Public Health England

Health Protection Report
weekly report

Volume 9 Numbers 17 Published on: **15 May 2015**

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News

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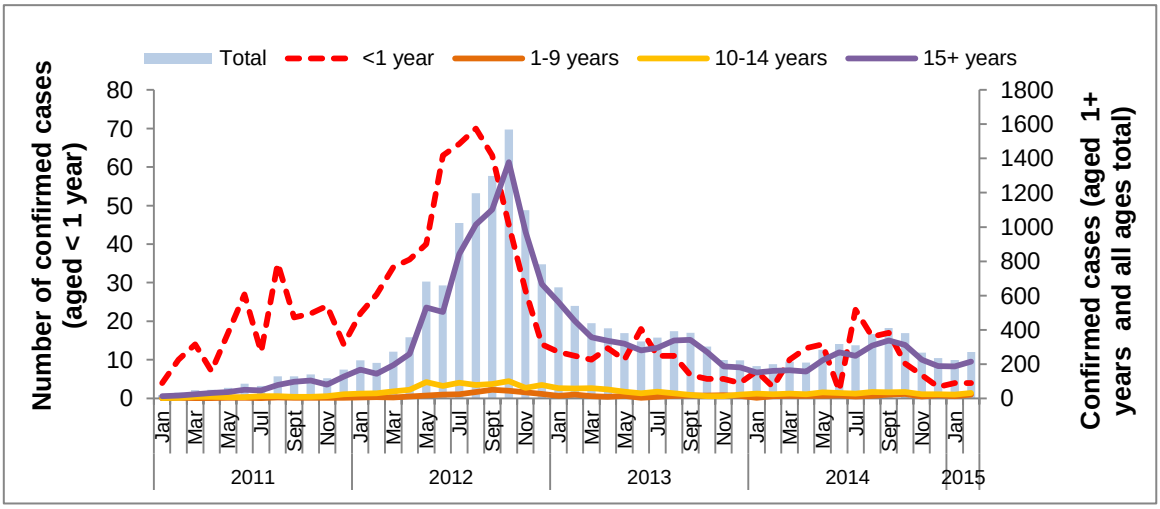
Laboratory confirmed pertussis in England: data to end-February 2015

This news report presents current pertussis activity to 28 February 2015, updating the previous report that included data to the end of October 2014 [1].

Background

In England the number of laboratory confirmed cases of pertussis has fallen overall each consecutive year from a peak of 9,367 cases in 2012; by 51% between 2012 and 2013 (4,621 cases) and 27% between 2013 and 2014 (3,388 cases). An expected seasonal increase was seen in August and September 2014. The number of laboratory confirmed cases reported in February 2015 was 21% higher than the previous month and 36% higher than the same period in 2014. Overall pertussis activity in England persists at raised levels compared to the years preceding the outbreak in 2012 (see figure).

Provisional number of laboratory confirmed cases of pertussis in England by age group and month: January 2011 to February 2015



The pertussis vaccination in pregnancy programme was introduced in October 2012 [2,3] in response to a national outbreak (see figure) and is offered to women ideally between 28 to 32 weeks pregnancy to protect infants in their first few weeks of life. Confirmed pertussis cases in infants <6 months of age have remained low despite the continued high activity in other age groups (see table 1).

Table 1. Provisional number of laboratory confirmed cases in England, 2008-2015 by age group: January to February

Year	Month	<3 months	3-5 months	6-11 months	1-4 years	5-9 years	10-14 years	15+ years	All ages
2008	Jan - Feb	20	3	2	5	3	15	55	103
2009	Jan - Feb	11	8	0	3	2	15	49	88
2010	Jan - Feb	8	1	0	1	1	2	33	46
2011	Jan - Feb	9	4	1	2	1	6	29	52
2012	Jan - Feb	43	5	1	4	8	57	311	429
2013	Jan - Feb	17	6	0	15	21	116	1012	1187
2014	Jan - Feb	7	1	2	3	13	51	310	387
2015	Jan - Feb	5	2	1	14	19	52	400	493

The immunisation programme for pregnant women continues to be important, particularly in light of the ongoing raised levels of pertussis in those from one year of age and recent infant deaths. There have been recent key publications on the high effectiveness and safety of the pertussis immunisation in pregnancy programme [4,5,6]. Together with coverage and epidemiological data, these findings informed the Joint Committee on Vaccination and Immunisation's decision in July 2014 that the pregnancy programme should continue for at least a further five years [7].

Pertussis vaccination coverage in pregnant women has been published up to December 2014 when 62% coverage was recorded [8] and a seasonal pattern in uptake has been observed in both 2013 and 2014 peaking in December each year.

Confirmed cases in 2015

In infants under three months of age low numbers of cases have been sustained since December 2012 with fewer than 10 cases per month reported up to August 2013 and six or fewer reported each month between September 2013 and March 2014. Cases increased from April 2014, in line with expected seasonal increases, peaking at 21 cases in July 2014; the highest number of monthly cases since 23 reported in November 2012.

Pertussis activity in all infants <1 year of age was very low in the first two months of 2015 (see table 2); disease incidence, as expected, continued to be highest in this age group but case reports are now in line with those seen before the 2012 peak. The numbers of laboratory confirmed cases in those aged one year and older, however, continue to be higher than reported before the 2012 outbreak.

Overall confirmed pertussis cases were higher to February 2015 than in comparable periods in previous years, excluding 2013 when high levels of disease were starting to fall from the peak in autumn 2012. There had been no deaths reported in infants with laboratory confirmed pertussis in 2015 as at end-February.

Table 2. Provisional number of laboratory confirmed cases in England, 2008-2015 by PHE Region and PHE Centre: January to February

PHE Region and Centre	2008 Jan - Feb	2009 Jan - Feb	2010 Jan - Feb	2011 Jan - Feb	2012 Jan - Feb	2013 Jan - Feb	2014 Jan - Feb	2015 Jan - Feb
London	**14**	**16**	**9**	**7**	**35**	**122**	**62**	**95**
Midlands and East of England	**29**	**23**	**6**	**12**	**75**	**397**	**99**	**128**
Anglia and Essex	7	6	4	2	17	110	21	26
East Midlands	10	9	1	2	32	143	34	33
South Midlands and Herts.	4	2	1	5	11	40	15	26
West Midlands	8	6	0	3	15	104	29	43
North of England	**20**	**17**	**19**	**18**	**137**	**299**	**88**	**112**
Cheshire and Merseyside	5	2	2	3	10	40	7	17
Cumbria and Lancashire	3	4	3	3	4	31	7	12
Greater Manchester	2	1	1	2	20	21	11	15
North East	6	2	6	7	49	76	12	16
Yorkshire and Humber	4	8	7	3	54	131	51	52
South of England	**40**	**32**	**12**	**15**	**182**	**369**	**138**	**158**
Avon, Glous. and Wilts.	12	8	0	6	60	112	17	43
Devon, Cornwall, Somerset	4	2	4	2	20	41	17	16
Sussex, Surrey and Kent	10	4	0	4	56	148	67	60
Thames Valley	12	14	7	3	13	32	14	13
Wessex	2	4	1	0	33	36	23	26
Total	**103**	**88**	**46**	**52**	**429**	**1187**	**387**	**493**

Overall trends at end-February 2015

The greatest reduction in disease since the peak in 2012 has been in infants aged under six months. Ten deaths had been reported in young babies with confirmed pertussis who were born after the introduction of the pregnancy programme on 1 October 2012, as at end February. Nine of these 10 babies were born to mothers who had not been vaccinated against pertussis, all of the 10 babies were too young to be fully protected by vaccination themselves and none had received their first dose of pertussis-containing vaccine.

References

1. Confirmed pertussis cases in England and Wales: update to end-October 2014, *HPR* **8**(47): news, 12 December 2014.

2. "Pregnant women to be offered whooping cough vaccination", 28 September 2012. Department of Health website.

3. "HPA welcomes introduction of whooping cough vaccination for pregnant women as outbreak continues", HPA press release, 28 September 2012.

4. Amirthalingam G, Andrews N, Campbell H, *et al* (2014). Effectiveness of maternal pertussis vaccination in England: an observational study, *Lancet*.

5. Donegan K, King B, Bryan P (2014). Safety of pertussis vaccination in pregnant women in the UK: observational study, *BMJ*.

6. Dabrera G, Amirthalingam G, Andrews N *et al* (2014). A case-control study to estimate the effectiveness of maternal pertussis vaccination in protecting newborn Infants in England and Wales, 2012–2013, *Clinical Infectious Diseases* (online), 19 October.

7. Joint committee of Vaccination and Immunisation minutes.

8. Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, October 2012 to March 2014 (PHE statistics).

WHO Emergency Committee updates wild poliovirus vaccination recommendations

A fifth meeting of the World Health Organization's International Health Regulations Emergency Committee – convened on 5 May to review progress on implementation of temporary measures on international spread of wild poliovirus – concluded that the situation still constitutes a Public Health Emergency of International Concern (PHEIC) and recommended the extension of the Temporary Recommendations for a further three months [1].

Vaccination recommendations for travellers to countries exhibiting active transmission of wild polio virus (WPV) – first issued under the International Health Regulations (IHR) by the WHO in May last year – remain in place. Affected countries now fall into three groups: those that are still currently 'exporting' WPV (Afghanistan and Pakistan); those infected but no longer exporting (Cameroon, Equatorial Guinea, Nigeria, Somalia and Iraq); and states no longer affected but which remain vulnerable to international spread (Ethiopia, Syria and Israel).

The WHO-IHR emergency committee noted that strong progress had been made since the declaration of the PHEIC one year ago. In Pakistan, for example, since last November, an average of 370,000 international travellers per month have been vaccinated pre-departure at health facilities and points of exit. However, international spread of WPV has continued and the WHO committee concluded that: stronger cross-border vaccination and surveillance activities

were required in Pakistan and Afghanistan, in particular, and that these two countries should be treated as a single epidemiological block in view of the frequent cross-border population movement (poliovirus isolates found in cases in Pakistan were shown to be closely related to strains circulating in Afghanistan).

Up-to-date vaccination recommendations for travellers to affected countries from England, Wales and Northern Ireland, endorsed by the Department of Health for England, have been issued by the PHE-commissioned National Travel Health Network and Centre (NaTHNaC) [2].

Since WHO recommended that both Afghanistan and Pakistan should continue to require all departing residents or long-term visitors to be vaccinated, NaTHNaC has reiterated that visitors leaving either country may be required to produce a valid vaccination certificate at the time of their departure [2].

NaTHNaC has reminded clinicians in the UK that they should maintain awareness for suspect cases of poliomyelitis in travellers and migrants arriving from affected areas. Acute poliomyelitis is a notifiable disease. All suspected cases must be notified to the Proper Officer, normally the Consultant in Communicable Disease Control in the Health Protection Team of the local PHE Centre, which are then reported to the Centre for Infectious Disease Surveillance and Control.

References

1. WHO statement on the fifth IHR Emergency Committee meeting regarding the international spread of wild poliovirus (5 May 2015).

2. National Travel Health Network and Centre clinical update: Afghanistan: evidence of polio spread to Pakistan and polio vaccine recommendations for travellers (13 May 2015).

Infection reports / Bacteraemia - HCAI

Volume 9 Number 17 Published on 15 May 2015

Voluntary surveillance of *Enterococcus* spp. bacteraemia, England, Wales and Northern Ireland: 2014

These analyses are based on data extracted from the Public Health England (PHE) voluntary surveillance database, the Second Generation Surveillance System (SGSS), on 2 March 2015 for the five-year period 2010-2014. To put these analyses in context, the longitudinal trend for the incidence of bacteraemia caused by *Enterococcus* spp. incorporates data for the seven-year period 2008-2014, extracted on the same date. The data presented here may differ in some instances from data in earlier publications due to the change in surveillance systems and the inclusion of late reports.

Rates were calculated using 2013 mid-year resident population estimates based on the 2011 census for England, Wales, and Northern Ireland.[1, 2] Geographical analyses were made based on the residential location of the patient with reference PHE Centres.

The report includes analyses on the trends, age and sex distribution, geographical distribution of and the antimicrobial susceptibility data in cases of bacteraemia caused by *Enterococcus* species.

Key points

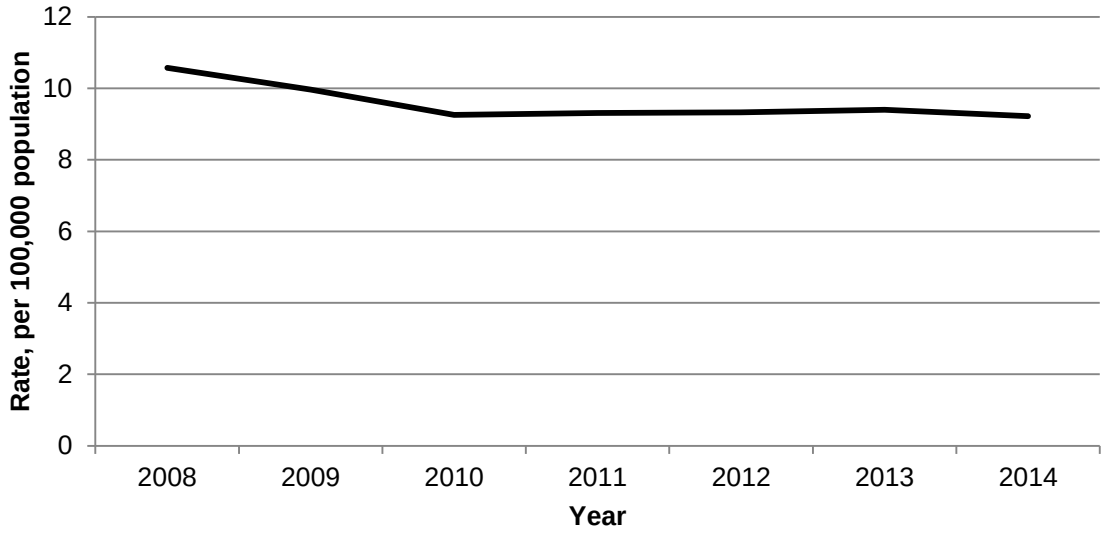
- The incidence rate of bacteraemia caused by *Enterococcus* spp. declined between 2008 and 2010, but thereafter remained stable at approximately 9.2 reports per 100,000 population per year.
- The two most frequently isolated species within the genus in 2014 were *Enterococcus faecalis*, with 2323 reports (43%) and *Enterococcus faecium* with 2090 reports (39%).
- The incidence rate of *Enterococcus* spp. bacteraemia was highest among older adults (≥75 years) and infants (<1 year old) and higher among males than females in 2014.
- The incidence rate was higher in Northern Ireland (10.2 reports per 100,000 population, per year in 2014) than in England (9.2 reports per 100,000 population, per year in 2014).
- Within England, incidence rates were consistently high in Greater Manchester (12.1 reports per 100,000 population, per year in 2014) and West Midlands (12.0 reports per 100,000 population, per year in 2014). Incidence rates were consistently low in Thames Valley (5.8 reports per 100,000 population, per year in 2014).
- Among *E. faecalis* and *E. faecium* isolates, the proportions resistant to glycopeptides in 2014 were ≈ 24% and ≈ 2% respectively.

Trends in episode numbers and rates

Between 2008 and 2010 the incidence rate of bacteraemia caused by *Enterococcus* spp. fell from 10.6 reports per 100,000 population per year to 9.2 per 100,000 population per year. Since 2010, the incidence rate has remained stable between 9.4 and 9.2 reports per 100,000 population per year (figure 1).

The number of *Enterococcus* spp. reports increased by 1.8% from 5324 in 2010 to 5420 in 2014. The total number of bacteraemias (any genus) reported to SGSS increased by 4.1% between 2009 and 2013 (101,484 to 105,686 reports).[3] *Enterococcus* spp. accounted for 4.3% of all monomicrobial bacteraemia reports in 2013, making it the seventh most frequently reported monomicrobial bloodstream infection-causing genus.

Figure 1. *Enterococcus* spp. bacteraemia rates per 100,000 population (England, Wales and Northern Ireland): 2008-2014



In 2014, 86% of *Enterococcus* spp. isolates were identified to species level (table 1). This continues an upward trend since 2010, when 78% of *Enterococcus* spp. isolates were identified to species level, probably reflecting increasing deployment of MALDI-ToF for identification. Over the past five years, the proportion of *Enterococcus* spp. bacteraemias caused by *E. faecium* has increased from 29% in 2010 to 39% in 2014. In contrast, the number of *Enterococcus* spp. bacteraemias caused by *E. faecalis* has fallen slightly from 45% to 43% over the same five year period.

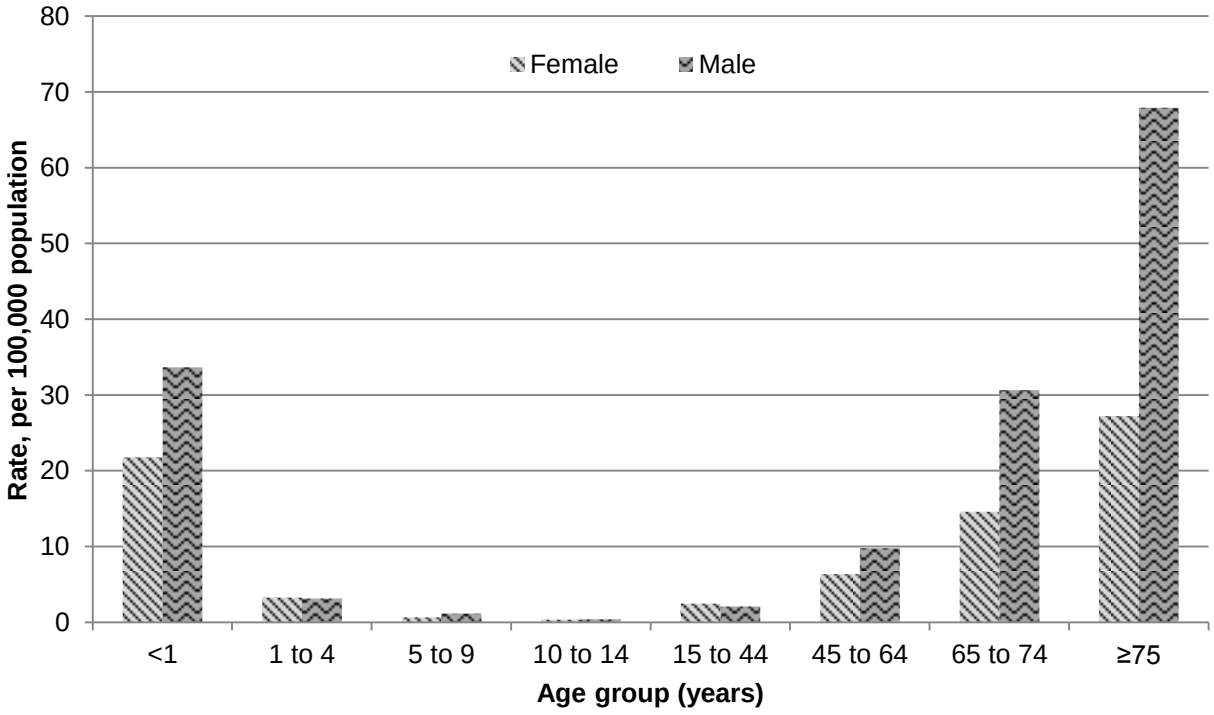
Table 1. Reports of *Enterococcus* spp. bacteraemia by species (England, Wales and Northern Ireland): 2010-2014

	2010		2011		2012		2013		2014	
Organism	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
E. avium	41	1	53	1	56	1	47	1	47	1
E. casseliflavus	36	1	38	1	33	1	40	1	55	1
E. durans	25	<1	30	1	25	<1	23	<1	19	<1
E. faecalis	2378	45	2352	44	2367	43	2389	43	2323	43
E. faecium	1529	29	1662	31	1941	36	2024	37	2090	39
E. gallinarum	115	2	131	2	130	2	113	2	85	2
E. hirae	9	<1	4	<1	4	<1	0	<1	4	<1
E. raffinosus	11	<1	15	<1	22	<1	40	1	32	1
Enterococcus spp., species not recorded	1180	22	1115	21	869	16	850	15	765	14
Enterococcus spp.	5324	1	5400	1	5447	1	5526	1	5420	1

Age and sex distribution

The incidence rate of *Enterococcus* spp. bacteraemia was higher among males than females for most age groups in 2014. The highest rate was among males over 75 years old (67.9 reports per 100,000 population per year, figure 2). For females in the same age group, the rate was 27.3 reports per 100,000 population per year.

Figure 2. *Enterococcus* spp. bacteraemia age and sex rates per 100,000 population (England, Wales and Northern Ireland): 2014



Geographic distribution

The overall incidence rate of *Enterococcus* spp. bacteraemia in England, Wales and Northern Ireland was 9.2 per 100,000 population per year in 2014 (table 2). Northern Ireland had the highest reported incidence rate (10.2 per 100,000 population per year).

Within England, incidence rates of *Enterococcus* spp. bacteraemia have been consistently high in Greater Manchester and the West Midlands. Rates were high in East Midlands in 2010 (11.9 per 100,000 population per year), but fell consistently each year to 9.8 per 100,000 population per year in 2014.

Incidence rates of *Enterococcus* spp. bacteraemia were consistently low in Thames Valley between 2010 and 2014 (between 4.9 and 5.8 per 100,000 population per year).

Figure 3. Geographic distribution of *Enterococcus* spp. bacteraemia rates per 100,000 population (England, Wales and Northern Ireland): 2014

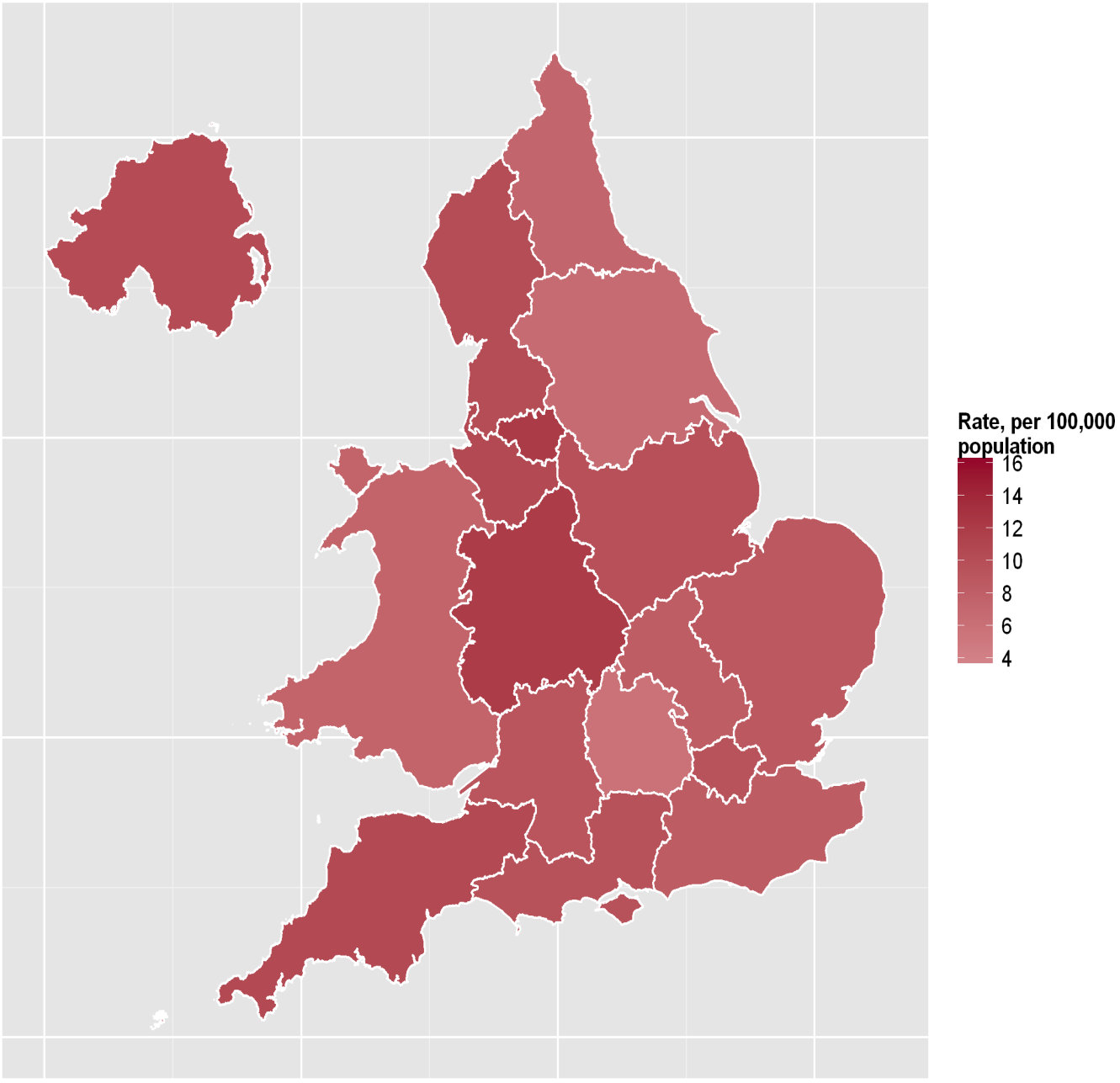


Table 2. Rate per 100,000 population *Enterococcus* spp. bacteraemia reports by PHE Centre (England, Wales and Northern Ireland): 2010-2014

Region	PHE Centre	Rate, per 100,000 population				
		2010	2011	2012	2013	2014
North of England	Cheshire and Merseyside	9.5	9.8	10.3	11.7	10.5
	Cumbria and Lancashire	8.1	8.4	8.6	9.4	10.1
	Greater Manchester	12.9	11.4	13.0	12.8	12.1
	North East	8.0	7.9	6.1	8.5	7.4
	Yorkshire and Humber	9.8	7.8	7.4	6.2	6.6
Midlands and East of England	South Midlands and Hertfordshire	6.6	8.1	7.1	7.9	8.3
	East Midlands	11.9	11.3	10.3	10.2	9.8
	Anglia and Essex	8.5	10.3	10.3	8.5	8.9
	West Midlands	9.6	10.0	9.8	11.7	12.0
London	London	9.8	9.4	9.5	9.0	9.5
South of England	Avon Gloucestershire and Wiltshire	6.7	6.5	7.8	7.6	9.2
	Devon Cornwall and Somerset	9.9	9.8	10.9	9.9	10.6
	Wessex	8.0	8.2	8.8	10.0	9.6
	Kent Surrey and Sussex	8.5	9.1	9.3	9.0	8.4
	Thames Valley	4.9	5.6	5.4	4.4	5.8
England		9.1	9.1	9.1	9.2	9.3
Northern Ireland		12.6	12.6	13.5	14.2	10.2
Wales		9.5	10.9	10.9	10.9	7.5
England, Wales and Northern Ireland		9.3	9.3	9.3	9.4	9.2

Antimicrobial susceptibility data

For both *E. faecalis* and *E. faecium*, the proportion of isolates for which antimicrobial susceptibility data were reported fell in 2014. For *E. faecalis*, data for at least one key antimicrobial was provided for 74.6% of isolates in 2010; in 2014, this figure was 59.4%. For *E. faecium*, data for at least one key antimicrobial was provided for 77.4% of isolates in 2010, compared to 58.1% in 2014.

As the surveillance system does not currently diffferentiate between high-level gentamicin resistance and the intrinsic level of resistance characteristic of Enterococci these data are not reported.

Reported resistance (defined as reduced susceptibility or non-susceptible) among *E. faecalis* isolates was low (<3% for ampicillin/amoxicillin, vancomycin and teicoplanin in 2014, table 3).

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Table 3. Antimicrobial susceptibility for *E. faecalis* bacteraemia (England, Wales and Northern Ireland): 2010 to 2014

	2010		2011		2012		2013		2014	
	Tested	% resistant	Tested	% resistant	Tested	% resistant	Tested	% resistant	Tested	% resistant
Vancomycin/Teicoplanin	1774	2	1760	4	1826	2	1771	2	1381	2
Ampicillin/Amoxycillin	1746	6	1763	5	1809	4	1770	3	1353	3
Teicoplanin	1335	3	1338	3	1388	2	1386	1	1096	2
Vancomycin	1748	1	1748	1	1748	1	1748	1	1353	2
Linezolid	809	<1	809	<1	809	<1	809	<1	914	<1
Total	2378		2352		2367		2389		2323	

Table 4. Antimicrobial susceptibility for *E. faecium* bacteraemia (England, Wales and Northern Ireland): 2010 to 2014

	2010		2011		2012		2013		2014	
	Tested	% resistant	Tested	% resistant	Tested	% resistant	Tested	% resistant	Tested	% resistant
Vancomycin/Teicoplanin	1183	16	1316	17	1506	20	1567	22	1214	24
Ampicillin/Amoxycillin	1122	89	1282	89	1440	92	1505	91	1141	89
Teicoplanin	934	14	1056	16	1245	18	1275	22	1002	24
Vancomycin	1160	16	1160	16	1160	16	1160	16	1205	23
Linezolid	640	<1	640	<1	640	<1	640	<1	863	1
Total	1529		1662		1941		2024		2090	

Resistance to ampicillin/amoxicillin was high among *E. faecium* isolates (89% of tested isolates in 2014, table 4). There was a consistent increase in the proportion of isolates resistant to glycopeptides between 2010 and 2014. In 2014, the proportion of *E. faecium* isolates resistant to glycopeptides was about 24%. The most prevalent glycopeptide resistance mechanisms (*VanA* and *VanB*) confer resistance to vancomycin and teicoplanin (*VanA*) or to vancomycin without resistance to teicoplanin (*VanB*).[4] The apparently higher proportion of isolates resistant to teicoplanin (table 4) may reflect differential reporting of one or other glycopeptide

Acknowledgements

These reports would not be possible without the weekly contributions from microbiology colleagues in laboratories across England, Wales, and Northern Ireland, without whom there would be no surveillance data. The support from colleagues within Public Health England, and the Antimicrobial Resistance and Healthcare Associated Infections (ARMHAI) Reference Unit, in particular, is valued in the preparation of the report. Feedback and specific queries about this report are welcome and can be sent to hcai.amrdepartment@phe.gov.uk.

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