

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

### Monthly report on February 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 53 patients in February, compared with 55 in January. There were 537\* patients in total for 2018 versus 433 in 2017
2. **Notification of patients with invasive CPE infection (Departments of Public Health):** No invasive CPE infections were notified in February, with two in January. There were 16 notifications in 2018 and 14 in 2017
3. **Creation of new CPE outbreak events (Departments of Public Health):** In February, one new acute hospital CPE outbreak event was created, with two in January. 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 eight reporting events in February [January = 92% returns & 11 outbreak events]
5. **CPE screens and CPE detections (HSE acute hospitals reporting to BIU):** Data returned by 98% of hospitals, with 19,223 CPE screens performed in February and 38 CPE detected overall, 36 from screening specimens [January = 98% returns; 21,789 screens; 60 CPE detected overall, 52 from screening specimens]
6. **Inpatients with known CPE (HSE acute hospitals reporting to BIU):** Data returned by 96% of hospitals. There were 173 inpatients of 29 hospitals with known CPE colonisation or infection in February [January = 98% returns; 204 inpatients of 26 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 98% of hospitals. In February, five inpatients of five hospitals were not accommodated in an *en suite* single room/appropriate cohort area for part of their admission [January = 96% returns; 10 inpatients of eight hospitals]
8. **Total grams (g) of meropenem\*\* issued by hospital pharmacies: (HSE acute hospitals reporting to BIU):** Data returned by 31% of hospitals. In February, 7,967g of meropenem were issued [January; 31% returns; 8,376g]

*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 27/03/2019). 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*.

\*Total for 2018 differs to previously published data due to late submission of an isolate and following annual data validation

\*\*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).

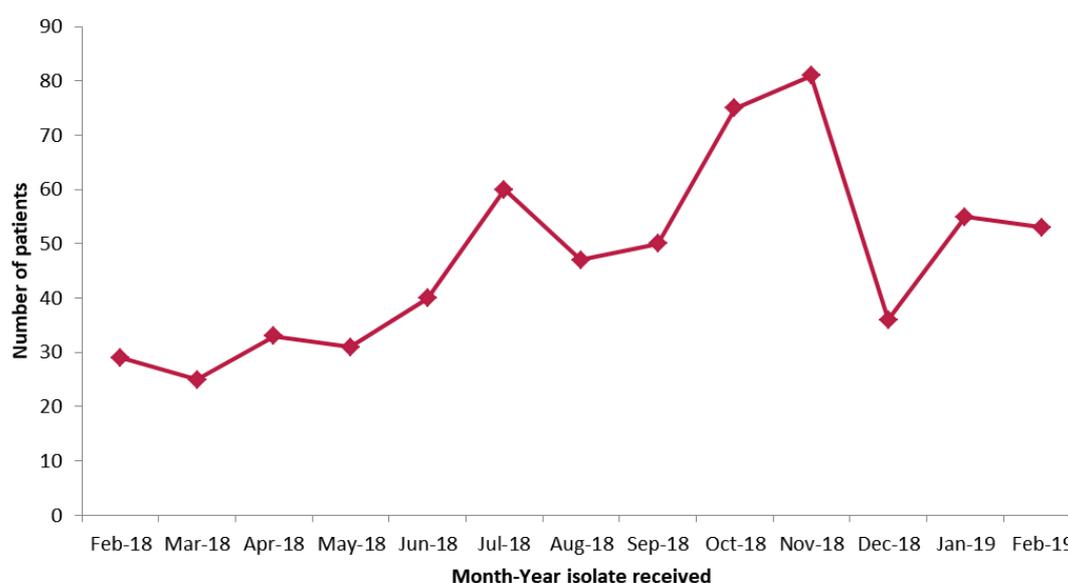
As of 1st February 2019, the NCPERLS will perform in-house molecular Real-Time PCR, targeting CPE genes for those isolates referred which have:

- 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.*

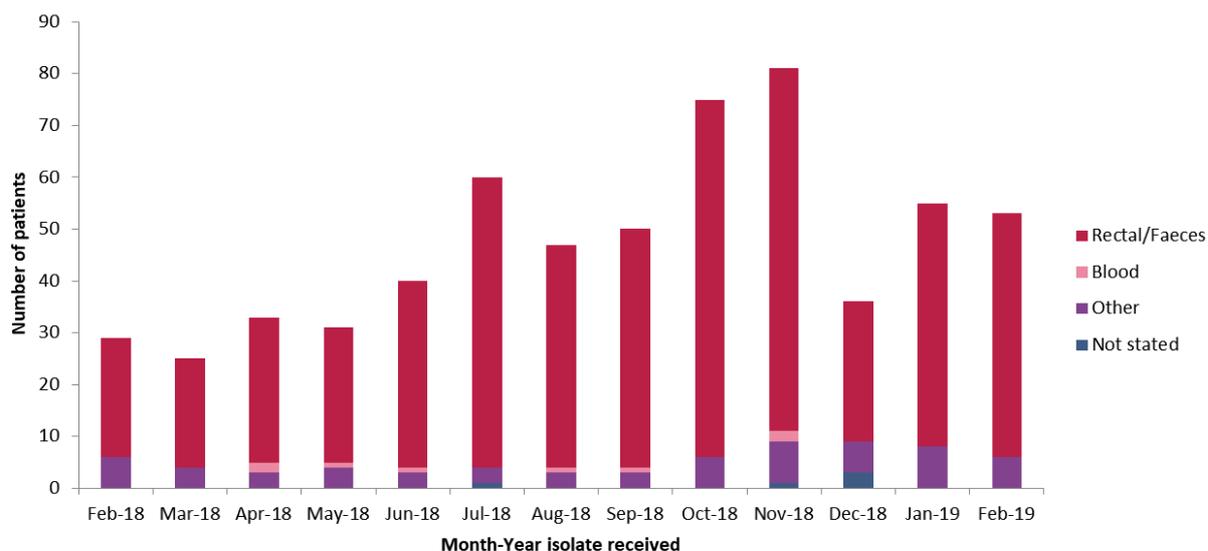
**Appendix 1a** displays annual CPE and carbapenemase trends from 2012 to 2018. **Appendix 1b** displays total patients with CPE newly-confirmed by NCPERLS, stratified by carbapenemase type, by HSE acute hospital for 2018 (also see **Appendix 1c**). The number of cases in 2018 differs to that published previously following the late submission of one isolate and annual validation.

In February 2019, 53 patients with newly-detected CPE were identified, compared with 55 in January (Figure 1).

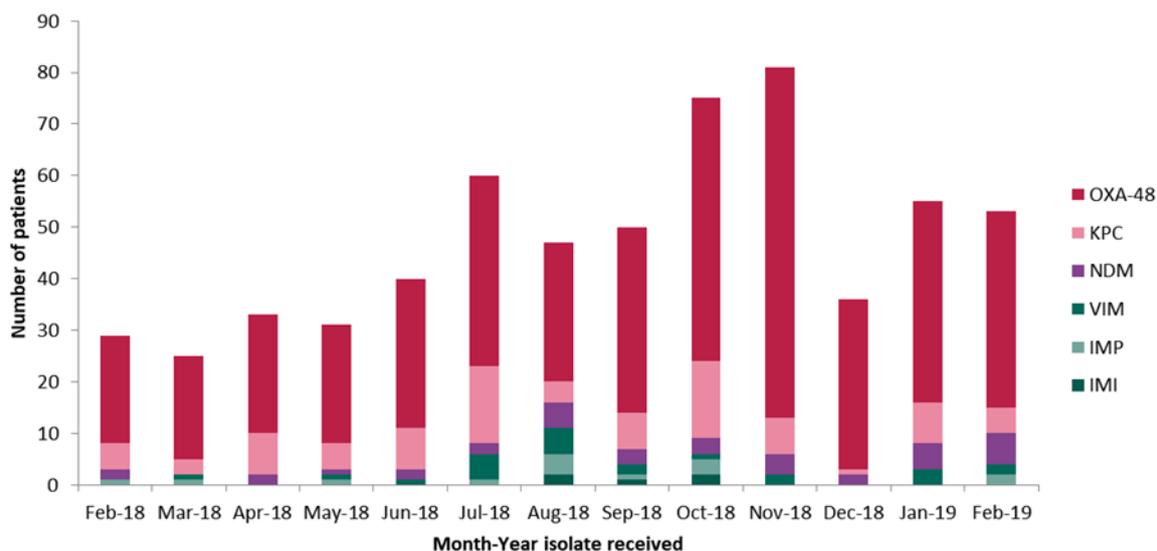


**Figure 1.** Monthly numbers of patients with CPE newly-confirmed by NCPERLS from February 2018. Source: NCPERLS

Of 53 patients in February 2019, 89% were newly-confirmed carriers detected on CPE screening (rectal swab/faeces) (**Figure 2**). OXA-48 remains the predominant carbapenemase in Ireland. Increased detection of KPC carbapenemase has been observed in 2018 (**Figure 3**).



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



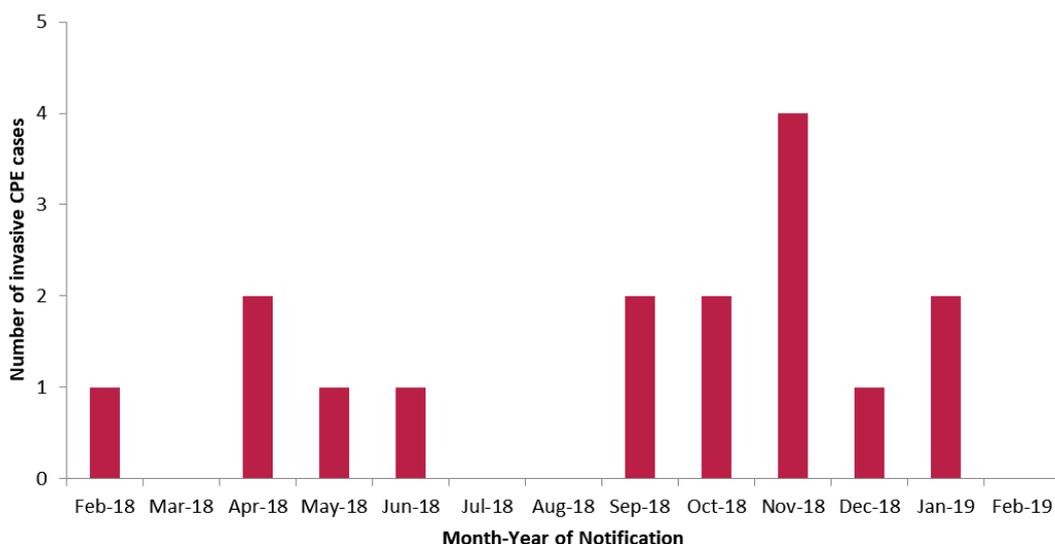
**Figure 3.** Monthly numbers of patients with CPE newly-confirmed by NCPERLS, by carbapenemase.  
Source: NCPERLS

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

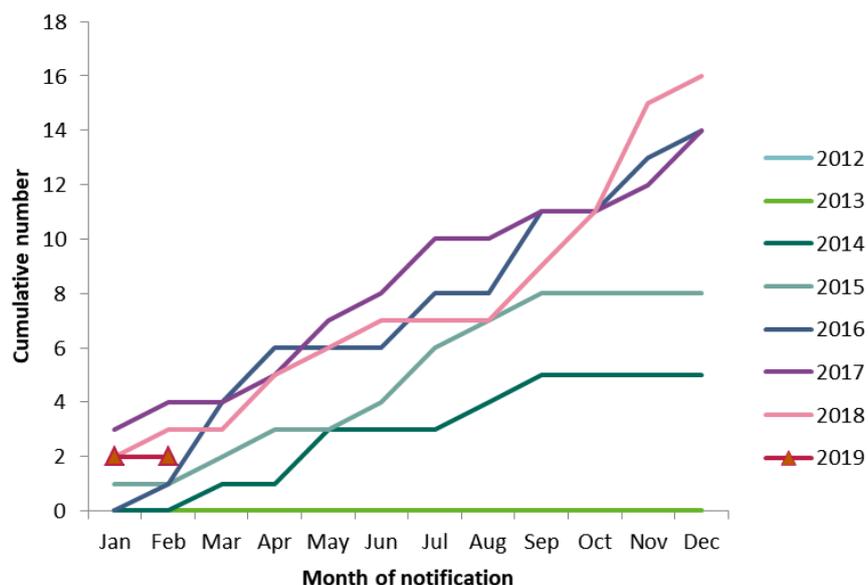
In December 2018, the Infectious Diseases Regulations were updated, changing the terminology from CRE to CPE and expanding the requirement to notify not only invasive “carbapenemase producing *Enterobacteriaceae* (CPE) infection”, but also “non-invasive infection and colonisation” by laboratories (public 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 monthly notifications of invasive CPE infection since February 2018 and **Figure 5** displays cumulative monthly notifications of invasive CPE from 2012 onwards. No cases of invasive CPE infection were notified in February.



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

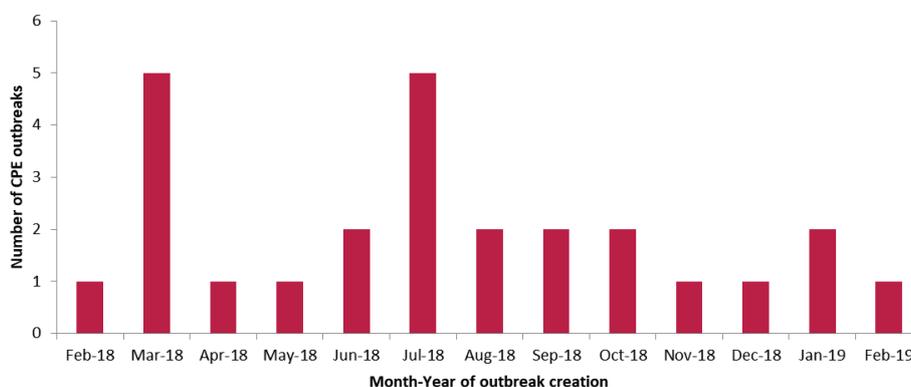


**Figure 5.** Cumulative monthly notifications of invasive CPE infection (2012-2019). **Source:** CIDR

### 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 February 2018. In February 2019, one new acute hospital CPE outbreak event was created on CIDR on the 19<sup>th</sup> February.

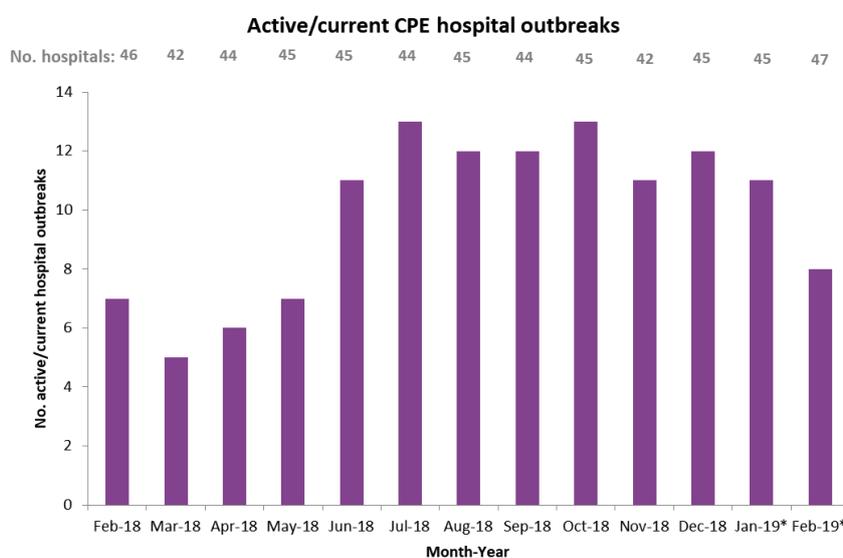


**Figure 6.** Monthly new CPE outbreak events created by Departments of Public Health from February 2018. **Source:** CIDR

### 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 February 2018. In February 2019, a current/active CPE outbreak was being managed by 8 (17%) of the 47 hospitals (96%) that reported this data.



**Figure 7.** Monthly CPE active/current outbreaks (purple bars) from February 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 February 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 27/03/2019). 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 February 2018. **Source:** BIU

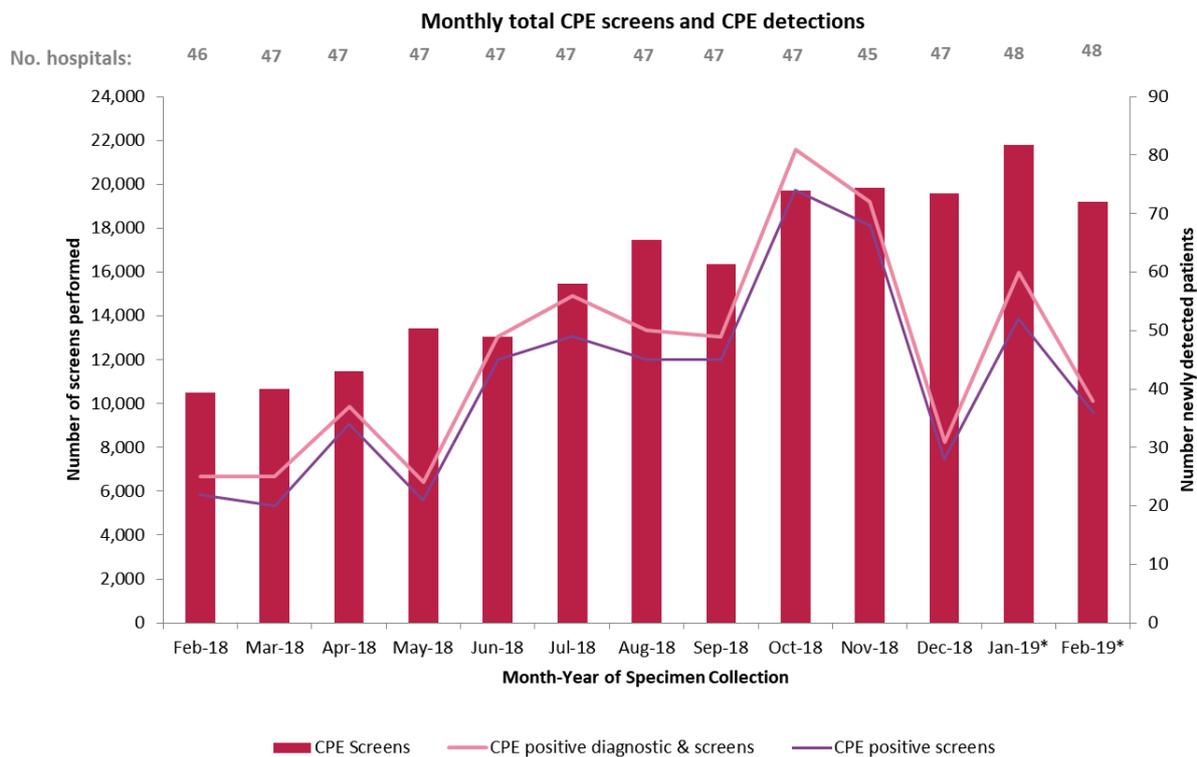
	N (%) HSE acute hospitals providing data (CPE004)	Total monthly CPE screens (CPE004)	Total monthly confirmed CPE cases screening & diagnostic (CPE002+003)	Total confirmed CPE cases from screening (CPE002)	Percentage of positive CPE screens (CPE002/CPE004)
<b>February 2018</b>	46 (98)	10,518	25	22	0.21
<b>March 2018</b>	47 (100)	10,648	25	20	0.19
<b>April 2018</b>	47 (100)	11,468	37	34	0.30
<b>May 2018</b>	47 (100)	13,416	24	21	0.16
<b>June 2018</b>	47 (100)	13,062	49	45	0.34
<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>	48 (98)	21,789	60	52	0.24
<b>February 2019*</b>	48 (98)	19,223	38	36	0.19

\*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**.

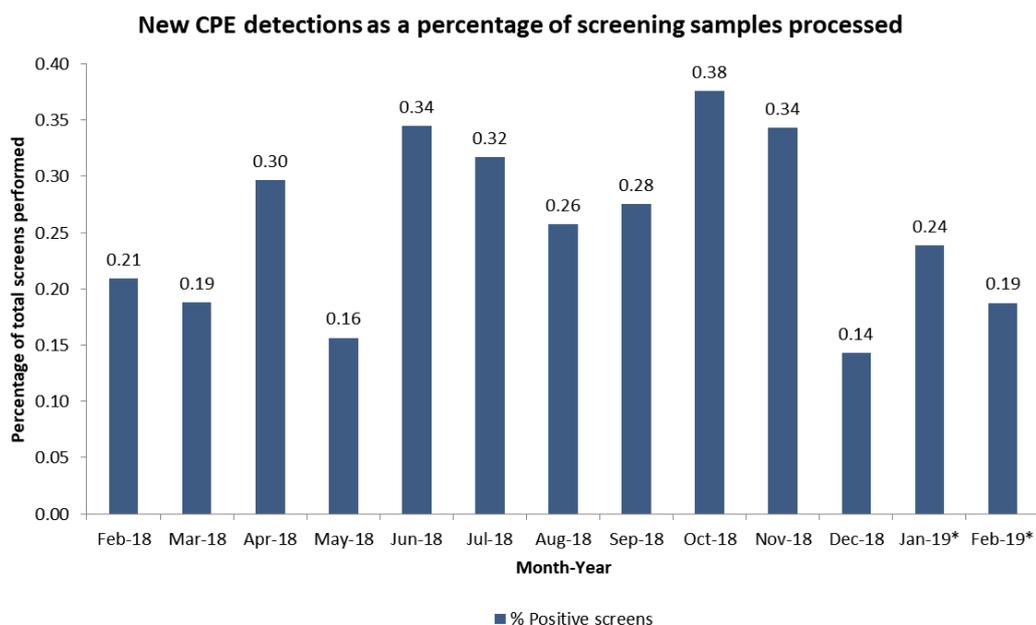
In February, there were 38 patients from whom CPE were newly-detected (**Table 1** and **Figure 8**). Of these, a screening specimen accounted for 36 new detections (0.19% of all screening specimens n=19,223; **Table 1** and **Figure 9**). **Figures 10** and **11** display the rate of CPE screens and number of newly-detected patients with CPE in February by hospital group, respectively. Considerable variation in screening activity between each group was observed in February, 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.



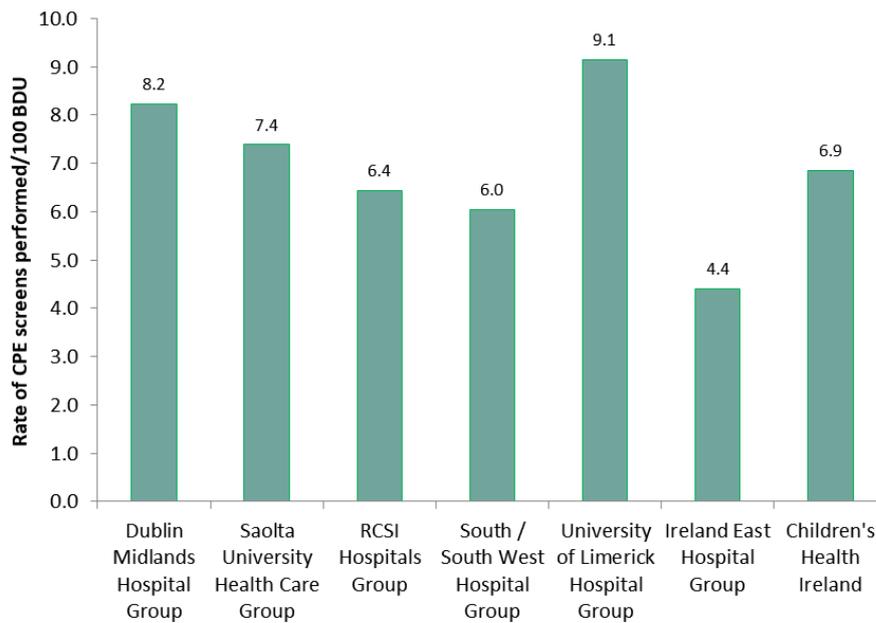
**Figure 8.** Monthly total CPE rectal swab/faecal screening specimens (red bars), CPE diagnostic and screening detections from all sites (pink line) and CPE detections from rectal swab/faecal screening specimens (purple line) in acute HSE hospitals from February 2018. Number of hospitals reporting cited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

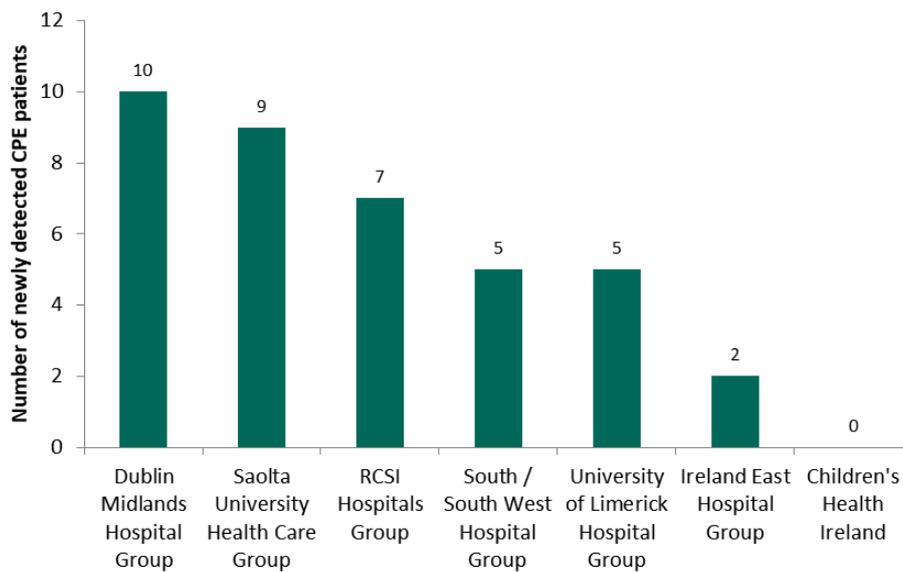
**Rate of CPE screens by BDU conducted by hospital group**



**Figure 10.** Rate of CPE screens per 100 bed days used (BDU), by acute HSE hospital group (February 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 (February 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 January 2018.

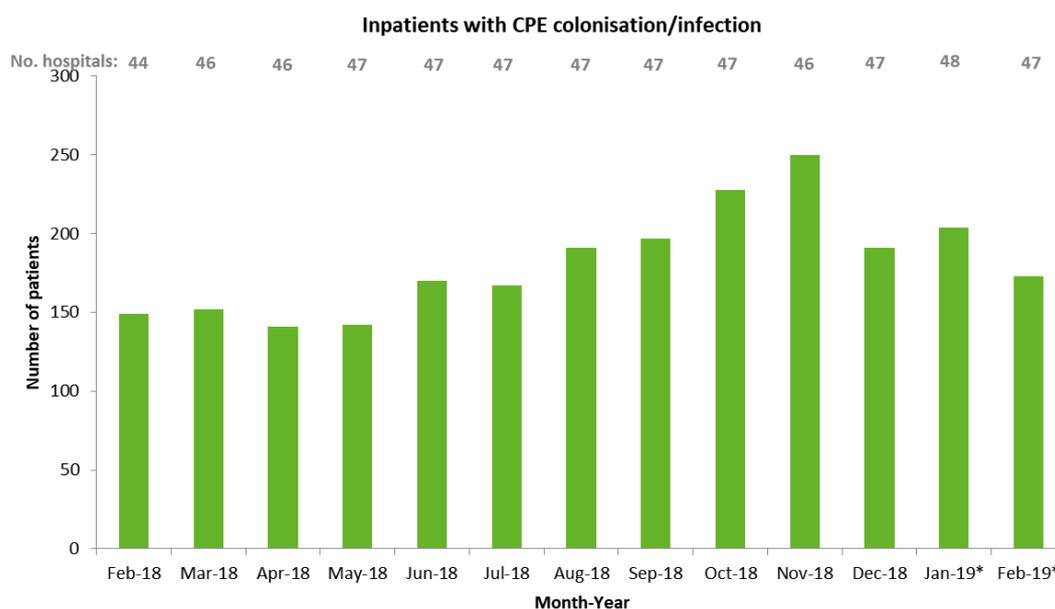
**Table 2.** Monthly national inpatients with known CPE and those not accommodated in an *en suite* single room or appropriate cohort for part of their admission from February 2018. **Source:** BIU

	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
February 2018	44 (94)	149	46 (98)	9
March 2018	46 (98)	152	45 (96)	5
April 2018	46 (98)	141	46 (98)	18
May 2018	47 (100)	142	46 (98)	10
June 2018	47 (100)	170	47 (100)	9
July 2018	47 (100)	167	47 (100)	12
August 2018	47 (100)	191	46 (98)	10
September 2018	47 (100)	197	47 (100)	11
October 2018	47 (100)	228	47 (100)	19
November 2018	46 (98)	250	46 (98)	13
December 2018	47 (100)	191	47 (100)	10
January 2019*	48 (98)	204	47 (96)	10
February 2019*	47 (96)	173	48 (98)	5

\*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 February 2019, 47 HSE acute hospitals (96%) provided data. There were 173 inpatients with known CPE infection or colonisation accommodated in 29 (62%) reporting HSE acute hospitals (range = 1 – 33 inpatients), with 18 hospitals reporting no known inpatients with CPE (**Figure 12** and **Appendix 5**).

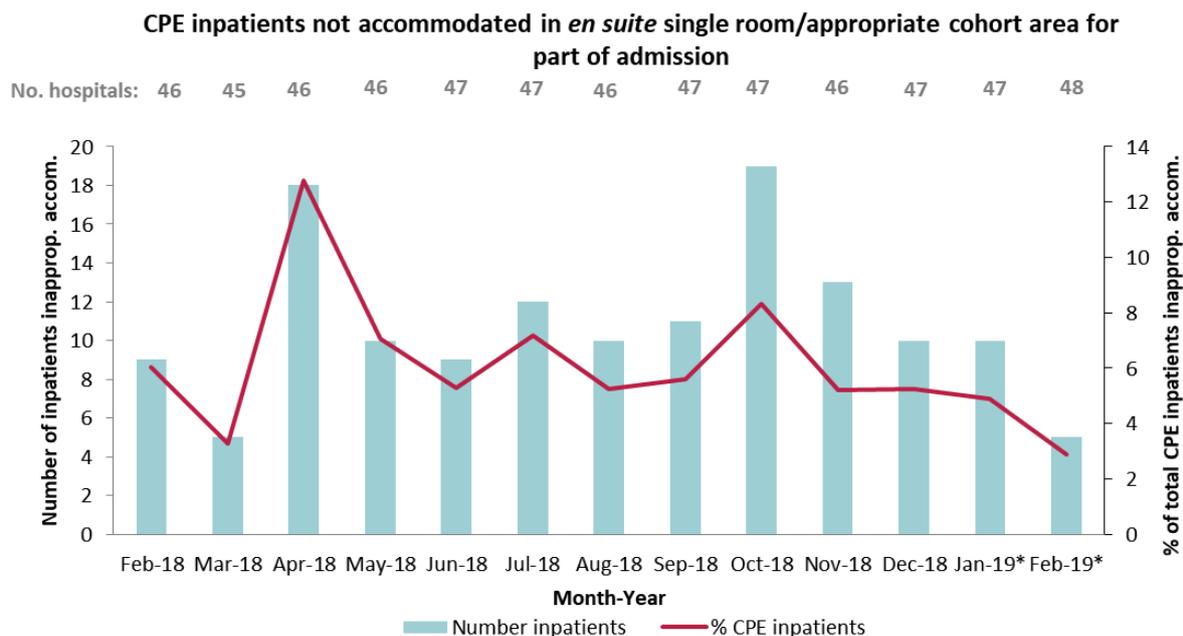


**Figure 12.** Monthly total of known inpatients with CPE (green bars) in acute HSE hospitals. Number of hospitals reporting cited above each bar. **Source:** BIU

\*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 February 2019, 48 HSE acute hospitals (98%) provided data. A total of five inpatients of five acute HSE hospitals (10% 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): Dublin Midlands Hospital Group (n=2 patients), Ireland East Hospital Group (n=1 patient), RCSI Hospital Group (n=1 patient) and Saolta University Hospital Group (n=1 patient). Visits by the national team to a number of hospitals show that in many cases patients that 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 available 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.

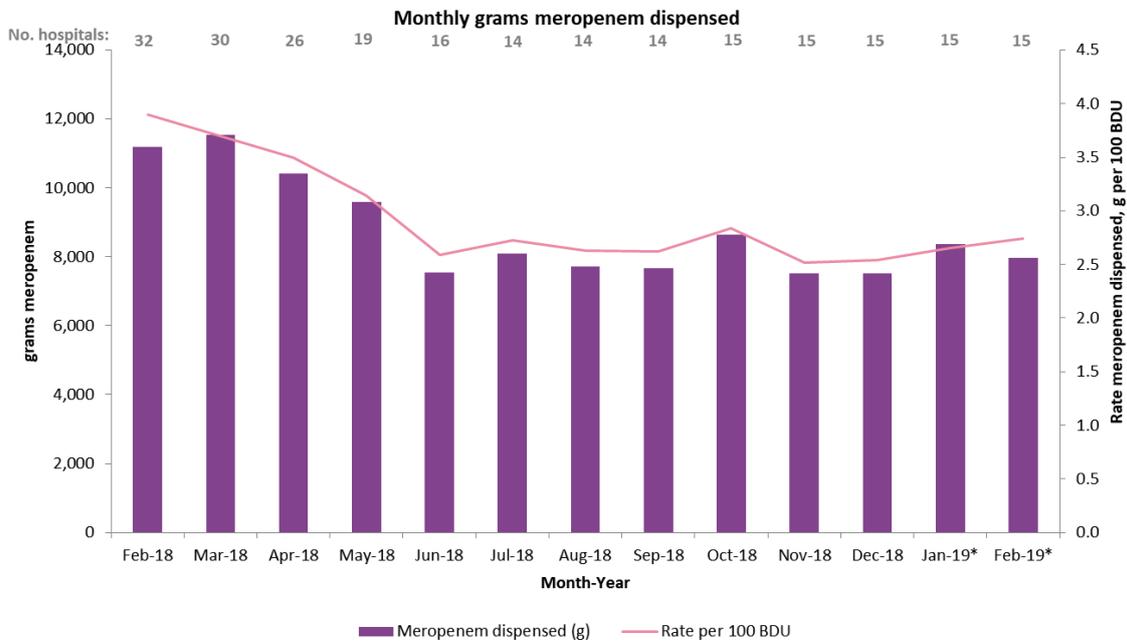
All 49 acute HSE hospitals are asked to report data on net monthly grams of meropenem dispensed by the pharmacy. **Appendix 3** describes the CPE-related performance indicators currently reported to BIU by HSE acute hospitals and **Appendix 4** displays compliance with monthly data returns of each hospital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

**Table 3** and **Figure 14** display national monthly data from February 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 15 HSE acute hospitals (31%) in February 2019. Fewer reporting hospitals accounts for the reduction in monthly meropenem dispensing, with 7,967 net grams dispensed in February by 14 pharmacies (93% of those providing data), and one hospital reported having dispensed no meropenem.

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

	N (%) HSE acute hospitals providing data (CPE008)	Net grams of meropenem dispensed monthly	Number of pharmacies dispensing meropenem
<b>February 2018</b>	32 (68)	11,201	28
<b>March 2018</b>	30 (64)	11,534	23
<b>April 2018</b>	26 (55)	10,413	17
<b>May 2018</b>	19 (40)	9,594	15
<b>June 2018</b>	16 (34)	7,554	13
<b>July 2018</b>	14 (30)	8,097	12
<b>August 2018</b>	14 (30)	7,715	13
<b>September 2018</b>	14 (30)	7,671	12
<b>October 2018</b>	15 (32)	8,635	12
<b>November 2018</b>	15 (32)	7,513	13
<b>December 2018</b>	15 (32)	7,512	13
<b>January 2019*</b>	15 (31)	8,376	14
<b>February 2019*</b>	15 (31)	7,967	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.



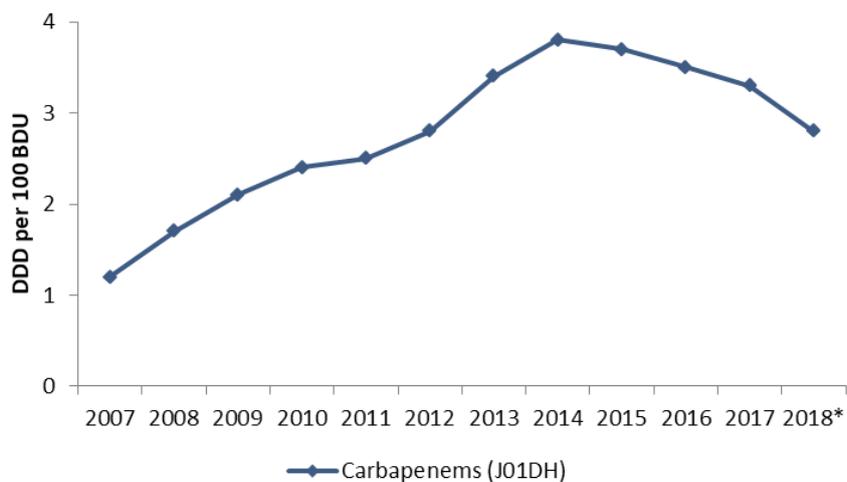
**Figure 14.** Monthly net\*\* grams of meropenem dispensed by acute HSE hospital pharmacies (purple bars) and rate of meropenem dispensed per 100 bed days used (pink line). Note monthly reduction in number of hospitals reporting data, cited above each bar. **Source:** BIU

\*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 Q2 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 Q2). **Source:** HPSC

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

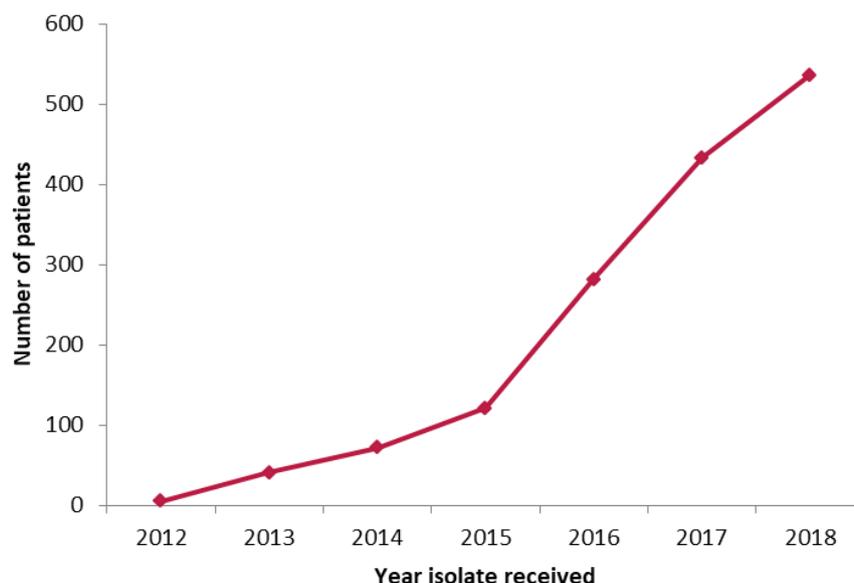
## 8. Enhanced surveillance of CPE, as reported to HPSC

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 2017, 449 CPE were reported from 447 patients by 32 microbiology laboratories. In the first six months of 2018, 209 cases were reported by 23 laboratories. The latest CPE enhanced surveillance report is available on the HPSC website:

[http://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/strategyforthecontrolofantimicrobialresistanceinirelandsari/carbapenemresistantenterobacteriaceae/surveillanceofcpeinireland/cpequarterlysurveillancereports/CRE%20Enhanced%20Surveillance%20Report%202018Q1-2\\_Website\\_20190204.pdf](http://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/strategyforthecontrolofantimicrobialresistanceinirelandsari/carbapenemresistantenterobacteriaceae/surveillanceofcpeinireland/cpequarterlysurveillancereports/CRE%20Enhanced%20Surveillance%20Report%202018Q1-2_Website_20190204.pdf)

## Appendix 1

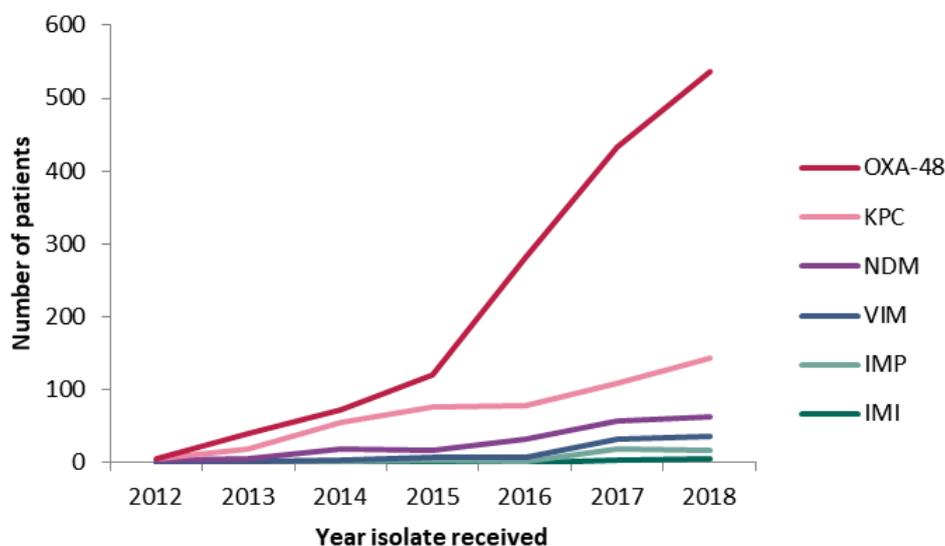
### Appendix 1a. Annual NCPERLS data (2012 – 2018\*)



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

**Source:** NCPERLS

\*Total number for 2018 differs to previously published data due to the late submission of an isolate



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

**Source:** NCPERLS

\*Total number for 2018 differs to previously published data due to the late submission of an isolate

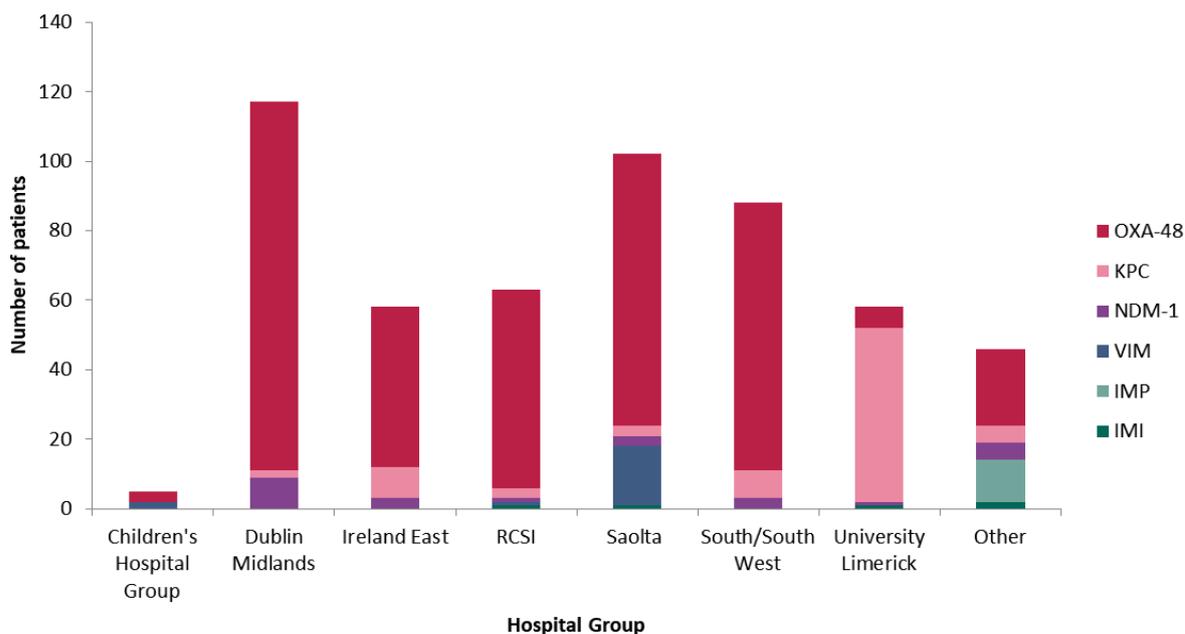
<sup>^</sup>From 2012-2017 the number of newly-detected patients with CPE was determined by “the first isolate per patient per year of any *Enterobacterales* species that was a confirmed carbapenemase-producer from any specimen type, either infection or carriage”. In 2018 and onwards the number of newly-detected 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.
- \*Total number for 2018 differs to previously published data due to the late submission of an isolate and following annual validation

**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.

\*Total number for 2018 differs to previously published data due to the late submission of an isolate and following annual validation

## Appendix 2

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

Source: CIDR

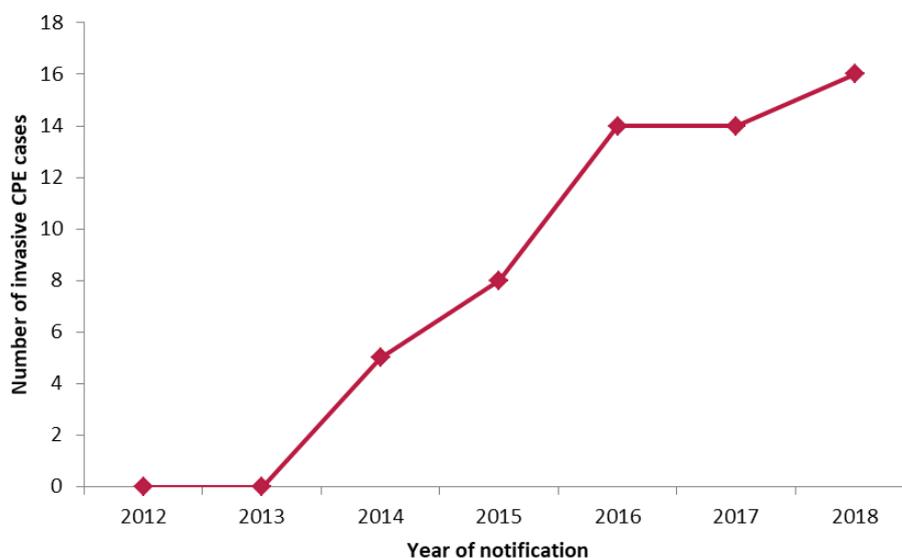


Figure 19. Annual notifications of invasive CPE infection: 2012-2018. Source: CIDR

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

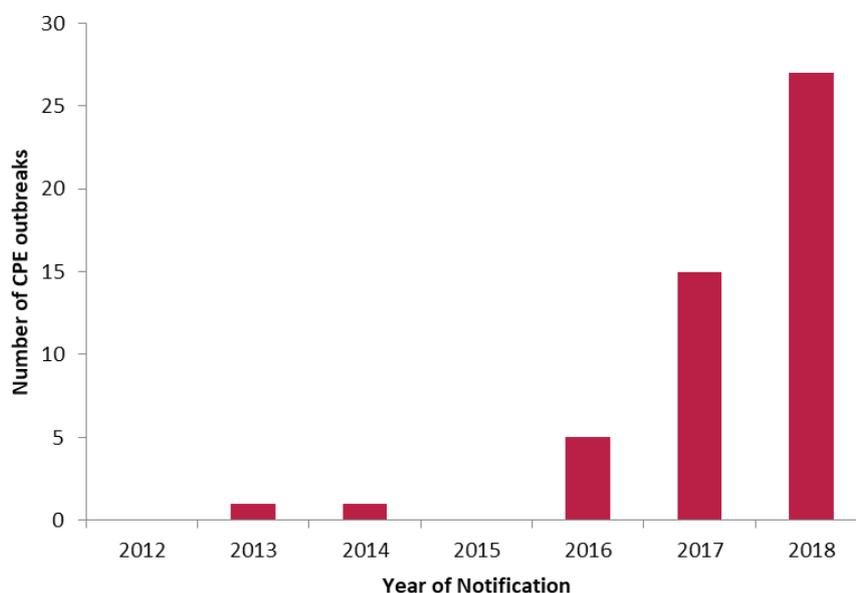


Figure 20. Annual CPE outbreak events created by Departments of Public Health: 2012-2018. Source: CIDR

## 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:

### January 2019 and February 2019

Provider	Jan-19		Feb-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	3	60%	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%	4	80%
Cork University Maternity Hospital	Data outstanding		Data outstanding	
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	4	80%	4	80%
Midland Regional Hospital - Tullamore	4	80%	4	80%
Midland Regional Hospital Mullingar	4	80%	4	80%
Naas General Hospital	5	100%	4	80%
National Maternity Hospital	4	80%	4	80%
Nenagh Hospital	4	80%	4	80%
Our Lady of Lourdes Hospital Drogheda	4	80%	5	100%
CHI at Crumlin	4	80%	4	80%
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%	4	80%
Sligo University Hospital	4	80%	4	80%
South Infirmary/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	5	100%	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%	4	80%
University Hospital, Limerick	4	80%	4	80%
UMH Limerick	4	80%	4	80%
Wexford General Hospital	4	80%	4	80%
Kerry General Hospital	4	80%	4	80%
Mallow General Hospital	4	80%	4	80%
Bantry General Hospital	5	100%	5	100%
Total submitted	48		48	
Did not submit	1		1	
% of providers who submitted data	98%		98%	

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

### 5a. National:

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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Childrens Health Ireland	CPE002+003	2	0	1	0	0	0	0	1	0	2	0	0	3	0
	CPE004	423	352	367	458	439	372	441	458	488	519	563	488	603	509
	CPE005	6	4	5	3	4	3	1	3	3	4	4	0	2	5
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	350	520	321	399	630	0	0	0	0	0	0	0	0	0
Dublin Midlands Hospital Group	CPE002+003	13	7	9	11	8	12	8	13	15	18	13	9	7	10
	CPE004	3,822	3,247	3,189	3,049	3,786	3,571	3,839	4,210	3,895	4,823	4,302	4,656	4,870	4,471
	CPE005	67	63	58	49	60	65	65	65	62	72	64	59	57	46
	CPE006	0	1	0	0	2	2	0	0	1	0	0	0	1	2
	CPE008	3,157	2,145	2,789	2,708	3,943	3,101	3,136	2,539	2,983	3,204	2,299	2,824	3,752	3,512
Ireland East Hospital Group	CPE002+003	3	5	5	3	3	8	10	4	5	7	6	5	9	2
	CPE004	1,976	1,825	1,842	2,161	2,292	2,399	2,687	2,659	2,450	2,832	2,762	2,936	3,497	2,778
	CPE005	14	21	13	15	17	22	21	22	30	30	25	21	19	20
	CPE006	2	5	2	5	3	5	2	3	3	7	3	2	1	1
	CPE008	5,822	5,344	4,856	4,132	3,424	3,230	3,717	3,377	2,735	3,489	3,093	2,631	2,755	2,686
RCSI Hospitals Group	CPE002+003	1	1	0	4	1	3	6	11	12	10	18	4	12	7
	CPE004	987	881	931	1,004	1,163	1,115	1,444	2,178	2,260	3,121	2,977	2,955	3,498	2,868
	CPE005	8	5	7	9	4	8	5	17	19	18	37	23	30	22
	CPE006	2	1	2	3	0	1	3	0	1	1	0	0	2	1
	CPE008	242	288	30	55	75	65	49	35	83	75	62	115	23	45
Saoilta University Health Care Group	CPE002+003	8	5	1	4	7	10	12	10	7	14	20	5	16	9
	CPE004	2,172	2,425	2,146	2,413	3,035	2,653	3,281	3,363	3,095	3,651	3,889	3,459	4,039	3,628
	CPE005	26	24	28	25	27	30	31	41	35	43	60	42	46	41
	CPE006	2	1	1	5	4	0	3	2	2	1	2	3	5	1
	CPE008	1,189	688	745	593	665	677	657	1,242	1,307	936	854	1,321	1,249	1,323
South / South West Hospital Group	CPE002+003	3	2	6	7	3	8	8	5	4	25	10	4	9	5
	CPE004	639	635	1,037	1,114	1,443	1,689	2,115	2,689	2,374	2,974	3,550	3,243	3,223	3,143
	CPE005	10	15	17	18	12	18	13	23	16	36	33	28	26	25
	CPE006	1	1	0	3	1	1	1	1	1	0	3	1	1	0
	CPE008	1,400	1,140	1,065	921	857	481	538	522	563	931	1,205	621	597	401
University of Limerick Hospital Group	CPE002+003	4	5	3	8	2	8	12	6	6	5	5	4	4	5
	CPE004	1,274	1,153	1,136	1,269	1,258	1,263	1,664	1,929	1,779	1,783	1,781	1,872	2,059	1,826
	CPE005	19	17	24	22	18	24	31	20	32	25	27	18	24	14
	CPE006	0	0	0	2	0	0	3	4	3	10	5	4	0	0
	CPE008	1,467	1,076	1,728	1,605	0	0	0	0	0	0	0	0	0	0
<b>National Total (All Groups)</b>	CPE002+003	34	25	25	37	24	49	56	50	49	81	72	31	60	38
	CPE004	11,293	10,518	10,648	11,468	13,416	13,062	15,471	17,486	16,341	19,703	19,824	19,609	21,789	19,223
	CPE005	150	149	152	141	142	170	167	191	197	228	250	191	204	173
	CPE006	7	9	5	18	10	9	12	10	11	19	13	10	10	5
	CPE008	13,627	11,201	11,534	10,413	9,594	7,554	8,097	7,715	7,671	8,635	7,513	7,512	8,376	7,967

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
CHI at Crumlin	CPE002+003	2	0	1	0	0	0	0	1	0	2	0	0	0	0
	CPE004	310	263	270	320	340	298	347	371	394	370	417	347	410	324
	CPE005	5	3	4	2	3	2	1	3	3	4	4	0	1	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	289	380	246	325	630									
CHI at Tallaght	CPE002+003													1	0
	CPE004													6	39
	CPE005													1	2
	CPE006														0
	CPE008														
CHI at Temple St	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	CPE004	113	89	97	138	99	74	94	87	94	149	146	141	187	146
	CPE005	1	1	1	1	1	1	0	0	0	0	0	0	0	2
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	61	140	75	74										
Children's Health Ireland	CPE002+003	2	0	1	0	0	0	0	1	0	2	0	0	3	0
	CPE004	423	352	367	458	439	372	441	458	488	519	563	488	603	509
	CPE005	6	4	5	3	4	3	1	3	3	4	4	0	2	5
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	350	520	321	399	630	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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Coombe Women and Infants University Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	27	36	38	28	31	33	55	37	68	38	51	39	27	38
	CPE005	0	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	0
	CPE008	59	35	59	15	16	16	43						27	66
MRH Portlaoise	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	40	38	35	64	60	61	60	75	158	301	327	295	315	292
	CPE005	0	0	0	0	0	0	0	1	1	0	0	0	0	1
	CPE006	0	0	0	0	0	0	0	0	1	0	0	0	1	1
	CPE008	23	26	34					70	4	122		45		
MRH Tullamore	CPE002+003	0	0	1	1	0	1	0	0	0	0	1	1	1	0
	CPE004	234	222	229	262	297	289	294	341	507	671	615	655	513	
	CPE005	0	0	1	1	0	1	0	1	0	0	1	1	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008														
Naas General Hospital	CPE002+003	0	0	0	0	1	1	0	1	0	0	0	0	1	1
	CPE004	801	639	483	299	397	459	521	396	377	489	511	495	630	657
	CPE005	5	5	4	4	4	4	4	9	3	4	4	5	1	
	CPE006	0	0	0	0				0	0	0	0	0	0	0
	CPE008	140	7	117	0	21	121	123	106		260	130	137	67	38
St. James's Hospital	CPE002+003	3	0	1	2	2	2	0	7	8	6	6	2	2	1
	CPE004	507	582	722	656	813	815	900	1,283	760	1,051	1,168	1,083	1,125	1,036
	CPE005	17	15	10	9	14	11	13	11	15	23	18	11	14	11
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	2,217	1,685	1,922	1,985	2,955	2,262	2,366	2,353	2,493	2,303	1,700	2,160	3,297	2,756
St. Luke's Radiation Oncology Network	CPE002+003	0	0	0	0	1	0	0	1	0	0	1	0	0	0
	CPE004	234	175	127	181	219	194	207	216	182	194	248	175	170	185
	CPE005	0	1	1	1	0	0	1	2	2	1	2	1	1	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0	10	20	1	0	19	15	10	14	49	4	10	107	180
Tallaght University Hospital	CPE002+003	10	7	7	8	4	8	8	4	7	12	5	6	3	8
	CPE004	1,979	1,555	1,555	1,559	1,969	1,720	1,802	1,862	1,843	2,079	1,997	1,954	1,948	1,750
	CPE005	45	42	42	34	42	49	46	42	41	44	39	41	41	33
	CPE006	0	1	0	0	2	2	0		0	0	0	0	0	1
	CPE008	718	382	637	707	951	683	589		472	470	465	472	254	472
Dublin Midlands Hospital Group	CPE002+003	13	7	9	11	8	12	8	13	15	18	13	9	7	10
	CPE004	3,822	3,247	3,189	3,049	3,786	3,571	3,839	4,210	3,895	4,823	4,302	4,656	4,870	4,471
	CPE005	67	63	58	49	60	65	65	65	62	72	64	59	57	46
	CPE006	0	1	0	0	2	2	0	0	1	0	0	0	1	2
	CPE008	3,157	2,145	2,789	2,708	3,943	3,101	3,136	2,539	2,983	3,204	2,299	2,824	3,752	3,512

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Cappagh National Orthopaedic Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	0	0	0	17	46	47	52	139	139	165	187	112	144	144
	CPE005	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	23	50	15	11	6	20	0	10	8	0	61	0	10	32
Mater Misericordiae University Hospital	CPE002+003	2	3	2	2	2	3	6	4	2	3	4	2	2	0
	CPE004	395	335	382	439	513	464	611	603	578	689	666	637	650	538
	CPE005	8	10	8	4	5	9	9	9	13	13	13	7	6	5
	CPE006	1	2	1	1	0	2	2	2	2	3	0	0	1	0
	CPE008	2,756	2,429	2,239	2,330	2,150	2,024	2,090	1,780	1,546	1,464	1,145	1,520	1,354	1,242
MRH Mullingar	CPE002+003	0	0	0	0	0	1	0	0	0	0	1	0	0	0
	CPE004	87	100	139	183	200	216	184	196	182	216	271	250	321	218
	CPE005	0	0	0	1	1	0	1	0	1	0	0	1	0	0
	CPE006	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	CPE008	355	169	255	0										
National Maternity Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	68	92	120	129	173	135	163	160	182	182	169	140	179	134
	CPE005	0	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	0
	CPE008	20	0	0											
Our Lady's Hospital Navan	CPE002+003	0	0	1	0	0	1	0	0	0	0		0	0	1
	CPE004	46	41	84	67	71	89	107	58	47	59		41	49	57
	CPE005	1	2	1	2	0	2	1	2	2	2		0	0	2
	CPE006	0	0	1	1	0	1	0	0	0	0		0	0	1
	CPE008														
Royal Victoria Eye and Ear Hospital	CPE002+003	0	0	0	0	1	0	0	0	0	0	0	0	1	0
	CPE004	34	20	22	25	49	38	48	26	39	57	37	34	49	49
	CPE005	0	2	0	0	1	0	0	0	0	0	0	0	0	0
	CPE006	0	2	0	0	1	0	0	1	0	0	0	0	0	0
	CPE008	68	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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
St. Columille's Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	119	103	94	102	123	109	108	119	111	130	145	162	185	142
	CPE005	0	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	0
	CPE008	10	0	10	0	10	11	10	23	0	0	0	13	23	10
St. Luke's General Hospital Kilkenny	CPE002+003	0	1	1	1	0	2	1	0	1	3	0	1	0	0
	CPE004	76	116	86	105	92	211	164	240	107	166	161	132	202	127
	CPE005	0	2	1	2	4	4	2	0	2	5	3	2	2	1
	CPE006	0	1	0	2	2	2	0	0	1	4	3	2	0	0
	CPE008	37	37	337		0									
St. Michael's Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	CPE004	60	66	65	80	65	84	122	95	105	117	137	204	261	205
	CPE005	0	1	0	2	1	1	0	1	0	0	1	0	0	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	70	3	15											
St. Vincent's University Hospital	CPE002+003	1	1	1	0	0	1	3	0	0	1	1	2	4	1
	CPE004	984	856	749	897	837	864	1,005	876	843	902	869	1,074	1,319	1,054
	CPE005	4	2	2	3	2	4	5	8	8	6	6	7	8	8
	CPE006	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	2,373	2,495	1,985	1,791	1,258	1,175	1,617	1,564	1,181	2,025	1,887	1,098	1,368	1,402
Wexford General Hospital	CPE002+003	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	CPE004	107	96	101	117	123	142	123	147	117	149	120	150	138	110
	CPE005	1	2	1	1	3	2	2	1	4	4	2	4	3	3
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	110	161		0										
Ireland East Hospital Group	CPE002+003	3	5	5	3	3	8	10	4	5	7	6	5	9	2
	CPE004	1,976	1,825	1,842	2,161	2,292	2,399	2,687	2,659	2,450	2,832	2,762	2,936	3,497	2,778
	CPE005	14	21	13	15	17	22	21	22	30	30	25	21	19	20
	CPE006	2	5	2	5	3	5	2	3	3	7	3	2	1	1
	CPE008	5,822	5,344	4,856	4,132	3,424	3,230	3,717	3,377	2,735	3,489	3,093	2,631	2,755	2,686

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Beaumont Hospital	CPE002+003	1	0	0	3	0	2	2	10	9	8	6	3	11	4
	CPE004	696	633	591	610	743	658	685	920	896	1,474	889	935	1,264	988
	CPE005	7	4	6	7	3	6	2	15	18	14	21	15	23	16
	CPE006	2	1	2	3	0	0	1	0	1	1	0	0	1	0
	CPE008														
Cavan General Hospital	CPE002+003	0	0	0	0	0	0	4	0	3	1	12	0	0	1
	CPE004	24	33	42	52	100	61	297	796	872	982	1,469	1,132	1,340	1,048
	CPE005	0	0	0	0	0	0	2	0	0	2	14	5	2	1
	CPE006	0	0	0	0	0	0	2	0	0	0	0	0	0	1
	CPE008	210	210												
Connolly Hospital	CPE002+003	0	0	0	1	0	1	0	1	0	1	0	1	1	2
	CPE004	94	73	92	135	138	133	156	165	171	236	183	454	502	458
	CPE005	1	1	1	2	1	2	1	2	1	2	2	3	5	5
	CPE006	0	0	0	0	0	1	0	0	0	0	0	0	1	0
	CPE008														
Louth County Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	0	3	1	5	1	1	0	0	5	50	38	30	40	43
	CPE005	0	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	0
	CPE008														
Our Lady of Lourdes Hospital	CPE002+003	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	71	59	71	69	77	151	169	176	204	223	251	239	204	150
	CPE005	0	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	0
	CPE008														0
Rotunda Hospital	CPE002+003	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	CPE004	102	80	134	133	104	111	137	121	112	156	147	165	148	181
	CPE005	0	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	0
	CPE008	32	78	30	55	75	65	49	35	83	75	62	115	23	45
RCSI Hospitals Group	CPE002+003	1	1	0	4	1	3	6	11	12	10	18	4	12	7
	CPE004	987	881	931	1,004	1,163	1,115	1,444	2,178	2,260	3,121	2,977	2,955	3,498	2,868
	CPE005	8	5	7	9	4	8	5	17	19	18	37	23	30	22
	CPE006	2	1	2	3	0	1	3	0	1	1	0	0	2	1
	CPE008	242	288	30	55	75	65	49	35	83	75	62	115	23	45

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Galway University Hospitals	CPE002+003	6	4	1	4	3	5	10	5	5	5	8	3	7	5
	CPE004	1,205	1,316	1,179	1,400	1,927	1,560	1,898	1,841	1,660	1,973	1,827	1,690	1,769	1,509
	CPE005	14	13	13	11	13	14	16	20	19	25	24	18	23	23
	CPE006	1	0	0	0	2	0	1	1	1	1	1	0	2	1
	CPE008	1,110	601	745	593	665	677	657	1,242	1,307	936	854	1,321	1,249	1,323
Letterkenny University Hospital	CPE002+003	0	1	0	0	0	0	0	2	0	0	1	1	3	1
	CPE004	99	125	107	77	111	90	206	199	282	404	542	564	578	440
	CPE005	3	4	6	5	5	5	2	6	3	2	5	5	4	4
	CPE006	0	1	0	1	2	0	0	1	0	0	0	2	1	0
	CPE008				0										
Mayo University Hospital	CPE002+003	1	0	0	0	0	0	2	1	0	0	2	0	3	1
	CPE004	382	404	345	410	373	397	482	579	537	470	475	386	664	759
	CPE005	4	1	3	3	1	1	3	5	4	1	7	3	6	4
	CPE006	1	0	1	0	0	0	0	0	0	0	0	1	0	0
	CPE008	79	87												
Portiuncula University Hospital	CPE002+003	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	CPE004	182	176	199	215	242	254	251	261	219	269	252	294	294	262
	CPE005	0	0	1	1	0	1	1	2	1	1	1	0	2	0
	CPE006	0	0		0	0	0	0	0	0	0	1	0	2	0
	CPE008			0											
Roscommon University Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	72	57	54	49	65	57	54	73	72	61	72	61	61	72
	CPE005	0	1	0	0	1	1	0	0	0	1	1	0	0	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008														
Sligo University Hospital	CPE002+003	1	0	0	0	4	5	0	1	2	8	9	1	3	2
	CPE004	232	347	262	262	317	295	390	410	325	474	721	464	673	586
	CPE005	5	5	5	5	7	8	9	8	8	13	22	16	11	9
	CPE006	0	0	0	4	0	0	2	0	1	0	0	0	0	0
	CPE008														
Saolta University Health Care Group	CPE002,003	8	5	1	4	7	10	12	10	7	14	20	5	16	9
	CPE004	2,172	2,425	2,146	2,413	3,035	2,653	3,281	3,363	3,095	3,651	3,889	3,459	4,039	3,628
	CPE005	26	24	28	25	27	30	31	41	35	43	60	42	46	41
	CPE006	2	1	1	5	4	0	3	2	2	1	2	3	5	1
	CPE008	1,189	688	745	593	665	677	657	1,242	1,307	936	854	1,321	1,249	1,323

Please Note: Mayo data regarding CPE006 above for January 2018 is not confirmed

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Bantry General Hospital	CPE002+003	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	CPE004			33	41	52	40	42	42	51	115	111	91	96	89
	CPE005	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	CPE006	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	CPE008	64	40	30	10	84	117		70	153	177	110	50	178	140
Cork University Hospital	CPE002+003	0	1	0	1	0	2	2	1	1	9	2	0	1	0
	CPE004	287	261	307	279	316	313	494	771	537	684	552	444	378	483
	CPE005		1	0	1	1	2	3	4	1	10	7	8	3	2
	CPE006		0	0	0	0	1	0	0	0	0	0	0	0	0
	CPE008						0								
Cork University Maternity Hospital	CPE002+003														
	CPE004														
	CPE005														
	CPE006														
	CPE008														
Lourdes Orthopaedic Hospital Kilcreene	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	0	0	0	8	12	8	7	15	18	13	11	9	15	16
	CPE005	0	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	0
	CPE008	0	0	0	0	0	0	0							
Mallow General Hospital	CPE002+003	0	0	0	0	0	0	0	2	0	0	0	0	0	0
	CPE004	22	25	36	33	48	53	66	93	94	89	96	100	106	85
	CPE005	0	0	0	0	0	0	0	2	0	0	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008														
Mercy University Hospital	CPE002+003	3	1	2	2	0	3	0	0	1	2	1	0	1	0
	CPE004	73	85	287	277	533	585	577	583	587	680	595	633	621	543
	CPE005	3	3	2	3	1	2	1	2	3	2	3	5	5	1
	CPE006	0	0	0	0	0	0	0	0	0	0	1	1	0	0
	CPE008	445	332	567	304	314	364	520	420	350	590	510	522	370	251

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
South Infirmary Victoria University Hospital	CPE002+003	0	0	0	0	0	0	0	1	0	1	0	1	1	0
	CPE004	7	9	13	6	17	62	83	153	166	200	199	221	268	257
	CPE005	0	0	0	0	0	0	0	1	1	0	0	1	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0	80	0	0	10		18	32	60	164	80	49	49	10
South Tipperary General Hospital	CPE002+003	0	0	1	1	0	0	3	0	1	0	1	0	1	0
	CPE004	100	96	89	89	104	102	405	564	498	510	523	528	429	456
	CPE005	1	2	0	2	1	0	1	2	1	1	2	1	1	1
	CPE006	1	1	0	2	1	0	1	1	1	0	2	0	1	0
	CPE008	112	190												
UH Kerry	CPE002+003		0	0	0	0	0	0	0	0	0	0	0	0	1
	CPE004		73	66	62	53	45	69	60	103	111	218	289	292	266
	CPE005		1	1	1	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		164												
UH Waterford	CPE002+003	0	0	3	2	3	3	3	1	1	13	6	3	5	4
	CPE004	150	86	206	319	308	481	372	408	320	572	1,245	928	1,018	948
	CPE005	6	8	14	10	9	14	8	12	10	23	21	13	17	20
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	779	334	468	607	449						505			
South / South West Hospital Group	CPE002,003	3	2	6	7	3	8	8	5	4	25	10	4	9	5
	CPE004	639	635	1,037	1,114	1,443	1,689	2,115	2,689	2,374	2,974	3,550	3,243	3,223	3,143
	CPE005	10	15	17	18	12	18	13	23	16	36	33	28	26	25
	CPE006	1	1	0	3	1	1	1	1	1	0	3	1	1	0
	CPE008	1,400	1,140	1,065	921	857	481	538	522	563	931	1,205	621	597	401

## 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	Q1 2018			Q2 2018			Q3 2018			Q4 2018			Q1 2019	
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
Croom Orthopaedic Hospital	CPE002+003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE004	26	18	23	27	26	21	19	25	29	31	37	31	36	23
	CPE005	0	0	0	0	1	1	0	0	1	1	0	0	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	0		0	0										
Ennis Hospital	CPE002+003	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	CPE004	103	104	90	90	102	89	89	113	117	109	131	117	126	110
	CPE005	0		2	2	3	3	2	1	2	2	5	2	2	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	64	133	82	22										
Nenagh Hospital	CPE002+003	0	0	0	0	0	2	2	0	0	0	0	0	0	0
	CPE004	43	59	49	46	63	98	86	75	64	59	84	80	91	79
	CPE005	0		1	0	1	2	4	2	2	0	2	1	2	1
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008			0											
St. John's Hospital Limerick	CPE002+003	1	0	0	0	0	1	3	1	0	0	0	0	0	0
	CPE004	135	128	148	113	121	125	164	175	183	190	184	170	154	152
	CPE005	0	1	1	1	0	0	1	0	1	3	0	1	0	0
	CPE006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CPE008	39	53	74	105										
UH Limerick	CPE002+003	3	5	3	6	2	5	7	5	6	5	5	4	3	5
	CPE004	967	844	826	993	943	929	1,286	1,521	1,364	1,379	1,299	1,378	1,537	1,354
	CPE005	19	16	20	19	13	18	24	17	26	19	20	14	19	12
	CPE006	0	0	0	2	0	0	3	4	3	10	5	4	0	0
	CPE008	1,364	890	1,572	1,478										
UMH Limerick	CPE002+003					0	0	0	0	0	0	0	0	1	0
	CPE004					3	1	20	20	22	15	46	96	115	108
	CPE005					0	0	0	0	0	0	0	0	1	1
	CPE006					0	0	0	0	0	0	0	0	0	0
	CPE008														
University of Limerick Hospital Group	CPE002,003	4	5	3	8	2	8	12	6	6	5	5	4	4	5
	CPE004	1,274	1,153	1,136	1,269	1,258	1,263	1,664	1,929	1,779	1,783	1,781	1,872	2,059	1,826
	CPE005	19	17	24	22	18	24	31	20	32	25	27	18	24	14
	CPE006	0	0	0	2	0	0	3	4	3	10	5	4	0	0
	CPE008	1,467	1,076	1,728	1,605	0	0	0	0	0	0	0	0	0	0

**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