Public Health England

Health Protection Report
weekly report

This is a PDF consolidation of the news items and infection reports published in HPR numbers 10 and 11, on 20 and 27 March 2015, respectively

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- **Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during October to December 2014**

* Published in *HPR* **9**(10) on 20/3/2015.

** Note (30/3/2015). The EVD summary published on 20/3/2015, in HPR **9**(10), has been omitted from this PDF version. For the most recent, full weekly epidemiological report on the EVD outbreak in West Africa, see PHE's *Ebola virus disease: epidemiological update* webpages.

*** Published in *HPR* **9**(11) on 27/3/2015.

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Chikungunya annual report 2014 (England, Wales and Northern Ireland)

In 2014, 295 cases of chikungunya were reported in England, Wales and Northern Ireland (EWNI), a 12-fold increase compared to 2013 (24 cases), according to the latest annual data published by PHE's Travel and Migrant Health section [1,2].

Chikungunya is a travel-associated infection and does not occur in the UK. The majority of EWNI cases (88%) were acquired on trips to the Caribbean and South America, where a large outbreak, which started in December 2013 in the French Caribbean territory of St Martin [3], has now affected most of the countries and territories in the Caribbean and the Americas. Travellers to these destinations are advised to seek pre-travel advice from their GP, a specialist travel clinic or a pharmacy at least six to eight weeks before they travel [4].

The disease is spread by day-biting *Aedes* spp. mosquitoes and is most often found in parts of Asia and Africa; in recent years, however, new areas of the world have become affected, including the Caribbean, parts of America and some islands in the Pacific. It is one of a number of vector-borne, tropical diseases – including dengue fever and malaria – for which sporadic outbreaks and clusters have occurred in Europe in recent years and for which the disease risk could be affected by climate change in future [5].

References

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2. "Travellers to the Caribbean warned about chikungunya", PHE press release, 20 March 2015.

3. "Chikungunya in the Caribbean" *HPR* January 2014.

4. NaTHNaC (February 2015). "Chikungunya virus: Caribbean and the Americas – update 12".

5. Medlock JM, Leach SA (2015). "Effect of climate change on vector-borne disease risk in the UK", Lancet Infectious Diseases (online, March 23).

Quarterly trends in mandatory HCAI reports: data to end-December 2014

PHE's latest quarterly epidemiological commentary on trends in reports of *Staphylococcus aureus* (MRSA and MSSA), *Escherichia coli* bacteraemia and *Clostridium difficile* infections, mandatorily reported by NHS acute Trusts in England up to October-December 2014, has been published on the GOV.UK website [1].

The report, including tabular and graphical information, provides data for the October-December 2014 quarter (updating the previous report published on 11 December 2014). Some key facts are listed below.

MRSA bacteraemia

While the total number of MRSA bacteraemia has decreased in the current quarter (October-December 2014, n=213) compared to the same quarter in the previous year (October-December 2013, n=218), there has been a 17.0% increase – from 182 to 213 – since July-September 2014.

Furthermore, the number of Trust-assigned MRSA bacteraemia has decreased 27.1% from 107 in October-December 2013 to 78 in October-December 2014. However, in the same time period the number of CCG-assigned MRSA bacteraemia increased by 18.9% from 111 to 132.

MSSA bacteraemia

October-December 2014 saw the highest number of MSSA bacteraemia since the inception of the mandatory surveillance programme in January 2011 (n=2,571).

***E coli* bacteraemia**

The total number of *E. coli* bacteraemia has increased steadily since July 2011, when the mandatory surveillance programme was initiated, with seasonal peaks between July-September each year. The data for October-December 2014 shows a continuation of this trend, with the highest recorded counts of *E. coli* bacteraemia for October-December to date (n=8,820), which follows the seasonal peak seen in July-September 2014 (n=9,476).

***C.difficile* infection (CDI)**

Between July-September 2014 and October-December 2014 there was a 15.5% decrease in the counts of *C. difficile* infections from 3,970 to 3,353. However, even with this recent decline, October-December 2014 still had a greater number of *C. difficile* infections

reported than the same quarter in the previous year (October-December 2013: n=3,298), a phenomenon also observed for April-June 2014 (n=3,970) vs. April-June 2013 (n=3,671) and July-September 2014 (n=3,440) vs. July-September 2013 (n=3,386). This has resulted in the first calendar year since the inception of the CDI mandatory surveillance programme where there has not been a decline from the previous year (2014: n=13,679 vs. 2013: 13,767).

Reference

1. PHE (12 March 2015). Quarterly epidemiological commentary: mandatory MRSA, MSSA and *E. coli* bacteraemia, and *C. difficile* infection data (up to October-December 2014).

Infection Reports

Bacteraemia *

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

Immunisation **

- **Quarterly vaccination coverage statistics for children aged up to five years in the UK (COVER programme): October to December 2014**

- **Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during October to December 2014**

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Infection report

Volume 9 Number 10 Published on: 20 March 2015

Bacteraemia

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

These analyses are based on data extracted from the Public Health England (PHE) voluntary surveillance database, SGSS (Second Generation Surveillance System), on the 16th February 2015 for the five-year period 2010-2014. SGSS comprises a communicable disease module (CDR; formerly CoSurv/LabBase2) and an antimicrobial resistance module (AMR; formerly AmSurv). The data presented here may differ in some instances from data in earlier publications due to inclusion of late reports.

The majority of analyses presented are based on data from the CDR module of SGSS. The exceptions are the analyses of resistance to more than one antibiotic among *Acinetobacter baumannii*, which are based on data from the AMR module, which is more complete than in the CDR module.

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 Public Health England 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 *Acinetobacter* species.

Key points

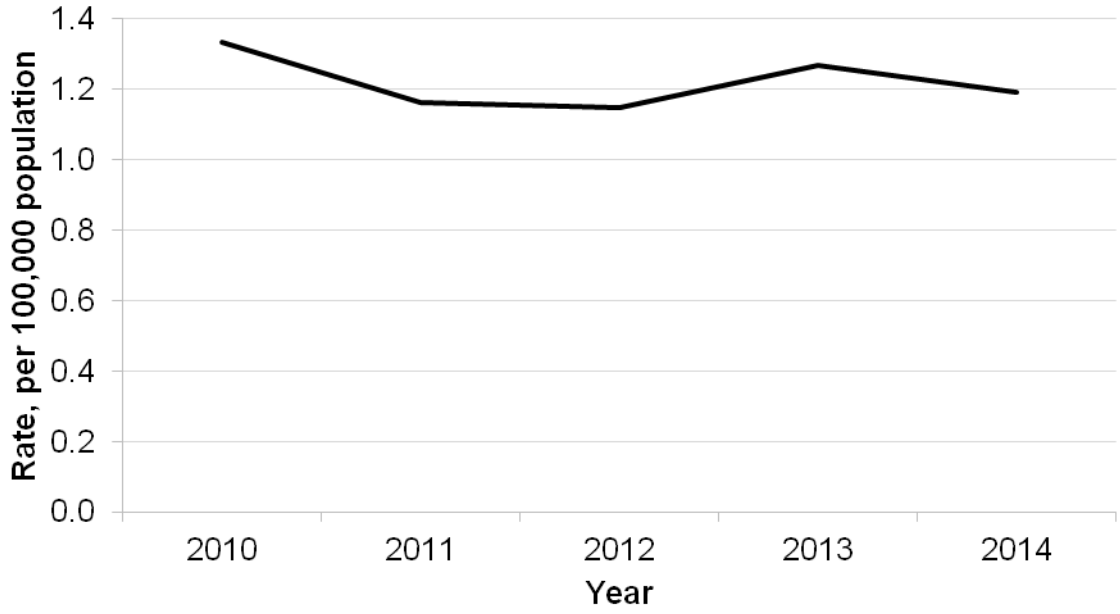
- The incidence rate of *Acinetobacter* spp. bacteraemia fell between 2010 and 2014, from 1.33 to 1.20 per 100,000 population, per year.
- *Acinetobacter lwoffii* was the most commonly identified species in bloodstream infection within the genus.
- The incidence of *Acinetobacter* spp. bacteraemia was highest among infants (<1 year old), and among older people (≥75 years) and was higher among males than females.
- The rate of *Acinetobacter* spp. bacteraemia was higher in England and Northern Ireland (1.2 per 100,000 population) than in Wales (0.5 per 100,000).
- Within England, the rate was highest in the London region and the Cumbria and Lancashire region (1.7 per 100,000) and lowest in the Wessex region (0.7 per 100,000).
- Among *Acinetobacter calcoaceticus/baumannii* isolates, resistance to ceftazidime or cefotaxime fell from 78% in 2010 to 59% in 2014.
- Among *A. lwoffii* isolates, antibiotic resistance was generally low except for ceftazidime or cefotaxime to which 16% of isolates were resistant.

Trends in episode numbers and rates

Between 2010 and 2014 the incidence rate of *Acinetobacter* spp. bacteraemia fell by 11% from 1.33 to 1.2 per 100,000 population (figure 1).

The total number of all-species bacteraemias reported to SGSS increased by 4.1% between 2009 and 2013 (101,484 to 105,686 reports) [3]. *Acinetobacter* spp. accounted for 0.6% of monomicrobial bloodstream infections in 2013 making it the 18th most commonly reported monomicrobial bloodstream infection-causing genus [3]. There were 700 reports of *Acinetobacter* spp. bacteraemia in 2014 (table 1).

Figure 1. *Acinetobacter* spp. bacteraemia rates per 100,000 population (England, Wales and Northern Ireland): 2010-2014



In 2014, 79% of *Acinetobacter* spp. isolates from blood were identified to species level (table 1). This is an increase on previous years where between 66% (in 2010) and 73% (2013) of isolates included species-level information, probably reflecting increasing deployment of MALDI-ToF for identification.

In 2011, the proportion of *Acinetobacter* spp. blood isolates identified as *Acinetobacter calcoaceticus/baumannii* fell below 25% for the first time [4]. This proportion has continued to decline with *A. calcoaceticus/baumanni* forming only 21% of blood isolates. In contrast, the proportion of isolates identified as *A. lwoffii* increased from 29% in 2010 to 38% in 2012 and remained stable thereafter.

Caution should be exercised when interpreting these results given that the changes seen in the *Acinetobacter* species distribution could in part be due to changes and improvements in species

identification techniques available to laboratories. There may also be changes in attitudes to reporting *A. lwoffii* isolates which can be skin contaminants but also have the capability to cause disease.

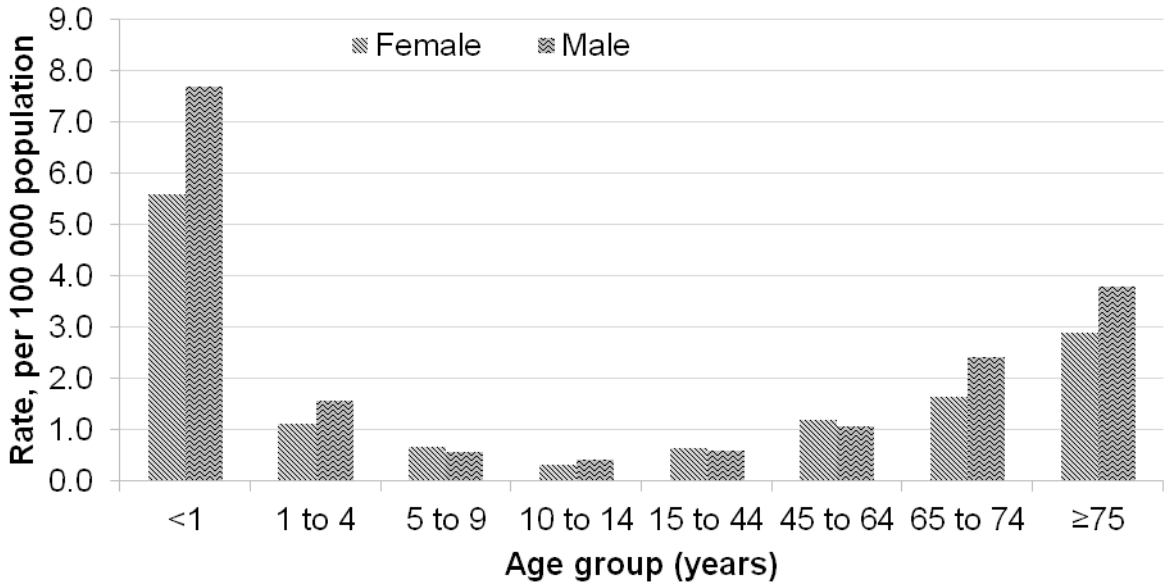
Table 1. Reports of *Acinetobacter* spp. bacteraemia by species (England, Wales and Northern Ireland): 2010-2014

	2010		2011		2012		2013		2014	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
A. baumannii	199	26	157	23	139	21	144	19	145	21
A. calcoaceticus (anitratus)	6	1	6	1	3	0	5	1	0	0
A. haemolyticus	21	3	20	3	9	1	15	2	20	3
A. johnsonii	1	0	1	0	2	0	6	1	13	2
A. junii	15	2	12	2	17	3	16	2	32	5
A. lwoffii	224	29	216	32	256	38	283	38	267	38
A. radioresistens	0	0	0	0	2	0	1	0	2	0
A. ursingii	0	0	0	0	0	0	0	0	3	0
Acinetobacter spp., other named	40	5	49	7	49	7	75	10	69	10
Acinetobacter spp., sp. not recorded	260	34	213	32	193	29	199	27	149	21
***Acinetobacter* spp.**	**766**	**100**	**674**	**100**	**670**	**100**	**744**	**100**	**700**	**100**

Age and sex distribution

Rates of *Acinetobacter* spp. bacteraemia reports were higher in males than females for most age groups. The highest rates were in infants under one year old for both males (7.7) and females (5.6), closely followed by infections in those 75 years old or greater (2.9 and 3.8 for females and males, respectively) (figure 2).

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



Geographic distribution

The overall rate of *Acinetobacter* spp. bacteraemia in England, Wales and Northern Ireland was 1.2 per 100,000 population in 2014. England and Northern Ireland had the highest reported incidence rates with 1.2 per 100,000. Wales had an incidence rate of 0.5 per 100,000.

Since 2010, the rate of *Acinetobacter* spp. bacteraemia reports per 100,000 population has decreased in England and Northern Ireland with the biggest reduction being seen in Northern Ireland (table 2)**.** The rate of *Acinetobacter* spp. bacteraemia has remained approximately stable over the five-year period.

There was wide variation in rates of reports within England in 2014 from 1.7 per 100,000 in the London region and Cumbria and Lancashire region to 0.7 per 100,000 in the Wessex region (figure 3).

Incidence rates of *Acinetobacter* spp. have been consistently high in Greater Manchester and London, but declining from 2010 for both regions. In contrast, rates have been consistently low in Thames Valley and Wales.

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

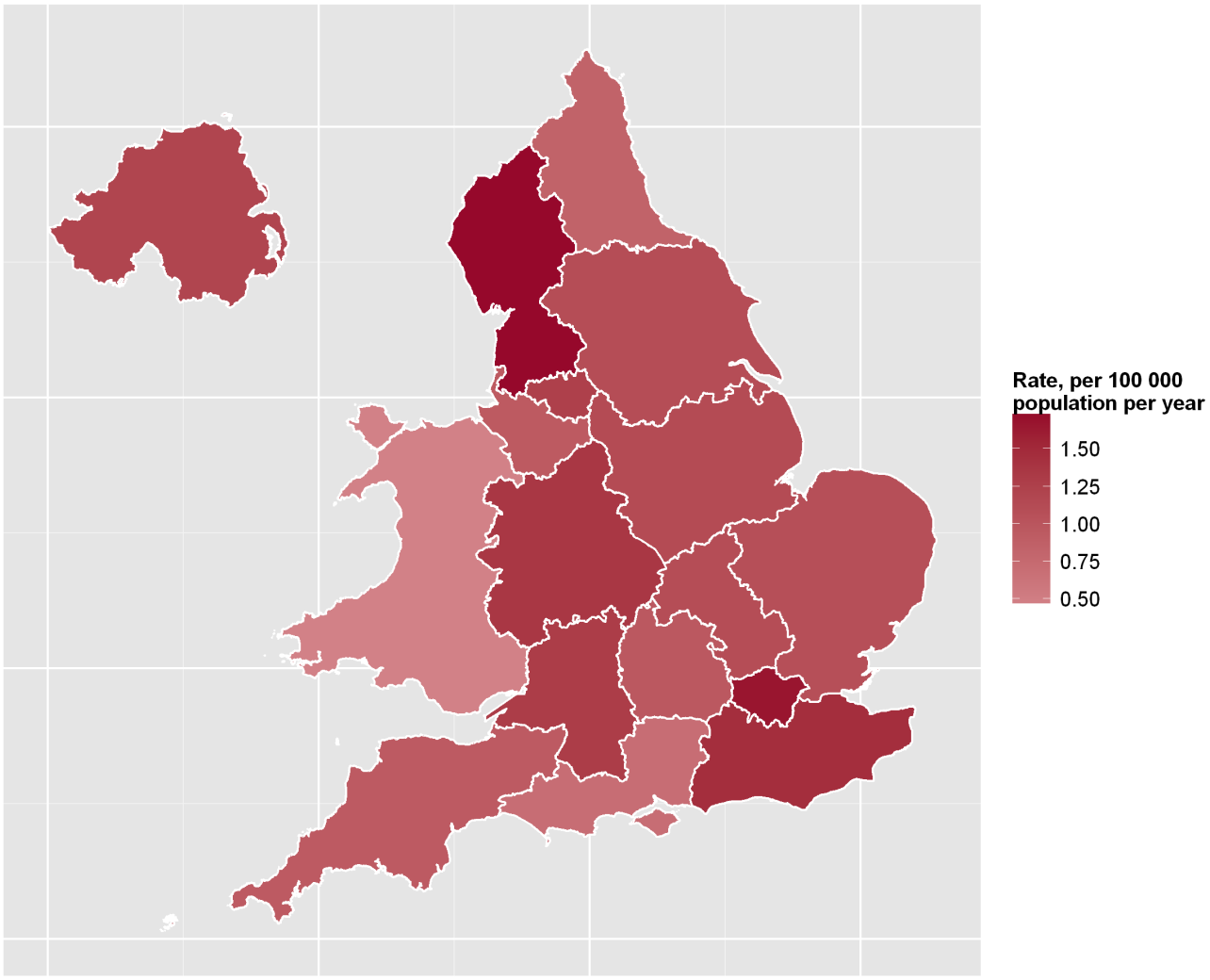


Table 2. Rate per 100,000 population *Acinetobacter* spp. bacteraemia reports by PHE Centre (England, Wales and Northern Ireland): 2010-2014

Region		Rate, per 100,000				
		2010	2011	2012	2013	2014
North of England	Cheshire and Merseyside	1.3	1.2	1.0	1.2	0.9
	Cumbria and Lancashire	0.7	0.9	0.8	1.4	1.7
	Greater Manchester	2.4	1.6	1.7	1.7	1.3
	North East	1.2	0.9	0.8	0.9	0.8
	Yorkshire and Humber	1.1	1.0	0.9	0.7	1.1
Midlands and East of England	Anglia and Essex	1.2	1.1	1.2	1.3	1.1
	East Midlands	1.2	1.1	0.9	1.4	1.1
	South Midlands and Hertfordshire	1.2	0.9	1.2	1.3	1.1
	West Midlands	1.0	1.2	1.2	1.3	1.4
London	London	2.1	1.9	1.9	1.8	1.7
South of England	Avon, Gloucestershire and Wiltshire	1.6	1.4	1.0	1.2	1.3
	Devon, Cornwall and Somerset	1.2	1.2	1.1	1.3	0.9
	Kent, Surrey and Sussex	1.5	1.0	1.4	1.5	1.5
	Thames Valley	0.6	0.7	0.8	0.4	1.0
	Wessex	1.0	0.8	0.8	1.0	0.7
England		1.4	1.2	1.2	1.3	1.2
Northern Ireland		1.8	1.5	1.4	1.7	1.2
Wales		0.4	0.3	0.2	0.6	0.5
England, Wales, Northern Ireland		1.3	1.2	1.1	1.3	1.2

Antimicrobial susceptibility data

The proportion of *Acinetobacter* spp. isolates with susceptibility test results reported has decreased or remained approximately the same for each of the listed antibiotics between 2010 and 2014. Despite the lack of EuCAST breakpoints for cephotaxime/ceftazidime, susceptibility data were none-the-less for almost 60% of *A. baumannii/calcoaceticus* in both 2010 and 2014 (table 3).

Resistance to ceftazidime/cefotaxime among *A. baumannii/calcoaceticus* fell from 78% in 2010 to 59% in 2014. Resistance to other antibiotics fluctuated without particular direction (meropenem/imipenem 10% in 2013 and 25% in 2011, ciprofloxacin 15% in 2013 and 31% in 2011; tobramycin 4% in 2013 and 18% in 2014; and gentamicin 11% in 2012 and 22% in 2011). Resistance to amikacin remained stable at 17% until 2014, when it rose to 21%.

Low absolute numbers of isolates may make the proportions resistant more sensitive to small changes and this may explain the variability of the proportions resistant over time.

Table 3. Antimicrobial susceptibility for *A. baumannii/ calcoaceticus* bacteraemia (England, Wales and Northern Ireland): 2010 to 2014

	2010		2011		2012		2013		2014	
	No. tested	% resistant	No. tested	% resistant	No. tested	% resistant	No. tested	% resistant	No. tested	% resistant
Meropenem/ imipenem	115	17	97	25	99	12	112	10	92	16
Ceftazidime/ cefotaxime	119	78	87	74	82	68	97	60	71	59
Ciprofloxacin	135	19	108	31	101	22	117	15	94	24
Tobramycin	62	11	41	15	38	13	46	4	34	18
Amikacin	82	17	82	17	82	17	82	17	47	21
Gentamicin	158	20	118	22	109	11	124	10	98	17
Total	205		163		142		149		145	

Resistance among *A. lwoffii* to most antibiotics failed to show any particular trends (table 4). Resistance to ceftazidime or cefotaxime was high, but fell a little from 21% in 2012 to 15-16% in 2013 and 2014. Reported resistance to other antibiotics was generally low (<10%).

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

	2010		2011		2012		2013		2014	
	No. tested	% resistant	No. tested	% resistant	No. tested	% resistant	No. tested	% resistant	No. tested	% resistant
Meropenem/imipenem	115	1	97	2	99	2	112	2	92	0
Ceftazidime/cefotaxime	119	19	87	23	82	21	97	15	71	16
Ciprofloxacin	135	4	108	3	101	2	117	2	94	3
Tobramycin	62	8	41	0	38	0	46	0	34	8
Amikacin	82	1	82	1	82	1	82	1	47	0
Gentamicin	158	2	118	1	109	0	124	0	98	2
Total	205		163		142		149		145	

Analyses on resistance to more than one antimicrobial were based on data extracted from the AMR module of SGSS. Data in the AMR module is limited to isolates from England, whereas data in the CDR module receives data from England, Wales and Northern Ireland.

A total of 110 *A. baumannii/calcoaceticus* isolates were extracted from the AMR module of SGSS. Resistance to more than one of the listed antimicrobial combinations varied between 14% of tested *A. baumannii* isolates (gentamicin and imipenem/meropenem, table 5) to 34% of tested isolates (cefotaxime/ceftazidime and ciprofloxacin).

A total of 72 *A. baumannii/calcoaceticus* bacteraemia isolates were tested against all of ciprofloxacin, gentamicin, imipenem or meropenem, and cefotaxime or ceftazidime. Of these, 17% were resistant to all of the antibiotics.

Table 5. Pair-wise comparisons of antimicrobial resistances among *A. baumannii/calcoaceticus isolates causing bacteraemia. England, 2014**.

	Ciprofloxacin		Imipenem/ meropenem		Cefotaxime/ ceftazidime		Gentamicin	
	Tested	% resistant	Tested	% resistant	Tested	% resistant	Tested	% resistant
Ciprofloxacin								
Imipenem/ meropenem	104	17						
Cefotaxime/ ceftazidime	76	34	76	17				
Gentamicin	105	28	104	14	76	26		

* Susceptibility data was only reported for *A. baumannii* in 2014, in the AMR module. No isolates of *A. calcoaceticus* were reported in 2014.

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Bacteraemia

Quarterly vaccination coverage statistics for children aged up to five years in the UK (COVER programme): October to December 2014

Commentary on the third quarterly report (October to December 2014) for 2014/15

One year old children evaluated in the current quarter (born October to December 2013), are the second cohort to have been routinely offered rotavirus vaccine at two and three months, and the third quarterly cohort offered only one primary MenC dose at three months of age [1].

In Scotland, Northern Ireland and Wales the programmes extracting COVER data from Child Health Information Systems (CHISs) have been modified to reflect these changes. Data presented in this report shows that coverage of one dose of MenC is higher than the other vaccines evaluated at one year in those countries (98.2% in Scotland, 98.6% in Northern Ireland, and 96.2% in Wales). Coverage of two doses of rotavirus vaccine evaluated at one year is also high – in Scotland rotavirus coverage is 93.7%, in Northern Ireland 94.9%, and in Wales 90.2% (table 1a).

In England a new *Information Standards Notice* (ISN) for the COVER programme was approved by the Standardisation Committee for Care Information (SCCI) in September and published in November 2014 [2]. Some CHIS IT suppliers are still making the necessary changes to their systems in order to become compliant with the ISN and currently only eight Area Teams (ATs) are able to supply one dose MenC vaccine coverage data for their area, although in all of these areas coverage was similar to or exceeded that of other vaccines evaluated at one year. As a consequence we are not able to produce MenC vaccine coverage at one year for England or the UK (table 1a). This is a technical rather than a delivery issue which should resolve once all CHIS IT suppliers comply with the ISN, by the end of September 2015 at the latest.

English ATs were also unable to produce rotavirus vaccine coverage data for all former PCTs in their area from CHIS due to the delayed ISN implementation. However, PHE introduced a temporary sentinel collection via ImmForm to extract monthly coverage data directly from GP practices in England for children who had just reached the upper age for receiving the vaccine (25 weeks) in order to rapidly assess rotavirus vaccine coverage [3]. This early evaluation of vaccine coverage has provided assurance that the vaccine has been well accepted in England. Monthly coverage estimates at the national and AT levels have been published [4]. Those children born between October and December 2013, ie the cohort evaluated this quarter at 12 months, were assessed at aged 25 weeks in April to June 2014, and two-dose rotavirus coverage was estimated at 88% nationally during these months [4]. This sentinel GP data collection will remain in place until routine COVER rotavirus data from CHIS are available for all areas. UK coverage for the other antigens evaluated at 12 months (DTaP/IPV/Hib and PCV) both increased compared to the previous quarter to 94.5% and 94.4% respectively (table 1a).

UK coverage of all antigens evaluated at two years decreased marginally, between 0.1% and 0.4% this quarter when compared to the previous quarter [5]. Primary DTaP/IPV/Hib3 coverage is now 96.0% (down 0.1%), PCV booster is 92.4% (down 0.3%), and MMR and Hib/MenC booster are 92.3% (down 0.3% and 0.4% respectively). These decreases were also observed at country level (table 2a). Scotland and Northern Ireland achieved at least 95% coverage for MMR, PCV booster and Hib/MenC booster, as did two of the 25 ATs in England.

At five years coverage was at least 95% for the primary course of DTaP/IPV/Hib in all countries and all but two English ATs (Surrey and Sussex, and London) (tables 3a). UK coverage of MMR1 at five years reached 95% for the first time with all countries and all English ATs except Surrey and Sussex achieved at least 90%. Scotland, Northern Ireland, Wales and 20 English ATs achieved at least 95% coverage for MMR1 and 18 achieved at least 90% for MMR2 at five years (table 3a).

COVER data in England from April 2013

From April 2013, the responsibility for commissioning and coordinating immunisation programmes transferred to NHS England [6]. Population vaccination coverage is a key indicator included in the Public Health Outcomes Framework (PHOF) (Indicator 3.3) [7] with reporting expected for the Local Authority (LA) resident population.

COVER reports present data by English Area Teams (AT) (tables 1a-4a) while former Strategic Health Authority tabulations are provided for historical comparisons (tables 1b-4b).

From April 2014 England COVER data became Official Statistics and is subject to the code of practice associated with such data [8].

COVER Information Standards Notice and COVER user guide

A new *Information Standards Notice* (ISN) for the COVER programme was approved by the Standardisation Committee for Care Information (SCCI) in September and published by the Health and Social Care Information Centre (HSCIC) in November 2014 [2]. PHE published a new COVER User Guide, aimed at all those submitting COVER data, to support the implementation of the ISN. All these documents can be found here: https://www.gov.uk/government/publications/cover-of-vaccination-evaluated-rapidly-cover-programme-information-standards.

The ISN provides detailed instruction for Child Health Information System (CHIS) IT suppliers and all data providers on the:

- geographies required for data output (new LA resident output, continuation of PCT responsible population output for trend). This will bring COVER in line with expectations of reporting of population vaccination coverage for the PHOF [7].
- changes to the routine childhood immunisation schedule (primary MenC reduced from two to one dose, the introduction of Rotavirus immunisation at two and three months). The final sentence in the description section of the ISN states, '*…the implementation completion date of 01/10/15 is the full conformance date. Care providers and suppliers should aim on a best endeavours basis to achieve earlier implementation, in particular in respect of rotavirus and Meningitis C, to enable the commencement of national surveillance*.'
- inclusion of neonatal BCG coverage to be evaluated at 12 months for those areas offering a universal programme
- inclusion of a field for MenB vaccine reporting – this will only become active should the vaccine be procured at a cost-effective price and a national programme implemented
- need to refine the definition of completed doses for age-dependent vaccines in the COVER request parameters to ensure information on children who were immunised outside the UK is captured accurately.

The HSCIC alerted IT system suppliers of the publication of the new COVER ISN in November 2014. The PHE national COVER team has raised awareness of the new ISN via PHE's *Vaccine Update*, DH's *Children, Families and Maternity e-bulletin* and the NHS England Area Team Bulletin. COVER data providers and NHS England Screening and Immunisation Teams have been contacted directly to keep them informed with developments. Area Teams have been asked to contact local CHIS suppliers and other stakeholders to alert them to the new ISN and engage with them to ensure compliance is achieved for all aspects.

New 'Output and information requirements specification: for the Child Health information service and systems' published

This document, published this week, is an update of the Information Requirements Specification (IRS) and the Output Based Specification (OBS) for Child Health Information Systems that was published as two documents in 2012 by the Department of Health (DH). It sets out the detailed information requirements for child health services and the technical output based specification for Child Health Information Systems to support the future health and care system for children in England announced in the Health and Social Care Bill 2012.

The document was developed through collaboration between PHE, NHS England, the DH and the Health and Social Care Information Centre and is informed by clinical practice and technical expertise. (https://www.gov.uk/government/publications/child-health-information-systems-information-requirements-and-output-specifications

It aims to:

- support the delivery of child health services across multiple commissioners and providers
- support the delivery of child health services as part of the transition of children's public health to Local Authorities
- deliver consistency in functionality of these important information systems in order to promote better, safer and more effective care for children

It incorporates policy, standards and guidelines for child health programmes in England, such as immunisation, screening and the Healthy Child Programme.

It should be of interest to those involved in the commissioning or delivery of child health services, child health information services and child health information systems and to those who rely on such systems to deliver effective services to children. It should also be of interest to the suppliers of such IT systems.

It can be used as a checklist for either procurement or development of child health services and systems and includes data that drives the statutory requirements for delivery of child health services.

The document contains high level technical requirements for information systems to be procured to underpin the delivery of child health services in England.

Results for October to December 2014

This report presents quarterly coverage data for children in the UK who reached their first, second, or fifth birthday during the evaluation quarter (October to December 2014). Those reaching one year of age in the quarter are the second quarterly cohort to be offered rotavirus vaccine routinely at two and three months of age.

Children who reached their first birthday in the quarter (born October to December 2013) were scheduled for three doses of diphtheria, tetanus, acellular pertussis, polio, and *Haemophilus influenzae* type b vaccine (DTaP/IPV/Hib vaccine), two doses of pneumococcal conjugate vaccine (PCV), one dose of meningococcal serogroup C conjugate vaccine (MenC vaccine) at three months of age and two doses of rotavirus vaccine at two and three months of age [1].

Children who reached their second birthday in the quarter (born October to December 2012) were scheduled to receive their third DTaP/IPV/Hib, second MenC and PCV vaccinations between February and April 2013, and their first measles, mumps, and rubella (MMR) vaccination, a booster dose of Hib and MenC vaccine (given as a combined Hib/MenC vaccine) and PCV vaccine at the same visit at 12 months of age, between November 2013 and January 2014 [9].

Children who reached their fifth birthday in the quarter (born October to December 2009) were scheduled to receive their third dose DTaP/IPV/Hib and second MenC and PCV vaccinations between February and April 2011. They were also scheduled to receive their first MMR between November 2010 and January 2011 and their pre-school diphtheria, tetanus, acellular pertussis, inactivated polio booster and second dose MMR from January 2013. Children born between October to December 2009 were scheduled to receive Hib/MenC booster vaccine at 12 months and PCV booster vaccine at 13 months.

Participation and data quality

Data were received from all Health Boards (HBs) in Scotland, Northern Ireland and Wales. In England, ATs and Child Health Record Departments (CHRDs) submitted data for all former PCTs. Six former PCTs reported data quality issues this quarter which were related to changes in information flows or incomplete data for unregistered children.

Across England there are some challenges with maintaining data flows for the PCT level collection as these organisations formally ceased to exist on 1 April 2013. Some CHISs have moved to extracting data at the Clinical Commission Group (CCG) level and we have aggregated these returns to produce a PCT report, based on postcode. Many CHISs are still not able to provide accurate LA resident population coverage data, however, where LAs are coterminous with a former PCT boundary, coverage data for the PCT responsible population will approximate to the LA responsible population. Twenty of the 41 LAs that are not coterminous with PCT boundaries are currently not able to provide LA responsible population data.

Children evaluated in the current quarter (born October to December 2013), are the second cohort to have been routinely offered two doses of rotavirus vaccine at two and three months of age, and the third to be exclusively offered one dose of MenC at three months of age. In Scotland, Wales and Northern Ireland the programmes extracting COVER data from Child Health Information Systems (CHISs) have already been modified to reflect these changes and coverage is presented in table 1a.

In England, some CHIS IT suppliers required the publication of the ISN to make the appropriate changes to their COVER data extraction report. As a consequence only eight ATs are currently able to supply one dose MenC vaccine coverage data for most former PCTs in their area and so MenC vaccine coverage at one year is not published for England or the UK (table 1a). This is a technical rather than a delivery issue and, as evidenced by the areas that have made the change, MenC coverage is expected to be similar to DTaP/IPV/Hib3 and PCV2 coverage at one year (table 1a).

No AT is able to produce rotavirus vaccine coverage data for all former PCTs in their area from CHIS. However, in order to rapidly assess rotavirus vaccine coverage PHE, introduced a temporary sentinel collection via ImmForm to extract monthly coverage data directly from GP practices in England for

children who had just reached the upper age for receiving the vaccine (25 weeks) [3]. This early evaluation of vaccine coverage has provided assurance that the vaccine has been well accepted in England. This collection will remain in place until routine COVER rotavirus data are available for all areas.

Coverage at 12 months

UK coverage at 12 months for DTaP/IPV/Hib3 increased 0.2% to 94.5% and PCV2 increased 0.4% to 94.4%) (table 1a) when compared to the previous quarter [5]. Country-specific minimum coverage levels achieved for DTaP/IPV/Hib3 and PCV2 evaluated at 12 months show that Scotland and Northern Ireland achieved at least 97% coverage, Wales at least 95%, and England at least 94%. Within England 17 out of 25 ATs achieved at least 95% coverage at 12 months (table 1a).

UK coverage of one dose of MenC at 12 months cannot be calculated this quarter (see commentary above), however, accurate data were provided by all HBs in Scotland, Wales, Northern Ireland and from eight English ATs (Q44, Q47, Q53, Q60, Q64, Q65, Q66 and Q69). At the country and English AT level (where data available) MenC coverage ranged from 95.9% in Thames Valley (Q69) to 98.1% in Shropshire and Staffordshire (Q60). Where available, MenC coverage at the national or AT level, always exceeded coverage of other vaccines evaluated at 12 months (table 1a).

Quarterly coverage of two doses of rotavirus vaccine, evaluated at 12 months, was available for the all the devolved administrations. Northern Ireland reported the highest coverage at 94.9%, Scotland achieved 93.7% and Wales achieved 90.2%. Although English data were not available through COVER, rotavirus coverage estimates have been published at the national and AT levels using data from the ImmForm GP practice-based sentinel collection. Monthly coverage data for children who had just reached the upper age for receiving the vaccine (25 weeks) was 88% for children born between February and September 2014 [4], and remained at this level for children born between October and December 2014 [4].

Table 1a. Completed primary immunisations at 12 months by country and English Area Team: October to December 2014 (*July to September 2014*)

Country and English Area Team (AT code)	Number of PCTs/HBs†	DTaP/IPV/Hib3 %	MenC%	PCV2%	Rota2%
United Kingdom	**176**	**94.5** *(94.3)*	**n/a** *(n/a)*	**94.4** *(94.0)*	**n/a** *(n/a)*
Wales	**7**	**95.1** (*94.6*)	**96.2** (*96.1)*	**95.0** (*94.0*)	**90.2** *(89.2)*
Northern Ireland	**4**	**97.9** (*97.6*)	**98.6** (*96.6)*	**97.8** (*97.6*)	**94.9** *(96.3)*
Scotland	**14**	**97.7** (*97.5*)	**98.2** (*98.0*)	**97.7** (*97.5*)	**93.7** *(92.3)*
England (Total)	**151**	**94.1** (*93.9*)	n/a (*n/a*)	**94.0** (*93.5*)	**See commentary**
English Area Teams					
Cheshire, Warrington and Wirral (Q44)	4	96.5 (*96.4*)	97.8 (*97.5*)	96.3 *(96.6*)	n/a
Durham, Darlington and Tees (Q45)	6	97.1 (*96.6*)	n/a (*n/a*)	97.0 (*96.1*)	n/a
Greater Manchester (Q46)	10	95.7 (*95.7*)	n/a (*n/a*)	95.3 (*95.4*)	n/a
Lancashire (Q47)	5	91.5 (89.7)	93.1 (*96.8*[1])	89.5 (*88.2*)	n/a
Merseyside (Q48)	4	94.9 (*93.1*)	n/a (*n/a*)	95.2 (*93.3*)	n/a
Cumbria, Northumberland, Tyne and Wear (Q49)	7	96.9 (*97.1*)	n/a (*n/a*)	96.7 (*96.9*)	n/a
N Yorkshire and Humber (Q50)	5	94.9 (*96.6*)	n/a (*n/a*)	95.1 (*96.7*)	n/a
S Yorkshire and Bassetlaw (Q51)	5	95.6 (*95.4*)	n/a (*n/a*)	95.4 (*95.3*)	n/a
W Yorkshire (Q52)	5	96.0 (*96.3*)	n/a (*n/a*)	95.8 (*96.1*)	n/a
Arden, Herefordshire and Worcestershire (Q53)	4	96.5 (*96.6*)	96.5 (*98.0*)	96.2 (*96.1*)	n/a
Birmingham and the Black Country (Q54)	8	93.1 (*93.1*)	n/a (*n/a*)	92.9 (*93.3*)	n/a
Derbyshire and Nottinghamshire (Q55)	4	95.4 (*95.3*)	n/a (*n/a*)	94.9 (*94.7*)	n/a
East Anglia (Q56)	5	95.8 (*95.0*)	n/a (*n/a*)	95.8 (*94.6*)	n/a
Essex (Q57)	5	96.0 (*95.8*)	n/a (*n/a*)	95.7 (*95.7*)	n/a
Hertfordshire and the S Midlands (Q58)	5	96.9 (*96.6*)	n/a (*n/a*)	96.8 (*96.5*)	n/a
Leicestershire and Lincolnshire (Q59)	3	96.1 (*96.4*)	n/a (*n/a*)	95.9 (*96.3*)	n/a
Shropshire and Staffordshire (Q60)	5	96.5 (*96.9*)	98.1 (*98.3*)	96.4 (*96.8*)	n/a
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	4	95.3 (*95.6*)	98.0 (*97.0*)	96.5 (*95.5*)	n/a
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	4	96.1 (*96.0*)	97.8 (*97.4*)	96.1 (*95.9*)	n/a
Devon, Cornwall, Isles of Scilly (Q66)	4	95.7 (*95.3*)	97.4 (*97.7*[2])	95.5 (*94.9*)	n/a
Kent and Medway (Q67)	3	89.5 (*90.7*)	n/a (*n/a*)	89.2 (*87.3)*	n/a
Surrey and Sussex (Q68)	5	89.7 (88.7)	n/a (*n/a*)	89.7 (*88.8)*	n/a
Thames Valley (Q69)	4	95.4 (*95.2*)	95.9 (*95.7*)	95.1 (*94.5*)	n/a
Wessex (Q70)	6	95.7 (*95.2*)	n/a (*96.1*[3])	95.8 (*95.1*)	n/a
London (Q71)	31	90.0 (*89.6*)	n/a (*n/a*)	90.3 (*89.1*)	n/a

† Primary Care Trusts/health boards.
n/a accurate estimate not available (see commentary above)
[1]based on coverage data from 4 of 5 PCTs
[2]based on coverage data from 3 of 4 PCTs
[3]based on coverage data from 5 of 6 PCTs

Table 1b. UK completed primary immunisations at 12 months by former Strategic Health Authority, England: October to December 2014 (*July to September 2014*)

Former English Strategic Health Authorities (SHAs)	PCT/HB†	DTaP/IPV /Hib3 %	MenC%	PCV2%
North East	12	97.0 (*97.0*)	n/a (*n/a*)	96.9 (*96.6*)
North West	24	94.9 (*94.2*)	n/a (*n/a*)	94.4 (*93.9*)
Yorkshire and Humber	14	95.6 (*96.1*)	n/a (*n/a*)	95.5 (*96.0*)
East Midlands	9	96.1 (*96.3*)	n/a (*n/a*)	95.8 (*95.9*)
West Midlands	17	94.8 (*94.9*)	n/a (*n/a*)	94.6 (*94.8*)
East of England	13	96.2 (*95.6*)	n/a (*n/a*)	96.0 (*95.4*)
London	31	90.0 (89.6)	n/a (*n/a*)	90.3 (*89.1*)
South Central	9	95.6 (*95.4*)	n/a (*n/a*)	95.5 (*95.0*)
SE Coast	8	89.6 (*89.6*)	n/a (*n/a*)	89.5 (*88.2*)
South West	14	96.0 (*95.6*)	n/a (*n/a*)	96.0 (*95.3*)

† Primary Care Trusts/health boards
n/a = accurate estimate not available (see commentary above)

Coverage at 24 months

UK coverage of DTaP/IPV/Hib3 at 24 months decreased by 0.1% to 96.0% compared to the previous quarter [5]. Kent and Medway (Q67), Surrey and Sussex (Q68) and London (Q71) are the only ATs with DTaP/IPV/Hib3 coverage below the 95% target at 94.1%, 92.7% and 91.9% respectively (table 2a).

Compared to the previous quarter, UK coverage for PCV booster decreased by 0.3% to 92.4%, Hib/MenC booster decreased by 0.4% to 92.3%, and MMR1 coverage at 24 months decreased by 0.3% to 92.3% (table 2a) [5]. Country-specific comparisons for minimum coverage levels achieved for these three vaccines evaluated at 24 months show that Scotland and Northern Ireland achieved at least 95% coverage, Wales at least 94% and England at least 92%. Within England two ATs achieved at least 95% for all three vaccines (table 2a).

Table 2a. Completed primary immunisations at 24 months by country and English Area Team: October to December 2014 (*July to September 2014*)

Country and English Area Team (AT code*)	PCT/HB†	DTaP/IPV/Hib3 %	PCV booster %	Hib/MenC %	MMR1 %
United Kingdom	**176**	**96.0** (*96.1*)	**92.4** (*92.7*)	**92.3** (*92.7*)	**92.3** (*92.6*)
Wales	**7**	**96.9** (*97.1*)	**94.6** (*94.9*)	**94.2** (*94.3*)	**94.6** (*95.2*)
Northern Ireland	**4**	**98.4** (*98.7*)	**95.9** (*96.6*)	**95.9** (*96.5*)	**95.5** (*96.4*)
Scotland	**14**	**98.2** (*98.3*)	**95.3** (*96.0*)	**95.5** (*96.0*)	**95.4** (*95.7*)
England (Total)	**151**	**95.6** (*95.8*)	**91.9** (*92.4*)	**91.8** (*92.1*)	**91.8** (*92.0*)
English Area Teams					
Q44	4	97.1 (*97.8*)	94.1 (*95.1*)	93.4 (*95.3*)	95.4 (*96.0*)
Q45	6	97.8 (*97.6*)	95.5 (*95.8*)	95.3 (*96.0*)	94.5 (*94.3*)
Q46	10	97.1 (*97.5*)	93.6 (*94.3*)	92.9 (*93.8*)	93.7 (*94.5*)
Q47	5	95.5 (*93.8*)	88.2 (*89.9*)	87.7 (*89.9*)	91.7 (*92.8*)
Q48	4	97.0 (*95.5*)	94.2 (*92.7*)	93.7 (*92.6*)	93.6 (*91.9*)
Q49	7	96.0 (*98.3*)	93.6 (*96.3*)	93.8 (*96.4*)	93.6 (*96.2*)
Q50	5	97.4 (*97.2*)	95.2 (*95.0*)	94.1 (*94.4*)	94.6 (*94.7*)
Q51	5	96.5 (*97.3*)	93.1 (*94.1*)	93.9 (*94.7*)	92.8 (*93.2*)
Q52	5	97.4 (*97.4*)	95.2 (*95.3*)	95.2 (*95.2*)	94.7 (*94.7*)
Q53	4	98.3 (*98.4*)	96.2 (*96.2*)	95.2 (*95.1*)	96.5 (*96.3*)
Q54	8	94.8 (*95.6*)	91.4 (*91.9*)	90.7 (*91.3*)	91.0 (*91.4*)
Q55	4	97.7 (*97.1*)	94.1 (*93.2*)	94.2 (*93.7*)	93.7 (*93.1*)
Q56	5	96.9 (*96.6*)	94.0 (*93.7*)	94.0 (*93.7*)	93.3 (*93.2*)
Q57	5	97.1 (*97.1*)	94.6 (*95.2*)	95.1 (*95.6*)	93.9 (*94.6*)
Q58	5	97.3 (*97.3*)	95.0 (*95.2*)	95.2 (*95.6*)	94.6 (*94.8*)
Q59	3	97.0 (*97.3*)	93.5 (*94.4*)	93.6 (*94.2*)	93.5 (*93.9*)
Q60	5	98.1 (*98.4*)	95.9 (*95.7*)	95.3 (*95.2*)	95.4 (*95.4*)
Q64	4	97.0 (*97.4*)	94.5 (*95.5*)	93.7 (*94.8*)	93.5 (*95.3*)
Q65	4	97.1 (*97.7*)	93.7 (*95.0*)	93.1 (*94.5*)	93.2 (*94.6*)
Q66	4	96.9 (*96.5*)	94.2 (*93.4*)	93.2 (*92.6*)	93.9 (*93.3*)
Q67	3	94.1 (*96.1*)	88.0 (*88.2*)	88.4 (*89.1*)	87.5 (*87.4*)
Q68	5	91.5 (*91.7*)	88.0 (*87.8*)	87.7 (*87.3*)	87.5 (*87.3*)
Q69	4	95.7 (*96.2*)	93.5 (*93.1*)	93.5 (*92.8*)	93.7 (*92.7*)
Q70	6	96.5 (*96.8*)	94.4 (*94.6*)	93.8 (*94.1*)	94.0 (*94.3*)
Q71	31	92.3 (*91.9*)	85.5 (*85.1*)	86.1 (*86.0*)	86.0 (*85.8*)

* See table 1a for key to Area Team organisational code
† Primary Care Trusts/health boards

Table 2b. Completed primary immunisations at 24 months by former Strategic Health Authority, England: October to December 2014 (*July to September 2014*)

Former English Strategic Health Authorities (SHAs)	PCT/HB†	DTaP/IPV /Hib3 %	PCV booster %	Hib/MenC %	MMR1 %
North East	12	98.0 (*98.0*)	95.5 (*96.0*)	95.5 (*96.2*)	94.9 (*95.2*)
North West	24	96.3 (*96.5*)	92.4 (*93.5*)	91.8 (*93.3*)	93.2 (*94.1*)
Yorkshire and Humber	14	97.1 (*97.3*)	94.7 (*94.9*)	94.6 (*94.8*)	94.2 (*94.3*)
East Midlands	9	97.5 (*97.4*)	94.2 (*94.4*)	94.2 (*95.5*)	94.0 (*94.0*)
West Midlands	17	96.5 (*97.0*)	93.7 (*94.0*)	93.0 (*93.2*)	93.5 (*93.7*)
East of England	13	97.1 (*96.9*)	94.4 (*94.4*)	94.8 (*94.8*)	93.8 (*93.9*)
London	31	92.3 (*91.9*)	85.5 (*85.1*)	86.1 (*86.0*)	86.0 (*85.8*)
South Central	9	96.0 (*96.4*)	93.7 (*93.9*)	93.4 (*93.4*)	93.8 (*93.7*)
SE Coast	8	92.5 (*93.5*)	88.0 (*88.0*)	88.0 (*88.0*)	87.5 (87.3)
South West	14	96.9 (*97.1*)	94.3 (*94.6*)	93.5 (*94.0*)	93.6 (*94.3*)

† Primary Care Trusts/health boards

Coverage at five years

UK coverage evaluated at five years increased by 0.2% for Hib/MenC booster, 0.1% for DTaP/IPV/Hib and MMR1 and decreased by 0.1% for MMR2 and DTaP/IPV booster compared to the previous quarter [5] and at least 95% coverage was achieved for the primary course of DTaP/IPV/Hib for all countries and all but two English ATs (Surrey and Sussex (Q68), and London (Q71)) (tables 3a).

UK coverage of MMR1 at five years reached 95% for the first time. All countries and all English ATs except for Surrey and Sussex (Q68) achieved at least 90%. Scotland, Northern Ireland, Wales and 20 English ATs achieved at least 95% coverage for MMR1 and 18 achieved at least 90% for MMR2 at five years (tables 3a).

All devolved administrations and all but six English ATs achieved at least 90% coverage of the DTaP/IPV booster.

Table 3a. UK completed primary immunisations and boosters at five years by country and English Area Team: October to December 2014 (*July to September 2014*)

ENGLAND Area Team (AT) code*	Number of PCTs in AT	Primary		Booster		
		DTaP/IPV Hib %	MMR1 %	MMR2 %	DTaP/ IPV %	Hib/ MenC
United Kingdom	**176**	**96.1** (*96.0*)	**95.0** (*94.9*)	**89.2** (*89.3*)	**89.3** (*89.4*)	**93.1** (*92.9*)
Wales	**7**	**97.1** (*96.4*)	**97.0** (*96.3*)	**93.0** (*92.6*)	**93.5** (*92.9*)	**94.1** (*93.2*)
N. Ireland	**4**	**97.6** (*97.7*)	**96.8** (*97.2*)	**93.2** (*92.9*)	**94.3** (*93.9*)	**96.0** (*96.2*)
Scotland	**14**	**98.1** (*98.4*)	**97.3** (*97.7*)	**93.8** (*93.9*)	**94.5** (*94.6*)	**96.4** (*96.4*)
England (Total)	**151**	**95.8** (*95.7*)	**94.6** (*94.5*)	**88.5** (*88.5*)	**88.4** (*88.6*)	**92.7** (*92.5*)
English Area Teams						
Q44	4	96.7 (*96.7*)	95.9 (*95.9*)	91.0 (91.3)	91.7 (*91.7*)	93.5 (*93.4*)
Q45	6	97.9 (*98.0*)	96.0 (*95.4*)	93.6 (*93.6*)	94.2 (*94.3*)	96.3 (*96.0*)
Q46	10	97.1 (*97.1*)	96.6 (*96.7*)	92.1 (*92.3*)	92.2 (*92.3*)	93.0 (*93.1*)
Q47	5	96.7 (*96.3*)	96.2 (*96.5*)	87.5 (*87.1*)	83.9 (*84.4*)	93.7 (*93.4*)
Q48	4	96.8 (*96.0*)	97.0 (*95.4*)	91.1 (*88.1*)	91.1 (*88.0*)	95.3 (*93.1*)
Q49	7	98.4 (*97.8*)	98.0 (*96.9*)	94.5 (*93.6*)	95.0 (*94.2*)	95.6 (*94.5*)
Q50	5	96.9 (*96.5*)	95.8 (*95.8*)	92.4 (*92.3*)	93.1 (*92.9*)	93.5 (*93.0*)
Q51	5	96.7 (*96.9*)	95.3 (*95.7*)	90.0 (*90.6*)	90.7 (*91.3*)	95.1 (*95.7*)
Q52	5	97.0 (*97.3*)	96.8 (*96.6*)	93.0 (*92.8*)	93.0 (*93.2*)	95.8 (*95.8*)
Q53	4	97.3 (*97.3*)	96.5 (*97.2*)	93.8 (*93.9*)	94.9 (*94.7*)	92.5 (*91.8*)
Q54	8	96.2 (*95.8*)	94.9 (*94.5*)	88.4 (*87.7*)	88.6 (*88.3*)	92.3 (*91.2*)
Q55	4	97.6 (*98.1*)	96.1 (*96.1*)	91.6 (*90.9*)	91.6 (*91.6*)	95.8 (*94.7*)
Q56	5	96.3 (*95.7*)	94.2 (*93.5*)	89.8 (*89.4*)	90.8 (*90.1*)	93.1 (*92.7*)
Q57	5	97.4 (*97.1*)	95.9 (*95.2*)	92.8 (*92.0*)	93.8 (*93.2*)	96.2 (*95.7*)
Q58	5	96.2 (*96.3*)	95.4 (*95.2*)	91.6 (*91.5*)	92.5 (*92.7*)	94.6 (*94.3*)
Q59	3	96.8 (*97.3*)	96.0 (*96.2*)	91.0 (*91.4*)	91.6 (*94.7*)	93.3 (*94.5*)
Q60	5	98.0 (*97.6*)	96.5 (*96.5*)	92.5 (*92.8*)	93.2 (*93.6*)	96.0 (*95.3*)
Q64	4	96.7 (*97.0*)	95.5 (*96.6*)	91.7 (*91.3*)	92.6 (*92.3*)	93.9 (*93.9*)
Q65	4	97.8 (*97.7*)	96.8 (*96.1*)	91.5 (*91.1*)	91.8 (*92.2*)	95.0 (*93.8*)
Q66	4	96.9 (*96.6*)	95.5 (*95.5*)	91.4 (*91.4*)	92.3 (*92.4*)	93.6 (*93.2*)
Q67	3	95.2 (*94.9*)	93.3 (*92.9*)	80.2 (*81.3*)	81.0 (*82.2*)	92.9 (*92.6*)
Q68	5	91.9 (91.9)	89.8 (*90.0*)	82.7 (*82.8*)	83.4 (*83.3*)	88.5 (*89.3*)
Q69	4	95.8 (*95.8*)	95.1 (*95.0*)	89.5 (*89.9*)	89.3 (*89.5*)	93.1 (*93.4*)
Q70	6	96.6 (*96.2*)	95.0 (*94.6*)	90.7 (*90.8*)	91.3 (*91.5*)	93.1 (*92.9*)
Q71	31	92.8 (*92.4*)	91.2 (*91.3*)	80.5 (*80.8*)	78.0 (*78.2*)	88.0 (*88.1*)

* See table 1a for key to Area Team organisational code.

3b. Completed primary immunisations and boosters at five years by former Strategic Health Authority, England: October to December 2014 (*July to September 2014*)

Former English SHAs	PCT/ HB †	Primary		Booster		
		DTaP/IPV /Hib3 %	MMR1%	MMR2 %	DTaP/ IPV %	Hib/ MenC
North East	12	98.1 (*98.0*)	97.0 (*96.7*)	93.9 (*93.5*)	94.4 (*94.2*)	95.9 (*95.6*)
North West	24	97.0 (*96.7*)	96.6 (*96.3*)	91.1 (*90.6*)	90.6 (*90.1*)	93.7 (*93.1*)
Yorkshire and Humber	14	96.9 (*97.0*)	96.1 (*96.2*)	92.2 (*92.2*)	92.5 (*92.8*)	95.0 (*95.0*)
East Midlands	9	97.2 (*97.6*)	96.1 (*96.1*)	91.3 (*91.4*)	92.1 (*93.3*)	94.6 (*94.7*)
West Midlands	17	96.9 (*96.7*)	95.7 (*95.7*)	90.9 (*90.7*)	91.4 (*91.4*)	93.3 (*92.4*)
East of England	13	96.5 (*96.3*)	95.1 (*94.5*)	91.1 (*90.7*)	92.0 (*91.6*)	94.6 (*94.0*)
London	31	92.8 (*92.4*)	91.2 (*91.3*)	80.5 (*80.8*)	78.0 (*78.2*)	88.0 (*88.1*)
South Central	9	95.8 (*95.7*)	94.9 (*94.7*)	89.9 (*90.0*)	90.1 (*90.2*)	92.6 (*92.9*)
SE Coast	8	93.2 (*93.1*)	91.2 (*91.1*)	81.7 (*82.2*)	82.5 (*82.9*)	90.3 (*90.6*)
South West	14	97.2 (*97.2*)	95.9 (*96.0*)	91.6 (*91.4*)	92.3 (*92.6*)	94.4 (*93.8*)

† Primary Care Trusts/health boards

Neonatal hepatitis B vaccine coverage in England: October to December 2014

Vaccine coverage data in England for three doses of hepatitis B vaccine, in infants born to hepatitis B surface antigen (HBsAg) positive mothers, who reached the age of one year in this quarter (i.e. those born between October and December 2013), and coverage of four doses of vaccine in infants who reached two years of age (i.e. those born between October and December 2012) are presented by Area Team in table 4a below. Table 4b shows coverage by SHA for historical comparison.

PHE received 12 month coverage and 24 month coverage returns for 138 (91%) former PCTs, the highest participation rate recorded for this collection. The quality of these data is still variable and should be interpreted with caution. Where a zero was reported a check was made to ensure that this was a true zero rather than due to no data being available. Eighteen of the 25 ATs were able to provide data for the whole patch (table 4a).

12 month coverage of three doses of Hep B in England decreased by 2% to 85% when compared to the last quarter [5], and coverage of four doses at 24 months decreased by 7% to 72%, returning to the level reported in the April to June 2014 report [10].

Table 4a. Neonatal hepatitis B coverage in England by English Area Team: October to December 2014 (*July to September 2014*)

Area Team (AT code)	PCT returns with 12 month data	12 month deno-minator	Coverage at 12 months	PCT returns with 24 month data	24 month deno-minator	Coverage at 24 months
Q44	4 of 4	9	100 (*100*)	4 of 4	5	100 (*100*)
Q45	6 of 6	3	100 (*100*)	6 of 6	4	100 (*100*)
Q46	9 of 10	63	70 (*77*)	9 of 10	103	44 (*40*)
Q47	2 of 5	0	– (–)	2 of 5	0	– (–)
Q48	4 of 4	3	33 (*86*)	4 of 4	9	78 (*100*)
Q49	7 of 7	6	100 (*100*)	7 of 7	10	100 (*100*)
Q50	5 of 5	7	71 (*100*)	5 of 5	2	100 (*100*)
Q51	5 of 5	19	100 (*100*)	5 of 5	13	92 (*100*)
Q52	5 of 5	30	97 (*100*)	5 of 5	38	76 (*97*)
Q53	3 of 4	9	100 (*100*)	3 of 4	8	88 (*100*)
Q54	5 of 8	20	70 (*42*)	5 of 8	23	52 (*67*)
Q55	4 of 4	10	100 (*94*)	4 of 4	13	75 (*67*)
Q56	5 of 5	11	100 (*75*)	5 of 5	11	91 (*100*)
Q57	5 of 5	19	100 (*71*)	5 of 5	18	94 (*88*)
Q58	5 of 5	30	100 (*100*)	5 of 5	27	93 (*93*)
Q59	2 of 3	3	33 (–)	2 of 3	12	58 (–)
Q60	5 of 5	6	100(*100*)	5 of 5	10	67 (*100*)
Q64	4 of 4	6	83 (*100*)	4 of 4	6	83 (*100*)
Q65	4 of 4	9	78 (*100*)	4 of 4	0	– (*50*)
Q66	4 of 4	1	100 (*100*)	4 of 4	2	100 (*100*)
Q67	3 of 3	8	13 (*40*)	3 of 3	12	75 (*50*)
Q68	5 of 5	11	82 (*100*)	5 of 5	21	76 (*90*)
Q69	4 of 4	27	96 (*100*)	4 of 4	29	79 (*93*)
Q70	5 of 6	6	100(*67*)	5 of 6	5	100 (*50*)
Q71	28 of 31	163	85 (*93*)	28 of 31	161	75 (*87*)
England	**138 of 151**	**479**	**85 (*87*)**	**138 of 151**	**542**	**72 *(79)***

Notes: " – " indicates "no data available" for the denominator but "not applicable" for coverage; see table 1a for key to Area Team organisational codes.

Table 4b. Neonatal hepatitis B coverage in England by former Strategic Health Authority: October to December 2014 (*July to September 2014*)

English SHAs	PCT returns with 12 month data	12 month denominator	Coverage at 12 months	PCT returns with 24 month data	24 month denominator	Coverage at 24 months
North East	12 of 12	9	100 (*100*)	12 of 12	14	100 *(100)*
North West	20 of 24	75	72 (*78*)	20 of 24	117	49 *(48)*
Yorkshire and Humber	14 of 14	56	95 (*100*)	14 of 14	53	81 *(98)*
East Midlands	8 of 9	16	88 (*95*)	8 of 9	35	71 *(79)*
West Midlands	13 of 17	35	83 (*68*)	13 of 17	41	68 *(78)*
East of England	13 of 13	47	100 (*81*)	13 of 13	41	95 *(91)*
London	28 of 31	163	85 (*93*)	28 of 31	161	75 *(87)*
South Central	8 of 9	42	98 (*100*)	8 of 9	39	82 *(94)*
SE Coast	8 of 8	19	53 *(63)*	8 of 8	33	76 *(75)*
South West	14 of 14	17	82 (*92*)	14 of 14	8	88 *(86)*
England	**139 of 151**	**495**	**83 (*87*)**	**136 of 151**	**557**	**69 *(79)***

Relevant links for country-specific coverage data

England
http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/immunisation

Northern Ireland
http://www.publichealthagency.org/directorate-public-health/health-protection/vaccination-coverage

Scotland
http://www.isdscotland.org/Health-Topics/Child-Health/Immunisation/

Wales
http://www.wales.nhs.uk/sitesplus/888/page/43510

Other relevant links
https://www.gov.uk/government/collections/immunisation

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Immunisation

Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during October to December 2014 (Q4/2014)

In England there were 882 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the fourth quarter of 2014, from October to December (see table). In line with seasonal patterns, this was a 19% decrease in the number of cases reported during the previous quarter (1094 in July to September 2014). Total cases were 18% higher than those reported in the same quarter of 2013 (747 cases between October and December 2013). There were 35 laboratory confirmed cases reported in Wales between October and December 2014, a 5% decrease in the number of cases reported in the previous quarter (n=37) and a 30% increase on the number of cases reported in the same quarter in 2013 (n=27).

Typically pertussis activity peaks in quarter 3 and then declines (figure 1). The continued increase observed in each successive quarter between the first quarter of 2011 and third quarter of 2012 was unusual. The HPA declared a national outbreak of pertussis (level 3 incident [1]) in April 2012 and, as a response to the ongoing outbreak and a high number of infant deaths, the Department of Health announced the introduction of a temporary immunisation programme for pregnant women on 28 September 2012 [2]. The most recent PHE figures report that of the mothers due to give birth in December 2014, 62.3% had been immunised with a pertussis containing vaccine in pregnancy in England, the highest recorded coverage since the programme started [3]. From April 2014 the collection of vaccine coverage data has change from a manual to an automated system [4] and data for January to March 2015 will be published in June 2015.

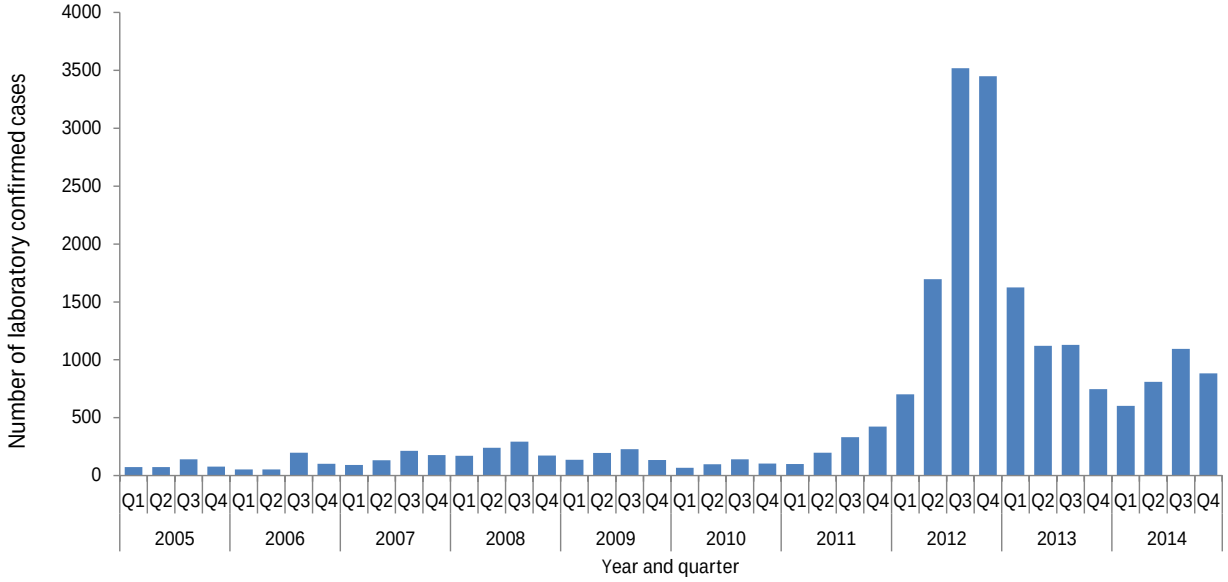
Following the high levels of activity in 2012, confirmed cases of pertussis first fell in the fourth quarter of 2012 and this decrease has continued overall with slight increases in the third quarters of 2013 and 2014, in line with the usual seasonal pattern. The highest number of laboratory confirmed cases in England has persisted in individuals aged 15 years and over whilst disease incidence continues to be highest in infants <3 months. The number of confirmed cases in infants less than 3 months in the fourth quarter of 2014 (13 cases) equalled the number of cases reported in the equivalent quarter in 2013. No deaths were reported in infants with laboratory confirmed pertussis tested between October and December 2014 in England.

Laboratory-confirmed cases of pertussis by age and testing method in England, October to December 2014

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	7	6	0	0	13
3-5 months	1	3	0	0	4
6-11 months	1	0	0	0	1
1-4 years	3	0	18	0	21
5-9 years	0	0	26	8	34
10-14 years	1	0	64	19	84
15+ years	4	0	716	5	725
Total	17	9	824	32	882

These surveillance data in young infants following the introduction of a programme to immunise pregnant women are encouraging as a relatively low incidence has been maintained, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in older age groups and women should therefore continue to be encouraged to be immunised against pertussis during pregnancy in order to protect their babies from birth. The pertussis immunisation in pregnancy programme in England has shown high levels of protection against pertussis in babies born to vaccinated mothers [5,6]. The Medicines and Healthcare Products Regulatory Agency also found no safety concerns relating to pertussis vaccination in pregnancy based on a large study of nearly 18,000 vaccinated women with similar rates of normal, healthy births in vaccinated and in unvaccinated women [7].

Figure 1. Total number of laboratory-confirmed pertussis cases per quarter: England, 2005-2014



Laboratory investigation

Bordetella pertussis PCR testing for hospitalised cases <1 year old has been offered by the Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) at the Public Health England (PHE) Microbiology Services Division Colindale since 2002. From July 2014, PCR testing for all ages has been deployed to Lead PHE laboratories in a phased approach [8] and this form of testing is particularly encouraged in all children aged 1-4 years who present within 3 weeks of onset as serological results may be confounded by recent vaccination.

Serological investigation by estimation of anti-pertussis toxin (PT) IgG antibody levels for older children and adults are also provided by the RVPBRU. RVPBRU also encourages submission of all *Bordetella pertussis* isolates for confirmation and national surveillance purposes. The RVPBRU is also offering an oral fluid (OF) testing service for clinically suspected cases reported to local Health Protection Teams, who are aged between 5-16 years (<17yrs) and have been coughing for more than 2 weeks and have not been immunised against pertussis in the previous year.

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