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Annual updates on voluntarily reported *Acinetobacter* spp. and streptococcal bacteraemia published

Trends in overall rates of bloodstream infections caused by Streptococcus spp., and *Acinetobacter* spp., respectively, are published in the Infection Reports section of this issue of *HPR* [1,2].

The reports include analyses of the trends in bacteraemia reports, and of age, sex distribution and geographical distribution. Data and commentary on antimicrobial susceptibility among the bacteraemia isolates received are also presented.

Group A and group B streptococcal bacteraemia increased in 2013. Resistance to erythromycin has risen in Group B and group G streptococci in 2013.

An increase in the rate of *Acinetobacter* spp. bacteraemia is reported nationally between 2012 and 2013. Resistance to a number of antibiotics among *Acinetobacter Baumannii* isolates has generally declined between 2009 and 2013.

References

1. Voluntary surveillance of pyogenic and non-pyogenic streptococcal bacteraemia in England, Wales and Northern Ireland: 2013. Downloadable at: https://www.gov.uk/government/publications/pyogenic-and-non-pyogenic-streptococcal-bacteraemia-annual-data-from-voluntary-surveillance.
2. Voluntary surveillance of bacteraemia caused by *Acinetobacter* spp in England, Wales and Northern Ireland: 2013. Downloadable at: https://www.gov.uk/government/publications/acinetobacter-spp-bacteraemia-annual-data-from-voluntary-surveillance.

Ebola virus disease: international epidemiological summary

Up to the end of 16 November (15 November for Liberia), a total of 15,145 clinically compatible cases (CCC) of Ebola virus disease (EVD), including 5,420 deaths have been reported in the six currently affected countries (Guinea, Liberia, Sierra Leone, Spain, the USA and Mali) and two previously affected countries (Nigeria and Senegal) since December 2013.

Reported case incidence is no longer increasing nationally in Guinea and Liberia. However, transmission remains high in certain hotspots in both countries. In contrast, incidence continues to increase in Sierra Leone, particularly in the western and northern regions (see PHE map), with 533 confirmed cases reported in the last week.

In Mali, as of 20 November, the cluster of cases of infection in Bamako has now reached five, all of whom have died. This latest cluster is unrelated to Mali's first case who was diagnosed in Kayes on 23 October.

To date, a total of 21 EVD cases have been cared for outside of Africa; 16 repatriated cases (hospitalised in USA, Spain, UK, Germany, France, Norway and Switzerland), two imported cases (both diagnosed in USA) and three incidents of local transmission (in Spain & USA).

The table below summarises Ebola virus disease international epidemiological information as at 16 November 2014.

Country	Total CCCs	Cases in previous 21 days	Total deaths
Guineau	1971	315	1192
Liberia	7069	532	2964
Sierra Leone	6073	1394	1250
Mali	6	5	6
Nigeria	20	–	8
Senegal	1	–	–
Spain	1	–	–
USA	4	–	1
TOTAL	15 145	2246	5421

Further information on the international epidemiological situation can be found in PHE's weekly Ebola Epidemiological Update.

HIV in the UK: overview for 2013

The Public Health England has published its analysis of HIV prevalence and incidence data for 2013, which shows that the number of people living with HIV in the United Kingdom has now reached an all-time high of almost 110,000 [1,2].

Around a quarter of people (26,100) are unaware of their infection and may be putting partners at risk of transmission through unprotected sex, according to the report. However, the proportion of people diagnosed with HIV at a late stage of the infection fell from 57% in 2004 to 42% in 2013 [1,2,3]. This is encouraging because those diagnosed late are likely to have lived with the infection undiagnosed for at least 3-4 years and have a 10-fold increased risk of death within a year of diagnosis compared with those diagnosed promptly.

PHE published the figures in advance of National HIV Testing Week, which runs from 22 to 30 November 2014 [4], in advance of World AIDS Day (1 December). National HIV Testing Week aims to increase access to testing services in both healthcare and community settings and promote testing to groups at risk of HIV in the UK: men who have sex with men (MSM) and black African heterosexual men and women.

MSM remained the group most affected by HIV, with 43,500 (6%) estimated to be living with the condition through the analysis. The prevalence of HIV among MSM was concentrated in London, where one in eight MSM (13%) were affected, compared with one in 26 MSM (4%) outside London. HIV incidence continues at high levels with no sign of a decrease. The relatively high number of newly acquired infections in MSM (2,800) compared to the number estimated to be undiagnosed (7,000) indicates the majority of those unaware of their HIV infection are likely to have acquired their infection relatively recently. It is recommended that all MSM have an HIV/STI screen at least annually, and every three months if having unprotected sex with new or casual partners.

Heterosexual, black-African men and women were the second largest group affected by HIV, with 38,700 living with the infection. The report draws attention to the fact that around one-third of the black African heterosexuals with HIV (38% of black-African men with HIV and 31% of black-African women with HIV) were unaware that they had the infection, with rates even higher outside of London. It is recommended that all black-African men and women have an HIV test and a regular HIV and STI screen if having unprotected sex with new or casual partners.

References

1. "HIV in the United Kingdom: 2014 Report." Downloadable at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377194/2014_PHE_HIV_annual_report_19_11_2014.pdf.
2. "HIV in the United Kingdom: 2013 Report." Downloadable at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/326601/HIV_annual_report_2013.pdf
3. "Safe supplies: reflecting on the population". Annual review from the NHS Blood and Transplant/Public Health England Epidemiology Unit, 2013 (November 2014). Downloadable at: https://www.gov.uk/government/collections/bloodborne-infections-in-blood-and-tissue-donors-bibd-guidance-data-and-analysis.
4. Trends in late HIV diagnoses and in persons accessing HIV-related care in the UK: data to December 2013, *HPR* **8**(39), 10 October 2014.

Group A streptococcal infections: first report on seasonal activity, 2014/15

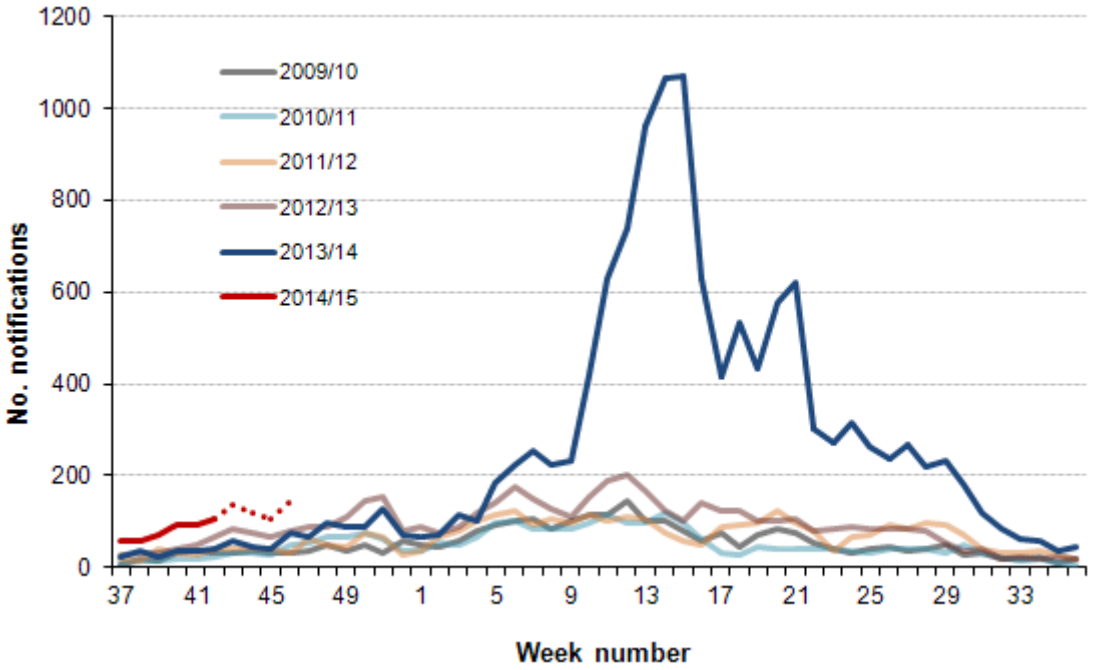
Following the substantial elevation in scarlet fever notifications last season, early indications from the current 2014/15 season indicate low levels of activity but remaining elevated for this time of year [1]. Routine laboratory reports and isolate referrals of invasive group A streptococcal (iGAS) disease remain within usual seasonal levels.

Scarlet fever

An increase in scarlet fever of unprecedented magnitude compared to recent decades was noted in England during the 2013/14 season, with 13,183 notifications made across the entire season (week 37 2013 to week 36 2014), an overall population rate of 24.5 per 100,000 population. Following the peak in notifications during weeks 14 and 15 of 2014, (figure 1), the number of reports declined to just above levels normally reported during the summer months.

So far this season, scarlet fever activity is showing a similar pattern to previous years with low levels of gradually increasing notifications each week, albeit slightly elevated compared to the previous year (figure 1). This pattern varies geographically although most areas are reporting more than double the rate of notifications so far this season compared to the same period last year (table 2).

Figure 1. Weekly scarlet fever notifications in England, 2008/09 onwards*



* Dashed line indicates that numbers may increase as further notifications expected.

Table 2. Scarlet Fever notifications and rate per 100,000 population by PHE Centre in 2014/15 (weeks 37 to 46)

	2013/14 season		2014/15 season		
	2013, weeks 37 to 46		2014, weeks 37 to 46		
PHE Centre Name	No. cases	Rate	No. cases	Rate	Rate Ratio
Anglia and Essex	20	0.5	51	1.2	2.6
Avon, Gloucestershire and Wiltshire	34	1.4	69	2.9	2.0
Cheshire and Merseyside	30	1.2	76	3.1	2.5
Cumbria and Lancashire	17	0.9	40	2.0	2.4
Devon, Cornwall and Somerset	16	0.7	29	1.3	1.8
East Midlands	33	0.8	102	2.6	3.1
Greater Manchester	27	1.0	27	1.0	1.0
Kent, Surrey and Sussex	24	0.5	55	1.2	2.3
London	47	0.6	71	0.8	1.5
North East	26	1.0	67	2.6	2.6
South Midlands and Hertfordshire	24	0.9	60	2.3	2.5
Thames Valley	22	1.1	66	3.2	3.0
Wessex	14	0.5	46	1.7	3.3
West Midlands	23	0.4	87	1.5	3.8
Yorkshire and the Humber	52	1.0	134	2.5	2.6
England	**409**	**0.8**	**980**	**1.8**	**2.4**

Invasive Group A Streptococcus

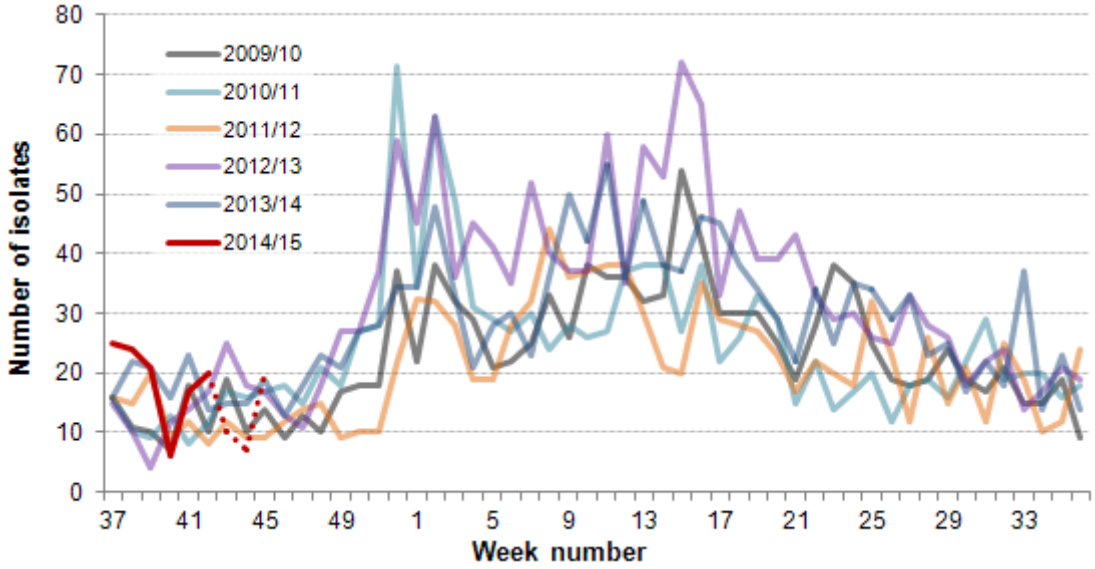
The number of invasive GAS isolates referred from laboratories in England, Wales and Northern Ireland to the Respiratory and Vaccine Preventable Bacteria Reference Unit at Colindale PHE remained within normal levels last season, which has continued into this season. A total of 1483 isolates were referred for specimens taken last season (week 37 of 2013 to week 36 of 2014; figure 2), slightly above the average for the same period over the last five years (1339) but within range for this period (1106 to 1664). Referrals so far this season total 150, again slightly higher but within range for the previous five years (average of 124 referred isolates, range 110 to 161).

Analysis of iGAS *emm* strain diversity remains similar to what is normally seen with *emm* st1 and *emm* st28 and *emm* st89 the most common types identified in October 2014.

Levels of scarlet fever are low but remain elevated when compared to recent years. This might reflect heightened awareness and improved diagnosis and/or notification practices around the country. However, close monitoring and rapid and decisive response to potential outbreaks remains essential given the potential complications associated with GAS infections. Clinicians, microbiologists and Health Protection Teams should continue to be mindful of potential increases in invasive disease and maintain a high index of suspicion in relevant patients as early recognition and prompt initiation of specific and supportive therapy for patients with iGAS

infection can be life-saving. Invasive disease isolates and those from suspected clusters or outbreaks should be submitted to the Respiratory and Vaccine Preventable Bacteria Reference Unit at Public Health England, 61 Colindale Avenue, London NW9 5HT.

Figure 2. Weekly count of sterile site GAS isolates referred to the national reference laboratory, England, 2008/09 onwards*



* Dashed line indicates that numbers may increase as further notifications expected.

Relevant guidelines/FAQs are available on the PHE website, as follows:

- Guidelines on infection control in schools and other childcare settings, including recommended exclusion periods for scarlet fever and guidelines on management of scarlet fever outbreaks, can be found at:
  https://www.gov.uk/government/publications/scarlet-fever-managing-outbreaks-in-schools-and-nurseries
  https://www.gov.uk/government/publications/infection-control-in-schools-poster
- FAQs on scarlet fever can be found at: https://www.gov.uk/government/collections/scarlet-fever-guidance-and-data
- Guidelines for the management of close community contacts of invasive GAS cases and the prevention and control of GAS transmission in acute healthcare and maternity settings are also available here: https://www.gov.uk/government/collections/group-a-streptococcal-infections-guidance-and-data

Reference

1. "Group A streptococcal infections: seventh update on seasonal activity, 2013/14". *Health Protection Report* 2014; **8**(27): infection (news) report.

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Infection Reports

Bacteraemia

- **Pyogenic and non-pyogenic streptococcal bacteraemia (EWNI, 2013)**
- **Acinetobacter spp. bacteraemia (EWNI, 2013)**

Zoonoses

Common animal-associated infections (E&W, Q3/2014)

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Voluntary surveillance of pyogenic and non-pyogenic streptococcal bacteraemia in England, Wales and Northern Ireland: 2013

These analyses are based on data extracted from the Public Health England (PHE) voluntary microbiology surveillance database, LabBase2, on 6 May 2014 for the period 2009 to 2013. The exception to this is group A streptococcal (GAS) infection for which data on isolates submitted to the PHE Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU, Colindale) are merged with routine laboratory reports; this was undertaken on the 22 August 2014. Data presented may differ from previous reports due to the inclusion of late reports.

Population rates were calculated using 2013 mid-year resident population estimates based on the 2011 census for England, Wales and Northern Ireland [1]. Rates of group B streptococcal (GBS) bacteraemia in infants were calculated using 2013 live birth denominators* [2]. English sub-national geographical analyses were based on the residential location of the patient with reference to PHE Centre geographies.

Data collection is based on a voluntary reporting system and as such it is important to note that regional incidence rates can be affected by completeness of reporting. Recent comparisons of LabBase2 data with mandatory collections have indicated that ascertainment in LabBase2 for 2013 was 85% with variations by region noted [3].

Beta-haemolytic, pyogenic streptococci are classified according to type of major surface polysaccharide antigen into Lancefield group A (*Streptococcus pyogenes*), B (*Streptococcus agalactiae*), C (multiple zoonotic species plus the human species, *Streptococcus dysgalactiae* subsp*. equisimilis*) and G (human and animal species *Streptococcus dysgalactiae* subsp *equisimilis* and *Streptococcus canis*).

The non-pyogenic streptococci are subdivided into the mitis, sanguinis, anginosus, salivarius, mutans, and bovis groups, of which the first four are often referred to as ‘viridans’ streptococci. Analyses on *Streptococcus pneumoniae* and group D Streptococci (now classified as *Enterococcus* spp.) are not included within this report.

* Live birth data for Northern Ireland remained provisional at time of publication

The report includes analyses on the trend, age and sex distribution, geographical distribution and the antimicrobial susceptibility in laboratory reported cases of pyogenic and non-pyogenic streptococcal bacteraemia.

Key points

- Between 2012 and 2013 there was a 7% increase in the number streptococcal bacteraemia reports (10,067 and 10,791 respectively) in England, Wales and Northern Ireland.
- The overall rate of group A streptococcal (GAS) bacteraemia in 2013 for England, Wales and Northern Ireland was 3.0 per 100,000 population. The equivalent rates for the other pyogenic streptococci were 2.8 (group B streptococci), 1.0 (group C streptococci) and 1.5 (group G streptococci).
- The rate of reports for the majority of non-pyogenic streptococcal groups increased over the period 2009 to 2013, the exceptions being the Mitis group with a slight decrease of 2%.
- In line with previous reports, rates of pyogenic streptococcal bacteraemia were highest in the elderly, with the notable exception of group B streptococci where rates were highest in infants.
- Rates of group B *Streptococcus* bacteraemia in infants (less than 90 days) increased slightly in in 2013 to 0.62 per 1000 live births, just below the rate in 2011 (0.63). Resistance to erythromycin further increased for group B and G streptococci in 2013 reaching 22% and 38% respectively.
- Between 2% and 24% of non-pyogenic streptococcal group bacteraemic isolates were reported as having reduced susceptibility or resistance to penicillin in 2013.

Trends

Between 2012 and 2013 there was a 7% increase in the number of laboratory reports of streptococcal bacteraemia (10,067 to 10,791 ; table 1) in England, Wales and Northern Ireland, an 8% increase in pyogenic (4526 to 4876) and 7% increase in non-pyogenic streptococci (3432 to 3687). Pyogenic and non-pyogenic streptococci accounted for 4.6% and 8.2% of mono-microbial bloodstream infections respectively in 2012 making them the sixth and fourth most commonly reported mono-microbial bloodstream infections [4].

In 2013, 82% of *Streptococcus* spp. isolates from blood were identified to species level (8578 reports), a slight increase than the previous four years (79% to 81%).

Figure 1a. Five year trend in pyogenic streptococcal bacteraemia reports per 100,000 population in England Wales and Northern Ireland; 2009 to 2013

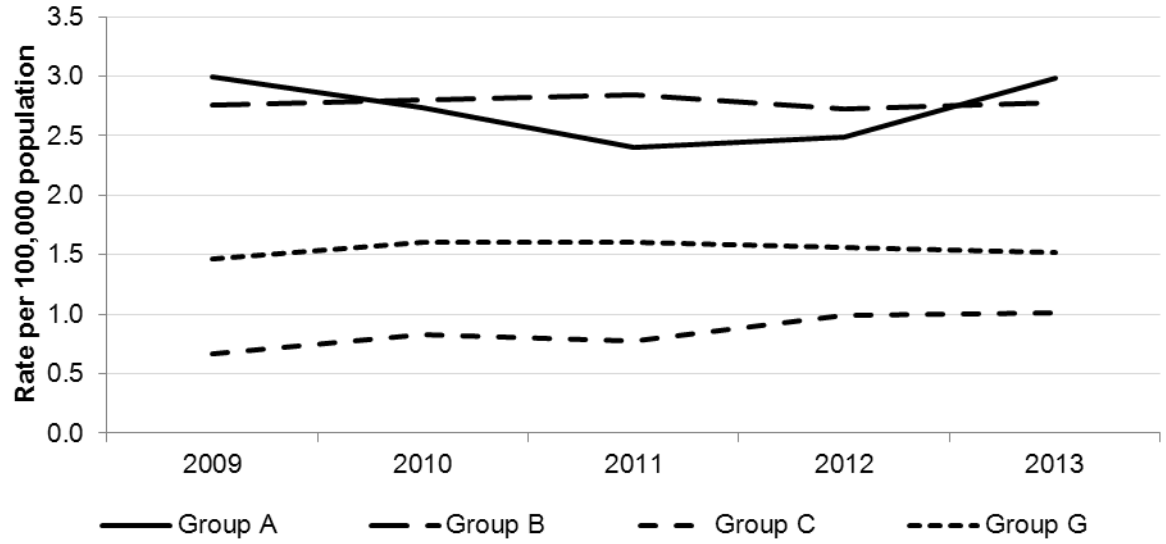


Figure 1b. Five year trend in non-pyogenic streptococcal bacteraemia reports per 100,000 population in England Wales and Northern Ireland; 2009 to 2013

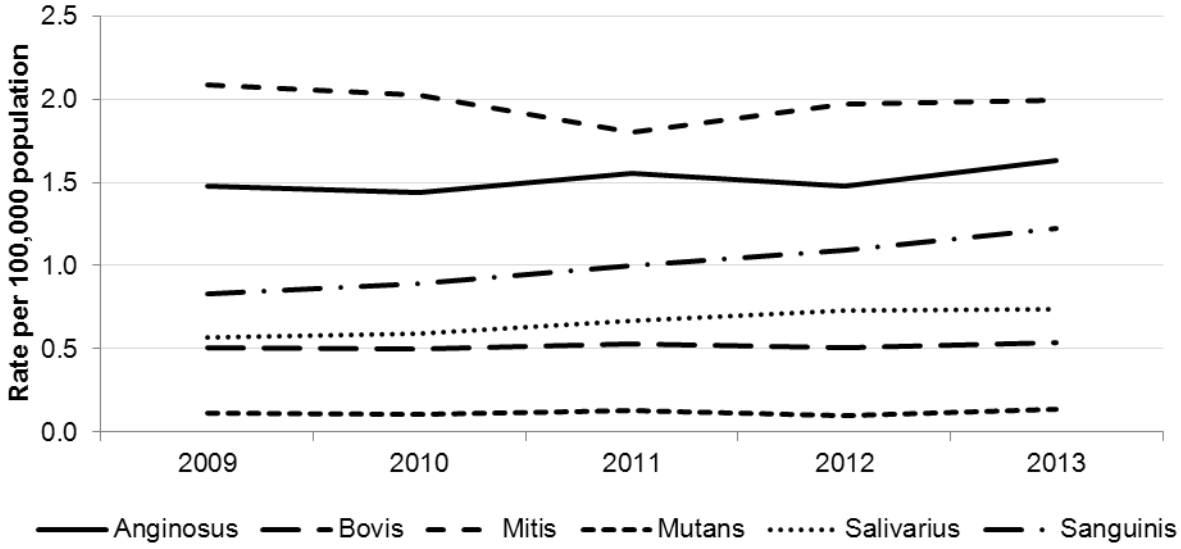


Table 1. Reports of pyogenic and non-pyogenic streptococcal bacteraemia by species in England, Wales and Northern Ireland; 2009 to 2013

	2009		2010		2011		2012		2013	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Pyogenic streptococci	**4493**	**100%**	**4585**	**100%**	**4419**	**100%**	**4526**	**100%**	**4876**	**100%**
Group A	1706	38%	1575	34%	1392	32%	1452	32%	1755	36%
Group B	1573	35%	1613	35%	1649	37%	1589	35%	1634	34%
Group C	378	8%	474	10%	450	10%	575	13%	596	12%
Group G	836	19%	923	20%	928	21%	910	20%	891	18%
Non-pyogenic streptococci	**3183**	**100%**	**3189**	**100%**	**3295**	**100%**	**3432**	**100%**	**3687**	**100%**
Anginosus group	**842**	**26%**	**829**	**26%**	**903**	**27%**	**863**	**25%**	**960**	**26%**
S. anginosus	276	9%	307	10%	328	10%	353	11%	398	11%
S. constellatus	224	7%	201	6%	230	7%	210	6%	260	7%
S. intermedius	83	3%	86	3%	97	3%	107	3%	107	3%
S. milleri group	197	6%	205	6%	207	6%	154	4%	162	4%
Streptococcus group F	62	2%	30	1%	41	1%	39	1%	33	1%
Bovis group	**288**	**9%**	**285**	**9%**	**306**	**9%**	**296**	**9%**	**318**	**9%**
S. alactolyticus	5	0%	11	0%	6	0%	11	0%	31	1%
S. bovis biotype ii	16	1%	23	1%	38	1%	58	2%	65	2%
S. bovis untyped	223	7%	223	7%	221	7%	166	5%	161	4%
S. equinus	9	0%	8	0%	11	0%	16	0%	17	0%
S. gallolyticus	34	1%	18	1%	20	1%	22	1%	20	1%
S. infantarius sp nov	1	0%	2	0%	10	0%	23	1%	24	1%
Mitis group	**1191**	**37%**	**1162**	**36%**	**1044**	**32%**	**1148**	**33%**	**1172**	**32%**
S. mitis	824	26%	785	25%	678	21%	801	23%	786	21%
S. oralis	367	12%	377	12%	366	11%	347	10%	386	10%
Mutans group	**64**	**2%**	**61**	**2%**	**73**	**2%**	**59**	**2%**	**82**	**2%**
S. mutans	62	2%	58	2%	71	2%	58	2%	80	2%
S. sobrinus	2	0%	3	0%	2	0%	1	0%	2	0%
Salivarius group	**324**	**10%**	**339**	**11%**	**389**	**12%**	**427**	**12%**	**435**	**12%**
S. salivarius	295	9%	316	10%	357	11%	387	11%	397	11%
S. vestibularis	29	1%	23	1%	32	1%	40	1%	38	1%
Sanguinis group	**474**	**15%**	**513**	**16%**	**580**	**18%**	**639**	**19%**	**720**	**20%**
S. gordonii	61	2%	58	2%	69	2%	74	2%	96	3%
S. parasanguinis	141	4%	184	6%	177	5%	235	7%	278	8%
S. sanguinis	272	9%	271	8%	334	10%	330	10%	346	9%
Other streptococci	**2071**	**100%**	**2007**	**100%**	**2032**	**100%**	**2109**	**100%**	**2228**	**100%**
'Anaerobic streptococcus'	21	1%	37	2%	36	2%	43	2%	30	1%
S. acidominimus	13	1%	12	1%	13	1%	14	1%	11	1%
S. suis	1	0%	2	0%	0	0%	2	0%	1	0%
S. uberis	6	0%	7	0%	6	0%	4	0%	3	0%
Streptococci not fully identified	1831	88%	1776	86%	1788	86%	1799	87%	1877	91%
Streptococcus spp., other named	199	10%	173	8%	189	9%	247	12%	306	15%

Table 1 (continued) Closely related genera reports.

	2009		2010		2011		2012		2013	
	No.	%	No.	%	No.	%	No.	%	No.	%
Genera closely related to streptococci	**478**	**100%**	**417**	**100%**	**410**	**100%**	**470**	**100%**	**454**	**100%**
Abiotrophia spp	25	5%	17	4%	29	6%	46	10%	37	8%
Aerococcus spp	153	32%	125	26%	127	27%	145	30%	148	31%
Gemella spp	115	24%	117	24%	88	18%	90	19%	97	20%
Globicatella sanguinis	2	0%	4	1%	3	1%	0	0%	3	1%
Leuconostoc spp	38	8%	34	7%	34	7%	42	9%	41	9%
Pediococcus spp	1	0%	6	1%	2	0%	3	1%	3	1%
Peptostreptococcus spp	144	30%	114	24%	127	27%	144	30%	125	26%

Group A Streptococci

Of the pyogenic streptococci causing bacteraemia, group A *Streptococcus* (GAS) was the most frequently reported (36%; 1755 reports; table 1) in 2013, an increase from 2012 where 32% of pyogenic streptococci were identified as GAS.

In 2013 the overall rate of GAS bacteraemia for England, Wales and Northern Ireland was 3.0 cases per 100,000 population (figure 1a). Wales reported the highest incidence rate with 3.2/100,000, followed by England (3.0) and Northern Ireland (1.9; table 2). Each country reported an increase compared to 2012, with the exception of Wales where a decrease was noted (from 2.1/100,000 in 2012) [5].

Table 2. Rate per 100,000 population of pyogenic streptococcal bacteraemia reports by Public Health England Centre and country in England, Wales and Northern Ireland; 2013

	Rate per 100,000 population			
PHE Centre	**Group A**	**Group B**	**Group C**	**Group G**
London	2.4	3.3	0.6	1.3
South Midlands and Hertfordshire	2.4	2.7	0.9	1.3
East Midlands	2.7	3.3	0.7	1.5
Anglia and Essex	3.1	2.4	1.0	2.6
West Midlands	2.9	2.5	1.5	2.0
Cheshire and Merseyside	2.8	3.1	1.8	2.7
Cumbria and Lancashire	2.7	2.8	0.7	2.0
Greater Manchester	3.9	4.1	1.1	2.0
North East	4.1	2.6	1.6	0.5
Yorkshire and Humber	3.5	2.5	1.1	0.8
Avon, Gloucestershire and Wiltshire	2.9	3.1	1.0	2.1
Devon, Cornwall and Somerset	4.8	3.2	1.3	2.1
Wessex	2.8	2.9	0.8	1.5
Kent, Surrey and Sussex	3.1	1.6	0.6	1.2
Thames Valley	2.2	1.2	0.7	0.5

Table 2 continued. National totals.

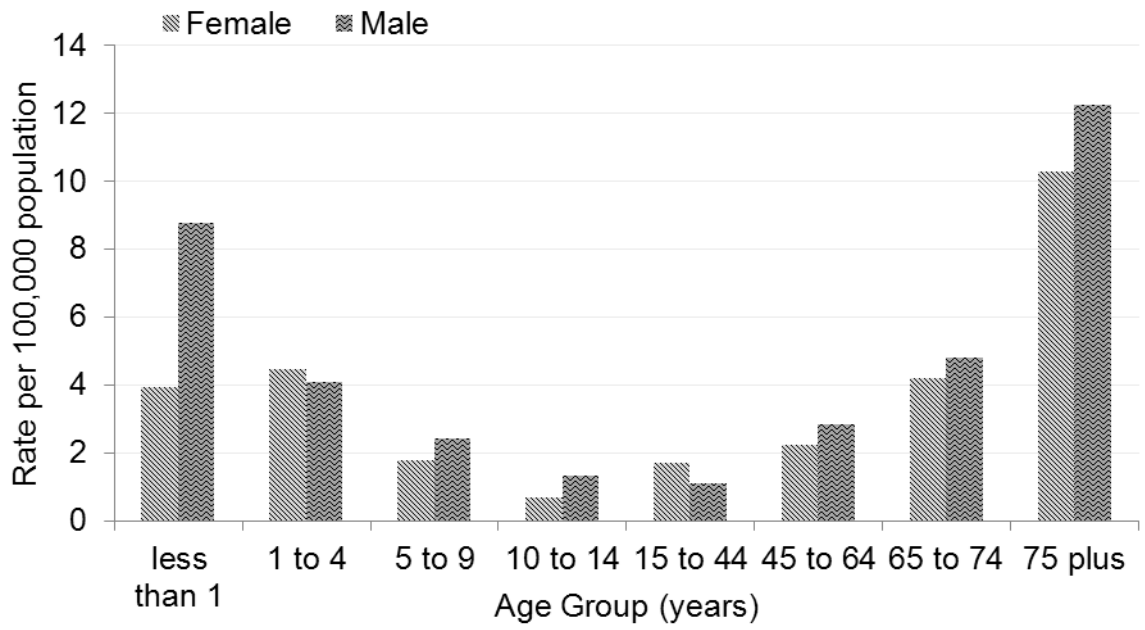
England	**3.0**	**2.8**	**1.0**	**1.6**
Northern Ireland	**1.9**	**3.3**	**1.7**	**0.5**
Wales	**3.2**	**2.8**	**1.1**	**1.3**
England, Wales and Northern Ireland	**3.0**	**2.8**	**1.0**	**1.5**

There was wide variation in GAS bacteraemia reports within England in 2013, with rates of reports ranging from 2.2 in Thames Valley to 4.8/100,000 in Devon, Cornwall and Somerset.

Rates of GAS bacteraemia were higher in males than females in the majority of age groups, the only exceptions were for those aged 1 to 4 years and 15 to 44 years where rates of GAS bacteraemia were higher in females (figure 2). The highest rates were in the elderly, aged 75 years and over (11.1/100,000), followed by those less than 1 year old (6.1/100,000).

The proportion of GAS bacteraemia cases accompanied by antimicrobial susceptibility data has improved since 2009, with 45%, 68% and 62% reports in 2013 including susceptibility to clindamycin, erythromycin and tetracycline respectively (table 3). In 2013 resistance (defined as reduced-susceptibility or non-susceptible) to clindamycin, erythromycin and tetracycline was recorded as 3%, 5% and 10% of cases respectively. Resistance to clindamycin and erythromycin has remained stable since 2009, whereas prevalence of tetracycline resistance has fluctuated over the last five years, remaining around 10%.

Figure 2. Group A streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013

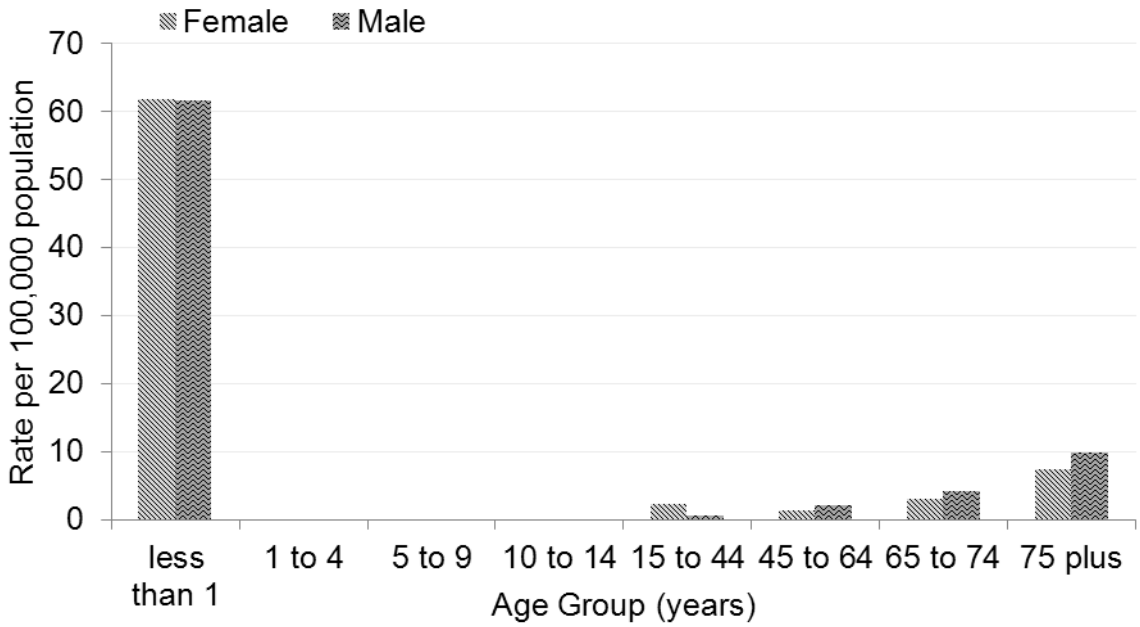


Group B *streptococci*

In 2013, 1634 cases of GBS bacteraemia were reported by laboratories in England, Wales and Northern Ireland to PHE, a 3% increase compared to 2012 (1589 reports; table 1). This, however, is still lower than the number of cases reported in 2011. GBS bacteraemia accounted for 34% of the pyogenic streptococcal bacteraemia reported in 2013 making GBS the 2nd most frequently reported pyogenic streptococcal bacteraemia. This is the first time since 2009 that GAS bacteraemia is more prevalent than GBS.

The reported rate of GBS bacteraemia in England, Wales and Northern Ireland was 2.8 per 100,000 population in 2013, with little variation between countries (England and Wales 2.8, and Northern Ireland 3.3/100,000; table 2). This represents a slight increase in each country compared to 2012. Within England, there was greater variation with Thames Valley and Kent, Surrey and Sussex reporting the lowest rate of infection (1.2 and 1.6/100,000 respectively) and Greater Manchester reporting the highest rate (4.1/100,000) in 2013.

Figure 3. Group B streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013



Rates of GBS bacteraemia remain highest in infants (<1y) at 59.3/100,000 population (95% CI: 54.0-65.0; figure 3), with the rate in female infants increasing compared to 2012 (61.7 compared with 50.4/100,000), while staying the same in male infants (61.5). Rates were higher in males than females in all age groups except the <1 year and 15 to 44 years age groups.

Table 3. Antimicrobial susceptibility for pyogenic streptococci causing bacteraemia, England, Wales and Northern Ireland; 2009 to 2013

		2009		2010		2011		2012		2013	
		No. tested	% resistant (R)	No. tested	% R	No. tested	% R	No. tested	% R	No. tested	% R
Group A	clindamycin	335	3%	378	3%	422	3%	466	4%	614	3%
	erythromycin	826	5%	862	5%	810	5%	772	5%	898	5%
	tetracycline	640	9%	749	8%	697	13%	709	11%	844	10%
Group B	clindamycin	400	10%	467	9%	563	17%	626	13%	624	17%
	erythromycin	1069	14%	1137	15%	1093	18%	1096	19%	1074	22%
	tetracycline	943	80%	1046	82%	1043	83%	1039	85%	1042	86%
Group C	clindamycin	83	4%	129	12%	186	12%	229	12%	260	13%
	erythromycin	249	13%	337	14%	334	17%	414	25%	399	23%
	tetracycline	213	23%	294	26%	280	26%	387	32%	393	30%
Group G	clindamycin	192	8%	229	9%	292	12%	338	19%	331	19%
	erythromycin	558	24%	666	26%	676	32%	643	37%	654	38%
	tetracycline	483	50%	583	47%	604	49%	582	50%	636	47%

Rates of GBS bacteraemia in infants less than 90 days old in England, Wales and Northern Ireland increased slightly to 0.62/1000 live births in 2013 (table 4) compared with 0.58/1000 in 2012, just below the rate in 2011 (0.63) [6]. Consistent with previous years' reports, in 2013 the reported incidence of early onset disease (<7days old) was higher than late onset disease (7-90 days old) in England, Wales and Northern Ireland (0.38 compared with 0.23/1000 live births). The only exception was Wales, where the rate of late onset GBS bacteraemia was higher than early onset (0.39 and 0.27/1000 live births respectively). Rates and absolute numbers of early and late onset GBS disease increased across England, Wales and Northern Ireland in 2013 compared to 2012.

The proportion of GBS bacteraemia cases accompanied by antimicrobial susceptibility test result data improved overall across the last five years, with 38%, 66% and 64% GBS cases in 2013 including susceptibility to clindamycin, erythromycin and tetracycline respectively. In England, Wales and Northern Ireland identification of clindamycin and tetracycline resistance has increased in GBS bacteraemia isolates between 2009 and 2013, from 10% and 14% in 2009 to 17% and 22% resistant in 2013 respectively (table 3).

Table 4. Number and rate per 1000 live births of group B streptococcal bacteraemia in infants 0-90 days old, England, Wales and Northern Ireland; 2013

	All cases (0-90 days old)			Early onset (0-6 days old)			Late onset (7-90 days old)		
	No.	rate	95% CI	No.	rate	95% CI	No.	rate	95% CI
England	406	0.61	(0.55 - 0.67)	257	0.39	(0.34 - 0.44)	149	0.22	(0.19 - 0.26)
Northern Ireland (NI)	17	0.70	(0.41 - 1.12)	12	0.49	(0.26 - 0.86)	5	0.21	(0.07 - 0.48)
Wales	22	0.65	(0.41 - 0.99)	9	0.27	(0.12 - 0.51)	13	0.39	(0.21 - 0.66)
England, Wales & NI	445	0.62	(0.56 - 0.68)	278	0.38	(0.34 - 0.43)	167	0.23	(0.20 - 0.27)

Groups C and G streptococci

In England, Wales and Northern Ireland the number of cases of Group C streptococcal (GCS) bacteraemia increased slightly (4%) in 2013 (596) compared with 2012 (575), following year on year increase seen since 2009 (table 1). The rate of GCS bacteraemia was 1.0/100,000 population in 2013, a slight increase compared to 0.7 in 2009 (figure 1a).

In contrast with the trends observed for GCS bacteraemia, the numbers of group G streptococcal (GGS) bacteraemia reported decreased slightly between 2012 and 2013 (2%; 910 to 891). In England, Wales and Northern Ireland the rate of GGS bacteraemia in 2013 was 1.5/100,000 population.

Rate of infection varied by individual country for both GCS and GGS bacteraemia in 2013, with GCS bacteraemia rates of 1.0, 1.7 and 1.1/100,000 and GGS bacteraemia rates of 1.6, 0.5 and 1.3/100,000 in England, Northern Ireland and Wales respectively (table 2). Within England GCS bacteraemia rates ranged from 0.6/100,000 in Kent, Surrey and Sussex and London to 1.8 in Cheshire and Merseyside. Rates of GGS bacteraemia also varied, ranging from 0.5/100,000 in the Thames Valley and North East to 2.7 in Cheshire and Merseyside.

The rates of both GCS and GGS bacteraemia were highest in the elderly, with 5.9 and 10.4/100,000 in the 75 years and over age group respectively (figures 4 and 5). Rates tended to be higher in males than in females in the majority of age groups.

Figure 4. Group C streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013

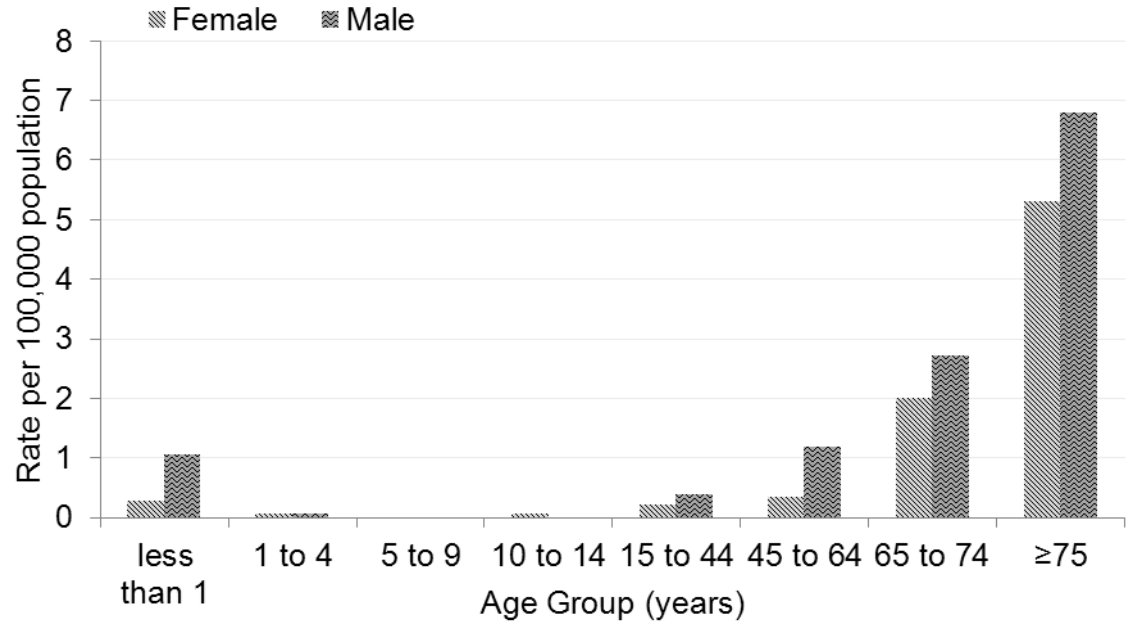
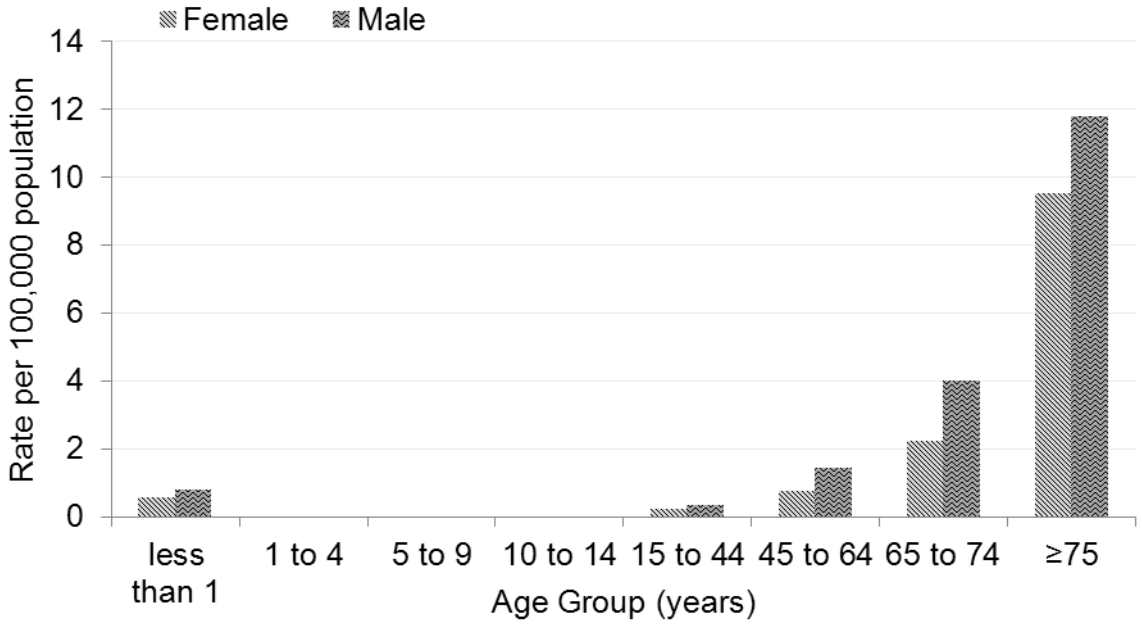


Figure 5. Group G streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013



The proportion of GCS bacteraemia reports accompanied by susceptibility data has on the whole increased since 2009. Susceptibility data were available for 44%, 67% and 66% of GCS bacteraemia isolates in 2013 for clindamycin, erythromycin and tetracycline respectively (table 3). A similar picture was seen in GGS bacteraemia isolates with susceptibility results to clindamycin, erythromycin and tetracycline reported for 37%, 73% and 71% of cases in 2013 respectively.

In 2013, the proportion of isolates resistant to clindamycin, erythromycin and tetracycline in reported GCS bacteraemia was 13%, 23% and 30% respectively, a slight decrease on that

reported in 2012 (table 3). The proportion of resistant isolates was slightly higher in GGS bacteraemia isolates with 19%, 38% and 47% resistant to clindamycin, erythromycin and tetracycline respectively. This continues a trend of increasing resistance to clindamycin and erythromycin reported since 2009.

Non-pyogenic streptococci

The number of cases of non-pyogenic streptococcal bacteraemia reported in England, Wales and Northern Ireland has increased each year since 2009, a 14% increase overall (3183 in 2009 to 3687 in 2013; table 1). The rate of reports has stayed level or decreased in the majority of non-pyogenic groups over that time (figure 1b), with the exception of Sanguinis group streptococci (47% increase, 0.8 to 1.2/100,000) and Salivarius group streptococci (30% increase, 0.56 to 0.74/100,000).

Table 5. Rate per 100,000 population non-pyogenic streptococcal bacteraemia reports by Public Health England Centre and country in England, Wales and Northern Ireland; 2013

	Rate per 100,000 population					
PHE Centre	**Anginosus Group**	**Bovis Group**	**Mitis Group**	**Mutans Group**	**Salivarius Group**	**Sanguinis Group**
London	1.7	0.5	1.7	0.1	1.0	1.5
South Midlands and Hertfordshire	2.4	0.5	2.2	0.2	0.8	0.9
East Midlands	1.9	0.2	2.4	0.0	0.7	1.4
Anglia and Essex	1.4	0.4	1.7	0.2	0.6	1.3
West Midlands	1.9	1.0	2.9	0.2	1.0	1.3
Cheshire and Merseyside	2.2	1.2	1.6	0.3	0.7	1.1
Cumbria and Lancashire	1.5	0.5	3.4	0.0	0.9	1.2
Greater Manchester	2.0	0.6	2.8	0.0	0.8	1.5
North East	1.6	0.7	1.3	0.1	0.8	1.4
Yorkshire and Humber	1.2	0.3	1.4	0.2	0.6	0.8
Avon, Gloucestershire and Wiltshire	1.3	0.8	2.8	0.2	0.7	1.5
Devon, Cornwall and Somerset	1.6	0.8	2.7	0.3	0.9	1.6
Wessex	1.7	0.4	2.0	0.0	0.7	1.0
Kent, Surrey and Sussex	1.2	0.5	2.3	0.2	0.9	1.4
Thames Valley	2.2	0.4	1.4	0.1	0.5	0.9
England	**1.7**	**0.6**	**2.1**	**0.1**	**0.8**	**1.3**
Northern Ireland	**1.6**	**0.6**	**1.1**	**0.2**	**0.3**	**1.2**
Wales	**1.0**	**0.0**	**0.3**	**0.0**	**0.1**	**0.5**
England, Wales and Northern Ireland	**1.6**	**0.5**	**2.0**	**0.1**	**0.7**	**1.2**

The rates varied by individual country. Of the non-pyogenic streptococci, the rate of bacteraemia reports in England was highest for Mitis group streptococci in 2013 (2.1/100,000; table 5), with the lowest rates for Mutans group streptococci (0.1/100,000). Comparatively the

highest non-pyogenic bacteraemia rates were observed for Anginosus group streptococci in Wales and Northern Ireland in 2013, with 1.0 and 1.6/100,000 respectively.

Within England, there was more variation in incidence for each of the non-pyogenic groups. Kent, Surrey and Sussex and Yorkshire and Humber reported the lowest rate of Anginosus group bacteraemia at 1.2/100,000 population, whereas the highest rate was 2.4/100,000 reported in the South Midlands and Hertfordshire. Rates of Bovis group bacteraemia varied from 0.2/100,000 in the East Midlands to 1.2/100,000 in Cheshire and Merseyside, and the largest variation was seen with Mitis group bacteraemia from 1.3/100,000 in the North East to 3.4/100,000 in Cumbria and Lancashire.

Figure 6. Anginosus group streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013

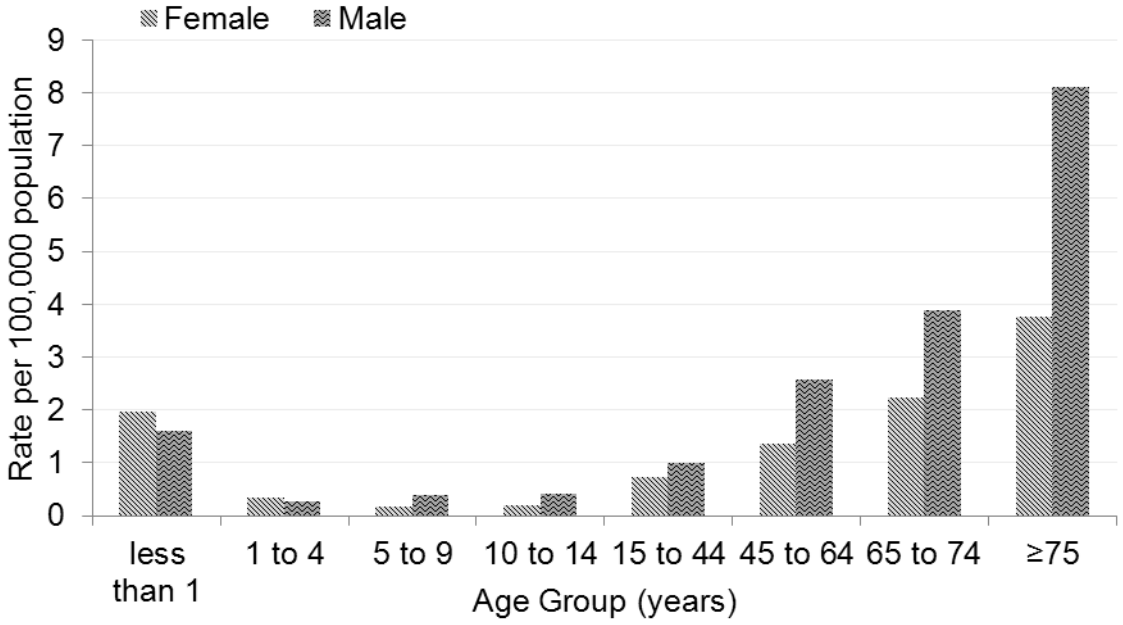
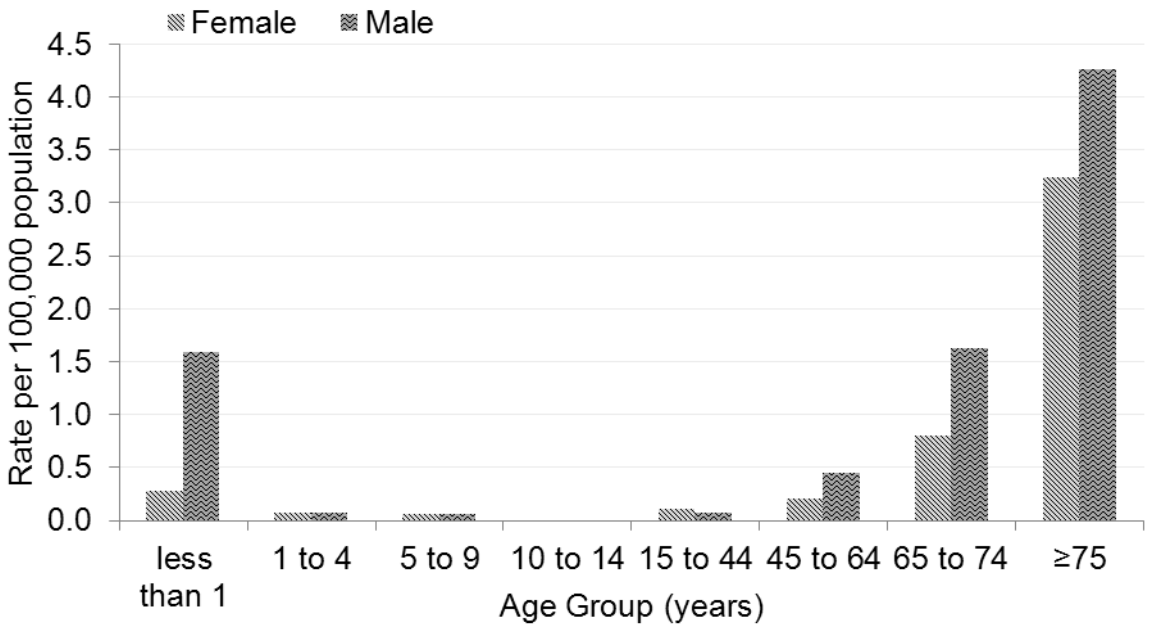


Figure 7. Bovis group streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013



Within non-pyogenic streptococcal groups, the Mitis group accounted for the majority of bacteraemia reports (32%) in 2013, however, the proportion of non-pyogenic streptococcal bacteraemia caused by Mitis group streptococci has decreased overall since 2009 (37%; table 1). The proportion of non-pyogenic streptococcal bacteraemia due to Sanguinis group streptococci has increased between 2009 and 2013 from 15% to 20%, and reflects a 34% increase in number of reports.

The different non-pyogenic streptococcal bacteraemia reports in 2013 displayed a wide variation in rates between age groups, although rates in all groups, except the Mitis group, were highest in those aged 75 years and above (figures 6 to 10). In 2013 the Mitis group streptococci were highest in those aged less than one year (11.2/100,000; figure 8).

Figure 8. Mitis group streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013

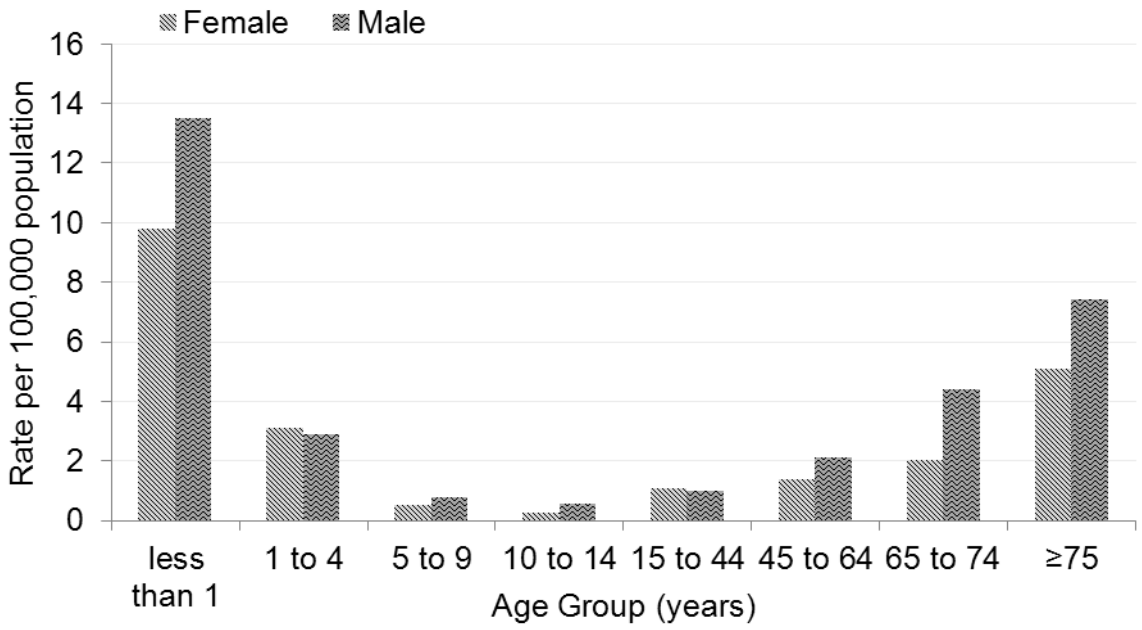
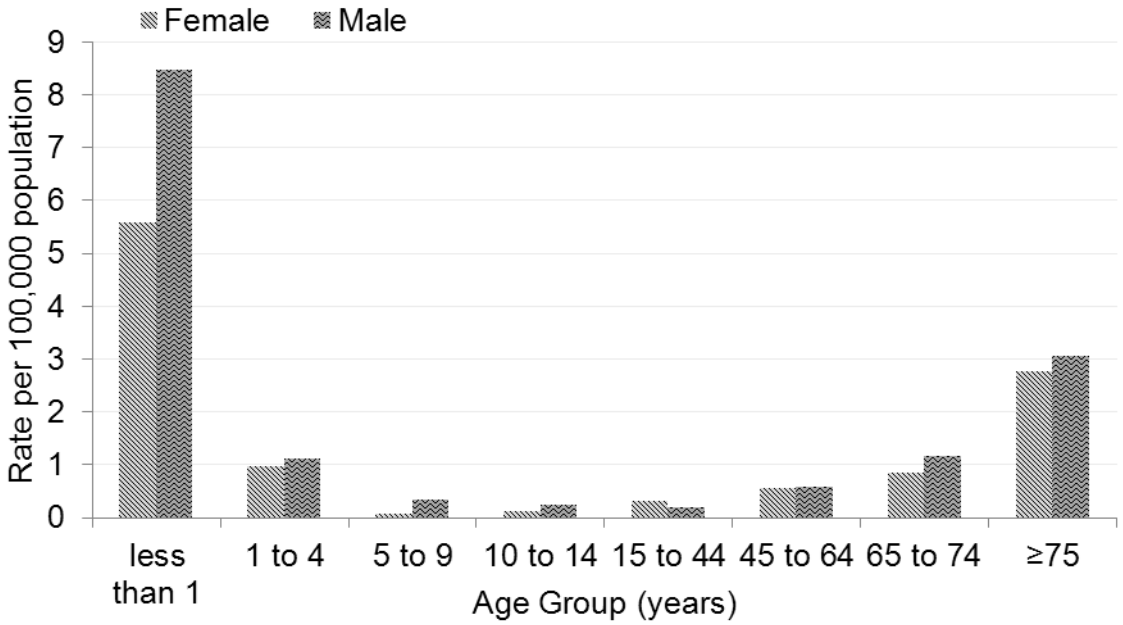


Figure 9. Salivarius group streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013



The proportion of isolates reported as resistant to erythromycin and penicillin has remained steady between 2009 and 2013 in all of the non-pyogenic streptococcal groups. There is slightly more variation seen in resistance to tetracycline, most probably due to the lower level of susceptibility test result reporting for that antibiotic.

Figure 10. Sanguinis group streptococcal bacteraemia age and sex rates per 100,000 population England, Wales and Northern Ireland; 2013

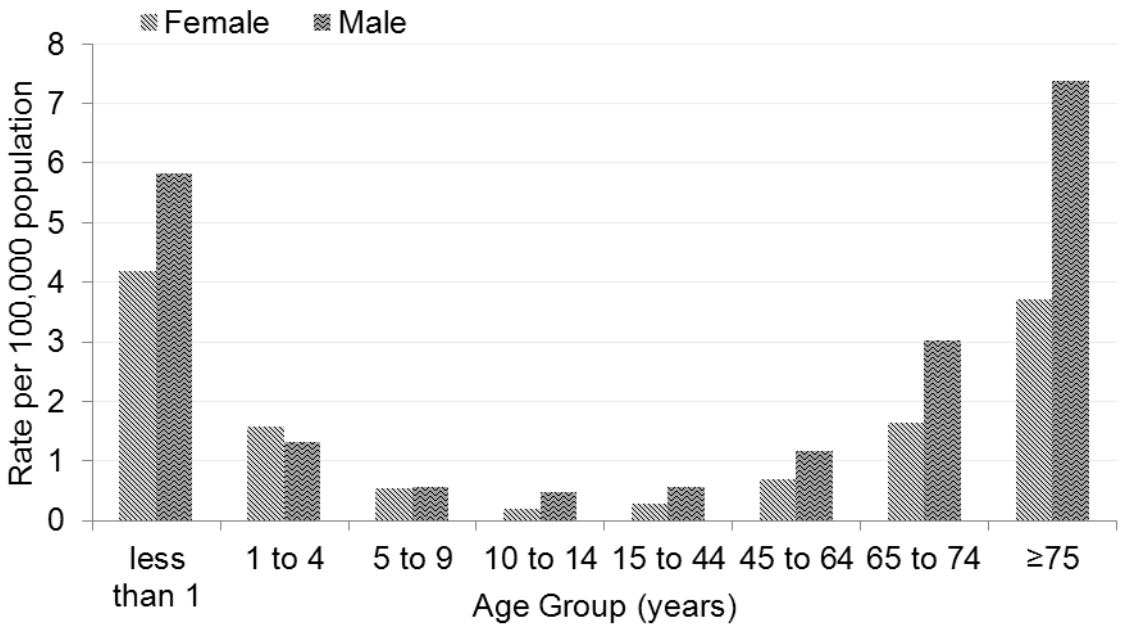


Table 6. Antimicrobial susceptibility for non-pyogenic streptococci causing bacteraemia, England, Wales and Northern Ireland; 2009 to 2013

		2009		2010		2011		2012		2013	
		No. tested	% resistant (R)	No. tested	% R	No. tested	% R	No. tested	% R	No. tested	% R
Anginosus	erythromycin	555	9%	537	9%	618	10%	558	10%	607	10%
	penicillin	713	3%	677	1%	772	1%	730	2%	815	2%
	tetracycline	437	19%	464	23%	510	22%	487	20%	579	17%
Bovis	erythromycin	169	23%	172	30%	188	22%	179	26%	181	31%
	penicillin	220	5%	229	7%	246	5%	236	3%	246	2%
	tetracycline	154	68%	144	60%	173	67%	145	69%	170	69%
Mitis	erythromycin	752	43%	748	44%	705	46%	776	46%	747	46%
	penicillin	972	24%	963	23%	872	19%	977	19%	1006	19%
	tetracycline	604	28%	622	24%	622	25%	622	29%	624	28%
Salivarius	erythromycin	226	36%	219	39%	245	34%	274	42%	260	47%
	penicillin	255	23%	266	21%	309	22%	336	18%	339	21%
	tetracycline	174	19%	158	18%	199	23%	205	20%	199	16%
Sanguinis	erythromycin	311	40%	341	43%	387	34%	408	38%	454	38%
	penicillin	355	31%	405	26%	481	26%	528	23%	601	24%
	tetracycline	239	32%	262	33%	313	28%	327	32%	391	26%

In England, Wales and Northern Ireland in 2013 between 2% and 24% of non-pyogenic streptococcal isolates either had reduced susceptibility or were resistant to penicillin; this is a contrast from the pyogenic streptococci where penicillin resistance is still undocumented in the UK. Erythromycin resistance was also high in non-pyogenic streptococcal groups compared to pyogenic groups, with between 31% and 47% of isolates reported as resistant; the only exception is the Anginosus group streptococci where 10% were reported as resistant to erythromycin.

Reference microbiology service

In 2013, the proportion of reports of streptococcal bacteraemia in which the organism was not fully identified was slightly lower than in previous years at 18% (compared with 19% between 2009 and 2012). Precise species identification of isolates would improve the monitoring of trends in non-pyogenic streptococci and related genera in particular. The Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU, Colindale) offers a referred (charged for) taxonomic identification service for streptococci and other related Gram-positive, catalase-negative genera from systemic and other significant infections. A free-of-charge reference service is available for urgent public health investigations, either hospital or community based. All such isolates should be submitted to RVPBRU along with all GAS, GBS, GCS and GGS isolates from normally sterile sites.

Laboratories are requested to send any pyogenic streptococcal isolates exhibiting a decreased sensitivity to penicillin to the Antimicrobial Resistance and Healthcare Associated Infections Reference Unit (AMRHAI, Colindale) for confirmation. In addition, any streptococci (pyogenic or non-pyogenic) with suspected glycopeptide or linezolid resistance should be referred for further investigation. Both AMRHAI and RVPBRU are based at the Public Health England, Colindale.

Guidelines for the management of close community contacts of invasive GAS cases [7] and the prevention and control of GAS transmission in acute healthcare and maternity settings [8] are available at the following web-page: https://www.gov.uk/government/collections/group-a-streptococcal-infections-guidance-and-data.

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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 PHE Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU, Colindale), in particular, is valued in the preparation of this report. Feedback and any specific enquiries regarding this report should be sent to hcai.armdepartment@phe.gov.uk.

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5. PHE. Voluntary surveillance of pyogenic and non-pyogenic streptococcal bacteraemia in England, Wales and Northern Ireland: 2012. *HPR* 2013; **8**(46)

6. HPA. Pyogenic and non-pyogenic streptococcal bacteraemia (England, Wales and Northern Ireland):2011. *HPR* 2012; **6**(46)

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8. Steer JA, Lamagni TL, Healy B, Morgan M, Dryden M, Rao B *et al*. Guidelines for prevention and control of group A streptococcal infection in acute healthcare and maternity settings in the UK. *J Infect* 2012 Jan; **64**(1): 1-18.

Bacteraemia

Volume 8 Number 43 Published on: 21 November 2014

Voluntary surveillance of *Acinetobacter* spp. bacteraemia in England, Wales and Northern Ireland: 2013

These analyses are based on data extracted from the Public Health England (PHE) voluntary microbiology surveillance database, LabBase2, on 14 April 2014 for the period 2009 to 2013. Data presented may differ from previous reports due to the inclusion of late reports.

Population rates were calculated using mid-year resident population estimates based on the 2011 census for England, Wales and Northern Ireland [1]. English sub-national geographical analyses were based on the residential location of the patient with reference to PHE Centre geographies; Wales and Northern Ireland were each analysed as a whole.

The report includes analyses on the trend, age and sex distribution, geographical distribution and the antimicrobial susceptibility in reported cases of bacteraemia.

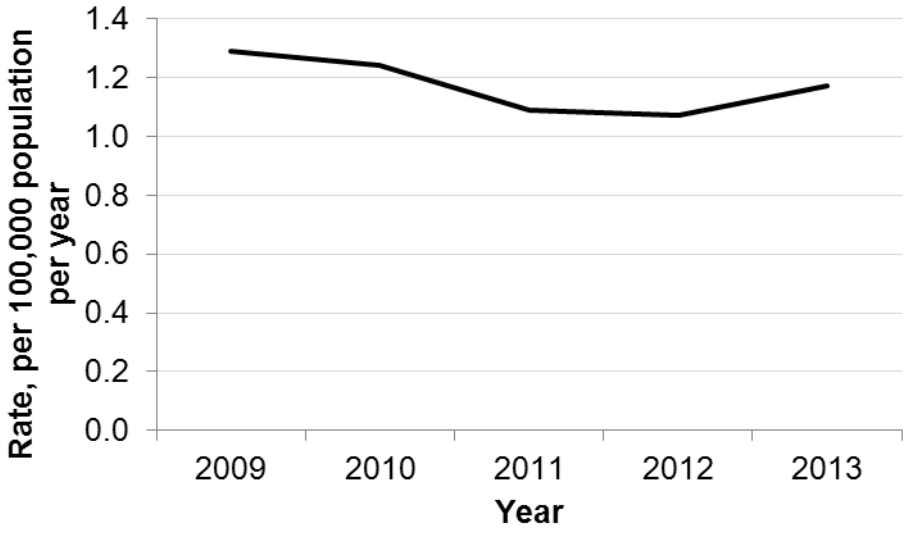
Key points

- The incidence of *Acinetobacter* spp. bacteraemia rose slightly in 2013 to 1.17 per 100,000 population from 1.07 per 100,000 population in 2012, after four years of continuous decline.
- Lower rates of *Acinetobacter* spp. bacteraemia were reported in Wales (0.42 per 100,000 population per year) than in England (1.31 reports per 100,000 population per year) and Northern Ireland (1.69 reports per 100,000 population per year).
- The English PHE Centre area with the highest reported rate in 2013 was London (1.84 per 100,000 population per year).
- The proportion of *Acinetobacter* spp. bacteraemia caused by *A. lwoffii* rose from 28% in 2009 to 37% in 2013.
- *Acinetobacter* spp. bacteraemia is higher in those under one year old and those greater than 74 years old.

Trends

The incidence of bacteraemia due to *Acinetobacter* species in England, Wales and Northern Ireland fluctuated slightly between 2009 and 2013 (figure 1). The incidence declined from 1.29 reports per 100,000 population per year in 2009 to 1.07 reports per 100,000 population per year in 2012. In 2013, the incidence increased to 1.17 per 100,000 population per year.

Figure 1. Five year trend in *Acinetobacter* spp. reports per 100,000 population per year in England, Wales and Northern Ireland, 2009 to 2013



Geographical distribution

The incidence of bacteraemia caused by *Acinetobacter* spp. varied by reporting country. In 2013, incidence was highest in Northern Ireland with 1.69 reports per 100,000 population per year (table 1). The incidence was lower in England (1.31 reports per 100,000 population per year) and Wales (0.42 reports per 100,000 population per year). Each country reported an overall decrease in incidence between 2009 and 2013, with a small increase occurring between 2012 and 2013.

The English PHE Centre area with the highest reported rate in 2013 was London (1.84 per 100,000 population per year; figure 2). The lowest incidence was reported in Thames Valley (0.44 per 100,000 population per year). The voluntary nature of the reporting to LabBase means that some regions may under-report the number of *Acinetobacter* bacteraemias, resulting in an under-estimate of the rate. In a comparison of voluntary and mandatory *Staphylococcus aureus* bacteraemia reporting, 85% of mandatory reports had matching records in the voluntary surveillance. [2]

Figure 2. Geographic distribution of *Acinetobacter* spp. bacteraemia rates per 100,000 population in England, Wales and Northern Ireland, 2013

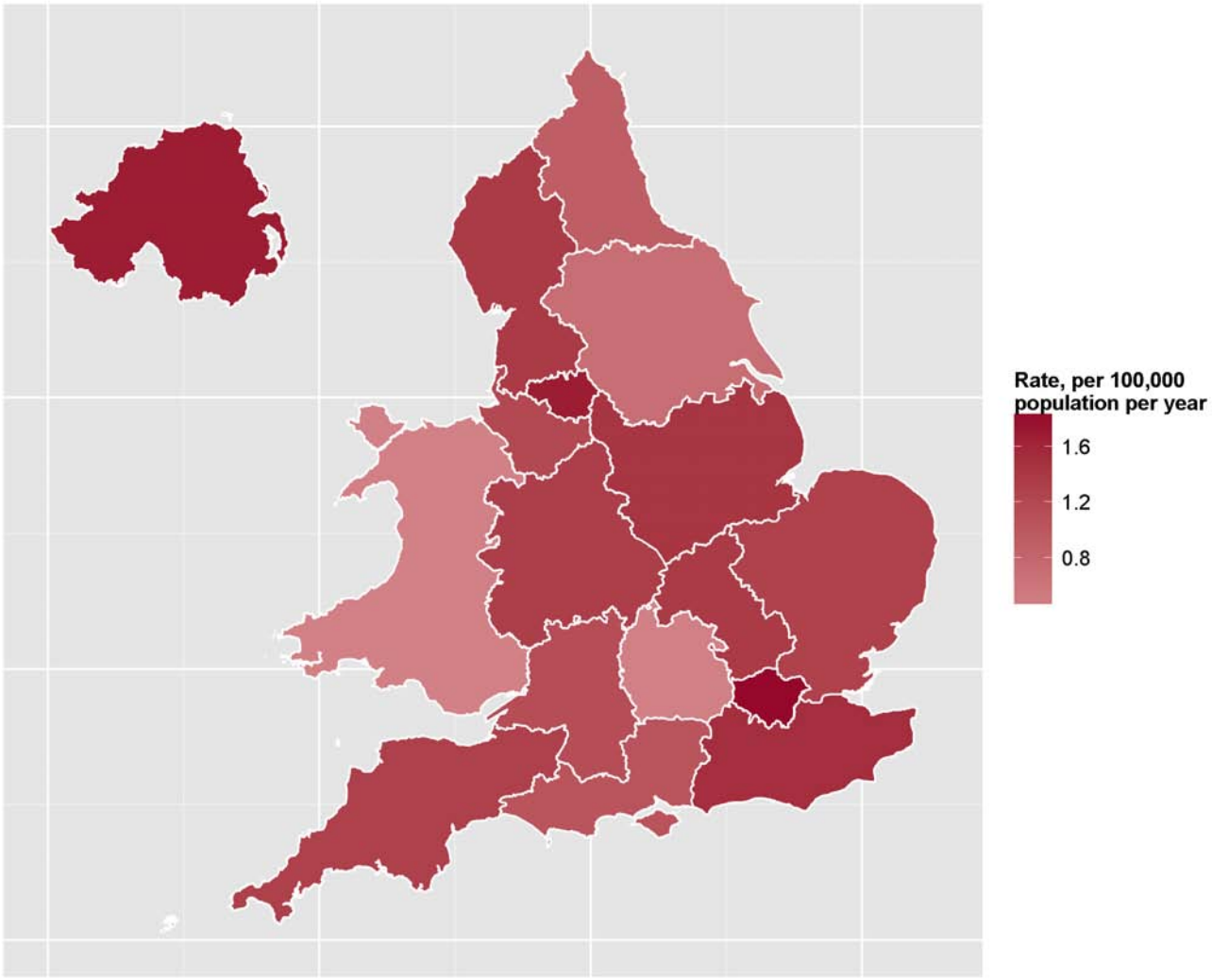


Table 1. Incidence of *Acinetobacter* bacteraemia by PHE centre and country in England, Wales and Northern Ireland, 2009 to 2013

		Rate, per 100,000 population, per year				
PHE Region	**PHE Centre**	**2009**	**2010**	**2011**	**2012**	**2013**
North of England	Cheshire and Merseyside	0.88	1.33	1.25	0.99	1.20
	Cumbria and Lancashire	1.07	0.72	0.92	0.76	1.37
	Greater Manchester	1.48	2.44	1.68	1.67	1.69
	North East	1.28	1.20	0.89	0.77	0.92
Midlands and East of England	South Midlands and Hertfordshire	1.37	1.25	0.93	1.22	1.37
	East Midlands	1.35	1.23	1.07	0.88	1.44
	Anglia and Essex	1.31	1.25	1.14	1.16	1.29
	West Midlands	1.61	0.95	1.18	1.17	1.32
London	London	2.13	2.23	1.96	1.95	1.84
South of England	Yorkshire and Humber	1.26	1.14	1.02	0.90	0.69
	Avon, Gloucestershire and Wiltshire	1.25	1.63	1.32	1.01	1.13
	Devon, Cornwall and Somerset	1.01	1.23	1.23	1.08	1.30
	Wessex	1.04	0.95	0.87	0.90	1.04
	Kent, Surrey and Sussex	1.62	1.49	1.03	1.40	1.52
	Thames Valley	0.60	0.65	0.74	0.88	0.44
England		**1.43**	**1.40**	**1.23**	**1.22**	**1.31**
Northern Ireland		**2.40**	**1.83**	**1.49**	**1.37**	**1.69**
Wales		**0.63**	**0.33**	**0.26**	**0.23**	**0.42**
England, Wales, Northern Ireland		**1.29**	**1.24**	**1.09**	**1.07**	**1.17**

Species distribution

The proportion of *Acinetobacter* spp. isolates from blood identified to species level increased from 65% in 2009 to 73% in 2013. This increase may be due to increased availability of diagnostic techniques such as Matrix Assisted Laser Desorption/Ionisation – Time of Flight (MALDI-ToF). The proportion of bacteraemias caused by *Acinetobacter lwoffii* has increased over the same time period, from 28% in 2009 to 38% in 2013 and is the most frequently isolated species (table 2). There has been a consistent decline in the proportion of bacteraemias caused by *A. baumannii* from 27% in 2009 to 20% in 2013.

There was very strong evidence that the rate of bacteraemia caused by *A. baumannii* decreased each year between 2009 and 2013 (incidence rate ratio: 0.89, 95%CI: 0.85-0.93, $p < 0.001$). There was also very strong evidence that the rate of bacteraemia caused by *A. lwoffii* increased each year between 2009 and 2013 (IRR:1.05, 95%CI: 1.01-1.10, $p < 0.001$).

Many *Acinetobacter* species, including *A. lwoffii*, are relatively commonly isolated from normal human skin. [3] However, in contrast to *A. lwoffii*, *A. baumannii* is rarely isolated from human skin. Some of the reported *A. lwoffii* isolates may therefore reflect contamination of blood samples but

this is unlikely to account for all of the isolates. *A. lwoffii* bacteraemia is particularly associated with immunocompromise and presence of an indwelling catheter [4].

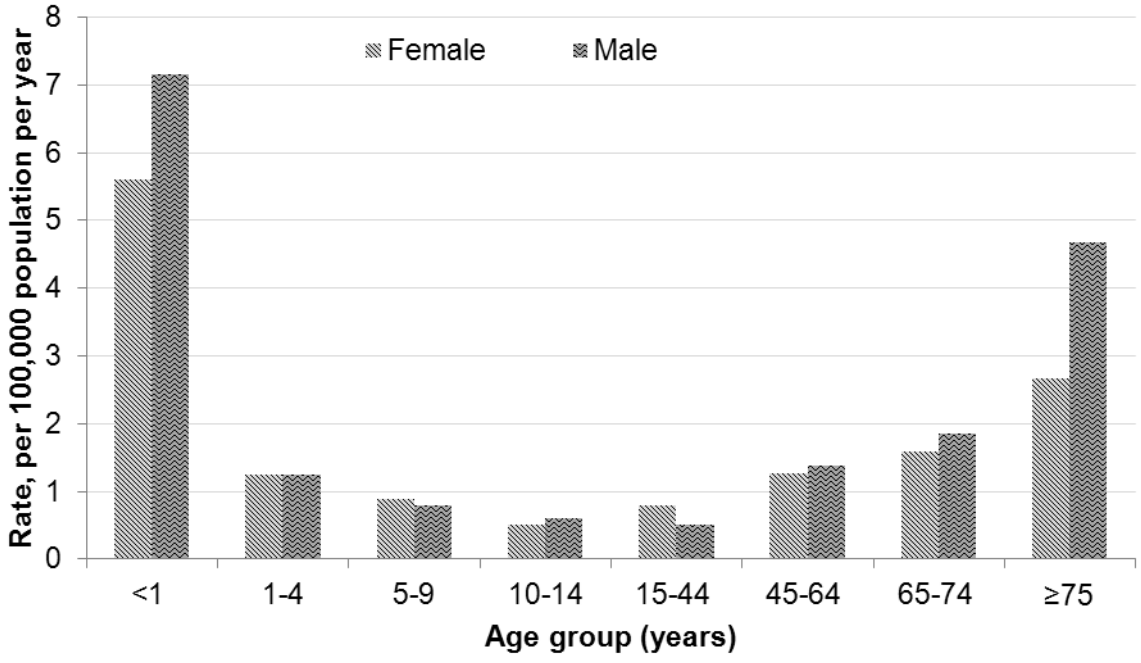
Table 2. Reports of *Acinetobacter* spp. bacteraemia by species, England, Wales and Northern Ireland, 2009-2013.

	2009		2010		2011		2012		2013	
	No.	%	No.	%	No.	%	No.	%	No.	%
***Acinetobacter* spp.**	**806**	**100**	**779**	**100**	**688**	**100**	**682**	**100**	**751**	**100**
Acinetobacter lwoffii	228	28	225	29	217	32	258	38	284	38
Acinetobacter calcoaceticus/baumannii	219	27	212	27	174	25	145	21	153	20
Acinetobacter spp, other named species	76	9	79	10	82	12	84	12	115	15
Acinetobacter spp, species not recorded	283	35	263	34	215	31	195	29	199	27

Age and sex distribution

The rate of *Acinetobacter* spp. bacteraemia was higher in infants aged <1 year and older adults (figure 3). The rate of bacteraemia was higher in males than in females in all age groups with the exception of those aged 5-9 years old and 15-44 years old. The increase in the number of *A. lwoffii* reports occurred predominantly in the very young (< 1 year) and the very old (≥ 75 years, data not shown).

Figure 3. Rate of *Acinetobacter* spp. bacteraemia per 100,000 population, per year by age and sex in England, Wales and Northern Ireland; 2013



Antibiotic susceptibility

The prevalence of non-susceptibility is calculated by dividing the number of isolates reported as intermediate (reduced susceptibility) or resistant by the total number of isolates tested against a given antibiotic.

Non-susceptibility to selected antibiotics among *A. baumannii* isolates is shown in table 3. For a number of antibiotics (gentamicin, amikacin, tobramycin and ciprofloxacin), the percentage of tested isolates that were non-susceptible fluctuated between 2009 and 2013. Due to the low number of isolates tested against imipenem, susceptibilities were combined with those for meropenem. The percentage of isolates non-susceptible to either imipenem or meropenem rose from 21% in 2009 to 30% in 2011. Non-susceptibility to these antibiotics then fell in 2012 (11%) and 2013 (13%).

Acinetobacter spp. are considered inherently resistant to cefotaxime and therefore susceptibility levels to this antibiotic are not reported. [5] Non-susceptibility to ceftazidime remained stable at around 74% between 2009 and 2011, before falling to 63% in 2012 and 53% in 2013. The number of isolates tested against ceftazidime declined over this time period.

Table 3. Number of *A. baumannii* isolates tested against, and per cent non-susceptible (NS) to, selected antibiotics. England, Wales and Northern Ireland, 2009-2013.

	2009		2010		2011		2012		2013	
Antibiotic	No. tested	% NS	No. tested	% NS	No. tested	% NS	No. tested	% NS	No. tested	% NS
Gentamicin	191	19	183	25	143	25	120	10	137	13
Amikacin	108	28	95	24	72	28	55	16	63	16
Tobramycin	57	18	74	22	54	28	44	11	54	13
Ciprofloxacin	177	27	154	22	130	35	112	21	130	19
Imipenem or meropenem	210	21	165	24	140	30	120	11	143	13
Ceftazidime	155	74	134	75	102	74	89	63	102	53
Total	219		212		174		145		153	

Non-susceptibility to selected antibiotics among *A. lwoffii* isolates is shown in table 4. Non-susceptibility to most antibiotics is low (<10%) in comparison to non-susceptibility among *A. baumannii*. Non-susceptibility to ceftazidime fluctuated between 2009 and 2013, with 15% of isolates non-susceptible to ceftazidime in 2013.

Table 1. Number of *A. lwoffii* isolates tested against, and per cent non-susceptibility (ns) to, selected antibiotics. England, Wales and Northern Ireland, 2009-2013

	2009		2010		2011		2012		2013	
Antibiotic	No. tested	% NS	No. tested	% NS	No. tested	% NS	No. tested	% NS	No. tested	% NS
Gentamicin	189	2	185	2	178	2	204	0	229	1
Amikacin	95	1	95	1	68	0	93	0	123	0
Tobramycin	34	6	41	7	38	0	31	0	36	0
Ciprofloxacin	165	2	172	4	154	3	186	2	205	3
Imipenem or meropenem	163	1	178	1	148	3	172	2	218	1
Ceftazidime	134	17	140	14	114	22	123	15	121	15
Total	228		225		217		258		284	

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Common animal associated infections quarterly report (England and Wales) – third quarter 2014

This quarterly report, produced by the Emerging Infections and Zoonoses Section at Public Health England Centre for Infectious Disease Surveillance and Control, and the Health Protection Division of Public Health Wales, summarises confirmed cases of zoonoses reported in England and Wales between July and September 2014 (third quarter; weeks 27-39).

Animal associated infections in England and Wales: laboratory reports to LabBase (unless otherwise specified) by specimen date, Q3 (weeks 27-39/14)

Disease (Organism)	Reports for weeks 01-13		Reports for weeks 14-26		Reports for weeks 27-39	
	2014*	2013	2014*	2013	2014*	2013
Anthrax (*Bacillus anthracis*)	–	1	–	–	–	–
Brucellosis** *(Brucella spp.)*	2	1	2	6	4	5
Hepatitis E**	218	147	243	155	221	173
Hydatid** (*Echinococcus granulosus*)	6	3	1	3	–	3
Leptospirosis** *(Leptospira spp.)*	5	14	6	5	26	18
Lyme borreliosis** # (*Borrelia burgdorferi*)	136	106	188	201	323	287
Pasteurellosis *(Pasteurella spp.)*	105	136	164	168	181	149
Psittacosis (*Chlamydophila psittaci)*	4	7	10	5	6	7
Q-fever *(Coxiella burnetii)*	11	8	14	11	14	11
Toxoplasmosis**# *(Toxoplasma gondii)*	88	70	96	86	101	71

* Provisional data
** Enhanced surveillance system
# Based on date specimen received

Anthrax

There were no cases reported in the third quarter of 2014.

Brucellosis (data from the Brucella Reference Laboratories)

There were four reports of brucellosis reported during the third quarter of 2014, compared with five during the third quarter of 2013. Of the four cases, three were male and one female (age range 27 – 63 years) all confirmed as *Brucella melitensis*, with typing confirmed by APHA Weybridge. No clinical or epidemiological details are available; all are understood to be from countries where brucellosis is endemic.

Hepatitis E (data from Public Health Laboratory Birmingham, and Blood Borne Virus Unit Colindale)

There were 221 cases of Hepatitis E in the third quarter of 2014 compared to 173 in the same quarter of 2013. This is consistent with the on-going increase in cases observed since 2010[1].

One hundred and forty-five cases (65%) were male (aged 15-89 years, median 57) and 76 (35%) were female (aged 24-90 years, median 59). Older men predominate and this is a persisting observation, although the excess remains unexplained. Cases were reported from all regions. The majority of cases (85%, n=189) had no apparent travel history.

Laboratory confirmed cases of Hepatitis E infection (week 27-39, 2014)

Age Group	Male	Female	Unknown	Total
0-14	–	–	–	–
15-24	7	1	–	8
25-44	22	18	–	40
45-64	67	26	–	93
>64	49	31	–	80
Total	**145**	**76**	–	**221**

Hydatid disease (data from the Parasitology Reference Laboratory)

No reports of hydatid disease were received during the third quarter of 2014, compared with three cases during the third quarter of 2013.

Leptospirosis (data from the Leptospira Reference Unit)

Twenty-six cases of leptospirosis were confirmed in England and Wales residents during the third quarter of 2014 compared with 18 during the third quarter of 2013. Of these, seventeen infections were acquired in the UK and nine were acquired overseas.

Of the autochtonous cases, four were confirmed with *L.* Icterohaemorrhagiae and for the remainder (n=13) the infecting sero-group was not determined. Fifteen infections were identified in males and two in females. Ages of the cases ranged from 16 to 79 years (median= 51 years).

Occupational exposures were reported in a veterinary surgeon, a builder, a gardener and an estate worker. Recreational exposures occurred in two people who swam in the river Thames, one who swam in the river Lune and two triathlon swimmers, one of whom swam in a police triathlon at Chatsworth and one person who had cleaned out a pond. For the remainder (n=7), exposure details were not recorded.

Overseas acquired infections were reported in nine males aged 19 to 58 years (median=31 years) of whom six were in South East Asia including Thailand where exposures included wading in rivers, one in

Sri Lanka, one in Nigeria and one individual who had been fishing in France. For one case the infecting serovar was identified as *L.* Icterohaemorrhagiae, for the remainder, the serovar was not determined. Confirmations by PCR (undertaken by both the Leptospira Reference Unit [LRU] and the Rare and Imported Pathogens laboratory [RIPL], Porton) remain a developmental test with limited technical validation. Clinicians are asked to submit a second specimen from the patient to the LRU, together with exposure and clinical histories as this increases the likelihood that the infecting serovar can be determined.

Lyme disease (data from the Rare and Imported Pathogens Laboratory, Porton)

Note: Specimens sent for Lyme borreliosis referral testing should be accompanied by a completed referral form: https://www.gov.uk/lyme-borreliosis-service

Three hundred and twenty-three serologically confirmed cases of Lyme borreliosis were reported during the third quarter of 2014 compared with 287 in the same quarter 2013. A total of six hundred and forty seven serologically confirmed cases were reported between January and the end of September 2014 (136 in Q1, 188 in Q2, 323 in Q3).

The 323 cases comprised 196 males and 127 females. Ages of cases ranged from 1 to 90 years (median = 61). Sera from cases were submitted from regions throughout England and Wales. The majority of cases were reported from the South of England (n=192).

Cases were reported with specimen dates in each month (July n=78, August n=117, September n=128), onset dates are seldom reported.

Thirty three (10%) cases reported overseas travel, primarily to Northern European countries (Czech Republic n=2, Sweden n=5, Germany, n=5, Poland n=7, Estonia n=1, Norway n=1, France n=5, Spain n=2) and to the USA (n=5); three cases reported exposure in Scotland.

Clinical presentations were available for 149 (46%) cases: 131 (41%) tick bite, 79 (24%) erythema migrans, 11 (3.4%) facial palsy; other presentations included influenza-like illness, fatigue, myalgia and arthralgia; many cases reporting multiple symptoms.

Laboratory confirmed cases of Lyme borreliosis (week 27-39, 2014)

Age group	Male	Female
0-14	21	6
15-24	13	4
25-34	27	21
35-44	34	20
45-54	32	20
55-64	34	26
65-74	26	20
75+	7	10
Unknown	2	–
Total	**196**	**127**

Pasteurellosis

One hundred and eighty-one cases of pasteurellosis were reported in the third quarter of 2014, compared with 149 in the same quarter of 2013: *Pasteurella multocida* (143 cases, 79%), *Pasteurella pneumotropica* (6 cases, 3%), *Pasteurella* other named (10 cases, 6%) and *Pasteurella* sp. (22 cases, 12%). One of the cases had a duel infection with *Pasteurella multocida* and *Pasteurella* sp.

Seventy-three of the cases were male (2-89 years, median 54 years) and 108 were female (0-97 years, median 64). The South of England reported the most cases (62) and Wales reported the fewest (7). Of the 28 cases giving an animal exposure, 15 had cat bites and two had been scratched by cats, and 11 reported dog bites.

Laboratory confirmed cases of pasteurellosis (week 27-39, 2014)

Age group	Male	Female
0-14	3	4
15-29	8	8
30-39	12	5
40-49	7	11
50-59	15	16
60-69	14	25
70-79	6	25
80+	8	14
Unknown	-	-
Total	**73**	**108**

Psittacosis

Six cases of psittacosis were diagnosed in the third quarter of 2014, compared with seven during the third quarter of 2013. Two cases were male (aged 55 and 62) and four were female (aged 48 to 65, median 53). All of the cases were from the South of England.

Note: Serological tests for respiratory chlamydophila infections cannot consistently distinguish psittacosis. The cases reported above have been identified by reporting laboratories as infection with *Chlamydia psittaci*.

Q fever (data from the Rare and Imported Pathogens Laboratory, Porton, and Bristol Reference Laboratory)

There were 14 cases of Q fever reported in the third quarter of 2014, compared with 11 in the third quarter of 2013. Seven cases were male (aged 27-73 years, median 41) and seven were female (aged 31-76, median 53). Six cases were reported by the South of England, five by the North of England, two by London and one each by Midlands and the East of England.

Toxoplasma (Data from the Toxoplasma Reference Unit)

There were 101 laboratory-confirmed cases of *Toxoplasma* infection in the third quarter of 2014, compared with 71 cases in the third quarter of 2013. Five cases reported ocular symptoms. Ten cases occurred in pregnant women and there were four confirmed congenital cases, of which two were twins (one died). The four confirmed congenital cases formed mother-child pairs with three of the pregnant cases.

Laboratory confirmed cases of toxoplasma infection (week 27-39, 2014)

Age group	Male	Female	Unknown	Total
Foetus	–	–	2	2
0	1	–	1	2
1-9	–	1	–	1
10-14	–	1	–	1
15-24	7	3	1	11
25-44	15	40	2	57
45-64	12	7	1	20
>64	3	2	1	6
Unknown	–	–	1	1
Total	**38**	**54**	**9**	**101**

Age group	Con-genital	Pregnant	HIV	Organ donor	Organ recipient	Other (Immuno-competent)	Other (Immuno-suppressed)	Unknown*	Total
Foetus	2	–	–	–	–	–	–	–	2
0	2	–	–	–	–	–	–	–	2
1-9	–	–	–	–	–	1	–	–	1
10-14	–	–	–	–	–	1	–	–	1
15-24	–	–	–	–	–	10	–	1	11
25-44	–	10	4	–	1	41	1	–	57
45-64	–	–	2	–	1	15	2	–	20
>64	–	–	–	–	2	3	1	–	6
Unknown	–	–	–	–	–	1	–	–	1
Total	**4**	**10**	**6**	–	**4**	**72**	**4**	**1**	**101**

* No clinical details or information given.

Other zoonotic organisms

Other zoonotic infections of interest diagnosed in the third quarter of 2014 were as follows:

- Ten cases of *Capnocytophaga sp.* infection; four in females (aged 38 to 78 years, median 78) and six in males (aged 9 to 72 years, median 62). Five were reported from the South of England, four from the Midlands and East of England, and one from Wales. All the infections were bacteraemias.
- Three cases of *Mycobacterium marinum,* one in a female aged 63 and two in males aged 52 and 72 years. All had tissue infections.

Reference

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