related to reduced hospital activity in the context of the COVID-19 pandemic.
- The most recent data show a substantial increase in new detections of CPE in line with scaling back up of hospital activity.

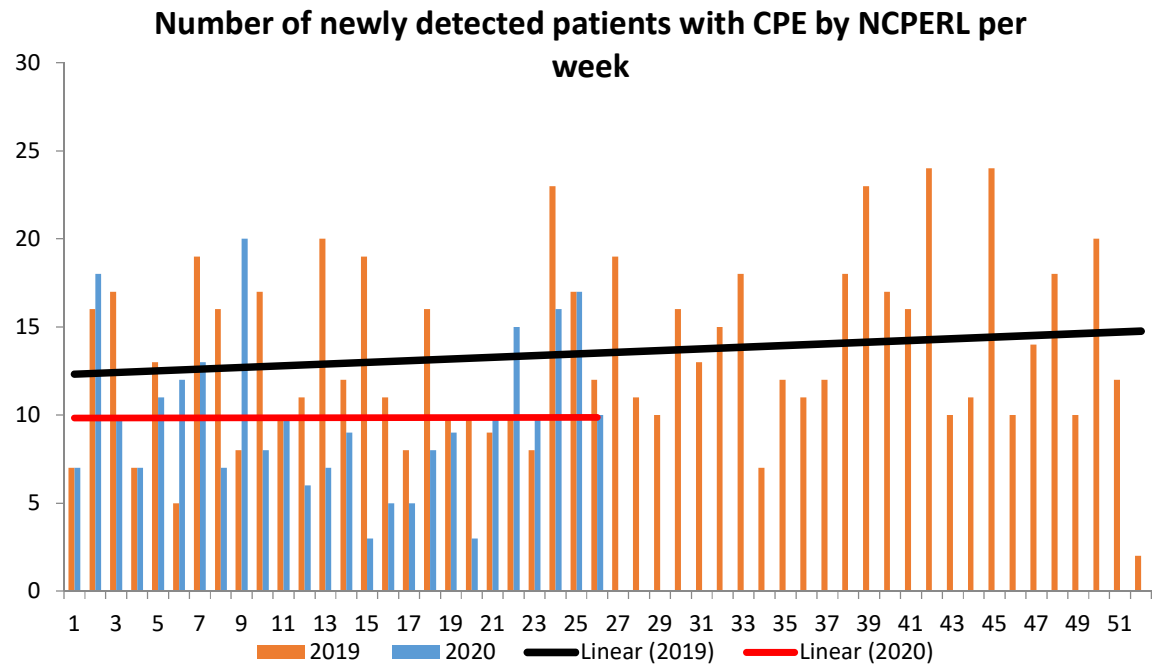
Additional details

Week 23-26 (1st June 2020-26th June 2020)

- Total of 80 CPE isolates were received, **53** 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 2019 (orange) and 2020 (blue). The black line represents the trend in weekly numbers through 2019 and the red line represents the trend in weekly numbers through 2020.

Table 1 - Hospitals with current outbreaks (as per May 2020 return for Business Information Unit (BIU), HSE)

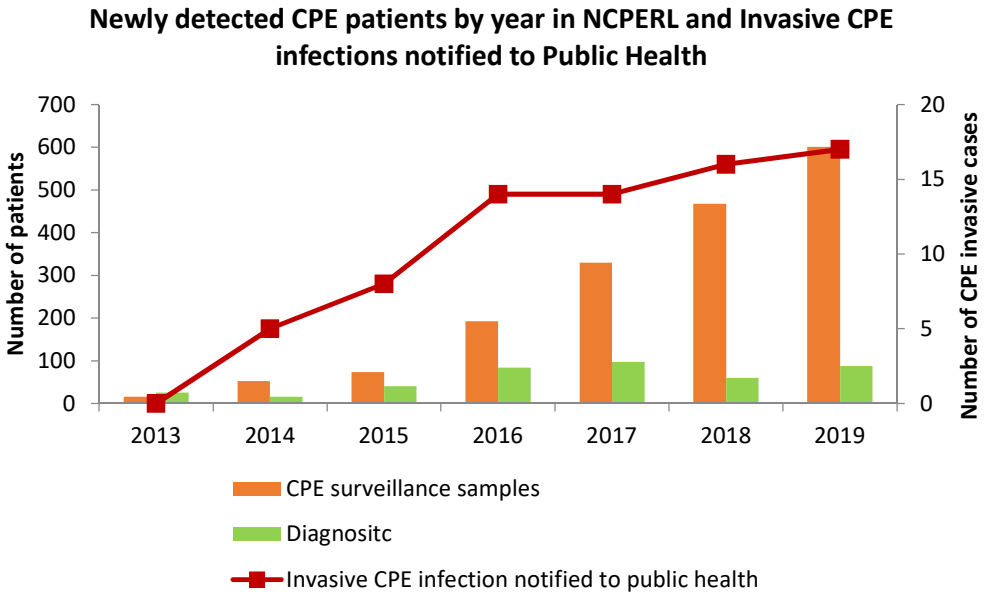
This figure is based on data collated by the HSE Business Information Unit (BIU). It is intended that it be updated monthly.

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
RCSI Hospital Group	Beaumont Hospital
Saolta Hospital Group	Galway University Hospitals Portiuncula University Hospital
South / South West Hospital Group	Cork University Hospital
University Limerick Hospitals Group	University Hospital Limerick

(NOTE: **44 of 48 hospitals** have 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.



Comment:

Overall the data to the end of 2019 support a conclusion that measure to control the spread of CPE have been generally effective the number of invasive CPE and the number of CPE from diagnostic samples are 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 2019 was 17.

The number of people with CPE first detected from surveillance samples has increased each year since 2013. The number of people with CPE first detected from diagnostic samples peaked in 2017, declined somewhat in 2018 and has increased somewhat in 2019. Some year to year fluctuation is expected.

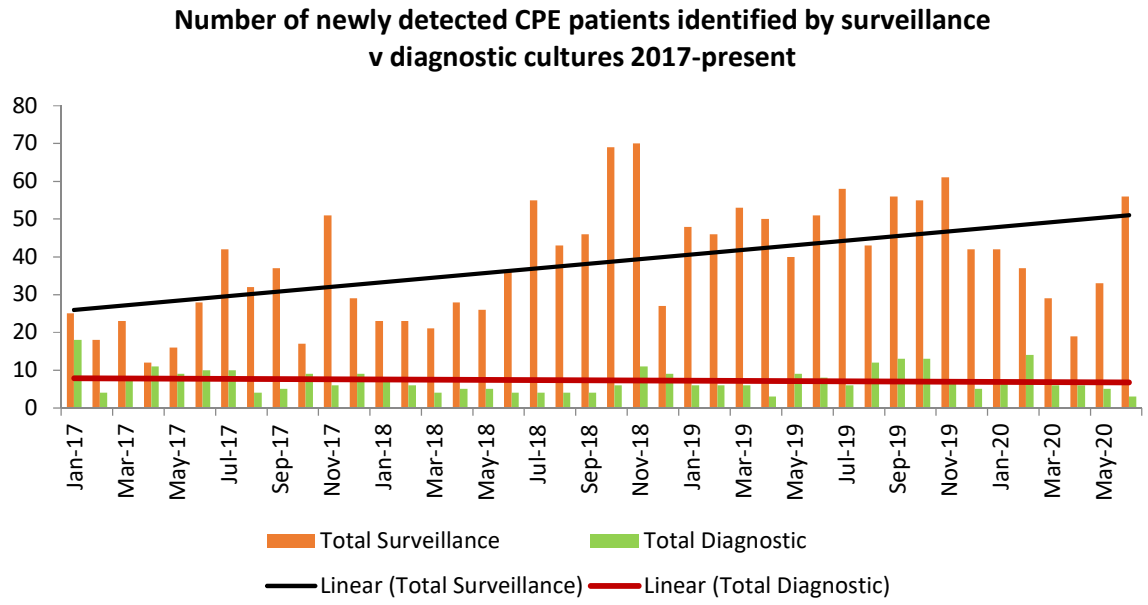
In general isolates from diagnostic samples are likely to reflect clinical infection. Isolates from surveillance samples reflect detection of CPE gut colonisation in the absence of clinical CPE infection.

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 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 per month (2017- June 2020)

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 the beginning of 2017. 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 number of people with CPE first detected from surveillance samples has increased while the number of people with CPE first detected from diagnostic samples had decreased.

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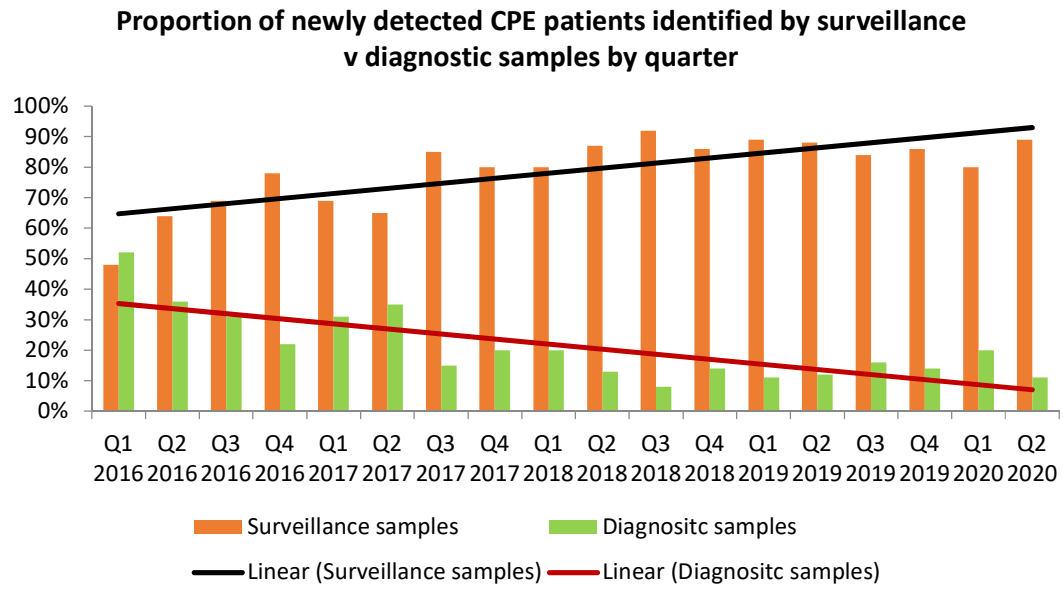
Detection of most cases of CPE in surveillance samples reflects a system in which most people with CPE are detected relatively early in their contact with the healthcare system allowing early application of measures to control spread.

Figure 4 – Proportion of CPE isolated from people identified by Surveillance and Diagnostic samples per quarter 2016-2020

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 since the beginning of 2016. 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 percent of people with CPE first detected from surveillance samples has increased while the number of people with CPE first detected from diagnostic samples had decreased.

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.

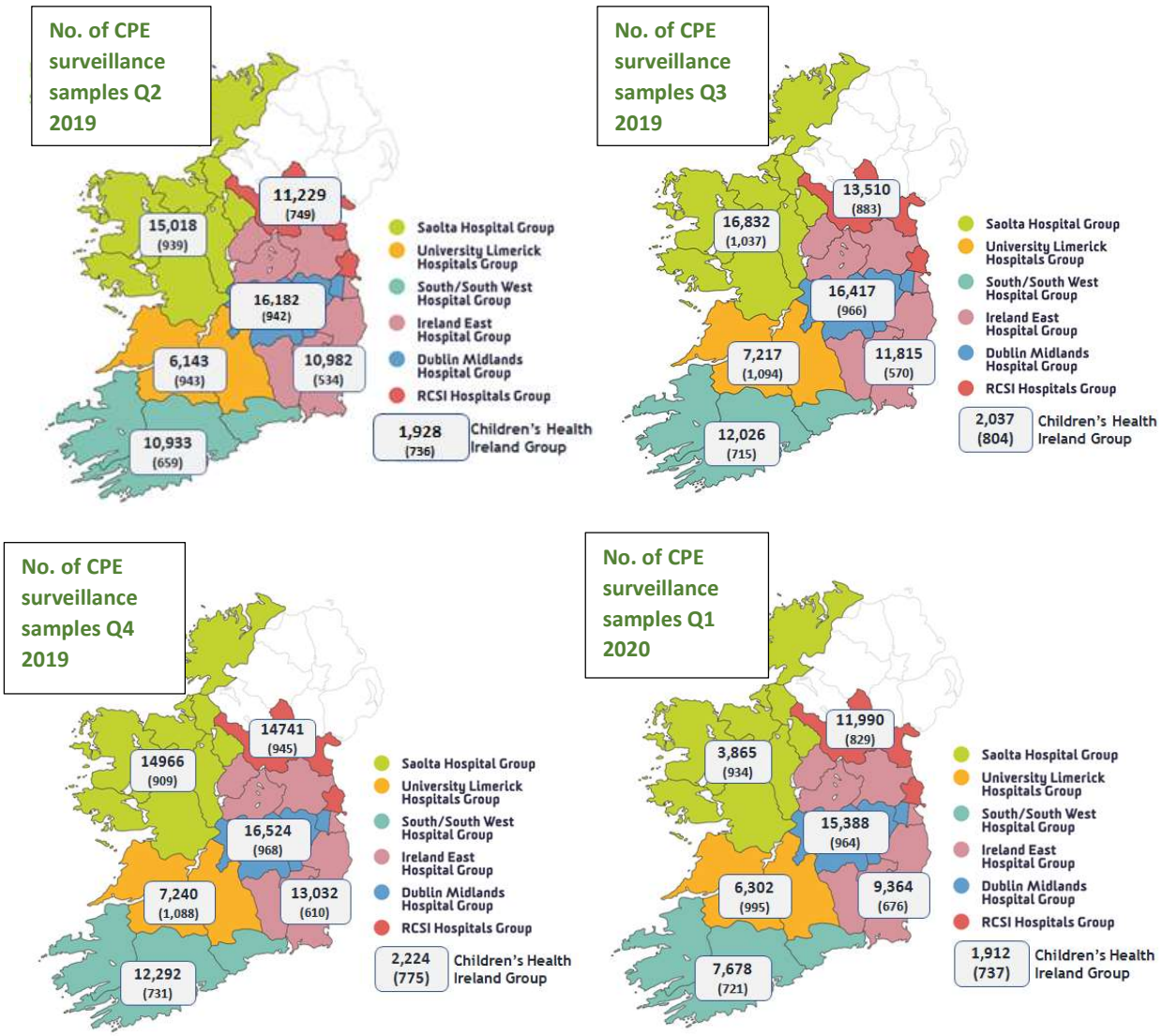
If most cases of CPE are detected from diagnostic samples this reflects a system in which relatively late detection of people with CPE in the context of clinical infection is the norm because the preceding asymptomatic colonisation is not detected. This suggests that interventions to control spread are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

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, by type of variant and by species (2018-2020 Q1-2)

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 increases in 2019 (YTD) is likely to be largely related to increased awareness and testing. The low number of isolates in Q1 and 2 of 2020 is likely to be related to reduced sampling activity in the context of COVID-19.

Figure 6

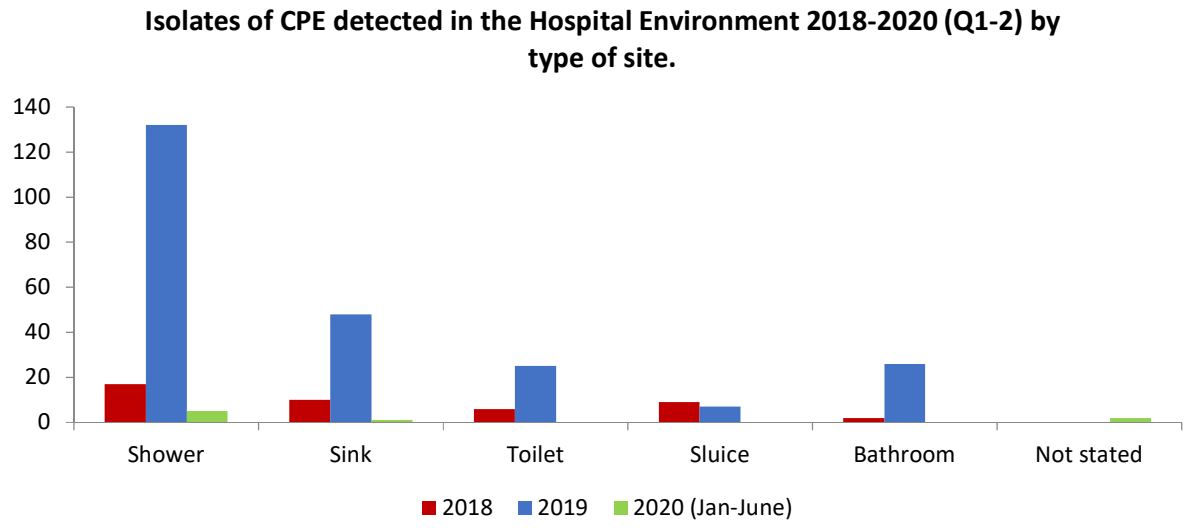
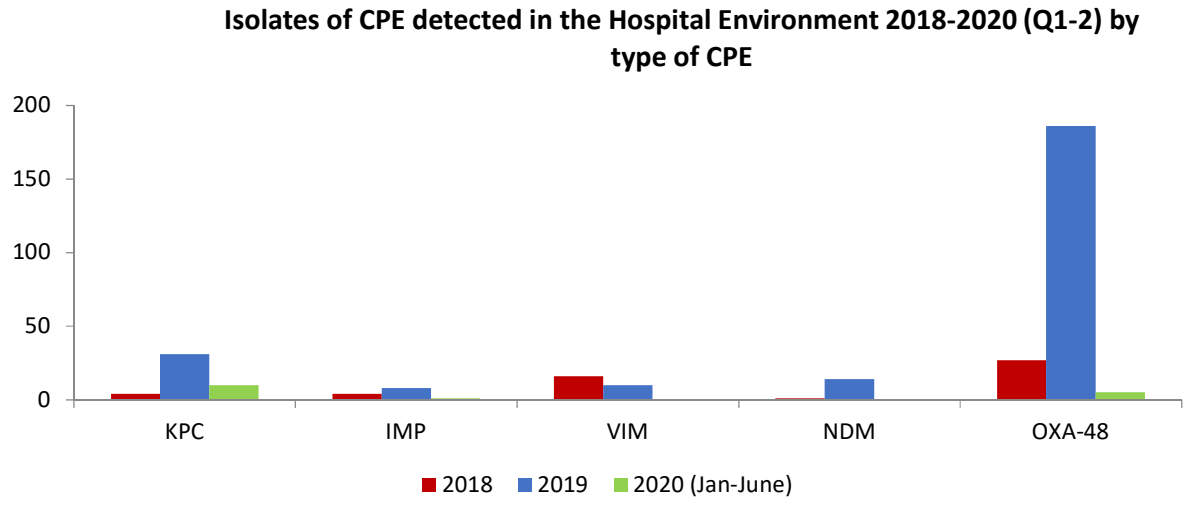


Figure 7



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