Public Health England

Health Protection Report
weekly report

Volume 9 Numbers 26 Published on: **24 July 2015**

Current News

Infection Reports

Vaccine preventable infections

Vaccine coverage reports

Volume 9 Number 26 Published on: **24 July 2015**

Cyclospora outbreak related to travel to Mexico

As of 24 July, 24 cases of cyclospora infection have been reported in England and Scotland in June and July 2015, of which 21 were associated with travel to Mexico. No cases have been reported in Wales or Northern Ireland to date. Cases have been to various hotels and resorts on the Riviera Maya coast of Mexico, which includes Cancun, Playa del Carmen and Sian Ka'an, suggesting the source may be a food product that was distributed to several hotels.

Most cyclospora cases in England and Wales in recent years have been reported between weeks 23 and 33 (in June and July) so the current excess is not unusual at this time of the year. However in previous years, on average, one case per year has been associated with travel to Mexico, so the recent excess of cases linked to Mexico is unusual. There is currently an outbreak of cyclospora in Texas with over 182 cases, and large outbreaks in Texas in 2013 and 2014 were associated with Mexican salad products [1,2].

Cyclospora cayetanensis is a coccidian protozoan parasite that infects humans and other primates. Infection is characterised by diarrhoea, abdominal cramping, nausea, flatulence, anorexia, fatigue, low-grade fever, and weight loss and is commonly derived from food or water contaminated by human faeces [3,4]. The oocysts of this organism are not infectious for around 10 days after they are passed in faeces and person-to-person transmission does not occur. The foods previously involved include soft fruits such as raspberries and salad products such as coriander, basil and lettuce.

There may be substantial under-ascertainment and reporting of cyclospora cases, because not all patients are tested for cyclospora and not all positives are reported by laboratories. In addition, these organisms can be difficult to spot and recognise in unstained wet films or concentrates. Faecal samples can be examined using a wet prep, and if structures resembling cyclospora are observed, the slide can be viewed under UV light as the parasite autofluoresces or stained using Modified ZN staining on fixed films [5].

In view of the ongoing outbreak we recommend that patients returning from Mexico with diarrhoea are tested for cyclospora. Cases in England should be reported to the Public Health England (PHE) local health protection team, and positive samples referred to the Cryptosporidium Reference Unit in Swansea for confirmation and typing.

Health advice for travellers to Mexico, including advice on food and water hygiene, can be found on the NaTHNaC website.

References

1. Abanyie F, Harvey RR, Harris JR, Wiegand RE, Gaul L, Desvignes-Kendrick M, *et al*. (2015). 2013 multistate outbreaks of *Cyclospora cayetanensis* infections associated with fresh produce: focus on the Texas investigations. *Epidemiology and Infection*: 1-8.

2. Centers for Disease Control and Prevention (2013). Outbreaks of cyclosporiasis – United States, June-August 2013. *Morbidity and Mortality Weekly Report* (MMWR) **62**(43): 862.

3. Ortega YR, Sanchez R (2010). Update on Cyclospora cayetanensis, a food-borne and waterborne parasite. *Clinical Microbiology Reviews* **23**(1): 218-234.

4. Chacin-Bonilla L (2010). Epidemiology of Cyclospora cayetanensis: a review focusing in endemic areas. *Acta tropica* **115**(3): 181-193.

5. PHE-SMI B31. UK Standards for Microbiology Investigations: Investigation of specimens other than blood for parasites.

EVD: international epidemiological summary (at 19 July 2015)

The Ebola Virus Disease (EVD) outbreak in West Africa continued with cases reported in two countries in the week-ending 19 July 2015. A that time a total of 27,741 clinically compatible cases of EVD had been reported associated with this outbreak, 11,284 of which had died.

There were 26 confirmed cases of EVD reported in the week-ending 19 July: 22 in Guinea and four in Sierra Leone, compared to 13 in Guinea, three in Liberia and 14 in Sierra Leone in the previous week (see table and map below).

The main foci of transmission remain within Conakry and Freetown, the capital cities of Guinea and Sierra Leone respectively, for the second week in a row.

All but two of the 26 cases arose among registered contacts of previous EVD cases indicating improvements in contact ascertainment and monitoring in both countries.

Three new healthcare worker infections were recorded: two in Guinea and one in Sierra Leone.

No new cases were reported in Liberia where six cases have been confirmed since 29 June 2015. Investigations are ongoing into the source of this outbreak

On 20 July, Italy was declared EVD free after the completion of 42 days since their only EVD case tested negative and was discharged from hospital.

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 below.

Countries currently or previously affected by EVD as at 19 July 2015

Country		Total CCCs¥	Total CCs	Total deaths	New CCCs¥ reported in preceding week*	New confirmed cases in preceding week*	Current status (Date declared EVD free)
Guinea		3,783	3,322	2,512	23	22	Active transmission
Liberia	Outbreak 1	10,666	3,151	4,806	0	0	Declared over 9 May 2015**
	Outbreak 2	6	6	2	-1	0	Localised transmission**
Sierra Leone		13,250	8,692	3,949	4	4	Active transmission
Italy		1	1	0	0	0	EVD free (20 July 2015)
UK		1	1	0	0	–	EVD free (7 March 2015)
Nigeria		20	19	8	0	–	EVD free (19 Oct 2014)
Senegal		1	1	0	0	–	EVD free (17 Oct 2014)
Spain		1	1	0	0	–	EVD free (2 Dec 2014)
Mali		8	7	6	0	–	EVD free (18 Jan 2015)
USA		4	4	1	0	–	Considered EVD free^ (23 Oct 2014^)
TOTAL		**27,741**	**15,205**	**11,284**	**26**	**26**	–

Data sources: WHO Ebola Situation Report 22 July 2015 (data to 19 July) and statement from Ministry of Health Italy on imported Italian case, 10 June 2015.

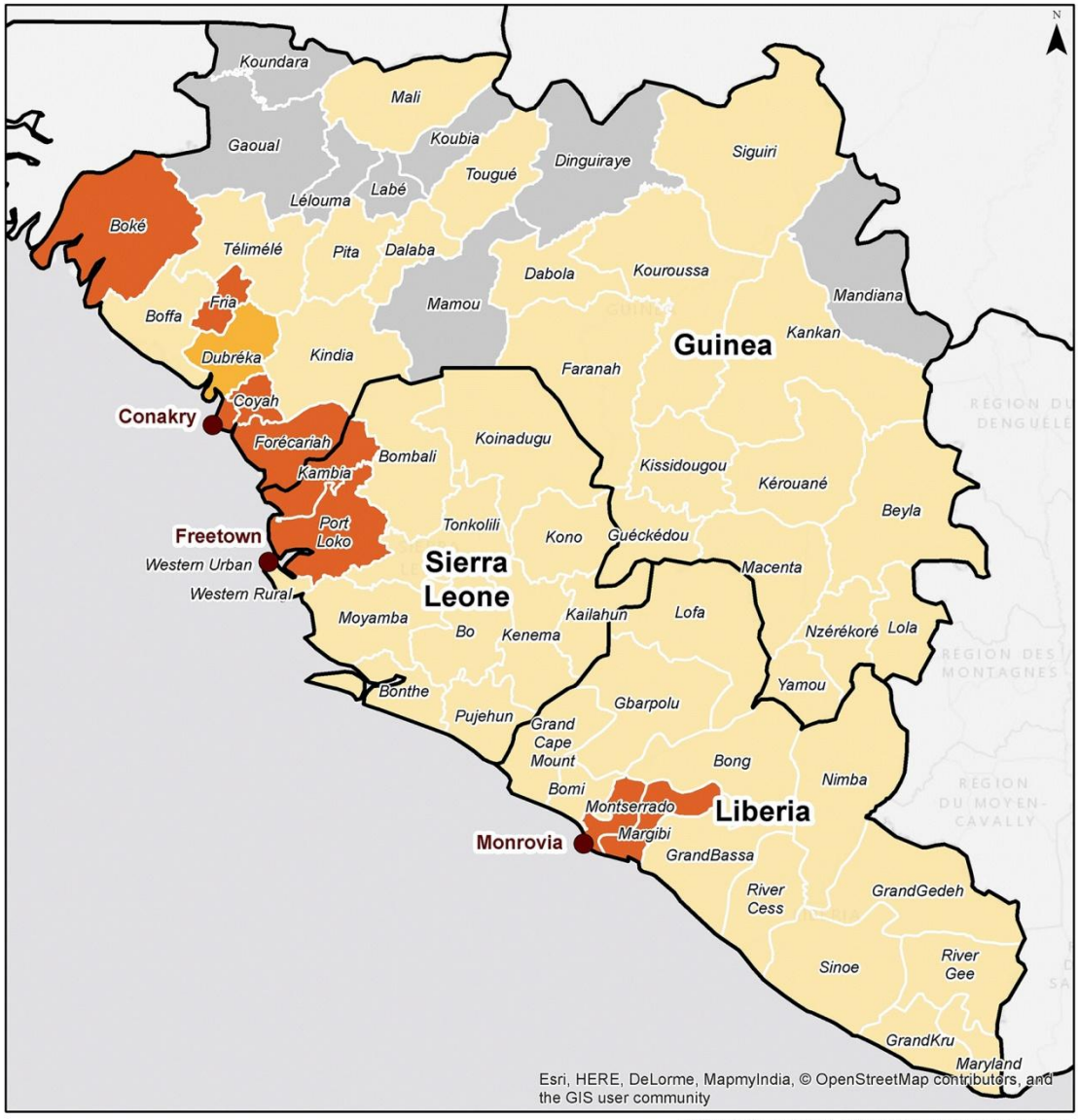
¥ Clinically compatible cases (CCC) represents a combination of suspected, probable and confirmed cases. CCC totals are under constant revision and reclassification as suspect cases are confirmed or discounted.

***** The reporting period is one week: 13 July to 19 July (WHO latest Ebola situation report 22 July 2015).

****** Liberia was declared EVD free on 9 May, 2015, following 42 days without a case with the country entering a three-month period of enhanced surveillance. On 29 June, routine surveillance confirmed a new case in Margibi County, with five further cases reported in registered contacts since that date. The origin of infection is currently under investigation.

^ More than 42 days have passed since last case tested negative.

Ebola Outbreak Distribution Map



Transfusion transmitted infections (UK): 2014

A description of the possible transfusion-transmitted infection incidents investigated by the United Kingdom (UK) Blood Services in 2014 has been published in the Serious Hazards of Transfusion (SHOT) annual report [1].

The risk of a screened component transmitting hepatitis B virus (HBV), hepatitis C virus (HCV) or human immunodeficiency virus (HIV) in the UK is very low [2]. Nevertheless, to maintain haemovigilance, investigations are performed if a recipient is suspected to have been infected via transfusion.

UK Blood Service investigations in 2014 have confirmed that there were:

- no proven bacterial transfusion-transmissions reported in 2014;
- two near miss bacterial incidents;
- one transfusion-transmitted hepatitis E virus (HEV) incident following a transfusion in 2014 affecting two recipients.

The risk of bacterial transmission is not completely abolished by bacterial screening of platelets. Alerting the Blood Service, immediately, of significant adverse reactions – including those suspected of being the result of bacterial contamination of a component – allows associated packs to be recalled, if necessary.

Suspected viral transmissions should also be reported to the blood services who can advise on the information required and how to proceed. The HEV incident in 2014 was reported by one of the health protection teams to the Blood Service for investigation. Blood donations in the UK are not currently screened for HEV. The Advisory Committee on the Safety of Blood, Tissues and Organs (SaBTO) has set up a working group to consider the risk of hepatitis E transmission via blood in the UK and what action, if any, should be taken. Recommendations from this work are likely to be in the public domain by the Autumn of 2015.

See the SHOT annual report [1] for a fuller description of incidents investigated in 2014 with commentary on cytomegalovirus (CMV), cumulative data by transfusion year and advice on what to do if you suspect a transfusion transmitted infection incident has occurred.

For further information please contact the NHSBT/PHE Epidemiology Unit at: epidemiology@nhsbt.nhs.uk.

References

1. NHSBT (2015). SHOT Annual Report 2014.
2. NHSBT/PHE (September 2014). Safe supplies: reflecting on the population 2013 annual review.

One Health Report on human and animal antibiotic use, sales and resistance (UK): 2013

The joint One Health report – presenting data on antimicrobial usage and bacterial resistance in selected human and animal pathogens in the UK – was published by PHE and the Veterinary Medicines Directorate on 22 July 2015 [1].

The One Health report brings together the most recently available UK data on antibiotic resistance in key bacteria that are common to animals and humans and, details on the amount of antibiotics sold for animal health and welfare and antibiotics prescribed to humans, with the following aims:

- to encourage further joint working between the human and animal sectors;
- to identify the emerging and current antibiotic resistance threats in three key bacteria in humans and animals;
- to identify differences in surveillance methodology and data gaps that limit our ability to compare trends between the two fields, both within the UK and across Europe;
- to evaluate available data from humans and animals side by side and begin to assess the relationship between antibiotic sales, use and resistance across the two sectors;
- to develop recommendations to improve the surveillance of antibiotic use and resistance in humans and animals.

The bacteria selected for this report are based on the following: bacteria that are transmitted through the food-borne route (salmonella and campylobacter) and *Escherichia coli* (*E. coli*), an important organism that lives in the gut of both humans and animals and can cause opportunistic and invasive disease in all species.

There are many caveats surrounding interpretation of the data presented in the report and in some cases the methods of data collection vary to such an extent that they cannot be meaningfully compared. This highlights the joint responsibility of the human and animal sectors in tackling antimicrobial resistance (AMR) and the importance of strengthened collaboration between them.

Escherichia coli

In 2013, 35,716 bloodstream infections in people due to *E. coli* were reported, making it the commonest cause of bloodstream infection in the UK. Antibiotic resistance results were available for more than 70% of these infections. Third-generation cephalosporin (cefotaxime and/or ceftazidime) resistance was reported in 10%, ciprofloxacin resistance in 18%, piperacillin-tazobactam resistance in 9% and carbapenem resistance in less than 1%. These are important antibiotics for the treatment of this infection.

In 2013, clinical surveillance yielded 3,320,807 isolates of *E. coli* from all livestock groups. Resistance to the third-generation cephalosporins cefotaxime and ceftazidime was seen in 11% and 6%, respectively; no antibiotic susceptibility testing (AST) for ciprofloxacin, piperacillin-tazobactam or carbapenems was performed. Enrofloxacin resistance was 6%; ciprofloxacin is an active metabolite of enrofloxacin, an antibiotic authorised solely for veterinary use. EU harmonised surveillance from pigs reported <1% of cefotaxime and ciprofloxacin resistance; carbapenems and piperacillin-tazobactam were not tested..

Camylobacter

Campylobacter gastroenteritis was the most common human-acquired bacterial zoonosis, with 66,575 cases reported in 2013. The majority of infections are self-limiting and do not require antibiotic treatment. However, in cases of invasive infection, severe disease or when individuals are immunocompromised, antibiotic treatment is required. Antibiotic resistance results were available for approximately 45% of bacterial isolates. Ciprofloxacin resistance was reported in 42% and erythromycin resistance in 2.5%. EU-harmonised surveillance of AMR in healthy pigs at slaughter yielded 141 *Campylobacter coli* (*C. coli*) isolates with 13% ciprofloxacin resistance and 28% erythromycin resistance. Similar surveillance performed in broiler chickens found 31% ciprofloxacin resistance in 61 *C. jejuni* isolates, 55% resistance in 33 *C. coli* and 3% erythromycin resistance in 33 *C. coli*.

Salmonella

As with campylobacter, salmonella infections are frequently self-limiting and require no treatment; however, antibiotics may be necessary in severe cases. In 2013, 8,459 human cases of non-typhoidal salmonella infections were reported in the UK through routine laboratory surveillance, with more than 70% referred to the reference laboratories for speciation and antibiotic resistance testing. Resistance to cefotaxime and ciprofloxacin was noted in 2% and 16% of tested isolates, respectively.

Salmonella species vary depending on the animal species from which they are isolated. Clinical and statutory surveillance of salmonella in animals showed very different resistance profiles across animal species: antibiotic resistance was uncommon in salmonella species from sheep or cattle but more frequent in salmonella species from pigs or turkeys. EU-harmonised surveillance was performed in healthy broilers, layers, turkeys and pigs in 2013. Cefotaxime resistance was rare: in salmonella isolated from pigs it was 2% and was not detected in other animals. Ciprofloxacin resistance was not detected in 2,2761,834 isolates from clinical surveillance. Cefotaxime and ciprofloxacin resistance were rare.

Antibiotic prescriptions and sales in humans and animals

In 2013, total antibiotics dispensed to humans through prescriptions was 531.2 tonnes and total sales for animal use comprised 418.7 tonnes, ie of the total antibiotic use that was measurable in the UK, humans used 56% of total antibiotic tonnes used. The most frequently used antibiotics in humans were penicillins (64%) and tetracyclines (10%). Antibiotics sold for animal use were most frequently tetracyclines (43.5%) and penicillins (21.7%). Four antibiotic groups are defined by the World Health Organization as critically important for human use: macrolides, quinolones, cephalosporins and glycopeptides. More of these antibiotics are used in humans than animals.

The One Health report is an important first step in building the data required to contain antibiotic resistance and to develop coordinated surveillance activities regarding antibiotic use and resistance in human and animal health across the UK and Europe. For the three bacteria in this report, significant resistance is identified from human and animal surveillance across a wide range of antibiotics. The aim is for the approach adopted in the report to be enhanced in public and professional activities to develop cross-sectoral understanding and improved working in the future.

Reference

1. PHE/VMD (22 July). UK One Health Report: Joint report on human and animal antibiotic use, sales and resistance, 2013.

Public Health England

Health Protection Report
weekly report

Volume 9 Numbers 26 Published on: **24 July 2015**

Infection Reports

Vaccine preventable infections

- **Laboratory reports of hepatitis A infection, and hepatitis C, England and Wales, 2014**
- **Annual report from the sentinel surveillance study of blood borne virus testing in England: data for January to December 2014**

Vaccine coverage reports

- **Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, January to May 2015**
- **Pneumococcal Polysaccharide Vaccine (PPV) coverage report, England, April 2014 to March 2015**
- **Shingles vaccine coverage report, England, September 2014 to May 2015**

Infection reports
Volume 9 Number 26 Published on: 24 July 2015

Immunisation

Laboratory reports of hepatitis A infection, and hepatitis C: 2014

1. Laboratory reports of hepatitis A infection: 2014

During 2014, there were 300 confirmed laboratory reports of hepatitis A virus (HAV) infection in England and Wales (Table 1). The greatest number of reports were among the 25 to 34 years age group (n=52), no cases of hepatitis A were reported in the under 1 age group. More reports were received for females than males during the second and fourth quarter of 2014, with more reports among males during the first and third quarter (Table 1).

Table 1: Laboratory reports of hepatitis A by age, sex, and quarter, England and Wales, 2014*

Age group (years)	Q1 Jan-Mar			Q2 Apr-Jun			Q3 Jul-Sep			Q4 Oct-Dec			Total
	Female	Male	NK	Female	Male	NK	Female	Male	NK	Female	Male	NK	
<1	0	0	0	0	0	0	0	0	0	0	0	0	0
1 to 4	0	2	1	1	0	0	3	3	0	6	5	0	21
5 to 9	3	3	0	3	0	0	4	6	0	5	3	0	27
10 to 14	3	2	0	2	1	0	3	2	0	6	2	0	21
15 to 24	7	4	0	4	2	0	7	3	0	8	6	0	41
25 to 34	0	10	0	3	3	0	4	8	0	13	11	0	52
35 to 44	3	3	0	6	2	0	2	7	0	3	4	0	30
45 to 54	3	8	0	4	4	0	3	5	0	3	4	0	34
55 to 64	3	2	0	5	4	0	2	3	0	3	2	0	24
≥65	8	4	0	12	3	0	5	6	0	7	5	0	50
NK	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**30**	**38**	**1**	**40**	**19**	**0**	**33**	**43**	**0**	**54**	**42**	**0**	300

* Due to late reporting, numbers for each quarter may have changed slightly since their HPR quarterly reports.

The number of laboratory reports by PHE Centre is presented below. Reports were assigned to a PHE Centre according to i) the patient's place of residence ii) the postcode of the patient's registered GP practice, iii) the postcode of the source laboratory. In 2014, the greatest number of hepatitis A reports were from the London (n=118) and South East (n=55) regions (Table 2). The comparatively high number of reports from London and the South East was consistent with previous years. Overall, there was a similar number of reports received during 2014 (n=300) compared to 2013 (n=283).

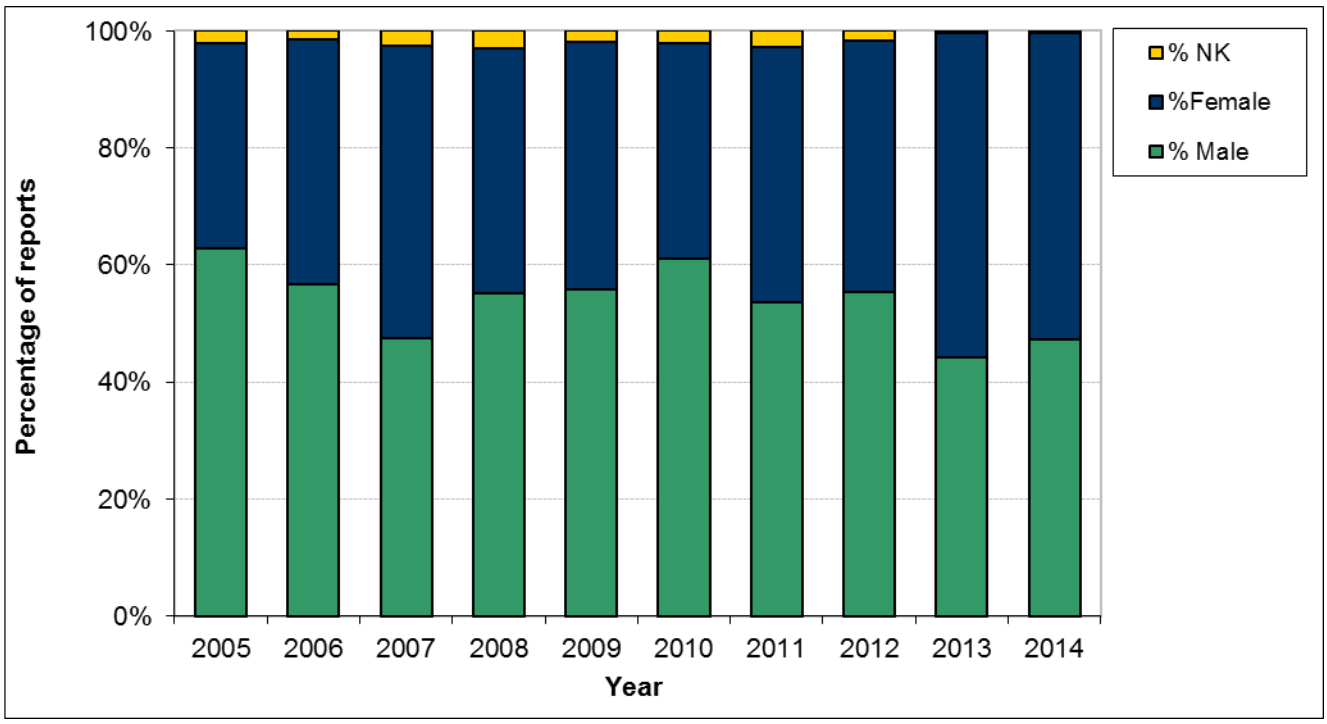
The overall trend has been a decline in the number of reports since 2005. The increased number of reports during 2010 was due to unrelated outbreaks of hepatitis A in the London and the South West regions. A number of clusters were also identified in 2014. Due to the small number of laboratory reports per PHE Centre for all centres apart from London trends in sub-national data over time should be interpreted with caution.

Table 2: Laboratory reports of hepatitis A by PHE Centre (England) and Wales (2005-2014)

PHE Centre	Year									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
East Midlands	31	15	13	19	14	9	6	7	8	10
East of England	41	40	31	34	38	36	24	25	23	15
London	28	47	50	54	53	72	69	71	91	118
North East	31	12	14	5	8	12	10	13	10	9
North West	136	71	63	48	64	56	24	28	34	22
South East	26	28	32	66	50	28	44	38	29	55
South West	52	40	33	30	24	48	11	18	29	14
West Midlands	58	66	71	67	59	61	41	44	29	32
Yorkshire and Humber	67	54	36	27	34	40	23	36	19	17
Wales	16	25	20	10	12	9	5	8	11	8
Total	**486**	**398**	**363**	**360**	**356**	**371**	**257**	**288**	**283**	**300**

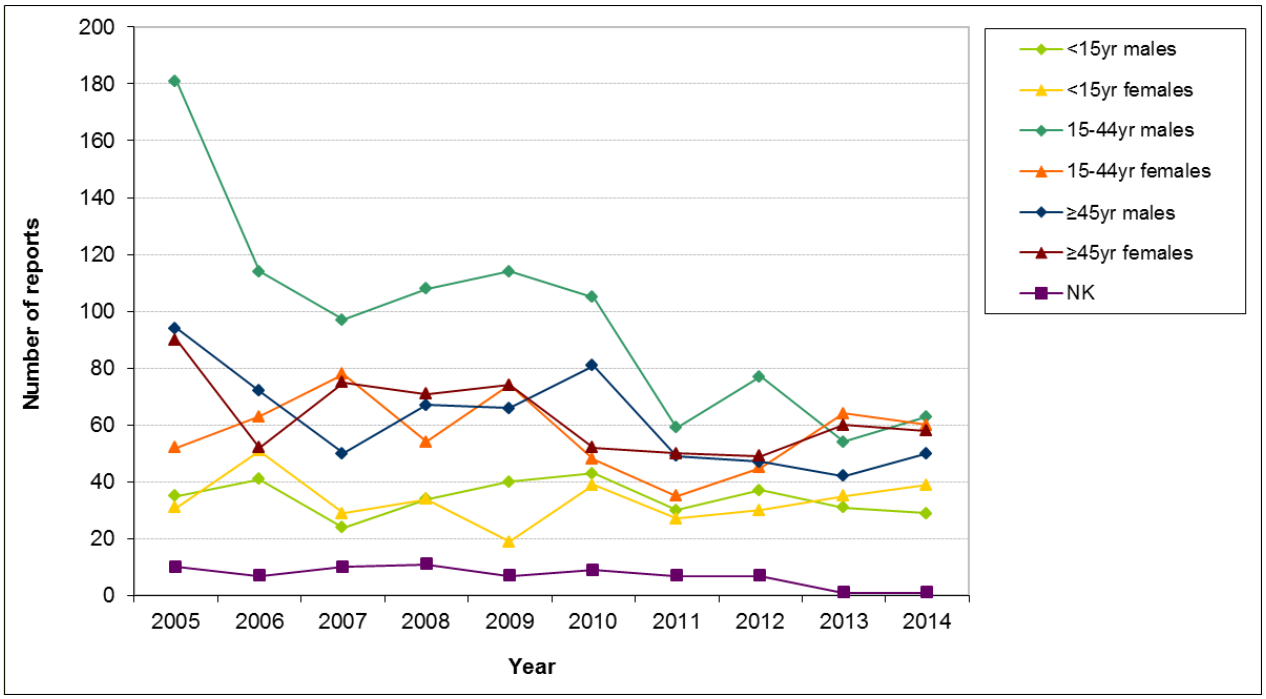
Age and gender were well completed each year (>98% complete) (Figure 1). Where known, males accounted for 47% (142/300) of reports during 2014 (Figure 1). As reported last year, since 2005 the majority of reports were among males for all years excluding 2007, and most recently also 2013 and 2014 (Figure 1). The proportion of reports among males has varied slightly each year; overall males have accounted for 57% of hepatitis A laboratory reports during this period (range 4-63%).

Figure 1: Percentages of hepatitis A laboratory reports by sex, England and Wales (2005-2014)



In 2014, the number of reports received from both the 15 to 44 year old males and those aged 45 years and over increased compared to 2013, (Figure 2). In comparison contrary to the previously reported increase in the number of reported received from 15 to 44 year old females there was a slight drop between 2013 and 2014. During 2014, males accounted for 46% of reports among the 45 years and over age group, 51% of reports in the 15 to 44 age group, and 43% of reports in the under 15 years age group. In comparison during 2013 males accounted for 46% of reports in the 15 to 44 years age group.

Fig. 2: Laboratory reports of hepatitis A by age and sex, England and Wales (2005-2014)



As reported previously, there was no risk factor information reported for anything other than recent travel in 2014. Travel history was available for 16.7% of reported cases, compared to 2013 when 15.2% had a known travel history (Table 3). Overall, risk factor information including travel history remains rare, which limits the conclusions that can be drawn from these data. More complete risk factor information would enable a better understanding of the current epidemiology of hepatitis A virus infection in England and Wales.

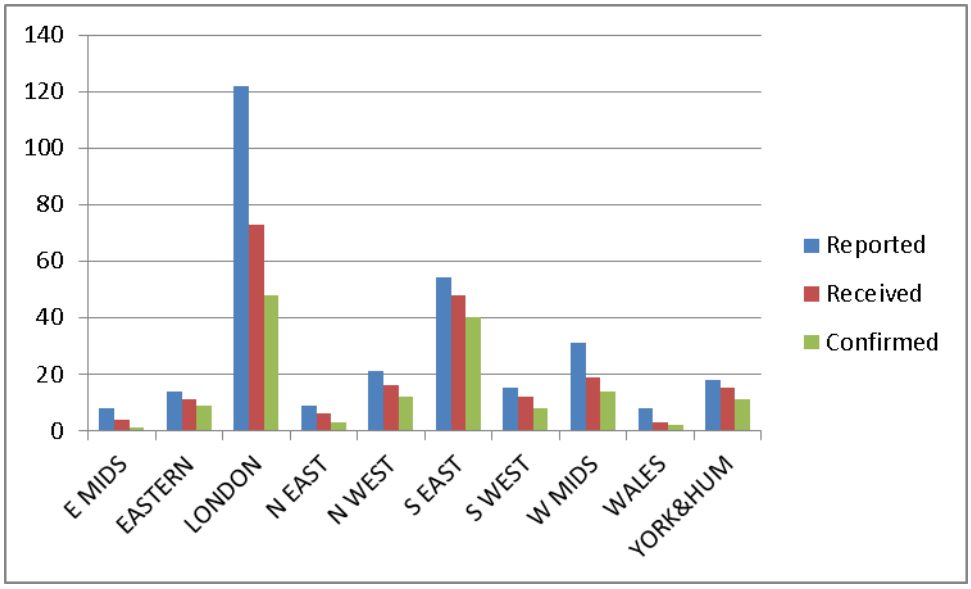
Table 3. Trends in hepatitis A laboratory reports, England and Wales (2005-2014)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
No. of reports	486	398	363	360	356	371	257	288	283	300
No. (%) aged 15-44 years	240 (49%)	182 (46%)	178 (49%)	167 (46%)	190 (53%)	157 (42%)	96 (37%)	122 (%)	118 (42%)	123 (41%)
No. (%) male	310 (63%)	227 (57%)	172 (47%)	209 (55%)	220 (56%)	230 (61%)	138 (54%)	162 (55%)	127 (44%)	142 (47%)
No. (%) with travel history	18 (3.7)	35 (8.8)	53 (14.6)	60 (16.7)	64 (18.0)	66 (17.8)	43 (16.7)	62 (21.5)	43 (15.2)	50 (16.7)
No. (%) travelled abroad	9 (1.9)	17 (4.3)	23 (6.3)	18 (5.0)	13 (3.7)	29 (7.8)	7 (2.7)	20 (6.9)	10 (3.5)	4 (1.3)

Reference laboratory confirmation and phylogeny of hepatitis A infection: 2014

Of the 300 laboratory reports of acute HAV infection during 2014, 207 (69%) had samples forwarded to the Virus Reference Department (VRD) for confirmation. Of the 93 (31%) cases who did not have a sample forwarded to VRD for confirmation, 2 were SGSS errors, 4 were known false positives, 1 was a laboratory control not a patient, 11 had no sample remaining and 10 had samples forwarded for HEV testing For the remaining 65 cases no sample or information was received. Acute HAV infection was not confirmed in 28.5% (59/207) of the forwarded samples. The remaining 148 (71.5%) cases were confirmed to have acute HAV infection. In addition 36 cases were confirmed to have acute HAV infection that had not been reported through the laboratory reporting system although they were recorded in HPzone. The breakdown of samples received per region can be seen in Figure 1.

Figure 1. Number of cases received for confirmation by region and the number confirmed.



Of the 185 confirmed cases, 109 (58.9%) reported a travel history, 62 (33.5%) had no travel history and 14 (7.6%) had no information. The age of the cases ranged from 1 to 78 years of age with travel associated infections peaking in young adults and then declining with older age (Figure 2). There has been an increase in cases confirmed in the 1 to 4, 15 to 24 and 45 to 54 age brackets compared to 2013 (Figure 3)

Figure 2. Confirmed HAV infections by age and travel history n=185: Jan – Dec 2014

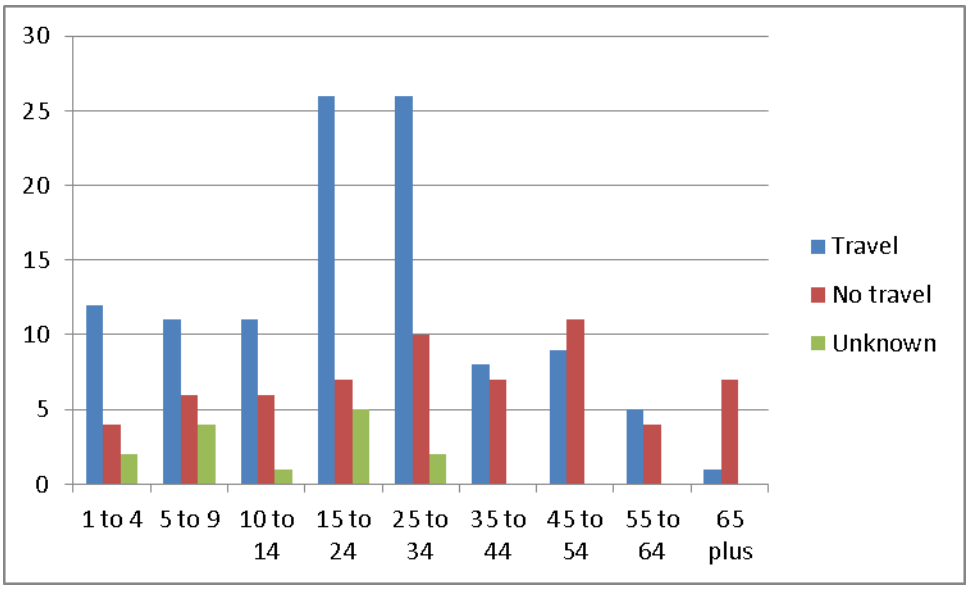
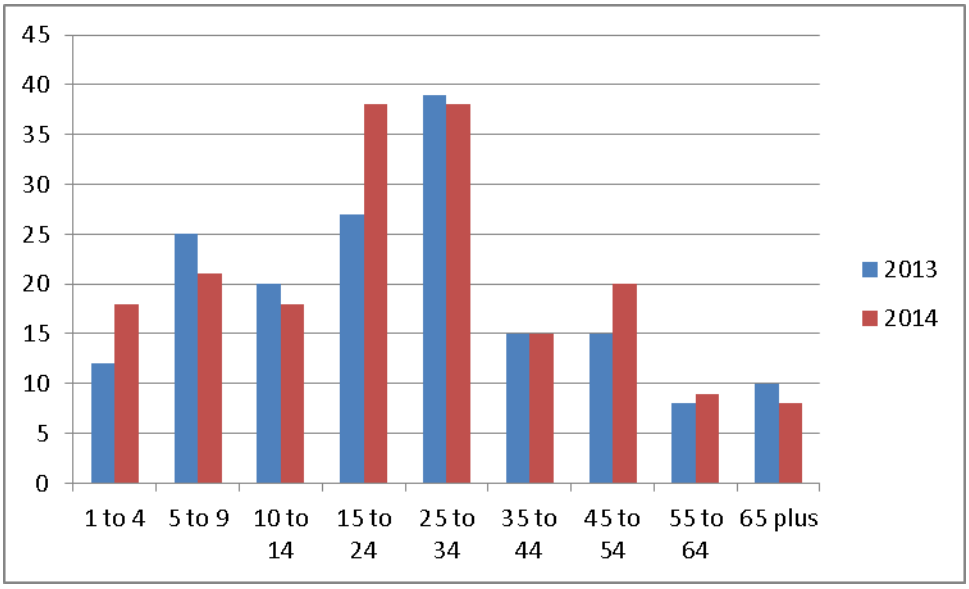


Figure 3. Comparison of 2013 and 2014 confirmed HAV infections by age

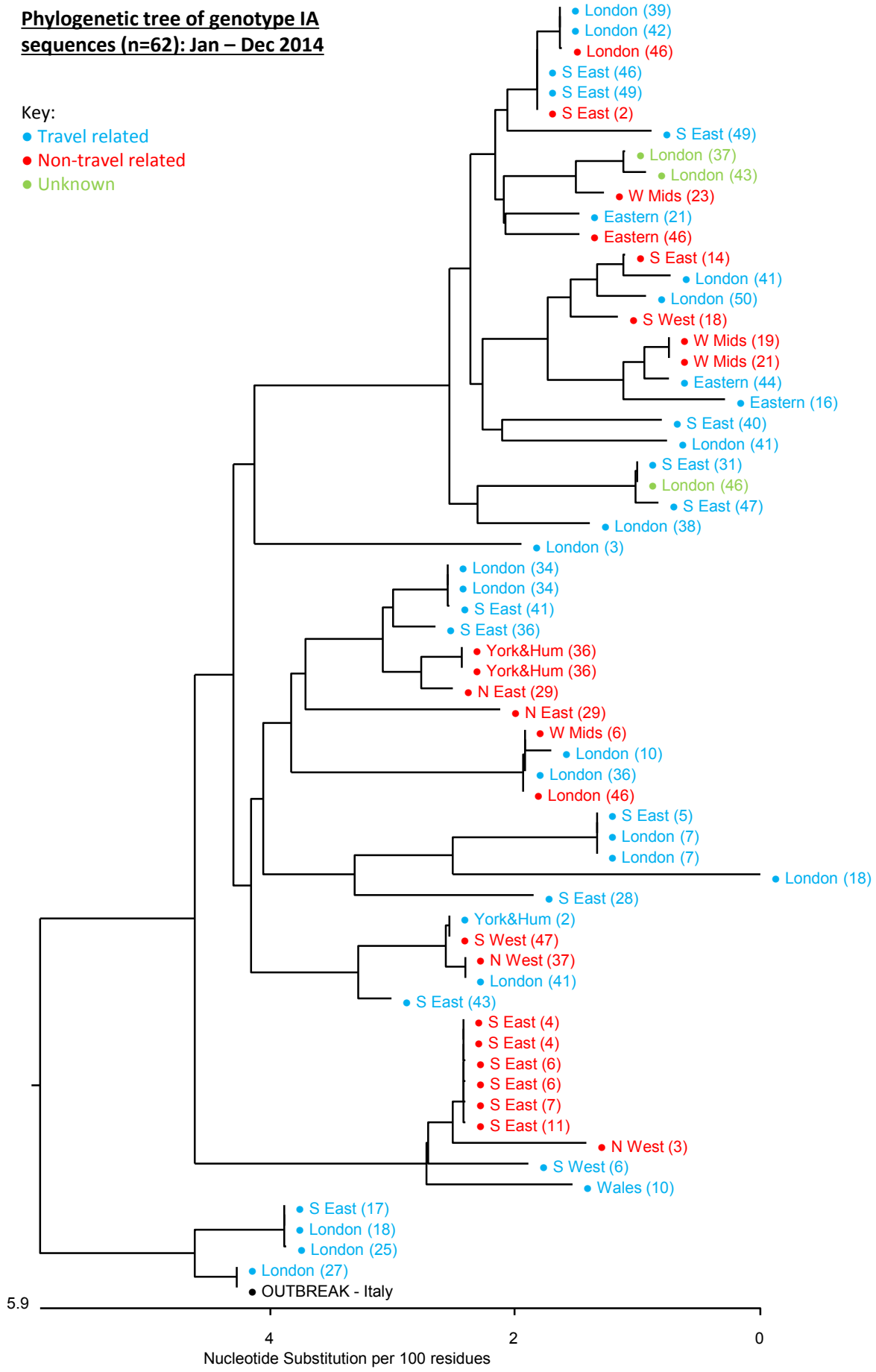


It was possible to genotype samples from 181 of the confirmed cases; 62 (34.3%) were genotype IA, 58 (32%) were genotype IB, 1 (0.6%) was genotype IIA, and 60 (33.1%) were genotype IIIA. This sequence information for each genotype, with the exception of genotype IIA as the numbers are too low, is presented as phylogenetic trees. Each sequence is represented by a dot with the patient region and the week of sampling in brackets.

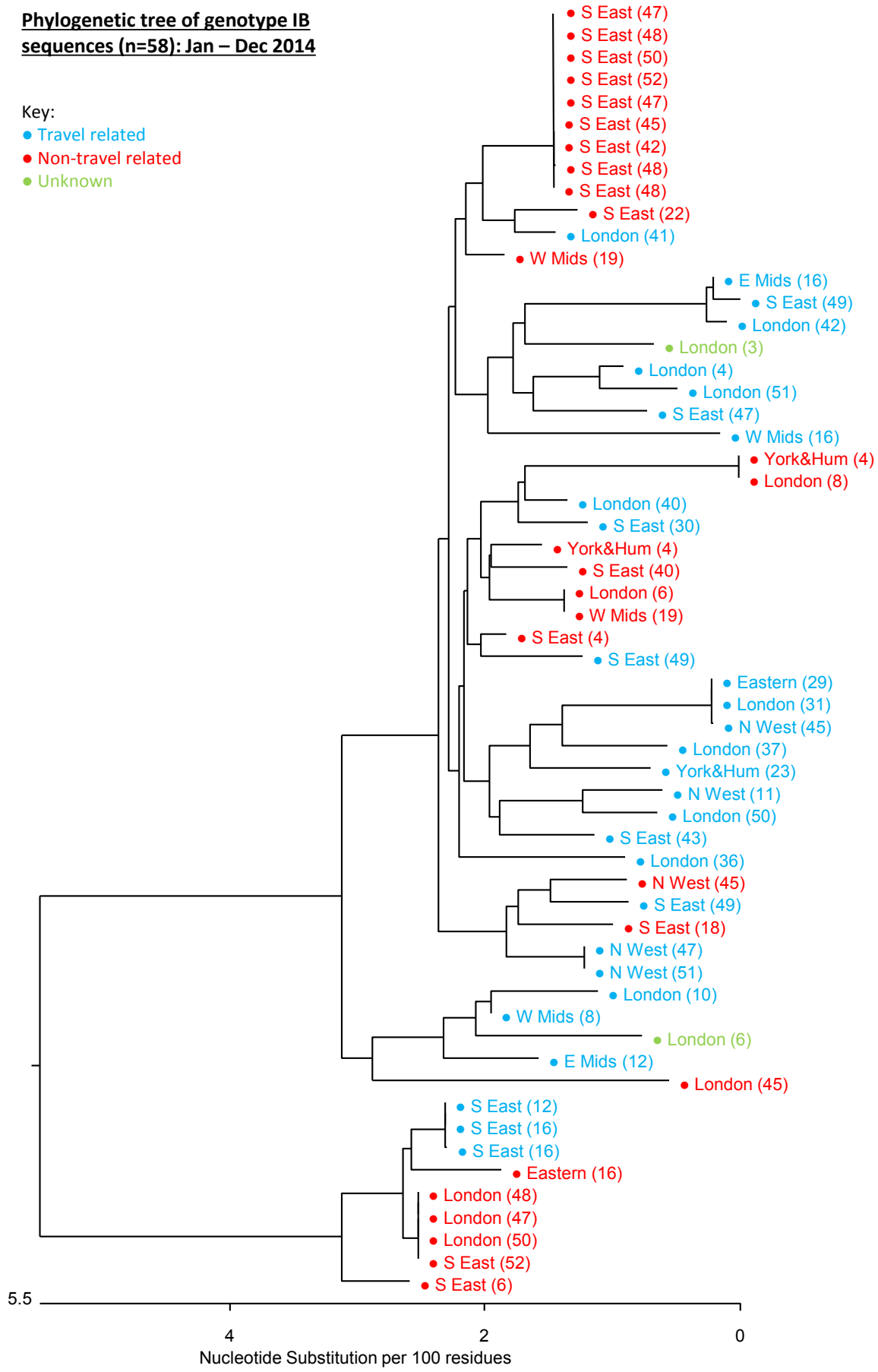
The majority of cases with genotype IA had a travel history reported 36/62 (58.6%) this is contrary to 2013 where more than half the cases had no travel history. This difference can be attributed to the fact that there were no large European outbreaks associated with genotype IA and contaminated food stuffs. Nationally there was one outbreak affecting multiple individuals who had no travel history; however no source was identified.

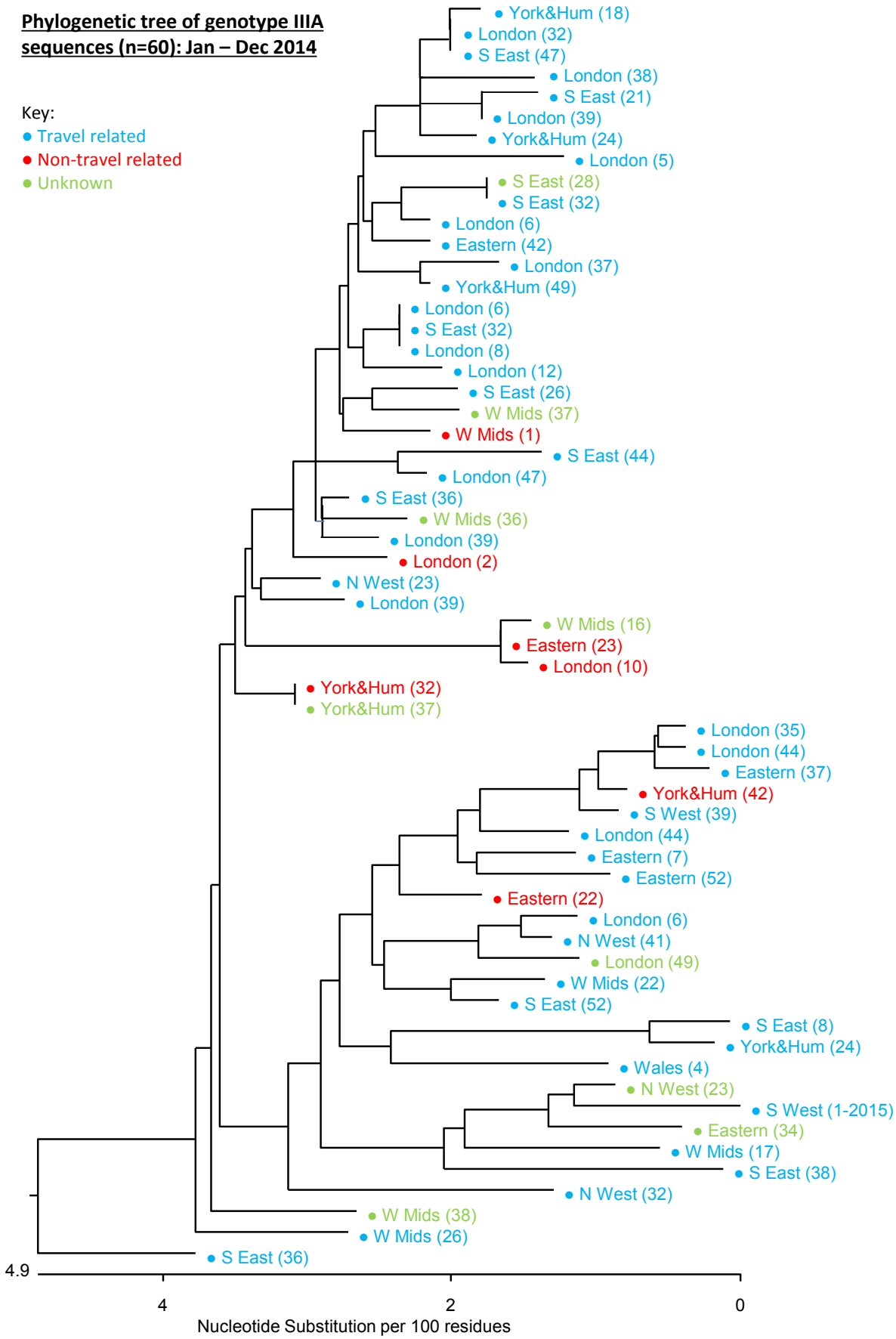
For genotype IB half the cases had no travel history which is slightly less than in 2013. As with genotype IA there were no large European outbreaks associated with genotype IB and contaminated food stuffs. Nationally there were two outbreaks affecting multiple individuals who had no travel history. The first outbreak was in the South East with nine cases and the second cluster comprised of four cases mainly from London. No source was identified for either outbreak.

Phylogenetic tree of genotype IA sequences (n=62): Jan – Dec 2014



Phylogenetic tree of genotype IB sequences (n=58): Jan – Dec 2014





As in 2013 the majority of cases with genotype IIIA had a travel history (44/60, 73.3%). Nationally there were no large outbreaks caused by genotype IIIA. Genotype IIIA is geographically associated with South Asia and travellers may not perceive themselves or their family to be at risk if they grew up in an endemic area and are travelling “home” to visit friends and relatives (5).

Summary

Comparison of SGSS reports with data from VRD have shown that nearly a quarter of the reports (22%) were not true cases of acute HAV. In addition significant numbers of cases genotyped within VRD have not been reported (36 cases) although were notified to their local Health Protection Teams.

Typing of hepatitis A virus is an invaluable tool and has increased our understanding of the molecular epidemiology of the virus; this is only possible by the continued submission of samples by laboratories from both travel associated and non-travel associated cases. It is clear that there are significant numbers of non-travel related cases which may indicate that contaminated food stuffs may be a more common occurrence than is thought and our ability to determine the origins of these non-travel associated strains is based on typing of strains from cases with known travel history. Typing has also enabled seemingly unrelated cases to be linked and has identified numerous clusters over the year.

As part of the ongoing enhanced surveillance of hepatitis A and to ensure sample confirmation, it is important that laboratories forward serum samples to VRD at PHE National Infection Service at Colindale as soon as the preliminary diagnostic testing is complete.

References

1. European Centre for Disease Prevention and Control (ECDC). Joint ECDC-EFSA assessment: outbreak of hepatitis A virus infection in residents and travellers to Italy. http://ecdc.europa.eu/en/publications/Publications/hepatitis-A-outbreak-of-hepatitis-A-virus-infection-in-residents-and-travellers-to-Italy.pdf
2. MacDonald E, Steens A, Stene-Johansen K, Gillesberg Lassen S, Midgley S, *et al* (2013). Increase in hepatitis A in tourists from Denmark, England, Germany, the Netherlands, Norway and Sweden returning from Egypt, November 2012 to March 2013. *Euro Surveill.* **18**(17): 20468.
3. Centers for Disease Control and Prevention (CDC). Multistate outbreak of hepatitis A virus infections linked to pomegranate seeds from Turkey (Final Update). http://www.cdc.gov/hepatitis/Outbreaks/2013/A1b-03-31/index.html
4. Gillesberg Lassen S, Soborg B, Midgley SE, Steens A, Vold L, Stene-Johansen K, *et al* (2013). Ongoing multi-strain food-borne hepatitis A outbreak with frozen berries as suspected vehicle: four Nordic countries affected, October 2012 to April 2013. *Euro Surveill.* **18**(17): 20467.
5. Health Protection Agency (HPA). Foreign travel-associated illness – a focus on those visiting friends and relatives: 2008 report. http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1231419800356

2. Laboratory reports of hepatitis C: 2014

During 2014, there were 11,997 confirmed laboratory reports of hepatitis C in England and Wales (Table 1). The demographic breakdown of individuals with reported hepatitis C per quarter was relatively consistent with more reports among males and in the 25 to 54 years old age group.

Table 1: Laboratory reports of hepatitis C by age, sex, and quarter, England and Wales, 2014*

Age group (years)	Q1 Jan-Mar			Q2 Apr-Jun			Q3 Jul-Sep			Q4 Oct-Dec			Total
	Female	Male	NK	Female	Male	NK	Female	Male	NK	Female	Male	NK	
<1	1	1	0	3	2	0	4	1	0	3	2	0	17
1 to 4	0	2	0	2	2	1	2	2	0	1	1	0	13
5 to 9	1	4	0	0	0	0	2	1	0	2	0	0	10
10 to 14	2	1	0	3	3	0	3	2	0	1	5	0	20
15 to 24	75	65	2	55	80	3	53	86	1	53	74	3	550
25 to 34	260	488	6	230	425	11	243	443	12	260	462	9	2,849
35 to 44	216	584	5	218	539	7	248	614	14	256	602	7	3,310
45 to 54	159	496	0	192	475	1	235	613	4	209	531	3	2,918
55 to 64	90	241	1	129	231	1	138	333	2	115	278	0	1,559
≥65	52	51	0	78	72	0	87	113	1	94	109	0	657
NK	3	11	2	3	13	3	12	23	3	3	13	5	94
Total	**859**	**1,944**	**16**	**913**	**1,842**	**27**	**1,027**	**2,231**	**37**	**997**	**2,077**	**27**	**11,997**

* Laboratory reports are not reliable for differentiating acute and chronic infections. Due to late reporting, numbers for each quarter may have changed slightly since their HPR quarterly reports.

Overall, there was a 3% increase in the number of reports received during 2014 compared to 2013 (11,997/11,692).

The number of laboratory reports by PHE Centre is presented below. Reports were assigned to a PHE Centre according to i) the patient's place of residence ii) the postcode of the patient's registered GP practice, iii) the postcode of the source laboratory. During 2014, the greatest number of hepatitis C reports were received from the London (n=3,836) and Yorkshire and Humber (n=1,513) PHE Centres (Table 2). The comparatively high number of reports from these regions was consistent with previous years.

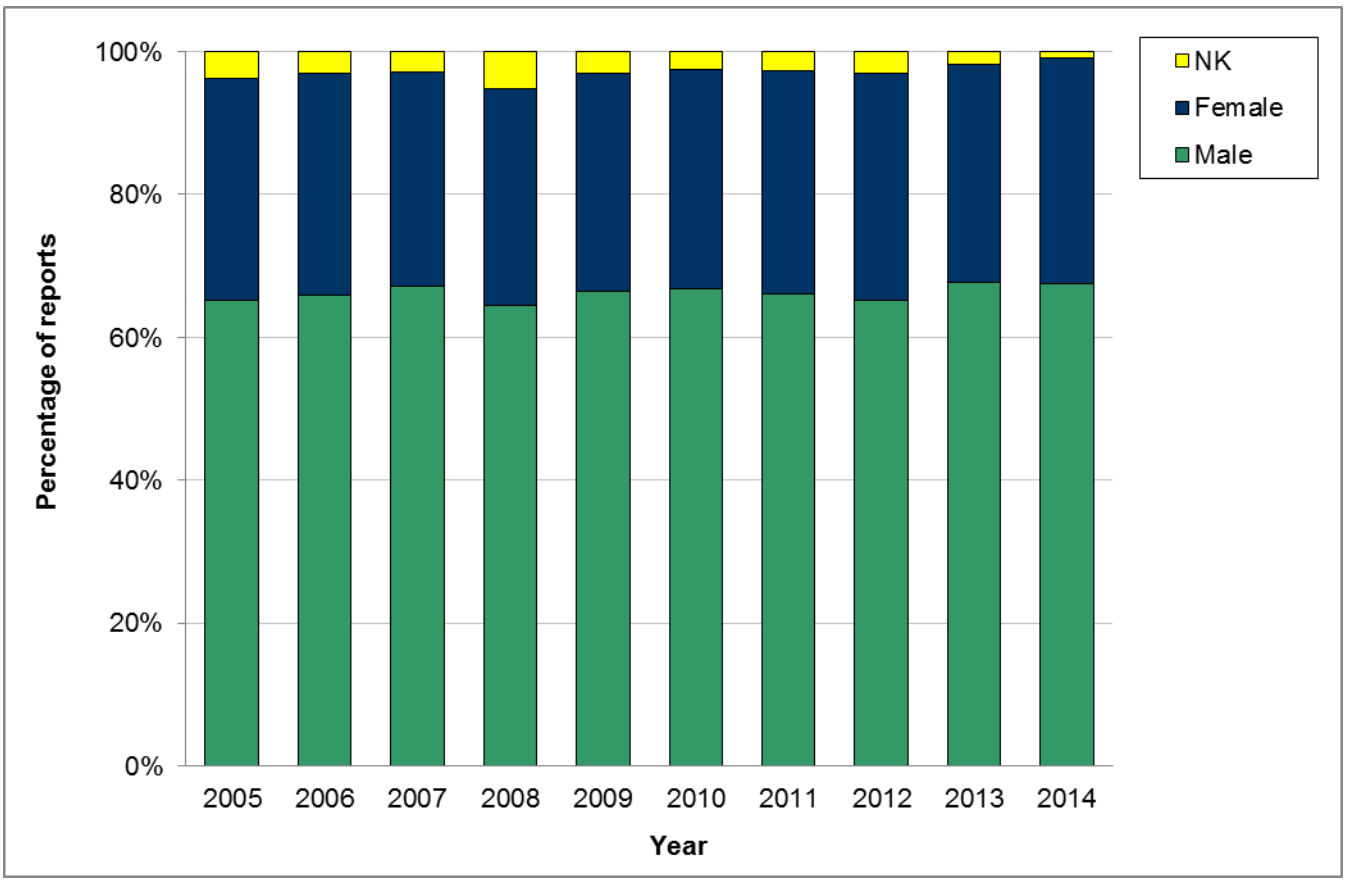
Apart from 2010, the overall trend is of a year on year increase in the number of hepatitis C reports. This may be due to in part to more complete reporting and/or more targeted testing of individuals.

Table 2: Laboratory reports of hepatitis C by region, England and Wales (2005-2013)

PHE Centre	Year									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
East Midlands	443	259	402	588	576	515	673	672	549	591
East of England	653	684	695	794	706	607	844	776	707	792
London	805	1190	1017	966	856	968	2012	2789	3089	3836
North East	277	245	141	167	275	317	310	301	360	305
North West	1505	1380	1737	1666	2117	1807	1514	1797	1981	1496
South East	325	379	786	1083	1147	1170	1300	1298	1137	1323
South West	695	872	1046	1114	999	732	973	1111	997	983
West Midlands	572	487	614	673	860	778	774	740	781	648
Yorkshire and Humber	1016	1449	1363	1344	1091	981	1507	1376	1470	1513
Wales	281	327	333	487	356	318	486	502	690	510
Total	6,572	7,272	8,134	8,882	8,983	8,193	10,393	11,362	11,761	11,997

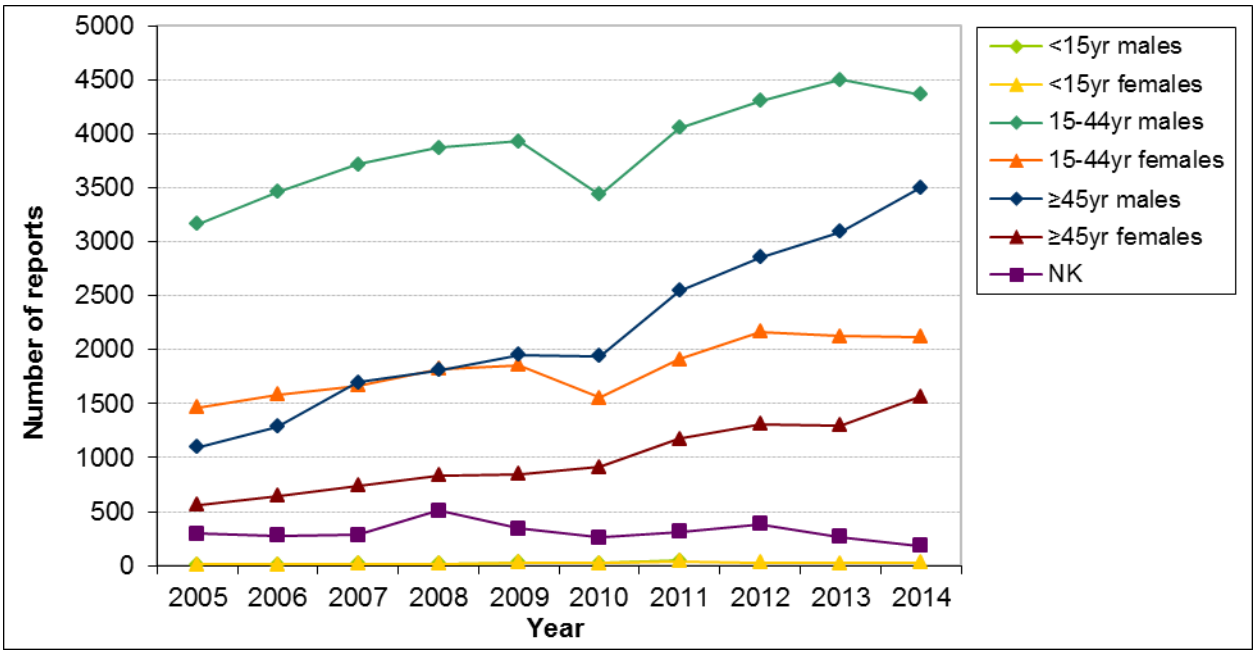
Age and gender were well completed each year (>97% complete) (Figure 1). Where known, males accounted for 68% (8,094/11,890) of reports during 2014 which was consistent with previous years (Figure 1). In total, males have accounted for 67% of reports during this period.

Figure 1: Percentages of hepatitis C laboratory reports by sex, England and Wales (2005-2014)



During 2014, where known 56% of hepatitis C reports were among the 15 to 44 year old age group, a further 43% were among the 45 over age group with under 1% of reports among the under 15 years old age group. Since 2005 the highest number of reports has consistently been in the 15 to 44 year age group (Figure 2). However there has been a year on year decline in the proportion of hepatitis C reports among the 15 to 44 year old age group and a corresponding increase in reports among the 45 years and over age group. The proportion of reports among the under 15 years old age group has remained low at less than 1% per year.

Figure 2: Laboratory reports of hepatitis C by age and sex, England and Wales (2005-2014)



Infection report

Volume 9 Number 26 Published on: 24 July 2015

Immunisation

Annual report from the sentinel surveillance study of blood borne virus testing in England: data for January to December 2014

This report provides summary data for individuals who were first reported to the sentinel surveillance programme during 2014. Sections 1 to 7 describes testing and demographic information for individuals tested by venepuncture for hepatitis A to E, HIV, and HTLV.

The sentinel surveillance of blood borne virus testing began in 2002, with the aim of supplementing the routine surveillance of hepatitis. Information on the testing carried out in participating centres is collected irrespective of test result and can therefore also be used as a basis for estimating prevalence among those tested. These data have enhanced our knowledge and understanding of hepatitis testing, in terms of who is being tested and from which service types individuals are accessing testing, and also in interpreting trends in the number of positive individuals identified over time. In 2014, sentinel surveillance captured front-line testing for hepatitis A, B, C and HIV among 13 out of 15 PHE Centres (PHECs) in England, covering approximately 40% of the population, and over 80% of the population from all 15 PHECs tested for hepatitis D, E and HTLV (*Supplementary Figure 1*).

The supplementary tables referred to in this report are available on the GOV.UK website page "Sentinel surveillance of blood borne virus testing in England: 2014".

1. Hepatitis A IgM testing

In 2014, 21 participating centres supplied hepatitis A-specific IgM antibody (anti-HAV IgM) testing data (a marker of acute infection). Overall 29,274 individuals were tested for anti-HAV IgM, of whom 116 (0.4%) tested positive (*Supplementary Table 1*). The age and gender of individuals tested was well reported (>99.7% complete). Where known, more males (54.5%) were tested than females. Half of all individuals tested and almost one-third of those who tested positive were aged between 25 and 54 years old (*Supplementary Table 2*). The median age of individuals undergoing testing was 46.0 years (IQR 30.8 – 62.0) whereas the median age of individuals testing positive was 30.0 years (IQR 12.9 – 57.3). As seen in previous years, the greatest proportion positive was among children aged 1-14 years (4.1%).

The type of service which requested the hepatitis test was identified using the record location of the requestor (table 1). Where known (n=29,211), general practice tested the greatest proportion of individuals for anti-HAV IgM (55.2%), with a further 16.8% tested in other known hospital wards, and 10.9% tested in general medical surgical wards. The highest proportion of positive tests were from paediatric services (2.5%), and accident and emergency (1.8%).

A combination of self-reported ethnicity and name analysis software was used to classify most individuals tested for anti-HAV IgM as belonging to one of four broad ethnic groups (n=28,547) (*Supplementary table 3*). Where known, the majority of individuals were classified as being of white or white British ethnic origin (82.0%), a further 13.2% were classified as Asian or Asian British origin, 3.1% were classified as other and/or mixed ethnic origin, and 1.7% were classified as black or black British origin. The greatest proportion positive was among individuals of other and/or mixed origin (0.7%).

Table 1. Number of individuals tested, and testing positive for anti-HAV IgM in participating centres by service type, January – December 2014*

Service type	Number tested	Number positive (%)
Primary Care		
Accident and emergency	1,088	20 (1.8)
Drug dependency services	49	0 (0.0)
General practitioner	16,140	40 (0.2)
GUM clinic	288	1 (0.3)
Occupational health	18	0 (0.0)
Prison services	489	0 (0.0)
Total primary care	18,072	61 (0.3)
Secondary Care		
Antenatal	577	0 (0.0)
Fertility services	13	0 (0.0)
General medical / surgical departments	3,183	19 (0.6)
Obstetrics and gynaecology	226	0 (0.0)
Other ward type (known service)†	4,918	7 (0.1)
Paediatric services	692	17 (2.5)
Renal	190	0 (0.0)
HIV	98	0 (0.0)
Specialist infectious disease services	906	6 (0.7)
Unspecified ward§	335	4 (1.2)
Total secondary care	11,138	53 (0.5)
Unknown#	64	2 (3.1)
Total	**29,274**	**166 (0.4)**

* Excludes reference testing and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

† Other ward types includes cardiology, coroner, dermatology, haematology, ultrasound, x-ray.

§ These are hospital services which are currently being investigated to identify specific service type, and may include any of the secondary care services mentioned above.

These services are currently being investigated to identify specific service type, where possible.

2. Hepatitis B surface antigen testing

Sentinel surveillance collects data on testing for hepatitis B surface antigen (HBsAg). All pregnant women in the UK are offered hepatitis B screening as part of their antenatal care. Data from the test request location and freetext clinical details field accompanying the test request were reviewed to distinguish individuals tested for HBsAg as part of routine antenatal screening (section 2a) from those tested in other settings and for other reasons (section 2b). It is possible that some women undergoing antenatal screening may not be identified as such and may therefore be included in section 2b as non-antenatal testing.

a. Antenatal HBsAg screening

In 2014, 86,964 women aged between 12 and 49 years old were identified as undergoing antenatal screening for HBsAg, representing 29.2% of all individuals tested for HBsAg in participating sentinel centres *(Supplementary Table 4)*. Overall 375 (0.4%) of these women tested positive. The median age of women tested was 29.5 years (IQR 25.2– 33.4) and the median age of women testing positive was 30.1 years (IQR 26.2 – 34.3).

A HBeAg result was available for all HBsAg positive women (375), and of these, 8.5% were HBeAg positive (table 2). Most women who underwent antenatal screening were classified as belonging to one of four broad ethnic groups (n= 85,171) (table 2). The majority of individuals were classified as being of white or white British ethnic origin (78.4%), a further 15.4% were classified as Asian or Asian British origin, 4.0% were classified as other and/or mixed ethnic origin, and 2.2% were classified as black or black British origin. The proportion testing positive was higher among women of black or black British origin and other and/or mixed origin (2.1% and 2.0% respectively) than women of Asian or Asian British origin and white or white British origin (0.5% and 0.2% respectively).

The proportion of HBeAg positive women also differed by ethnic group with 30.9% of other and/or mixed ethnic origin women testing positive, 4.4% of Asian or Asian British women and 3.3% of white or white British women; there were no positive black or black British women.

Table 2. Number of antenatal women tested and testing positive for HBsAg, and number of HBsAg positive women tested and testing positive for HBeAg by ethnic group, January – December 2014*

Ethnic group	Number tested HBsAg	Number positive (%)	Number HBsAg positive tested for HBeAg	% HBsAg positive tested	Number HBeAg positive (%)
Asian or Asian British origin	13,104	68 (0.5)	68	100.0	3 (4.4)
Black or black British origin	1,862	39 (2.1)	39	100.0	0 (0.0)
Other and/or mixed origin	4,340	68 (2.0)	68	100.0	21 (30.9)
White or white British origin	66,775	151 (0.2)	151	100.0	5 (3.3)
Unknown ethnic origin	1,793	49 (2.7)	49	100.0	3 (6.1)
Total	**86,946**	**375 (0.4)**	**375**	100.0	**32 (8.5)**

* Excludes dried blood spot testing, oral fluid testing, reference testing and testing from hospitals referring all samples. Only women aged 12-49 years old are included. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

b. Non-antenatal HBsAg testing

In 2014, 210,685 individuals were tested at least once for HBsAg, excluding antenatal screening, in 21 participating sentinel centres. Overall, 2,692 (1.3%) of individuals tested positive, with the highest proportion of positive tests in the West Midlands (2.2%) *(Supplementary Table 5)*. This may reflect more targeted testing of risk groups and/or genuinely higher prevalence of hepatitis B in people being tested in this PHEC.

The age and gender of individuals tested for HBsAg was well reported (>99.2% complete). Where known, slightly more males (52.5%) were tested compared to females (*Supplementary Table 6*). The number of females tested may include some undergoing routine antenatal screening who could not be identified as such from the information provided. Males had a greater proportion testing positive compared to females (1.6% vs 0.9% $p<0.001$). Almost half of all individuals tested and three fifths of individuals testing positive were aged between 25 and 44 years old. The median age of individuals tested and positive were similar with 35.3 years (IQR 26.6 – 50.4) and 35.7 years (IQR 28.9 – 45.6) respectively.

Where known (n=210,379), general practice tested the greatest proportion of individuals for HBsAg (31.6%), with a further 22.8% tested in GUM clinics, and 15.5% tested in other known hospital wards (table 3). The highest proportion of positive tests were among unspecified wards, specialist liver services and in general practice (4.1%, 1.7% and 1.6% respectively).

Three-quarters of individuals tested for HBsAg were classified as belonging to one of four broad ethnic groups (n=156,687) (table 4). The majority of individuals were classified as being of white or white British ethnic origin (76.6%), a further 16.7% were classified as Asian or Asian British origin, 4.0% were classified as other and/or mixed ethnic origin, and 2.7% were classified as black or black British origin. Most individuals of unknown ethnic origin were tested by GUM clinics, from which only minimal demographic data are available, resulting in poor ethnic classification. The proportion positive varied by ethnic group; 6.4% of individuals of other and/or mixed ethnicity tested positive compared to 5.7% of black or black British origin individuals, 1.8% of Asian or Asian British origin individuals and 0.7% of white or white British origin individuals.

Table 3. Number of individuals tested, and testing positive for HBsAg in participating centres by service type (excluding antenatal testing), January – December 2014*

Service type	Number tested	Number positive (%)
Primary Care		
Accident and emergency	4,101	55 (1.3)
Drug dependency services	1,103	12 (1.1)
General practitioner	66,577	1,063 (1.6)
GUM clinic	47,876	661 (1.4)
Occupational health	12,465	58 (0.5)
Prison services	3,301	49 (1.5)
Total primary care	135,423	1,898 (1.4)
Secondary Care		
Fertility services	7,742	28 (0.4)
General medical / surgical departments	9,463	118 (1.2)
Obstetrics and gynaecology	8,616	24 (0.3)
Other ward type (known service)†	32,706	351 (1.1)
Paediatric services	2,909	30 (1.0)
Renal	5,201	32 (0.6)
Specialist HIV services	861	13 (1.5)
Specialist liver services	4,629	79 (1.7)
Unspecified ward§	2,829	116 (4.1)
Total secondary care	74,956	791 (1.1)
Unknown#	306	3 (1.0)
Total	**210,685**	**2,692 (1.3)**

* Excludes dried blood spot, oral fluid, reference testing and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

† Other ward types includes cardiology, coroner, dermatology haematology, ultrasound, x-ray.

§ These are hospital services which are currently being investigated to identify specific service type, and may include any of the secondary care services mentioned above.

These services are currently being investigated to identify specific service type, where possible

Table 4. Number of individuals tested, and testing positive for HBsAg in participating centres by ethnic group (excluding antenatal testing), January – December 2014*

Ethnic group	Number tested	Number positive (%)
Asian or Asian British origin	26,109	467 (1.8)
Black or black British origin	4,292	245 (5.7)
Other and/or mixed origin	6,315	403 (6.4)
White or white British origin	119,971	831 (0.7)
Unknown ethnic origin	53,998	746 (1.4)
Total	**210,685**	**2,692 (1.3)**

* Excludes dried blood spot, oral fluid, reference testing and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

3. Hepatitis C antibody testing

Sentinel surveillance collects data on testing for hepatitis C-specific antibodies (anti-HCV). It is important to note that no laboratory methods are currently available to distinguish between acute or chronic hepatitis C virus infections. Therefore, positive anti-HCV results do not therefore necessarily represent incident infections.

In 2014, 183,001 individuals were tested at least once for anti-HCV in 21 participating sentinel centres. Overall, 3,372 (1.8%) of individuals tested positive. This varied by PHEC with the highest proportion of positive tests were from the West Midlands (3.0%) (*Supplementary Table 7)*. This may reflect more targeted testing of risk groups and/or genuinely higher prevalence of hepatitis C in people being tested in this PHEC. Of those individuals testing positive for anti-HCV 71.6% were tested for HCV RNA by PCR, of whom 48.8% tested positive (n=1,644). Of the PCR positive individuals 53.1% had a HCV genotype recorded; 49.3% were genotype 1, with a further 41.9% genotype 3.

Age and gender were well reported (>99.1% complete). Where known, slightly more males (56.1%) were tested than females (*Supplementary Table 8*). Almost half of all individuals tested and around half testing positive were aged between 25 and 54 years old. A greater proportion of males tested positive compared to females (2.2% vs 1.3% respectively, $p<0.001$). The median age of those tested was 37.3 years (IQR 27.8 – 52.6 years), whereas the median age of those tested positive was 41.8 years (IQR 32.8 – 51.5 years).

Where known (n=182,783), general practice tested the greatest proportion of individuals for anti-HCV (32.1%), with a further 19.1% tested in GUM clinics and 17.5% tested in other known hospital wards (table 5). The highest proportion of positive tests were among specialist drug (9.3%) and prison services (8.0%).

Table 5. Number of individuals tested, and testing positive for anti-HCV in participating centres by service type, January – December 2014*

Service type	Number tested	Number positive (%)
Primary Care		
Accident and emergency	4,176	95 (2.3)
Drug dependency services	1,136	106 (9.3)
General practitioner	58,675	1,139 (1.9)
GUM clinic	34,878	569 (1.6)
Occupational health	10,413	27 (0.3)
Prison services	4,089	327 (8.0)
Total primary care	113,367	2,263 (2.0)
Secondary Care		
Antenatal	1,763	42 (2.4)
Fertility services	7,675	27 (0.4)
General medical / surgical departments	8,916	187 (2.1)
Obstetrics and gynaecology	3,523	19 (0.5)
Other ward type (known service)†	31,898	448 (1.4)
Paediatric services	2,080	11 (0.5)
Renal	5,199	36 (0.7)
Specialist HIV services	1,000	38 (3.8)
Specialist liver services	4,584	140 (3.1)
Unspecified ward§	2,778	153 (5.5)
Total secondary care	69,416	1,101 (1.6)
Unknown#	218	8 (3.7)
Total	**183,001**	**3,372 (1.8)**

* Excludes dried blood spot, oral fluid, reference testing and testing from hospitals referring all samples. Individuals aged less than one year are excluded since positive tests in this age group may reflect the presence of passively-acquired maternal antibody rather than true infection. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

† Other ward types includes cardiology, coroner, dermatology haematology, ultrasound, x-ray

§ These are hospital services which are currently being investigated to identify specific service type, and may include any of the secondary care services mentioned above.

These services are currently being investigated to identify specific service type, where possible

Most individuals tested for anti-HCV were classified as belonging to one of four broad ethnic groups (n=142,357) (table 6). The majority of individuals were classified as being of white or white British ethnic origin (77.8 %), a further 15.9% were classified as Asian or Asian British origin, 3.7% were classified as other and/or mixed ethnic origin, and 2.5% were classified as black or black British origin. The proportion positive varied slightly by ethnic group: 2.0% of individuals of Asian or Asian British ethnic origin tested positive compared to 1.9% of white or white British origin individuals, 1.2% of other or mixed ethnic origin individuals and 0.8% of black or black British origin individuals.

Table 6. Number of individuals tested, and testing positive for anti-HCV in participating centres by ethnic group, January – December 2014*

Ethnic group	Number tested	Number positive (%)
Asian or Asian British origin	22,676	449 (2.0)
Black or black British origin	3,622	29 (0.8)
Other and/or mixed origin	5,258	65 (1.2)
White or white British origin	110,801	2,116 (1.9)
Unknown ethnic origin	40,644	713 (1.8)
Total	**183,001**	**3,372 (1.8)**

* Excludes dried blood spot testing, oral fluid testing, reference testing and testing from hospitals referring all samples. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

4. Hepatitis D total antibody testing

Sentinel surveillance collects data on testing for hepatitis D-specific total antibody (HDV TA) and A-specific IgM antibody (anti-HAV IgM), a marker of acute hepatitis D infection. Six sentinel laboratories provide hepatitis D testing facilities. Given the small number of tests individuals tested for HDV TA and/or HDV IgM are aggregated, and therefore do not necessarily represent incident infections, and be interpreted accordingly. Data are shown by region of the requesting service.

In 2014, 2,457 individuals were tested at least once for HDV TA and/or HDV IgM in six participation sentinel centres (*Supplementary Table 9*). Overall 97 (3.9%) of individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in the West Midlands (8.4%).

The age and gender of individuals tested for hepatitis D was well reported (>98.3% complete). Where known, slightly more males were tested than females (56.4% male). The proportion of females testing positive was not significantly greater when compared to males (4.3% vs 3.6%, p=0.39). Over three-fifths of all individuals tested and testing positive were aged between 25 and 44 years old. The median age of individuals tested was 35.4 years (IQR 29.0 – 45.7) and the median age of individuals testing positive was 36.1 years (IQR 30.0 – 44.7).

Where known (n=2,456), almost two-thirds of individuals were tested by a hospital which referred all hepatitis D samples to a sentinel centre (64.5%). In these cases the original service that initially requested the test could not be determined.

Most individuals tested for hepatitis D were classified as belonging to one of four broad ethnic groups (n=2,096). Over two-fifths of individuals were classified as being of white or white British ethnic origin (45.2%), a further 23.8% were classified as Asian or Asian British ethnic origin, 20.5% were classified as other and/or mixed origin, and 10.5% were classified as black or black British origin (table 7). The proportion positive varied by ethnic group; 6.6% of Asian or Asian British origin tested positive compared to 3.2% of individuals of black or black British ethnic origin individuals, 3.4% of white or white British origin individuals and 2.3% of other or mixed ethnic origin individuals.

Table 7. Number of individuals tested, and testing positive, for HDV-TA and/or HDV IgM in participating centres by ethnic group, January – December 2014*

Ethnic group	Number tested	Number positive (%)
Asian or Asian British origin	498	33 (6.6)
Black or black British origin	221	7 (3.3)
Other and/or mixed origin	429	10 (2.3)
White or white British origin	948	32 (3.4)
Unknown ethnic origin	361	15 (4.2)
Total	**2,457**	**97 (3.9)**

* Excludes reference testing. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

5. Hepatitis E IgM testing

Sentinel surveillance collects data on testing for hepatitis E-specific IgM antibody (anti-HEV IgM), a marker of acute hepatitis A infection. Six sentinel laboratories provide anti-HEV IgM testing facilities.

In 2014, 11,039 individuals were tested at least once for anti-HEV IgM in six participating sentinel centres (*Supplementary Table 10*). This represents a 28% increase in the number of individuals tested in 2014 compared to that reported in 2013. This increase in testing is likely to reflect a substantial increase in confirmed HEV cases since 2010. Overall, 803 (7.3%) of individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in the Avon, Gloucestershire and Wiltshire (32.0%).

The age and gender of individuals tested for anti-HEV IgM was well reported (>99.2% complete). Where known, slightly more males were tested than females (53.0% male). A greater proportion of males tested positive compared to females (8.9 % vs. 5.5% respectively, $p<0.001$). Almost half of all individuals tested and two-fifths of individuals testing positive were aged between 25 and 54 years old. The median age of individuals tested was 51.1 years (IQR 34.5 – 66.6) and the median age of individuals testing positive was 59.9 years (IQR 47.5 – 69.9).

Overall 12.1% (369/3050) of males aged 50 or over tested positive for HEV, compared to 5.4% (149/2,738) among those under the age of 50. A similar pattern was seen among females, where 7.3% (193/2,635) of females aged 50 or over tested positive compared to 3.5% (89/2,512) among those under the age of 50.

Where known (n=11,033), most individuals were tested by a hospital which referred all anti-HEV IgM samples to a sentinel centre (63.6%). In these cases the original service that initially requested the test could not be determined. The highest proportion of positive tested through general medical surgical (6.7%) and GP services (4.8%).

Most individuals tested for anti-HEV IgM were classified as belonging to one of four broad ethnic groups (n=10,577). The majority of individuals were classified as being of white or white British ethnic origin (82.6%), a further 13.7% were classified as Asian or Asian British origin, 2.5% were classified as other and/or mixed ethnic origin, and 1.2% were classified as black or black British origin (table 8). The proportion positive varied by ethnic group; 8.0% of individuals of white or white British origin tested positive compared to 4.1% of Asian or Asian British origin individuals and 1.9% of other or mixed ethnic origin individuals.

Table 8. Number of individuals tested, and testing positive, HEV IgM in participating centres by ethnic group, January – December 2014

Ethnic group	Number tested	Number positive (%)
Asian or Asian British origin	1,451	60 (4.1)
Black or black British origin	129	0 (0.0)
Other and/or mixed origin	265	5 (1.9)
White or white British origin	8,732	699 (8.0)
Unknown ethnic origin	462	39 (8.4)
Total	**11,039**	**803 (7.3)**

6. HIV testing

Sentinel surveillance collects data on testing for HIV. All pregnant women in the UK are offered HIV screening as part of their antenatal care. Data from the test request location and free-text clinical details field accompanying the test request were reviewed to distinguish individuals tested for HIV as part of routine antenatal screening (section 6a) from those tested in other settings and for other reasons (section 6b). It is possible that some women undergoing antenatal screening may not be identified as such and may therefore be included in section 6b as non-antenatal testing.

a. Antenatal HIV screening

In 2014, 67,016 women aged between 16 and 49 years old were identified as undergoing antenatal screening for HIV, representing 19.0% of all individuals tested for HIV in participating sentinel centres *(Supplementary Table 11)*. Overall, 76 (0.1%) of these women tested positive. The median age of women tested was 29.8 years (IQR 25.6 – 33.7) and the median age of women testing positive was 35.0 years (IQR 28.4 – 41.6).

b. Non-antenatal HIV testing

In 2014, 285,902 adults aged 16 and over years old were tested at least once for HIV, excluding antenatal screening, in 14 participating sentinel centres. Overall, 2,460 (0.9%) of individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in Avon, Gloucestershire and Wiltshire (4.0%) *(Supplementary Table 12)*, although few individuals were tested from this PHEC

The age and gender of adults tested for HIV was well reported (>99.0% complete). Where known, similar numbers of females (51.1%) were tested compared to males (*Supplementary Table 13*). The number of females tested may include some undergoing routine antenatal screening who could not be identified as such from the information provided. A greater proportion of males tested positive compared to females (1.4% vs 0.4% $p<0.001$). A third of all individuals tested and testing positive were aged between 25 and 34 years old. The median age of individuals tested was 30.0 years (IQR 23.9 – 40.0) and the median age of individuals testing positive was 36.3 years (IQR 29.1 – 45.7).

Where known (n=284,936), GUM clinics tested the greatest proportion of individuals for HIV (56.2%), with a further 16.3% tested in general practice, and 10.1% tested in other known hospital wards (table 9). The highest proportion of positive tests were among specialist HIV services, unspecified wards and specialist liver services (44.3%, 3.2% and 1.7% respectively).

Table 9. Number of adults (16+ years old) tested and testing positive for HIV in participating centres by service type (excluding antenatal testing), January – December 2014*†.

Service type	Number tested	Number positive (%)
Primary Care		
Accident and emergency	7,901	63 (0.8)
Drug dependency services	524	2 (0.4)
General practitioner	46,505	204 (0.4)
GUM clinic	160,026	1,556 (1.0)
Occupational health	8,474	19 (0.2)
Prison services	2,834	16 (0.6)
Total primary care	226,264	1,860 (0.8)
Secondary Care		
Fertility services	7,274	7 (0.1)
General medical / surgical departments	7,128	69 (1.0)
Obstetrics and gynaecology	4,476	7 (0.2)
Other ward type (known service)†	28,647	187 (0.7)
Paediatric services	1,248	6 (0.5)
Renal	3,529	12 (0.3)
Specialist HIV services	384	170 (44.3)
Specialist liver services	3,667	63 (1.7)
Unspecified ward§	2,319	75 (3.2)
Total secondary care	58,672	596 (1.0)
Unknown#	966	4 (0.4)
Total	**285,902**	**2,460 (0.9)**

* Excludes individuals aged under 16, antenatal screening, dried blood spot testing, oral fluid testing, reference testing and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

† Other ward types includes cardiology, coroner, dermatology haematology, ultrasound, x-ray.

§ These are hospital services which are currently being investigated to identify specific service type, and may include any of the secondary care services mentioned above.

These services are currently being investigated to identify specific service type, where possible

Two-fifths of adults tested for HIV were classified as belonging to one of four broad ethnic groups (n=115,679) (table 10). Where known, the majority of individuals were classified as being of white or white British ethnic origin (80.3%), a further 12.6% were classified as Asian or Asian British origin, 4.1% were classified as other and/or mixed ethnic origin, and 3.1% were classified as black or black British origin. Most individuals of unknown ethnic origin were tested in GUM clinics, hence the lack of demographic information. The proportion positive varied by ethnic group; 2.9% of individuals of black or black British origin tested positive compared to 1.0% of individuals of white or white British origin, 0.8% of other and/or mixed origin individuals and 0.7% of Asian or Asian British origin individuals.

Table 10. Number of adults (16+ years old) tested, and testing positive for HIV in participating centres by ethnic group (excluding antenatal testing), January – December 2014*

Ethnic group	Number tested	Number positive (%)
Asian or Asian British origin	14,560	99 (0.7)
Black or black British origin	3,587	103 (2.9)
Other and/or mixed origin	4,692	39 (0.8)
White or white British origin	92,840	952 (1.0)
Unknown ethnic origin	170,223	1,267 (0.7)
Total	**285,902**	**2,460 (0.9)**

* Excludes individuals aged under 16, antenatal screening, dried blood spot testing, oral fluid testing, reference testing and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

7. HTLV testing

In 2014, 5,969 individuals were tested at least once for HTLV-1 specific antibodies in 11 participating sentinel centres (*Supplementary Table 14*). Overall, 99 (1.7%) of individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in the Avon, Gloucestershire and Wiltshire (15.4%), although few individuals were tested from this region.

The age and gender of individuals tested for HTLV-1 was well reported (>93.4% complete) (*Supplementary Table* 15). Where known, slightly more males were tested than females (53.7% male), with no significant difference in the proportion of females testing positive compared to males (2.0% vs. 1.5% respectively, p=0.15). Over half of all individuals tested and two-thirds of those testing positive, were aged 45 years and older. The median age of individuals tested was 47.6 years (IQR 32.4 – 60.6) and the median age of individuals testing positive was 54.6 years (IQR 42.5 – 69.0).

Where known (n=5,966), a quarter of individuals were tested by a hospital which referred all HTLV-1 samples to a sentinel centre (24.7%). In these cases the original service that initially requested the test could not be determined.

Most individuals tested for HTLV-1 were classified as belonging to one of four broad ethnic groups (n=5,098) (table 11). The majority of individuals were classified as being of white or white British ethnic origin (85.7%), a further 8.9% were classified as Asian or Asian British origin, 3.3% were classified as black or black British origin, and 2.1% were classified as other and/or mixed ethnic origin (table 11). The proportion positive varied by ethnic group; 3.0% of individuals of black or black British origin tested positive compared to 1.8% of Asian or Asian British origin individuals, 1.5% of individuals of white or white British origin and 0.9% of other and/or mixed origin individuals.

Table 11. Number of individuals tested, and testing positive for HTLV in participating centres by ethnic group, January – December 2014*

Ethnic group	Number tested	Number positive (%)
Asian or Asian British origin	455	8 (1.8)
Black or black British origin	167	5 (3.0)
Other and/or mixed origin	109	1 (0.9)
White or white British origin	4,367	64 (1.5)
Unknown ethnic origin	871	21 (2.4)
Total	**5,969**	**99 (1.4)**

* Excludes reference testing. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

8. Dried blood spot testing

Dried blood spot testing data is not yet complete for 2014. Please contact us directly if you have any queries or would like any further information.

Reference

1. Judd A, *et al.* Evaluation of a modified commercial assay in detecting antibody to hepatitis C virus in oral fluids and dried blood spots. *J Med Virol.* 2003; 71: 49-55.

Infection report

Volume 9 Number 26 Published on: **24 July 2015**

Immunisation

Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, January to May 2015

Background to the pertussis vaccination in pregnancy programme

In the UK the introduction of routine national immunisation against pertussis (whooping cough) in 1957 resulted in a marked reduction in pertussis notifications and deaths [1]. Despite a sustained period of high vaccine coverage since the early 1990s, pertussis has continued to display 3-4 yearly peaks in activity. In the five years prior to 2012, on average, there were nearly 800 confirmed cases of whooping cough, 270 babies admitted to hospital and four deaths in babies each year [Health Protection Agency (HPA) unpublished reconciled data]. The highest disease incidence occurs in infants under three months of age who are too young to have completed the primary vaccine course and have the greatest risk of complications and death. In 2012, pertussis activity increased beyond levels reported in the previous 20 years and extended into all age groups, including infants less than three months of age. This young infant group is considered a key indicator of pertussis activity [2] and the primary aim of the pertussis vaccination programme is to minimise disease, hospitalisation and death in young infants.

A national outbreak (level 3 incident) was declared in April 2012 by the HPA to coordinate the response to increased pertussis activity [3]. In response to this on-going outbreak, the Department of Health announced that pertussis immunisation would be offered to pregnant women from 1 October 2012 to protect infants from birth whilst disease levels remain high [4]. This programme aims to passively protect infants from birth, through intra-uterine transfer of maternal antibodies, until they can be actively protected by the routine infant programme with the first dose of pertussis vaccine scheduled at eight weeks of age [5].

Pertussis activity in England persists at raised levels compared to the years preceding the outbreak in 2012 [6]. The greatest reduction in disease since the peak in 2012 has been in infants under six months of age who are targeted by the maternal pertussis vaccination programme. Disease incidence has, as expected, continued to be highest in this age group but case reports are now in line with those seen before the 2012 peak. Up to 31 March 2015, 11 deaths have been reported in young babies with confirmed pertussis who were born after the introduction of the pregnancy programme on 1 October 2012. Ten of these 11 babies were born to mothers who had not been vaccinated against pertussis [6].

A UK study examining the safety of pertussis vaccination in pregnancy found no evidence of an increased risk of any of an extensive predefined list of adverse events related to pregnancy for women given pertussis vaccination in the third trimester [7]. Two studies using different methods have each shown that babies born to mothers vaccinated at least seven days before delivery had a reduced risk of pertussis disease, of around 90%, in their first few weeks of life when compared with babies whose mothers had not been vaccinated [8, 9]. In June 2014 the Joint Committee on Vaccination and Immunisation (JCVI) considered available data relating to the coverage, effectiveness and safety of the programme, its impact on disease and current epidemiology and advised that the programme should continue for a further five years [10]. This includes the continuation of all surveillance activities introduced to monitor the programme.

Vaccine coverage collection

Since April 2014, monthly data on the uptake of pertussis vaccination in pregnancy in England are collected from GP records via the ImmForm website* and are monitored, validated and analysed by PHE. The ImmForm web-based system automatically extracts vaccine coverage data from participating General Practice (GP) clinical systems with minimal or no burden to the NHS. This method replaced the manual system which was previously in use [11].

The monthly surveys capture data on number of women who delivered in the survey month at more than 28 weeks gestational age (denominator), and the number of pregnant women who delivered after 28 weeks gestational age in the survey month that received a dose of pertussis-containing vaccine in the preceding fourteen weeks (numerator).

In addition to the numerator and denominator, the automated survey records the number and percentage of GP practices responding each month.

For accurate denominators to be extracted from GP IT systems by the automated survey and precise coverage estimates to be calculated it is important that the medical records of all women who have given birth have the following fields completed:

- the date of delivery
- the date of receipt of a pertussis-containing vaccine at or after week 28 of pregnancy, regardless of the setting where the vaccine was administered
- where relevant, any record of a premature delivery occurring at less than 28 weeks gestational age

This report updates the previous summary of the pertussis vaccination programme for pregnant women for the three months ending 31 December 2014 [13], presenting data collected for five months ending 31 May 2015.

Results

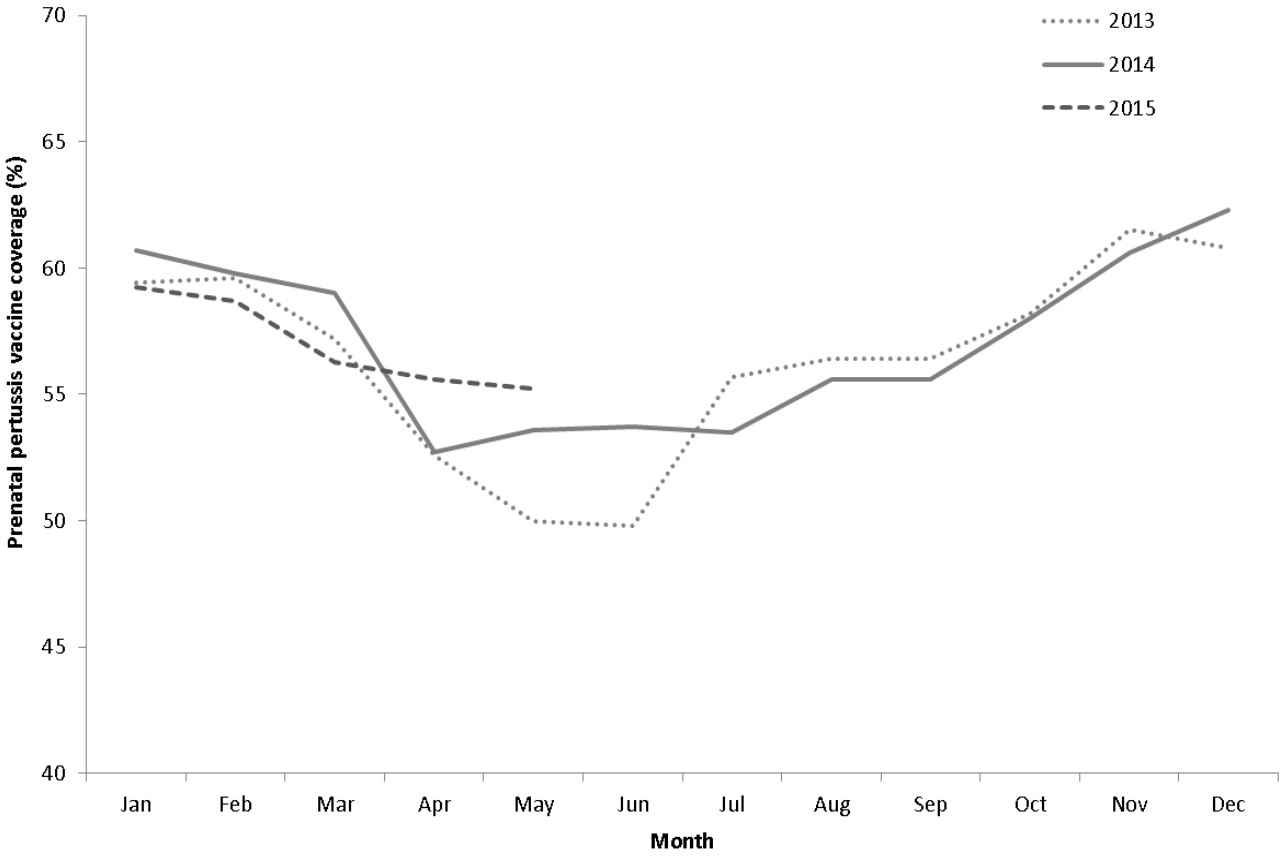
Pertussis vaccine coverage in pregnant women decreased over the five months from 59.3% in January to 55.2% in May 2015 (figure 1). This decline followed a similar seasonal pattern to that observed in 2013 and 2014 (figure 1), with coverage dropping in the first quarter and starting to plateau at the end of spring, although the decline has been less pronounced in 2015, with coverage at 55.2% in May 2015 compared to 50% and 53.6% in the same month in 2013 and 2014 respectively.

The proportion of GP practices participating nationally in the survey each month remains very high at 96.6% with 18 out of 24 ATs having at least 95% of GP practices participating.

Vaccine coverage by Area Team (AT) for the period January 2015 to May 2015 is presented in an Appendix associated with this report. There was significant variation in coverage by AT, and in May 2015 there was a 20.6% difference in uptake between the AT with the highest coverage (66.4% in Cheshire, Warrington and Wirral) and the AT with the lowest coverage (45.8% in London). From January 2015 to May 2015 only the London AT reported coverage below 50%. Seventeen ATs reported ≥60% coverage in January (four of these over 65%), and eight of those ATs maintained coverage ≥60% up to May 2015.

* ImmForm is the system used by PHE to record vaccine coverage data for some immunisation programmes and to provide vaccine ordering facilities for the NHS (https://www.immform.dh.gov.uk/SignIn.aspx?ReturnUrl=%2f).

Figure 1. Prenatal pertussis vaccine coverage in England, January to December 2013 and 2014, with January to May 2015 data for comparison



Discussion

Comparison of the monthly vaccine coverage figures in the years 2013 to 2015 (to date), reveals a seasonal pattern to vaccine uptake with a peak in December and a trough between April and July. In April and May 2015 however, coverage has been sustained at a higher level than in previous years at 55.2% nationally. The increase in coverage between September and December coincides with the delivery of the seasonal influenza vaccination programme which also targets pregnant women [14]. During the flu campaign GP practices actively call and recall eligible patients, which should include pregnant women, and this may be having a positive knock-on effect on pregnant women being offered pertussis vaccine at the same time.

Pertussis continues to persist at heightened levels in the population and so GPs and midwifes should continue to encourage pregnant women to book an appointment to receive the pertussis vaccine, ideally between weeks 28 and 32 of their pregnancy (but up to week 38) [16], to further reduce the incidence of pertussis disease in young infants. This data collection is vital to monitor the uptake of the programme, to identify areas of low coverage and inform public health actions. Considerable variation in coverage between AT's has consistently been reported, with around a 20% difference between those with the highest coverage and those with the lowest coverage. It would be helpful to share examples of good practice from areas achieving consistently high coverage for pertussis vaccination during pregnancy.

Prenatal pertussis vaccine coverage data should be interpreted with caution for several reasons. Completeness of data is reliant on the recording of delivery dates in the mothers' medical records and comparison of this data with national data on live births, indicates these data are incomplete and represent about 70% of the population of pregnant women [13],

however, monthly variations in the denominator closely mirror the seasonal variation observed in national live births.

The survey is sentinel and does not cover all GP practices in England, although 96% of GP practices participated, and there may be variation between the reporting practices with respect to the completeness of the recording of delivery dates. Coverage may be over-estimated if women who have received the vaccine are more likely to have their delivery date recorded. Furthermore, women not registered with a GP (and therefore less likely to be having regular contact with the health service prior to delivery) will not be captured by this reporting system.

However, despite these factors contributing to potential over-estimation of coverage, comparison with other data sources examined to estimate the vaccine coverage of this programme suggests that this methodology may be under-estimating coverage [11]. If coverage, and ultimately the impact of the programme itself, is to be accurately monitored, it is essential that GPs and practice nurses ensure that vaccination and date of delivery are recorded in the patient's GP record.

Continued support in the delivery of this important programme is being sought from service providers (GP practices and maternity units), Screening and Immunisation Teams and Health Protection Teams. Screening and Immunisation Teams should continue to update service providers on the current epidemiology of the disease, the effectiveness of the vaccination programme and the need to maintain and improve coverage achieved. Further information on the pertussis vaccination programme for pregnant women is available here: https://www.gov.uk/government/collections/pertussis-guidance-data-and-analysis.

References

1. Amirthalingam G, Gupta S, Campbell H (2013). Pertussis immunisation and control in England and Wales, 1957 to 2012: a historical review. *Euro Surveill*. **18**(38), Available at: http://eurosurveillance.org/images/dynamic/EE/V18N38/art20587.pdf

2. Campbell H, Amirthalingam G, Andrews N, Fry NK, George RC, Harrison TG, Miller E (2012). Accelerating control of pertussis in England and Wales. *Emerging Infectious Diseases* **18**(1): 38-47.

3. A level 3 incident is the third of five levels of alert under the HPA's Incident Reporting and Information System (IERP) according to which public health threats are classified and information flow to the relevant outbreak control team is coordinated. A level 3 incident is defined as one where the public health impact is significant across regional boundaries or nationally. An IERP level 3 incident was declared in April 2012 in response to the ongoing increased pertussis activity (*HPR* **6**(15))

4. Department of Health press release, 28 September 2012. "Pregnant women to be offered whooping cough vaccination", http://www.dh.gov.uk/health/2012/09/whooping-cough/

5. PHE (2014). The complete routine immunisation schedule. Available at: https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule

6. PHE (2015). Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during January to March 2015 (Q1/2015). *HPR 9(22)*

7. Donegan K, King B, Bryan P (2014). Safety of pertussis vaccination in pregnant women in UK: observational study. *BMJ*. Available at: http://www.bmj.com/content/349/bmj.g4219

8. Amirthalingam G, Andrews N, Campbell H, Ribeiro S, Kara E, Donegan K, Fry NK, *et al* (2014). Effectiveness of maternal pertussis vaccination in England: an observational study. *Lancet* **384**(9953): 1521-1528. Available at: http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60686-3/abstract

9. Dabrera G, Amirthalingam G, Andrews N, Campbell H, Ribeiro S, Kara E, *et al* (2014). A case-control study to estimate the effectiveness of maternal pertussis vaccination in protecting newborn infants in England and Wales, 2012–2013. *Clin Infect Dis* **60**(3): 333-7. Available at: http://cid.oxfordjournals.org/content/60/3/333.long

10. Joint Committee on Vaccination and Immunisation minutes. Available at: https://www.gov.uk/government/groups/joint-committee-on-vaccination-and-immunisation#minutes

11. PHE (2014). Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, April 2014 to August 2014. *HPR* **8**(41). Available from: https://www.gov.uk/government/publications/pertussis-vaccination-programme-for-pregnant-women-vaccine-coverage-estimates-in-england-april-to-august-2014

12. PHE (2014). Replacement whooping cough vaccine. *Vaccine update* (issue 213, March 2014). Available at: https://www.gov.uk/government/publications/vaccine-update-issue-213-march-2014

13. PHE (2014). Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, September to December 2014. *HPR* **9**(7). Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408500/hpr0715_prtsss-vc.pdf14. PHE. Green Book Chapter 19: Influenza. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385226/Green_Book_Chapter_19_v8_2.pdf

15. Department of Health (2014). Resources to support whooping cough vaccination. Available at: https://www.gov.uk/government/publications/resources-to-support-whooping-cough-vaccination

Appendix

"Prenatal pertussis Vaccine Coverage Monitoring Programme, England, monthly surveys January 2015 to May 2015" is available on the GOV.UK website page "Pertussis immunisation in pregnancy: vaccine coverage estimates (England)"

Infection report

Volume 9 Number 26 Published on: 24 July 2015

Immunisation

Pneumococcal Polysaccharide Vaccine (PPV) coverage report, England, April 2014 to March 2015

Coverage of PPV in adults aged 65 years and over, vaccinated any time up to and including 31 March 2015, was 69.8%, compared with 68.9% in 2014. The proportion of adults aged 65 years who were vaccinated in the previous 12 months was 16.1%, compared to 13.7% in 2014. Over a third (35.1%) of 65 year olds had received the vaccine any time up to and including the 31 March 2015. Coverage is presented here by NHS England Area Team with Clinical Commissioning Group and Local Authority level data provided online.

Introduction

Pneumococcal disease can present as non-invasive or invasive infections caused by the bacterium *Streptococcus pneumoniae* (also called pneumococcus). Non-invasive disease includes middle ear infections (otitis media), sinusitis and bronchitis, whilst invasive pneumococcal disease (IPD) includes septicaemia, pneumonia and meningitis.

IPD is a significant cause of morbidity and mortality globally and in the UK with more than 5,000 confirmed cases reported annually in England. Young children, the elderly and people in clinical risk groups are most at risk of severe pneumococcal disease, and so all of these groups are currently offered pneumococcal immunisation.

A pneumococcal immunisation programme for older people was introduced in the UK in August 2003 [1]. In the first year of the programme, all people aged 80 years or above were offered a single dose of Pneumococcal Polysaccharide Vaccine (PPV) and in April 2004, this was extended to include all people aged 75 years and over. Since April 2005 all people aged 65 years and over have been offered the vaccine.

PPV contains purified polysaccharide from 23 capsular pneumococcal types (PPV23) [2]. Most healthy adults develop a good antibody response to a single dose of PPV however children younger than two years do not and so the pneumococcal conjugate vaccine [PCV] is used in the childhood immunisation programme [2].

Public Health England (PHE) monitors coverage of the PPV immunisation programme through an annual survey administered via ImmForm*. The survey measures the proportion of those aged 65 and over who have received PPV at any time and the proportion who received PPV during the previous year.

The data presented in this report describe vaccine coverage for the tenth year of the PPV programme in England, in adults aged 65 years and over. Data for previous years are available online [3].

* ImmForm is the system used by PHE to record vaccine coverage data for some immunisation programmes and to provide vaccine ordering facilities for the NHS (https://www.immform.dh.gov.uk/SignIn.aspx?ReturnUrl=%2f).

Methods

The ImmForm web-based system automatically extracts vaccine coverage data from participating General Practice (GP) clinical systems with minimal or no burden to the NHS.

The annual survey captured data on the number of patients registered on the date of extraction [denominator] and the number of patients registered who had received the PPV vaccine [numerator]). These data were collected for the time period up to and including 31 March 2015 as well as for the previous 12 months only i.e. between 1 April 2014 and 31 March 2015. These data are delineated by age at 31 March 2015 in the following age bands:

- 65 years and over (overall)
- 65 years only
- 66 to 74 years
- 75 years and over

GP data are collated by NHS England Area Team (AT), Local Authority and Clinical Commissioning Group (CCG).

Results

In total 7,561/7,822 (96.7%) GP practices reported PPV coverage data in 2015, an increase on the 92.9% (7,393/7,956) of practices reporting in 2014. This proportion ranged from 89.8% in Kent and Medway AT to 100% in Lancashire AT.

PPV coverage was 69.8% in all patients aged 65 and over, immunised at any time up to the 31st March 2015 in England (table 1). This ranged by AT (table 1) and age group as follows:

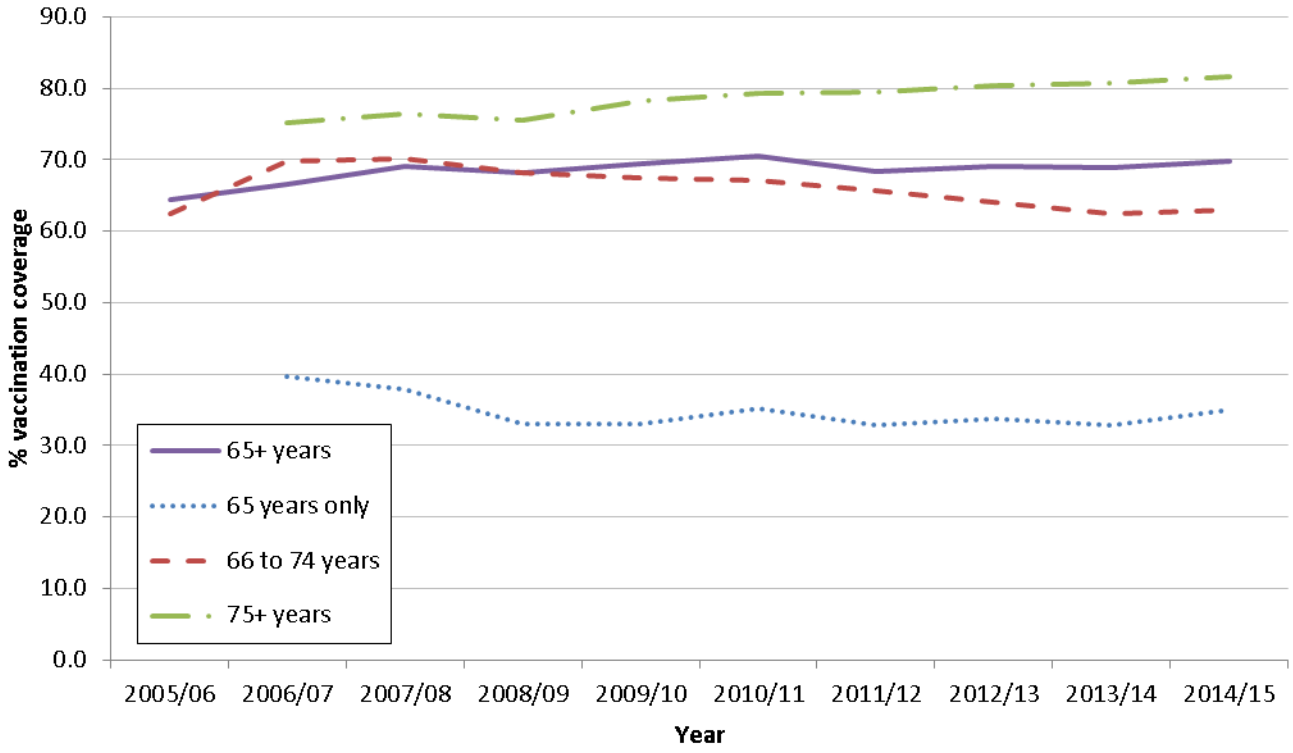
- 65.0% (London) to 73.3% (Merseyside) for people aged 65 years and over
- 30.0% (Essex) to 44.4% (Merseyside) for people aged 65 years only
- 57.5% (London) to 68.9% (Merseyside) for people aged 66 to 74 years
- 77.5% (London) to 84.4% (Thames Valley) for people aged 75 years and over

Table 1. Percentage of GP practices reporting and vaccination coverage for patients who received PPV anytime up to 31 March 2015 by age group for each Area Team in England

Area Team (code)	% of GP practices reporting	Aged 65 and over	Aged 65 only	Aged 66 to 74	Aged 75+
Cheshire, Warrington and Wirral (Q44)	96.4	72.6	38.7	66.8	83.5
Durham, Darlington and Tees (Q45)	96.5	69.5	35.8	62.6	82.0
Greater Manchester (Q46)	92.1	69.7	37.3	63.8	81.3
Lancashire (Q47)	100.0	70.3	35.7	64.1	81.9
Merseyside (Q48)	92.7	73.3	44.4	68.9	81.9
Cumbria, Northumberland, Tyne and Wear (Q49)	96.0	72.6	38.5	66.3	84.1
N Yorkshire and Humber (Q50)	99.1	70.6	35.7	63.3	83.3
S Yorkshire and Bassetlaw (Q51)	98.6	72.0	39.2	65.9	83.1
W Yorkshire (Q52)	99.7	71.6	39.9	65.3	82.8
Arden, Herefordshire and Worcestershire (Q53)	94.3	71.3	37.3	64.9	82.8
Birmingham and Black Country (Q54)	95.1	67.7	33.3	60.0	79.4
Derbyshire and Notts. (Q55)	99.6	73.3	40.1	67.7	84.0
East Anglia (Q56)	97.2	71.7	37.5	65.2	83.1
Essex (Q57)	98.9	66.2	30.0	58.2	79.5
Hertfordshire and the S Midlands (Q58)	96.5	69.8	32.4	63.0	82.4
Leicestershire and Lincolnshire (Q59)	99.2	70.7	37.4	64.5	82.1
Shropshire and Staffordshire (Q60)	93.8	66.7	30.9	59.6	79.9
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	98.4	70.2	34.6	62.8	82.7
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	97.2	70.3	33.1	62.9	82.8
Devon, Cornwall and Scilly Isles (Q66)	93.4	68.7	32.3	61.6	81.2
Kent and Medway (Q67)	89.8	69.9	32.0	63.8	81.8
Surrey and Sussex (Q68)	98.2	67.5	30.9	59.0	80.1
Thames Valley (Q69)	96.6	72.6	35.0	66.3	84.4
Wessex (Q70)	96.8	71.7	35.6	64.1	83.9
London (Q71)	98.1	65.0	31.4	57.5	77.5
England	96.7	69.8	35.1	63.0	81.7
England denominator	7822	9464112	579965	4582037	4302110

Coverage has remained stable in recent years (figure 1) hovering at just below 70% in the 65+ years age group and at around 80% in the 75+ year age group (figure 1).

Figure 1. Percentage PPV coverage – ever vaccinated, by age group, England, 2005/06 to 2014/15



The proportion of patients vaccinated in the previous 12 months has remained stable over the last five years (figure 2, table 2). Almost a fifth (19.0%) of patients in the 65 years only group had already received the vaccine any time up to and including 31 March 2014 as they were eligible due to their inclusion in specific clinical risk groups, and an additional 16.1% received the vaccine in the previous 12 months (ie 1 April 2014 to 31 March 2015).

More detailed tables by AT, Clinical Commissioning Group (CCG) and Local Authority are available on the GOV.UK website page "Pneumococcal polysaccharide vaccine (PPV): vaccine coverage estimates".

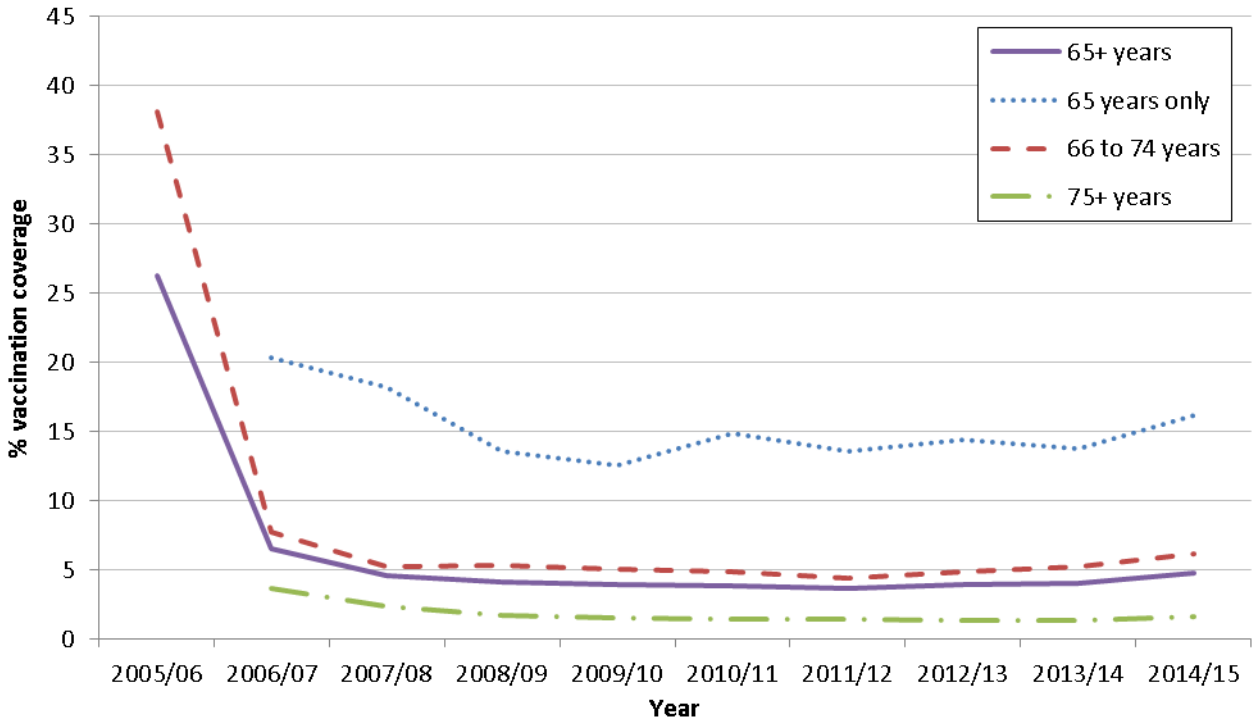
Data issues/limitations

This survey is a snapshot of vaccine coverage among the eligible GP registered population at the time of data extraction. The data will therefore exclude patients who received the vaccine but have subsequently died and patients who have since moved. Patients who are vaccinated but have not had their electronic patient record updated by the time of data extraction, will also not be included. The data include patients who have been vaccinated by another healthcare provider (provided their electronic record is updated before the data are extracted).

Table 2. Percentage of GP practices reporting and vaccination coverage for patients who received PPV between 1 April 2014 and 31 March 2015 by age group for each Area Team in England

Area Team (code)	% of GP practices reporting	Aged 65 and over	Aged 65 only	Aged 66 to 74	Aged 75+
Cheshire, Warrington and Wirral (Q44)	96.4	5.26	18.73	6.93	1.64
Durham, Darlington and Tees (Q45)	96.5	4.49	14.14	5.79	1.67
Greater Manchester (Q46)	92.1	5.21	14.83	6.62	2.16
Lancashire (Q47)	100.0	3.63	12.08	4.75	1.23
Merseyside (Q48)	92.7	5.37	20.06	6.60	2.09
Cumbria, Northumberland, Tyne and Wear (Q49)	96.0	4.33	15.29	5.74	1.33
N Yorkshire and Humber (Q50)	99.1	3.76	16.94	4.68	0.98
S Yorkshire and Bassetlaw (Q51)	98.6	4.87	16.62	6.69	1.31
W Yorkshire (Q52)	99.7	4.80	19.11	6.02	1.46
Arden, Herefordshire and Worcestershire (Q53)	94.3	5.20	19.01	6.73	1.65
Birmingham and Black Country (Q54)	95.1	5.11	12.57	6.61	2.73
Derbyshire and Notts. (Q55)	99.6	4.22	18.56	5.31	1.03
East Anglia (Q56)	97.2	5.10	20.97	6.56	1.48
Essex (Q57)	98.9	3.96	14.28	5.36	1.11
Hertfordshire and the S Midlands (Q58)	96.5	4.31	14.57	5.72	1.33
Leicestershire and Lincolnshire (Q59)	99.2	5.04	19.33	6.45	1.49
Shropshire and Staffordshire (Q60)	93.8	3.96	13.25	5.09	1.35
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	98.4	4.22	16.68	5.54	1.18
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	97.2	3.68	15.09	4.85	0.99
Devon, Cornwall and Scilly Isles (Q66)	93.4	4.32	15.63	5.51	1.53
Kent and Medway (Q67)	89.8	4.60	15.51	6.09	1.45
Surrey and Sussex (Q68)	98.2	4.46	14.31	6.23	1.57
Thames Valley (Q69)	96.6	5.40	18.34	7.14	1.80
Wessex (Q70)	96.8	4.25	18.06	5.50	1.27
London (Q71)	98.1	5.56	13.78	7.21	2.68
England	96.7	4.67	16.15	6.07	1.62
England denominator	7822	9464112	579965	4582037	4302110

Figure 2. Percentage PPV coverage in the last 12 months, by age group, England, 2005/06 to 2014/15



Discussion

The proportion of GP practices participating in the PPV survey continues to be very high, achieving levels over 95% this year. For the fifth consecutive year, PPV coverage among people over the age of 65 remains stable at just under 70% of the eligible cohort.

The impact of the PPV programme on reducing the incidence of vaccine-type IPD in patients aged 65 years and over has not been evident in surveillance data, due to the vaccine's modest effectiveness and its existing use in risk groups prior to their entry into the over 65 year old programme. However, there is evidence of individual protection against the serotypes covered by PPV23 [4]. In addition it has yet to be determined if vaccine efficacy declines over time [4,5] and therefore reinforcing doses are not currently recommended except for people whose antibody levels decline more rapidly [2].

The data presented in this report indicate that many of those eligible for PPV vaccination do not receive the vaccine in the first year that they become eligible. However, increasing vaccine coverage in the older age groups demonstrates that vaccination continues to be offered opportunistically in primary care to those aged over 65 years.

PPV is a one-off vaccine available throughout the year however for a more efficient delivery it can be given at the same time as the seasonal influenza vaccine, which is also recommended for adults aged 65 years and over [6]. Coverage of the seasonal influenza programme in this age group has been 73% for the past three seasons [7-8] suggesting that at least similar coverage could be achieved for PPV. A further opportunity for offering this vaccine is also available for adults eligible for the shingles vaccine (currently offered to those who are 70 years old on the 1 September 2014, with a catch-up available for those aged 78 and 79 on 1 September 2014 [9]). The recent experience with the shingles programme has further demonstrated that it is feasible to successfully deliver an additional vaccine, targeted to a specific age group, alongside the influenza programme.

References

1. Department of Health, Chief Medical Officer (2003). PL CMO (2003)6: Adult immunisation update.
2. Public Health England (2013). Pneumococcal: the green book, chapter 25. (Last updated 4 December 2013).
3. Public Health England. Pneumococcal Polysaccharide Vaccination (PPV) uptake.
4. Andrews NJ, Waight PA, George RC, Slack MPE, Miller E (2012). Impact and effectiveness of 23-valent pneumococcal polysaccharide vaccine against invasive pneumococcal disease in the elderly in England and Wales. *Vaccine* **30**: 6802-6808.
5. Moberley SA, Holden J, Tatham DP, Andrews RM (2008) Vaccines for preventing pneumococcal infection in adults. Cochrane Database Syst Rev 2008 (1) CD000422
6. Public Health England. Influenza: the green book, chapter 19. (Last updated 21 May 2015).
7. Public Health England. Influenza immunisation uptake in GP patient groups data collection survey 2014 to 2015.
8. Public Health England. Influenza immunisation uptake in GP patient groups data collection survey 2013/14.
9. Public Health England (2014). Shingles: the green book, chapter 28a. (Last updated 23 September 2014).

Infection report

Volume 9 Number 26 Published on: 24 July 2015

Immunisation

Shingles vaccine coverage report, England, September 2014 to May 2015

Coverage of the shingles vaccine in the routine cohort by the third quarter of the 2014/15 programme, is almost four percent lower than that recorded for the same time period last year but is comparable for patients in the catch-up cohorts, aged 78 and 79 years.

Introduction

A report describing the first six months of the second year (September 2014 to February 2015) of the herpes zoster (shingles) vaccination programme in England was published in April 2015 [1]. Here we update those data to include the third quarter of the second year of this national immunisation programme.

Various surveillance systems have been put in place by PHE in collaboration with a range of partners to effectively monitor the impact and effectiveness of the shingles vaccine programme in England, and an evaluation of the first year of the programme, including vaccine coverage by ethnic group, was published in December 2014 [2].

This year (1 September 2014 to 31 August 2015) the shingles vaccine should be offered to patients aged 70 years for the routine programme (born between 2 September 1943 and 1 September 1944) and patients aged 78 and 79 years (born between 2 September 1934 and 1 September 1936) for the catch-up programme. Eligibility is determined by the patient's age on 1 September 2014. From 1 September 2014 GPs may continue to offer immunisation to all those who became eligible as 70 year-olds from 1 September 2013 but have not yet been immunised [3]. The programme aims to reduce the incidence and severity of shingles by boosting individuals' pre-existing varicella zoster virus immunity.

As a live viral vaccine, the shingles vaccine is contraindicated for individuals with severe immunosuppression either as a result of combination immunosuppressive therapies or due to a known primary or acquired immunodeficiency state such as leukaemia or lymphoma. It is also contraindicated for pregnant women. It is important to assess the eligibility of individuals prior to offering the shingles vaccine. Whilst a number of individuals in the eligible cohort are likely to have underlying medical conditions, many are likely to benefit and therefore prior assessment is essential to ensure individuals who can benefit from the vaccine are not excluded [4,5].

Methods

Aggregated GP practice level shingles vaccine coverage data are automatically uploaded via participating GP IT suppliers to the ImmForm* website on a monthly basis. The ImmForm website provides a secure platform for vaccine coverage collections and these data collections are monitored, validated and analysed by PHE.

* ImmForm is the system used by Public Health England to record vaccine coverage data for some immunisation programmes and to provide vaccine ordering facilities for the NHS.

Cumulative shingles vaccine coverage in England by age cohort and Area Team: 1 September 2014 to 31 May 2015*

Area Team (code)	Per cent of practices reporting data in May 2015	Percentage of age cohort vaccinated to end May 2015		
		Routine 70 years	Catch-up 79 years	Catch-up 78 years
Cheshire, Warrington and Wirral (Q44)	94.6	55.7	60.0	56.6
Durham, Darlington and Tees (Q45)	97.6	53.8	52.4	52.7
Greater Manchester (Q46)	91.1	51.6	51.5	50.2
Lancashire (Q47)	98.7	52.7	54.0	54.8
Merseyside (Q48)	93.1	49.0	53.1	50.8
Cumbria, Northumberland, Tyne and Wear (Q49)	96.3	55.6	57.7	56.2
N Yorkshire and Humber (Q50)	96.5	53.2	52.9	52.4
S Yorkshire and Bassetlaw (Q51)	98.6	54.2	52.6	52.4
W Yorkshire (Q52)	100.0	55.6	54.5	53.2
Arden, Herefordshire and Worcestershire (Q53)	91.5	54.2	56.8	55.5
Birmingham and Black Country (Q54)	93.3	48.3	50.8	48.8
Derbyshire and Notts. (Q55)	98.5	57.2	55.4	54.0
East Anglia (Q56)	97.2	57.7	56.8	55.3
Essex (Q57)	98.5	47.0	47.3	45.3
Hertfordshire and the S Midlands (Q58)	97.4	55.9	55.7	54.4
Leicestershire and Lincolnshire (Q59)	97.1	58.8	58.0	56.2
Shropshire and Staffordshire (Q60)	92.1	53.7	56.0	54.1
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	97.9	54.9	54.8	53.3
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	92.8	54.7	55.9	55.9
Devon, Cornwall and Scilly Isles (Q66)	93.0	54.8	55.8	54.7
Kent and Medway (Q67)	87.9	51.4	52.7	53.2
Surrey and Sussex (Q68)	98.8	50.9	53.1	51.6
Thames Valley (Q69)	94.5	55.5	58.4	58.2
Wessex (Q70)	96.2	55.6	57.3	56.1
London (Q71)	97.1	42.0	45.8	43.3
ENGLAND	95.8	52.8	53.8	52.5

* Data are provisional and reliant upon correct interpretation and implementation of the data specification by GP IT suppliers. One of four IT suppliers (representing 36% of registered patients) has been identified as potentially under-reporting vaccination rates and further investigations are underway.

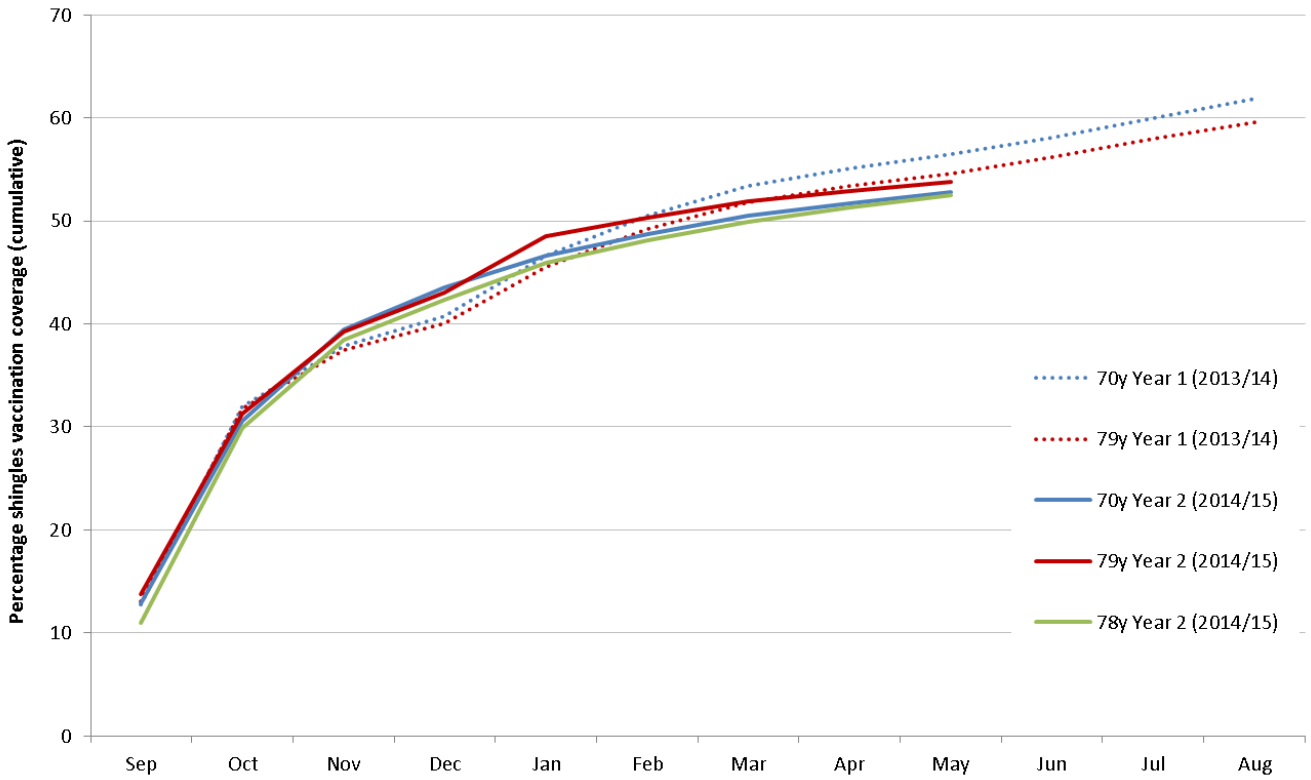
Results

In total 7487/7819 (95.8%) GP practices reported shingles vaccine coverage data in May 2015 (compared to 97.0% of GP practices in February 2015). This ranged from 87.9% of practices in Kent and Medway Area Team, to 100% of practices in West Yorkshire Area Team (see table and appendix).

Overall cumulative coverage of the shingles vaccination programme in England in May 2015 was 52.8% for the routine 70 year old cohort (compared to 56.5% at the same point in 2014), 53.8% in the 79 year old catch-up cohort (compared to 54.6% at the same point in 2014), and 52.5% in the 78 year old catch-up cohort (see figure).

Coverage by Area Team (AT) ranged from 42.0% (London) to 58.8% (Leicestershire and Lincolnshire) for the routine 70 year old cohort, 45.8% (London) to 60.0% (Cheshire, Warrington and Wirral) for the 79 year old catch-up cohort and 43.3% (London) to 58.2% (Thames Valley) for the 78 year old catch-up cohort. Coverage ≥50% was achieved in all three age cohorts for 21 of 25 ATs. Coverage estimates by Clinical Commissioning Group (CCG) and age cohort are available as an appendix to this report [6].

Cumulative shingles vaccine coverage in England by age cohort, September 2014 to May 2015 (year 2), and September 2013 to August 2014 (year 1)



Discussion

By the end of May 2015 vaccine coverage for the 2014/15 shingles vaccination programme was 52.8% for the routine cohort in England, almost 4% lower than the coverage achieved at the same time last year (56.5%). Cumulative coverage for the 79 year old catch-up cohort was 53.8%, only marginally lower than the 54.6% achieved at the same point in 2014. However it should be noted that in 2014/15 an additional catch-up cohort has been targeted with 52.5% coverage reached among 78 year olds. Annual coverage for the 2013/14 programme reached 62% for the routine cohort and almost 60% for the catch-up cohort [2] and so a final push to

reach more patients in the routine and catch–up cohorts needs to continue over the summer if similar coverage is to be achieved by the end of August 2015.

GP practices are urged to continue to offer shingles vaccine to the eligible cohorts in the coming months in order to prevent the significant burden of disease associated with shingles among older adults in England.

References

1. Public Health England. Shingles vaccine coverage report, England, September 2014 to February 2015 Available at: https://www.gov.uk/government/publications/herpes-zoster-shingles-immunisation-programme-2013-to-2014-provisional-vaccine-coverage-data

2. Public Health England. Herpes Zoster (Shingles) immunisation programme 2013/2014: Report for England. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/383018/Shingles Report2014.pdf

3. Public Health England. Shingles immunisation programme letter. 20 August 2014. Available at: https://www.gov.uk/government/publications/shingles-immunisation-programme-letter

4. Public Health England. Shingles vaccination programme – one year on. Vaccine Update. 2014. Issue 223. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/390117/PHE_9173_VU_223_Dec_2014_11.pdf

5. Public Health England. Shingles (herpes zoster): the green book, Chapter 28a. 2014. Available at: https://www.gov.uk/government/publications/shingles-herpes-zoster-the-green-book-chapter-28a

6. Public Health England. Shingles vaccine coverage report, England, September 2014 to February 2015, **appendix**: "Vaccine coverage in England by age cohort and Clinical Commissioning Group (CCG), 1 September 2014 to 31 May 2015".

Appendix

"Shingles Immunisation Vaccine Coverage Monitoring Programme, England September 2014 to May 2015" is available on the GOV.UK website page "Herpes zoster (shingles) immunisation programme: vaccine coverage data".