



Summary Report on Carbapenemase Producing Enterobacterales (CPE)

January 2020

This is a summary report on CPE in Ireland¹ for the period December 30th 2019 to January 31st 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.



Antimicrobial Resistance &
Infection Control Programme

Key points.

- There were **49** new CPE patients identified in January 2020.
- 25,943 CPE samples were reported tested in HSE laboratories in December 2019. Testing volumes overall are above the minimum target. **(Figure 5)**. However there is still significant variation in testing volumes between the hospital groups providing care primarily to adults. Differences may be related, in part, to higher levels of testing in hospital groups where hospitals have recognised CPE outbreaks and are doing higher levels of testing as part of their response.
- The provisional total of new patients for the first 5 weeks of 2020 is 53. The total for the corresponding period in 2019 was 60.
- The number of people newly detected with CPE YTD in 2020 is a little lower than but essentially comparable to the same period of 2019 (see Figures 1 and 3).
- A small number of hospitals have not yet fully implemented national guidance on CPE testing.
- CPE Outbreaks continue in multiple hospitals (Table 1).
- Detection of CPE in hospital environments is a continuing concern.

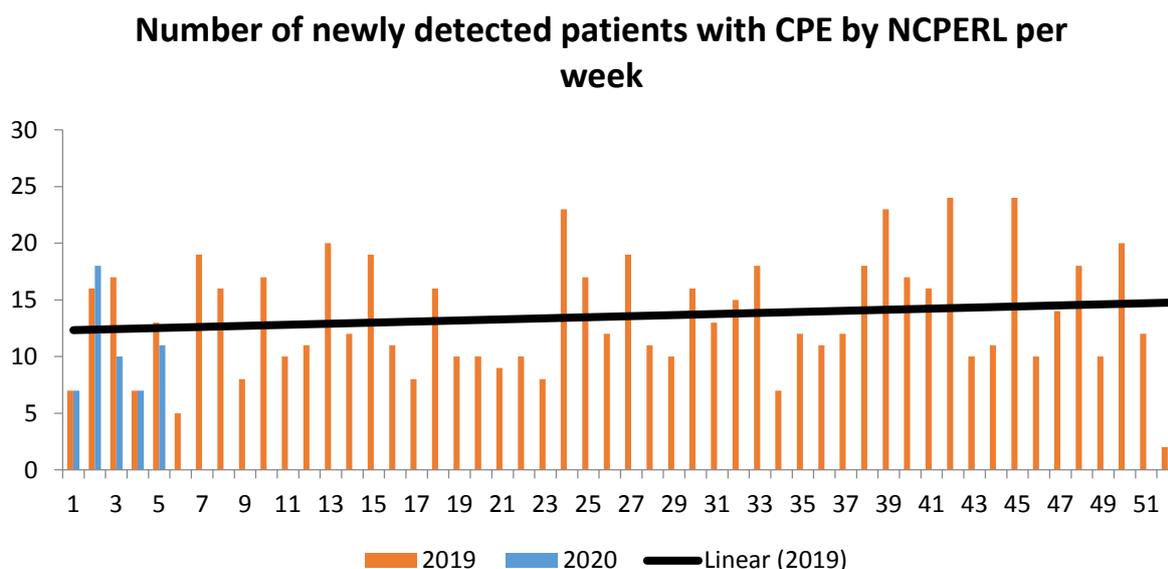
Additional details

Week 1-5 (30th December 2019-31st January 2020)

- Total of **83** CPE isolates were received, **53** were newly identified CPE patients in this period.

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.

Table 1 - Hospitals with current outbreaks (as per December 2019 return for Business Information Unit (BIU), HSE)

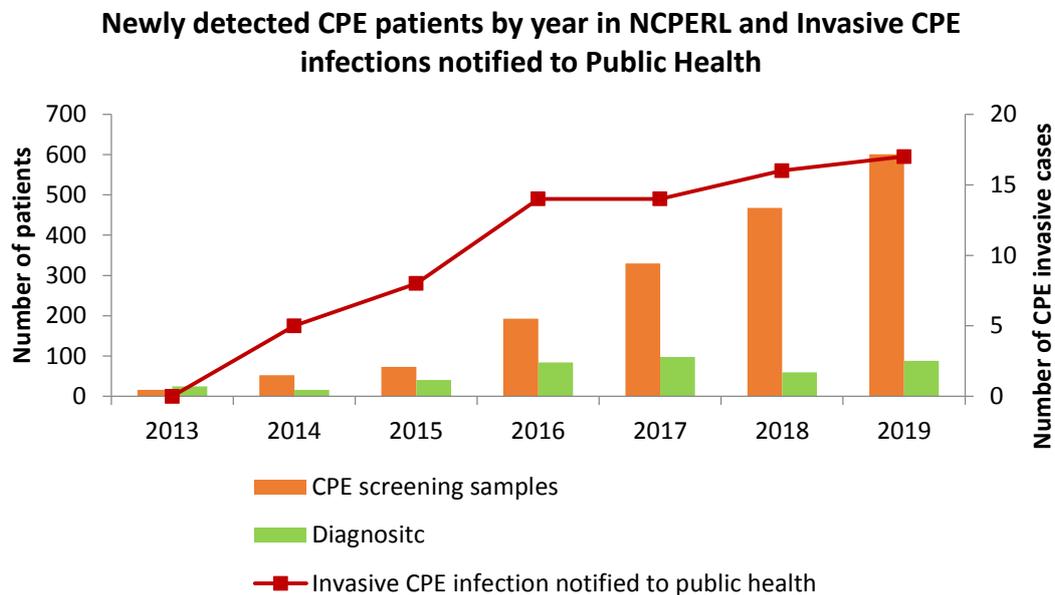
This figure is based on data collated by the HSE Business Information Unit (BIU). It is intended that it be updated monthly.

| HOSPITAL GROUP | HOSPITALS REPORTING CPE OUTBREAKS |
|-------------------------------------|--|
| Children’s Hospital Group | No outbreaks reported. |
| Dublin Midlands Hospital Group | No outbreaks reported. |
| Ireland East Hospital Group | Mater Misericordiae University Hospital St. Luke's General Hospital Kilkenny |
| RCSI Hospital Group | Beaumont Hospital Cavan General Hospital Our Lady of Lourdes Hospital, Drogheda |
| Saolta Hospital Group | Galway University Hospitals Letterkenny University Hospital Mayo University Hospital Portiuncula University Hospital Sligo University Hospital |
| South / South West Hospital Group | Cork University Hospital South Tipperary General Hospital Mercy University Hospital University Hospital Waterford |
| University Limerick Hospitals Group | University Hospital Limerick |

(NOTE: **46 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.



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. The total number of CPE detected from blood stream infections in 2019 was 17.

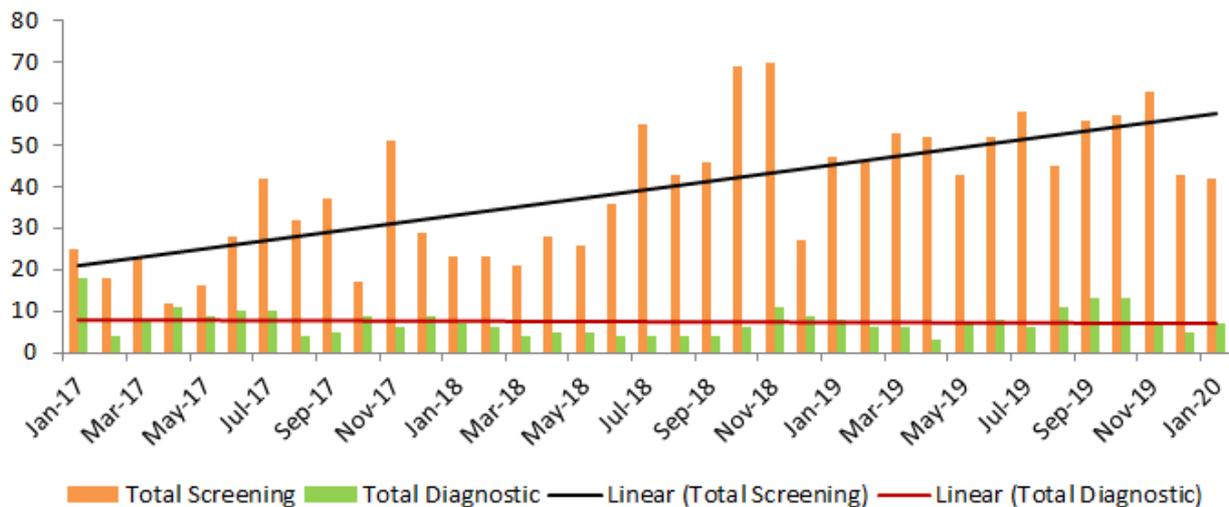
The number of people with CPE first detected from surveillance samples has increased each year since 2013. The number of people with CPE first detected from diagnostic samples peaked in 2017, declined somewhat in 2018 and has increased somewhat in 2019. Some year to year fluctuation is expected. In general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

Figure 3 – Total numbers of CPE patients identified by Surveillance and Diagnostic samples per month (2017-January 2020)

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

Number of newly detected CPE patients identified by screening v diagnostic cultures 2017-present



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.

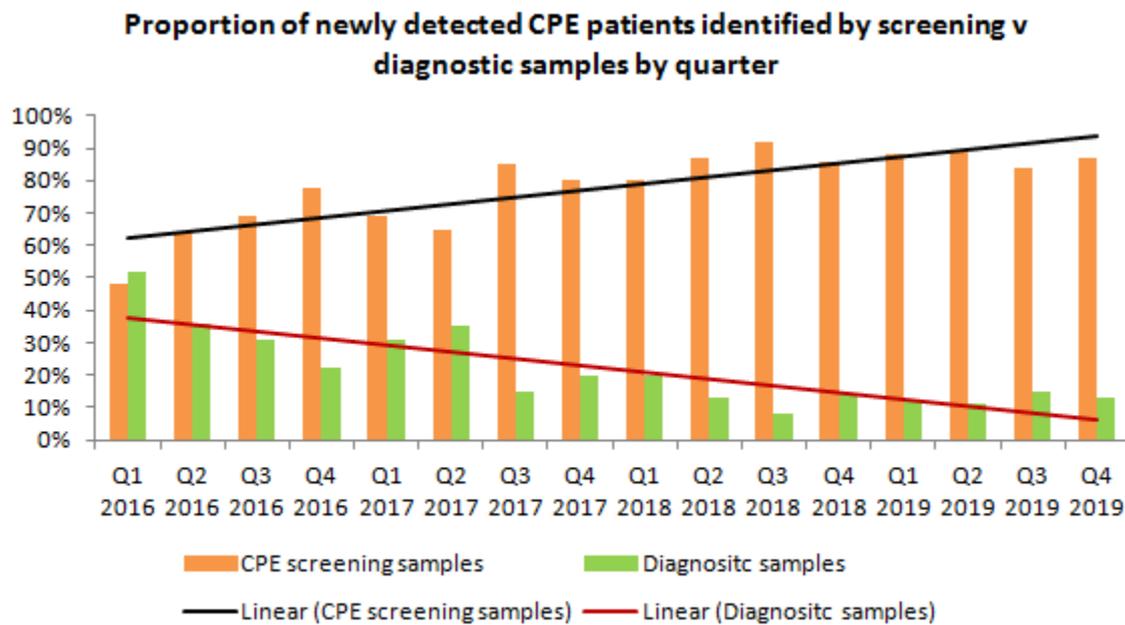
In general isolates from diagnostic samples are likely to reflect clinical infection. Isolates from surveillance samples reflect detection of CPE gut colonisation in the absence of clinical CPE infection.

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.

Figure 4 – Proportion of CPE isolated from people identified by Surveillance and Diagnostic samples per quarter 2016-2019

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.

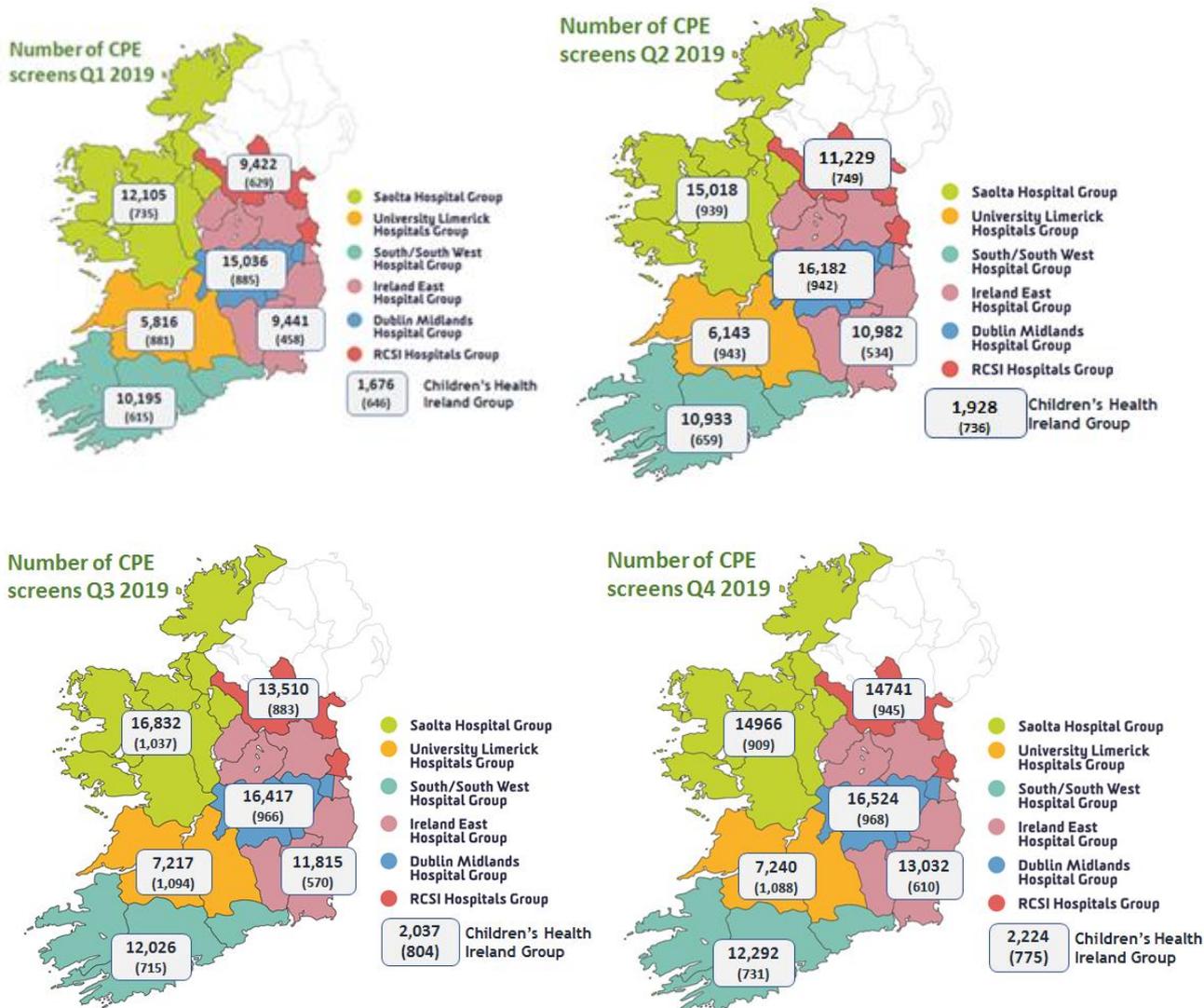
If most cases of CPE are detected from diagnostic samples this reflects a system in which relatively late detection of people with CPE in the context of clinical infection is the norm because the preceding asymptomatic colonisation is not detected. This suggests that interventions to control spread are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



The screening rate per 10 000 bed days has increased through 2019 in all hospital groups. In Q4 the screening rate in IEHG and to a lesser extent in SSWHG are still substantially below other hospital groups.

Figures 6 & 7: Number of Environmental isolates of CPE by location, by type of variant and by species (2018-2019)

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 is likely to be largely related to increased awareness and testing.

Figure 6

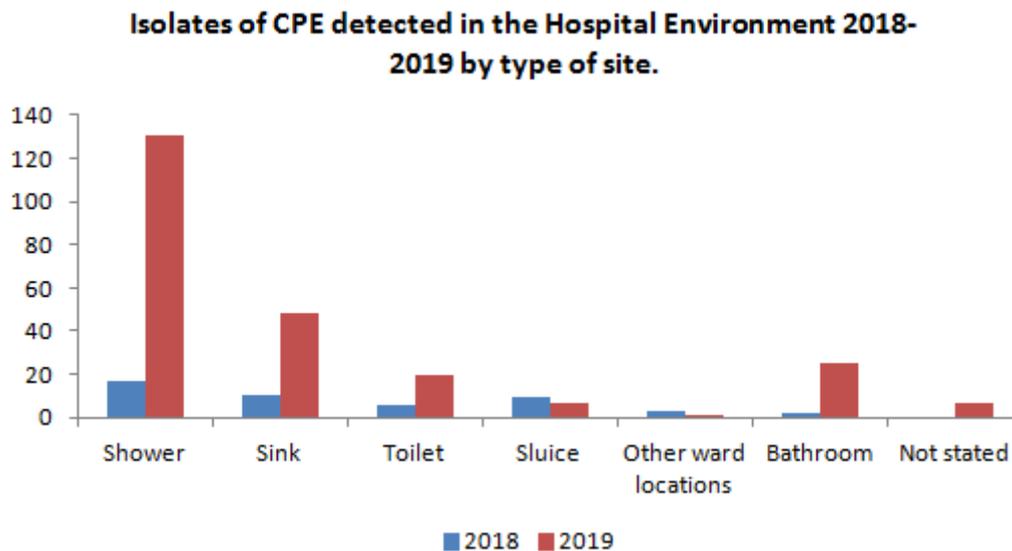
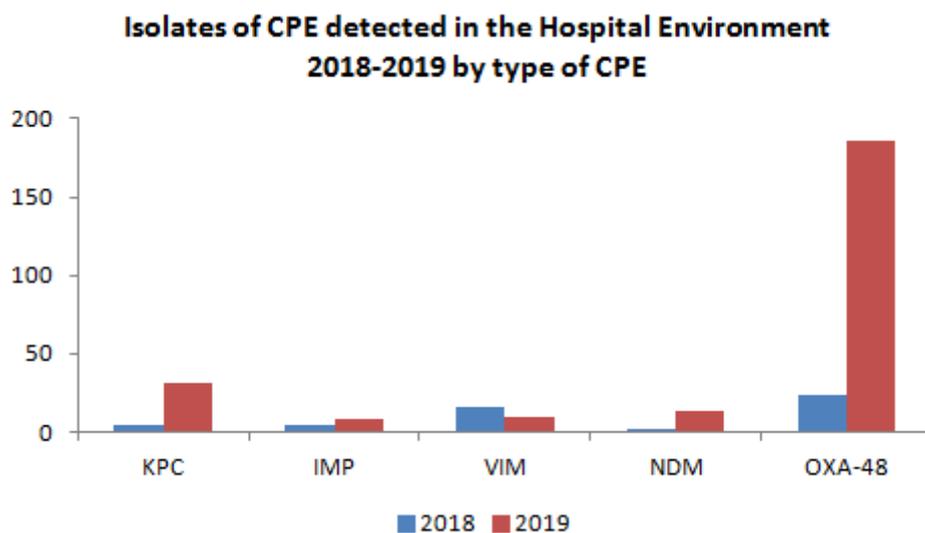


Figure 7



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