Enhanced Surveillance of Carbapenemase-Producing Enterobacterales (CPE) 2025

For more information on CPE, including Factsheets, Case Definitions and previous years surveillance reports, please visit the HPSC website

2025 Surveillance Report

Introduction

Limited treatment options

Carbapenemase-producing Enterobacterales (CPE) are a growing threat to public health due to limited options for treatment of infection

Wide range of infections

CPE can cause a wide range of infections ranging from urinary tract infections (UTIs) and skin and soft tissue infections (SSTIs) to more severe invasive infections, such as bloodstream infections (BSIs)

Known to colonise patients

CPE belong to the Enterobacterales order. Unrecognised colonisation contributes to the dissemination of CPE, particularly in healthcare settings

Surveillance paused in 2020

Enhanced CPE surveillance was paused in 2020 as a result of the COVID-19 pandemic. A revised version of CPE surveillance resumed in 2022

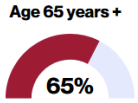
Amended Case Definition

The case definition for enhanced surveillance of CPE was amended to reflect the potential for progression to infection and to more accurately reflect the burden in different scenarios (e.g., screening, non-invasive infection, invasive infection)

2025 Surveillance Report

Key Points

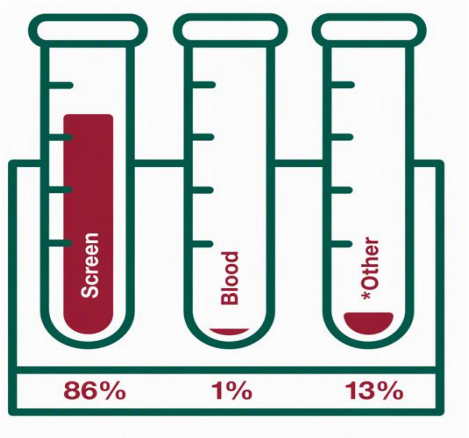
Case Demographics



Hospital associated

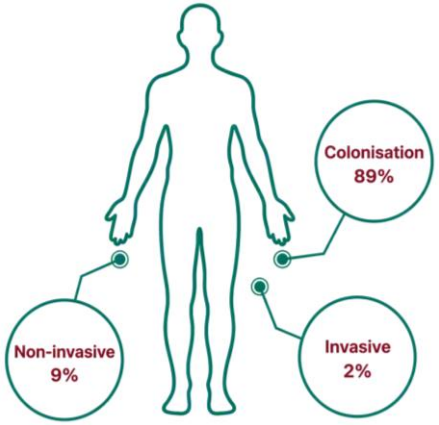
*associated with hospitals – this includes in-patients, ICU patients and hospital outpatients

Specimen Type

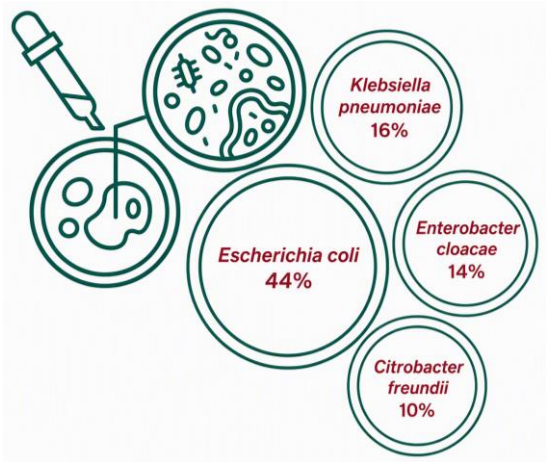


**Other clinical specimens = urine and other sterile and non-sterile sites

Host/organism interaction

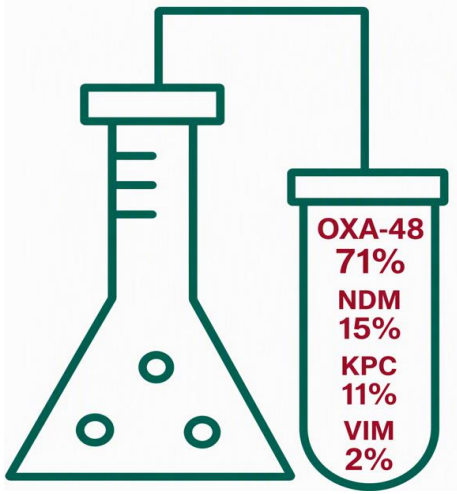


Species*



*refers to the four most common species identified

Enzyme Type



2025 Surveillance Report – Key Points

Note: data on all CPE is submitted to this surveillance system by laboratories using an MS Excel data collection tool while cases of invasive CPE are also notified to CIDR (Computerised Infectious Disease Reporting system) as per Infectious Diseases Regulations 1981 and subsequent amendments

- In 2025, **1471** confirmed CPE isolates were reported to this surveillance system compared to **1557** in 2024 and **1096** in 2023.
- The adjacent table shows:
  - the number of isolates reported by all laboratories (**n = 1471**).
  - the number of isolates reported by the twenty-one laboratories who submitted data **in all four** years (**n = 1174**)
- **Comparing just these 21 laboratories, there was a 127% increase in reported cases between 2022 and 2025.**
- Data was received from 30*** (both public and private hospitals) in 2025, the same number as in 2024, and a decrease of 2 laboratories compared to 2023. Laboratories ranged in size from small local hospital laboratories to large tertiary hospitals.

***There was some variation in the 30 laboratories that reported in 2024 & 2025

	2022	2023	2024	2025	% increase 2022 v 2025
N CPE (21 labs*)	518	725	1074	**1174**	**127%**
* labs who reported data for all four years					
N CPE (all labs)	861	1096	1557	**1471**	**71%**
Invasive	2%	<2%	2%	2%	
Non-invasive	10%	9%	9%	9%	
Colonisation	88%	90%	89%	89%	
OXA-48**	74%	75%	74%	71%	↓
NDM	8%	10%	8%	15%	↑
KPC	9%	11%	14%	11%	↑
VIM	9%	3%	3%	2%	↓
Others	0%	1%	1%	1%	↑

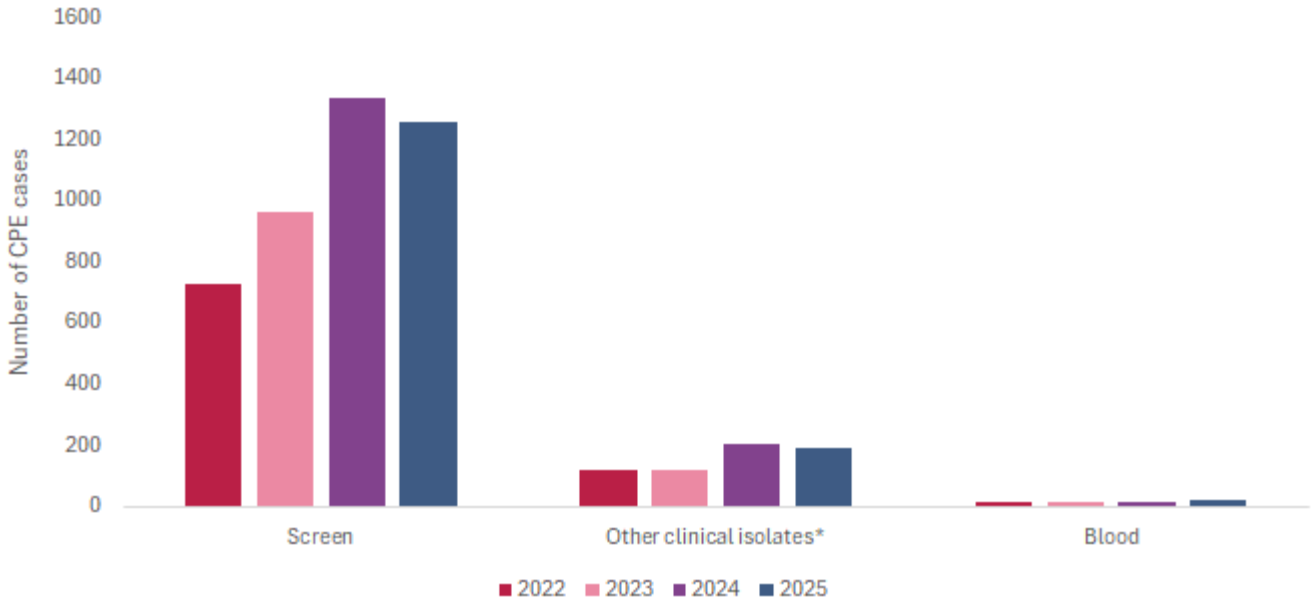
**includes OXA-48-like enzymes incl. OXA-181, OXA-244 and in combination with KPC, NDM and VIM

Summary of reported CPE cases by specimen type, 2025

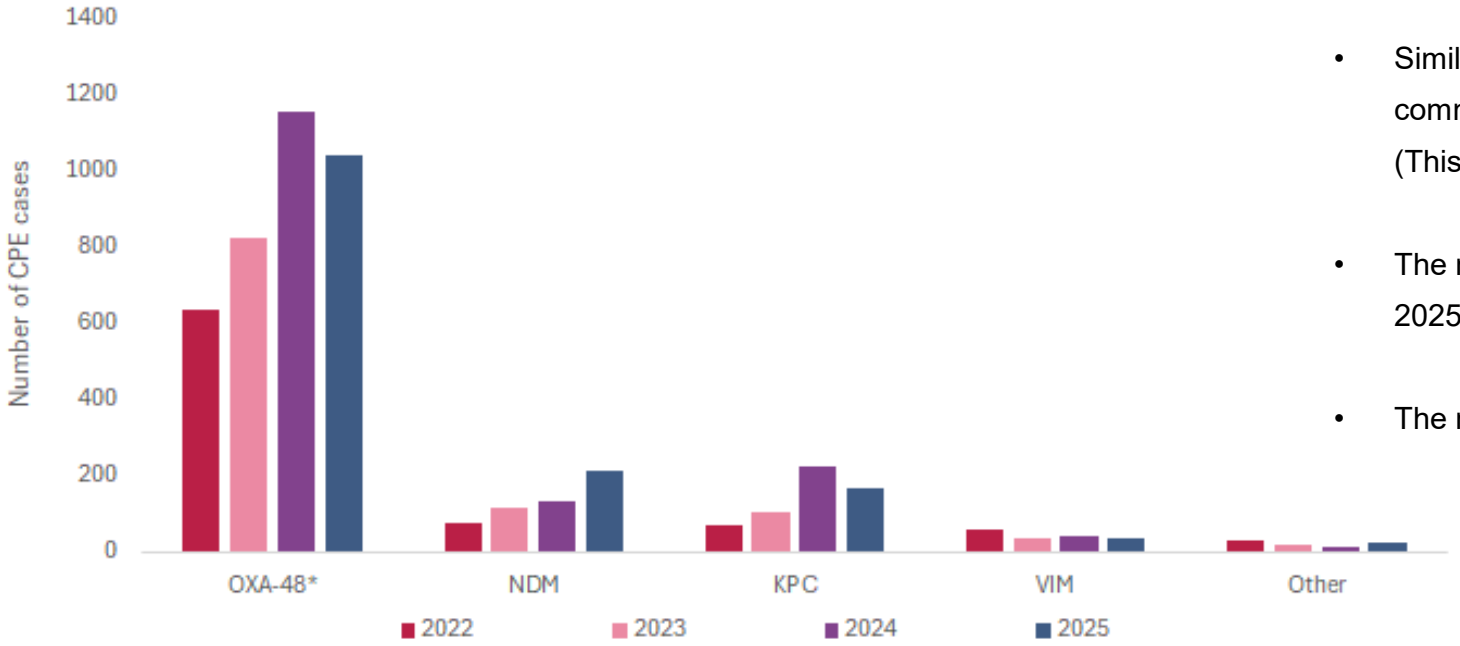
- The majority **(86%)** of CPE cases in 2025 were identified from **rectal screening** samples. This correlates with the high rate of colonisation common with CPE - **87%** of cases in 2025 were associated with **colonisation** (patients carrying CPE in their gastrointestinal (GI) tract without any signs or symptoms of infection).
- In **13%** (n=159) of cases, CPE was identified from a non-sterile clinical specimen e.g. urine. However, without supporting clinical or enhanced surveillance information, it is not possible to differentiate colonisation from infection.
- **2%** (n=30) of cases who were originally colonised rectally progressed to having CPE detected in a clinical sample in 2025.
- **Twenty-nine** cases of **invasive** CPE infection were identified, twenty-three **(79%)** of which were identified from blood samples. The remaining six invasive cases were identified from other sterile samples such as bone, joint fluid and abdominal/pelvic fluid.

	Number of isolates			
Specimen type	**2022**	**2023**	**2024**	**2025**
Screen	727 (84%)	963 (88%)	1335 (86%)	1257 (86%)
Other clinical isolates*	118 (14%)	118 (11%)	206 (13%)	191 (13%)
Blood	16 (2%)	15 (1%)	16 (1%)	23 (1%)
Total	**861 (100%)**	**1096 (100%)**	**1557 (100%)**	**1471 (100%)**

*includes urine and other sterile and non-sterile specimens



Summary of reported CPE cases by enzyme type, 2025



- Similar to previous years, **OXA-48 like enzymes** represented the most common enzyme identified in 2025 accounting for **71%** of all reported CPE. (This also includes OXA-48-like enzymes such as OXA-244 and OXA-181).
- The number of NDM isolates increased from 9% to 15% of all isolates in 2025, while the number of KPC isolates reported decreased slightly.
- The number of VIM isolates remained broadly in line with previous years.

*includes OXA-48-like enzymes incl. OXA-181, OXA-244 and in combination with KPC, NDM and VIM

Enzyme Type	2022	2023	2024	2025
OXA-48*	632 (73%)	824 (72%)	1151 (74%)	1036 (71%)
NDM	74 (9%)	118 (11%)	133 (9%)	210 (15%)
KPC	67 (8%)	103 (10%)	221 (14%)	166 (11%)
VIM	60 (7%)	34 (3%)	39 (2%)	34 (2%)
Other	28 (3%)	17 (4%)	13 (1%)	25 (1%)
Total	**861 (100%)**	**1096 (100%)**	**1557 (100%)**	**1471 (100%)**

Summary of reported CPE cases by species and enzyme type, 2025

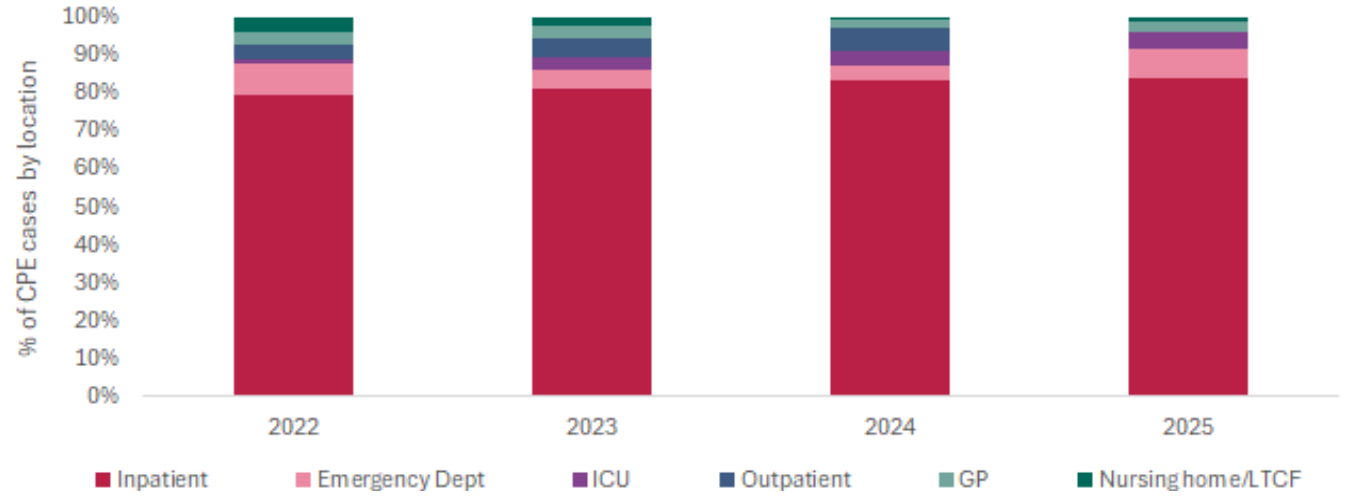
Pathogen	OXA-48 *	NDM	KPC	VIM	Other	Total
E. coli	536	88	26	2	3	**655**
K. pneumoniae	130	58	35	1	6	**230**
E. cloacae	136	27	8	22	11	**204**
C. freundii	77	6	63	0	1	**147**
K. oxytoca	63	1	14	3	1	**82**
Other	43	20	11	6	0	**80**
Citrobacter spp	34	0	7	0	0	**41**
Enterobacter spp	12	10	2	0	3	**27**
Klebsiella spp	5	0	0	0	0	**5**
Total	**1036 (71%)**	**210 (15%)**	**166 (11%)**	**34 (2%)**	**25 (1%)**	**1471 (100%)**

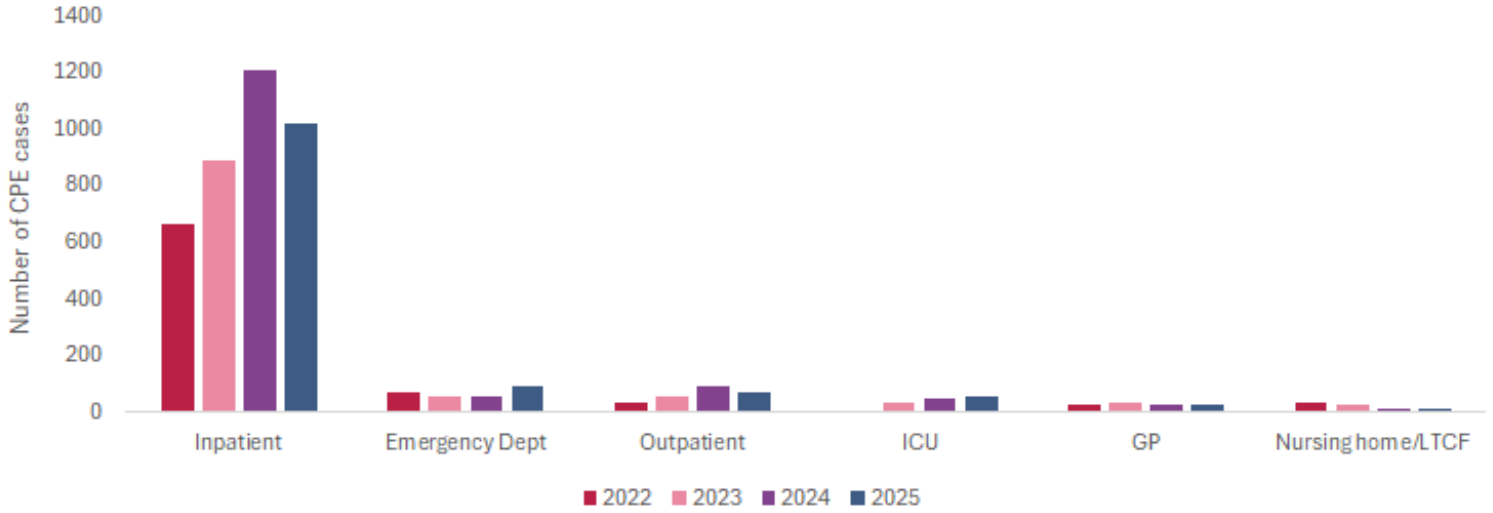
*includes OXA-48-like enzymes incl. OXA-181, OXA-244 and in combination with KPC, NDM and VIM

- *E. coli* was the most common species identified in 2025, accounting for over 44% of CPE infections, an increase from 2024 where it accounted for 36% of all CPE.
- OXA-48* was responsible for the majority (81%) of *E. coli* infections.
- The majority (88%) of *E. coli* infections were identified via routine screening.
- *K. pneumoniae* was the second most common pathogen identified in 2025 (16% of all CPE). This is a slight decrease from 2024 where it accounted for 19% of CPE infections.
- *E. cloacae* complex decreased to 13% of CPE infections in 2025 from 22% in 2024.

Summary of reported CPE cases by location, 2025

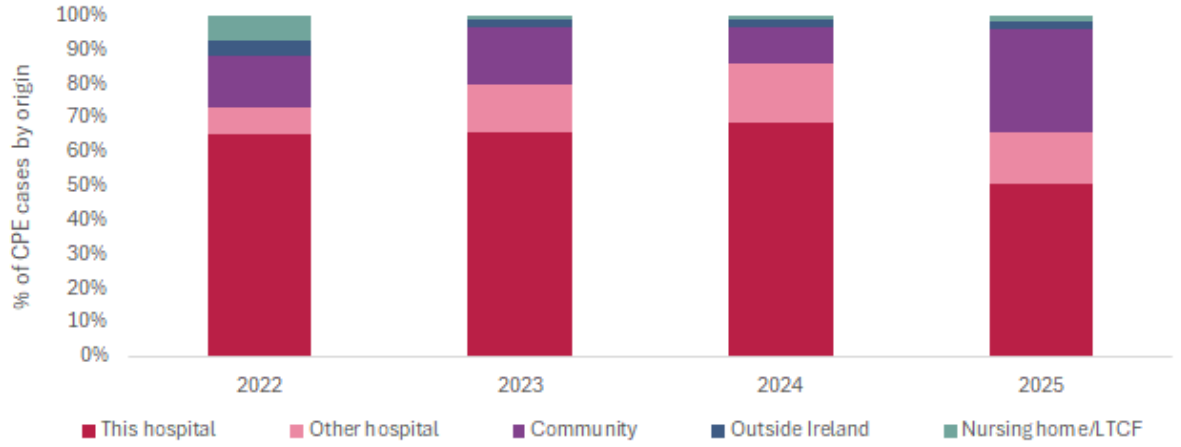
- Where patient type is known (n=1282, 87%), the majority (89%) of CPE cases in 2025 were associated with hospitals – this includes in-patients, ICU patients and hospital outpatients. This is a slight decrease on 2024 figures (93%) but in line with the preceding year (89% in 2023).
- **Note**: testing for CPE colonisation is focused on acute hospital admissions which accounts for the high number of cases seen in hospital inpatients.
- Just 1% of cases were associated with residents in nursing homes and long-term care facilities compared to 1% in 2024 and 2% in 2023.
- 2% of samples were from GP patients in line with previous years.

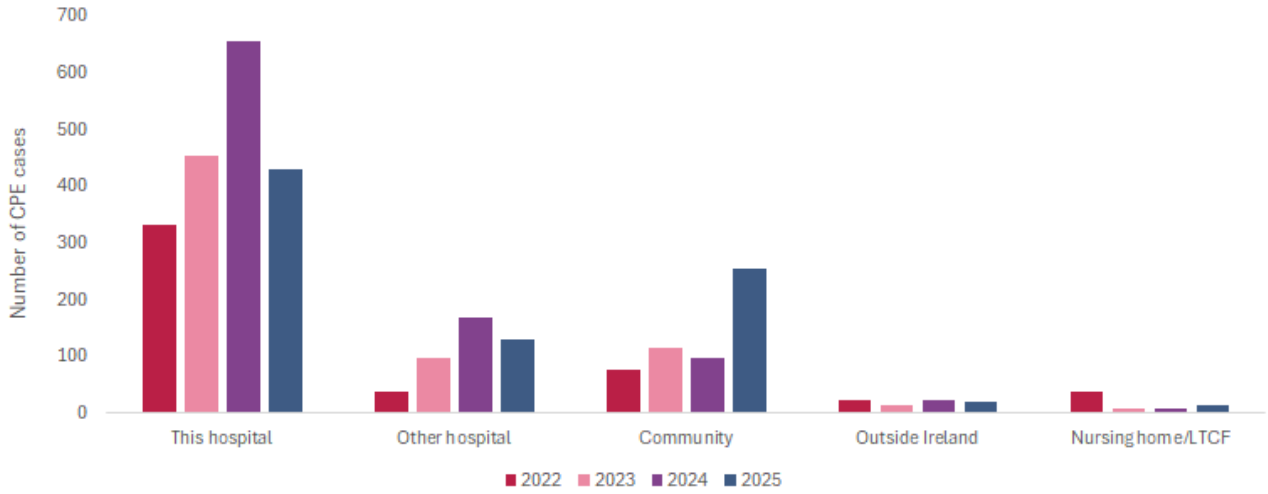




Most likely origin of reported CPE cases, 2025

- The most likely origin of CPE cases in 2025 (where known, n=854, 58%) was in the hospital of current admission (50%). This is a decrease from previous years – 68% of cases in 2024 and 66% of cases in 2023
- Thirty percent of cases are thought to have acquired their infection in the community compared to 10% the previous year and 17% in 2023
- Eighty-eight percent of cases with community acquired infection were colonisations, suggesting that CPE is endemic in the community
- 2% (n = 21) of cases originated in nursing homes or LTCFs compared to 1% in 2023 and 2024
- 2% (n = 21) of cases were reported to have originated from outside Ireland in line with previous years figures. Two out of these twenty-one cases in reported having surgery or hospital admission abroad





Summary of invasive CPE cases and outbreaks reported on CIDR, 2025

The following slides relate to cases of invasive CPE and outbreaks of CPE colonisation which have been notified to HPSC via CIDR (Computerised Infectious Disease Reporting System)

Summary of invasive CPE cases and CPE outbreaks reported on CIDR, 2025

Invasive isolates

- **Note:** the data below refers to cases of invasive CPE reported to CIDR (Computerised Infectious Disease Reporting System) in 2025. This data source is independent of the enhanced surveillance data submitted by laboratories, which accounts for the discrepancy in blood culture numbers reported.
- In 2025, **27 cases** of **invasive** CPE with an epidemiological date in 2025 were reported, compared to 23 in 2024.
- Nineteen cases were isolated from blood culture, accounting for 3 in 4 invasive cases (see Table below)
- Where enzyme was recorded (20/27), **OXA-48** was the predominant enzyme associated with invasive CPE on CIDR, accounting for 90% of cases

Specimen type	Number of invasive isolates
Blood culture	19
Other	5
Not specified	3
Total	**27**

CPE outbreaks

- There were 44 **outbreaks** of CPE **colonisation** reported to CIDR in 2025 compared to;

- 2024 n=39
- 2023 n=33
- 2022 n=26

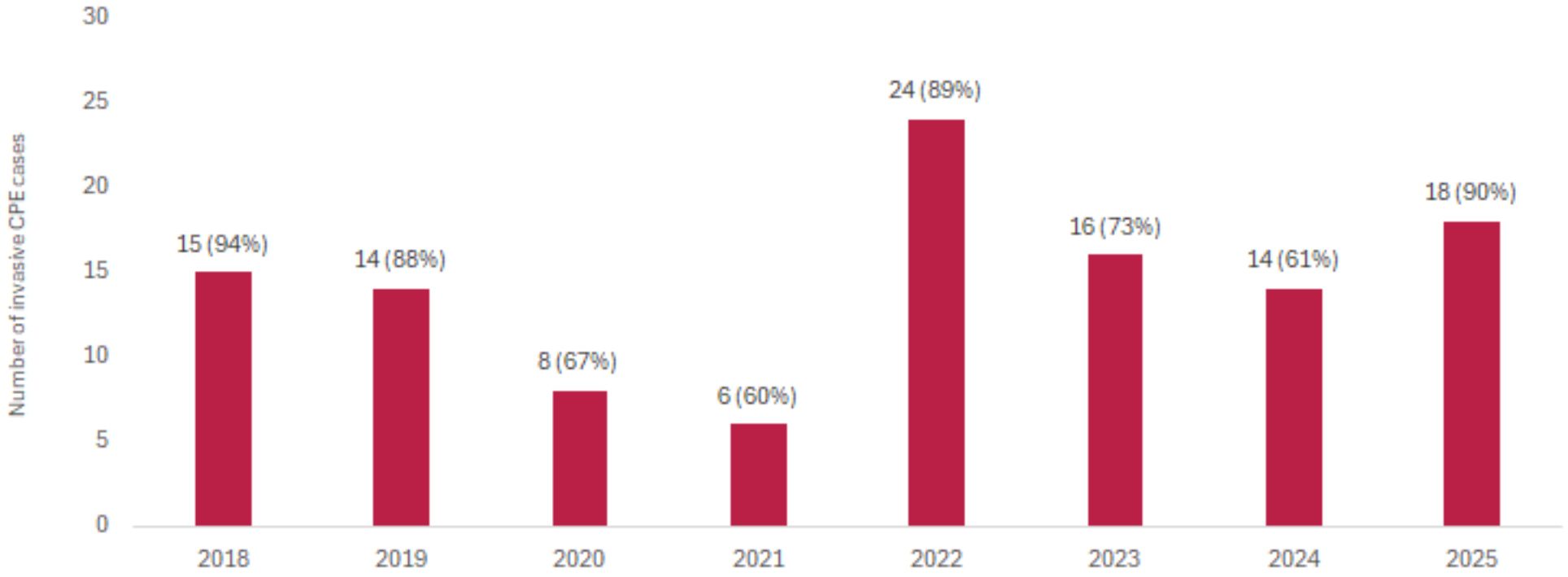
- All outbreaks notified in 2025 occurred in hospital (95%) or other healthcare settings (5%)
- An enzyme was reported for 32 (73%) outbreaks:
  - 18 OXA-48 & OXA-48 like
  - 5 KPC
  - 4 NDM
  - 4 mixed growth

Summary of invasive CPE cases reported on CIDR, 2018 to 2025

Year	OXA-48	KPC	NDM	VIM	Total
2018	15	0	0	1	16
2019	14	2	0	0	16
2020	8	2	2	0	12
2021	6	2	1	1	10
2022	24	3	0	0	27
2023	16	0	1	1	18
2024	14	2	2	0	18
2025	18	1	0	1	20
Total	**115 (84%)**	**12 (9%)**	**6 (4%)**	**4 (3%)**	**137 (100%)**

*enzyme unknown/not specified for 7 cases in 2025

Cases of OXA-48* as percentage of total invasive cases, 2018 to 2025



*where enzyme is recorded on CIDR (20/27 invasive cases in 2025)

Acknowledgements

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