Public Health England

Health Protection Report
weekly report

This is a PDF consolidation of the news items and infection reports published in HPRs 9(33) and 9(34), on 18 and 25 September 2015, respectively

Volume 9 Numbers 33-34 Published on: **18 and 25 September 2015**

Current News

Infection Reports

HCAI / bacteraemia *

Immunisation **

* Published in *HPR* **9**(33) on 18/9/2015.
** Published in *HPR* **9**(34) on 25/9/2015.

News

Volume 9 Number 33/34 Published on: **18 and 25 September 2015**

ACMP malaria guidelines updated

The Advisory Committee on Malaria Prevention (ACMP), an expert advisory committee of Public Health England (PHE), has published its annual revision of the 'Guidelines for malaria prevention in travellers from the UK' for 2015 [1].

These guidelines are a practical guide for medical professionals and other travel medicine advisors based in the UK who advise travellers, and may also be of use to travellers who wish to read about the options themselves.

The key changes included in the 2015 revision include:

- updated guidance on the use of insect repellent and sun protection
- clarification on the use of hydroxychloroquine
- updated guidance on the use of anticoagulants with antimalarials
- updated guidance on the use of doxycycline in epilepsy
- changes to the country recommendations for Vietnam and Malaysian Borneo, and clarifications on the recommendations for India
- additional notes added at the beginning of the country recommendations table including information on vulnerable travellers, and new malaria maps for India and South Africa
- clarification of advice for travellers moving through areas where different antimalarials are recommended
- details about the ACMP have been added including: membership, terms of reference and methodology used to make recommendations (these details are now also available on the PHE website [2]).

It is important that recommendations for antimalarials should be appropriate for the destination and tailored to the individual, taking into account possible risks and benefits to the traveller. As part of an individual stringent risk assessment, it is essential that a full clinical history is obtained, detailing current medication, significant health problems and any known drug allergies. A suggested risk assessment template is included with the guidelines.

While the focus of these guidelines is on malaria prevention, it should be emphasised that malaria prevention is only one aspect of pre-travel advice. A comprehensive risk assessment-based package of travel health advice should be provided to travellers 6-8 weeks (ideally) before they travel. Travel health advice is available from the National Travel Health Network and Centre (NaTHNaC) website at: http://travelhealthpro.org.uk/http://travelhealthpro.org.uk/.

References

1. PHE (17 September 2015). Malaria prevention guidelines for travellers from the UK: 2015.
2. See: ACMP webpage.

Mandatory HCAI reports quarterly trends: April-June 2015

PHE's latest quarterly epidemiological commentary on trends in reports of *Staphylococcus aureus* (MRSA and MSSA) and *Escherichia coli* bacteraemia, and of *Clostridium difficile* infections, mandatorily reported by NHS acute Trusts in England up to April-June 2015, has been published on the GOV.UK website [1].

The report, including tabular and graphical information, provides data for the April-June 2015 quarter (updating the previous report published in June 2015). Some key facts are listed below.

MRSA bacteraemia

There has been a 21.3% decrease (1.97 to 1.55 reports per 100,000 population) in rates of total MRSA bacteraemia reports between January-March 2012 and the current quarter (April-June 2015). This is part of an overall decreasing trend beginning from April 2007.

However, more recently (April-June 2014 to April-June 2015) increases in both the counts and rates of total MRSA bacteraemia have been reported (from 181 to 210 and from 1.34 to 1.55 per 100,000 population, respectively). This has been observed for Trust assigned (from 73 to 86 and from 0.85 to 1.00 per 100,000 bed-days), CCG assigned (from 91 to 98 and from 0.67 to 0.72 per 100,000 population) and Third Party assigned cases (from 17 to 26 and from 0.13 to 0.19 per 100,000 population). The increases in Trust and CCG assigned reports and rates represent the first year-on-year inter-quarter increase since the PIR process was initiated (April 2013).

MSSA bacteraemia

The current quarter (April-June 2015) saw the highest rate of total MSSA bacteremia (18.93 reports per 100,000 population) since the reporting of MSSA bacteraemia cases was initiated in January 2011. The count of total MSSA bacteraemia has increased by 10.8% in the current quarter (April-June 2015, n=2,564) when compared to the same quarter in the previous year (April-June 2014, n=2,315). Conversely, there has been little change in the counts of Trust apportioned MSSA bacteraemia reports within the same time period, with a 0.4% decrease in counts from 682 to 679 reports.

E. coli bacteraemia

A 2.9% increase (from 65.62 to 67.49 reports per 100,000 population) has been observed in the rate of *E. coli* bacteraemia reports when comparing the current quarter (April-June 2015) with the same quarter of the previous year (April-June 2014), with an overall increase of 16.6% (from 57.88 to 67.49 reports per 100,000 population since January-March 2012). The increase in *E. coli* bacteraemia reports and rates between April-June 2014 and April-June 2015 represents the ninth consecutive increase since April-June 2013 between a quarter and the same quarter in the previous year.

C. difficile infection (CDI)

From April-June 2014 to April-June 2015 there was a 6.2% increase in the counts and rates of total CDI reported from 3,442 to 3,654 reports and 25.42 to 26.98 reports per 100,000 population respectively. Similarly within the same period, counts and rates of the Trust apportioned CDI reported have both increased by 9.9% (from 1,197 to 1,316 reports and 13.97 to 15.36 reports per 100,000 bed-days). This is now the fourth consecutive observed increase in counts and rates of Trust apportioned CDI and the fifth for counts and rates of total reported CDI, when comparing to the same quarters in the previous year.

References

1. PHE (10 September 2015). Quarterly Epidemiological Commentary: Mandatory MRSA, MSSA and *E. coli* bacteraemia, and *C. difficile* infection data (up to April-June 2015).

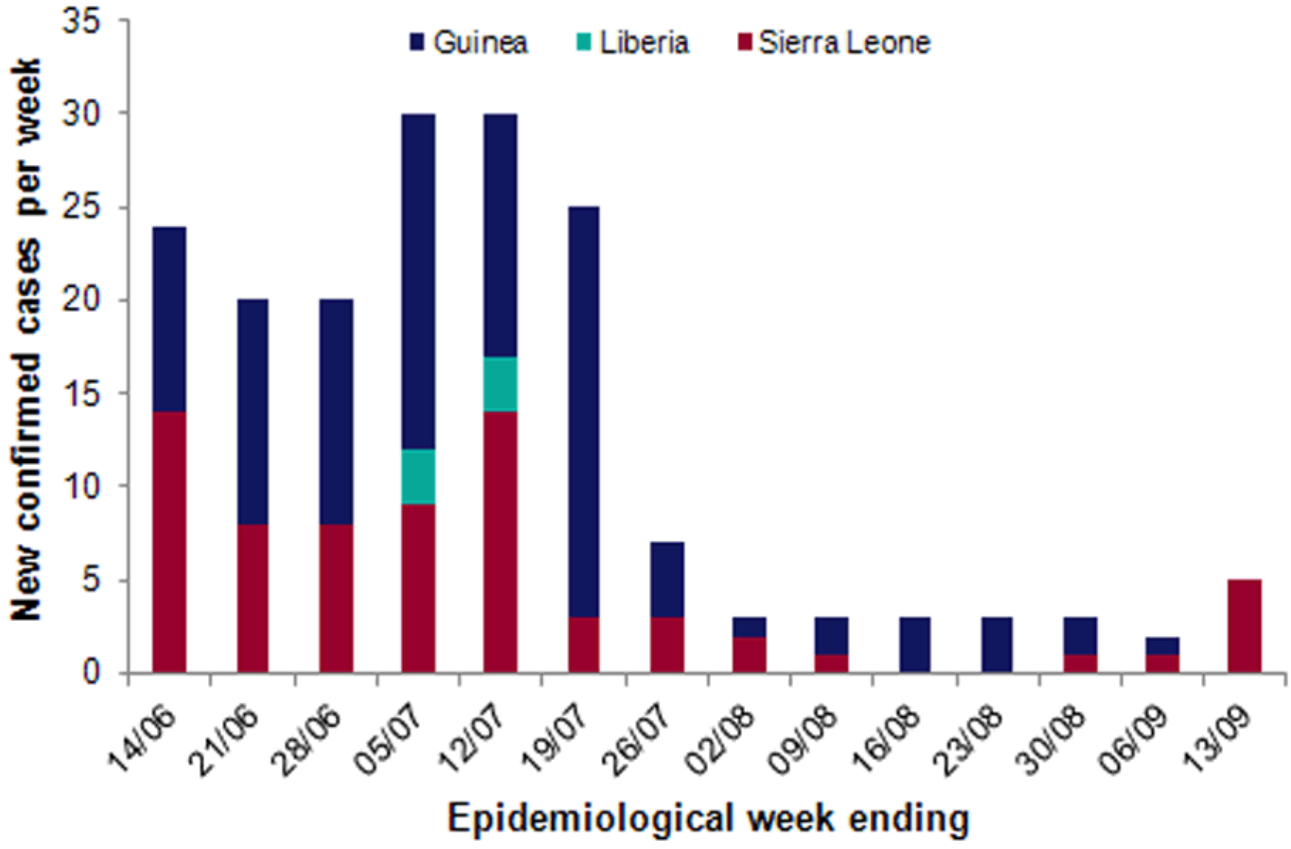
Ebola virus disease: international epidemiology summary (at 13 September 2015)

The West African Ebola virus disease (EVD) outbreak continues continues with a total of 28,256 clinically compatible cases (15,233 confirmed) reported as of 13 September 2015, 11,306 of which have died. There were five confirmed cases reported in week-ending 13 September (see figure), all in Sierra Leone, compared to one in Guinea and one in Sierra Leone in the previous week.

This is the first time Guinea has recorded an EVD-free week for over 12 months. Four of the five cases reported this week in Sierra Leone are associated with the previously reported cluster in Kambia. All four are close relatives of the initial case. The remaining case in Sierra Leone was reported in Bombali, a district that had not reported a case for over five months. Investigation into the source of infection is ongoing. The case was symptomatic in the community for several days before being admitted to an Ebola treatment centre and further cases are expected.

A total of 1,785 contacts remain under follow up (241 in Guinea and 1,524 in Sierra Leone), rising from 1,281 in the previous week. Liberia remains within a 90 day period of heightened vigilance following being declared EVD transmission free on 3 September 2015.

Number of new confirmed cases reported per week (14 June to 13 September 2015) in affected countries in West Africa



Data source: WHO Ebola Situation Report 16 September 2015.

More detailed information is available in PHE's full weekly Ebola Epidemiological Update. A graphical indication of currently affected areas (in Guinea, Liberia and Sierra Leone) is presented in the Ebola Outbreak Distribution Map.

Consultation on a new microbiology test procedure using MALDI-ToF mass spectrometry

Matrix-assisted laser desorption ionization – time of flight (MALDI-ToF) mass spectrometry – a technique widely used in many clinical laboratories – is to be added to be PHE's list of standard microbiological test methods, following publication for consultation of a new draft standard (SMI test procedure 40) by PHE's Microbiology Services standards unit [1].

Methods currently listed under the Test Procedures category of UK Standards for Microbiology Investigations (SMIs) [2] are, for the most part, prescriptive recommendations relating to conventional laboratory procedures. The promulgation of SMI TP40 is a new departure in that, rather than providing detailed guidelines on how MALDI-ToF mass spectrometry should be carried out, it is an acknowledgement that this application of mass spectrometry – a technique traditionally applied in chemical and pharmaceutical analysis – is now in widespread use in many clinical laboratories for the identification and characterisation of microbiological pathogens.

MALDI-ToF mass spectrometry allows the analysis of biomolecules (such as DNA, proteins, peptide and sugars) and large organic molecules (such as polymers, dendrimers and other macromolecules) which tend to be fragile and fragment when ionised by more conventional ionisation methods. The technique can be used to analyse the protein composition of a microbial cell and has emerged as a new technology for species identification, particularly bacteria and fungi. It is popular because of its reproducibility, speed and sensitivity of analysis; in contrast to other identification methods, results can be available within minutes, or hours, rather than days.

Simplicity of sample preparation and the minimal costs of consumables make the method well suited for routine and high throughput use.

The draft standard includes detailed consideration of the limitations of the method, safety considerations, and the importance of related databases being maintained. Drawbacks associated with the currently available commercial platforms are acknowledged: a number of well-established commercial equipment manufacturers use their own algorithms, databases, software, and interpretive criteria for microbial identification, thereby making the data generated by these different systems not directly comparable.

The Standards Unit has invited feedback on the draft SMI test procedure before a consultation deadline of 5 October 2015.

References

1. PHE (21 September 2015). UK SMI TP 40 under consultation: Matrix assisted laser desorption ionisation time of flight mass spectrometry test procedure.

2. See: See: SMIs health protection collection webpages.

Public Health England

Health Protection Report
weekly report

Infection Reports

HCAI / bacteraemia *

- **Surveillance of candidaemia in England, Wales and Northern Ireland: 2014**

Immunisation **

- **Laboratory confirmed reports of invasive meningococcal disease in England: April to June 2015**
- **Suspected Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England: April to June 2015**
- **Quarterly vaccination coverage statistics for children aged up to five years in the UK (COVER programme): April to June 2015**

* Published in *HPR* **9**(33) on 18/9/2015.
** Published in *HPR* **9**(34) on 25/9/2015.

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Surveillance of candidaemia in England, Wales and Northern Ireland: 2014

These analyses are based on data relating to diagnoses of *Candida* spp. bloodstream infections during 2008-2014 in England, Wales and Northern Ireland (E,W&NI) extracted from Public Health England's (PHE) voluntary communicable disease reporting (CDR, formerly CoSurv/LabBase2) database, Second Generation Surveillance System (SGSS).

Analyses presented here are based on data extracted from SGSS on 28 August 2015. The data presented here will differ in some instances from those in earlier publications primarily due to the inclusion of late reports.

Rates of candidaemia laboratory reports were calculated using mid-year resident population estimates for the respective year and geography [1]. Geographical analyses were based on the residential postcode of the patient if known (otherwise the GP postcode if known or failing that the postcode of the laboratory) with cases in England being assigned to the catchment area of one of 15 local PHE centres (PHECs) formed from administrative local authority boundaries.

This report includes analyses of the trends, patient demographic and geographical distribution as well as antifungal susceptibility among the isolates from these candidaemia episodes.

Key points

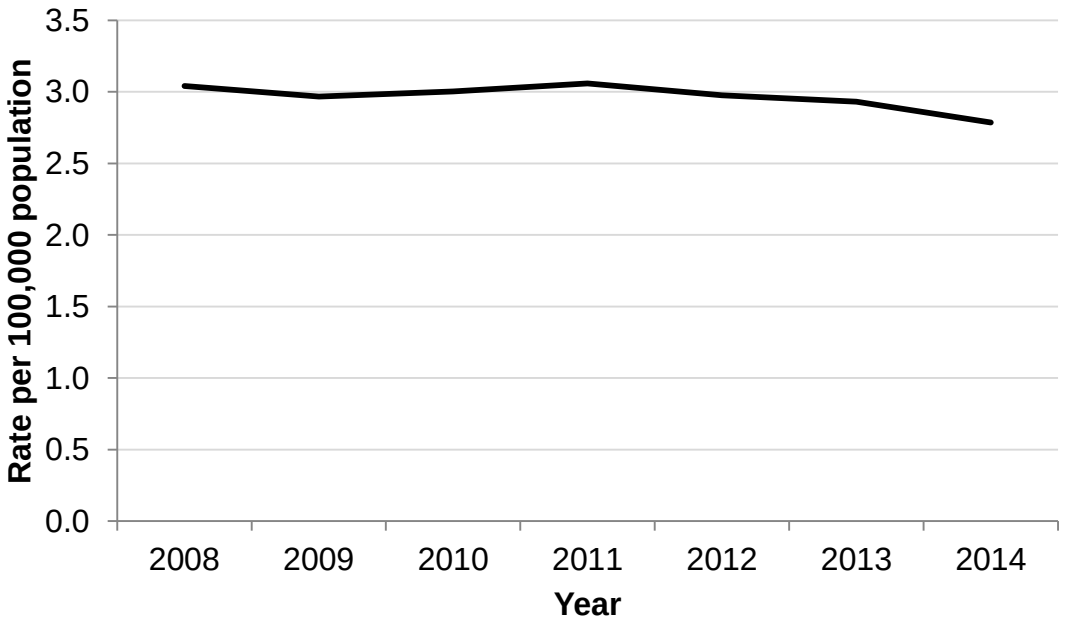
- the overall rate of candidaemia in England, Wales and Northern Ireland was 2.8 per 100,000 population in 2014
- Northern Ireland had the highest reported incidence rate of candidaemia in 2014, 4.0/100,000, followed by England (2.8) and Wales (2.6)
- within England the rate of candidaemia ranged from 1.7 per 100,000 population in Thames Valley and Wessex regions to 3.7/100,000 in the London area
- the most frequently identified *Candida* species in blood isolates in 2014 were *Candida albicans*, accounting for 45% of reports, followed by *Candida glabrata* (26%)
- the proportion of candidaemia identified as non-*albicans* species showed further slight increase in 2014 (55%) compared to 2013 (52%), with increases in *C. glabrata*, *C. parapsilosis* and *C. krusei* accounting for these changes
- the highest rates of candidaemia continued to be seen in the elderly (≥75 years; 31.5 /100,000) and infants (≤1 year; 6.6) with higher rates noted in males in the majority of age groups
- the proportion of candidaemia reports including antifungal susceptibility testing data has increased, from 39% in 2013 to 44% in 2014
- the proportion of *C. albicans* blood isolates reported as resistant to the most commonly tested antifungals ranged from <1% for caspofungin to 3% for fluconazole in 2014
- an increase in the number of *C. glabrata* with intermediate resistance to fluconazole in 2014 has resulted in an overall increase in resistance rates between 2013 and 2014 (23% to 30%)
- improved reporting of antifungal susceptibility results remains key to assisting the interpretation of fungal susceptibilities.

Trends

Between 2013 and 2014 there was a 4% decrease in laboratory reports of candidaemia in England, Wales and Northern Ireland (1712 and 1638 reports respectively; table 2). The overall rate of candidaemia in E,W&NI was 2.8 per 100,000 population in 2014, a slight decrease from 3.0/100,000 observed in 2008 (8% decrease; figure 1). Northern Ireland had the highest reported incidence rate of candidaemia with 4.0/100,000 followed by England (2.8) and Wales (2.6). A steeper decrease in candidaemia incidence rate was seen in Northern Ireland (33% decrease) and Wales (19% decrease) compared to England over the past five years (5% decrease; 2010 to 2014; table 1).

Candida spp. accounted for 1.5% of mono-microbial bloodstream infections (BSI; all bacterial and fungal bloodstream pathogens) in 2014; making them the eleventh most commonly reported mono-microbial BSI causing organisms [2]. *Candida* spp. was identified in 1.9% of poly-microbial BSI in 2014.

Figure 1. Candidaemia per 100,000 population (England, Wales and Northern Ireland); 2008 to 2014



Geographic distribution

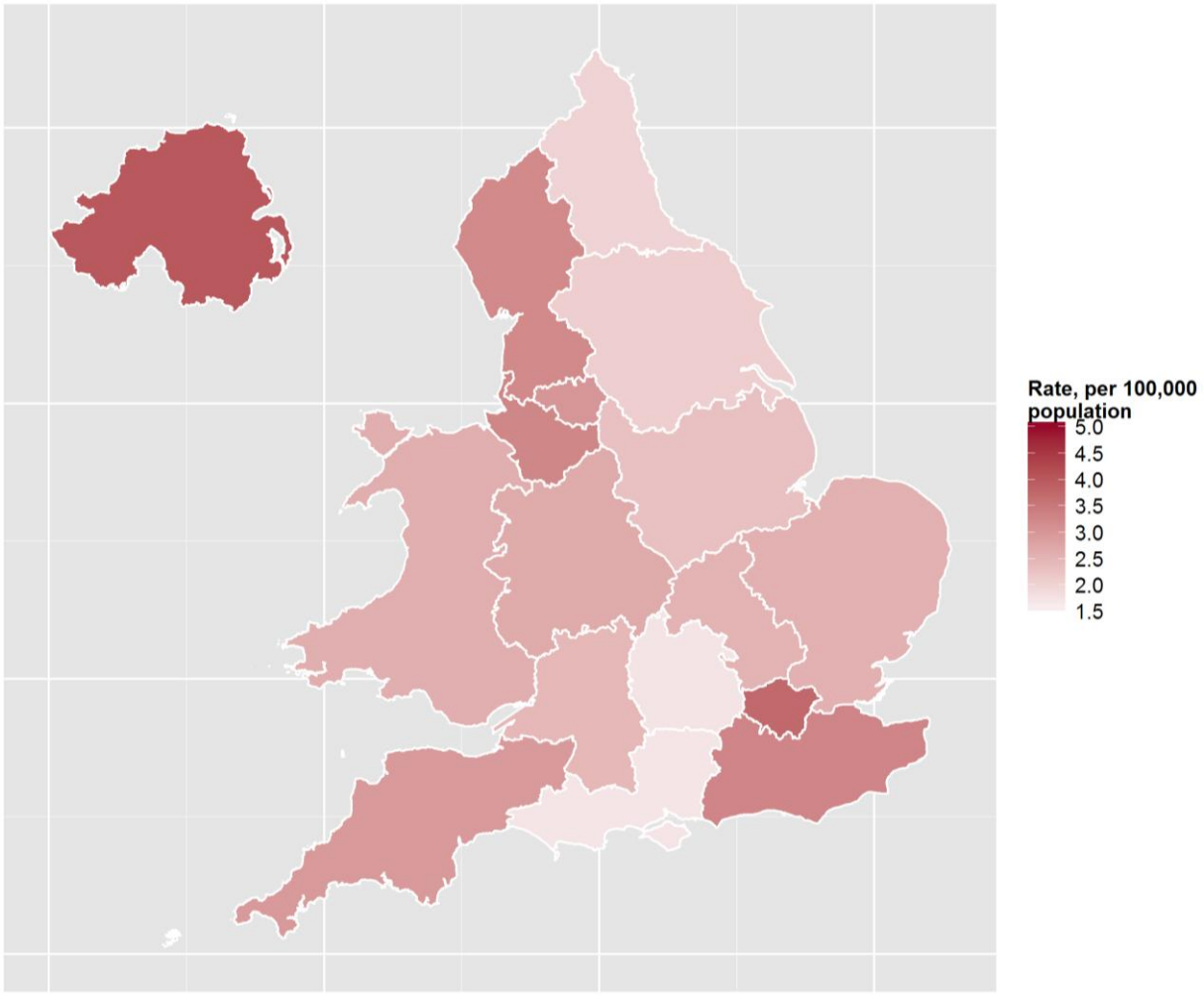
In England, Wales and Northern Ireland the geographical distribution of candidaemia varied widely in 2014, from 1.7/100,000 population in the Thames Valley and Wessex regions of England (95% CI 1.2 to 2.4 and CI 1.3 to 2.3 respectively) to 4.0/100,000 in Northern Ireland (95% CI 3.2 to 5.1; figure 2).

The rate of candidaemia has varied over the five years between 2010 and 2014 within the English PHECs, however, no area has consistently reported the highest (or lowest) rates across the period (table 1).

Table 1. Candidaemia per 100,000 population by region (England, Wales and Northern Ireland); 2010 to 2014

Region		Rate per 100,000 population				
		2010	2011	2012	2013	2014
London	London	3.6	3.4	3.8	3.5	3.7
Midlands	South Midlands and Hertfordshire	2.0	1.9	2.3	2.2	2.5
	East Midlands	3.5	3.3	3.4	2.7	2.3
	Anglia and Essex	3.4	3.5	3.1	2.9	2.6
	West Midlands	2.8	3.1	2.3	2.7	2.7
Northern	Cheshire and Merseyside	3.5	3.5	3.5	3.8	3.3
	Cumbria and Lancashire	1.9	2.8	2.7	3.3	3.2
	Greater Manchester	3.8	3.5	4.0	3.8	3.0
	North East	2.3	3.0	2.5	2.3	2.0
	Yorkshire and Humber	2.1	1.9	1.8	1.9	2.1
Southern	Avon Gloucestershire and Wiltshire	2.4	2.8	2.7	2.0	2.4
	Devon Cornwall and Somerset	2.9	2.0	2.4	2.6	2.9
	Wessex	2.4	2.6	2.4	2.6	1.7
	Kent Surrey and Sussex	2.8	3.1	3.0	3.6	3.3
	Thames Valley	1.6	2.2	2.0	1.6	1.7
England		2.9	2.9	2.9	2.8	2.7
Northern Ireland		6.0	5.3	4.6	4.9	4.0
Wales		3.2	3.4	3.7	3.2	2.6
England, Wales and Northern Ireland		3.0	3.0	3.0	2.9	2.8

Figure 2. Geographical distribution of candidaemia per 100,000 population in England, Wales and Northern Ireland; 2014



Species distribution

Ninety-two per cent of candidaemia cases were identified to species level in 2014 (1500/1638); this is a slight decline on the previous year where 94% were identified at species level, however consistent with earlier years (table 2). The most frequently identified *Candida* species in blood isolates in 2014 was *Candida albicans* (45%; 732), a decline since 2010 (49%; 847). This represents a 14% decline in the number of *C. albicans* candidaemias reported between 2010 and 2014. In 2014 (55%) there were higher numbers of non-albicans *Candida* species reported in blood compared with 2013 (52%), with *C. glabrata, C. parapsilosis* and *C. krusei* accounting for the majority of this increase.

Table 2. Reports of candidaemia by species (England, Wales and Northern Ireland); 2010 to 2014

	2010		2011		2012		2013		2014	
	count	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
Total candidaemia reports	1712	100%	1758	100%	1726	100%	1712	100%	1638	100%
C. albicans	847	49%	828	47%	807	47%	825	48%	732	45%
C. dubliniensis	6	0%	9	1%	10	1%	12	1%	19	1%
C. famata	5	0%	8	0%	4	0%	7	0%	2	0%
C. glabrata	404	24%	426	24%	409	24%	433	25%	422	26%
C. guilliermondii	6	0%	27	2%	22	1%	16	1%	7	0%
C. kefyr (pseudotropicalis)	10	1%	5	0%	5	0%	2	0%	8	0%
C. krusei	22	1%	24	1%	23	1%	22	1%	37	2%
C. lusitaniae	20	1%	31	2%	30	2%	19	1%	28	2%
C. parapsilosis	159	9%	161	9%	161	9%	170	10%	164	10%
C. tropicalis	60	4%	65	4%	67	4%	58	3%	46	3%
Candida spp., other named*	29	2%	27	2%	30	2%	38	2%	35	2%
Candida spp., sp. *not recorded*	144	8%	147	8%	158	9%	110	6%	138	8%

*including *C. ciferrii*, *C. lypolytica*, *C. nivariensis*, *C. pelliculosa* and *C. peltata*

The second most frequently reported candidaemia species was *Candida glabrata* (26%; 422). The proportion of candidaemia identified as *C. glabrata* has increased since 2010 (24%; 404), however this only represents a 4% increase in numbers of candidaemia due to *C. glabrata* over the time period. Increases have also been seen in the some of the other *Candida* species (*C. parapsilosis* and *C. krusei*).

Age and sex distribution

The age distribution of candidaemia for 2014 is presented in figure 3a. In line with previous years, the highest rates of candidaemia were observed in those aged 75 years or older (31.5/100,000 population) and those aged less than one year (6.6/100,000)[3].

Variation in candidaemia rates were also observed by gender, with higher rates noted in men in the majority of age groups (figure 3a). The most striking differences were noted in those aged 75 years and over (males: 14.9; females: 6.9) and to a lesser extent in those aged between 65 and 74 years (males: 7.1; females: 5.3). The only exception where there were higher rates in women was for 15 to 44 years age group, where the rate of candidaemia was 1.2 (95% CI 1.0-1.4) compared with 0.7 in males in 2014 (95% CI 0.6-0.9).

The relative age distribution was similar between the three most frequently reported species from candidaemia reports in 2014, with high rates being observed in those aged 75 years and over and infants (figure 3b). The exception was with *C. glabrata* where the rate of infection in infants was low, accounting for <1% reports (0.3).

Figure 3a. Rate per 100,000 population candidaemia by age and sex in England, Wales and Northern Ireland; 2014

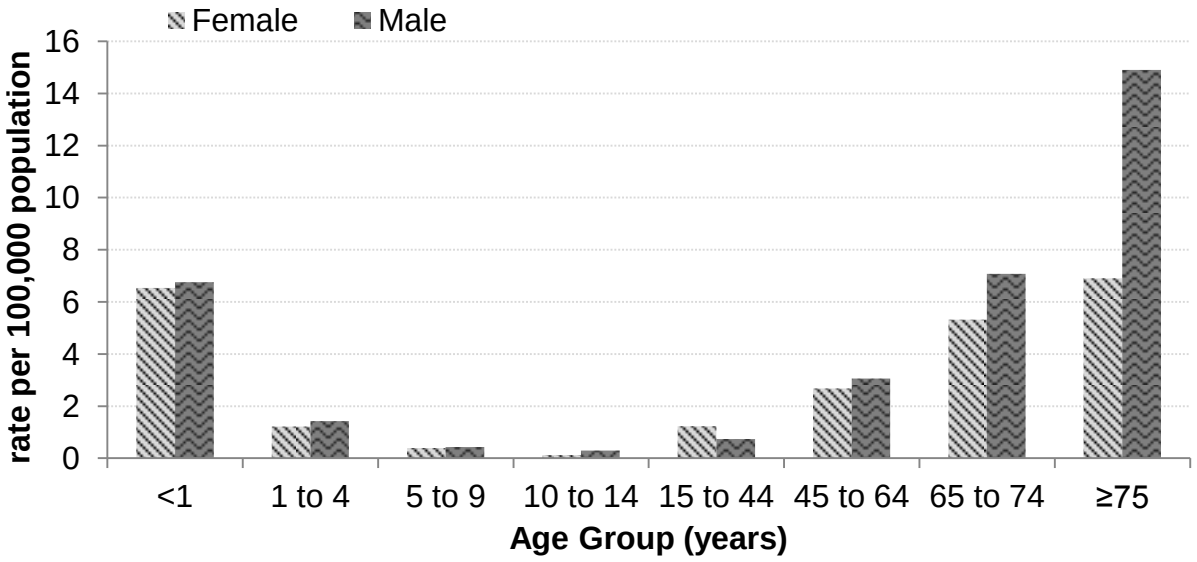
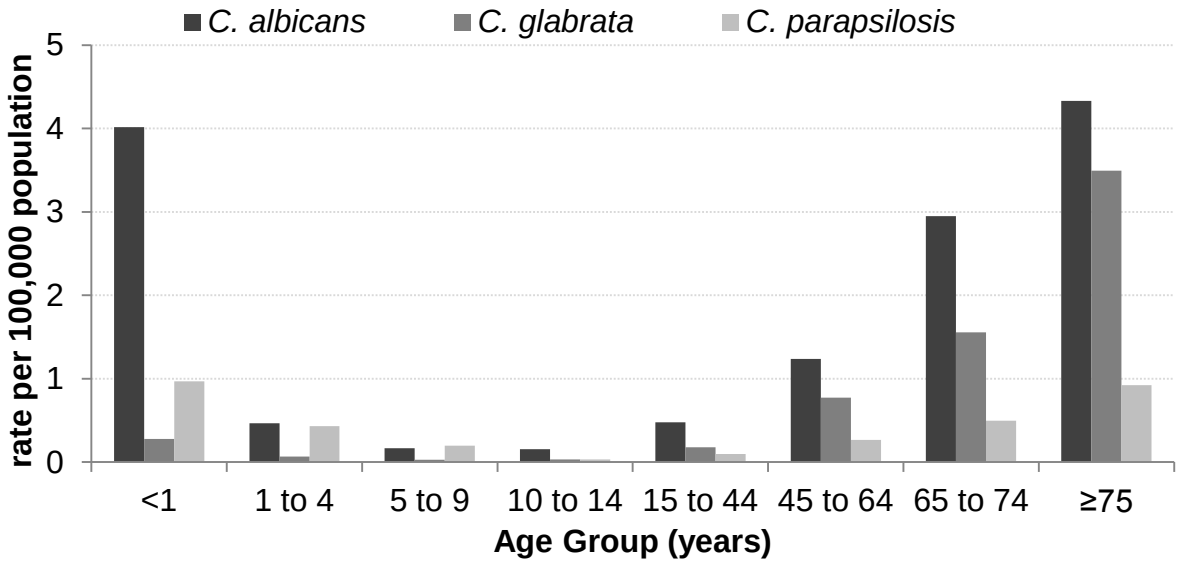


Figure 3b. Population rate by age group for BSI caused by *C. albicans*, *C. glabrata* and *C. parapsilosis* in England, Wales and Northern Ireland; 2014



Antifungal resistance

The prevalence of non-susceptibility is calculated by dividing the number of isolates reported as intermediate (reduced susceptibility) or resistant (non-susceptible) by the total number of isolates tested against a given antifungal agent. Candidaemia reports in SGSS provided susceptibility results to one or more of the following agents – amphotericin B, caspofungin, fluconazole, flucytosine, and voriconazole.

Over the last five years, the proportion of candidaemia reports with susceptibility testing data has increased in E,W&NI, from 20% in 2010 to 44% in 2014 (49% in England), a further increase on 2013 (38%; 42% in England). This proportion varied geographically, with reporting for one of the five listed antifungal agents ranging from 14% in the Thames Valley region (5/36) to 80% in Cheshire and Merseyside (63/79).

The overall increase in susceptibility test result reporting may be in part due to the increased awareness following the production of guidelines in recent years, recommending antifungal susceptibility testing for all *Candida* species isolated from blood [4] and therapeutic drug monitoring of antifungal agents [5], as well as the increased use of automated Antimicrobial Susceptibility Testing (AST) instruments in laboratories across England [6].

Table 3a. Antifungal susceptibility of isolates from candidaemia cases (England, Wales and Northern Ireland); 2010 to 2014

Antifungal agent	2010		2011		2012		2013		2014	
	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*
Amphotericin B	237	1%	377	1%	477	1%	539	1%	557	2%
Caspofungin	138	5%	185	6%	339	3%	474	4%	533	2%
Fluconazole	316	15%	430	18%	568	10%	621	11%	694	14%
Flucytosine	226	5%	326	3%	418	5%	458	3%	472	3%
Voriconazole	264	2%	396	4%	513	3%	564	4%	594	5%
Total candidaemia	**1712**		**1758**		**1726**		**1712**		**1638**	

*defined as reduced-susceptibility or non-susceptible

Table 3b. Antifungal susceptibility of *C. albicans* fungaemia cases (England, Wales and Northern Ireland); 2010 to 2014

Antifungal agent	2010		2011		2012		2013		2014	
	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*
Amphotericin B	112	<1%	158	<1%	212	<1%	255	1%	244	1%
Caspofungin	56	0%	73	1%	150	<1%	228	0%	230	<1%
Fluconazole	165	1%	189	3%	257	1%	294	2%	312	3%
Flucytosine	111	<1%	148	4%	188	4%	221	2%	210	1%
Voriconazole	126	0%	169	0%	231	<1%	278	<1%	265	1%
Total *C. albicans*	**847**		**828**		**807**		**825**		**732**	

*defined as reduced-susceptibility or non-susceptible

Table 3c. Antifungal susceptibility of *C. glabrata* fungaemia cases (England, Wales and Northern Ireland); 2010 to 2014

Antifungal agent	2010		2011		2012		2013		2014	
	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*
Amphotericin B	66	0%	112	2%	140	4%	157	<1%	168	2%
Caspofungin	47	2%	56	2%	105	2%	137	4%	170	2%
Fluconazole	78	41%	123	48%	161	21%	180	23%	219	30%
Flucytosine	58	2%	92	0%	120	2%	128	<1%	147	3%
Voriconazole	74	5%	117	11%	152	6%	157	11%	176	10%
Total *C. glabrata*	**404**		**426**		**409**		**433**		**422**	

*defined as reduced-susceptibility or non-susceptible

Table 3d. Antifungal susceptibility of *C. parapsilosis* fungaemia cases (England, Wales and Northern Ireland); 2010 to 2014

Antifungal agent	2010		2011		2012		2013		2014	
	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*	No. tested	% Resistant*
Amphotericin B	27	4%	46	2%	52	0%	68	4%	68	3%
Caspofungin	14	29%	23	22%	38	5%	59	10%	63	3%
Fluconazole	33	6%	52	0%	61	2%	72	4%	80	3%
Flucytosine	27	0%	39	0%	49	0%	57	0%	56	0%
Voriconazole	27	0%	51	0%	55	2%	65	0%	73	3%
Total *C. parapsilosis*	**159**		**161**		**161**		**170**		**164**	

*defined as reduced-susceptibility or non-susceptible

The proportion of *C. albicans* candidaemia reports in 2014 reported as resistant to the most commonly tested antifungals ranged from <1% for caspofungin to 3% for fluconazole (table 3b).

Interpreting the trends in *C. glabrata* resistance is more difficult owing to revisions in standard breakpoints used by laboratories to determine susceptibility level. A number of laboratories have transitioned to the revised Clinical and Laboratory Standards Institute (CLSI) breakpoints after 2012, leading to those isolates previously reported as 'intermediate' (and therefore considered in this report as non-susceptible) being classified as 'susceptible' in reports to PHE. The new 'susceptible' group isolates are reported in a single category of 'susceptible-dose-dependent' but with the advice to always use high-dose fluconazole [7]. The results submitted to the PHE surveillance do not distinguish between old and new breakpoints, and as such we need to interpret the *C. glabrata* fluconazole resistance results before and after 2012 with this change in mind.

The proportion of *C. glabrata* fungaemia reports which were reported as resistant to an antifungal in 2014 remained similar to those reported for 2013 (table 3c), however an increase in fluconazole non-susceptibility has been noted from 23% in 2013 to 30% in 2014, although the proportion reported as non-susceptible remains lower than observed prior to 2012. Considering the breakpoints change described earlier it is interesting to note an increase in the number of *C. glabrata* fluconazole intermediate reports in 2014, and it may be due to this increase that there is an overall increase in non-susceptibility. In 2013 12% of *C. glabrata* BSIs were reported as 'intermediate' to fluconazole and in 2014 this has risen to 15%; still well below the levels reported prior to the breakpoint change (24% in 2011).

Similarly the reduction in the reporting of resistance to caspofungin in *C. parapsilosis* may be due to altered methodology or the wider application of the higher breakpoint suggested for this species as compared to *C. albicans*. With some testing formats and batches of caspofungin, isolates of all *Candida* species tend to give increased non-susceptibility results (elevated minimum inhibitory concentration (MIC) results) so it has become more common to use anidulafungin as the sentinel echinocandin for reference testing [8].

The shift towards increased numbers of more drug resistant *Candida* species being identified is of concern [9]. However, whilst antifungal test reporting is improving, it remains below 50%, consequently, changes in the reported prevalence of drug resistance cannot be interpreted with confidence. Antibacterial resistance is a matter of considerable global concern and it is

important that antifungal resistance is similarly monitored to optimise treatment and public health strategies to combat resistance [10-12].

In interpreting these results it should be remembered that the observed non-susceptibility prevalence may be biased by selective testing of patients failing to respond to therapy, and the effect of this bias is amplified by low levels of susceptibility testing. The effect of this bias would be to over-estimate the true prevalence of non-susceptibility. The British and European guidelines may have assisted in raising awareness and improving antifungal susceptibility test reporting (in fungal isolates from blood specimens). Improving test result reporting further would assist in the better understanding of the drug resistance landscape in these key pathogenic organisms. For advice on treatment of fungal infections or for reference mycology services including species identification and confirmation of susceptibility testing results, laboratories can contact or submit isolates to the PHE Mycology Reference Laboratory in Bristol [13].

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Laboratory confirmed reports of invasive meningococcal disease in England: April to June 2015

In England, the national Public Health England (PHE) Meningococcal Reference Unit (MRU) confirmed 173 cases of invasive meningococcal disease (IMD) between April and June 2015 [1]. IMD cases were 20% higher in this quarter than the 144 cases confirmed in the equivalent quarter in 2014 (table 1). There were 279 cases confirmed in the January to March 2015 period [2].

The distribution of meningococcal capsular groups causing IMD by age is summarised in table 2, with capsular group B (MenB) accounting for 58% (101/173) of all cases, followed by MenW (n=43, 25%), MenY (n=23, 13%) and MenC (n=3, 2%). The number of MenW cases in the first two quarters of 2015 combined (n=112 was 2.2 times higher than the 52 cases confirmed during the same period in 2014, whilst MenY increased by 53% from 45 to 69 cases. MenB cases increased from 234 in the first quarter of 2014 to 252 cases (7% increase) in the same quarter of 2015 and the number of MenC cases fell from 18 to 13 cases (28% decrease). During the first two quarters of 2015, there were no reported cases for capsular groups A, X and Z/E (table 1) in England.

In quarter 2 of 2015 MenB was responsible for the majority of IMD cases in infants (33/41, 80%) and toddlers (31/40, 78%) but contributed to a lower proportion of cases in older age groups (table 2). The introduction of a routine national MenB immunisation programme for infants was announced in June [3] with immunisation of infants starting from 1 September 2015.

Capsular groups other than MenB were more prevalent in older age groups (table 2). However, 30% of the 43 MenW cases were in children under 5 years with 44% in adults aged 65+ years, and 9% in 15-24 year-olds. The previously reported increase in MenW cases [4,5] has continued and has led to the introduction of MenACWY conjugate vaccine to the national immunisation programme in England. [6,7]. MenACWY vaccine replaced the existing time-limited ‘freshers’ programme from August 2015 and will directly substitute MenC vaccine in the routine adolescent schools programme (school year 9 or 10) from Autumn 2015. In addition a catch-up campaign is being implemented offering MenACWY vaccine to all adolescents aged 14 to 18 years (to school year 13); 2015 school leavers (aged 17/18) have been prioritised for the first phase of the catch-up.

Table 1. Invasive meningococcal disease in England by capsular group and laboratory testing method: April – June (Q2), 2015

Capsular groups ~	Laboratory method						Total		Cumulative total	
	CULTURE AND PCR		CULTURE ONLY		PCR ONLY					
	2014 (Q2)	2015 (Q2)	2014 (Q2)	2015 (Q2)	2014 (Q2)	2015 (Q2)	**2014 (Q2)**	**2015 (Q2)**	**2014 (Q1-Q2)**	**2015 (Q1-Q2)**
A	–	–	–	–	1	–	1	–	1	–
B	20	23	28	27	54	51	102	101	234	252
C	1	–	6	2	1	1	8	3	18	13
W	–	4	15	33	4	6	19	43	52	112
Y	3	3	8	15	1	5	12	23	45	69
Ungrouped*	–	–	–	–	2	1	2	1	5	2
Ungroupable*	–	–	–	2	–	–	–	2	–	4
Total	**24**	**30**	**57**	**79**	**63**	**64**	**144**	**173**	**355**	**452**

~ Note: No cases capsular groups A, X or Z/E were confirmed during any of the periods summarised in the table.

* Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (ctrA) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

Table 2. Invasive meningococcal disease in England by capsular group and age group at diagnosis: April – June (Q2), 2015

Age groups	Capsular group ~										Total		2015 total	
	B		C		W		Y		Other *		Q2		Q1-Q2	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%		
<1 year	33	(33)	0	–	7	(16)	1	(4)	0	–	41	(24)	79	(17)
1-4 years	31	(31)	0	–	6	(14)	3	(13)	0	–	40	(23)	101	(22)
5-9 years	9	(9)	2	(67)	1	(2)	2	(9)	0	–	14	(8)	31	(7)
10-14 years	4	(4)	0	–	0	(–)	1	(4)	0	–	5	(3)	12	(3)
15-19 years	8	(8)	0	–	3	(7)	4	(17)	0	–	15	(9)	36	(8)
20-24 years	2	(2)	0	–	1	(2)	0	–	1	(33)	4	(2)	21	(5)
25-44 years	7	(7)	0	–	1	(2)	2	(9)	1	(33)	11	(6)	27	(6)
45-64 years	5	(5)	1	(33)	5	(12)	3	(13)	0	–	14	(8)	65	(14)
>=65 years	2	(2)	0	–	19	(44)	7	(30)	1	(33)	29	(17)	80	(18)
Total	101		3		43		23		3		173		452	

~ Note: No cases capsular groups A, X or Z/E were confirmed during any of the periods summarised in the table.

* Other includes Ungroupable and Ungrouped.

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Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during April to June 2015 (Q2/2015)

In England there were 960 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the second quarter of 2015, from April to June (see table). Total cases were 19% higher than those reported in the same quarter of 2014 (810 cases between April and June 2014).

Typically pertussis activity peaks in quarter 3 and then declines (see figure). 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 reported that 55.2% of mothers due to give birth in May 2015 had been immunised with a pertussis containing vaccine in pregnancy in England, compared to 50% and 53.6% in the same month in 2013 and 2014 respectively [3]. An annual report summarising prenatal pertussis vaccination coverage data has recently been published providing a more complete assessment of vaccine coverage and validation of the monthly surveys [4,5]. From April 2014 the collection of vaccine coverage data has changed from a manual to an automated system [6] and for data for June to September 2015 will be published in November 2015.

Following the high levels of activity in 2012, an overall decrease has been observed 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 less than three months of age. The number of confirmed cases in infants less than three months in the second quarter of 2015 (31 cases) was 19% higher than the same quarter in 2014 (26 cases). One infant with laboratory confirmed pertussis tested between January and March was reported to have died. Of the 12 infants who have died following confirmed pertussis disease, and who were born after the introduction of the maternal programme on 1 October 2012, 11 were born to mothers who had not been immunised against pertussis during pregnancy. Total case numbers of pertussis in all age groups are higher in Q2, 2015, than the same quarter in 2014 and activity remains higher in all age groups from one year and older, relative to the pre-2012 peak.

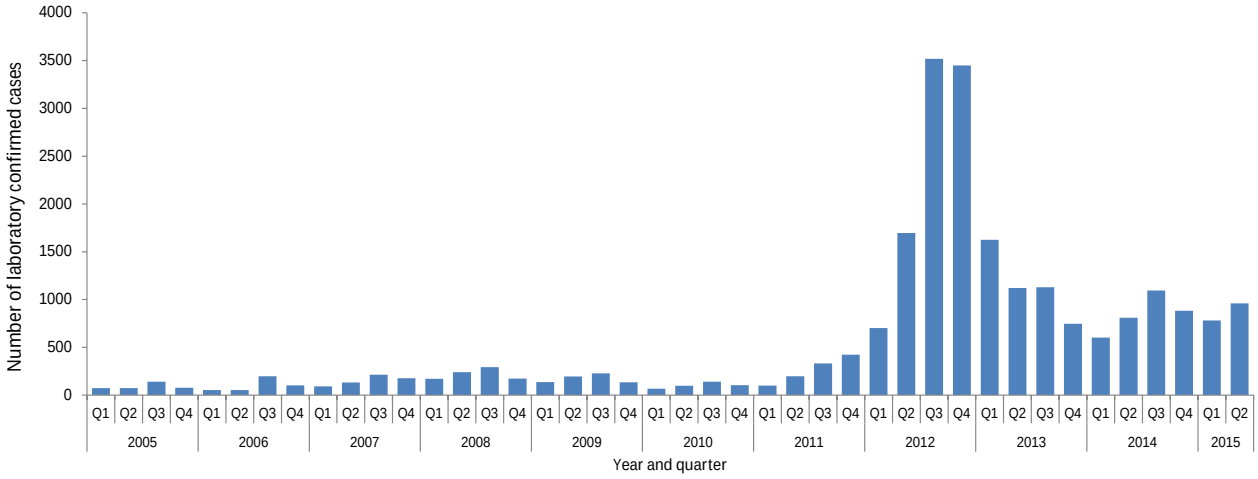
Surveillance data in young infants following the introduction of a programme to immunise pregnant women are encouraging as a relatively low incidence has been maintained, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in older age groups and women should therefore continue to be encouraged to be immunised against pertussis during pregnancy (ideally between 28-32 weeks) 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 [7,8]. 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 [9].

Please see previous reports for details of appropriate laboratory investigation of suspected cases of pertussis which may be affected by the age of the suspect case and time since onset of their symptoms.

Laboratory-confirmed cases of pertussis by age and testing method in England, April to June 2015

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	12	18	1	–	31
3-5 months	3	1	–	–	4
6-11 months	2	2	–	–	4
1-4 years	1	4	10	1	16
5-9 years	3	–	29	16	48
10-14 years	3	1	105	29	138
15+ years	4	4	702	9	719
Total	28	30	847	55	960

Total number of laboratory-confirmed pertussis cases per quarter in England, 2005 to 2015 (Q2)



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Quarterly vaccination coverage statistics for children aged up to five years in the UK (COVER programme): April to June 2015

Commentary on the first quarterly report for 2015/16

One year old children evaluated in the current quarter (born April to June 2014), are the third cohort to have been routinely offered rotavirus vaccine at two and three months, and the fifth quarterly cohort offered only one primary MenC dose at three months of age [1].

In Scotland, Northern Ireland and Wales the COVER data extraction from Child Health Information Systems (CHISs) has 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 (98.1% in Scotland, 98.4% in Northern Ireland, and 98.1% in Wales). Coverage of two doses of rotavirus vaccine evaluated at one year is also high – rotavirus coverage is 93.2% in Scotland, 94.9% in Northern Ireland, and 94.4% in Wales (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. As a result only eleven of the 25 Area Teams (ATs) in England were able to supply one dose MenC vaccine coverage data for all Local Authorities in their area, although where it was reported coverage was similar to or exceeded that of other vaccines evaluated at one year, as seen in the devolved administrations. As a consequence of this missing data 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.

For the same reason, England could not provide robust estimates of rotavirus coverage at this age from CHIS with data flowing for around a quarter of Local Authorities and complete reporting available for six Area Teams (table 1b). 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]. GP data for those children born between April and June 2014 (i.e. the COVER cohort evaluated in this quarter at 12 months of age), were assessed at aged 25 weeks in October, November and December 2014, and two-dose rotavirus coverage was estimated at 88% nationally during these months [4].

UK coverage for DTaP/IPV/Hib3 and PCV2 evaluated at 12 months decreased by 0.3% to 94.2% and 94.1% respectively compared to the previous quarter (table 1a).

UK coverage at two years increased by 0.1% for MMR to 92.6%, by 0.2% for the Hib/MenC booster to 92.7% and both DTaP/IPV/Hib3 and PCV booster coverage remained at 95.9% and 92.6% respectively [5]. At country level Scotland, Northern Ireland and Wales all achieved at least 95% coverage for all antigens evaluated at two years of age, as did five of the 25 ATs in England (table 2b).

At five years coverage was at least 95% for the primary course of DTaP/IPV/Hib in all countries. UK coverage of MMR1 at five years exceeded the WHO target at 95.1%, the highest quarterly UK figure ever recorded, with all countries and all but five English ATs achieving at least 95%. Scotland, Northern Ireland, Wales and 20 English ATs achieved at least 90% coverage for MMR2 at five years (table 3b).

UK pre-school booster coverage (DTaP/IPV) decreased by 0.7% to 88.5% when compared to the previous quarter; decreases were seen in all countries except Scotland (table 3a).

Selective neonatal hepatitis B coverage for three doses by 12 months of age increased by 1% to 85% compared to the previous quarter and increased by 3% to 75% for those receiving four doses by 24 months (table 4a).

On September 23rd 2015, the Health and Social Care Information Centre (HSCIC) published national statistics for England in their 'NHS Immunisation Statistics, England 2014-15', which also includes 2014-15 annual coverage data for the UK childhood immunisation programme [6]. UK coverage for one dose of MMR vaccine at 24 months decreased by 0.3% to 92.8% compared to 2013-14, with decreases observed in all UK countries. However, UK coverage of MMR1 evaluated at five years increased by 0.2% to 94.8% and MMR2 increased by 0.3% to 89.3%, when compared to the previous year [6, 7]. These are the highest annual MMR coverage estimates achieved for five year olds since evaluation of the two-dose programme began in 1998. UK coverage of other vaccines evaluated at 12 months decreased marginally by 0.1%, by 0.2 – 0.4% at 24 months, but remained very similar to or slightly higher at five years, ranging from -0.1 to 0.4%.

COVER data in England from April 2013

From April 2013, the responsibility for commissioning and coordinating immunisation programmes transferred to NHS England [8]. Population vaccination coverage is a key indicator included in the Public Health Outcomes Framework (PHOF) (Indicator 3.3) [9] with reporting expected for the Local Authority (LA) resident population. From April 2014 England COVER data became Official Statistics and is subject to the code of practice associated with such data [10].

From April 2015, NHS England made changes to its internal structure as part of its Organisational Change Programme 2014/15 (see http://www.england.nhs.uk/about/regional-area-teams/). To reflect these changes this COVER report presents data by English Local Teams (tables 1a-3a) and Area Teams (tables 1b-3b, 4a).

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 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 the PHOF requirements for reporting population vaccination coverage [9].
- 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 which was introduced to the childhood vaccination schedule in September 2015
- 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.

Results for April to June 2015

This report presents quarterly coverage data for children in the UK who reached their first, second, or fifth birthday during the evaluation quarter (April to June 2015). Those reaching one year of age in the quarter are the fourth 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 April to June 2014) 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 April to June 2013) were scheduled to receive their third DTaP/IPV/Hib, second MenC and PCV vaccinations between August and October 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 May and July 2014 [11].

Children who reached their fifth birthday in the quarter (born April to June 2010) were scheduled to receive their third dose DTaP/IPV/Hib and second MenC and PCV vaccinations between August and October 2010. They were also scheduled to receive their first MMR, Hib/MenC booster and PCV booster after their first birthday (April to June 2011) May and July 2011 and their pre-school diphtheria, tetanus, acellular pertussis, inactivated polio booster and second dose MMR from July 2013.

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. Eleven 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. Eleven 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 April to June 2014), are the fourth cohort to have been routinely offered two doses of rotavirus vaccine at two and three months of age, and the fifth 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 CHISs have already been modified to reflect these changes and coverage is presented in table 1a.

Eleven 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 (tables 1a-b).

Five ATs are able to produce rotavirus vaccine coverage data for all former PCTs in their area from CHIS. However, more complete data are available from the temporary PHE sentinel collection via the ImmForm web platform. This collection was introduced to rapidly assess coverage by extracting monthly coverage data directly from GP practices in England for children who had just reached the upper age for receiving the vaccine (25 weeks) [4]. This early evaluation of vaccine coverage has provided assurance that the vaccine has been well accepted in England and will remain in place until routine COVER rotavirus data are available for all areas.

Coverage at 12 months

UK coverage at 12 months for both DTaP/IPV/Hib3 and PCV2 slightly dropped by 0.3% to 94.2% and 94.1% respectively (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 96%, and England at least 93%. Within England 14 out of 25 ATs achieved at least 95% coverage at 12 months for both these antigens (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 eleven English ATs (Q44, Q46, Q47, Q53, Q57, Q59, Q60, Q64, Q65, Q66 and Q69) an increase from seven from previous quarter. In the devolved administrations MenC coverage exceeded 97% and English AT level (where data available) coverage ranged from 95.3% in Thames Valley (Q69) to 98.2% 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 all the devolved administrations. Northern Ireland reported the highest coverage at 94.9 %, Scotland achieved 93.2% and Wales achieved 94.4%. Although rotavirus data was available for only around a quarter of Local Authorities, six ATs (Q53, Q59, Q60, Q65, Q66, Q69) were able to provide full data, where coverage ranged from 85.2% in Devon, Cornwall and Isle of Scilly to 93.6% in Shropshire and Staffordshire (table 1a). Although complete English data were not available through COVER, monthly coverage data for children in England born in April to June 2014 (the 12 month cohort in this COVER report) were evaluated when they had just reached the upper age for receiving the vaccine (25 weeks) between October and December 2014. Monthly vaccine coverage for two doses of rotavirus vaccine at this age was 88.4% [4].

Table 1a. Completed UK primary immunisations at 12 months by country and English Local Teams: April to June 2015 (*January to March 2015*)

	Country	No. of PCTs/ HBs†	DTaP/IPV/Hib3 %	MenC%	PCV2%	Rota2%
	United Kingdom	**176**	**94.2** *(94.5)*	**n/a** *(n/a)*	**94.1** (*94.4*)	**n/a** *(n/a)*
	Wales	**7**	**96.9** (*95.9*)	**98.1** (*97.8*)	**96.8** (*96.9*)	**94.4** *(92.7)*
	Northern Ireland	**4**	**97.4** (*97.5*)	**98.4** (*98.5*)	**97.3** (*97.5*)	**94.9** *(94.8)*
	Scotland	**14**	**97.3** (*97.3*)	**98.1** (*98.0*)	**97.3** (*97.4*)	**93.2** *(93.4)*
	England (Total)	**151**	**93.6** (*94.1*)	n/a (*n/a*)	**93.5** (*93.9*)	**See commentary**
LT code	***NHS England Local Teams***					
Q70	Wessex	4	95.5 (95.9)	n/a	95.3 (95.7)	n/a
Q71	London	6	90.0 (90.3)	n/a	90.1 (90.2)	n/a
Q72	North (Yorkshire & Humber)	10	95.7 (95.6)	n/a	95.6 (95.6)	n/a
Q73	North (Lancashire & Grt Manchester)	5	92.9 (94.3)	n/a	91.9 (93.3)	n/a
Q74	North (Cumbria & North East)	4	96.6 (96.4)	n/a	96.4 (96.3)	n/a
Q75	North (Cheshire & Merseyside)	7	95.9 (94.9)	n/a	95.7 (94.7)	n/a
Q76	Midlands & East (North Midlands)	5	96.2 (96.6)	n/a	95.8 (96.3)	n/a
Q77	Midlands & East (West Midlands)	5	93.7 (94.0)	n/a	93.8 (93.9)	n/a
Q78	Midlands & East (Central Midlands)	5	96.1 (96.5)	n/a	95.9 (96.2)	n/a
Q79	Midlands & East (East)	4	95.8 (95.9)	n/a	95.6 (95.7)	n/a
Q80	South (South West)	8	94.6 (95.2)	n/a	95.0 (95.1)	n/a
Q81	South (South East)	4	88.5 (89.9)	n/a	89.1(89.9)	n/a
Q82	South (South Central)	5	94.4 (95.5)	n/a	94.0 (95.3)	n/a

† Primary Care Trusts/health boards.

n/a accurate estimate not available (see commentary above)

[1]based on coverage data from 3 of 4 PCTs

Table 1b. Completed UK primary immunisations at 12 months NHS England Area Teams : April to June 2015 (January to March 2015)

*NHS England Local team code**	English Area Team (AT code)	No. of former PCT's	DTaP/IPV/Hib3%	MenC%	PCV2%	Rota2%
Q70	Wessex (Q70)	6	95.5 (*95.9*)	n/a (*n/a*)	95.3 (*95.7*)	n/a
Q71	London (Q71)	31	90.0 (*90.3*)	n/a (*n/a*)	90.1(*90.2*)	n/a
Q72	N Yorkshire and Humber (Q50)	5	96.2 (*95.3*)	n/a (*n/a*)	96.1 (*96.1*)	n/a
	S Yorkshire and Bassetlaw (Q51)	5	95.1 (*95.4*)	n/a (*n/a*)	94.8 (*95.0*)	n/a
	W Yorkshire (Q52)	5	95.8 (*95.9*)	n/a (*n/a*)	95.8 (*95.7*)	n/a
Q73	Greater Manchester (Q46)	10	94.5 (*94.8*)	96.5[1] (*n/a*)	94.3 (*94.6*)	n/a
	Lancashire (Q47)	5	89.6 (*93.1*)	94.2 (*n/a*)	87.0 (*90.6*)	n/a
Q74	Durham, Darlington and Tees (Q45)	6	96.4 (*95.6*)	n/a (*n/a*)	96.1 (*95.6*)	n/a
	Cumbria, Northumberland, Tyne and Wear (Q49)	7	96.7 (*96.9*)	n/a (*n/a*)	96.5 (*96.8*)	n/a
Q75	Cheshire, Warrington and Wirral (Q44)	4	96.6 (*96.6*)	97.9 (*97.7*)	96.4 *(96.4*)	n/a
	Merseyside (Q48)	4	95.1 (*93.3*)	n/a (*n/a*)	94.9 (*93.1*)	n/a
Q76	Derbyshire and Nottinghamshire (Q55)	4	95.4 (*96.3*)	n/a (*n/a*)	94.8 (*95.8*)	n/a
	Shropshire and Staffordshire (Q60)	5	97.3 (*97.1*)	98.2 (*98.5*)	97.1 (*97.0*)	93.6
Q77	Arden, Herefordshire and Worcestershire (Q53)	4	97.0 (*95.9*)	98.0 (*96.6*)	96.9 (*95.7*)	94.0
	Birmingham and the Black Country (Q54)	8	92.1 (*93.1*)	n/a (*n/a*)	92.2 (*93.0*)	n/a
Q78	Hertfordshire and the S Midlands (Q58)	5	96.3 (*96.6*)	n/a (*n/a*)	95.9 (*96.4*)	n/a
	Leicestershire and Lincolnshire (Q59)	3	95.9 (*96.2*)	96.7 (*n/a*)	96.0 (*95.9*)	92.6
Q79	East Anglia (Q56)	5	95.6 (*95.6*)	n/a (*n/a*)	95.4 (*95.3*)	n/a
	Essex (Q57)	5	96.1 (*96.4*)	96.9 (*n/a*)	96.0 (*96.2*)	n/a
Q80	Bristol, N Somerset, Somerset and S 7Gloucestershire (Q65)	4	95.7 (*95.7*)	97.6 (*96.9*)	96.0 (*95.5*)	90.6
	Devon, Cornwall, Isles of Scilly (Q66)	4	93.4 (*94.7*)	96.4 (*96.4*)	93.8 (*94.7*)	85.2
Q81	Kent and Medway (Q67)	3	89.1 (*90.1*)	n/a (*n/a*)	89.4 (*90.0)*	n/a
	Surrey and Sussex (Q68)	5	88.0 (89.8)	n/a (*n/a*)	88.8 (*89.8)*	n/a
Q82	Bath, Gloucestershire, Swindon and Wiltshire (Q64)	4	95.0 (*95.6*)	97.5[2] (*97.9*)	94.8 (*95.6*)	n/a
	Thames Valley (Q69)	4	94.0 (95.5)	95.3 (96.3)	93.5 (95.1)	90.7[2]

n/a accurate estimate not available (see commentary above)

[1]based on coverage data from 9 of 10 LAs

[2]based on coverage data from 3 of 4 LAs

* See table 1a for key to local team organisational code

Coverage at 24 months

UK coverage of DTaP/IPV/Hib3 at 24 months remained at 95.9% compared to the previous quarter [5]. Lancashire (Q47), Birmingham and the Black Country (Q54), 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 90.5%, 94.5%, 92.6%, 91% and 92.8% respectively (table 2b).

Compared to the previous quarter, UK coverage for Hib/MenC booster increased by 0.2% to 92.7% and MMR increased by 0.1% to 92.6% (table 2a) [5]. Country-specific comparisons for minimum coverage levels achieved for these vaccines evaluated at 24 months show that Scotland, Wales and Northern Ireland achieved at least 95% coverage, and England achieved at least 92% coverage. Within England four ATs achieved at least 95% for all three vaccines (table 2a).

Table 2a. Completed UK primary immunisations at 24 months by country and NHS England local team: April to June 2015 (*January to March 2015*)

Country	No. of former PCTs/ HBs†	DTaP/IPV/Hib3 %	PCV booster %	Hib/MenC %	MMR1 %
United Kingdom	**176**	**95.9** (*95.9*)	**92.6** (*92.6*)	**92.7** (*92.5*)	**92.6** (*92.5*)
Wales	**7**	**97.6** (*97.6*)	**96.1** (*95.9*)	**95.0** (95.2)	**95.8** (95.5)
Northern Ireland	**4**	**98.2 (97.9)**	**95.9 (95.0)**	**95.8 (94.7)**	**96.1 (94.5)**
Scotland	**14**	**97.9** (*97.8*)	**95.4** (*95.5*)	**95.6** (*95.5*)	**95.3** (*95.2*)
England (Total)	**151**	**95.5** (*95.6*)	**92.1** (*92.1*)	**92.2** (*92.1*)	**92.1** (*92.0*)
NHS England local teams*					
Q70	4	96.8 (95.7)	93.9 (92.7)	94.0 (93.5)	94.1 (93.8)
Q71	6	92.8 (92.6)	86.3 (85.7)	86.4 (86.3)	86.7 (86.5)
Q72	10	97.1 (97.1)	94.8 (94.8)	94.8 (94.8)	94.3 (94.4)
Q73	5	94.9 (95.9)	92.0 (92.1)	91.9 (91.8)	92.4 (92.4)
Q74	4	97.7 (97.6)	95 5 (95.7)	95.7 (96.0)	95.3 (95.6)
Q75	7	97.0 (96.7)	93.8 (93.7)	94.8 (94.3)	94.3 (94.0)
Q76	5	97.6 (97.5)	94.9 (94.8)	94.7 (94.6)	94.4 (94.3)
Q77	5	95.8 (96.3)	92.6 (93.4)	92.8 (92.4)	92.6 (93.1)
Q78	5	97.4 (97.0)	95.0 (95.1)	95.2 (94.9)	94.6 (94.8)
Q79	4	96.7 (96.5)	94.6 (94.3)	94.6 (94.4)	94.0 (93.8)
Q80	8	96.8 (97.1)	93.8 (94.5)	93.8 (93.6)	93.6 (93.7)
Q81	4	91.6 (93.2)	88.8 (89.0)	89.0 (88.8)	88.7 (88.3)
Q82	5	96.0 (95.5)	93.1 (93.6)	92.9 (93.2)	93.0 (93.1)

* See table 1a for key to local team organisational code.

† Primary Care Trusts/health boards

Table 2b. Completed primary immunisations at 24 months by NHS England Area Teams : April to June 2015 (*January to March 2015*)

NHS England Local Team Code*	Area Team code*	No. of former PCTs†	DTaP/IPV/Hib3 %	PCV booster %	Hib/MenC %	MMR1 %
Q70	Q70	6	96.8 (*95.7*)	93.9 (*92.7*)	94.0 (*93.5*)	94.1 (*93.8*)
Q71	Q71	31	92.8 (*92.6*)	86.3 (*85.7*)	86.4 (*86.3*)	86.7 (*86.5*)
Q72	Q50	5	97.3 (*96.9*)	95.6 (*95.4*)	94.9 (*94.2*)	95.1 (*95.0)*
	Q51	5	96.7 (*96.6*)	93.3 (*92.6*)	94.0 (*93.9*)	92.9 (*92.4*)
	Q52	5	97.3 (*97.6*)	95.1 (*95.8*)	95.2 (*95.8*)	94.7 (*95.3*)
Q73	Q46	10	96.9 (*97.2*)	93.5 (*93.2*)	93.2 (*92.7*)	93.9 (*93.3*)
	Q47	5	90.5 (*93.2*)	89.0 (*89.7*)	89.0 (89.7)	89.3 (*90.4*)
Q74	Q45	6	97.7 (*97.5*)	95.4 (*95.4*)	95.8 (*96.2*)	95.1 (*95.1*)
	Q49	7	97.7 (*97.6*)	95.6 (*95.9*)	95.7 (*95.9*)	95.5 (*95.9*)
Q75	Q44	4	97.1 (*97.4*)	93.4 (*94.2*)	95.8 (*95.8*)	94.7 (*95.3*)
	Q48	4	97.0 (*96.0)*	94.3 (*93.3*)	93.7 (*92.8*)	93.9 (*92.8*)
Q76	Q55	4	97.2 (*97.6*)	93.8 (*94.5*)	93.7 (*94.7*)	93.4 (*94.2*)
	Q60	5	98.2 (*97.3*)	96.2 (*95.2)*	96.0 (*94.5*)	95.7 (*94.6*)
Q77	Q53	4	98.4 (*98.5*)	96.0 (*96.4*)	96.5 (*95.5*)	96.8 (*96.7*)
	Q54	8	94.5 (*95.2*)	90.9 (*91.8*)	91.0 (*90.8)*	90.6 (*91.1*)
Q78	Q58	5	97.3 (*96.6*)	95.2 (*95.4*)	95.3 (*95.2*)	94.6 (*94.9*)
	Q59	3	97.6 (*97.7*)	94.7 (*94.5*)	95.0 (*94.3*)	94.8 (*94.8*)
Q79	Q56	5	96.5 (*96.4*)	93.6 (*93.9*)	93.8 (*94.0*)	93.4 (*93.5)*
	Q57	5	97.1 (*96.5*)	95.7 (*94.9*)	95.7 (*94.9*)	94.8 (*94.2)*
Q80	Q65	4	97.4 (*97.6*)	94.4 (*94.2*)	94.4 (*93.1*)	93.6 (*93.0*)
	Q66	4	96.1 (*96.7*)	93.2 (*94.7*)	93.2 (*94.0*)	93.5 (*94.3*)
Q81	Q67	3	92.6 (*94.0*)	89.7 (*88.6*)	90.2 (*88.8*)	89.7 (*87.8*)
	Q68	5	91.0 (*92.6*)	88.1 (*89.3)*	88.3 (*88.9)*	88.0 (*88.6)*
Q82	Q64	4	96.8 (*95.6*)	94.0 (*94.7*)	93.5 (*93.9*)	93.3 (*94.1*)
	Q69	4	95.4 (*95.4*)	92.4 (*92.9*)	92.5 (*92.7*)	92.8 (*92.4*)

* See table 1a and 1b for keys to NHS England local team/Area Team organisational code.

† former Primary Care Trusts

Coverage at five years

UK coverage of MMR1 at five years increased by 0.2% to 95.1%, the highest level ever recorded. All countries and all English ATs except for Surrey and Sussex (Q68) achieved at least 90%. Scotland, Northern Ireland, Wales and 21 English ATs achieved at least 95% coverage for MMR1 and 20 achieved at least 90% for MMR2 at five years (tables 3a and 3b).

UK coverage evaluated at five years increased by 0.4% for Hib/MenC booster, remained at the same levels for DTaP/IPV/Hib3, and decreased by 0.1% for MMR2 and 0.7% for DTaP/IPV booster when compared to the previous quarter [5]. At least 95% coverage was achieved for the primary course of DTaP/IPV/Hib3 for all countries and all but two English ATs (Surrey and Sussex (Q68) and London (Q71)) (tables 3a and 3b).

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

Table 3a. Completed UK primary immunisations and boosters at five years by country and NHS England local team: April to June 2015 (*January to March 2015*)

Country	Number of PCTs/HBs†	Primary		Booster		
		DTaP/IPV Hib3%	MMR1%	MMR2%	DTaP/IPV%	Hib/ MenC%
United Kingdom	**176**	**96.1** (*96.1*)	**95.1** (*94.9*)	**89.2** (*89.3*)	**88.5** (*89.2*)	**93.6** (*93.2*)
Wales	**7**	**97.1** (*97.7*)	**97.2** (*97.6*)	**92.6** (*93.6*)	**92.3** (*93.6*)	**94.5** (*94.8*)
N. Ireland	**4**	**98.0** (*98.3*)	**97.6** (*97.4*)	**93.2** (*93.6*)	**93.6** (*94.5*)	**96.7** (*96.7*)
Scotland	**14**	**98.5** (*98.2*)	**97.5** (*97.2*)	**93.5** (*93.0*)	**94.2** (*93.6*)	**96.5** (*95.3*)
England (Total)	**151**	**95.8** (*95.7*)	**94.7** (*94.5*)	**88.5** (*88.6*)	**87.7** (*88.4*)	**93.2** (*92.8*)
English Local Teams						
Q70	4	95.5 (96.3)	94.4 (96.0)	90.0 (91.6)	90.5 (91.8)	93.0 (94.0)
Q71	6	93.0 (92.3)	91.5 (90.5)	80.4 (80.1)	78.4 (77.0)	88.8 (87.5)
Q72	10	97.1 (97.1)	96.2 (96.2)	91.7 (92.2)	92.1 (92.5)	95.6 (95.5)
Q73	5	96.5 (96.7)	96.3 (96.4)	89.8 (90.9)	86.3 (89.1)	93.7 (93.5)
Q74	4	97.9 (97.8)	97.0 (96.6)	93.3 (93.6)	94.0 (94.4)	96.8 (96.3)
Q75	7	96.6 (96.7)	96.9 (96.4)	90.9 (90.8)	91.6 (90.7)	95.0 (94.4)
Q76	5	97.8 (97.6)	96.6 (96.1)	91.8 (92.3)	92.2 (92.6)	96.1 (95.7)
Q77	5	96.5 (96.7)	96.3 (95.8)	88.8 (90.2)	87.7 (90.6)	93.2 (92.5)
Q78	5	97.1 (96.5)	96.0 (95.6)	91.8 (91.5)	92.4 (92.4)	94.4 (94.7)
Q79	4	96.7 (96.4)	94.9 (94.6)	92.0 (90.8)	92.0 (91.9)	94.4 (94.2)
Q80	8	96.9 (97.4)	96.2 (96.5)	90.8 (92.3)	87.0 (92.2)	95.0 (93.8)
Q81	4	92.5 (93.4)	90.5 (90.8)	83.7 (82.2)	82.9 (83.2)	89.8 (90.3)
Q82	5	96.7 (96.6)	95.6 (95.5)	91.3 (90.5)	90.1 (90.5)	94.5 (94.2)

* See table 1a for key to NHS England local team organisational code.

3b. Completed primary immunisations and boosters at five years by NHS England Area Team, April to June 2015 (*January to March 2015*)

NHS England local team Code*	Area Team (AT) code*	No. of former PCTs† in AT	Primary		Booster		
			DTaP/IPV Hib3 %	MMR1 %	MMR2 %	DTaP/ IPV %	Hib/ MenC
Q70	Q70	6	95.5 (*96.3*)	94.4 (*96.0*)	90.0 (*91.6*)	90.5 (*91.8*)	93.0 (*94.0*)
Q71	Q71	31	93.0 (*92.3*)	91.5 (*90.5*)	80.4 (*80.5*)	78.5 (*77.0*)	88.8 (*87.5*)
Q72	Q50	5	97.4 (*96.6*)	96.5 (*95.7*)	92.4 (*91.6*)	92.5 (*92.4*)	94.7 (*94.0*)
	Q51	5	96.4 (*96.6*)	95.4 (*95.2*)	90.3 (*90.9*)	90.7 (*91.1*)	95.6 (*95.4*)
	Q52	5	97.2 (*97.6*)	96.5 (*97.1*)	92.1 (*93.3*)	92.6 (*93.4*)	96.1 (*96.4*)
Q73	Q46	10	96.7 (*97.1*)	96.6 (*96.4*)	91.6 (*92.2*)	89.7 (*91.4*)	94.1 (*93.5*)
	Q47	5	96.1 (*96.0*)	95.7 (*96.3*)	86.2 (*87.9*)	79.2 (*83.9*)	93.1 (*93.0*)
Q74	Q45	6	97.9 (*97.5*)	96.7 (*95.7*)	93.2 (*92.8*)	94.0 (*93.6*)	96.7 (*96.3*)
	Q49	7	97.8 (*98.0*)	97.1 (*97.3*)	93.4 (*94.1*)	93.9 (*95.0*)	96.9 (*96.3*)
Q75	Q44	4	96.2 (*95.8*)	96.4 (*95.8*)	91.2 (90.2)	92.2 (*90.6*)	94.2 (*93.2*)
	Q48	4	97.0 (*97.5*)	97.4 (*97.1*)	90.6 (*91.6*)	90.9 (*90.7*)	95.9 (*95.7*)
Q76	Q55	4	97.8 (*97.5*)	96.0 (*96.2*)	91.3 (*92.1*)	91.8 (*92.0*)	95.6 (*95.9*)
	Q60	5	97.8 (*97.7*)	97.3 (*96.0*)	92.4 (*92.5*)	92.7 (*93.5*)	96.7 (*95.6*)
Q77	Q53	4	97.5 (*97.7*)	97.5 (*96.8*)	92.8 (*94.4*)	92.1 (*95.3*)	93.9 (*92.9*)
	Q54	8	96.0 (*96.1*)	95.6 (*95.2*)	86.5 (*87.9*)	85.2 (*88.0*)	92.7 (*92.3*)
Q78	Q58	5	96.9 (*96.5*)	95.7 (*95.4*)	92.1 (*91.8*)	92.8 (*92.9*)	95.0 (*95.3*)
	Q59	3	97.4 (*96.4*)	96.5 (*96.2*)	91.2 (*91.0*)	91.6 (*91.4*)	93.3 (*93.5*)
Q79	Q56	5	96.2 (*95.8*)	94.2 (*94.1*)	91.4 (*89.7*)	90.7 (*90.7*)	93.1 (*93.4*)
	Q57	5	97.4 (*97.1*)	95.8 (*95.4*)	92.7 (*92.2*)	93.7 (*93.5*)	96.2 (*95.3*)
Q80	Q65	4	97.9 (*97.7*)	97.1 (*96.7*)	91.5 (*92.4*)	88.8 (*91.5*)	96.1 (*93.6*)
	Q66	4	96.0 (*97.1*)	95.3 (*96.4*)	90.2 (*92.3*)	85.2 (*93.0*)	94.0 (*94.1*)
Q81	Q67	3	95.4 (*94.5*)	94.5 (*93.0*)	87.4 (*81.1*)	87.2 (*82.3*)	93.3 (*92.4*)
	Q68	5	90.7 (92.6)	88.0 (*89.3*)	81.3 (*82.9*)	80.2 (*83.8*)	87.5 (*88.9*)
Q82	Q64	4	96.9 (*96.6*)	95.9 (*95.3*)	91.9 (*91.4*)	91.7 (*92.3*)	95.3 (*94.4*)
	Q69	4	96.5 (*96.5*)	95.3 (*95.7*)	90.9 (*90.0*)	89.2 (*89.4*)	94.1 (*94.1*)

* See table 1a and 1b for keys to NHS England local team/Area Team organisational code .

† former Primary Care Trusts

Neonatal hepatitis B vaccine coverage in England: April to June 2015

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 April to June 2014), and coverage of four doses of vaccine in infants who reached two years of age (i.e. those born between April to June 2013) are presented by Area Team in table 4a below.

PHE received 131 (87%)12 month coverage returns and 129 (85%) 24 month coverage returns for former PCTs. The quality of these data is 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. Fifteen 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 increased by 1% to 85% compared to the last quarter and coverage of four doses at 24 months increased to 3% to 75% [5].

Table 4a. Neonatal hepatitis B coverage in England by NHS England Area Team: April to June 2015 (*January to March 2015*)

Area Team (AT code)*	Former PCT returns with 12 month data	12 month deno-minator	% Coverage at 12 months	Former PCT returns with 24 month data	24 month deno-minator	% Coverage at 24 months
Q44	4 of 4	5	100 (*100*)	4 of 4	3	100 (*100*)
Q45	6 of 6	2	100 (67)	6 of 6	3	100 (*100*)
Q46	9 of 10	49	55 (*80*)	9 of 10	94	31 (*35*)
Q47	0 of 5	–	– (67)	0 of 5	–	– (0)
Q48	3 of 4	7	71 (*100*)	3 of 4	5	80 (*73*)
Q49	7 of 7	6	83 (*100*)	7 of 7	4	100 (*100*)
Q50	3 of 5	3	100 (57)	3 of 5	3	100 (*100*)
Q51	5 of 5	13	92 (*100*)	5 of 5	21	100 (*100*)
Q52	5 of 5	21	100 (100)	5 of 5	17	94 (*90*)
Q53	3 of 4	6	83 (*100*)	3 of 4	6	100 (*100*)
Q54	3 of 8	6	83 (38)	3 of 8	3	67 (*33*)
Q55	4 of 4	8	100 (*100*)	4 of 4	8	88 (100)
Q56	5 of 5	9	100 (*100*)	5 of 5	10	80 (*89*)
Q57	5 of 5	19	89 (75)	5 of 5	6	100 (*86*)
Q58	5 of 5	26	100 (*94*)	5 of 5	34	94 (94)
Q59	2 of 3	18	17 (25)	2 of 3	9	22 (29)
Q60	5 of 5	6	83(*100*)	5 of 5	3	100 (*100*)
Q64	4 of 4	5	100 (*57*)	4 of 4	3	100 (*80*)
Q65	4 of 4	10	100 (*100*)	4 of 4	6	100 (*80*)
Q66	4 of 4	2	100 (-)	4 of 4	1	- (*100*)
Q67	3 of 3	13	100 (*100*)	3 of 3	6	100 (*100*)
Q68	4 of 5	10	100 (*88*)	3 of 5	9	100 (*92*)
Q69	4 of 4	21	90 (*96*)	4 of 4	32	94 (*75*)
Q70	5 of 6	29	100 (*79*)	5 of 6	9	89 (*100*)
Q71	29 of 31	191	88 (*83*)	28 of 31	192	81 (*79*)
England	**131 of 151**	**485**	**85 (*84*)**	**129 of 151**	**487**	**75 *(72)***

* See table 1b for key to NHS England Area Team organisational code

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

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/sites3/page.cfm?orgid=457&pid=54144/

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

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