

## Carbapenemase producing *Enterobacterales* (CPE) in HSE acute hospitals

### Monthly report on July 2019 data for the National Public Health Emergency Team (NPHE)

#### Executive summary of the latest available data (data source)

1. **Patients with newly-confirmed CPE (NCPERLS):** There were 64 patients in July, compared with 60 in June. There were 537 patients in total for 2018 versus 433 in 2017
2. **Notification of patients with invasive CPE infection (Departments of Public Health):** One invasive CPE infection was notified in July, with three in June. There were 16 notifications in 2018 and 14 in 2017
3. **Creation of new CPE outbreak events (Departments of Public Health):** In July, two new acute hospital CPE outbreak events were created, with three in June. There were 27 new CPE outbreaks created in 2018 versus 15 in 2017
4. **Active/current CPE hospital outbreak events (HSE acute hospitals reporting to BIU):** Data returned by 96% of hospitals, with nine reporting events in July [June = 94% returns & nine outbreak events]
5. **CPE screens and CPE detections (HSE acute hospitals reporting to BIU):** Data returned by 98% of hospitals, with 27,212 CPE screens performed in July, representing the highest monthly total screens to date and 52 CPE detected overall, 48 from screening specimens [June = 100% returns; 23,757 screens; 64 CPE detected overall, 56 from screening specimens]
6. **Inpatients with known CPE (HSE acute hospitals reporting to BIU):** Data returned by 92% of hospitals. There were 224 inpatients of 28 hospitals with known CPE colonisation or infection in July [June = 94% returns; 206 inpatients of 28 hospitals]
7. **Known CPE inpatients not accommodated in an *en suite* single room/appropriate cohort area for part of their admission (HSE acute hospitals reporting to BIU):** Data returned by 94% of hospitals. In July, 14 inpatients of nine hospitals were not accommodated in an *en suite* single room/appropriate cohort area for part of their admission [June = 96% returns; nine inpatients of five hospitals]
8. **Total grams (g) of meropenem\* issued by hospital pharmacies: (HSE acute hospitals reporting to BIU):** Data returned by 35% of hospitals. In July, 8,852g of meropenem were issued [June; 29% returns; 4,806g]

**Data provided by the HSE Business Information Unit (BIU) are provisional.** Once the HSE's monthly performance and data governance process is completed and the National Performance Profile has been approved by the HSE Directorate, these data will be considered final. In the event of there being any changes to the data contained in this report, they will be adjusted in subsequent reports (this report incorporates BIU data received by HPSC after review by the National HCAI Steering Group on 27/08/2019). Acute hospitals are required to report data for a given month to BIU by the 15<sup>th</sup> of the following month.

The terms carbapenem-resistant and carbapenemase-producing *Enterobacterales* (CRE/CPE) have often been used interchangeably. For technical reasons the term *Enterobacterales* has now replaced *Enterobacteriaceae*.

\*See section 7 for details

**Prior to January 2019, 47 acute HSE hospitals reported CPE data to BIU, with Tallaght University Hospital data including Tallaght Paediatric Hospital and Cork University Hospital data including Cork University Maternity Hospital. Since January 2019, these are reported separately as: Children's Health Ireland at Tallaght and Cork University Maternity Hospital, increasing the total number of hospitals reporting monthly CPE data to BIU to 49.**

## 1. Patients with CPE newly-confirmed by the National CPE Reference Laboratory Service (NCPERLS)

Microbiology laboratories are requested to submit all isolates from newly-detected patients from both diagnostic and screening specimens to NCPERLS. If a specific bacterial species and carbapenemase (e.g. OXA-48 *E. coli*) has previously been identified and confirmed from the patient, there is usually no need for the isolate to be resent to NCPERLS.

Additionally, all CPE isolates causing invasive infection (blood, CSF or other normally sterile site) should be referred to NCPERLS, even if a previous isolate of the same carbapenemase type from that patient was already referred to NCPERLS.

Isolates that are suspected carbapenemase producers and/or locally-confirmed CPE should also be referred to NCPERLS for further characterisation which includes whole genome sequencing (WGS), *mcr* analysis and additional susceptibility testing (e.g. ceftazidime-avibactam and colistin by broth microdilution).

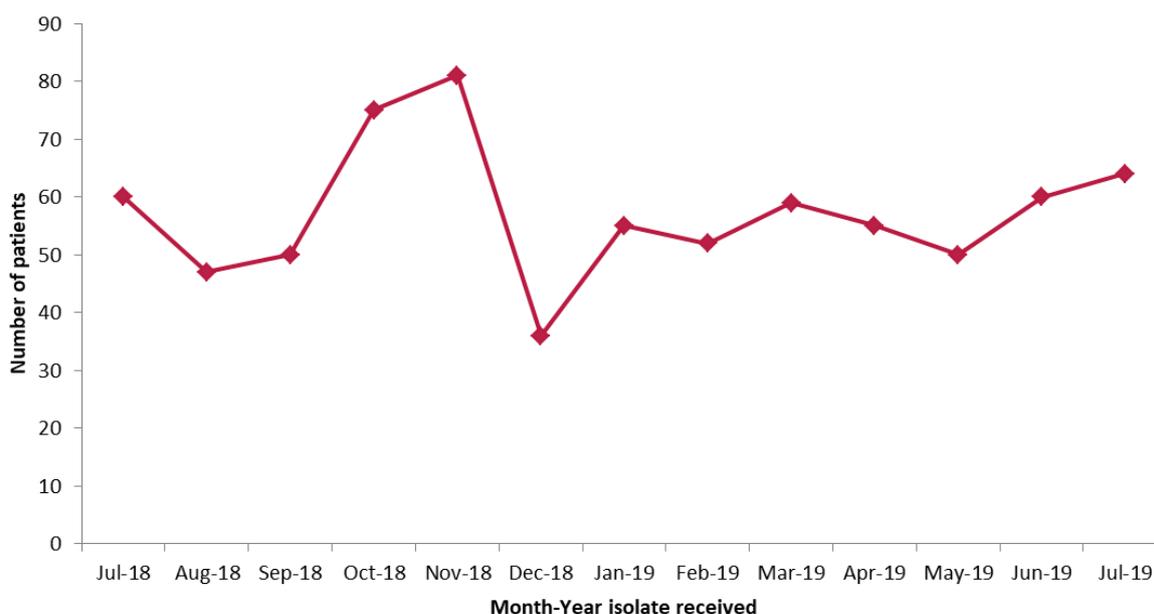
Effective February 2019, the NCPERLS performs in-house molecular real-time PCR, targeting CPE genes for those isolates referred which have:

- Tested negative locally by a rapid CPE assay in use (e.g. PCR or immunochromographic assay)
- Met the screening criteria for further investigation and have not been tested locally by a rapid CPE assay

*Data presented below are provisional. The data in this monthly report are based on latest preliminary rapid test results and/or in-house real time PCR assay by NCPERLS. WGS results may provide additional information. For example, the less common IMI or GES carbapenemases are not detected by rapid assays, but will be detected by WGS. Data relate to the date that NCPERLS received the isolates, not the original specimen collection date.*

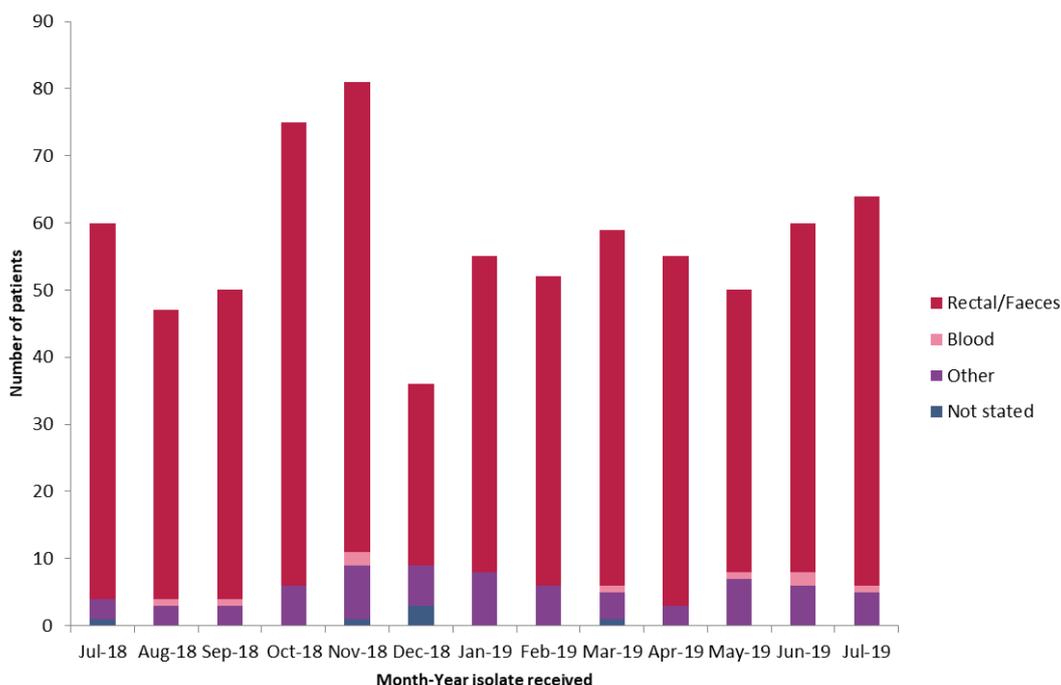
**Appendix 1a** displays annual CPE and carbapenemase trends from 2012 to 2018. **Appendix 1b** displays total patients with CPE newly-confirmed by NCPERLS, stratified by carbapenemase type, by HSE acute hospital for 2018 (also see **Appendix 1c**).

In July 2019, 64 patients with newly-detected CPE were identified, compared with 60 in June (**Figure 1**).

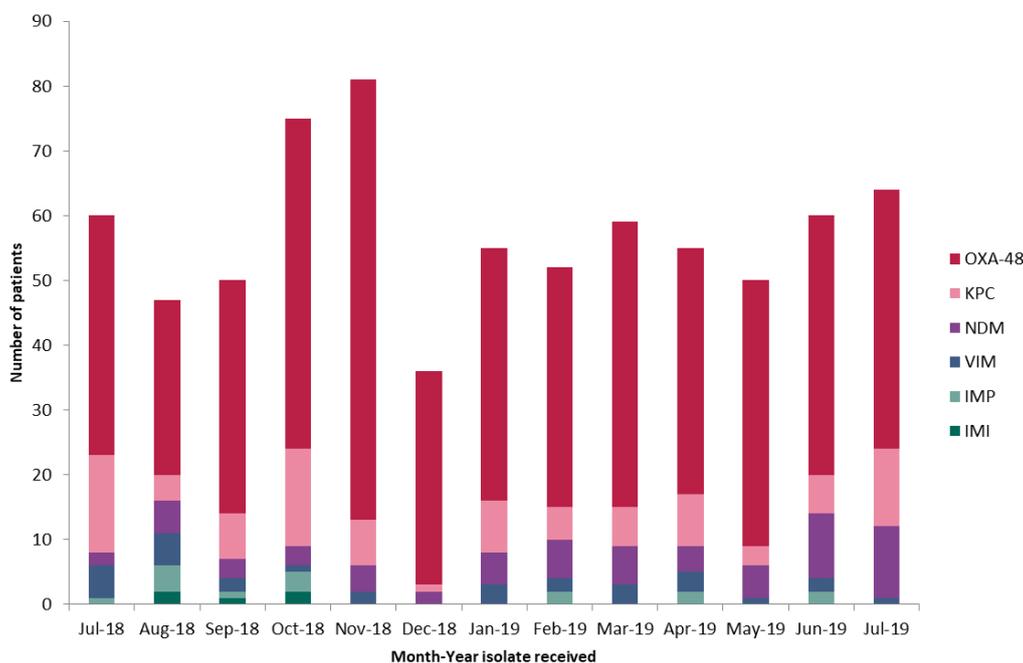


**Figure 1.** Monthly numbers of patients with CPE newly-confirmed by NCPERLS from July 2018. **Source:** NCPERLS

Of 64 patients in July 2019, 91% were newly-confirmed carriers detected on CPE screening (rectal swab/faeces) (**Figure 2**). OXA-48 remains the predominant carbapenemase in Ireland. There has been an increasing trend in the detection of NDM. (**Figure 3**).



**Figure 2.** Monthly number of patients with CPE newly-confirmed by NCPERLS, by specimen type. **Source:** NCPERLS



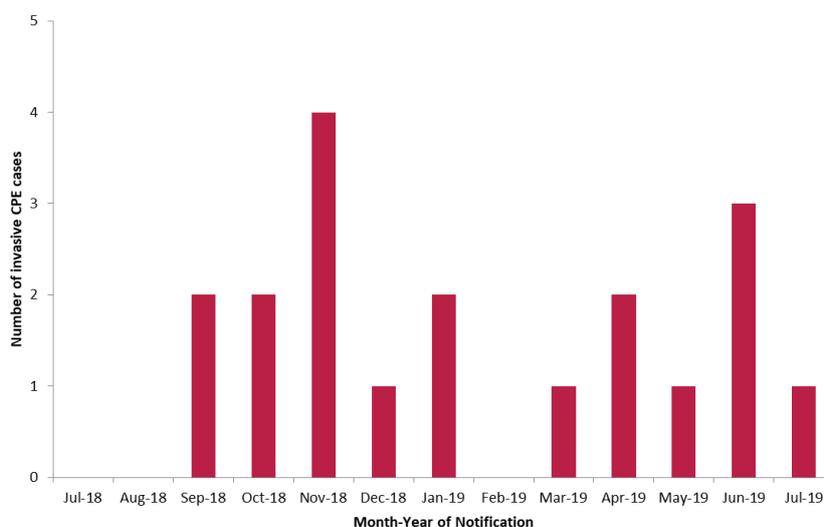
**Figure 3.** Monthly numbers of patients with CPE newly-confirmed by NCPERLS, by carbapenemase. **Source:** NCPERLS

## 2. Invasive CPE infections notified to Departments of Public Health

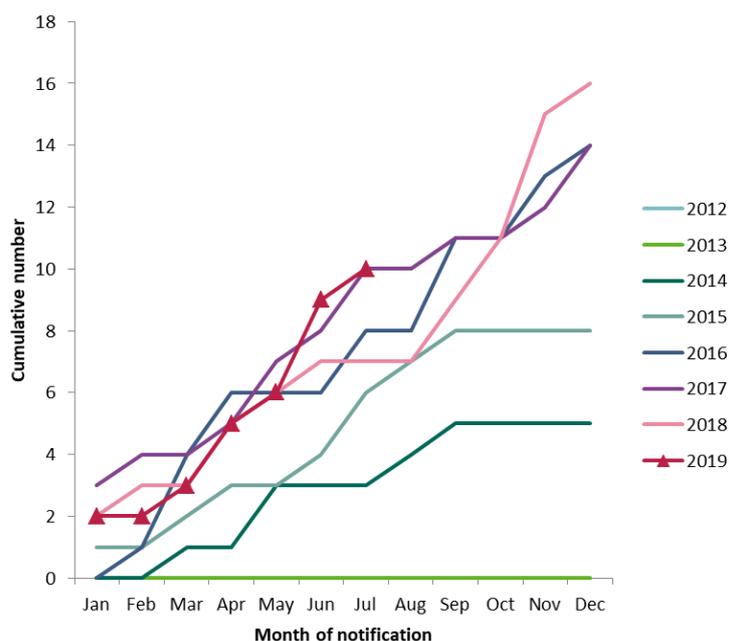
In December 2018, the Infectious Diseases Regulations were updated, changing the terminology from CRE to CPE and expanding the requirement to notify not only invasive “carbapenemase producing *Enterobacteriaceae* (CPE) infection”, but also “non-invasive infection and colonisation” by laboratories (public and private) to Departments of Public Health.

To date, invasive CPE infection cases are reported through the Computerised Infectious Disease Reporting (CIDR) system. **Appendix 2a** displays annual total cases of notified invasive CPE infections from 2012 to 2018. National data are analysed by HPSC. *The data presented below are provisional and relate to the date that cases were reported on CIDR, not the specimen collection date or illness onset date.*

**Figure 4** displays notifications of invasive CPE infection since July 2018 and **Figure 5** displays cumulative monthly notifications of invasive CPE from 2012 onwards. One case of invasive CPE infection was notified in July.



**Figure 4.** Monthly notifications of invasive CPE infection from July 2018. **Source:** CIDR

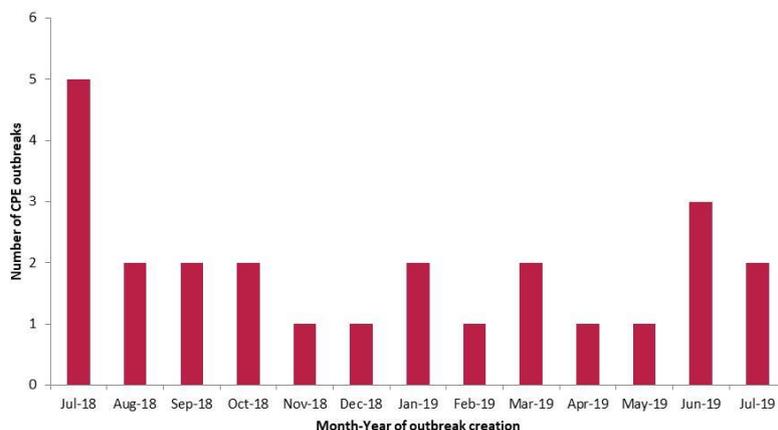


**Figure 5.** Cumulative monthly notifications of invasive CPE infection (2012-2019). **Source:** CIDR

### 3. New CPE outbreak events created by Departments of Public Health

Under Infectious Diseases Regulations, outbreaks (infections and/or colonisations) must be notified to the Department of Public Health, with creation of a unique outbreak event on CIDR. Legislation applies to all healthcare facility types regardless of ownership or acuity. *The data presented below are provisional and relate to the date an outbreak event was created on CIDR, not the date the outbreak was first detected or notified by the healthcare facility.*

**Appendix 2b** displays annual total of CPE outbreaks created on CIDR from 2012 to 2018. **Figure 6** displays monthly CPE outbreaks created on CIDR from July 2018. In July 2019, two new acute hospital CPE outbreak events were created on CIDR, with the latest on the 23<sup>rd</sup> July.

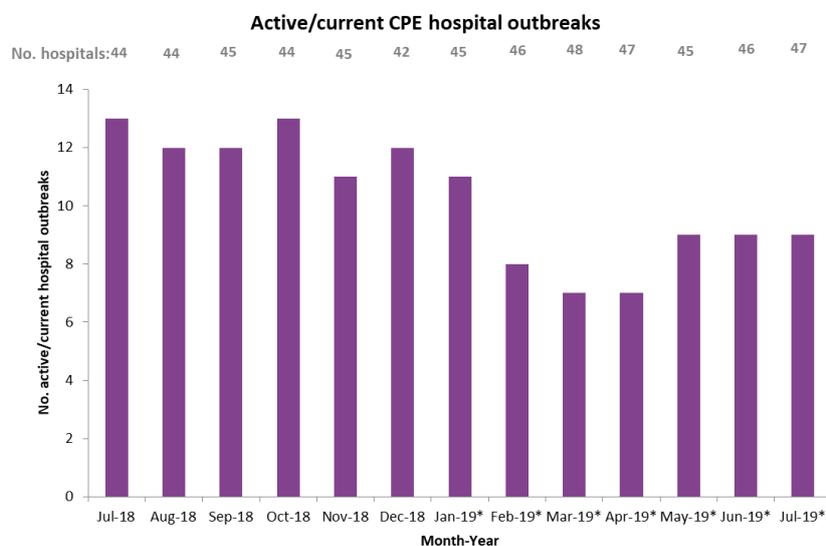


**Figure 6.** Monthly new CPE outbreak events created by Departments of Public Health from July 2018. **Source:** CIDR

### 4. Active/current CPE hospital outbreak events reported to BIU

All 49 acute HSE hospitals are asked to report data on the number of active or current CPE outbreaks to the HSE’s Business Information Unit (BIU), with monthly data available from January 2018. **Appendix 3** describes the CPE-related performance indicators currently reported to BIU by HSE acute hospitals and **Appendix 4** displays compliance with monthly data returns of each hospital for the preceding two months.

**Figure 7** displays the total number of hospitals reporting active/current CPE outbreaks from July 2018. In July 2019, a current/active CPE outbreak was being managed by nine (19%) of the 47 hospitals (96%) that reported this data.



**Figure 7.** Monthly CPE active/current outbreaks (purple bars) from July 2018. Number of hospitals reporting cited above each bar. **Source:** BIU

## 5. Monthly CPE screens performed and CPE positives reported to BIU

All 49 acute HSE hospitals are asked to report monthly data on the total number of CPE screens performed (rectal swab or faeces) and on the number of patients with newly-detected CPE from either screening or diagnostic specimens to the HSE's BIU. The monthly data reported by NCPERLS will not match the monthly data reported to BIU for the following reasons:

1. NCPERLS accepts specimens from both acute HSE and private hospital microbiology laboratories – Acute HSE hospitals are required to report data to BIU, whereas private hospitals are not required to report
2. NCPERLS reports positive specimens based on the date the specimen was received by NCPERLS, not the date the specimen was taken. Hospitals return data to BIU based on specimen collection date

**Appendix 3** describes the CPE-related performance indicators currently reported to BIU by HSE acute hospitals and **Appendix 4** displays compliance with monthly data returns of each hospital for the preceding two months. **Table 1** and **Figure 8** display national monthly data totals from July 2018, with a monthly increase in CPE screens performed observed.

*Data provided by BIU are provisional. Once the HSE's monthly performance and data governance process is completed and the National Performance Profile has been approved by the HSE Directorate, these data will be considered final. In the event of there being any changes to the data contained in this report, they will be adjusted in subsequent reports (this report incorporates BIU data received by HPSC after review by the National HCAI Steering Group on 27/08/2019). Acute hospitals are required to report data for a given month to BIU by the 15<sup>th</sup> of the following month.*

**Table 1.** Monthly CPE screening activity and confirmed CPE cases from July 2018. **Source:** BIU

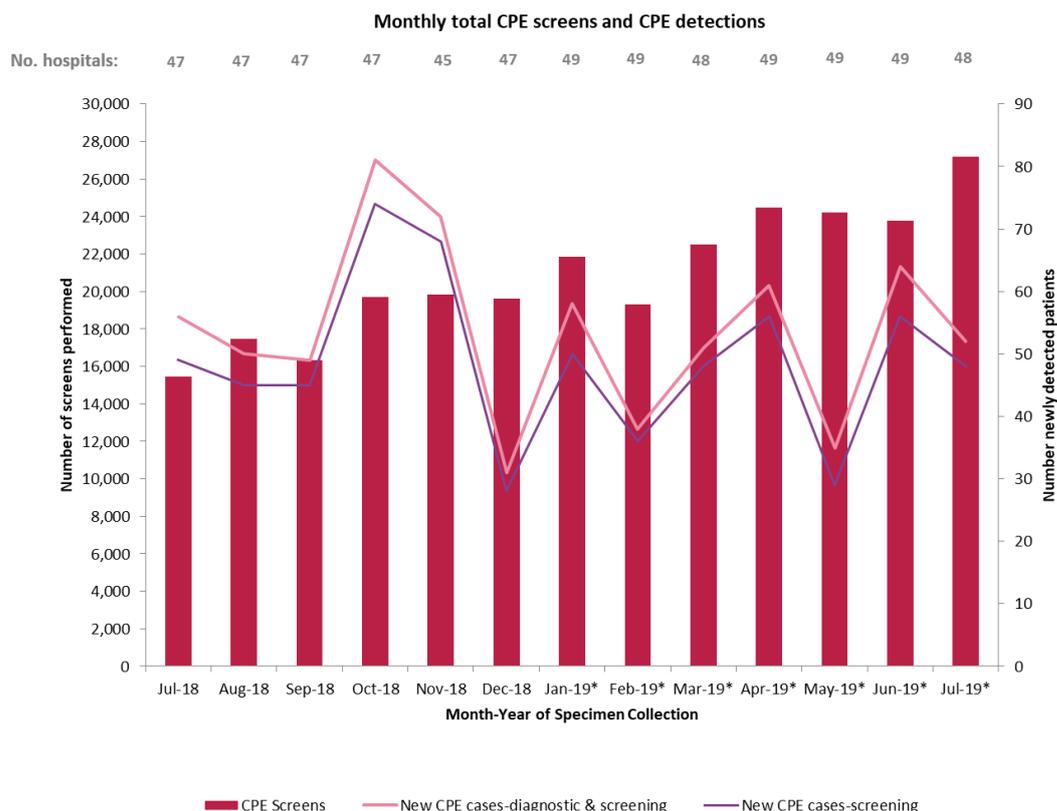
	N (%) HSE acute hospitals providing data (CPE004)	Total monthly CPE screens (CPE004)	Total monthly confirmed CPE cases screening & diagnostic (CPE002+003)	Total confirmed CPE cases from screening (CPE002)	Percentage of positive CPE screens (CPE002/ CPE004)
<b>July 2018</b>	47 (100)	15,471	56	49	0.32
<b>August 2018</b>	47 (100)	17,486	50	45	0.26
<b>September 2018</b>	47 (100)	16,341	49	45	0.28
<b>October 2018</b>	47 (100)	19,703	81	74	0.38
<b>November 2018</b>	45 (96)	19,824	72	68	0.34
<b>December 2018</b>	47 (100)	19,609	31	28	0.14
<b>January 2019*</b>	49 (100)	21,866	58	50	0.23
<b>February 2019*</b>	49 (100)	19,299	38	36	0.19
<b>March 2019*</b>	48 (98)	22,526	51	48	0.21
<b>April 2019*</b>	49 (100)	24,463	61	56	0.23
<b>May 2019*</b>	49 (100)	24,195	35	29	0.12
<b>June 2019*</b>	49 (100)	23,757	64	56	0.23
<b>July 2019*</b>	48 (98)	27,212	52	48	0.18

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.

The monthly total number of patients who had a CPE screen performed is likely to be less than the total screens, as some patients may have been tested more than once (e.g., admission and weekly CPE screening on selected high-risk wards, patients identified as contacts of CPE carriers requiring weekly screening for four weeks while they remain an inpatient etc.). The monthly number of CPE screens performed and CPE positive results from both screening and diagnostic specimens, by hospital group and hospital is displayed in **Appendix 5**.

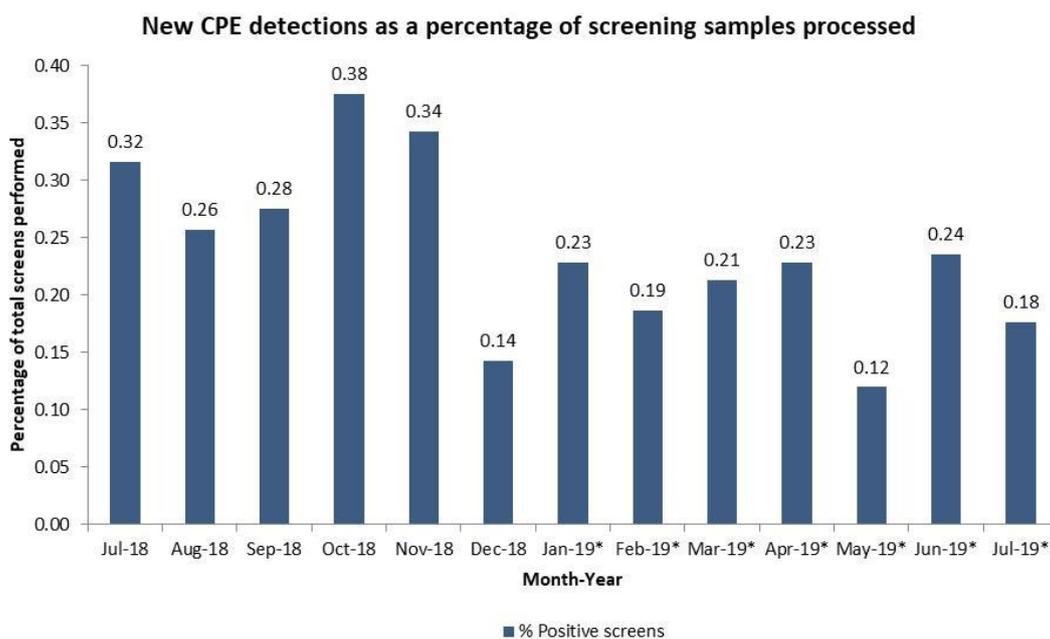
In July, there were 52 patients from whom CPE were newly-detected (**Table 1** and **Figure 8**). Of these, a screening specimen accounted for 48 new detections (0.18% of all screening specimens n=27,212; **Table 1** and **Figure 9**). **Figures 10** and **11** display the rate of CPE screens and number of newly-detected patients with CPE in July by hospital group, respectively. Considerable variation in screening activity between each group was observed, as is evident from the differences in the

screening rate by hospital group in **Figure 10**, which suggests variable local implementation of national CPE screening guidance.



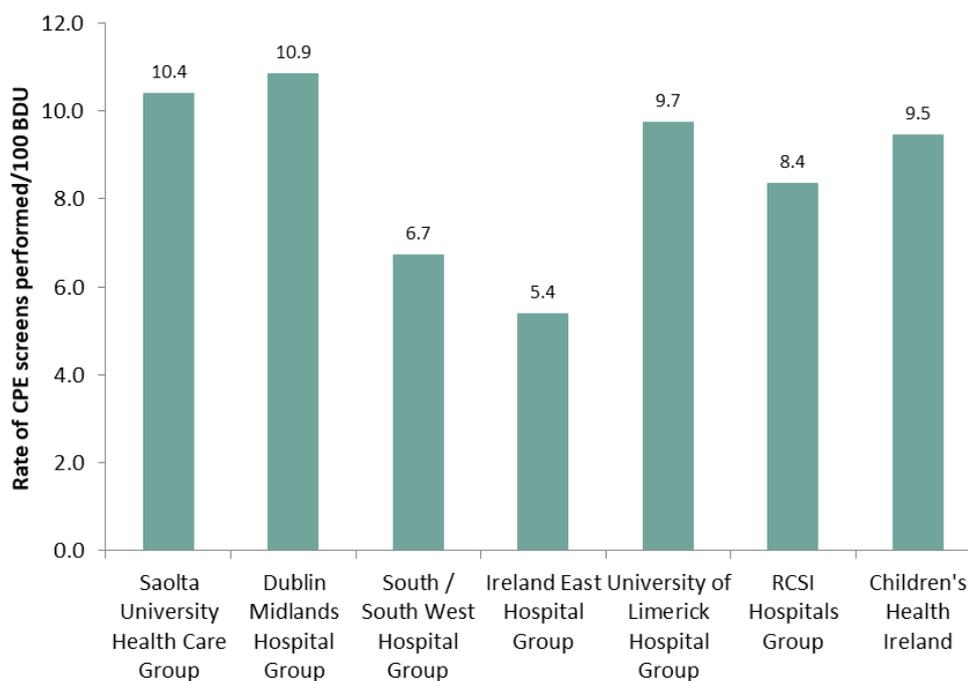
**Figure 8.** Monthly total CPE rectal swab/faecal screening specimens (red bars), CPE diagnostic and screening detections from all sites (pink line) and CPE detections from rectal swab/faecal screening specimens (purple line) in acute HSE hospitals from July 2018. Number of hospitals reporting cited above each bar. **Source:** BIU

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.



**Figure 9.** Newly positive CPE detections as a percentage of rectal swab/faecal screening samples processed from July 2018. **Source:** BIU

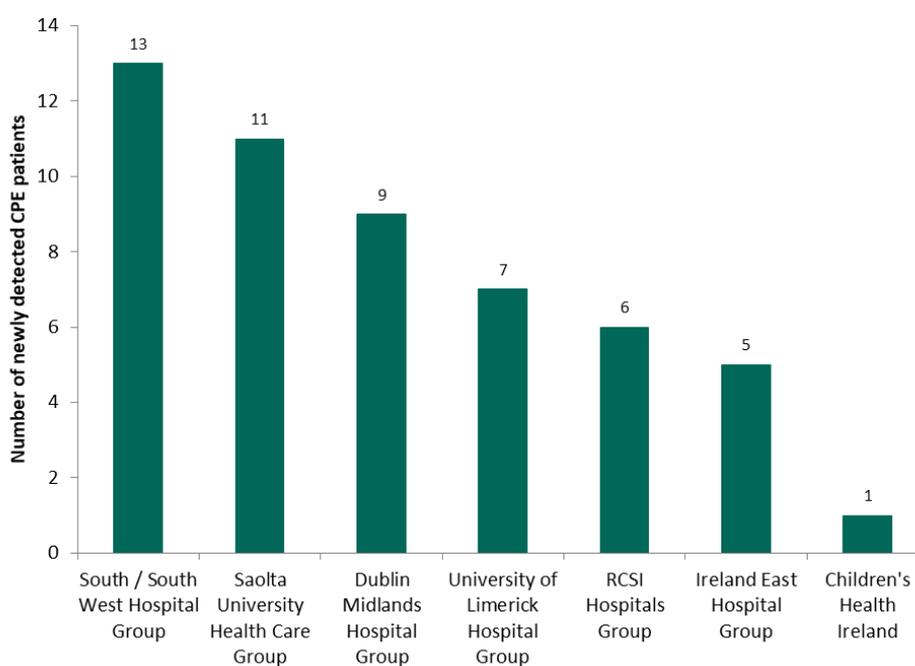
### Rate of CPE screens by BDU conducted by hospital group



**Figure 10.** Rate of CPE screens per 100 bed days used (BDU), by acute HSE hospital group (July 2019). **Source:** BIU

Denominator used in rate calculations derived from average monthly bed days used by hospital group for 2014-2018 inclusive.

### Newly detected patients with CPE by hospital group



**Figure 11.** Distribution of newly-detected patients with CPE (from either screens or diagnostic specimens) by acute HSE hospital group (July 2019). **Source:** BIU

## 6. Additional CPE performance indicators reported to BIU

All 49 acute HSE hospitals are asked to report monthly data on additional CPE-related performance indicators to the BIU. **Appendix 3** describes the CPE-related performance indicators currently reported to BIU by HSE acute hospitals and **Appendix 4** displays compliance with monthly data returns of each hospital for the preceding two months. **Table 2** displays national monthly data from July 2018.

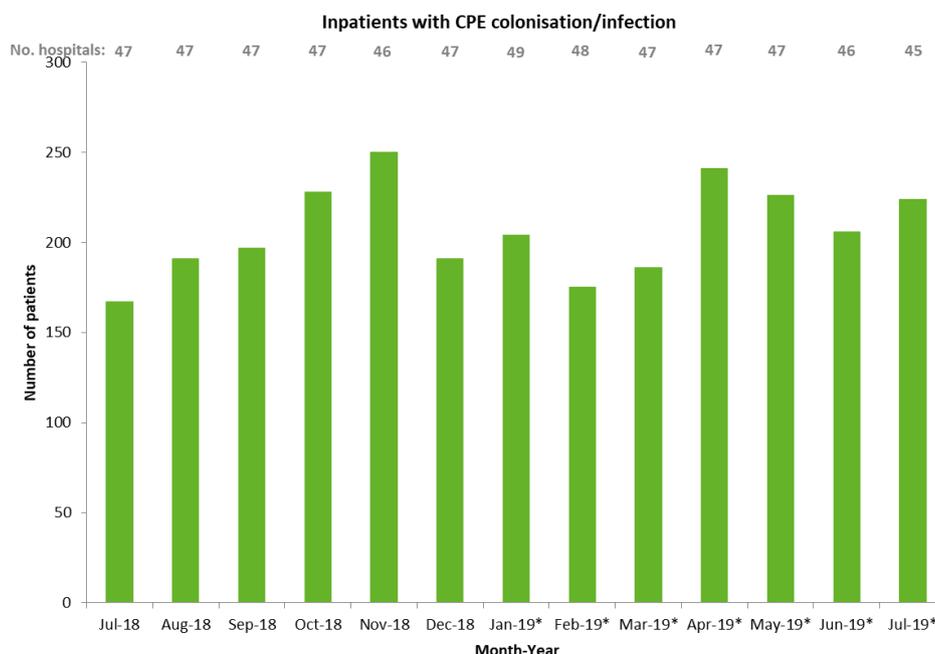
**Table 2.** Monthly national inpatients with known CPE and those not accommodated in an *en suite* single room or appropriate cohort for part of their admission from July 2018. **Source:** BIU

	N (%) HSE acute hospitals providing data (CPE005)	Total inpatients with known CPE	N (%) HSE acute hospitals providing data (CPE006)	Total inpatients not accommodated suitably for part of admission
<b>July 2018</b>	47 (100)	167	47 (100)	12
<b>August 2018</b>	47 (100)	191	46 (98)	10
<b>September 2018</b>	47 (100)	197	47 (100)	11
<b>October 2018</b>	47 (100)	228	47 (100)	19
<b>November 2018</b>	46 (98)	250	46 (98)	13
<b>December 2018</b>	47 (100)	191	47 (100)	10
<b>January 2019*</b>	49 (100)	204	48 (98)	10
<b>February 2019*</b>	48 (98)	175	49 (100)	5
<b>March 2019*</b>	47 (96)	186	47 (96)	10
<b>April 2019*</b>	47 (96)	241	47 (96)	14
<b>May 2019*</b>	47 (96)	226	47 (96)	9
<b>June 2019*</b>	46 (94)	206	47 (96)	9
<b>July 2019*</b>	45 (92)	224	46 (94)	14

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.

### 6.1 Inpatients with known CPE infection or colonisation (Indicator: CPE005)

In July 2019, 45 HSE acute hospitals (92%) provided data. There were 224 inpatients with known CPE infection or colonisation accommodated in 28 (62%) reporting HSE acute hospitals (range = 1 – 36 inpatients), with 17 hospitals reporting no known inpatients with CPE (**Figure 12** and **Appendix 5**).

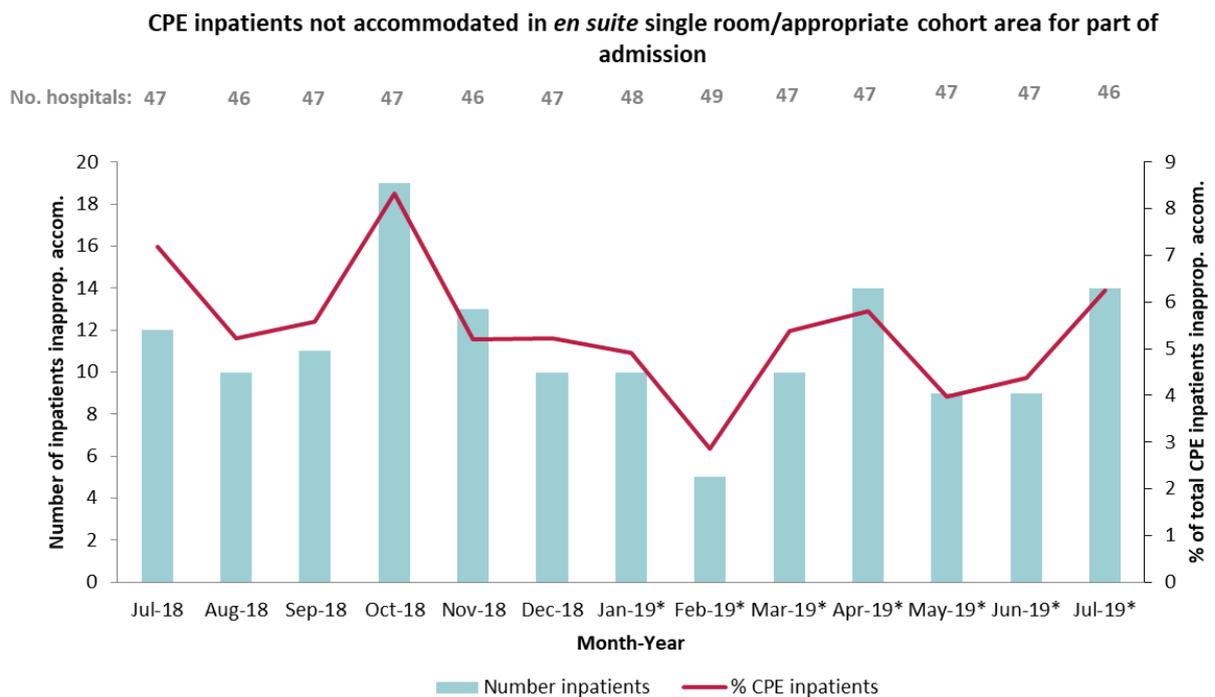


**Figure 12.** Monthly total of known inpatients with CPE (green bars) in acute HSE hospitals. Number of hospitals reporting cited above each bar. **Source:** BIU

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.

## 6.2 Known CPE inpatients not accommodated in an *en suite* single room or appropriate cohort\* for part of their admission (Indicator: CPE006)

In July 2019, 46 HSE acute hospitals (94%) provided data. A total of 14 inpatients of nine acute HSE hospitals (20% of those providing data) were not accommodated in an *en suite* single room or appropriate cohort\* for part of their admission, increasing the risk of further CPE transmission (Figure 13 and Appendix 5): Ireland East Hospital Group (n=7 patients), Saolta University Health Care Group (n=3 patients), RCSI Hospitals Group (n=2 patients) and South/South West Hospital Group (n=2 patients). Visits by the national team to a number of hospitals show that in many cases patients who are not accommodated in an *en suite* single room or appropriate cohort\* for part of their admission are very often accommodated in a single room with dedicated commode. Some hospitals have very few *en suite* single rooms and accommodation in a single room with dedicated commode, though not ideal, may be the best risk mitigation available.



**Figure 13.** Monthly total known CPE inpatients (blue bars) not accommodated in an *en suite* single room or appropriate cohort area for part of their admission to acute HSE hospitals. Proportion (%) of total CPE inpatients not accommodated appropriately (red line). Number of hospitals reporting cited above each bar. **Source:** BIU

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.

## 7. Meropenem use

### 7.1 Acute HSE hospital pharmacy dispensing of meropenem, as reported to BIU (indicator: CPE008)

Meropenem is a carbapenem antimicrobial of last resort, used in hospitals and reserved for treatment of infections due to antimicrobial resistant bacteria and infections in seriously ill patients, with input from an infection specialist (clinical microbiologist or infectious diseases physician). Because antimicrobial consumption is a driver of antimicrobial resistance, excessive consumption of meropenem is undesirable, as it may contribute to the spread of CPE in hospitals.

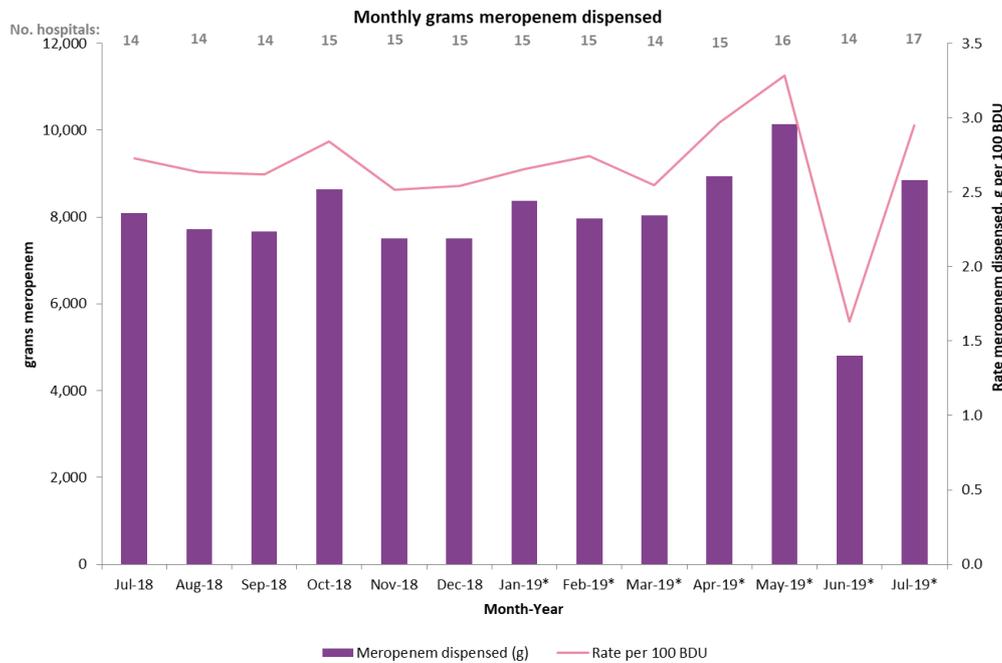
All 49 acute HSE hospitals are asked to report data on net monthly grams of meropenem dispensed by the pharmacy. **Appendix 3** describes the CPE-related performance indicators currently reported to BIU by HSE acute hospitals and **Appendix 4** displays compliance with monthly data returns of each hospital for the preceding two months.

**Table 3** and **Figure 14** display national monthly data from July 2018 and **Appendix 5** displays data by hospital and hospital group. A decline in reporting hospitals was observed in 2018, bringing the total to just 17 HSE acute hospitals (35%) in July 2019. Fewer reporting hospitals accounts for the reduction in monthly meropenem dispensing, with 8,852 net grams dispensed in July by 14 pharmacies (82% of those providing data), and three hospitals reported having dispensed no meropenem.

**Table 3.** Monthly net grams of meropenem dispensed from July 2018. **Source:** BIU

	N (%) HSE acute hospitals providing data (CPE008)	Net grams of meropenem dispensed monthly	Number of pharmacies dispensing meropenem
July 2018	14 (30)	8,097	12
August 2018	14 (30)	7,715	13
September 2018	14 (30)	7,671	12
October 2018	15 (32)	8,635	12
November 2018	15 (32)	7,513	13
December 2018	15 (32)	7,512	13
January 2019*	15 (31)	8,376	14
February 2019*	15 (31)	7,967	14
March 2019*	14 (29)	8,044	13
April 2019*	15 (31)	8,928	14
May 2019*	16 (33)	10,129	15
June 2019*	14 (29)	4,806	13
July 2019*	17 (35)	8,852	14

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.



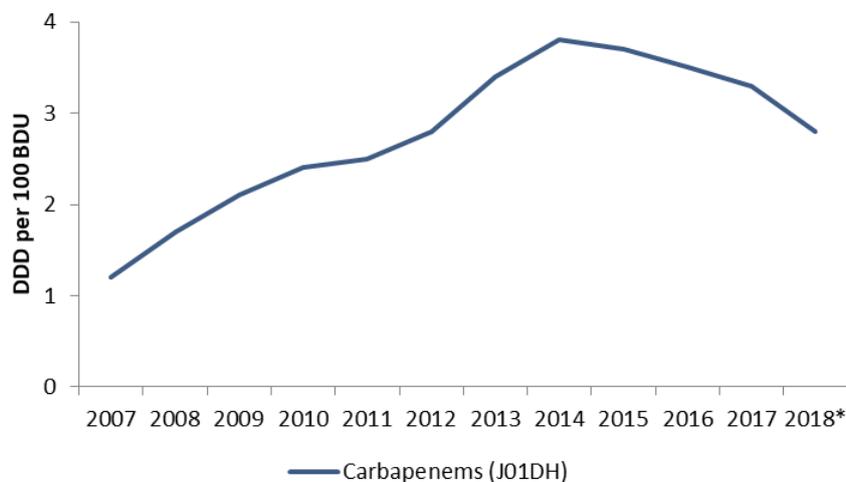
**Figure 14.** Monthly net\*\* grams of meropenem dispensed by acute HSE hospital pharmacies (purple bars) and rate of meropenem dispensed per 100 bed days used (pink line). Note monthly reduction in number of hospitals reporting data, cited above each bar. **Source:** BIU

\*Tallaght University Hospital included Tallaght Paediatrics data and Cork University Hospital included Cork University Maternity Hospital data prior to January 2019. These are reported separately as CHI at Tallaght and Cork University Maternity Hospital respectively from January 2019, bringing the total number of hospitals reporting from January 2019 to 49.

\*\*Not all meropenem dispensed by the hospital pharmacy may be administered to patients within the month. Pharmacy dispenses Xg in a month, but Yg is returned at the end of the month: Net = X-Y. For example, 400g issued in January, with 100g returned in February: 100g is deductible from the total issued in February (net = 300g). Denominator used in rate calculations derived from average monthly bed days used for 2014-2018 inclusive (2013-2017 used for Jan-Dec 2018 figures).

## 7.2 National carbapenem use data, as reported to HPSC

The majority of HSE acute hospitals submit data on antimicrobial use to the HPSC. Data are published nationally and by participating hospital on the HPSC website. Overall use and use by antimicrobial class, including carbapenems (meropenem, ertapenem and imipenem), are reported. Data are expressed as a rate of defined daily doses (DDD) per 100 bed days used (BDU), using the WHO standard method. **Figure 15** displays annual national carbapenem use trends to end Q4 2018, with a consistent decline in carbapenem use observed since a peak in 2014.



**Figure 15.** Annual national carbapenem use in acute HSE hospitals (results are provisional for \*2018 data to end Q4). **Source:** HPSC

<http://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/europeansurveillanceofantimicrobialconsumptionesac/PublicMicroB/SACHC/Report1.html>

## 8. Enhanced surveillance of CPE, as reported to HPSC

In January 2017, a mandatory CPE enhanced surveillance scheme was launched, with quarterly data reported by microbiology laboratories to HPSC, including those serving public and private hospitals. CPE enhanced surveillance collects information based on the first CPE isolate per patient per year of any *Enterobacteriales* species confirmed as a carbapenemase producer from acute HSE and private hospitals, patient age, gender, location at the time of positive CPE specimen, specimen type, and carbapenemase type. For inpatients, additional information is sought on patient isolation status within 24 hours of a suspected CPE result, whether or not the patient had required antimicrobial therapy for suspected CPE infection by the time of reporting and patient outcome. In 2018, 564 CPE were reported from 563 patients by 30 laboratories. This represents an increase from 449 cases from 447 patients in 2017. The latest CPE enhanced surveillance report is available on the HPSC website:

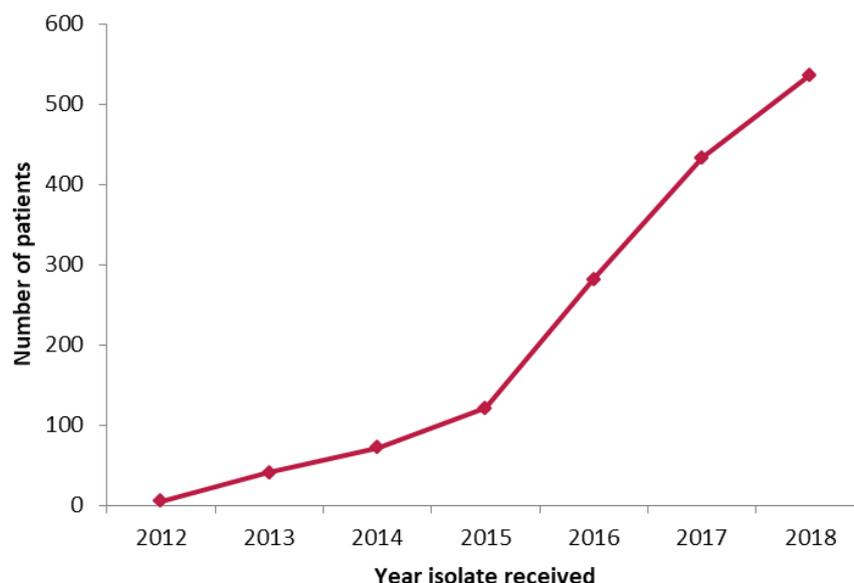
<https://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/strategyforthecontrolofantimicrobialresistanceinirelandsari/carbapenemresistantenterobacteriaceae/surveillanceofcpeinireland/cpeannualreports/CPE%20Enhanced%20Surveillance%20Report%20Q1-4%202018.pdf>

## 9. Acknowledgements

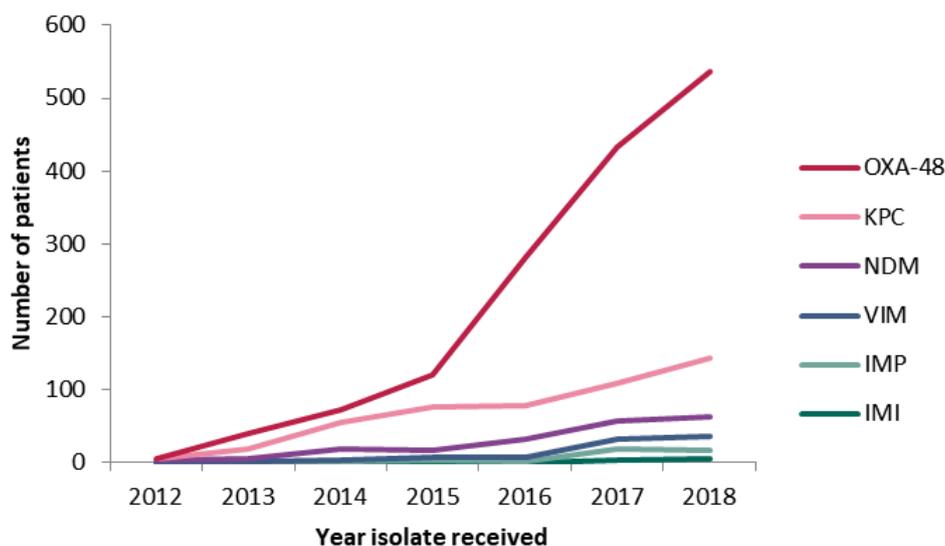
We would like to sincerely thank all who have contributed to this report: Microbiology Surveillance Scientists, Infection Prevention and Control Nurses, Microbiology Laboratory Scientists, Clinical Microbiologists, National CPE Reference Laboratory Service, BIU of HSE along with all the staff of the Departments of Public Health across Ireland.

## Appendix 1

### Appendix 1a. Annual NCPERLS data (2012 – 2018)



**Figure 16.** Annual numbers of patients with CPE newly-confirmed: 2012-2018<sup>^</sup>  
**Source:** NCPERLS



**Figure 17.** Annual numbers of patients with newly-confirmed CPE by carbapenemase type, 2012-2018<sup>^</sup>  
**Source:** NCPERLS

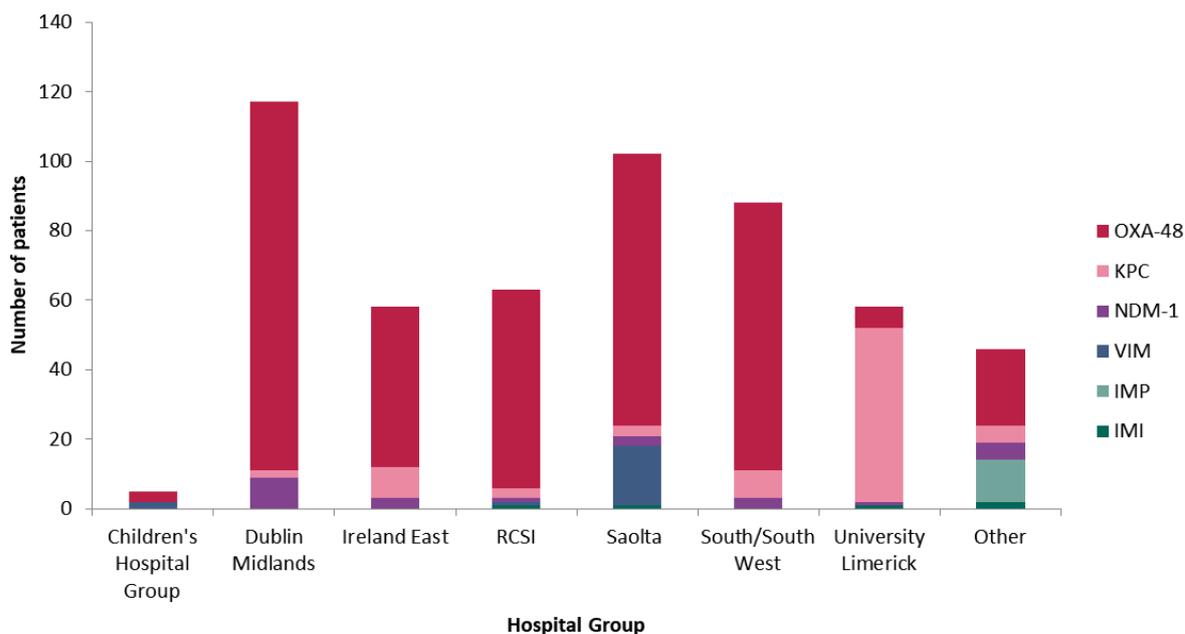
<sup>^</sup>From 2012-2017 the number of newly-detected patients with CPE was determined by “the first isolate per patient per year of any *Enterobacterales* species that was a confirmed carbapenemase-producer from any specimen type, either infection or carriage”. In 2018 and onwards the number of newly-detected patients with CPE was determined by “the first isolate per patient received to the NCPERLS” (i.e. patients counted in 2017 are not recounted again in 2018).

**Appendix 1b. Total patients with newly-confirmed CPE, by carbapenemase and HSE acute hospital in 2018. Source: NCPERLS**

CPE variant:	OXA-48	KPC	NDM-1	VIM	IMP	IMI	Total
<b>Children's Hospital Group</b>							
Our Lady's Children's Hospital, Crumlin	3			2			5
Temple Street Children's University Hospital							0
<b>Dublin Midlands Hospital Group</b>							
Coombe Women and Infants University Hospital							0
MRH Portlaoise							0
MRH Tullamore	3		1				4
Naas General Hospital	3						3
St. James's Hospital	29		3				32
St. Luke's Radiation Oncology Network							0
Tallaght University Hospital	70	2	6				78
<b>Ireland East Hospital Group</b>							
Cappagh National Orthopaedic Hospital							0
Mater Misericordiae University Hospital	21	8	2				31
MRH Mullingar	2						2
National Maternity Hospital							0
Our Lady's Hospital Navan	1	1					2
Royal Victoria Eye and Ear Hospital							0
St. Columcille's Hospital							0
St. Luke's General Hospital Kilkenny	10						10
St. Michael's Hospital							0
St. Vincent's University Hospital	11		1				12
Wexford General Hospital	1						1
<b>Royal College of Surgeons Ireland Hospital</b>							
Beaumont Hospital	37	1	1	1		1	41
Cavan General Hospital	16	2					18
Connolly Hospital	2						2
Louth County Hospital							0
Our Lady of Lourdes Hospital	1						1
Rotunda Hospital	1						1
<b>Saolta Hospital Group</b>							
Galway University Hospitals	42	2	1	10		1	56
Letterkenny University Hospital	2		2	2			6
Mayo University Hospital	2			5			7
Portlincula University Hospital	2						2
Roscommon University Hospital							0
Sligo University Hospital	30	1					31
<b>South/South West Hospital Group</b>							
Bantry General Hospital							0
Cork University Hospital	12	7	1				20
Lourdes Orthopaedic Hospital Kilcreene							0
Mallow General Hospital			2				2
Mercy University Hospital	17	1					18
South Infirmary Victoria University Hospital	1						1
South Tipperary General Hospital	7						7
UH Kerry	1						1
UH Waterford	39						39
<b>University Limerick Hospital Group</b>							
Croom Orthopaedic Hospital			1				1
Ennis Hospital		2					2
Nenagh Hospital		4					4
St. John's Hospital Limerick		6					6
UH Limerick	6	38				1	45
<b>Other</b>							
Private hospitals	13	2	5		12	2	34
Long-term care facilities	2						2
Other e.g. G.P., private laboratories	7	3					10
<b>Total:</b>	<b>394</b>	<b>80</b>	<b>26</b>	<b>20</b>	<b>12</b>	<b>5</b>	<b>537</b>

- Data are based on bacterial cultures submitted to NCPERLS. Patients are counted once only in the hospital/hospital group from which their first CPE isolate was submitted. It should not be assumed that the location of the patient at the time of first detection represents the hospital/hospital group in which colonisation/infection was acquired.
- Total does not include a small number of NDM-producing *Acinetobacter* species and VIM-producing *Pseudomonas aeruginosa* isolates detected in 2018, because neither are members of the order *Enterobacterales*. Other healthcare facilities include specimens from: Private hospitals, long-term care facilities and GP surgeries.

**Appendix 1c. Total patients with newly-confirmed CPE, by carbapenemase and HSE Hospital Group in 2018. Source: NCPERLS**



**Figure 18.** Patients with newly-confirmed CPE in 2018\*, by carbapenemase type and hospital group. **Source:** NCPERLS

Data are based on bacterial cultures submitted to NCPERLS. Patients are counted once only in the hospital/hospital group from which their first CPE isolate was submitted. It should not be assumed that the location of the patient at the time of first detection represents the hospital/hospital group in which colonisation/infection was acquired.

Other: Private hospitals, long-term care facilities and GP surgeries.

## Appendix 2

### Appendix 2a. Annual notifications of invasive CPE infections, 2012-2018.

Source: CIDR

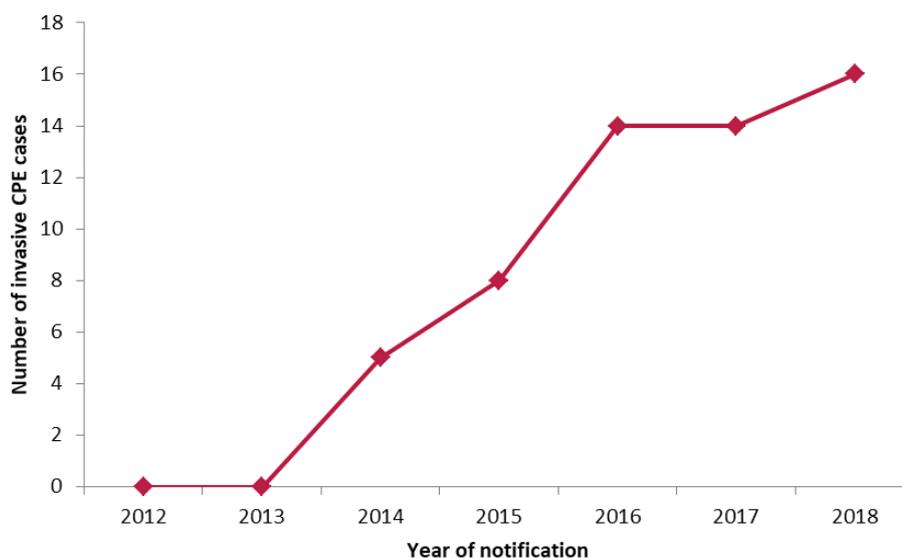


Figure 19. Annual notifications of invasive CPE infection: 2012-2018. Source: CIDR

### Appendix 2b. Annual CPE outbreak events created by Departments of Public Health, 2012-2018. Source: CIDR

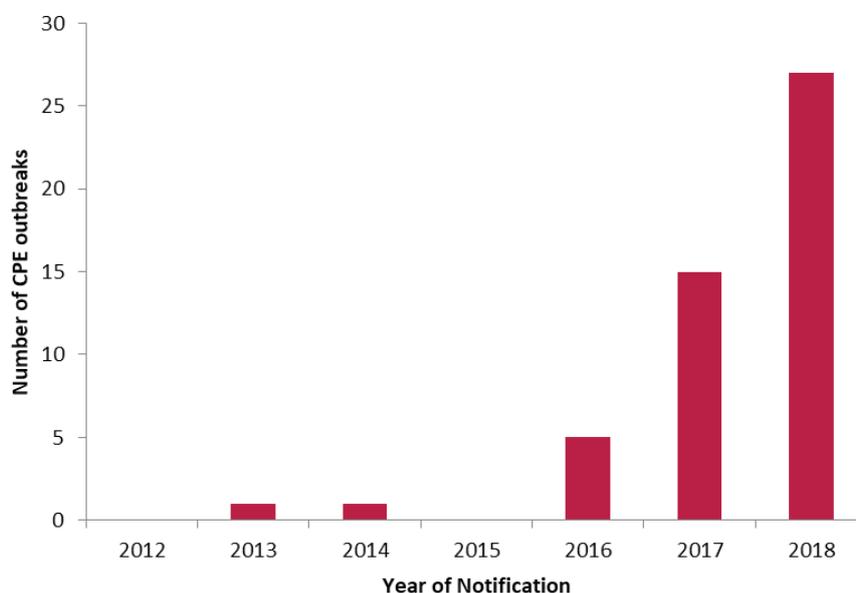


Figure 20. Annual CPE outbreak events created by Departments of Public Health: 2012-2018. Source: CIDR

## Appendix 3. CPE-related performance indicators reported monthly by acute HSE hospitals to the BIU.



### Carbapenemase Producing Enterobacteriaceae (CPE) and Meropenem use

Reference	Indicator
CPE002	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces*
CPE003	Number of patients confirmed with newly detected CPE from any other site*
CPE004	Total number of rectal swabs/ faeces samples tested for CPE
CPE005	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
CPE006	Number of in-patients with known CPE who were accommodated overnight in any accommodation other than an en-suite single room or appropriate cohort area, for any part of their admission. (Include time spent in the emergency department. Overnight means present at midnight).
CPE007	Did you or the IPC team consider that there was evidence of person to person transmission of CPE in your hospital in the past month
CPE008	Net number of grams of meropenem issued from pharmacy in this month**
CPE009	Hospital Manager approved all information included in CPE002- CPE 008 inclusive confirm Yes/ No***
CPE010	Do you have an active/current CPE outbreak in your hospital during this month?****

#### Note:

It is acknowledged that this information does not of itself form a basis for meaningful comparisons between hospitals and this is not its intended purpose. The data is intended to provide real time system wide information on the detection and distribution of patients colonised or infected with CPE and the challenges in containing further spread.

\*To avoid duplication confirmed CPE should be counted once only and for the purpose of this return it should be associated with the month during which a molecular result performed either in house or at reference laboratory becomes available to the Infection Prevention Control team at the hospital making the return.

\*\*It is acknowledged that the dispensing of meropenem by the hospital pharmacy does not mean that the agent was used in patients in that month. The quantity returned should be the net quantity issued. For example if in a given month a pharmacy issues 400g but receives 100g returned from the wards the number for this return is 300g. For example, 400 grams was issued in January, but 100 grams was returned in February, this is deducted from the total issued in February.

\*\*\*It is important that the name of the Hospital Manager approving the return is included in each return

\*\*\*\*For definition and help with determining if your hospital has an outbreak, please refer to the policy document HCAI/AMR P003 "Guide to Assessing if there is Evidence of Carbapenemase Producing Enterobacteriaceae (CPE) Transmission in an Acute Hospital"

## Appendix 4. Monthly CPE returns received by the BIU:

### June and July 2019

Provider	Jun-19		Jul-19	
	Questions completed	% completed	Questions completed	% completed
Beaumont Hospital	4	80%	4	80%
Cappagh National Orthopaedic Hospital	5	100%	5	100%
Cavan General Hospital	4	80%	4	80%
CHI at Tallaght	4	80%	4	80%
CHI at Temple St	4	80%	4	80%
Connolly Hospital - Blanchardstown	4	80%	4	80%
Coombe Women and Infants University Hospital	5	100%	5	100%
Cork University Hospital	4	80%	3	60%
Cork University Maternity Hospital	2	40%	2	40%
Croom Hospital	4	80%	4	80%
Ennis Hospital	4	80%	4	80%
Galway University Hospitals	5	100%	5	100%
Letterkenny University Hospital	4	80%	4	80%
Lourdes Orthopaedic Hospital Kilcreene	4	80%	4	80%
Louth County Hospital	4	80%	4	80%
Mater Misericordiae University Hospital	5	100%	5	100%
Mayo University Hospital	4	80%	4	80%
Mercy University Hospital Cork	5	100%	5	100%
Midland Regional Hospital - Portlaoise	5	100%	5	100%
Midland Regional Hospital - Tullamore	4	80%	4	80%
Midland Regional Hospital Mullingar	4	80%	4	80%
Naas General Hospital	3	60%	3	60%
National Maternity Hospital	4	80%	4	80%
Nenagh Hospital	4	80%	4	80%
Our Lady of Lourdes Hospital Drogheda	4	80%	4	80%
CHI at Crumlin	2	40%	2	40%
Our Ladys Hospital - Navan	4	80%	4	80%
Portiuncula University Hospital	4	80%	4	80%
Roscommon University Hospital	4	80%	4	80%
Rotunda Hospital	5	100%	5	100%
Royal Victoria Eye and Ear Hospital	5	100%	5	100%
Sligo University Hospital	4	80%	4	80%
South Infirmar/Victoria University Hospital Cork	5	100%	5	100%
South Tipperary General Hospital	4	80%	4	80%
St John's Hospital	4	80%	4	80%
St. Columcille's Hospital	5	100%	5	100%
St. James's Hospital	4	80%	5	100%
St. Luke's Hospital Kilkenny	4	80%	4	80%
St. Luke's Radiation Oncology Network	5	100%	5	100%
St. Michael's Hospital	4	80%	4	80%
St. Vincent's University Hospital	5	100%	5	100%
Tallaght University Hospital	5	100%	5	100%
University Hospital Waterford	4	80%	5	100%
University Hospital, Limerick	4	80%	4	80%
UMH Limerick	4	80%	4	80%
Wexford General Hospital	4	80%	4	80%
UH Kerry	4	80%	4	80%
Mallow General Hospital	4	80%	4	80%
Bantry General Hospital	5	100%	4	80%
<b>Total submitted</b>	<b>49</b>		<b>49</b>	
<b>Did not submit</b>	<b>0</b>		<b>0</b>	
<b>% of providers who submitted data</b>	<b>100%</b>		<b>100%</b>	

## Appendix 5. Monthly BIU CPE performance indicator data by Hospital Group

### 5a. National (CPE indicators 002, 003, 004, 005, 006 and 008):

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Hospital Group	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Childrens Health Ireland	CPE002+003	0	1	0	2	0	0	3	0	2	1	0	2	1
	CPE004	441	458	488	519	563	488	603	509	564	654	581	693	675
	CPE005	1	3	3	4	4	0	2	5	5	2	1	1	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0	0	0	0	0	0	0	0	0	0	0	0	0
Dublin Midlands Hospital Group	CPE002+003	8	13	15	18	13	9	7	10	8	11	2	12	9
	CPE004	3,839	4,210	3,895	4,823	4,302	4,656	4,870	4,471	5,695	5,735	5,320	5,127	5,256
	CPE005	65	65	62	72	64	59	57	46	55	63	56	44	53
	CPE006	0	0	1	0	0	0	1	2	0	0	0	4	0
	CPE008	3,136	2,539	2,983	3,204	2,299	2,824	3,752	3,512	2,702	3,568	3,776	465	2,979
Ireland East Hospital Group	CPE002+003	10	4	5	7	6	5	8	2	3	7	7	7	5
	CPE004	2,687	2,659	2,450	2,832	2,762	2,936	3,497	2,778	3,166	3,819	3,728	3,435	4,042
	CPE005	21	22	30	30	25	21	19	22	18	23	28	18	23
	CPE006	2	3	3	7	3	2	1	1	2	5	6	3	7
	CPE008	3,717	3,377	2,735	3,489	3,093	2,631	2,755	2,686	3,934	3,849	3,559	3,086	3,216
RCSI Hospitals Group	CPE002+003	6	11	12	10	18	4	12	7	4	12	9	4	6
	CPE004	1,444	2,178	2,260	3,121	2,977	2,955	3,498	2,868	3,056	3,508	3,880	3,841	4,487
	CPE005	5	17	19	18	37	23	30	22	15	40	29	25	31
	CPE006	3	0	1	1	0	0	2	1	0	5	0	2	2
	CPE008	49	35	83	75	62	115	23	45	60	101	175	64	100
Saoilta University Health Care Group	CPE002+003	12	10	7	14	20	5	16	9	17	12	11	23	11
	CPE004	3,281	3,363	3,095	3,651	3,889	3,459	4,039	3,628	4,438	4,935	4,905	5,178	6,276
	CPE005	31	41	35	43	60	42	46	41	46	46	41	55	47
	CPE006	3	2	2	1	2	3	5	1	1	0	1	0	3
	CPE008	657	1,242	1,307	936	854	1,321	1,249	1,323	1,026	961	985	720	1,082
South / South West Hospital Group	CPE002+003	8	5	4	25	10	4	8	5	10	8	5	10	13
	CPE004	2,115	2,689	2,374	2,974	3,550	3,243	3,300	3,219	3,676	3,723	3,665	3,545	4,113
	CPE005	13	23	16	36	33	28	26	25	31	33	38	34	33
	CPE006	1	1	1	0	3	1	1	0	2	1	2	0	2
	CPE008	538	522	563	931	1,205	621	597	401	322	449	1,634	471	1,475
University of Limerick Hospital Group	CPE002+003	12	6	6	5	5	4	4	5	7	10	1	6	7
	CPE004	1,664	1,929	1,779	1,783	1,781	1,872	2,059	1,826	1,931	2,089	2,116	1,938	2,363
	CPE005	31	20	32	25	27	18	24	14	16	34	33	29	36
	CPE006	3	4	3	10	5	4	0	0	5	3	0	0	0
	CPE008	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>National Total (All Groups)</b>	CPE002+003	56	50	49	81	72	31	58	38	51	61	35	64	52
	CPE004	15,471	17,486	16,341	19,703	19,824	19,609	21,866	19,299	22,526	24,463	24,195	23,757	27,212
	CPE005	167	191	197	228	250	191	204	175	186	241	226	206	224
	CPE006	12	10	11	19	13	10	10	5	10	14	9	9	14
	CPE008	8,097	7,715	7,671	8,635	7,513	7,512	8,376	7,967	8,044	8,928	10,129	4,806	8,852

## 5b. Children's Health Ireland:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
CHI at Crumlin	CPE002+003	0	1	0	2	0	0	0	0	2	1	0	0	1
	CPE004	347	371	394	370	417	347	410	324	415	465	461	511	472
	CPE005	1	3	3	4	4	0	1	1	3				
	CPE006	0	0	0	0	0	0	0	0	0				
	CPE008													
CHI at Tallaght	CPE002+003							1	0	0	0	0	0	0
	CPE004							6	39	1	46	3	47	60
	CPE005							1	2	1	1	1	1	1
	CPE006								0	0	0	0	0	0
	CPE008													
CHI at Temple St	CPE002+003	0	0	0	0	0	0	2	0	0	0	0	2	0
	CPE004	94	87	94	149	146	141	187	146	148	143	117	135	143
	CPE005	0	0	0	0	0	0	0	2	1	1	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Children's Health Ireland	CPE002+003	0	1	0	2	0	0	3	0	2	1	0	2	1
	CPE004	441	458	488	519	563	488	603	509	564	654	581	693	675
	CPE005	1	3	3	4	4	0	2	5	5	2	1	1	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0	0	0	0	0	0	0	0	0	0	0	0	0

## 5c. Dublin Midlands Hospital Group:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Coombe Women and Infants University Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	1	0	0	0
	CPE004	55	37	68	38	51	39	27	38	24	55	57	37	72
	CPE005	0	0	0	0	0	0	0	0	0	1	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	43						27	66	40	8	68	68	26
MRH Portlaoise	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	60	75	158	301	327	295	315	292	333	294	231	275	287
	CPE005	0	1	1	0	0	0	0	1	1	1	0	1	0
	CPE006	0	0	1	0	0	0	1	1	0	0	0	1	0
	CPE008		70	4	122		45							55
MRH Tullamore	CPE002+003	0	0	0	0	1	1	1	0	0	0	1	0	0
	CPE004	294	341	507	671		615	655	513	612	635	603	530	578
	CPE005	1	0	0	0	1	1	0	0	0	1	2	0	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Naas General Hospital	CPE002+003	0	1	0	0	0	0	1	1	0	3	0	0	2
	CPE004	521	396	377	489	511	495	630	657	700	746	748	541	515
	CPE005	4	9	3	4	4	5	1			3	4		
	CPE006	0	0	0	0	0	0	0	0		0	0	0	
	CPE008	123	106		260	130	137	67	38	48	143	121		0
St. James's Hospital	CPE002+003	0	7	8	6	6	2	2	1	3	4	0	5	1
	CPE004	900	1,283	760	1,051	1,168	1,083	1,125	1,036	1,803	1,585	1,469	1,711	1,680
	CPE005	13	11	15	23	18	11	14	11	16	20	20	17	16
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	2,366	2,353	2,493	2,303	1,700	2,160	3,297	2,756	2,548	2,734	2,936		2,250
St. Luke's Radiation Oncology Network	CPE002+003	0	1	0	0	1	0	0	0	0	0	0	1	0
	CPE004	207	216	182	194	248	175	170	185	175	172	203	161	191
	CPE005	1	2	2	1	2	1	1	1	1	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	15	10	14	49	4	10	107	180	66	164	173	60	36
Tallaght University Hospital	CPE002+003	8	4	7	12	5	6	3	8	5	3	1	6	6
	CPE004	1,802	1,862	1,843	2,079	1,997	1,954	1,948	1,750	2,048	2,248	2,009	1,872	1,933
	CPE005	46	42	41	44	39	41	41	33	37	37	30	26	36
	CPE006	0		0	0	0	0	0	1	0	0	0	3	0
	CPE008	589		472	470	465	472	254	472		519	478	282	632
Dublin Midlands Hospital Group	CPE002+003	8	13	15	18	13	9	7	10	8	11	2	12	9
	CPE004	3,839	4,210	3,895	4,823	4,302	4,656	4,870	4,471	5,695	5,735	5,320	5,127	5,256
	CPE005	65	65	62	72	64	59	57	46	55	63	56	44	53
	CPE006	0	0	1	0	0	0	1	2	0	0	0	4	0
	CPE008	3,136	2,539	2,983	3,204	2,299	2,824	3,752	3,512	2,702	3,568	3,776	465	2,979

## 5d. Ireland East Hospital Group:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Cappagh National Orthopaedic Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	52	139	139	165	187	112	144	144	155	162	150	117	168
	CPE005	1	1	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0	10	8	0	61	0	10	32	7	20	14	30	0
Mater Misericordiae University Hospital	CPE002+003	6	4	2	3	4	2	2	0	1	3	5	5	2
	CPE004	611	603	578	689	666	637	650	538	555	628	565	628	678
	CPE005	9	9	13	13	13	7	6	5	5	6	10	5	6
	CPE006	2	2	2	3	0	0	1	0	2	0	3	0	1
	CPE008	2,090	1,780	1,546	1,464	1,145	1,520	1,354	1,242	2,241	1,440	1,519	1,582	2,100
MRH Mullingar	CPE002+003	0	0	0	0	1	0	0	0	0	1	0	0	0
	CPE004	184	196	182	216	271	250	321	218	258	271	295	245	286
	CPE005	1	0	1	0	0	1	0	2	0	1	0	0	1
	CPE006	0	0	0	0	0	0	0	0	0	1	0	0	0
	CPE008													
National Maternity Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	163	160	182	182	169	140	179	134	130	151	134	139	156
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Our Lady's Hospital Navan	CPE002+003	0	0	0	0		0	0	1	0	0	0	0	1
	CPE004	107	58	47	59		41	49	57		85	60	43	65
	CPE005	1	2	2	2		0	0	2	1	0	0	0	2
	CPE006	0	0	0	0		0	0	1	0	0	0	0	1
	CPE008													
Royal Victoria Eye and Ear Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	48	26	39	57	37	34	49	49	54	65	39	52	60
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	1	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0	0	0	0	0	0	0		0	0	0	0	0

## 5d. Ireland East Hospital Group (continued):

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
St. Columcille's Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	108	119	111	130	145	162	185	142	179	160	168	162	195
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	10	23	0	0	0	13	23	10	23	13	52	50	63
St. Luke's General Hospital Kilkenny	CPE002+003	1	0	1	3	0	1	0	0	0	1	1	0	0
	CPE004	164	240	107	166	161	132	202	127	145	303	354	250	256
	CPE005	2	0	2	5	3	2	2	1	1	7	5	3	5
	CPE006	0	0	1	4	3	2	0	0	0	4	3	3	5
	CPE008													
St. Michael's Hospital	CPE002+003	0	0	0	0	0	0	2	0	0	0	0	0	0
	CPE004	122	95	105	117	137	204	261	205	209	217	217	218	224
	CPE005	0	1	0	0	1	0	0	1	0	0	2	1	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
St. Vincent's University Hospital	CPE002+003	3	0	0	1	1	2	4	1	1	2	1	1	2
	CPE004	1,005	876	843	902	869	1,074	1,319	1,054	1,325	1,588	1,391	1,226	1,553
	CPE005	5	8	8	6	6	7	8	8	8	6	7	6	8
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	1,617	1,564	1,181	2,025	1,887	1,098	1,368	1,402	1,663	2,376	1,974	1,424	1,053
Wexford General Hospital	CPE002+003	0	0	2	0	0	0	0	0	1	0	0	1	0
	CPE004	123	147	117	149	120	150	138	110	156	189	355	355	401
	CPE005	2	1	4	4	2	4	3	3	3	3	4	3	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Ireland East Hospital Group	CPE002+003	10	4	5	7	6	5	8	2	3	7	7	7	5
	CPE004	2,687	2,659	2,450	2,832	2,762	2,936	3,497	2,778	3,166	3,819	3,728	3,435	4,042
	CPE005	21	22	30	30	25	21	19	22	18	23	28	18	23
	CPE006	2	3	3	7	3	2	1	1	2	5	6	3	7
	CPE008	3,717	3,377	2,735	3,489	3,093	2,631	2,755	2,686	3,934	3,849	3,559	3,086	3,216

## 5e. RCSI Hospitals Group:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Beaumont Hospital	CPE002+003	2	10	9	8	6	3	11	4	4	10	6	4	4
	CPE004	685	920	896	1,474	889	935	1,264	988	1,162	1,202	1,103	1,208	1,625
	CPE005	2	15	18	14	21	15	23	16	12	18	22	18	22
	CPE006	1	0	1	1	0	0	1	0	0	0	0	1	1
	CPE008													
Cavan General Hospital	CPE002+003	4	0	3	1	12	0	0	1	0	0	2	0	0
	CPE004	297	796	872	982	1,469	1,132	1,340	1,048	880	811	1,138	956	1,038
	CPE005	2	0	0	2	14	5	2	1		19	5	5	6
	CPE006	2	0	0	0	0	0	0	1		3	0	0	0
	CPE008													
Connolly Hospital	CPE002+003	0	1	0	1	0	1	1	2	0	2	1	0	1
	CPE004	156	165	171	236	183	454	502	458	418	483	531	537	555
	CPE005	1	2	1	2	2	3	5	5	3	3	2	1	2
	CPE006	0	0	0	0	0	0	1	0	0	2	0	0	1
	CPE008													
Louth County Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	0	0	5	50	38	30	40	43	34	43	37	33	35
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Our Lady of Lourdes Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	1
	CPE004	169	176	204	223	251	239	204	150	412	750	863	862	1,001
	CPE005	0	0	0	0	0	0	0	0	0	0	0	1	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	1	0
	CPE008								0					
Rotunda Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	137	121	112	156	147	165	148	181	150	219	208	245	233
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	49	35	83	75	62	115	23	45	60	101	175	64	100
RCSI Hospitals Group	CPE002+003	6	11	12	10	18	4	12	7	4	12	9	4	6
	CPE004	1,444	2,178	2,260	3,121	2,977	2,955	3,498	2,868	3,056	3,508	3,880	3,841	4,487
	CPE005	5	17	19	18	37	23	30	22	15	40	29	25	31
	CPE006	3	0	1	1	0	0	2	1	0	5	0	2	2
	CPE008	49	35	83	75	62	115	23	45	60	101	175	64	100

## 5f. Saolta Hospital Group:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Galway University Hospitals	CPE002+003	10	5	5	5	8	3	7	5	8	4	6	18	6
	CPE004	1,898	1,841	1,660	1,973	1,827	1,690	1,769	1,509	1,844	2,074	2,017	1,991	2,550
	CPE005	16	20	19	25	24	18	23	23	26	22	15	29	26
	CPE006	1	1	1	1	1	0	2	1	1	0	0	0	1
	CPE008	657	1,242	1,307	936	854	1,321	1,249	1,323	1,026	961	985	720	1,082
Letterkenny University Hospital	CPE002+003	0	2	0	0	1	1	3	1	1	2	4	3	2
	CPE004	206	199	282	404	542	564	578	440	483	664	901	1,400	1,716
	CPE005	2	6	3	2	5	5	4	4	3	2	6	5	3
	CPE006	0	1	0	0	0	2	1	0	0	0	0	0	0
	CPE008													
Mayo University Hospital	CPE002+003	2	1	0	0	2	0	3	1	7	3	0	0	0
	CPE004	482	579	537	470	475	386	664	759	1,142	1,242	1,053	959	1,054
	CPE005	3	5	4	1	7	3	6	4	3	9	7	5	4
	CPE006	0	0	0	0	0	1	0	0	0	0	0	0	1
	CPE008													
Portiuncula University Hospital	CPE002+003	0	1	0	1	0	0	0	0	0	0	0	0	0
	CPE004	251	261	219	269	252	294	294	262	291	275	245	236	299
	CPE005	1	2	1	1	1	0	2	0	1	1	2	2	2
	CPE006	0	0	0	0	1	0	2	0	0	0	1	0	1
	CPE008													
Roscommon University Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	54	73	72	61	72	61	61	72	80	91	83	60	68
	CPE005	0	0	0	1	1	0	0	1	1	1	1	3	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Sligo University Hospital	CPE002+003	0	1	2	8	9	1	3	2	1	3	1	2	3
	CPE004	390	410	325	474	721	464	673	586	598	589	606	532	589
	CPE005	9	8	8	13	22	16	11	9	12	11	10	11	12
	CPE006	2	0	1	0	0	0	0	0	0	0	0	0	0
	CPE008													
Saolta University Health Care Group	CPE002,003	12	10	7	14	20	5	16	9	17	12	11	23	11
	CPE004	3,281	3,363	3,095	3,651	3,889	3,459	4,039	3,628	4,438	4,935	4,905	5,178	6,276
	CPE005	31	41	35	43	60	42	46	41	46	46	41	55	47
	CPE006	3	2	2	1	2	3	5	1	1	0	1	0	3
	CPE008	657	1,242	1,307	936	854	1,321	1,249	1,323	1,026	961	985	720	1,082

## 5g. South / South West Hospital Group:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Bantry General Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	42	42	51	115	111	91	96	89	97	79	109	100	
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008		70	153	177	110	50	178	140	25	108	58	45	236
Cork University Hospital	CPE002+003	2	1	1	9	2	0	1	0	2	0	2	3	0
	CPE004	494	771	537	684	552	444	378	483	699	568	692	663	730
	CPE005	3	4	1	10	7	8	3	2	6	6	10	6	
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Cork University Maternity Hospital	CPE002+003							0	0	0	0	0	0	0
	CPE004							77	76	101	114	74	86	104
	CPE005							0	0	0				
	CPE006							0	0	0				
	CPE008													
Lourdes Orthopaedic Hospital Kilcreene	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	7	15	18	13	11	9	15	16	10	11	10	11	8
	CPE005	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Mallow General Hospital	CPE002+003	0	2	0	0	0	0	0	0	0	0	0	0	1
	CPE004	66	93	94	89	96	100	106	85	92	98	88	85	104
	CPE005	0	2	0	0	0	0	0	0	0	0	0	0	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Mercy University Hospital	CPE002+003	0	0	1	2	1	0	1	0	1	1	0	0	2
	CPE004	577	583	587	680	595	633	621	543	588	638	720	616	707
	CPE005	1	2	3	2	3	5	5	1	1	1	3	2	2
	CPE006	0	0	0	0	1	1	0	0	0	0	0	0	0
	CPE008	520	420	350	590	510	522	370	251	270	281	386	410	507

## 5g. South / South West Hospital Group (continued):

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
South Infirmiry Victoria University Hospital	CPE002+003	0	1	0	1	0	1	1	0	1	0	0	0	1
	CPE004	83	153	166	200	199	221	268	257	270	228	178	166	218
	CPE005	0	1	1	0	0	1	0	0	1	0	0	0	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	18	32	60	164	80	49	49	10	27	60	9	16	39
South Tipperary General Hospital	CPE002+003	3	0	1	0	1	0	0	0	0	0	0	0	0
	CPE004	405	564	498	510	523	528	429	456	338	303	280	238	341
	CPE005	1	2	1	1	2	1	1	1	2	3	2	2	2
	CPE006	1	1	1	0	2	0	1	0	2	1	2	0	2
UH Kerry	CPE002+003	0	0	0	0	0	0	0	1	0	0	0	0	0
	CPE004	69	60	103	111	218	289	292	266	317	374	353	328	359
	CPE005	0	0	0	0	0	0	0	1	1	0	1	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
UH Waterford	CPE002+003	3	1	1	13	6	3	5	4	6	7	3	7	9
	CPE004	372	408	320	572	1,245	928	1,018	948	1,164	1,310	1,161	1,252	1,542
	CPE005	8	12	10	23	21	13	17	20	20	23	22	24	27
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
South / South West Hospital Group	CPE002,003	8	5	4	25	10	4	8	5	10	8	5	10	13
	CPE004	2,115	2,689	2,374	2,974	3,550	3,243	3,300	3,219	3,676	3,723	3,665	3,545	4,113
	CPE005	13	23	16	36	33	28	26	25	31	33	38	34	33
	CPE006	1	1	1	0	3	1	1	0	2	1	2	0	2
	CPE008	538	522	563	931	1,205	621	597	401	322	449	1,634	471	1,475
						505						1,181		693

## 5h. University of Limerick Hospital Group:

Performance Indicators:	
<b>CPE002</b>	Number of patients confirmed with newly detected CPE from rectal swabs/ faeces
<b>CPE003</b>	Number of patients confirmed with newly detected CPE from any other site
<b>CPE004</b>	Total number of rectal swabs/ faeces samples tested for CPE
<b>CPE005</b>	Number of patients with known CPE infection or colonisation who were inpatients at any time during the month
<b>CPE006</b>	Number of in-patients with known CPE who were accommodated overnight in accommodation other than an en-suite single room or appropriate cohort area for any part of their admission. <i>Please note that CPE inpatients accommodated in appropriate cohort areas were not captured in the definition for CPE006 in use from October to December 2017</i>
<b>CPE008</b>	Net number of grams of meropenem issued from pharmacy in this month
No data submitted by provider	

Provider	Performance indicator	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Croom Orthopaedic Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	19	25	29	31	37	31	36	23	51	40	53	51	108
	CPE005	0	0	1	1	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Ennis Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	2	0
	CPE004	89	113	117	109	131	117	126	110	118	115	124	126	176
	CPE005	2	1	2	2	5	2	2	0	1	4	1	3	6
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
Nenagh Hospital	CPE002+003	2	0	0	0	0	0	0	0	0	0	0	1	0
	CPE004	86	75	64	59	84	80	91	79	76	87	99	108	114
	CPE005	4	2	2	0	2	1	2	1	0	1	3	5	2
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
St. John's Hospital Limerick	CPE002+003	3	1	0	0	0	0	0	0	0	0	0	0	0
	CPE004	164	175	183	190	184	170	154	152	179	159	171	151	167
	CPE005	1	0	1	3	0	1	0	0	0	0	0	1	3
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
UH Limerick	CPE002+003	7	5	6	5	5	4	3	5	7	10	1	3	7
	CPE004	1,286	1,521	1,364	1,379	1,299	1,378	1,537	1,354	1,411	1,562	1,535	1,398	1,702
	CPE005	24	17	26	19	20	14	19	12	15	29	29	20	25
	CPE006	3	4	3	10	5	4	0	0	5	3	0	0	0
	CPE008													
UMH Limerick	CPE002+003	0	0	0	0	0	0	1	0	0	0	0	0	0
	CPE004	20	20	22	15	46	96	115	108	96	126	134	104	96
	CPE005	0	0	0	0	0	0	1	1	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008													
University of Limerick Hospital Group	CPE002,003	12	6	6	5	5	4	4	5	7	10	1	6	7
	CPE004	1,664	1,929	1,779	1,783	1,781	1,872	2,059	1,826	1,931	2,089	2,116	1,938	2,363
	CPE005	31	20	32	25	27	18	24	14	16	34	33	29	36
	CPE006	3	4	3	10	5	4	0	0	5	3	0	0	0
	CPE008	0	0	0	0	0	0	0	0	0	0	0	0	0

5i. National (CPE indicator 010):

<b>CPE010</b>	Do you have an active/current CPE outbreak in your hospital during this month?
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Group	Provider	Q3 2018			Q4 2018			Q1 2019			Q2 2019			Q3 2019
		Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Children's Health Ireland	CHI at Crumlin	No												
	CHI at Tallaght							unspecified	No	No	No	No	No	No
	CHI at Temple St	No												
Dublin Midlands Hospital Group	Coombe Women and Infants University Hospital	No												
	MRH Portlaoise	No												
	MRH Tullamore	No	No	No	No	No	No	unspecified	No	No	No	No	No	No
	Naas General Hospital	No	No	No	unspecified	unspecified	unspecified	No	No	unspecified	No	No	No	No
	St. James's Hospital	No	Yes	No										
	St. Luke's Radiation Oncology Network	No												
	Tallaght University Hospital	Yes	unspecified	Yes										
Ireland East Hospital Group	Cappagh National Orthopaedic Hospital	No												
	Mater Misericordiae University Hospital	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	unspecified	No	No
	MRH Mullingar	No												
	National Maternity Hospital	No												
	Our Lady's Hospital Navan	No	No	No	No	unspecified	No							
	Royal Victoria Eye and Ear Hospital	No												
	St. Columcille's Hospital	No												
	St. Luke's General Hospital Kilkenny	Yes	Yes	No										
	St. Michael's Hospital	No	No	No	No	No	No	Yes	No	No	No	No	No	No
	St. Vincent's University Hospital	Yes	No	Yes										
Wexford General Hospital	No	No	No	No	No	No	No	No	No	No	No	No	No	
RCSI Hospitals Group	Beaumont Hospital	Yes												
	Cavan General Hospital	Yes	No	Yes	Yes	Yes	Yes	Yes	No	unspecified	No	No	unspecified	No
	Connolly Hospital	No												
	Louth County Hospital	No												
	Our Lady of Lourdes Hospital	No												
	Rotunda Hospital	unspecified	No	unspecified	unspecified	unspecified	No							
Saoilta University Health Care Group	Galway University Hospitals	Yes												
	Letterkenny University Hospital	No	No	No	No	unspecified	No	No	No	No	Yes	Yes	Yes	Yes
	Mayo University Hospital	No	No	unspecified	No	No	No	Yes	Yes	Yes	Yes	Yes	No	unspecified
	Portlincula University Hospital	No												
	Roscommon University Hospital	No												
	Sligo University Hospital	Yes	Yes	No	Yes									
South / South West Hospital Group	Bantry General Hospital	No												
	Cork University Hospital	unspecified	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
	Cork University Maternity Hospital										unspecified	unspecified	unspecified	unspecified
	Lourdes Orthopaedic Hospital Kilcreene	No												
	Mallow General Hospital	unspecified	Yes	Yes	Yes	No								
	Mercy University Hospital	Yes	Yes	Yes	Yes	unspecified	Yes	No						
	South Infirmary Victoria University Hospital	No												
	South Tipperary General Hospital	Yes	No	No	No	No	No							
	UH Kerry	No	No	unspecified	No	No	No	No	No	No	unspecified	No	No	No
	UH Waterford	Yes	unspecified	Yes	Yes	Yes								
University of Limerick Hospital Group	Croom Orthopaedic Hospital	No												
	Ennis Hospital	No												
	Nenagh Hospital	Yes	Yes	Yes	Yes	Yes	Yes	No						
	St. John's Hospital Limerick	No												
	UH Limerick	Yes												
	UMH Limerick	No				No	No	No						
Yes	13	12	12	13	11	12	11	8	7	7	9	9	9	
No	31	33	32	32	31	33	35	40	40	38	37	37	38	
Unspecified	3	2	3	2	5	2	3	1	2	4	3	3	2	
Total	47	47	47	47	47	47	49	49	49	49	49	49	49	

**Appendix 6. Data sources for CPE indicators in Ireland – Provisional data is typically deemed final by the end of the following quarter.**

Indicator	Data source	Frequency collated	Unit being measured based on
<b>Invasive CPE infections</b>	CIDR (HPSC)	Weekly	New notifications of invasive CRE/CPE infection by clinicians and laboratories (public and private) to Departments of Public Health. <b>BASED ON DATE REPORTED ON CIDR</b>
<b>CPE outbreaks</b>	CIDR (HPSC)	Weekly	New notifications of CPE outbreaks in healthcare settings to Departments of Public Health and created as a new event on CIDR <b>BASED ON DATE OUTBREAK CREATED ON CIDR</b>
<b>Patients with CPE, newly-confirmed by NCPERLS</b>	NCPERLS	Monthly	Number of patients newly-confirmed by NCPERLS with CPE from any specimen type. Patient counted once per year, except where a second carbapenemase type is identified when the patient is counted again. <b>BASED ON DATE SPECIMEN RECEIVED AT NCPERLS</b>
<b>CPE positive screens (Indicator: CPE002)</b>	BIU	Monthly	Number of patients with newly detected CPE from screens (rectal swabs/faeces) reported by acute HSE hospitals <b>BASED ON DATE NEW CPE CONFIRMED</b>
<b>Newly detected patients with CPE (Indicator: CPE003)</b>	BIU	Monthly	Number of patients with newly detected CPE from clinical specimens reported by acute HSE hospitals <b>BASED ON DATE NEW CPE CONFIRMED</b>
<b>CPE screens (Indicator: CPE004)</b>	BIU	Monthly	Number of CPE screens performed by acute HSE hospital <b>BASED ON REPORTING MONTH</b>
<b>Inpatients with CPE (Indicator: CPE005)</b>	BIU	Monthly	Number of inpatients with known CPE infection admitted to acute HSE hospitals at any time during the month <b>BASED ON REPORTING MONTH</b>
<b>Unsuitable accommodation (Indicator: CPE006)</b>	BIU	Monthly	Number of in-patients with known CPE who were accommodated overnight in unsuitable accommodation for any part of their admission in acute HSE hospitals. (Any facility other than an <i>en suite</i> single room or designated cohort area is unsuitable. Include time spent in the emergency department. Overnight means present at midnight). <b>BASED ON REPORTING MONTH</b>
<b>Evidence of CPE transmission (Indicator: CPE007)</b>	BIU	Monthly	Number of acute HSE hospitals reporting evidence of person-to-person transmission <b>BASED ON REPORTING MONTH</b>
<b>Meropenem dispensed (Indicator: CPE008)</b>	BIU	Monthly	Net number of grams of meropenem dispensed by acute HSE hospital pharmacies <b>BASED ON REPORTING MONTH</b>
<b>Carbapenem use</b>	HPSC	Quarterly	Carbapenem use data from public acute hospitals measured in defined daily doses (DDD) per 100 bed days used (BDU) <b>BASED ON REPORTING QUARTER</b>
<b>CPE Enhanced surveillance</b>	HPSC	Quarterly	Laboratories (public and private) report detailed information on the first positive CPE isolate per patient per year (invasive and non-invasive infections, colonisations and positive screens) <b>BASED ON SPECIMEN DATE</b>

## Appendix 7 Glossary of Terms

<b>AMR</b>	Antimicrobial resistance
<b>BIU</b>	Business Information Unit
<b>CIDR</b>	Computerised Infectious Disease Reporting system
<b>CPE</b>	Carbapenemase-producing <i>Enterobacteriaceae/Enterobacterales</i>
<b>CRE</b>	Carbapenem-resistant <i>Enterobacteriaceae/Enterobacterales</i>
<b>HCAI</b>	Healthcare-associated infection
<b>HPSC</b>	Health Protection Surveillance Centre
<b>HSE</b>	Health Service Executive
<b>NCPERLS</b>	National Carbapenemase-Producing <i>Enterobacterales</i> Reference Laboratory Service
<b>NPHE</b>	National Public Health Emergency Team