GIG CYMRU NHS WALES | Iechyd Cyhoeddus Cymru Public Health Wales

Surveillance of Carbapenemase-producing Organisms (CPOs)

Wales 2024/25 Financial Year (FY) Report

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Contents

Report Summary

Wales is currently a relatively low prevalence area for Carbapenemase Producing Organisms (CPOs). Screening, detection of CPOs and effective Infection Prevention and Control measures play a vital role in maintaining a low prevalence and combatting spread of antibiotic resistance.

A. Screening for CPOs

- 22,960 screens for CPOs were taken from 12,179 individuals in Wales in 2024/25; equating to a rate of 50 screens per 1,000 hospital admissions (Table 1.1.) and a 66% increase compared to 2023/24 (Figure 1.1.). Across the 6 UHBs, rates ranged from 19 per 1,000 admissions in Cwm Taf Morgannwg UHB to 83 in Betsi Cadwaladr UHB; all were higher than the previous financial year (FY). Screening for CPOs in Betsi Cadwaladr UHB increased by 140% compared to the previous FY and accounted for more than a third of all CPO screens in Wales in 2024/25.
- 56% of individuals screened were male. The median age was 70 years (Figure 2.1.). CPO screening in individuals aged 50 and over increased by 44% compared to the previous FY (Figure 2.2.).
- 91% of screens were taken in a hospital inpatient (IP) location (Table 3.1.). 69% of first screens during a hospital IP stay were taken on admission (day 1 or 2) (Table 3.2.); similar to 2023/24 (Figure 3.1.). Of these, 23% were admissions to critical care (CC); 3% admissions from a care home (CH); and <1% were patients who had a CPO detected in the previous 12 months (Table 3.3.). Of the 2,137 CPO screens taken in the community or a non-IP hospital location, <1% were from CH residents and 2% prior to hospital admission (Table 3.4.). 23% of all patients admitted to CC were screened on the day of admission (Table 3.5.); an increase from 15% in 2023/24.
- 283 of the 22,960 screens for CPOs taken in Wales in 2024/25 identified at least one possible CPO (Table 4.1.). In 83 screens at least one possible CPO was confirmed as a CPO. This equated to a rate of 12 possible and 4 confirmed CPO screens per 1,000 CPO screens taken; a decrease compared to 2023/24 (Figure 4.1.), however this was likely due to an increase in the number of screens taken. Rate per 1,000 screens taken decreased in all UHBs except Cwm Taf Morgannwg UHB (Figure 4.2.).
- The number of screens for CPOs has increased in 2024/25 compared to the previous FY, however it is still low in some health boards and could improve in all health boards, especially pre-admission screens. Screening to detect and control the spread of CPOs is an essential part of infection control measures.

B. Possible CPOs

- 734 possible CPOs were identified in Wales in 2024/25; 39% (289) from screening and 61% (445) clinical specimens (Table 5.1.). N.B. Multiple possible CPOs were identified in 6 screening and 2 clinical specimen and counted as separate possible CPOs. Among the UHBs the percentage of possible CPOs from screening specimens ranged from 12% in Hywel Dda UHB to 56% in Betsi Cadwaladr UHB. Betsi Cadwaladr UHB was the only UHB to have a higher number of possible CPOs from screening compared to clinical specimens; 57% more than the previous FY (Figure 5.3.). The Wales rate of possible CPOs per 1,000 hospital admissions was

1.6; slightly lower than the previous FY (1.8) (Figure 5.1.). UHB rates ranged from 0.7 in Aneurin Bevan UHB to 2.2 in Swansea Bay UHB. The rate of possible CPOs in Aneurin Bevan was significantly lower than the other UHBs (Figure 5.2.). For the last 2 years the number of possible CPOs identified from screening specimens was slightly higher in Q3 (Jul-Sep) compared to other quarters (Figure 5.4.).

- 53% of possible CPOs were identified in specimens from males. The median age was 66 years (Figure 6.1.). While the number remained higher in the older age groups compared to 2023/24, numbers decreased by 12% in individuals aged 50 and over and increased by 12% in the younger age groups (Figure 6.2.).
- P. aeruginosa was the most common species of possible CPOs, accounting for 24% (Table 7.1.). Carbapenem resistance in *P. aeruginosa* is not uncommon, but it is mainly caused by the organism's native ampC beta-lactamase, permeability issues and efflux pumps. *Pseudomonas* spp. was the most common genus, accounting for 25% of all possible CPOs (Figure 7.1.), however more *Escherichia* spp. were isolated in Oct-Dec 24 (Q3) and more *Escherichia* spp. and *Klebsiella* spp. in Jan-Mar 25 (Q4) (Figure 7.2.). Compared to 2023/24, *Klebsiella* and *Pseudomonas* spp. decreased by 32% and 17% respectively; *Escherichia* and *Enterobacter* spp. increased by 9% and 7% (Figure 7.1.). *Escherichia* spp., *Klebsiella* spp. and *Enterobacter* spp. were more prevalent in screening specimens, accounting for 30%, 29% and 25% respectively, whereas *Pseudomonas* spp. was the most common CPO genus in clinical specimens (36%) (Figure 7.3.). *Pseudomonas* spp. was the most prevalent possible CPO genus in 3 of the 6 UHBs (Aneurin Bevan, Cardiff and Vale and Swansea Bay UHBs). *Enterobacter* spp. and *Klebsiella* spp. were more prevalent in Betsi Cadwaladr UHB; *Escherichia* spp. in Cwm Taf Morgannwg UHB; and Klebsiella spp. in Hywel Dda UHB (Figure 7.4.).
- 25% (186) of the 734 possible CPOs identified in Wales in 2024/25 were confirmed as a CPO; a higher percent in screening (40%) compared to clinical specimens (16%). Across the UHBs, the percentage of possible CPOs confirmed ranged from 16% (12/73) in Aneurin Bevan UHB to 32% (45/142) in Cardiff and Vale UHB (Table 8.1.).

C. New CPO episodes

- 154 new CPO episodes were identified in 148 specimens from 139 individuals. Counts by UHB ranged from 10 in Aneurin Bevan UHB to 44 in Betsi Cadwaladr UHB. 57% (88/154) of new episodes were isolated from screening specimens, although in Hywel Dda UHB more new CPO episodes were identified in clinical specimens (Table 9.1.). The rate per 1,000 hospital admissions was 0.34; similar to 2023/24. UHB rates ranged from 0.10 in Aneurin Bevan UHB to 0.61 in Cardiff and Vale UHB (Figure 9.1.).
- 56% of new CPO episodes were identified in specimens from males. The median age was 66 years (Figure 10.1.). While the number remained higher in older age groups than younger, numbers decreased by 5% in individuals aged 50 and over and increased by 32% in the younger age groups, compared to 2023/24 (Figure 10.2.).
- 77% of new CPO episodes were identified in specimens taken in a hospital IP location (Table 11.1.), of which 45% were from specimens taken on admission (day 1 or 2). Swansea Bay UHB had a higher percentage identified on admission than the other UHBs (65%) (Table 11.2.).
- *Escherichia coli* was the most common species isolated in Wales in 2024/25, accounting for 50% of all new CPO episodes. Compared to 2023/24 *Escherichia* spp. and *Enterobacter* spp.

increased by 35% and 92% respectively; *Klebsiella* spp. decreased by 42% (Table 12.1.). *Escherichia* spp. was the most common genus identified in clinical specimens for the last 2 FYs and replaced *Klebsiella* spp. as the most prevalent genus in CPO screening specimens in 2024/25 (Figure 12.3.). Escherichia spp. was the most prevalent genus in all 6 UHBs (Figure 12.4.).

- 56% of carbapenemases in new CPO episodes in Wales in 2024/25 were OXA-48-like (Figure 13.1.). OXA-48-like was the most common carbapenemase from screening (63%) and clinical (52%) specimens (Figure 13.2.) and in all 6 UHBs (Figure 13.3.). There was an increase in IMP-type carbapenemase in 2024/25 (13), compared to the previous FY (4); mainly due to *Enterobacter* spp. isolates identified in Cardiff and Vale UHB.
- OXA-48-like *E. coli* was the most common carbapenemase and species combination found in new CPO episodes in Wales in 2024/25 (63 episodes), followed by OXA-48-like *K. pneumoniae* (12 episodes) (Table 14.1.). Grouped by genus OXA-48-like *Escherichia* spp. accounted for 41% of new CPO episodes and OXA-48-like *Klebsiella* spp. 10% (Table 14.2.). Compared to the previous FY, OXA-48-like *Escherichia* spp. increased by 66% and OXA-48-like *Klebsiella* spp. decreased by 33% (Figure 14.1.). OXA-48-like *Escherichia* spp. was the most common carbapenemase/genus combination both in screening (40%) and clinical specimens (42%) (Figure 14.2.), and in all 6 UHBs, although VIM type *Pseudomonas* spp. was jointly most common in Hywel Dda UHB (Figure 14.5.).

Data sources

Carbapenemase-producing organism (CPO) screening data: Specimens submitted to a Welsh microbiology laboratory with CPO or CPE screen recorded as specimen type, extracted from LIMS via ICNet. Excludes MRSA screens and specimens not tested.

Possible carbapenemase-producing organism (CPO) data: Carbapenem resistant organisms detected in specimens submitted to a Welsh microbiology laboratory, extracted from the Welsh Laboratory Information Management System (LIMS) via ICNet.

New carbapenemase-producing organism (CPO) episode data: Specimens with carbapenemase detected by multiplex PCR testing by the Specialist Antimicrobial Reference Unit (SACU), extracted from LIMS via ICNet or specimens with carbapenemase detected by a rapid Cepheid test, extracted from LIMS via ICNet. Data deduplicated to exclude rapid result if a SACU result with the same organism and carbapenemase exists for that specimen.

Hospital admissions data: Admissions to hospitals in Wales extracted from patient administrative systems (PAS) via ICNet. Hospital admission defined as at least one overnight stay in hospital. Transfers to other hospitals within the same health board (HB) counted as one admission.

Care home (CH) resident data: Individuals resident in a care home at the time of specimen collection were identified using a trained random forest classifier model currently being developed in-house by the CDSC data science team. The automated tool predicts care home residency by checking available record address and postcode fields against multiple criteria and reference datasets, including a list of care homes registered with Care Inspectorate Wales (CIW).

Data definitions

UHB; THB; NHST: University Health Board; Teaching Health Board; National Health Service Trust.

Screening specimen: Specimen taken from an individual who had no evidence of infection but was identified as a potential carrier and tested for a carbapenemase-producing organism (CPO).

Clinical specimen: Specimen taken from an individual with signs and/or symptoms of an infection.

Possible carbapenemase-producing organism (CPO): Gram negative bacterium resistant to carbapenem antibiotics that could possibly be due to the presence of carbapenemase. Includes all Enterobacterales resistant to ertapenem OR imipenem OR meropenem; all *Pseudomonas* spp. resistant to meropenem AND imipenem AND piperacillin-tazobactam; all Acinetobacter spp. resistant to imipenem OR meropenem. Excludes *Aeromonas* spp.; *Chryseobacteria* spp.; *Stenotrophomonas maltophilia*; *Providencia* spp., *Morganella* spp. or *Proteus* spp. with resistance to imipenem, but susceptible to other carbapenems. N.B. More than one possible CPO can be isolated from a single specimen, e.g. *K. pneumoniae* and *E. coli* both isolated from the same specimen and both carbapenem resistant are counted as two possible CPOs.

Carbapenemase: A gene encoding for an enzyme able to hydrolyse carbapenems which can be present on mobile elements and spread across different bacteria; carbapenemases are often able to hydrolyse a wide spectrum of β-lactam.

Confirmed carbapenemase-producing organism (CPO): An organism where presence of carbapenemase has been confirmed by specific tests such as lateral flow or PCR assays. N.B. More than one CPO can be confirmed from a single specimen if multiple species and/or carbapenemase combinations are detected, e.g. carbapenem resistant *K. pneumoniae* and *E. coli* both isolated from the same specimen, OXA-48-like carbapenemase in both, count as two CPOs; or *K. pneumoniae* containing both OXA-48-like and NDM-type carbapenemases, also count as two CPOs.

New carbapenemase-producing organism (CPO) episode: Confirmed CPOs with no prior confirmed CPO of the same species and carbapenemase from the same individual, within the last 52 weeks. e.g. *K. pneumoniae* and *E. coli* isolated from the same specimen, with OXA-48-like carbapenemase in both and no history of OXA-48-like *K. pneumoniae* or *E. coli* in the previous 52 weeks, count as two new CPO episodes; or *K. pneumoniae* containing both OXA-48-like and NDM-type carbapenemases and no OXA-48-like or NDM type *K. pneumoniae* in the previous 52 weeks, also count as two new CPO episodes. However, if the individual had a prior OXA-48-like *K. pneumoniae*, only the NDM-type *K. pneumoniae* combination counts as a new CPO episode.

A. Screening for CPOs

1. Rate of screening for CPOs

- 22,960 screens for CPOs were taken from 12,179 individuals in Wales in 2024/25; equating to a rate of 50 screens per 1,000 hospital admissions (Table 1.1.). This is a 66% increase in the number of screens for CPOs compared to 2023/24 (Figure 1.1).
- UHB rates ranged from 19 per 1,000 hospital admissions in Cwm Taf Morgannwg UHB to 83 in Betsi Cadwaladr UHB (Table 1.1.). All UHBs had higher rates of screening for CPOs in 2024/25 than for the previous FY. Screening for CPOs in Betsi Cadwaladr UHB increased by 140% compared to the last FY, and accounted for more than a third of all CPO screens in Wales in 2024/25 (Figure 1.1).
- Compared to the other UHBs, Betsi Cadwaladr UHB had the highest rate of screening for CPOs per 1,000 hospital admissions in all 4 quarters of 2024/25 (Figure 1.2.).

Table 1.1. Count and rate of screening for CPOs per 1,000 hospital admissions in each HB/NHS Trust, 2024/25 FY

HB/NHS trust	Count of screens for CPOs taken	Rate of screening for CPOs per 1,000 admissions
Aneurin Bevan UHB	2,866	27
Betsi Cadwaladr UHB	8,190	83
Cardiff and Vale UHB	4,687	69
Cwm Taf Morgannwg UHB	1,264	19
Hywel Dda UHB	1,191	21
Powys THB	9	7
Swansea Bay UHB	4,195	67
Velindre NHST	558	172
All Wales	**22,960**	**50**

Rate of screening for CPOs per 1,000 hospital admissions: (Count of screens for CPOs taken / Count of hospital admissions) x 1,000

Figure 1.1. Comparative FY rate of screening for CPOs per 1,000 hospital admissions in each UHB, 2023/24 and 2024/25 FYs

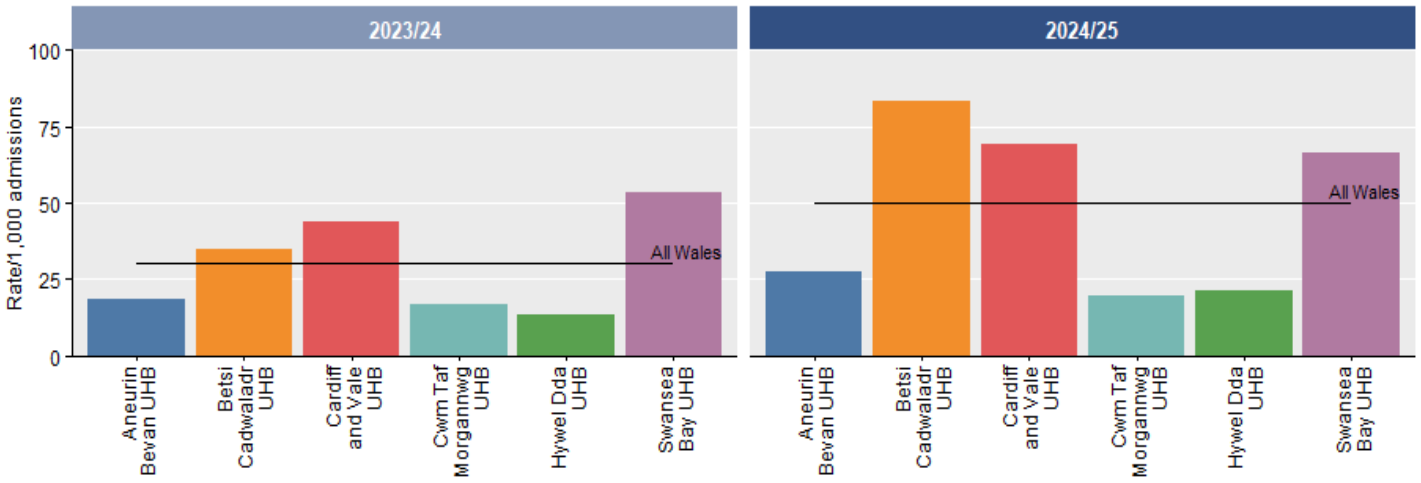
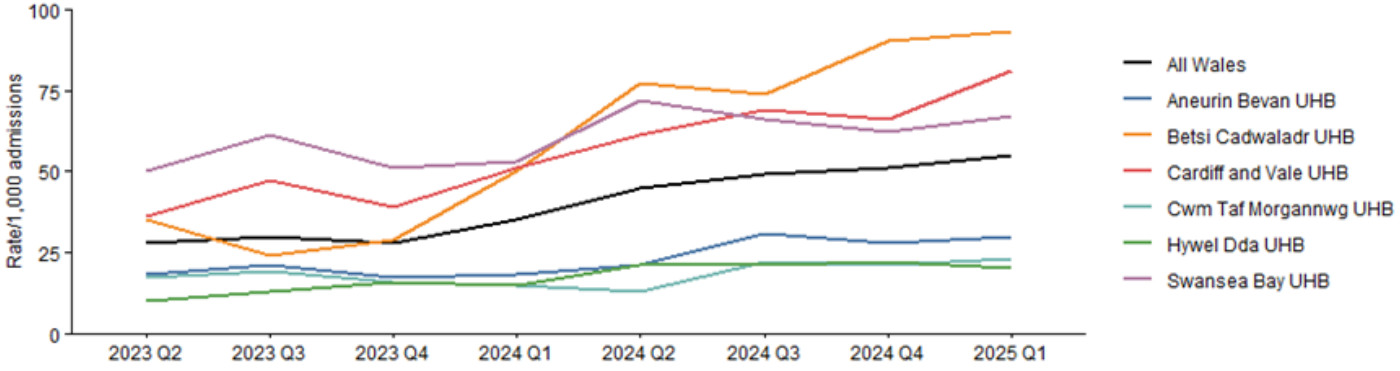


Figure 1.2. Quarterly rate of screening for CPOs per 1,000 hospital admissions in each UHB, Apr 23 to Mar 25



2. Screening for CPOs by demographics

- 56% of individuals screened for CPOs in 2024/25 were male. More males were screened than females across all age groups. The median CPO screening age was 70 years, with 44% aged between 50 and 74 years and just 4% under 25 years (Figure 2.1.).
- CPO screening in individuals aged 50 and over increased by 44% in 2024/25 compared to the previous FY (Figure 2.2.).

Figure 2.1. Count of screens for CPOs taken by age group and sex, 2024/25 FY

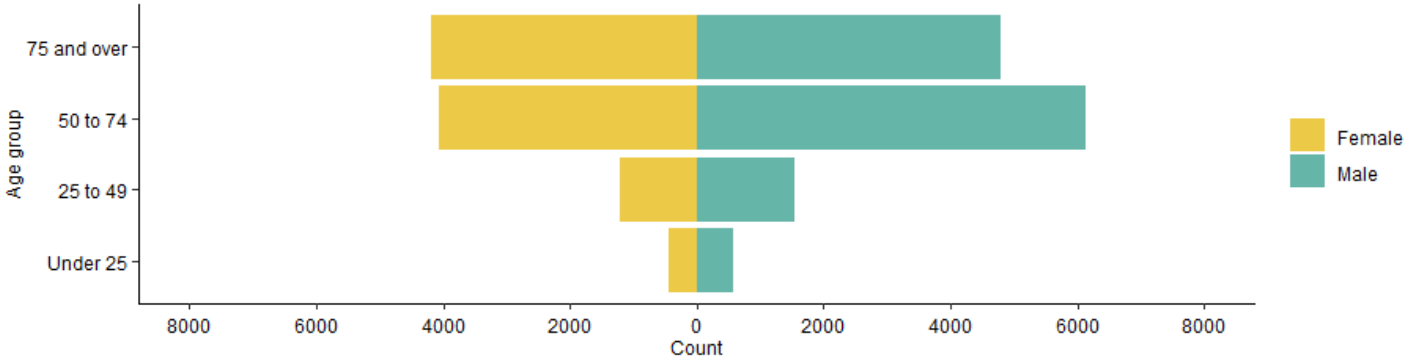
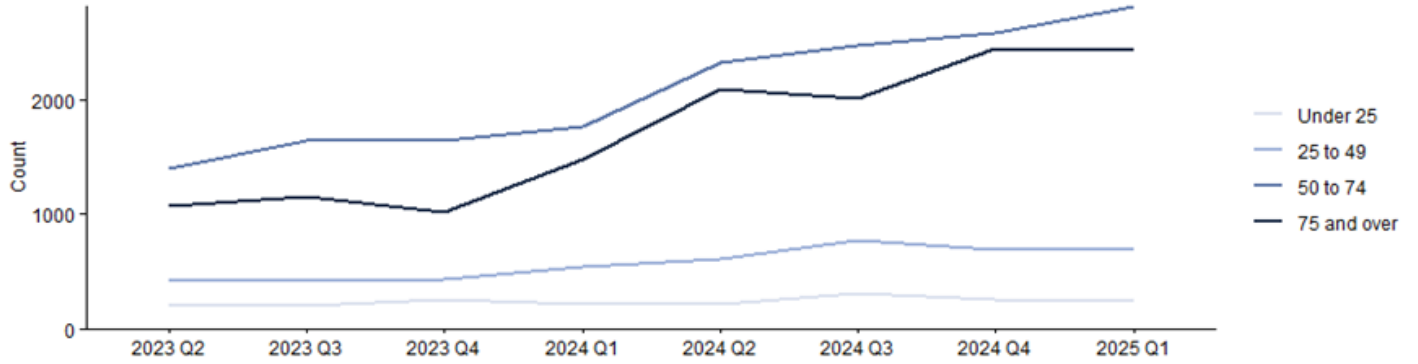


Figure 2.2. Quarterly count of screens for CPOs taken from each age group, Apr 23 to Mar 25



3. Screening for CPOs by location

- 91% of CPO screens were taken in a hospital inpatient (IP) location. Compared to the other UHBs, Aneurin Bevan, Betsi Cadwaladr and Swansea Bay UHBs had higher percentages of screening in non-inpatient (non-IP) hospital locations (10%;9%;16%); Aneurin Bevan and Cardiff and Vale UHBs screened more in community locations (4%) (Table 3.1.).
- 69% of first CPO screens taken during a hospital IP stay were on admission (day 1 or 2). Betsi Cadwaladr had a lower percentage of first screens on admission than other UHBs (54%) (Table 3.2.). The percentage of screens for CPOs taken on admission in Swansea Bay UHB increased from 63% in 2023/24 to 73% in 2024/25 (Figure 3.1.).
- 23% of first screens taken on admission to hospital were admissions to critical care (CC). Betsi Cadwaladr, Hywel Dda and Swansea Bay UHBs had higher percentages of first screens on admission to CC than other UHBs (42%; 32%; 28%). 3% of first screens on admission to hospital were care home (CH) residents. This was slightly higher in Betsi Cadwaladr UHBs (5%). Less than 1% of individuals screened had previously had a CPO detected within the last 12 months (Table 3.3.).
- Of the 2,137 CPO screens taken in the community or a non-IP hospital location, <1% were CH residents and 2% prior to hospital admission. (Table 3.4.).
- 23% of patients admitted to CC were screened on the day of admission. This ranged from 2% in Aneurin Bevan and Cwm Taf Morgannwg UHBs to 67% in Betsi Cadwaladr UHB (Table 3.5.). The percentage of CC admissions screened for CPOs almost doubled in Betsi Cadwaladr UHB in 2024/25 compared to 2023/24; Hywel Dda UHB increased from 19% to 36% (Figure 3.2.).

Table 3.1. Count and percentage (%) distribution of screens for CPOs taken in each HB/NHS trust, by location type, 2024/25 FY

HB/NHS trust	Count (% of all CPO screens)		
	Hospital IP screens	Hospital non-IP screens	Community screens
Aneurin Bevan UHB	2452 (86%)	297 (10%)	117 (4%)
Betsi Cadwaladr UHB	7473 (91%)	705 (9%)	12 (<1%)
Cardiff and Vale UHB	4449 (95%)	40 (1%)	198 (4%)
Cwm Taf Morgannwg UHB	1242 (98%)	18 (1%)	4 (<1%)
Hywel Dda UHB	1140 (96%)	47 (4%)	4 (<1%)
Powys THB	9 (100%)	0 (0%)	0 (0%)
Swansea Bay UHB	3500 (83%)	688 (16%)	7 (<1%)
Velindre NHST	558 (100%)	0 (0%)	0 (0%)
All Wales	**20823 (91%)**	**1795 (8%)**	**342 (1%)**

Hospital inpatient (IP) screen: Screen for CPOs taken in a hospital location during an IP overnight stay.
Hospital non-inpatient (non-IP) screen: Screen for CPOs taken in a hospital location with no overnight stay.
Community screen: Screen for CPOs taken in a non-hospital location.

Table 3.2. Count and percentage (%) distribution of first screens for CPOs taken in each HB/NHS trust during a hospital IP stay, by time from admission, 2024/25 FY

HB/NHS trust	Count of hospital IP stays with screen (N)	Count first screens (% of N)	
		On admission (day 1 or 2)	>2 days after admission
Aneurin Bevan UHB	977	760 (78%)	217 (22%)
Betsi Cadwaladr UHB	3,609	1932 (54%)	1677 (46%)
Cardiff and Vale UHB	2,420	2017 (83%)	403 (17%)
Cwm Taf Morgannwg UHB	490	325 (66%)	165 (34%)
Hywel Dda UHB	1,020	750 (74%)	270 (26%)
Powys THB	5	1 (20%)	4 (80%)
Swansea Bay UHB	2,720	1989 (73%)	731 (27%)
Velindre NHST	481	347 (72%)	134 (28%)
All Wales	**11,722**	**8121 (69%)**	**3601 (31%)**

Hospital inpatient (IP) stays with screen: Hospital IP stays where the patient had at least one screen for CPOs. N.B. IP stays are defined as an admission to hospital with at least one overnight stay. Transfers between hospitals in the same health board are counted as one IP stay.
On admission: First screen for CPO taken on day 1 or 2 of a hospital IP stay (where day 1 is the day of admission).

>2 days after admission: First screen for CPO taken more than 2 days into a hospital IP stay (where day 1 is the day of admission).

Figure 3.1. Comparative FY percentage (%) of first screens for CPOs taken during a hospital IP stay that were taken on admission (day 1 or 2) in each UHB, 2023/24 and 2024/25 FYs

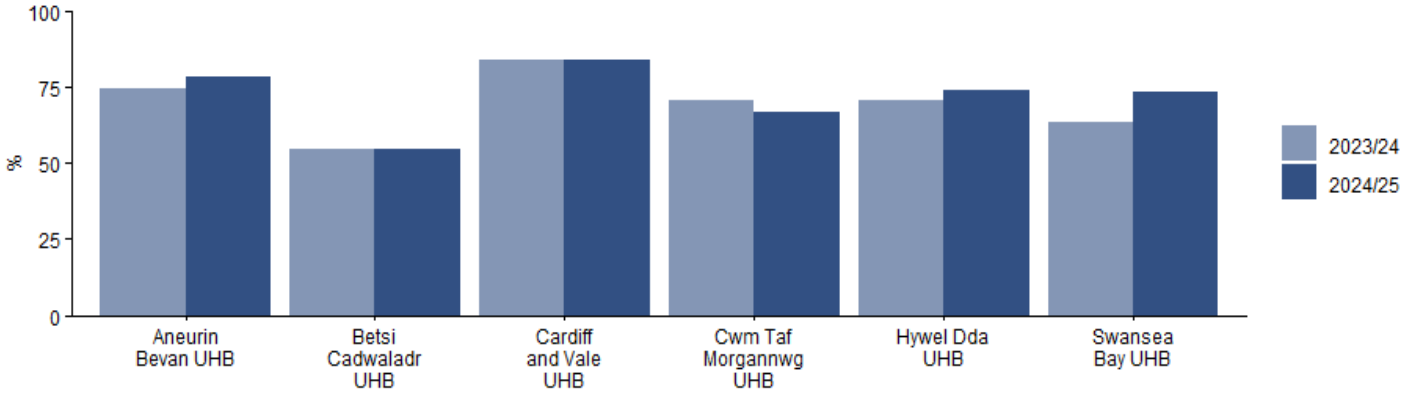


Table 3.3. Count and percentage (%) of first screens for CPOs taken on admission to each HB/NHS trust, by potential reasons for screening, 2024/25 FY

HB/NHS trust	Count of hospital IP stays with first screen on admission (N)	Count of first screens on admission (% of N)		
		CH resident	Previous CPO detected	On admission to CC
Aneurin Bevan UHB	760	21 (3%)	9 (1%)	46 (6%)
Betsi Cadwaladr UHB	1,932	105 (5%)	8 (<1%)	816 (42%)
Cardiff and Vale UHB	2,017	25 (1%)	3 (<1%)	135 (7%)
Cwm Taf Morgannwg UHB	325	4 (1%)	0 (0%)	23 (7%)
Hywel Dda UHB	750	18 (2%)	1 (<1%)	243 (32%)
Powys THB	1	1 (100%)	0 (0%)	0 (0%)
Swansea Bay UHB	1,989	39 (2%)	7 (<1%)	565 (28%)
Velindre NHST	347	1 (<1%)	0 (0%)	1 (<1%)
All Wales	**8,121**	**214 (3%)**	**28 (<1%)**	**1829 (23%)**

Hospital inpatient (IP) stays with first screen on admission: Hospital IP stays where the patient had their first screen for CPO (of current IP stay) on day 1 or 2 of the IP stay. N.B. IP stays are defined as an admission to hospital with at least one overnight stay. Transfers between hospitals in the same health board are counted as one IP stay.

Care home (CH) resident: First screen for CPOs on admission taken from a patient whose residential address at the time of screening was a CH.

Previous CPO detected: First screen for CPOs on admission taken from a patient who had a positive CPO test (e.g. lateral flow or PCR assays) in the previous 12 months from a clinical or a screen specimen.

On admission to critical care (CC): First screen for CPOs on admission taken on the same day the patient was admitted to a CC ward.

N.B. The above 3 categories are not mutually exclusive.

Table 3.4. Count and percentage (%) of CPO screens taken in each HB/NHS trust in non-IP hospital and community locations, by potential reasons for screening, 2024/25 FY

HB/NHS trust	Count of non-IP & community screens (N)	Count (% of N)	
		CH resident	Prior to hospital admission
Aneurin Bevan UHB	414	0 (0%)	11 (3%)
Betsi Cadwaladr UHB	717	4 (1%)	21 (3%)
Cardiff and Vale UHB	238	0 (0%)	3 (1%)
Cwm Taf Morgannwg UHB	22	0 (0%)	0 (0%)
Hywel Dda UHB	51	0 (0%)	0 (0%)
Powys THB	0	0 (0%)	0 (0%)
Swansea Bay UHB	695	6 (1%)	11 (2%)
Velindre NHST	0	0 (0%)	0 (0%)
All Wales	**2,137**	**10 (<1%)**	**46 (2%)**

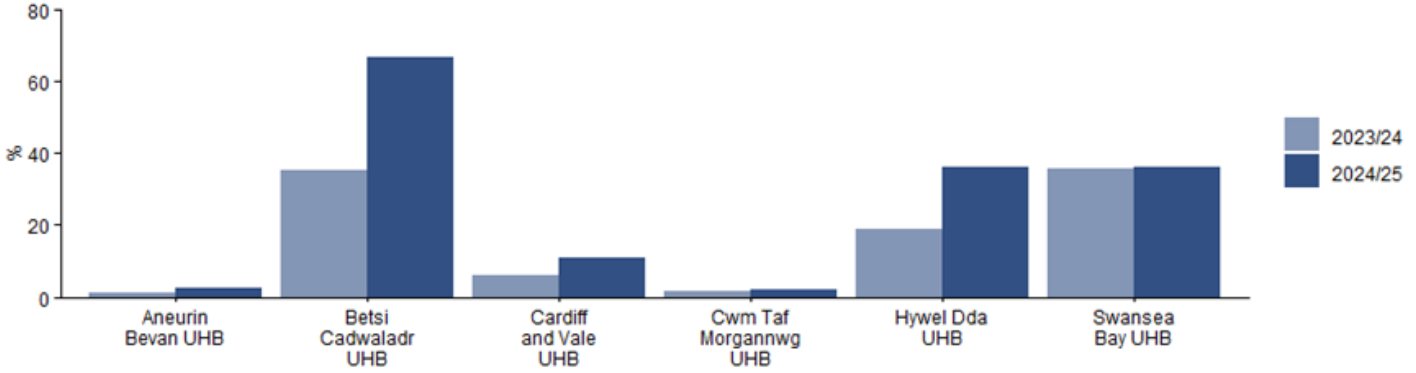
Care home (CH) resident: CPO screen specimen taken from an individual whose residential address at the time of screening was a CH.
Prior to hospital admission: CPO screen specimen taken within 3 days prior to hospital admission. N.B. Only includes hospital admissions with an overnight stay.
N.B. The above 2 categories are not mutually exclusive.

Table 3.5. Count and percentage (%) of CC admissions screened for CPOs in each UHB, 2024/25 FY

UHB	Count of CC admissions	Count of screens on admission to CC	% of CC admissions screened
Aneurin Bevan UHB	2,474	57	2%
Betsi Cadwaladr UHB	1,548	1,035	67%
Cardiff and Vale UHB	2,432	270	11%
Cwm Taf Morgannwg UHB	1,178	25	2%
Hywel Dda UHB	905	325	36%
Swansea Bay UHB	2,028	729	36%
All Wales	**10,565**	**2,442**	**23%**

Critical care (CC) admission: Admission to a CC ward that includes at least one overnight stay.
On admission to critical care (CC): Screen for CPOs taken on day of admission to a CC ward.
% of critical care (CC) admissions screened: (Count of screens for CPOs taken on admission to CC / Count of admissions to CC) *100.

Figure 3.2. Comparative FY percentage (%) of CC admissions screened for CPOs in each UHB, 2023/24 and 2024/25 FYs



4. Possible and confirmed CPO screens

- Of the 22,960 screens for CPOs taken in Wales in 2024/25, 283 identified at least one possible CPO. In 83 screens at least one possible CPO was confirmed as a CPO. This equates to a rate of 12 possible and 4 confirmed CPO screens per 1,000 screens for CPOs taken (Table 4.1.); a decrease compared to 2023/24 (Figure 4.1.), however this was likely due to an increase in the number of screens taken.
- Of the 6 UHBs the rate of possible CPO screens ranged from 9 (Hywel Dda UHBs) to 18 (Cwm Taf Morgannwg UHB) per 1,000 screens for CPOs taken. Confirmed CPO screens ranged from 2 (Hywel Dda UHB) to 5 (Cwm Taf Morgannwg UHB) per 1,000 screens for CPOs taken (Figure 4.2.). The rate of possible and confirmed CPO screens decreased in all UHBs in 2024/25 except Cwm Taf Morgannwg UHB, compared to the previous FY (Figure 4.2.).

Table 4.1. Count and rate of possible and confirmed CPO screens per 1,000 CPO screens taken in each HB/NHS trust, 2023/24 FY

HB/NHS trust	Count of screens taken	Possible CPO screens		Confirmed CPO screens	
		Count	Rate per 1,000 screens taken	Count	Rate per 1,000 screens taken
Aneurin Bevan UHB	2,866	29	10	9	3
Betsi Cadwaladr UHB	8,190	95	12	27	3
Cardiff and Vale UHB	4,687	63	13	21	4
Cwm Taf Morgannwg UHB	1,264	23	18	6	5
Hywel Dda UHB	1,191	11	9	2	2
Powys THB	9	0	0	0	0
Swansea Bay UHB	4,195	57	14	17	4
Velindre NHST	558	5	9	1	2

HB/NHS trust	Count of screens taken	Possible CPO screens		Confirmed CPO screens	
		Count	Rate per 1,000 screens taken	Count	Rate per 1,000 screens taken
All Wales	22,960	283	12	83	4

Possible CPO screen: Screening specimen with at least one possible CPO detected (including confirmed CPOs).
Confirmed CPO screen: Screening specimen with at least one confirmed CPO detected.
N.B. In table 4.1 and figures 4.1 and 4.2, specimens with more than one possible or confirmed CPO detected are still counted as one possible or confirmed CPO screen.

Figure 4.1. Quarterly rate of possible and confirmed CPO screens per 1,000 CPO screens taken, Apr 23 to Mar 25

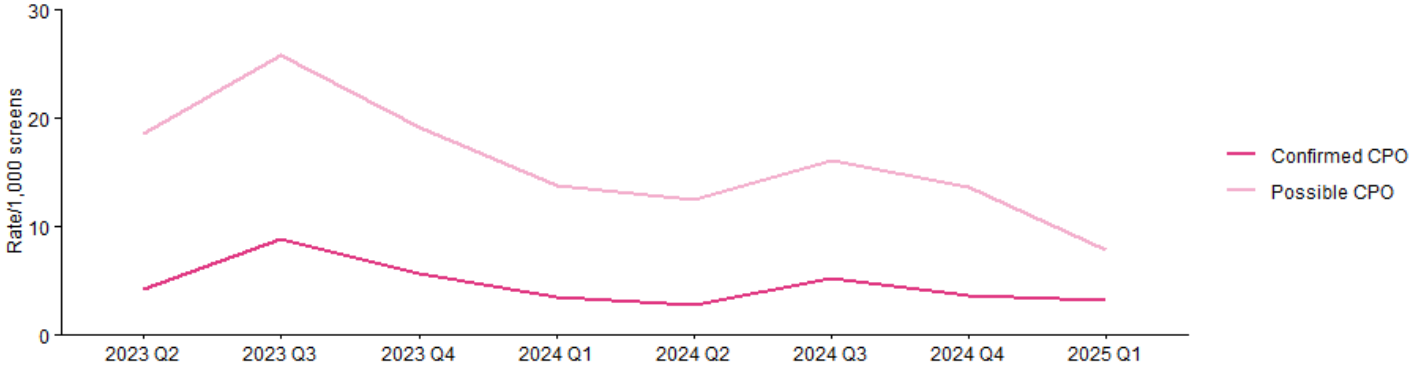
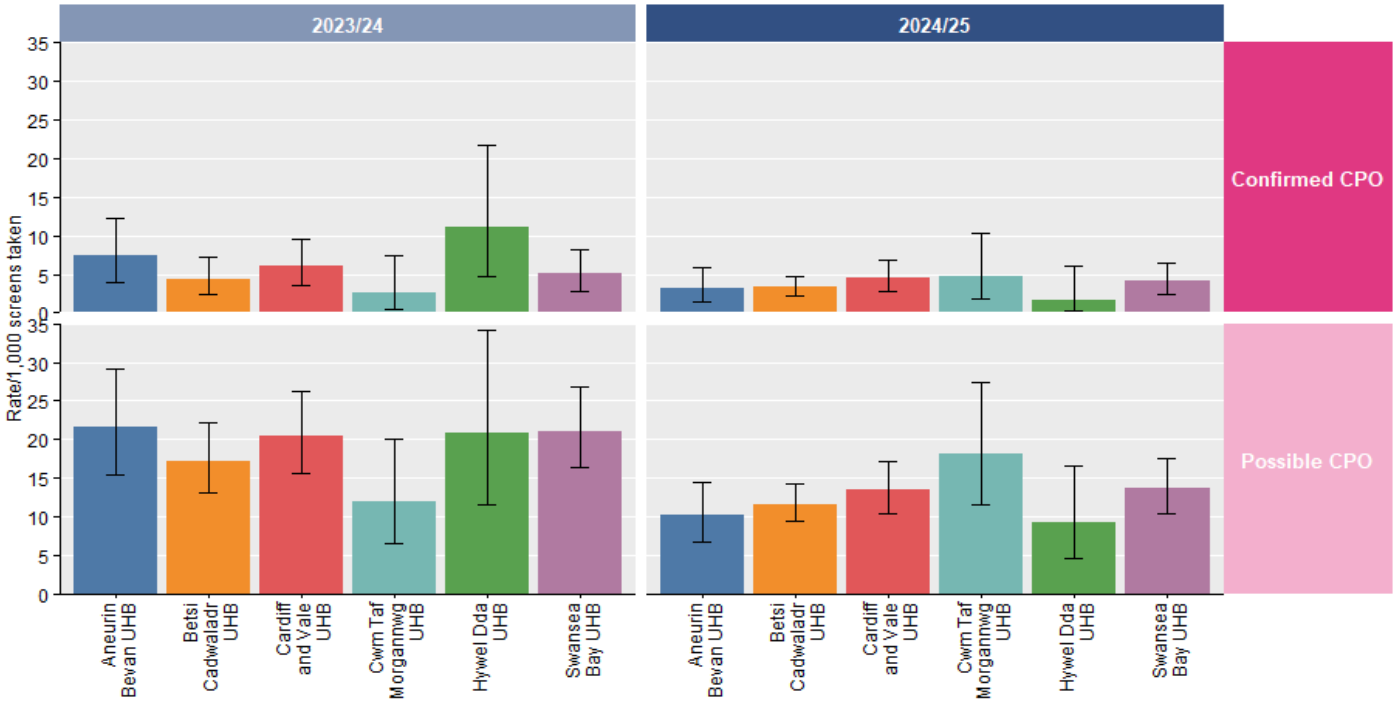


Figure 4.2. Comparative FY rate of possible and confirmed CPO screens per 1,000 CPO screens taken, Apr 23 to Mar 25



B. Possible CPOs

5. Possible CPOs by specimen type

- 734 possible CPOs were identified in Wales in 2024/25; 39% (289) from screening and 61% (445) from clinical specimens (Table 5.1.). N.B. Multiple possible CPOs were detected in 6 screening and 2 clinical specimens and counted as separate possible CPO.
- Among the UHBs the percentage of possible CPOs from screening specimens ranged from 12% in Hywel Dda UHB to 56% in Betsi Cadwaladr UHB (Table 5.1). Betsi Cadwaladr UHB was the only UHB to have a higher number of possible CPOs from screening compared to clinical specimens; 57% more than the previous FY (Figure 5.3.).
- The Wales rate of possible CPOs per 1,000 hospital admissions was 1.6; slightly lower than the previous FY (1.8) Rates across the 6 UHBs ranged from 0.7 in Aneurin Bevan UHB to 2.2 in Swansea Bay UHB. The rate of possible CPOs in Aneurin Bevan was significantly lower than the other UHBs (Figure 5.1.).
- For the last 2 years the number of possible CPOs identified from screening specimens was slightly higher in Q3 (Jul-Aug) compared to other quarters (Figure 5.4.).

Table 5.1. Count and percentage (%) distribution of possible CPOs identified in each HB/NHS trust, by specimen type, 2024/25 FY

HB/NHS trust	Count of possible CPOs (N)	Count of possible CPOs (% of N)	
		Screening specimens	Clinical specimens
Aneurin Bevan UHB	73	29 (40%)	44 (60%)
Betsi Cadwaladr UHB	176	99 (56%)	77 (44%)
Cardiff and Vale UHB	142	65 (46%)	77 (54%)
Cwm Taf Morgannwg UHB	99	23 (23%)	76 (77%)
Hywel Dda UHB	88	11 (12%)	77 (88%)
Powys THB	9	0 (0%)	9 (100%)
Swansea Bay UHB	141	57 (40%)	84 (60%)
Velindre NHST	6	5 (83%)	1 (17%)
All Wales	**734**	**289 (39%)**	**445 (61%)**

Possible carbapenemase-producing organism (CPO): Gram negative bacterium resistant to carbapenem antibiotics that could possibly be due to the presence of carbapenemase. Includes all Enterobacterales resistant to ertapenem OR imipenem OR meropenem; all *Pseudomonas spp*. resistant to meropenem AND imipenem AND piperacillin-tazobactam; all *Acinetobacter spp*. resistant to imipenem OR meropenem. Excludes *Aeromonas spp*.; *Chryseobacteria spp*.; *Stenotrophomonas maltophilia; Providencia*, *Morganella* or *Proteus spp*. with resistance to imipenem, but susceptible to other carbapenems.
N.B. More than one possible CPO can be isolated from a single specimen, e.g. *K. pneumoniae* and *E. coli* both isolated from the same specimen and both carbapenem resistant are counted as two possible CPOs.

Figure 5.1. Comparative FY rate of possible CPOs per 1,000 hospital admissions identified in each UHB (with 95% CI), 2023/24 and 2024/25 FYs

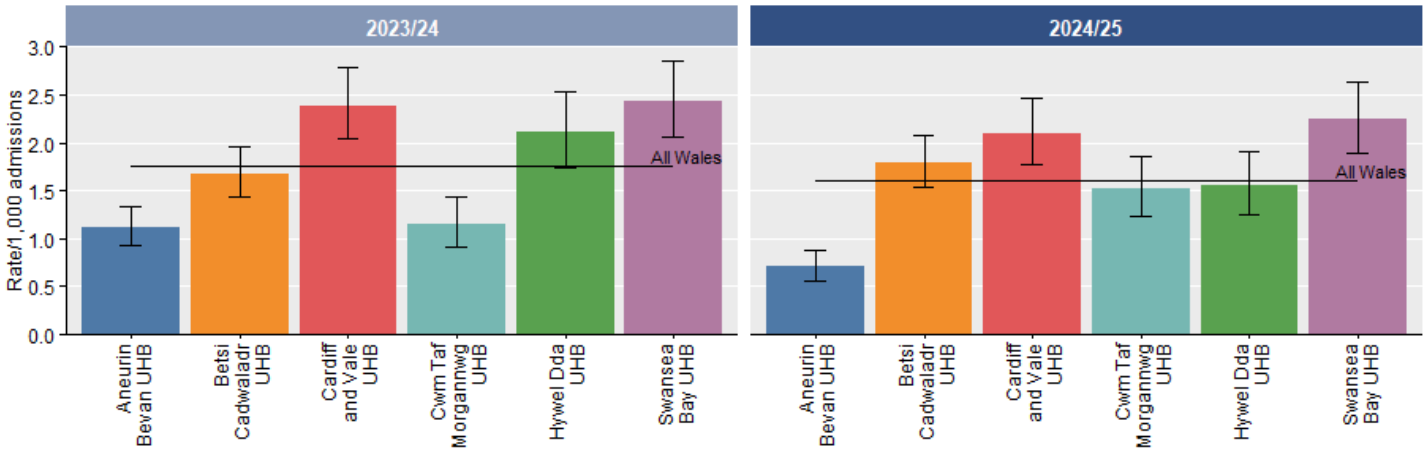


Figure 5.2. Quarterly rate of possible CPOs per 1,000 hospital admissions identified in each UHB, Apr 23 to Mar 25

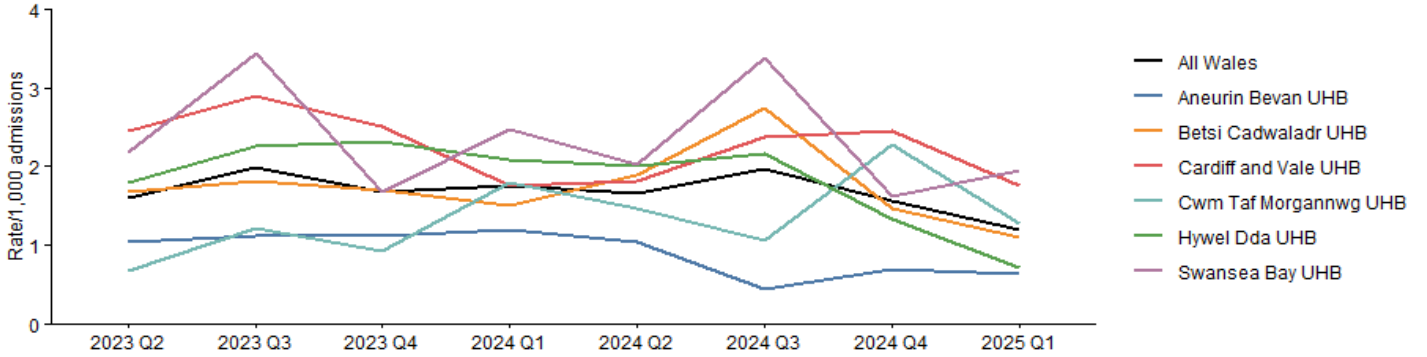


Figure 5.3. Comparative FY count of possible CPOs identified in each UHB by specimen type, 2023/24 and 2024/25 FYs

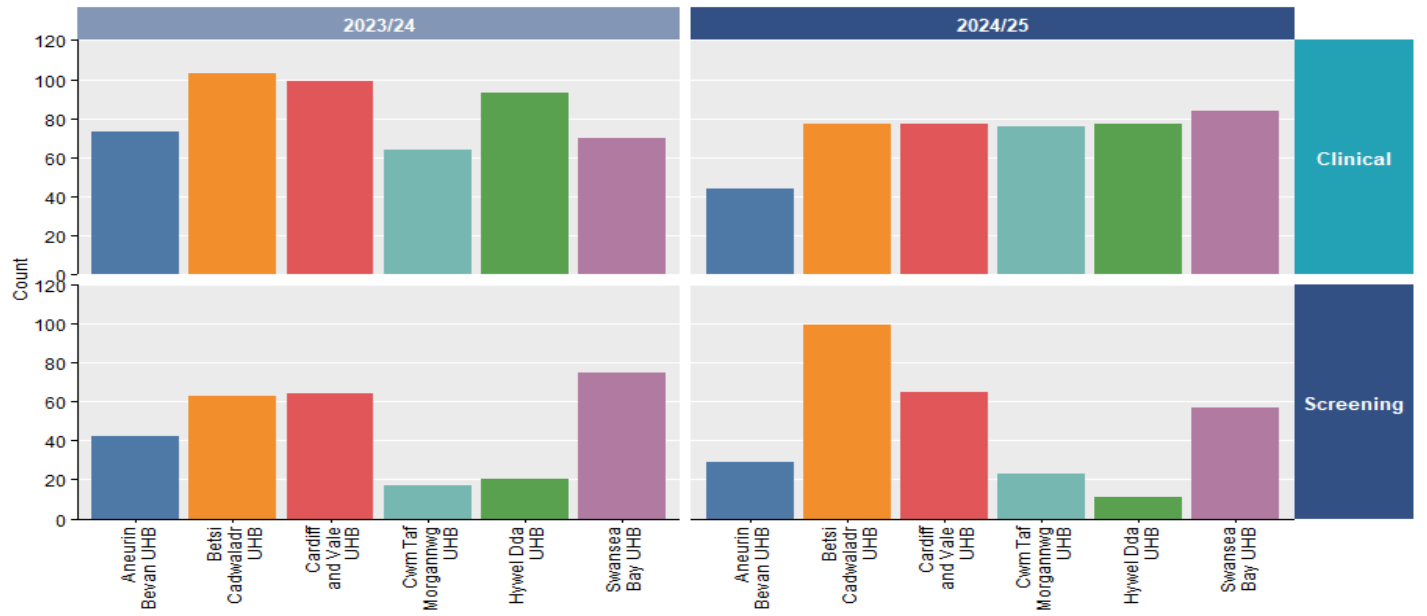
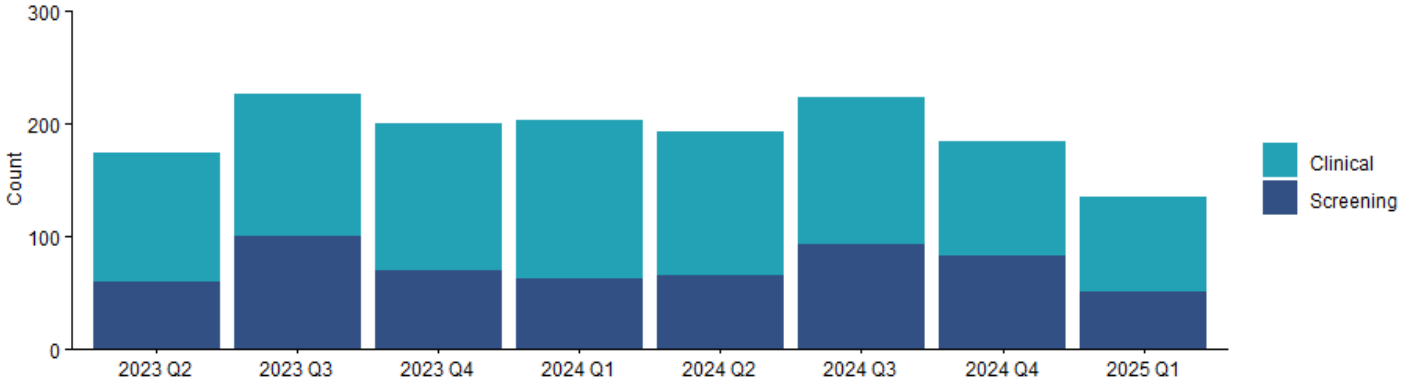


Figure 5.4. Quarterly count of possible CPOs by specimen type, Apr 23 to Mar 25



6. Possible CPOs by demographics

- 53% of possible CPOs in 2024/25 were identified in specimens from males. The median age was 66 years, with 40% aged between 50 and 74 years and 8% aged under 25. Males between the ages of 50 and 74 accounted for 23% of all possible CPOs (Figure 6.1.).
- While the number of possible CPOs in 2024/25 remained higher in older age groups than younger, compared to 2023/24, possible CPO numbers decreased by 12% in individuals aged 50 and over and increased by 12% in the younger age groups (Figure 6.2.).

Figure 6.1. Count of possible CPOs by age group and sex, 2024/25 FY

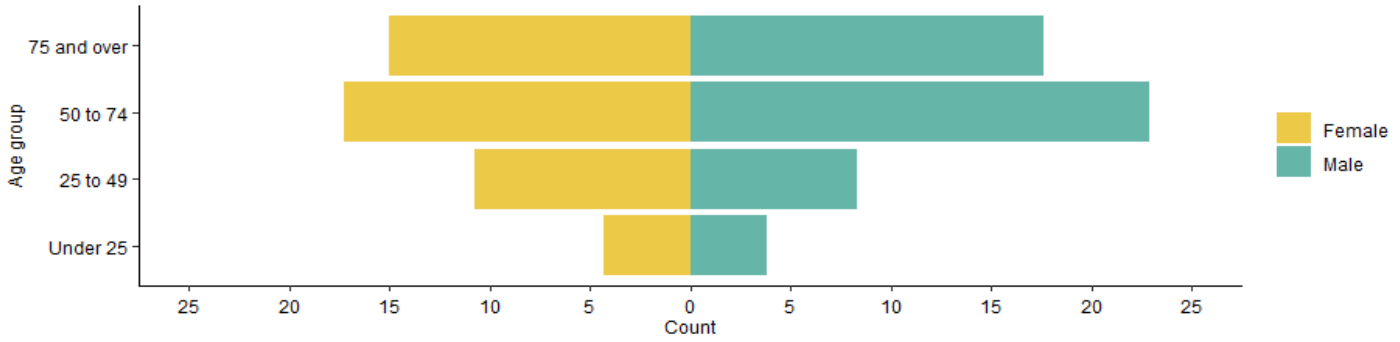
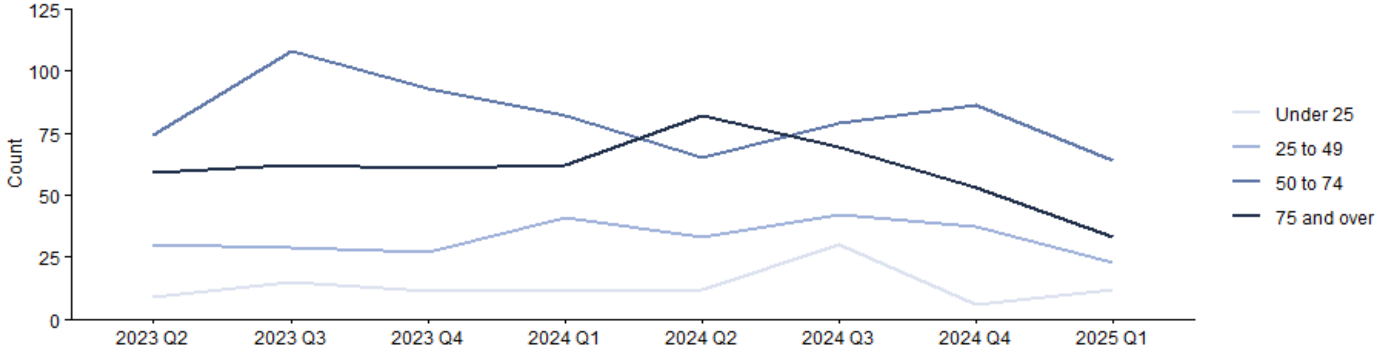


Figure 6.2. Quarterly count of possible CPOs by age group, Apr 23 to Mar 25



7. Possible CPOs by species

- *P. aeruginosa* was the most common species of possible CPOs isolated in Wales in 2024/25, accounting for 24% of all possible CPOs. (Table 7.1.).
- *Pseudomonas* spp. was the most common genus, accounting for 25% of all possible CPOs in 2024/25 (Figure 7.1.), however more *Escherichia* spp. were isolated in Oct-Dec 24 (Q3) and more *Escherichia* spp. and *Klebsiella* spp. in Jan-Mar 25 (Q4) (Figure 7.2.).
- Compared to possible CPOs in 2023/24, the number of *Klebsiella* spp. and *Pseudomonas* spp. decreased by 32% and 17% respectively; *Escherichia* spp. and *Enterobacter* spp. increased by 9% and 7% (Figure 7.1.).
- *Escherichia* spp., *Klebsiella* spp. and *Enterobacter* spp. were more prevalent in screening specimens, accounting for 30%, 29% and 25% respectively, whereas *Pseudomonas* spp. was the most common CPO genus in clinical specimens (36%) (Figure 7.3.).
- Compared to 2023/24, counts of *Klebsiella* spp. from screening specimens decreased by 42%; *Enterobacter* spp. increased by 95%. In clinical specimens, *Pseudomonas* spp. and *Enterobacter* spp. decreased by 20% and 28% respectively; *Klebsiella* spp. slightly increased (13%) (Figure 7.3.).
- *Pseudomonas* spp. was the most prevalent possible CPO genus in 3 of the 6 UHBs (Aneurin Bevan, Cardiff and Vale and Swansea Bay UHBs). *Enterobacter* spp. and *Klebsiella* spp. were more prevalent in Betsi Cadwaladr UHB; Escherichia spp. in Cwm Taf Morgannwg UHB; and *Klebsiella* spp. in Hywel Dda UHB (Figure 7.4.).
- Compared to 2023/24 FY, significant decreases in *Pseudomonas* spp. were isolated in Betsi Cadwaladr and Hywel Dda UHBs; counts increased in Swansea Bay UHB. *Klebsiella* spp. decreased in all UHBs except Betsi Cadwaladr UHB; *Escherichia* spp. increased in Cwm Taf Morgannwg UHB. Significant increases in *Enterobacter* spp. were reported in Betsi Cadwaladr and Cwm Taf Morgannwg UHBs; numbers decreased in Aneurin Bevan UHB (Figure 7.4.).

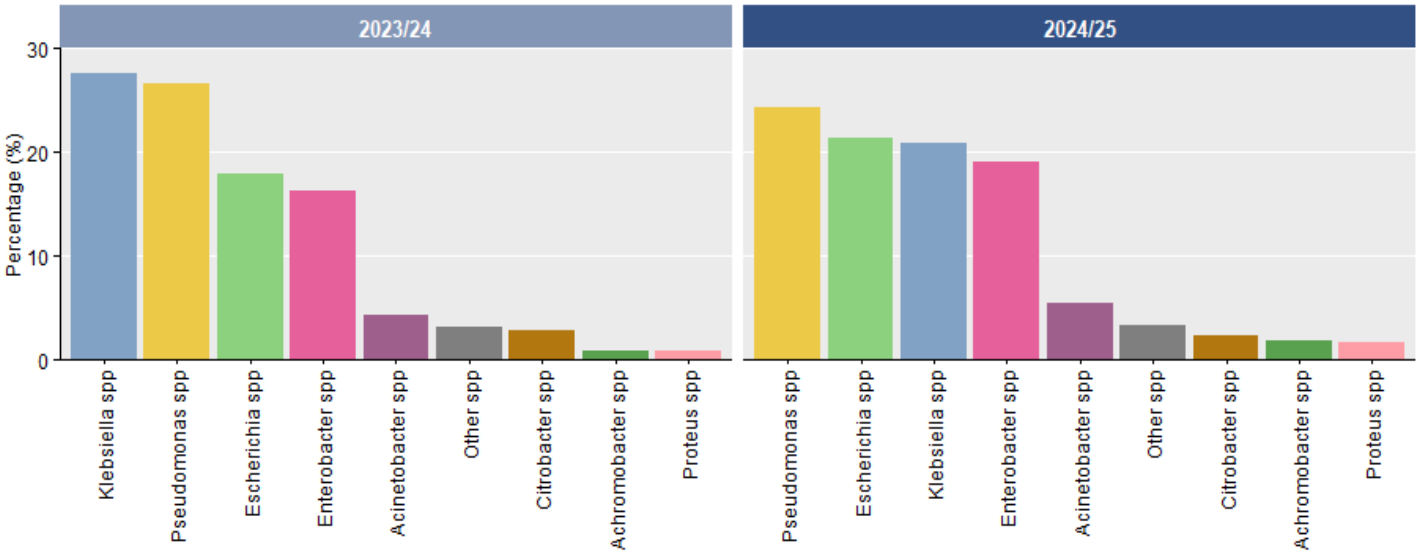
Table 7.1. Count and percentage (%) distribution of most common species of possible CPOs, 2024/25 FY

Organism species	Count of possible CPOs	% of possible CPOs
Pseudomonas aeruginosa	179	24%
Escherichia coli	157	21%
Enterobacter cloacae complex	138	19%
Klebsiella pneumoniae	135	18%
Acinetobacter baumannii	21	3%
Achromobacter xylosoxidans	13	2%
Proteus mirabilis	10	1%
Other	81	11%

Most common species of possible CPO: Organism species that individually account for more than 1% of all possible CPOs. Species that account for 1% or less are grouped as 'Other' (*Acidovorax* sp, *Acinetobacter johnsonii*, *Acinetobacter junii*, *Acinetobacter lwoffii*, *Acinetobacter pittii* (APIT), *Acinetobacter* sp, *Acinetobacter ursingii*, *Alcaligenes faecalis*, *Burkholderia cenocepacia*, *Burkholderia multivorans*,

Citrobacter braakii, Citrobacter freundii, Citrobacter koseri, Coliform, *Comamonas* sp, *Delftia acidovorans, Enterobacter hormaechei* CRO, Gram negative *bacillus*, *Hafnia alvei, Klebsiella aerogenes, Klebsiella oxytoca, Pantoea* sp, *Proteus mirabilis, Proteus* sp, *Serratia liquefaciens, Serratia marcescens, Serratia* sp, *Streptomyces* sp).

Figure 7.1. Comparative FY percentage (%) distribution of most common genus of possible CPOs, 2024/25 FY



Most common genus of possible CPO: Organism genus that individually account for more than 1% of all possible CPOs. Genus that account for 1% or less grouped as 'Other' (*Acidovorax* spp, *Alcaligenes* spp, *Bacillus* spp, *Burkholderia* spp, Coliform, *Comamonas* spp, *Delftia* spp, *Hafnia* spp, *Pantoea* spp, *Serratia* spp, *Streptomyces* spp).

Figure 7.2. Quarterly count of most common genus of possible CPOs, Apr 23 to Mar 25

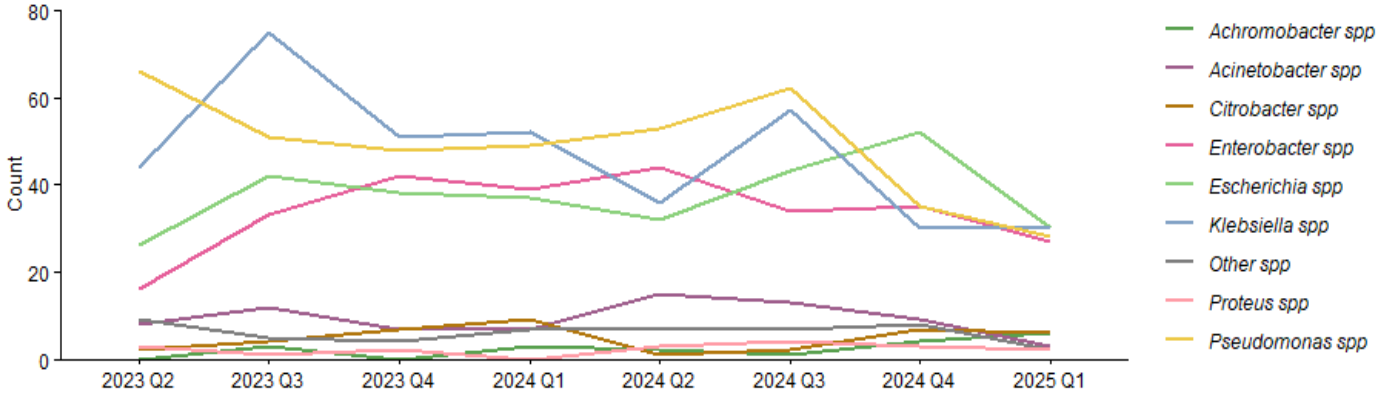
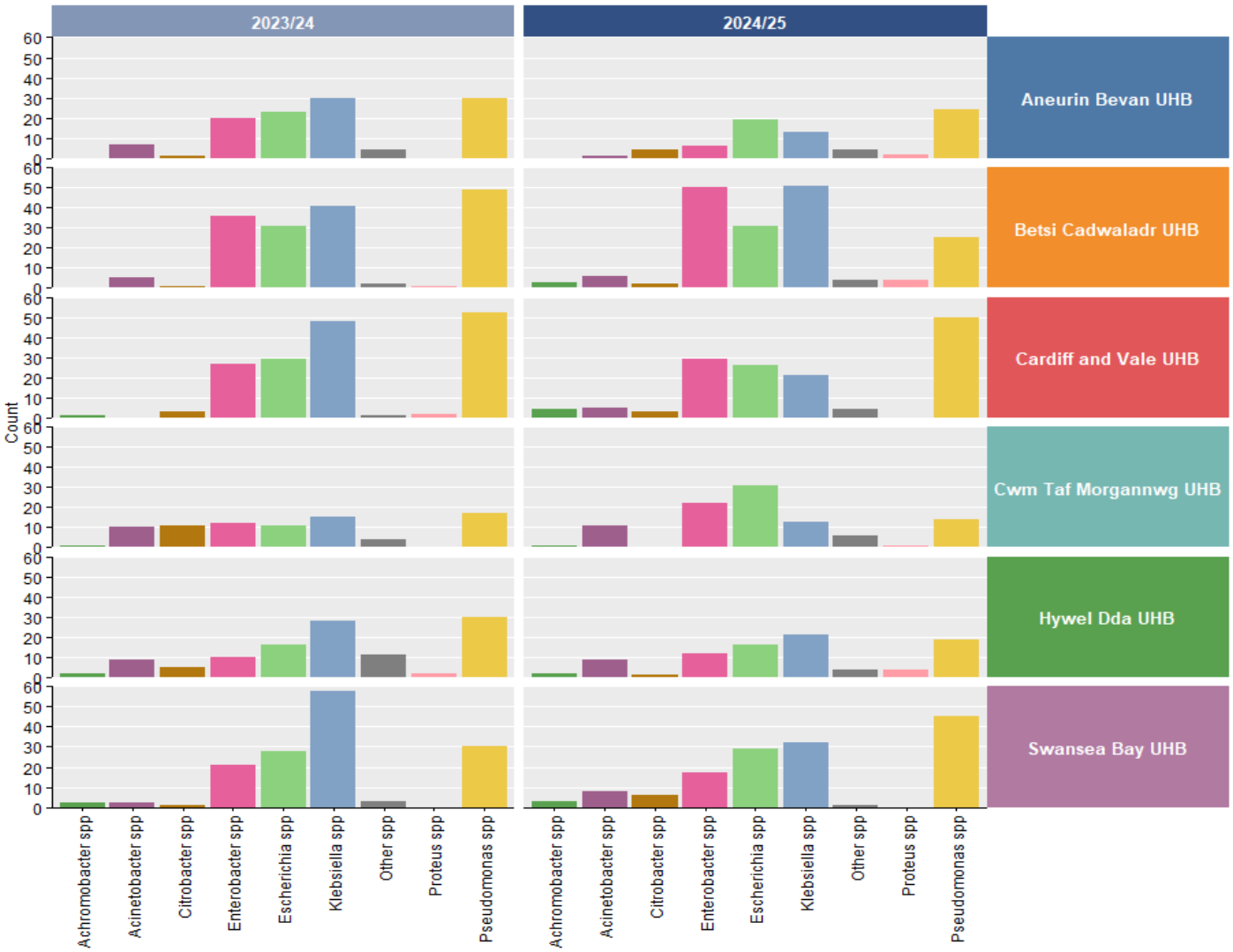


Figure 7.3. Comparative FY count of most common genus of possible CPOs by specimen type, Apr 23 to Mar 25

Figure 7.4. Comparative FY count of most common genus of possible CPOs in each UHB, Apr 23 to Mar 25



8. Possible CPOs confirmed

- Of the 734 possible CPOs identified in Wales in 2024/25, 25% (186) were confirmed as CPOs. A higher percentage of possible CPOs were confirmed from screening (40%) compared to 16% in clinical specimens (Table 8.1.).
- Across the UHBs, the percentage of possible CPOs confirmed ranged from 16% in Aneurin Bevan UHB to 32% in Cardiff and Vale UHB (Table 8.1.).
- In Swansea Bay UHB the percentage of possible CPOs confirmed decreased in clinical and increased in screening specimens; the reverse was true in Hywel Dda UHB (Figure 8.2.).

Table 8.1. Count and percentage (%) of possible CPOs identified in each HB/NHS trust that were confirmed, by specimen type, 2024/25 FY

HB/NHS trust	All specimens		Screening specimens		Clinical specimens	
	Count of possible CPOs (N)	Count of possible CPOs confirmed (% of N)	Count of possible CPOs (N)	Count of possible CPOs confirmed (% of N)	Count of possible CPOs (N)	Count of possible CPOs confirmed (% of N)
Aneurin Bevan UHB	73	12 (16%)	29	11 (38%)	44	1 (2%)
Betsi Cadwaladr UHB	176	47 (27%)	99	31 (31%)	77	16 (21%)
Cardiff and Vale UHB	142	45 (32%)	65	34 (52%)	77	11 (14%)
Cwm Taf Morgannwg UHB	99	23 (23%)	23	10 (43%)	76	13 (17%)
Hywel Dda UHB	88	18 (20%)	11	4 (36%)	77	14 (18%)
Powys THB	9	0 (0%)	0	0 (0%)	9	0 (0%)
Swansea Bay UHB	141	39 (28%)	57	24 (42%)	84	15 (18%)
Velindre NHST	6	2 (33%)	5	1 (20%)	1	1 (100%)
All Wales	**734**	**186 (25%)**	**289**	**115 (40%)**	**445**	**71 (16%)**

Confirmed CPO: Possible CPO where presence of carbapenemase has been confirmed by specific tests such as lateral flow or PCR assays.

N.B. In table 8.1. and figures 8.1-3., possible CPO confirmed by the presence of more than one type of carbapenemase are counted as one possible CPO confirmed.

Figure 8.1. Comparative FY percentage (%) of possible CPOs that were confirmed in each UHB, 2023/24 and 2024/25 FYs

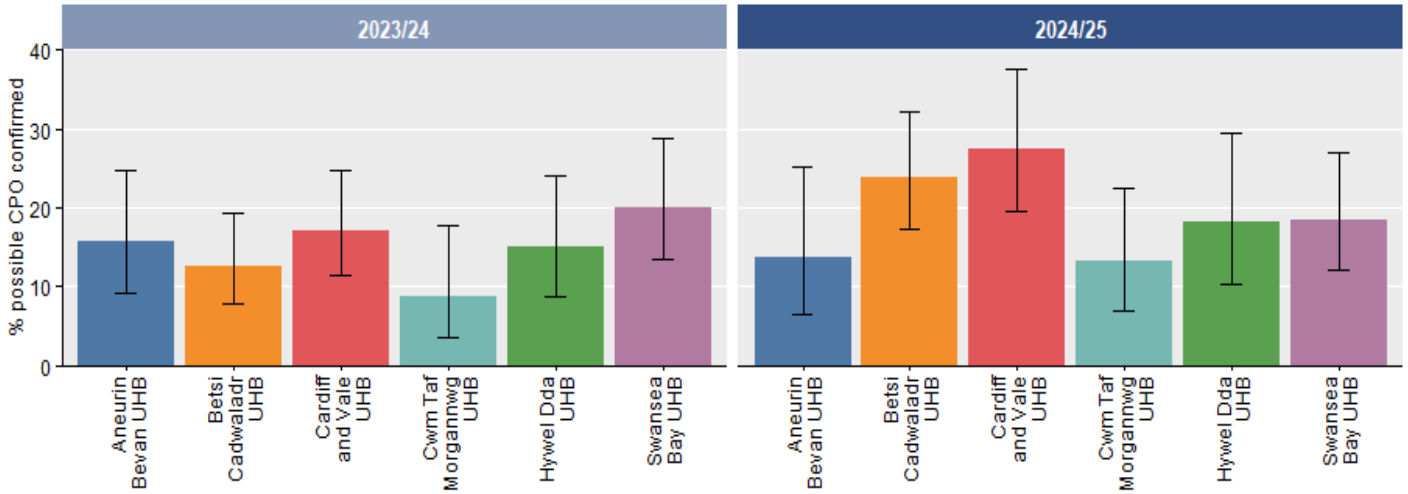


Figure 8.2. Comparative FY percentage (%) of possible CPOs that were confirmed in each UHB by specimen type, 2023/24 and 2024/25 FYs

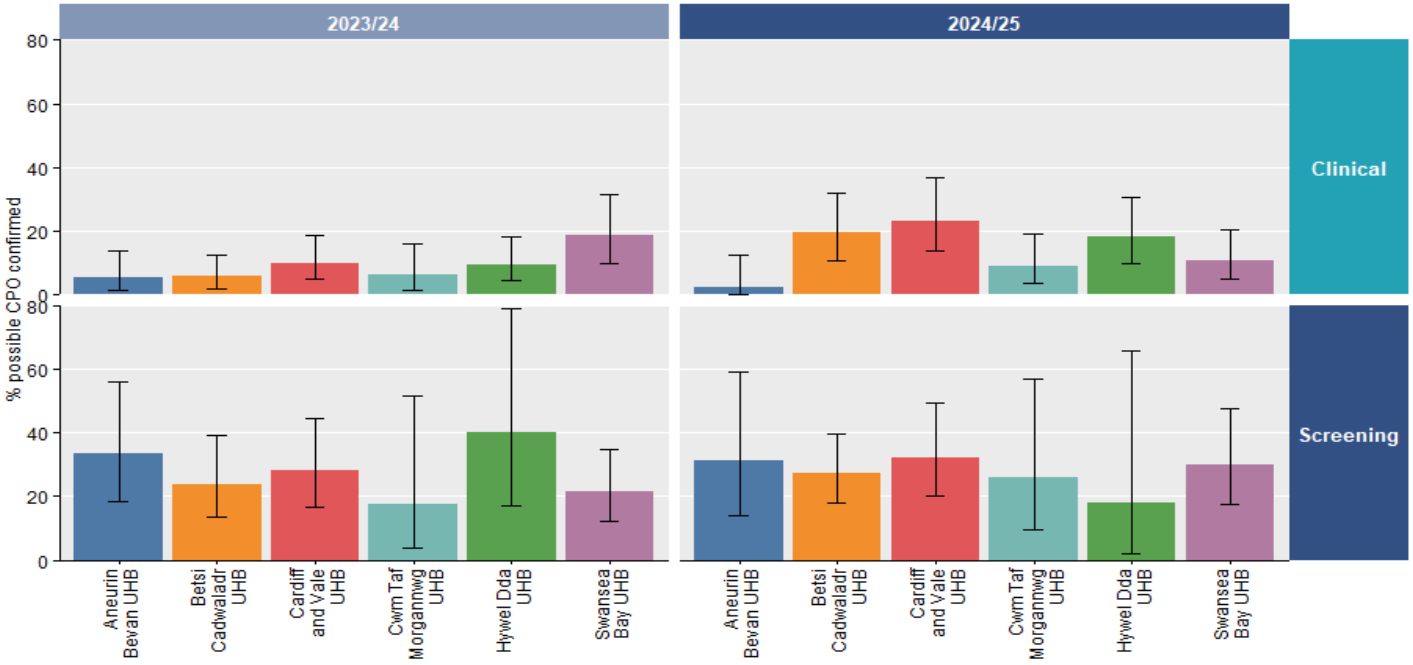
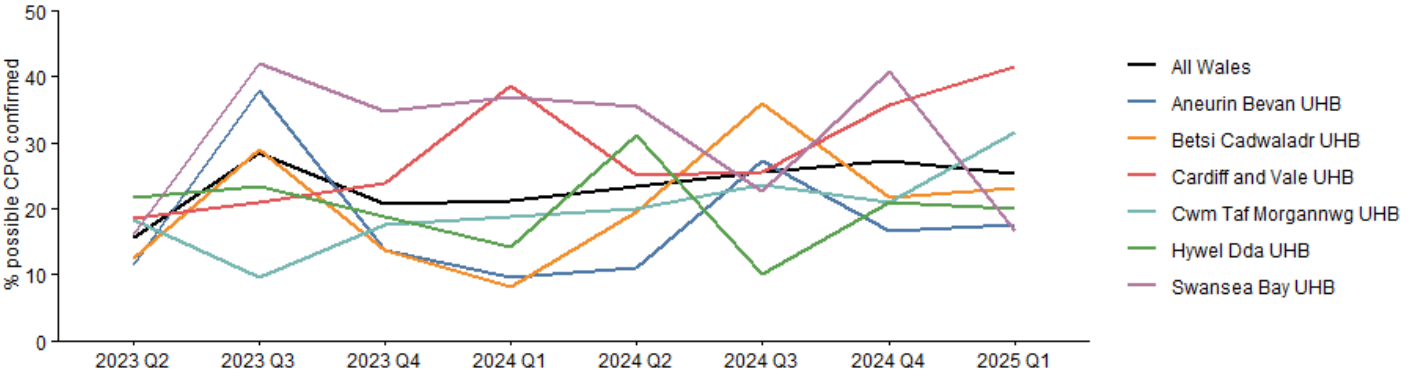


Figure 8.3. Quarterly percentage (%) of possible CPOs identified that were confirmed by specimen type, Apr 23 to Mar 25



C. New CPO episodes

9. New CPO episodes by specimen type

- 154 new episodes of CPOs were identified in 148 specimens from 139 individuals. Counts by UHB ranged from 10 in Aneurin Bevan UHB to 44 in Betsi Cadwaladr UHB. 57% (88) of new episodes were isolated from screening specimens, although in Hywel Dda UHBs more new CPO episodes were identified in clinical specimens (Table 9.1.).
- The rate of new CPO episodes in Wales in 2024/25 was 0.34 per 1,000 hospital admissions; similar to 2023/24 (Figure 9.1.).
- Rates per 1,000 hospital admissions across the 6 UHBs ranged from 0.10 in Aneurin Bevan UHB to 0.61 in Cardiff and Vale UHB (Figure 9.1.), although Swansea Bay and Betsi Cadwaladr UHBs had higher rates than Cardiff and Vale UHB in Q2 (Apr-Jun) and Q3 (Jul-Sep) 2024 respectively (Figure 9.2.).
- More new episodes of CPOs where isolated from screening specimens in every quarter of 2024/25 except Apr-Jun, when 57% (20/35) of new episodes were identified in clinical specimens (Figure 9.3.).
- Swansea Bay was the only UHB to have fewer new episodes of CPOs from clinical specimens in 2024/25 compared to the previous FY. New CPO episodes from screening specimens increased in Betsi Cadwaladr and Cwm Taf Morgannwg UHBs and decreased in Aneurin Bevan and Hywel Dda UHBs (Figure 9.4.).

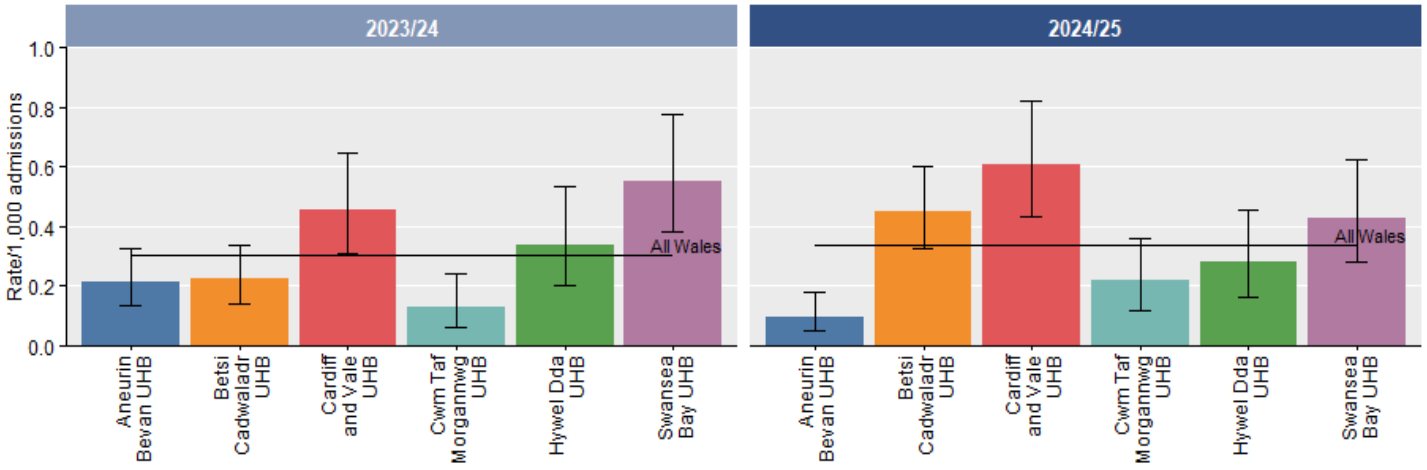
Table 9.1. Count and percentage (%) distribution of new CPO episodes identified in each HB/NHS trust, by specimen type, 2023/24 FY

HB/NHS trust	Count of new CPO episodes (N)	Count (% of N)	
		Screening specimens	Clinical specimens
Aneurin Bevan UHB	10	9 (90%)	1 (10%)
Betsi Cadwaladr UHB	44	29 (66%)	15 (34%)
Cardiff and Vale UHB	41	22 (54%)	19 (46%)
Cwm Taf Morgannwg UHB	14	7 (50%)	7 (50%)
Hywel Dda UHB	16	2 (12%)	14 (88%)
Powys THB	0	0 (0%)	0 (0%)
Swansea Bay UHB	27	18 (67%)	9 (33%)
Velindre NHST	2	1 (50%)	1 (50%)
All Wales	**154**	**88 (57%)**	**66 (43%)**

New CPO episode: Carbapenem resistant organism where the resistance is due to the presence of carbapenemase. Excludes repeat episodes within 52 weeks of the same species and carbapenemase, from the same individual. N.B. More than one new CPO episode can be confirmed from a single specimen if multiple species and/or carbapenemase combinations are detected, e.g. carbapenem resistant *K. pneumoniae* and *E. coli* both isolated from the same specimen, OXA-48-like carbapenemase in both and no

history of *K. pneumoniae* or *E. coli* with an OXA-48-like carbapenemase in the previous 52 weeks, count as two new CPO episodes; or *K. pneumoniae* containing both OXA-48-like and NDM-type carbapenemases and no *K. pneumoniae* with OXA-48-like or NDM type carbapenemase in the previous 52 weeks, also count as two new CPO episodes. However, if the individual did have a prior OXA-48-like *K. pneumoniae*, only the NDM-type *K. pneumoniae* combination counts as a new CPO episode.

Figure 9.1. Comparative FY rate of new CPO episodes per 1,000 hospital admissions identified in each HB/NHS trust (with 95% CI), 2023/24 and 2024/25 FYs



Rate per 1,000 hospital admissions: (Count new CPO episodes / Count of hospital admissions) x 1,000. With 95% confidence intervals (CI).

Figure 9.2. Quarterly rate of new CPO episodes per 1,000 hospital admissions identified in each UHB, Apr 23 to Mar 25

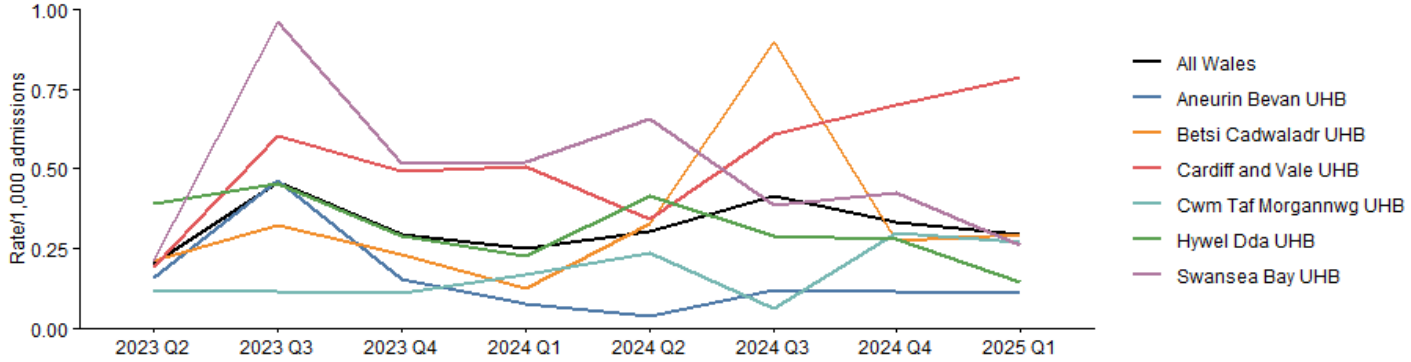
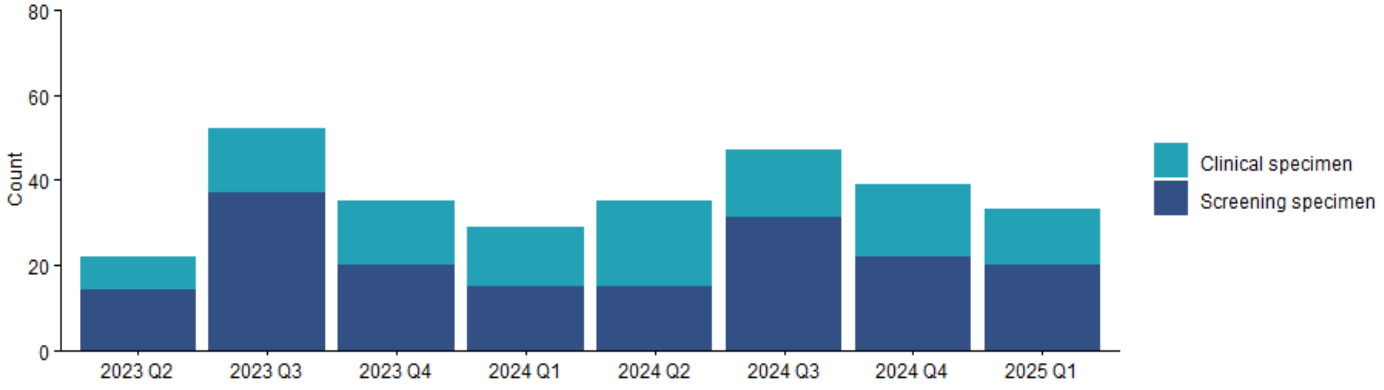
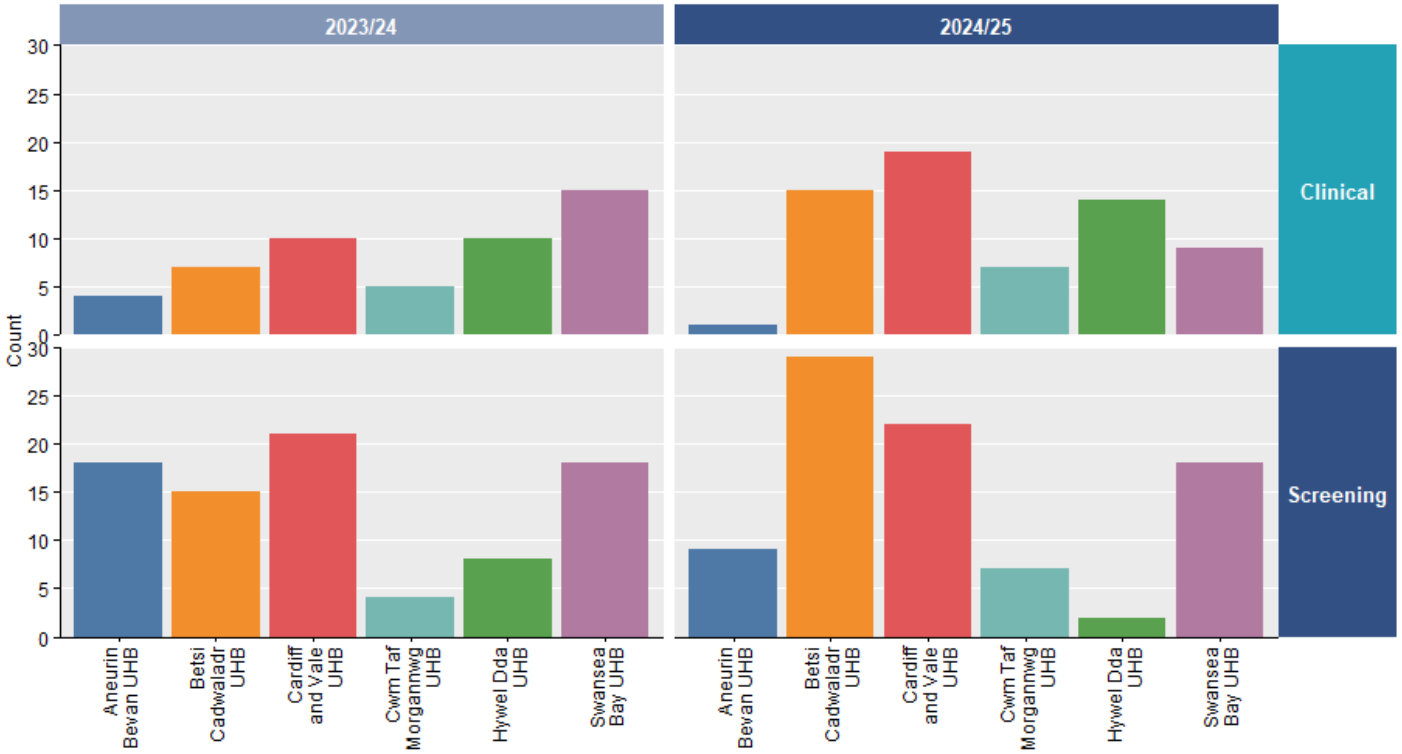


Figure 9.3. Quarterly count of new CPO episodes by specimen type, Apr 23 to Mar 25



Quarterly count: Based on quarter a screening or clinical specimen was taken that identified a new CPO episode.

Figure 9.4. Comparative FY count of new CPO episodes identified in each UHB by specimen type, 2023/24 and 2024/25 FYs



10. New CPO episodes by demographics

- 56% of new CPO episodes were identified in specimens from males. The median age was 66 years, with 43% aged between 50 and 74 and 6% aged under 25 (Figure 10.1.).
- While the number of new CPO episodes in 2024/25 remained higher in older age groups than younger, compared to 2023/24, numbers decreased by 5% in individuals aged 50 and over and increased by 32% in the younger age groups (Figure 10.2.).
- 64% of new CPO episodes identified in screening specimens were from males, compared to 44% in clinical specimens (Table 10.1.).

Figure 10.1. Count of new CPO episodes by age group and sex, 2024/25 FY

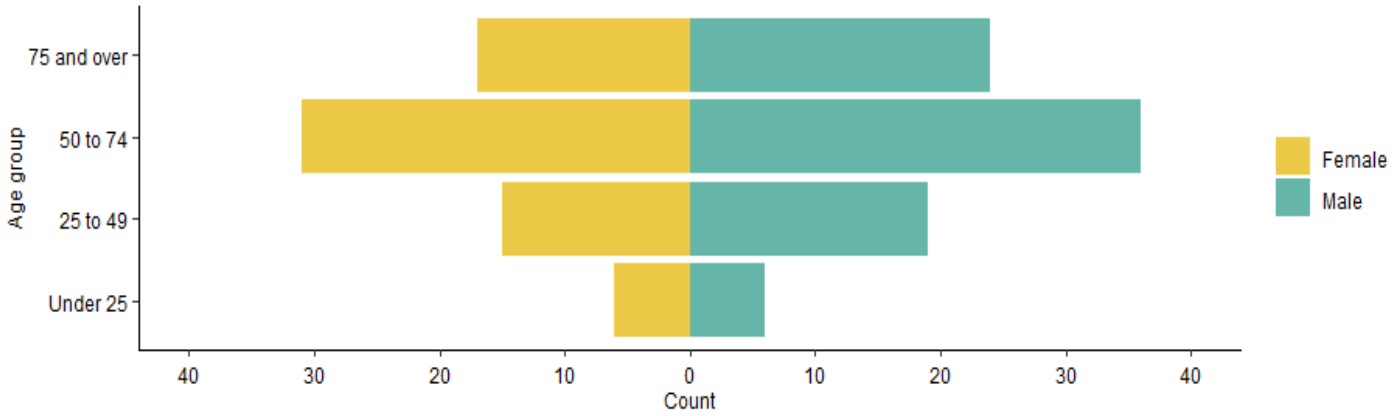


Figure 10.2. Quarterly count of new CPO episodes by age group, Apr 23 to Mar 25

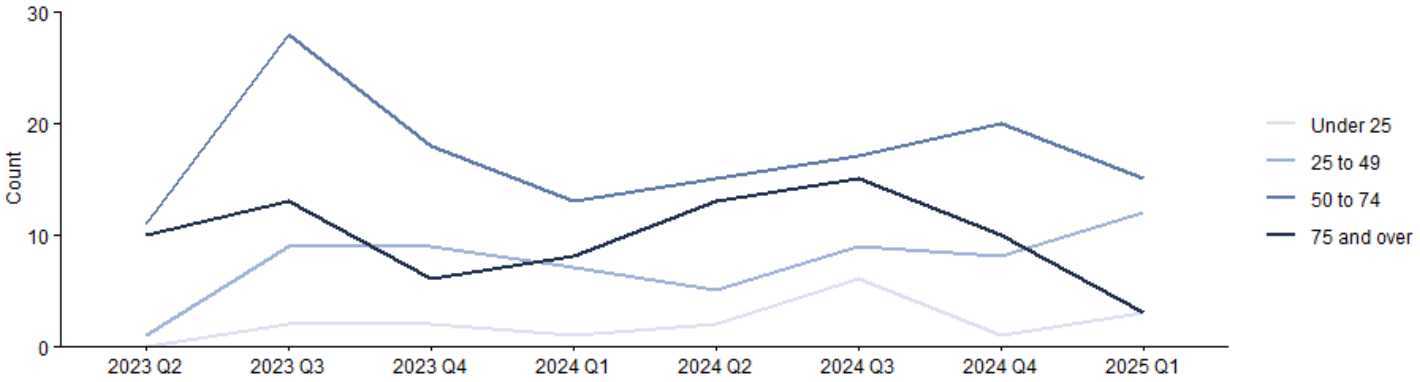


Table 10.1. Count and percentage (%) distribution of new CPO episodes by demographic characteristic and specimen type, 2024/25 FY

Characteristic	Total (N=144)	Count of new CPO episodes (%)	
		Screening specimens (N=84)	Clinical specimens (N=60)
Age group			
Under 25	6 (8%)	6 (7%)	6 (9%)
25 to 49	23 (22%)	23 (26%)	11 (17%)
50 to 74	36 (44%)	36 (41%)	31 (47%)
75 and over	23 (27%)	23 (26%)	18 (27%)
Sex			
Female	32 (45%)	32 (36%)	37 (56%)
Male	56 (55%)	56 (64%)	29 (44%)
Ethnicity			

Characteristic	Total (N=144)	Count of new CPO episodes (%)	
		Screening specimens (N=84)	Clinical specimens (N=60)
Asian	3 (5%)	3 (3%)	5 (8%)
Black	1 (1%)	1 (1%)	1 (2%)
White	79 (84%)	79 (90%)	50 (76%)
Unknown	5 (10%)	5 (6%)	10 (15%)
WIMD			
1 - Most deprived	17 (23%)	17 (19%)	18 (27%)
2	19 (20%)	19 (22%)	12 (18%)
3	12 (18%)	12 (14%)	15 (23%)
4	21 (18%)	21 (24%)	7 (11%)
5 - Least deprived	17 (19%)	17 (19%)	12 (18%)
Unknown	2 (3%)	2 (2%)	2 (3%)

11. New CPO episodes by location

- 77% of new CPO episodes were identified in specimens taken in a hospital IP location. Hywel Dda UHB had a higher percentage of new CPOs identified in community and hospital non-IP locations than the other HBs (44%) (Table 11.1.).
- 45% of new CPO episodes identified during a hospital IP stay were from specimens taken on admission (day 1 or 2). Swansea Bay UHB had a higher percentage of new CPO episodes identified on admission than the other UHBs (65%) (Table 11.2.) and were the only UHB to have a higher percentage of episodes identified on admission than the previous FY (Figure 11.1.).

Table 11.1. Count and percentage (%) distribution of new CPO episodes identified in each HB/NHS trust, by location type, 2024/25 FY

HB/NHS trust	Count (% of all new confirmed CPOs)		
	Hospital IP new CPO episodes	Hospital non-IP new CPO episodes	Community new CPO episodes
Aneurin Bevan UHB	8 (80%)	0 (0%)	2 (20%)
Betsi Cadwaladr UHB	34 (77%)	5 (11%)	5 (11%)
Cardiff and Vale UHB	34 (83%)	3 (7%)	4 (10%)
Cwm Taf Morgannwg UHB	12 (86%)	1 (7%)	1 (7%)

HB/NHS trust	Count (% of all new confirmed CPOs)		
	Hospital IP new CPO episodes	Hospital non-IP new CPO episodes	Community new CPO episodes
Hywel Dda UHB	9 (56%)	3 (19%)	4 (25%)
Powys THB	0 (0%)	0 (0%)	0 (0%)
Swansea Bay UHB	20 (74%)	4 (15%)	3 (11%)
Velindre NHST	2 (100%)	0 (0%)	0 (0%)
All Wales	**119 (77%)**	**16 (10%)**	**19 (12%)**

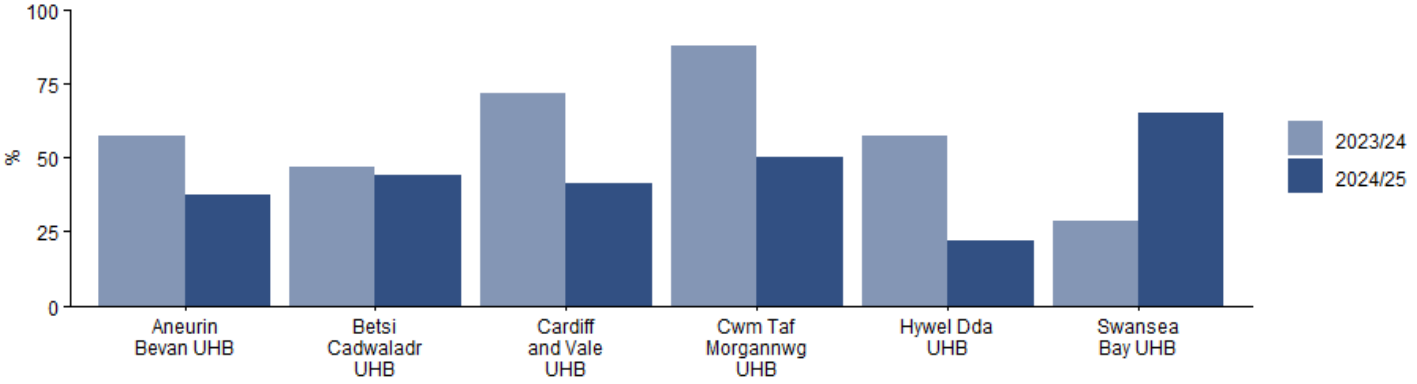
Hospital inpatient (IP): Screening or clinical specimen taken in a hospital location during an IP overnight stay.
Hospital non-inpatient (non-IP): Screening or clinical specimen taken in a hospital location with no overnight stay.
Community: Screening or clinical specimen taken in a non-hospital location.

Table 11.2. Count and percentage (%) distribution of new CPO episodes identified in each HB/NHS trust during a hospital IP stay, by time from admission, 2024/25 FY

HB/NHS trust	Count of hospital IP new CPO episodes (N)	Count (% of N)	
		On admission (day 1 or 2)	>2 days after admission
Aneurin Bevan UHB	8	3 (38%)	5 (62%)
Betsi Cadwaladr UHB	34	15 (44%)	19 (56%)
Cardiff and Vale UHB	34	14 (41%)	20 (59%)
Cwm Taf Morgannwg UHB	12	6 (50%)	6 (50%)
Hywel Dda UHB	9	2 (22%)	7 (78%)
Powys THB	0	0 (0%)	0 (0%)
Swansea Bay UHB	20	13 (65%)	7 (35%)
Velindre NHST	2	1 (50%)	1 (50%)
All Wales	**119**	**54 (45%)**	**65 (55%)**

On admission: Screening or clinical specimen taken on day 1 or 2 of a hospital IP stay (where day 1 is the day of admission).
>2 days after admission: Screening or clinical specimen taken more than 2 days into a hospital IP stay (where day 1 is the day of admission).

Figure 11.1. Comparative FY percentage (%) of new episodes of CPOs identified during a hospital IP stay in each UHB where the specimen was taken on admission (day 1 or 2), 2023/24 and 2024/25 FYs



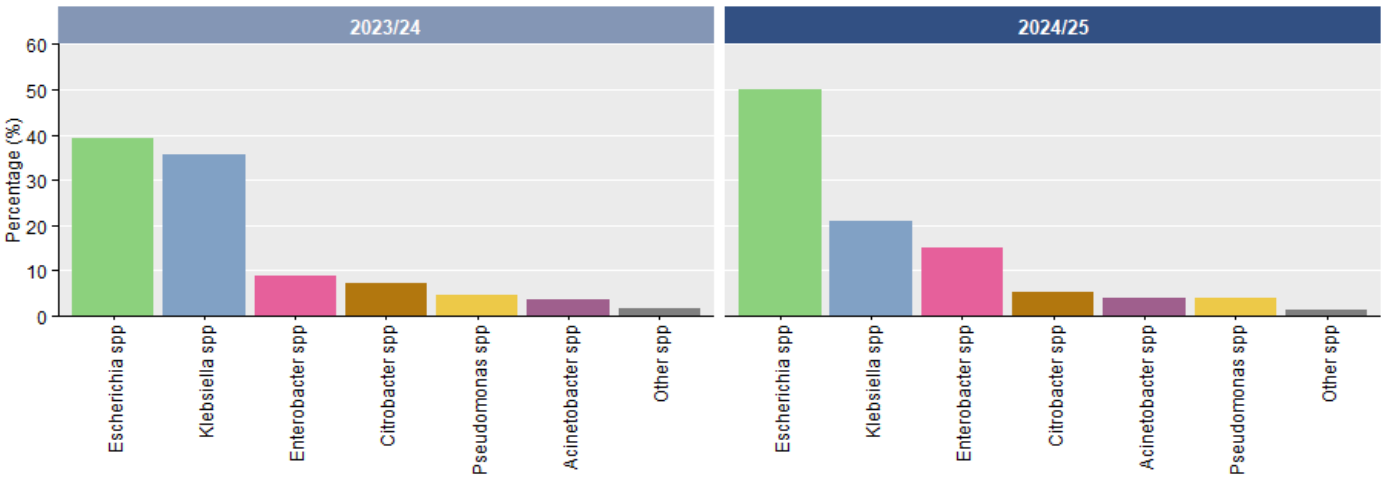
12. New CPO episodes by species

- *Escherichia coli* was the most common species of new CPO episodes isolated in Wales in 2024/25, accounting for 50% of all new CPO episodes. (Table 12.1.).
- Compared to counts of new CPO episodes in 2023/24, the number of *Escherichia* spp. and *Enterobacter* spp. increased by 35% and 92% respectively; *Klebsiella* spp. decreased by 42% (Figure 12.1.).
- *Escherichia* spp. was the most common genus identified in clinical specimens for the last 2 FYs and replaced *Klebsiella* spp. as the most prevalent genus in CPO screening specimens in 2024/25. There were more new episodes of *Enterobacter* spp. in clinical specimens in 2024/25 compared to the previous FY; the number of episodes identified in screening specimens remained the same (Figure 12.3.).
- *Escherichia* spp. was the most prevalent genus of new CPO episodes in all 6 UHBs in 2024/25. Compared to 2023/24 FY, significant decreases in *Klebsiella* spp. were identified in Aneurin Bevan and Swansea Bay UHBs; *Klebsiella* spp. increased in Betsi Cadwaladr UHB (Figure 12.4.).

Table 12.1. Count and percentage (%) distribution of species of new CPO episodes, 2024/25 FY

Organism species	Count of new CPO episodes	% of new CPO episodes
Escherichia coli	77	50%
Klebsiella pneumoniae	27	18%
Enterobacter cloacae complex	23	15%
Citrobacter freundii	6	4%
Pseudomonas aeruginosa	5	3%
Acinetobacter baumannii	5	3%
Klebsiella oxytoca	4	3%
Acinetobacter radioresistans	2	1%
Citrobacter amalonaticus	2	1%
Citrobacter koseri	1	1%
Raoultella ornithinolytica	1	1%
Serratia marcescens	1	1%

Figure 12.1. Comparative FY percentage (%) distribution of most common genus of new CPO episodes, 2023/24 and 2024/25 FYs



Most common new CPO episode genus: Organism genus that individually account for more than 1% of new CPO episodes. Genus that account for 1% or less grouped as 'Other'. N.B. Multiple species identified in the same specimen are counted as separate CPOs.

Figure 12.2. Quarterly count of genus of new CPO episodes, Apr 23 to Mar 25

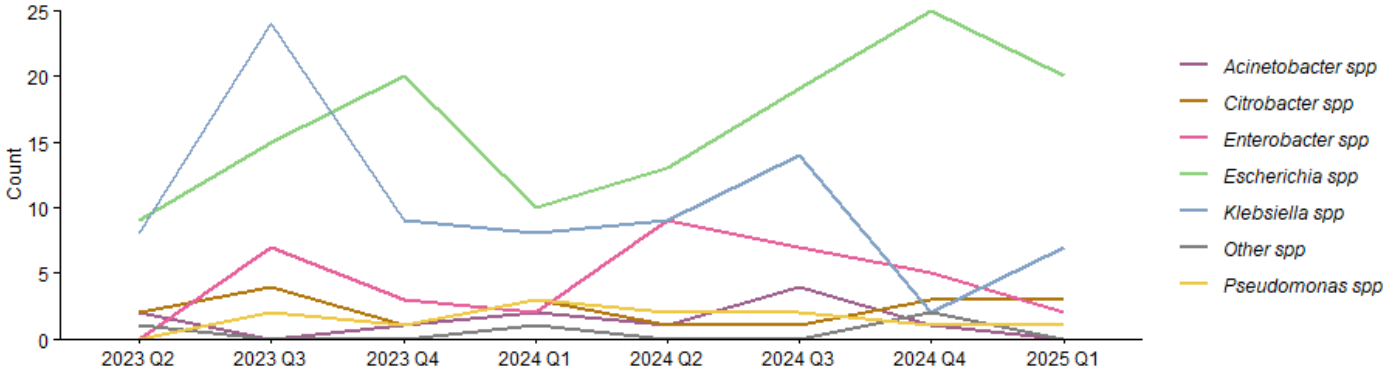


Figure 12.3. Comparative FY count of genus of new CPO episodes by specimen type, 2023/24 and 2024/25 FYs

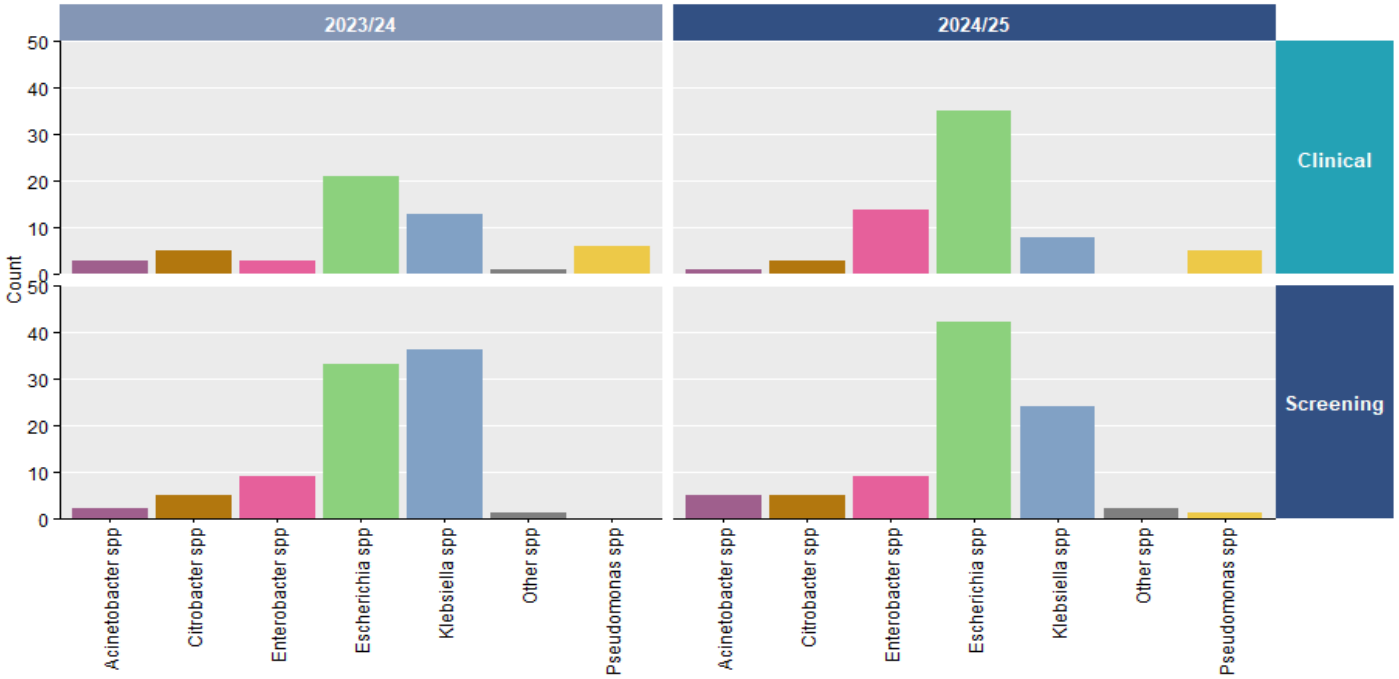
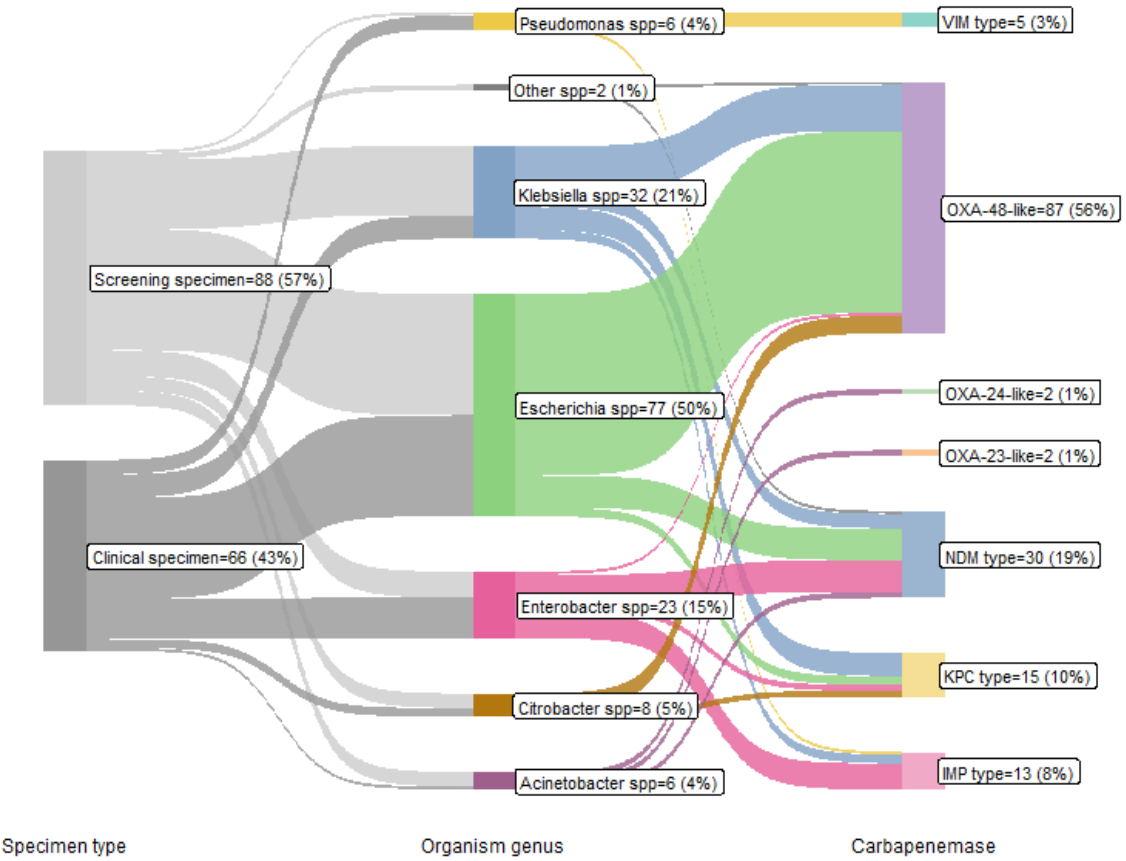


Figure 12.4. Comparative FY count of genus of new CPO episodes for each UHB, 2023/24 and 2024/25 FYs

13. New CPO episodes by carbapenemase

- 56% of carbapenemase in new CPO episodes in Wales in 2024/25 were OXA-48-like. (Figure 13.1.).
- OXA-48-like was the most common carbapenemase type found in isolates from screening (63%) and clinical (52%) specimens. Compared to the previous FY, the percentage of clinical isolates with OXA-48-like carbapenemase decreased, while the percentage in screening isolates increased (Figure 13.2.).
- In 2024/25 OXA-48-like was the most common carbapenemase in new CPO episodes in all 6 UHBs (Figure 13.3.).
- OXA-48-like was the most common carbapenemase every quarter for the last 2 FYs (Figure 13.4.).

Figure 13.1. Count and percentage (%) of new CPO episodes by specimen type, genus and carbapenemase, 2024/25 FY



Carbapenemase: A gene encoding for an enzyme able to hydrolyse carbapenems which can be present on mobile elements and spread across different bacteria.
N.B. Multiple carbapenemase types which exist in the same isolate from a single specimen are counted as separate CPO episodes.

Figure 13.2. Comparative FY percentage (%) of carbapenemase in new CPO episodes by specimen type, 2023/24 and 2024/25 FYs

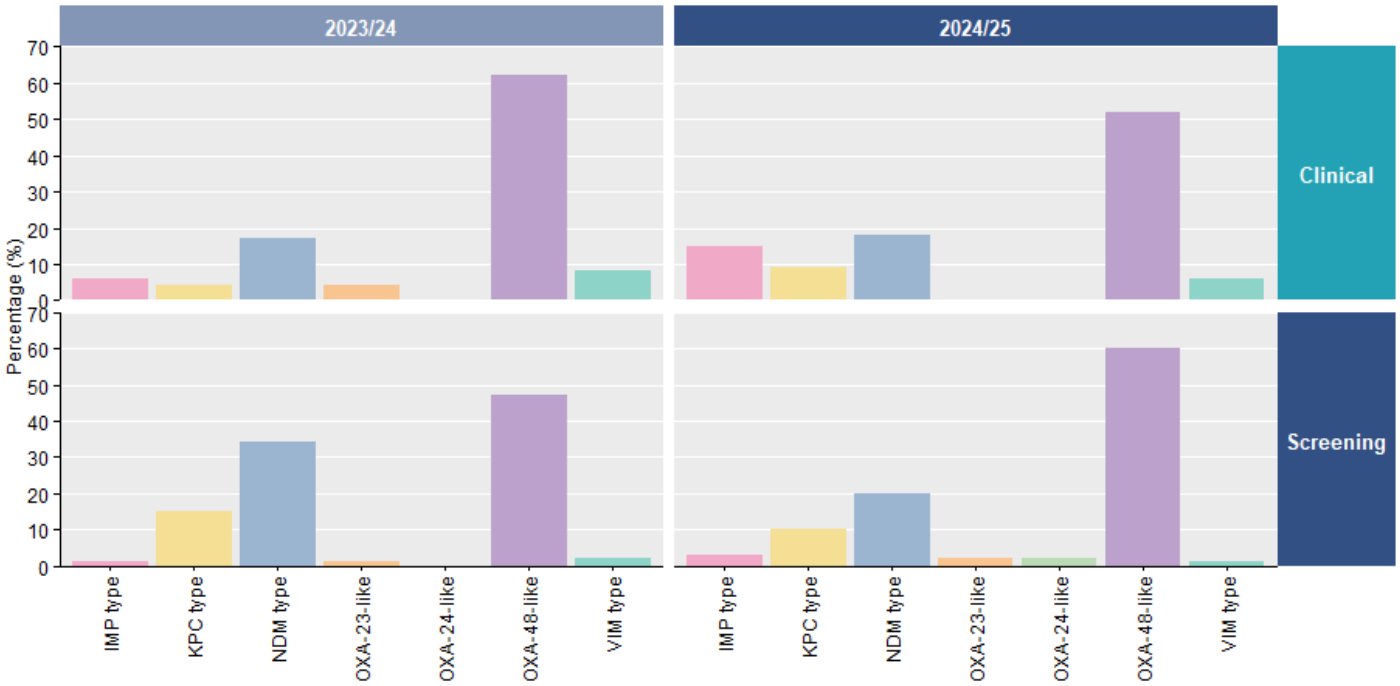


Figure 13.3. Comparative FY count of carbapenemase in new CPO episodes for each UHB, 2023/24 and 2024/25 FYs

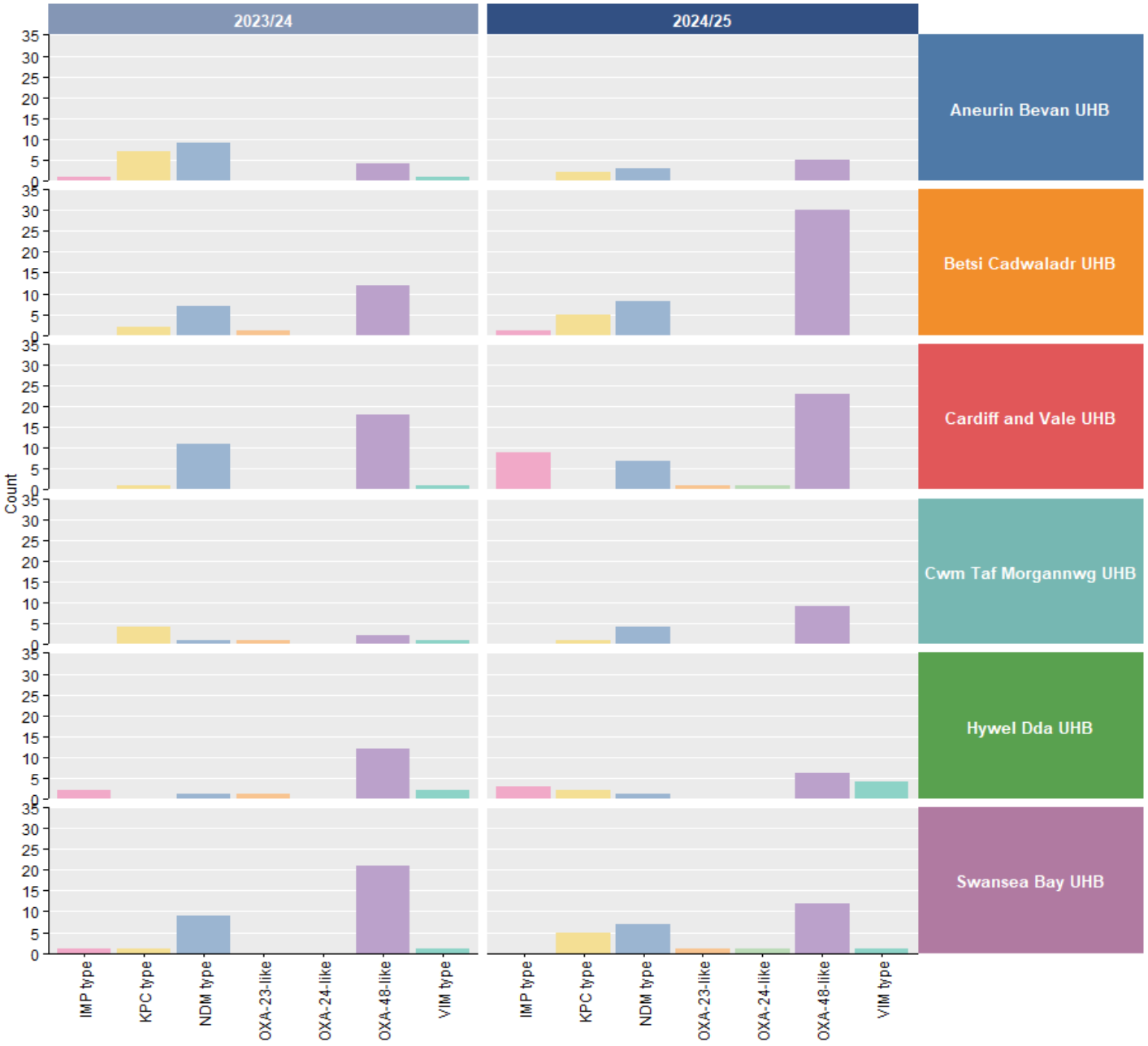
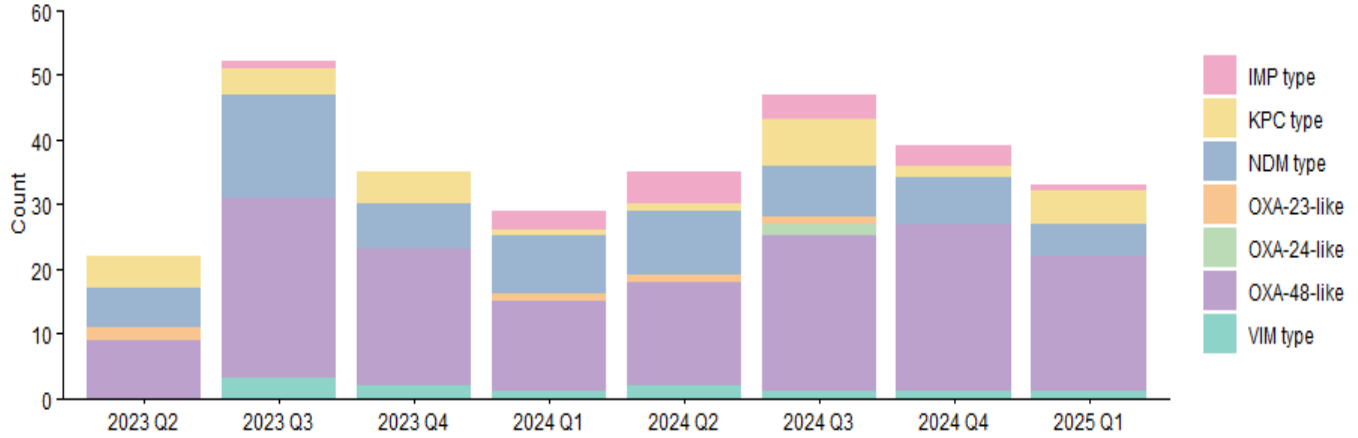


Figure 13.4. Quarterly count of carbapenemase in new CPO episodes, Apr 23 to Mar 25



14. New CPO episodes by carbapenemase/species combination

- OXA-48-like *E. coli* was the most common carbapenemase and species combination found in new CPO episodes in Wales in 2024/25 (63 episodes), followed by OXA-48-like *K. pneumoniae* (12 episodes). (Table 14.1.).
- Grouped by genus OXA-48-like *Escherichia* spp. accounted for 41% of new CPO episodes and OXA-48-like Klebsiella spp. 10%. (Table 14.2.).
- Compared to the previous FY the number of new episodes of OXA-48-like *Escherichia* spp. increased by 66%; OXA-48-like *Klebsiella* spp. decreased by 33%. (Figure 14.1.).
- OXA-48-like *Escherichia* spp. was the most common carbapenemase/genus combination found in screening specimens (40%) and clinical specimens (42%) (Figure 14.2.).
- Multiple new CPO episodes were identified in 6 of the 148 screening and clinical specimens. All had one species with multiple carbapenemase types. (Figure 14.3.).
- Multiple new CPO episodes were identified in 15 of the 139 individuals. 5 had multiple species (in ≥1 specimen) containing the same carbapenemase. 8 had one species with multiple carbapenemase types. 2 had multiple species and multiple carbapenemase types (in ≥1 specimen) (Figure 14.4.).
- OXA-48-like *Escherichia* spp. was the most common carbapenemase/genus combination of new CPO episodes in all UHBs, although VIM type *Pseudomonas* spp. was joint top in Hywel Dda UHB (Figure 14.5.).

Table 14.1. Count of species and carbapenemase combinations of new CPO episodes, 2024/25 FY

Organism species	IMP type	KPC type	NDM type	OXA-23-like	OXA-24-like	OXA-48-like	VIM Type
Acinetobacter baumannii	0	0	1	2	1	0	0
Acinetobacter nosocomialis	0	0	1	0	0	0	0
Acinetobacter pittii	0	0	0	0	1	0	0
Citrobacter braakii	0	1	0	0	0	1	0

Organism species	IMP type	KPC type	NDM type	OXA-23-like	OXA-24-like	OXA-48-like	VIM Type
Citrobacter freundii	0	1	0	0	0	4	0
Citrobacter koseri	0	0	0	0	0	1	0
Enterobacter cloacae complex	9	2	11	0	0	1	0
Escherichia coli	0	3	11	0	0	63	0
Klebsiella oxytoca	0	0	1	0	0	4	0
Klebsiella pneumoniae	3	8	4	0	0	12	0
Pseudomonas aeruginosa	1	0	0	0	0	0	5
Serratia marcescens	0	0	1	0	0	1	0

Table 14.2. Count and percentage (%) distribution of top 5 carbapenemase and genus combinations of new CPO episodes, 2024/25 FY

Gene/genus combination	Count of new CPO episodes	% of new CPO episodes
OXA-48-like *Escherichia* spp.	63	41%
OXA-48-like *Klebsiella* spp.	16	10%
NDM type *Enterobacter* spp.	11	7%
NDM type *Escherichia* spp.	11	7%
IMP type *Enterobacter* spp.	9	6%
Other combinations	44	29%

Figure 14.1. Comparative FY count of most common genus of new CPO episodes and carbapenemase, 2023/24 and 2024/25 FYs

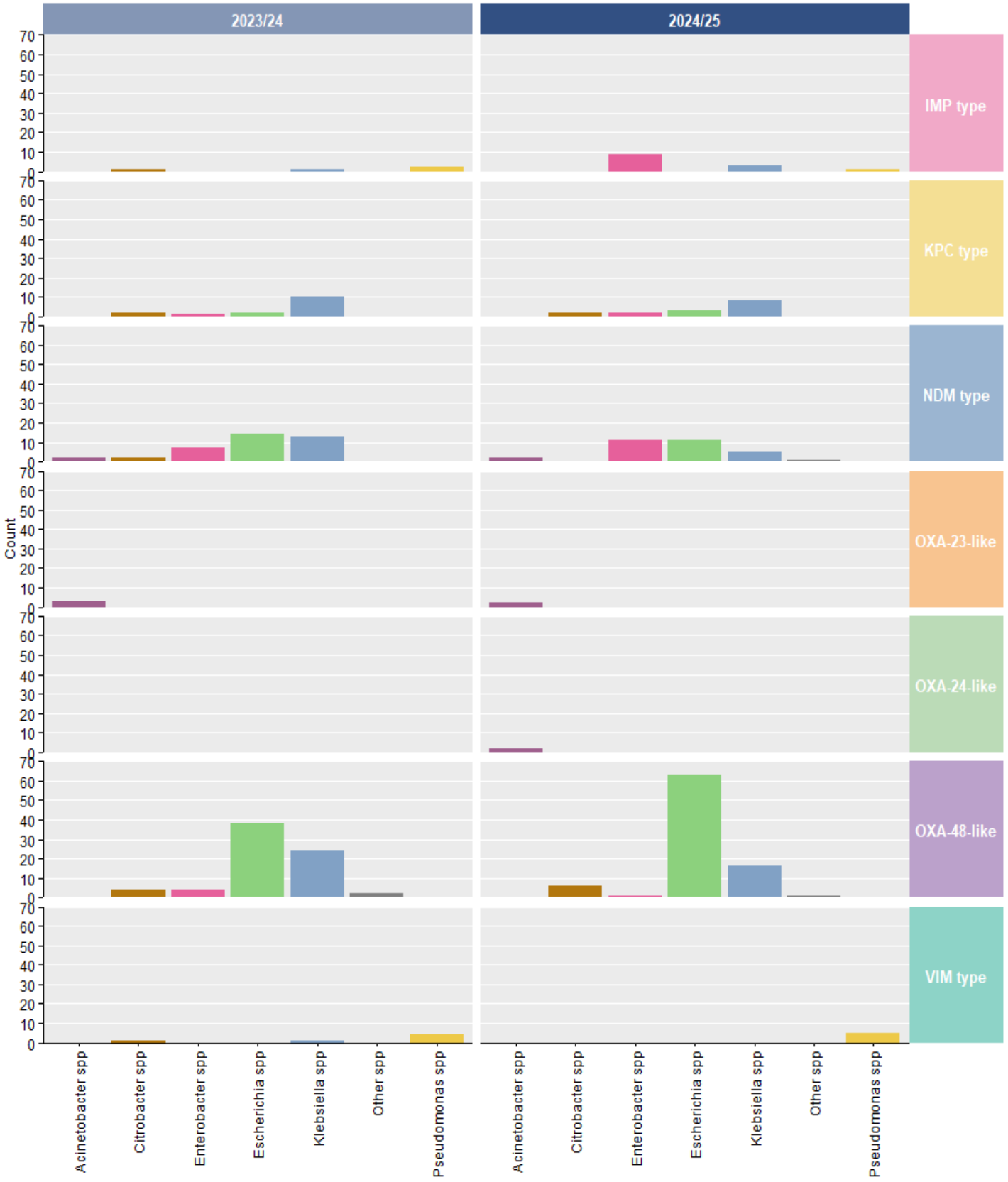


Figure 14.2. Comparative FY percentage (%) distribution of most common carbapenemase and genus combinations of new CPO episodes by specimen type, 2023/24 and 2024/25 FYs

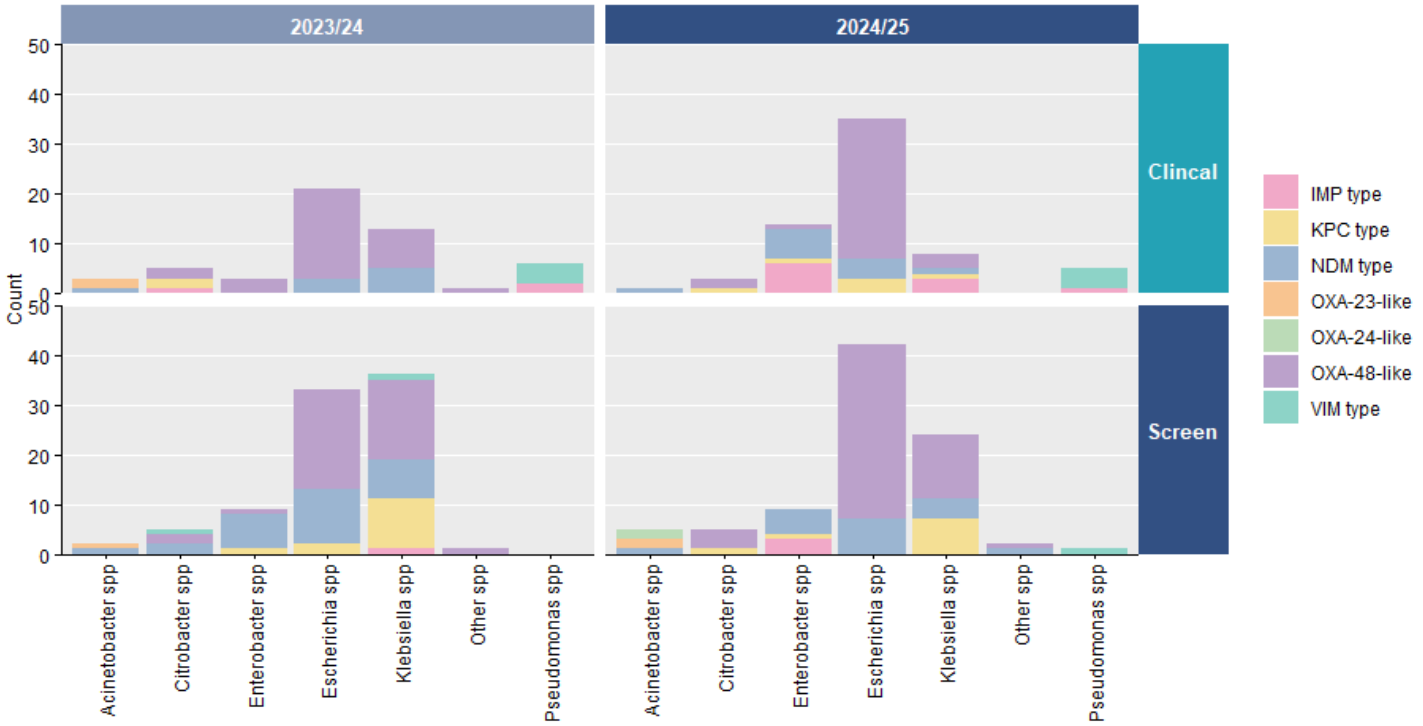
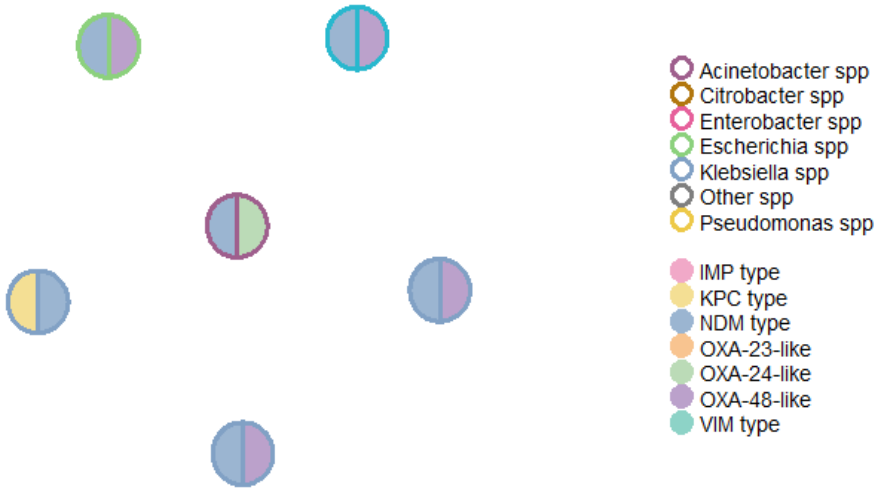


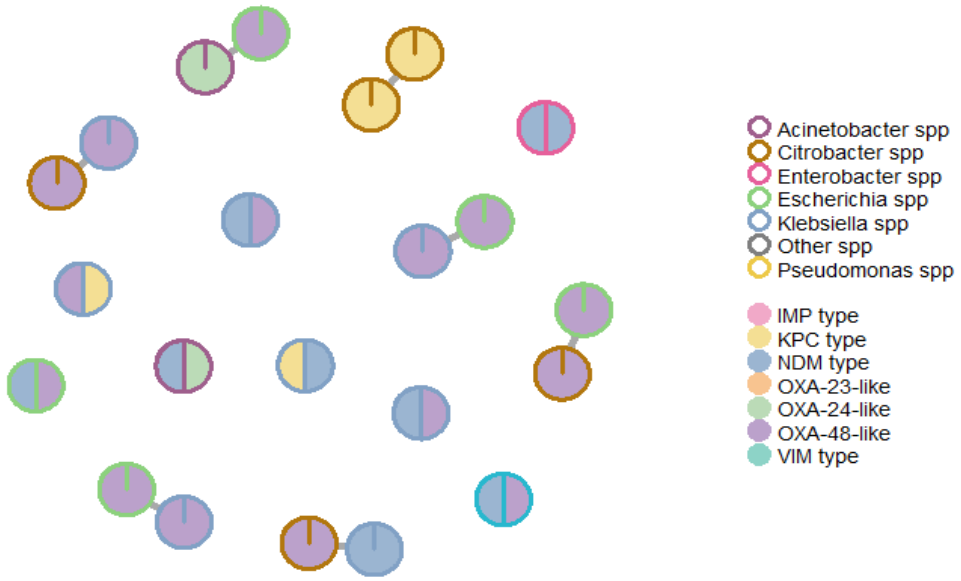
Figure 14.3. Carbapenemase and organism species combinations in specimens that contained multiple new CPO episodes, 2024/25 FY



In figure 14.3., each circle represents one carbapenem resistant isolate. Circles linked by a line are isolates from the same specimen. The outer colour of the circle represents the organism genus and the inner colour(s) the carbapenemase type(s). N.B. Where linked circles are identical in colour, the organism species differ.

Specimens with multiple new CPO episodes: More than one carbapenem resistant organism species isolated in the same specimen with the same or different carbapenemase type(s); or one species in the same specimen with multiple carbapenemase types.

Figure 14.4. Carbapenemase and organism species combinations in individuals with multiple new CPO episodes, 2024/25 FY



In figure 14.4., each circle represents one carbapenem resistant isolate. Circles linked by a line are isolates from the same individual (from one or more specimen). The outer colour of the circle represents the organism genus and the inner colour(s) the carbapenemase type(s). N.B. Where linked circles are identical in colour, the organism species differ.

Individuals with multiple new CPO episodes: More than one carbapenem resistant organism species (in one or more specimen) from one individual with the same or different carbapenemase type(s); or one species with more than one carbapenemase type.

Figure 14.5. Count of most common genus of new CPO episodes and carbapenemase for each HB/NHS trust, 2024/25 FY

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