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News

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Group A streptococcal infections: fourth update on seasonal activity, 2015/16 (in summary)

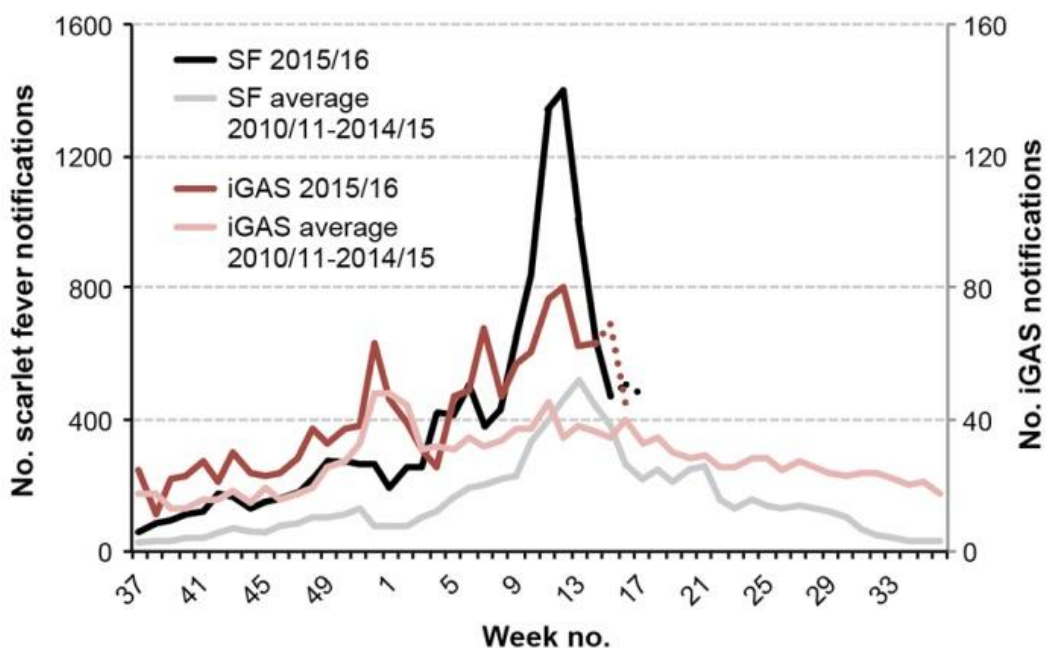
Although scarlet fever notifications in most areas of England remain elevated compared with the same period last year, since Easter the declining rate of notifications indicates that the season's peak has passed, according to the fourth update on seasonal group A streptococcus activity published in this issue of HPR [1].

The graph below compares latest surveillance data for both scarlet fever and invasive group A streptococcal (iGAS) infection (set against comparable data from previous seasons), indicating that the scarlet fever season appears to have peaked in England in the last two weeks of March.

In the current season to week 17 of 2016:

- a total of 12,906 scarlet fever notifications had been made, with notifications peaking in week 12 (1400 notifications)
- a total of 1333 reports of iGAS disease had been notified through routine laboratory surveillance, 45% higher than the average for the same period in the previous five years (922 reports; range 770-1054).

Weekly scarlet fever and iGAS notifications in England, 2010/11 onwards*



* Dashed lines are values that may increase as further notifications are received.

Geographical variation in iGAS infection notification rates were seen across England, with all but one of 15 English regions reporting higher than average iGAS cases so far this season. The areas with the highest population rates to date are Devon, Cornwall & Somerset (3.9 per 100,000 population), Yorkshire & Humber (3.7/100,000), and the North East (3.4).

The full report includes information from emm strain diversity testing and antimicrobial susceptibility data.

Reference

1. Group A streptococcal infections: fourth update on activity during the 2015/16 season, *HPR* 10(16): infection report
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Infection reports

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Infection Reports

Vaccine coverage

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Vaccine coverage report

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Shingles vaccine coverage report, England, September 2015 to February 2016

Provisional cumulative vaccine coverage estimates show 46.0% coverage for both the routine 70 year old and the 78 year old catch-up cohorts. Compared with February 2015, coverage was lower by 2.7% for the routine cohort and by 2.1% for the catch-up cohort.

Introduction

This report describes the first six months (September 2015 to February 2016) of the third year of the herpes zoster (shingles) vaccination programme in England, comparing cumulative vaccine coverage estimates with the 2014/15 and 2013/14 programmes [1,2]

In this year of the programme (1 September 2015 and 31 August 2016) shingles vaccine is routinely offered to patients aged 70 years old on 1 September 2015 (born between 2 September 1944 and 1 September 1945) and to a catch-up cohort comprised of adults aged 78 years old on 1 September 2015 (born between 2 September 1936 and 1 September 1937). GPs may continue to offer immunisation to anyone who was eligible for shingles vaccine in the first two years of the programme but has not yet been vaccinated, up until their 80th birthday. This includes people aged 71, 72 or 79 on 1 September 2015 [3,4].

As a live viral vaccine, the shingles vaccine is contraindicated for individuals with severe immunosuppression and pregnant women. It is essential to assess the eligibility of individuals prior to offering the shingles vaccine and ensure that those who can benefit are not excluded. Further information on shingles vaccine eligibility is available in the "Immunisation against infectious disease" book (the [Green Book](#)) [5].

Methods

GP practice level shingles vaccine coverage data are automatically uploaded via participating GP IT suppliers to the ImmForm* website on a monthly basis. These data are then validated and analysed by PHE to check data completeness, identify and query any anomalous results and describe epidemiological trends. The automated monthly surveys measure the proportion vaccinated in two ways:

- vaccine **coverage** – the total number of patients aged 70 or 78 years on 1 September 2015 **who have ever received the vaccination** (numerator) as a proportion of the number of patients registered aged 70 or 78 years on 1 September 2015 (denominator)
- vaccine **uptake** – the total number of patients aged 70 or 78 years on 1 September 2015 **who received the vaccination between 1 September 2015 and 31 November 2015** (numerator) as a proportion of the number of patients registered aged 70 or 78 years on 1 September 2015 (denominator)

* 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.

This report describes vaccine **coverage** of each eligible cohort for England and by NHS England area team (AT). Vaccine coverage estimates by NHS England Clinical Commissioning Group (CCG) are presented in an [appendix](#) associated with this report.

Participation and data quality

These cumulative data are provisional and should be interpreted with caution. Due to problems uploading data, coverage estimates for September and October 2015 (figures 1 and 2) include data from three of four IT suppliers, representing 61.5% GP practices.

In January 2016, one of four IT suppliers captured data from fewer GP practices, reducing the overall percentage reporting to 93.2% GP practices, compared to 96.0% in December 2015. Reporting returned to previous levels in February 2016.

Results

In total shingles vaccine coverage data was available for 7308/7669 (95.3%) GP practices in February 2016. This ranged by AT from 88.3% of practices in Merseyside, to 99.4% of practices in West Yorkshire (see table).

By the end of February 2016, 46.0% of the 70 year old routine cohort was vaccinated, (compared to 48.7% in February 2015 and 50.5% in February 2014); as well as 46.0% of the 78 year old catch-up cohort (compared to 48.1% in February 2015) (see figures 1 and 2).

Coverage by Area Team ranged from 39.1% (Essex) to 51.6% (Cheshire, Warrington and Wirral) for the routine 70 year old cohort, and from 38.6% (Essex) to 50.5% (Cheshire, Warrington and Wirral) for the 78 year old catch-up cohort (see table).

Discussion

Provisional cumulative shingles vaccine coverage estimates to the end of February 2016 indicate a decline in coverage of 2.7% for the routine cohort compared to February 2015. Coverage for the 78 year old catch-up cohort also dropped, by 2.1% compared to February 2015. Whilst these data are to be interpreted with caution due to partial GP IT supplier participation and data quality, it is important that GPs continue to offer the shingles vaccine to eligible patients in order to prevent the significant burden of disease associated with shingles among older adults in England.

Further provisional cumulative coverage data will be published on a quarterly basis, with the finalised annual coverage data due to be published in autumn 2016.

References

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Figure 1. Monthly cumulative shingles vaccine coverage for the routine cohort (70 year old) for September to February 2016, compared to 2013/14 and 2014/15 data, England

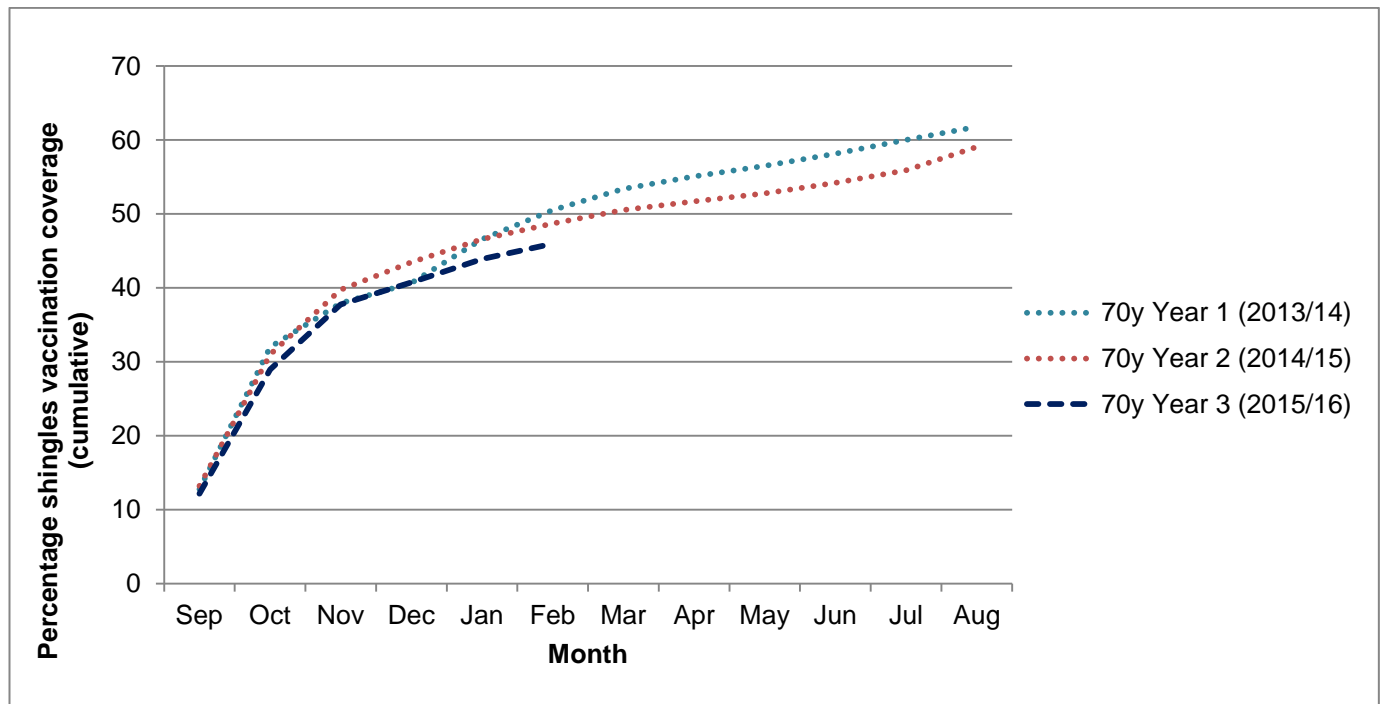
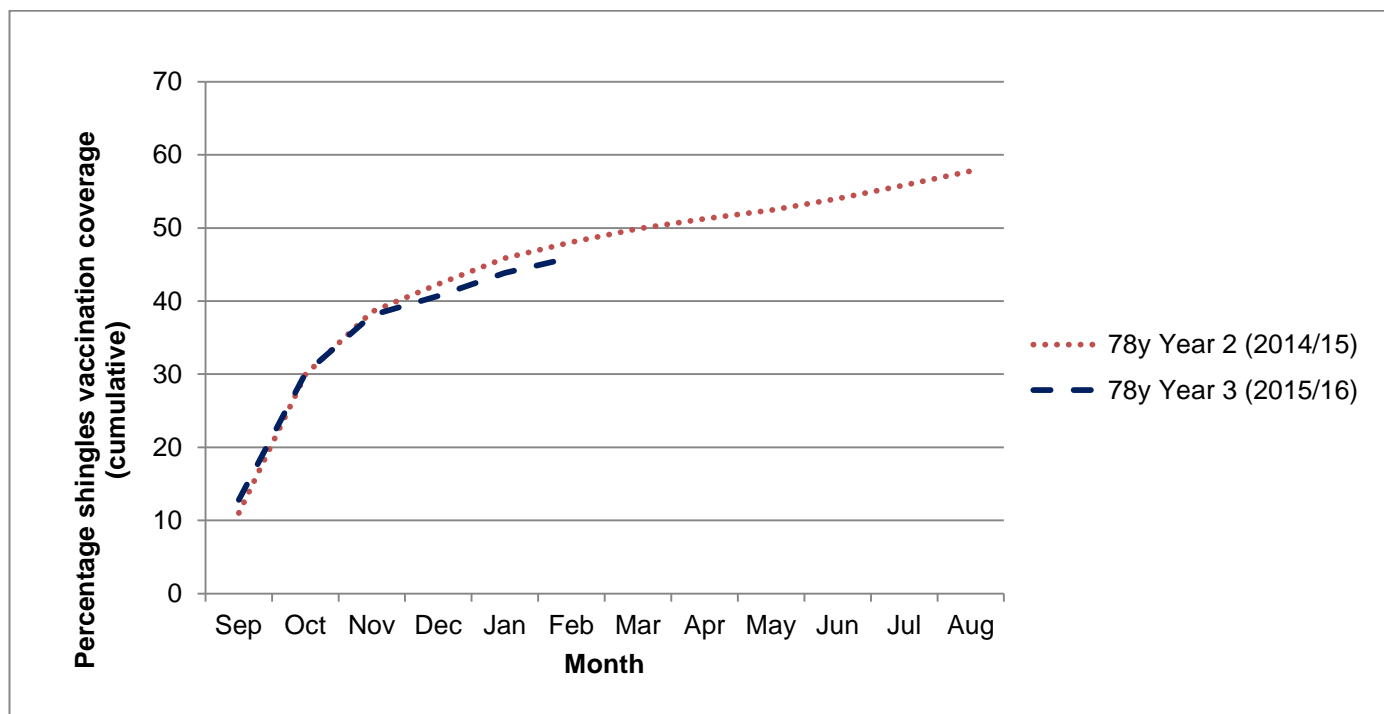


Figure 2. Monthly cumulative shingles vaccine coverage for the catch-up cohort (78 year old) for September to February 2016, compared to 2014/15 data, England



NB: Coverage data for the 2013/14 catch-up cohort are not shown as they were a different age cohort (79 years of age)

Cumulative shingles vaccine coverage to end February 2016 by age cohort and Area Team, England

Area Team (code)	Percent of practices reporting data in February 2016	Percent coverage in routine cohort (70 year olds)	Percent coverage in catch-up cohort (78 year olds)
Cheshire, Warrington and Wirral (Q44)	97.0	51.6	50.5
Durham, Darlington and Tees (Q45)	96.5	48.5	47.3
Greater Manchester (Q46)	90.2	46.8	45.5
Lancashire (Q47)	96.9	46.8	47.4
Merseyside (Q48)	88.3	43.9	45.1
Cumbria, Northumberland, Tyne and Wear (Q49)	97.3	49.7	49.1
N Yorkshire and Humber (Q50)	98.2	44.7	45.4
S Yorkshire and Bassetlaw (Q51)	96.2	46.7	45.9
W Yorkshire (Q52)	99.4	45.4	45.6
Arden, Herefordshire and Worcestershire (Q53)	94.3	48.7	48.6
Birmingham and Black Country (Q54)	93.6	43.9	43.4
Derbyshire and Notts. (Q55)	99.2	49.3	47.1
East Anglia (Q56)	96.8	48.4	48.5
Essex (Q57)	98.4	39.1	38.6
Hertfordshire and the S Midlands (Q58)	97.1	46.5	46.7
Leicestershire and Lincolnshire (Q59)	98.0	49.6	46.1
Shropshire and Staffordshire (Q60)	91.1	47.5	49.6
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	98.4	48.7	48.4
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	93.7	48.6	50.1
Devon, Cornwall and Scilly Isles (Q66)	93.3	44.6	45.3
Kent and Medway (Q67)	90.8	45.9	46.0
Surrey and Sussex (Q68)	97.2	44.8	46.3
Thames Valley (Q69)	94.8	48.1	49.3
Wessex (Q70)	96.8	45.2	45.8
London (Q71)	94.7	39.5	40.2
ENGLAND	95.3	46.0	46.0

Infection report

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Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England: annual report for 2015

In England there were 4190 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England pertussis enhanced surveillance programme in 2015. Pertussis is a cyclical disease with increases occurring every 3-4 years with pertussis activity usually peaking each year in quarter three. Numbers of confirmed cases in England in 2015 were 24% higher than the 3387 reported in 2014 however the number of confirmed cases reported in 2015 were 9% lower than 2013 and 55% lower than the peak observed in 2012 (4621 and 9367 respectively, see figure 1). A third (32%; 1327/4190) of all confirmed cases in England in 2015 were reported in the third quarter (July to September) (table1).

In those aged 1 to 4 years confirmed pertussis cases were higher in 2015 than in the 14 years preceding 2012 and cases aged between 5 and 9 years were higher than any year reported since the introduction of enhanced pertussis surveillance in 1994. Similarly the number of laboratory confirmed cases aged between 10 and 14 years reported in 2015 was the second highest reported after 2012. In infants under a year, however, pertussis cases were 42% higher in 2015 (n=175) than in 2014 (123) but lower than the 508 reported in 2012 and 205 reported in 2011.

A national outbreak of pertussis (level 3 incident [1]) was declared by the HPA in April 2012 and, as a response to the ongoing outbreak, the Department of Health (DH) announced the introduction of a temporary immunisation programme for pregnant women on 28 September 2012 [2]. In June 2014 the Joint Committee on Vaccination and Immunisation (JCVI) recommended that the programme should continue for a further five years [3] based on UK evidence of impact, high effectiveness and safety and continuing high levels of disease [4,5,6]. From 1 April 2016 the recommended gestational age for vaccination is between 16-32 weeks and for operational reasons vaccine should be offered from around 20 weeks on or after the foetal anomaly scan [3]. The most recent PHE figures report that the proportion of mothers due to give birth between January 2015 and December 2015 who had been immunised with a pertussis containing vaccine in pregnancy in England ranged from 55.1% to 61.6% [7].

The national incidence for all age groups, based on laboratory confirmations in England and 2014 population estimates [8], was; two cases of pertussis per 100,000 population in 2011, 18 per 100,000 in 2012, nine per 100,000 in 2013, six per 100,000 in 2014 and eight per 100,000 in 2015 (figure 2). As was seen in 2012, 2013 and 2014, the majority (79%; 3291/4190) of laboratory confirmed cases in England in 2015 (incidence 7/100,000) occurred in individuals aged 15 years and older. As expected, however, the incidence of laboratory confirmed cases continued to be highest in infants less than three months, who are at most risk of serious disease and too young to be fully vaccinated. Confirmed pertussis incidence in this age group was 78 per 100,000 in 2015 compared to 59 per 100,000 in 2014, 50 per 100,000 in 2013 and 240 per 100,000 in 2012 (figure 2). Accordingly, the number of confirmed cases in infants <3 months increased by 33% in 2015 (130 cases) compared to 2014 (98 cases), but was 68% lower than 2012 (407 cases) and 21% lower than 2011 (164).

In England, 14 deaths were reported in infants with pertussis confirmed in 2012. Following the introduction of pertussis vaccination in pregnancy; three babies died following pertussis

confirmed in 2013, seven in 2014 and four in 2015. All cases were <3 months of age and therefore too young to be fully protected by infant vaccination. Only two of the infants born after the introduction of the maternal programme had a mother who had been vaccinated during pregnancy but in both cases too close to delivery to confer optimal passive protection in the infant.

These surveillance data in young infants following the introduction of a programme to immunise pregnant women are encouraging as a relatively low incidence has been maintained, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in all age groups other than infants and are currently increasing. Women should, therefore, continue to be encouraged to be immunised against pertussis during pregnancy in order to protect their babies from birth. The advice to offer vaccination earlier in pregnancy should lead to more opportunities for pregnant women to be vaccinated and to have their vaccine status checked. It is anticipated that this will help improve coverage which is particularly important in view of the current increases in pertussis.

Background to laboratory testing

Since mid-2006 there has been greater use of serology testing compared to previous years due to increasing clinical awareness of pertussis in older children and adults [9] and increased awareness of the availability of this diagnostic method [10]. In 2015, serology confirmed cases accounted for the greatest proportion (90%; 3786/4190) of total laboratory confirmations, and accounted for 98% (3240/3786) of all confirmed cases of pertussis in older age groups (table 2). The majority (94%; 164/175) of infants under one year of age with confirmed pertussis in 2015 were tested using culture and PCR methods. Oral fluid (OF) testing was introduced in 2013 for testing children aged five to 16 years (<17 years) and in 2015, 161 of 795 cases (20%) in this age group tested positive for a recent pertussis infection by OF testing only. Thirty non-infant cases were confirmed by PCR.

The choice of laboratory testing method is dependent on the age of the patient and the stage of the illness; this is reflected in the distribution of testing methods summarised in table 2. Culture is the gold standard for diagnosis but loses sensitivity with increasing time from the onset of illness and is unlikely to be positive after two weeks from the onset of symptoms. The Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) at PHE's Microbiology Services Division Colindale encourages submission of all *Bordetella pertussis* isolates for confirmation and national surveillance purposes.

Bordetella pertussis PCR testing for hospitalised cases <1 year [10] old has been offered by the RVPBRU since 2002 and from July 2014, PCR testing for all ages has been deployed via lead PHE laboratories in a phased approach [11]. This form of testing is particularly encouraged in all children aged 1-4 years, who present within three weeks of onset, for whom recent vaccination may confound serology results.

In contrast, serology investigation by estimation of anti-pertussis toxin (PT) IgG antibody levels for older children and adults is routinely offered for older children/adults who have been unwell with a cough for at least two weeks. The RVPBRU is also offering an OF testing service for clinically suspected cases, reported to local Health Protection Teams, who are aged five to 16 years (<17yrs) and have been coughing for at least two weeks and have not been immunised against pertussis in the previous year. However, as recent pertussis vaccination (primary and pre-school booster vaccination) can confound the serology and OF results, these investigations are not usually recommended for infants or children within one year of receiving the pertussis vaccine (primary or pre-school booster).

Further information is available in the PHE Microbiology Services Colindale Bacteriology Reference Department User Manual at: <https://www.gov.uk/government/publications/bacteriology-reference-department-brd-user-manual>.

Figure 1. Total number of laboratory-confirmed pertussis cases per evaluation quarter in England: 2006 -2015

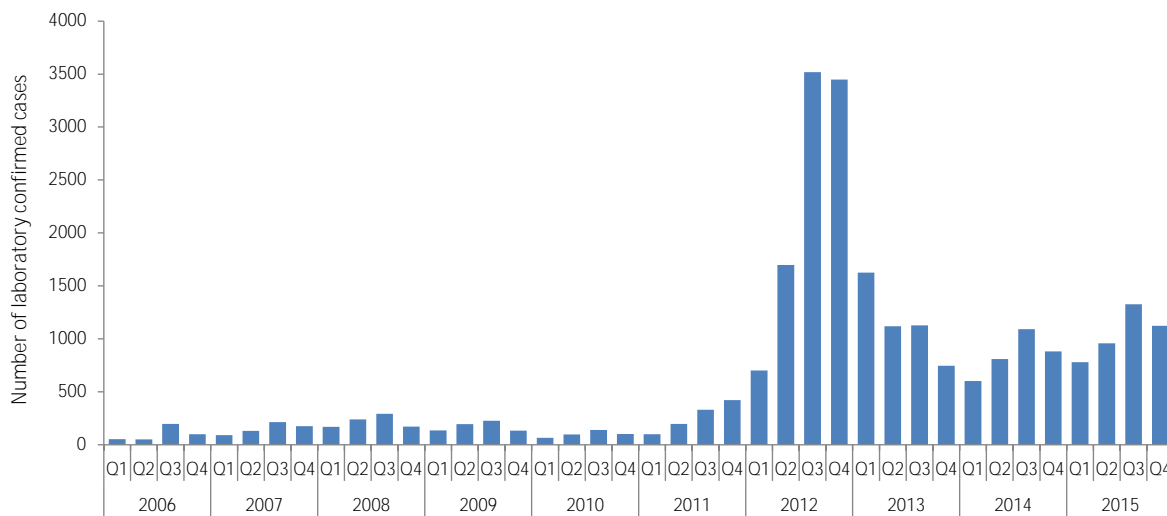


Table 1. Laboratory-confirmed cases of pertussis by quarter and test method in England: 2015

Quarter	Culture*	PCR	Serology	OF only	Total
Jan - Mar	11	22	723	25	781
Apr - Jun	28	30	845	55	958
Jul - Sep	48	49	1174	56	1327
Oct - Dec	22	27	1044	31	1124
Total	109	128	3786	167	4190

* Culture confirmed cases may additionally have tested positive using other methods. Submission of all presumptive *B. pertussis* isolates is encouraged for confirmation of identity and to allow further characterisation for epidemiological purposes.

Figure 2. Incidence of laboratory-confirmed pertussis cases by age group in England: 1998-2015

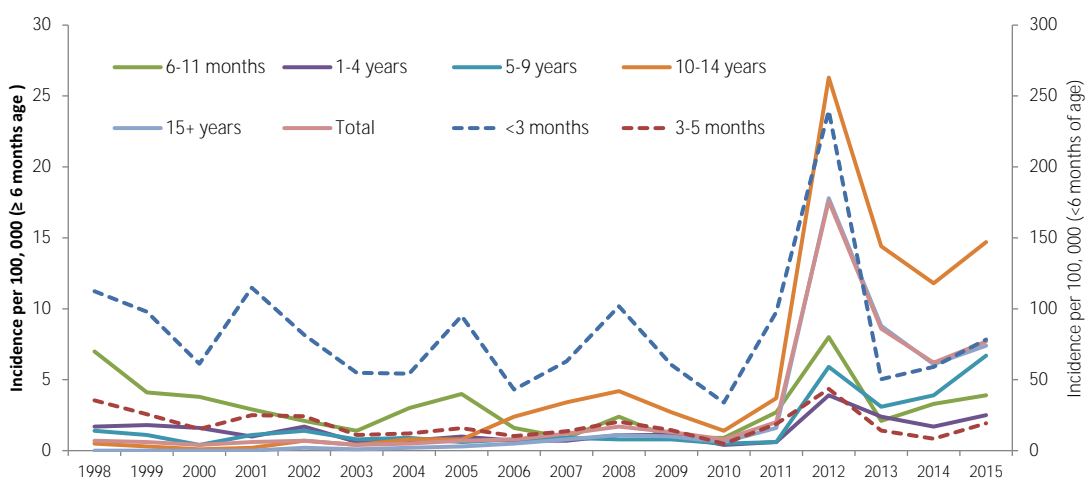


Table 2. Age distribution of laboratory-confirmed cases of pertussis in England: 2015

Age group	Culture*	PCR	Serology	OF only	Total
<3 months	46	75	9	-	130
3-5 months	15	15	2	-	32
6-11 months	5	8	-	-	13
1-4 years	11	9	47	2	69
5-9 years	9	1	144	64	218
10-14 years	5	4	344	84	437
15+ years	18	16	3240	17	3291
Total	109	128	3786	167	4190

* Culture confirmed cases may additionally have tested positive using other methods. Submission of all presumptive *B. pertussis* isolates is encouraged for confirmation of identity and to allow further characterisation for epidemiological purposes.

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Infection report

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

In England there were 1124 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the fourth quarter of 2015, from October to December 2015 (table 1). Total cases were 27% higher than those reported in the same quarter of 2014 (882 cases).

The then HPA declared a national outbreak of pertussis (level 3 incident [1]) in April 2012 and, as a response to the ongoing outbreak and high number of infant deaths, the Department of Health announced the introduction of a temporary immunisation programme for pregnant women on 28 September 2012 [2]. From the 1st of April 2016 the recommended gestational age for vaccination is between 16-32 weeks and for operational reasons should be offered from around 20 weeks on or after the foetal anomaly scan [3].

Pertussis vaccine coverage in pregnant women increased from 59.3% in October 2015 to 61.4% in December 2015, peaking at 61.6% in November 2015. These trends are consistent with the same period in previous years [4].

Following the high levels of activity in 2012 (see figure), an overall decrease has been observed with slight increases in the third quarters of 2013, 2014 and 2015, in line with the usual seasonal pattern. The highest number of laboratory confirmed cases in England has persisted in individuals aged 15 years and over whilst disease incidence continues to be highest in infants <3 months. The number of confirmed cases in infants under 3 months in the fourth quarter of 2015 (32 cases) were more than double the 13 cases reported in the same quarter in 2014 (table 2). One infant with pertussis confirmed between October and December 2015 died. Of the fourteen infants who have died following confirmed pertussis disease and who were born after the introduction of the maternal programme on 1 October 2012, 12 have been born to mothers who had not been immunised against pertussis during pregnancy.

Total case numbers of pertussis in all age groups were higher in Q4 2015 than in Q4 2014 (table 2) with the greatest proportionate increase observed in infants aged 3-5 months and children aged 1-9 years. Overall activity remained higher in all age groups from 1 year and older relative to the pre-2012 peak and exceeded 2012 cases in the 5-9 year age group.

Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme are encouraging as a relatively low incidence has been maintained, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in older age groups and women should therefore continue to be encouraged to be immunised against pertussis during pregnancy (ideally between 20-32 weeks) in order to protect their babies from birth. The pertussis immunisation in pregnancy programme in England has shown high levels of protection against pertussis in babies born to vaccinated mothers [5,6].

The Medicines and Healthcare Products Regulatory Agency also found no safety concerns relating to pertussis vaccination in pregnancy based on a large study of nearly 18,000 vaccinated women with similar rates of normal, healthy births in vaccinated and in unvaccinated women [7].

See the 2015 annual report [8] for details of appropriate laboratory investigation of suspected cases of pertussis which may be affected by the age of the suspect case and time since onset of their symptoms.

Table 1. Laboratory-confirmed cases of pertussis by age and testing method in England, October to December 2015 (Q4).

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	12	14	6	0	32
3-5 months	0	3	1	0	4
6-11 months	0	2	0	0	2
1-4 years	1	1	16	1	19
5-9 years	3	0	38	15	56
10-14 years	0	1	75	12	88
15+ years	6	6	908	3	923
Total	22	27	1044	31	1124

Total number of laboratory-confirmed pertussis cases per quarter in England, 2006-2015.

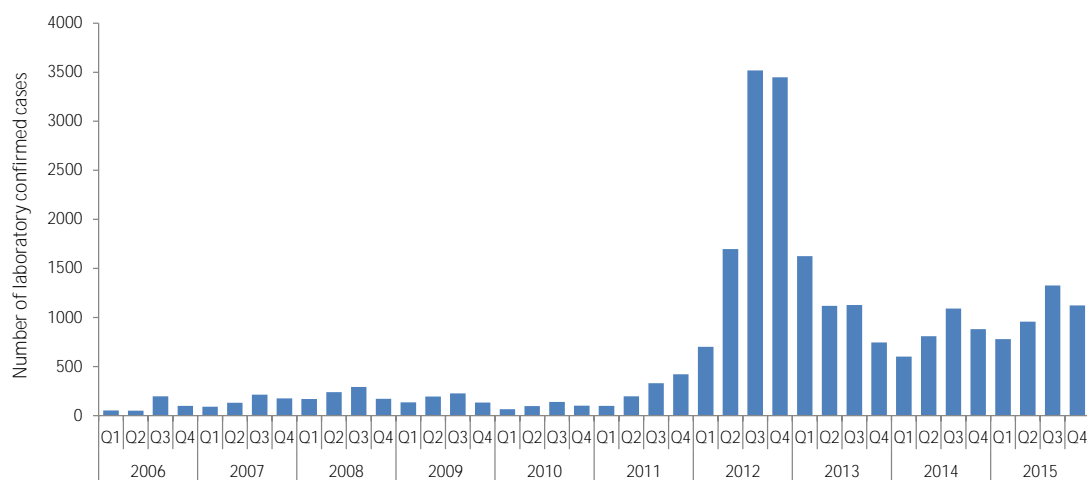


Table 2. Laboratory-confirmed cases of pertussis by age and year England, all quarters 2012-2015

Age group	2012	2013	2014	2015
<3 months	407	85	98	130
3-5 months	74	24	14	32
6-11 months	27	7	11	13
1-4 years	103	65	48	69
5-9 years	175	99	128	218
10-14 years	806	429	351	437
15+ years	7775	3912	2737	3291
Grand Total	9367	4621	3387	4190

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1. [National increase in laboratory-confirmed pertussis cases in England and Wales](#), *HPR* 6(15), 13 April 2012.
 2. Department of Health: <https://www.gov.uk/government/news/pregnant-women-to-be-offered-whooping-cough-vaccination>.
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 4. [Prenatal pertussis vaccine coverage estimates, November 2015 to January 2016](#), *HPR* 10(8), 26 February 2016.
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Infection report

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Laboratory reports of hepatitis A and C (England and Wales): October-December 2015

Laboratory reports of hepatitis A in England and Wales (October-December 2015)

There were a total of 105 laboratory reports of hepatitis A reported to Public Health England (PHE) during the fourth quarter of 2015 (October-December 2015). This was a 7% decrease on the number of reports during the third quarter of 2015 (n=113) and a 5% decrease on the same quarter in 2014 (n=110).

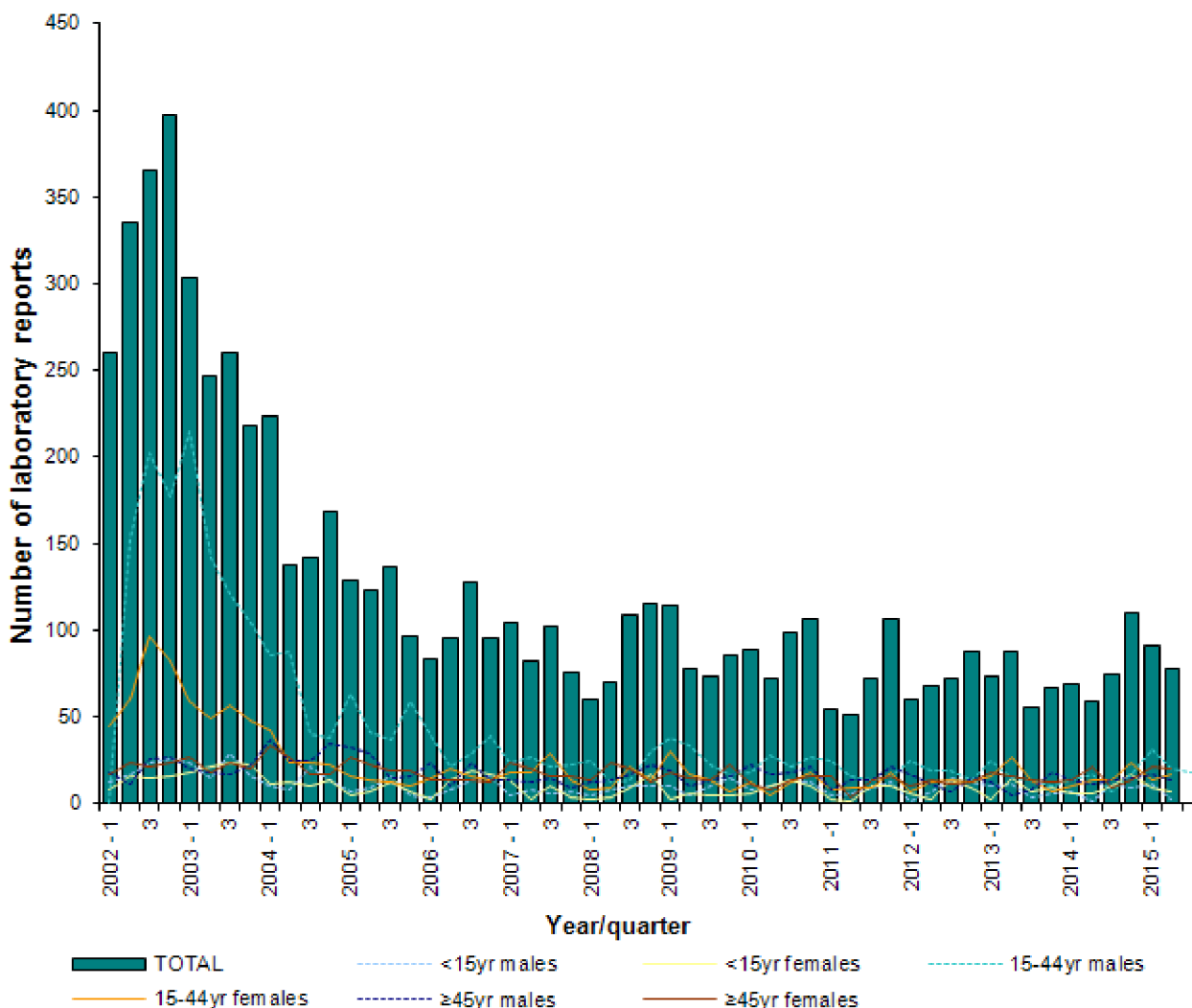
Age-group and sex were well reported (100% complete). Forty four (41.9%) reports were among those aged 15-44, a further 43 (41%) reports were among the over 44 years old-age group, and 18 (17.1%) reports were from the under 15 year age-group.

Males accounted for 58.8% of all reports. A similar proportion of males and females were reported in the over 45 years old group (60.5% males) and the 15-44 years age-group (56.8% males). An equal proportion of males and females (50%) was reported in the less than 15 years age-group.

Table 1. Laboratory reports of hepatitis A in England and Wales, October-December 2015

Age group	Male	Female	Unknown	Total
<1 year	0	0	0	0
1-4 years	0	3	0	3
5-9 years	6	4	0	10
10-14 years	3	2	0	5
15-24 years	13	4	0	17
25-34 years	9	8	0	17
35-44 years	3	7	0	10
45-54 years	14	5	0	19
55-64 years	6	7	0	13
>65 years	6	5	0	11
Unknown	0	0	0	0
Total	60	45	0	105

Figure 1. Laboratory reports of hepatitis A by age and sex (England and Wales): 2002-2015

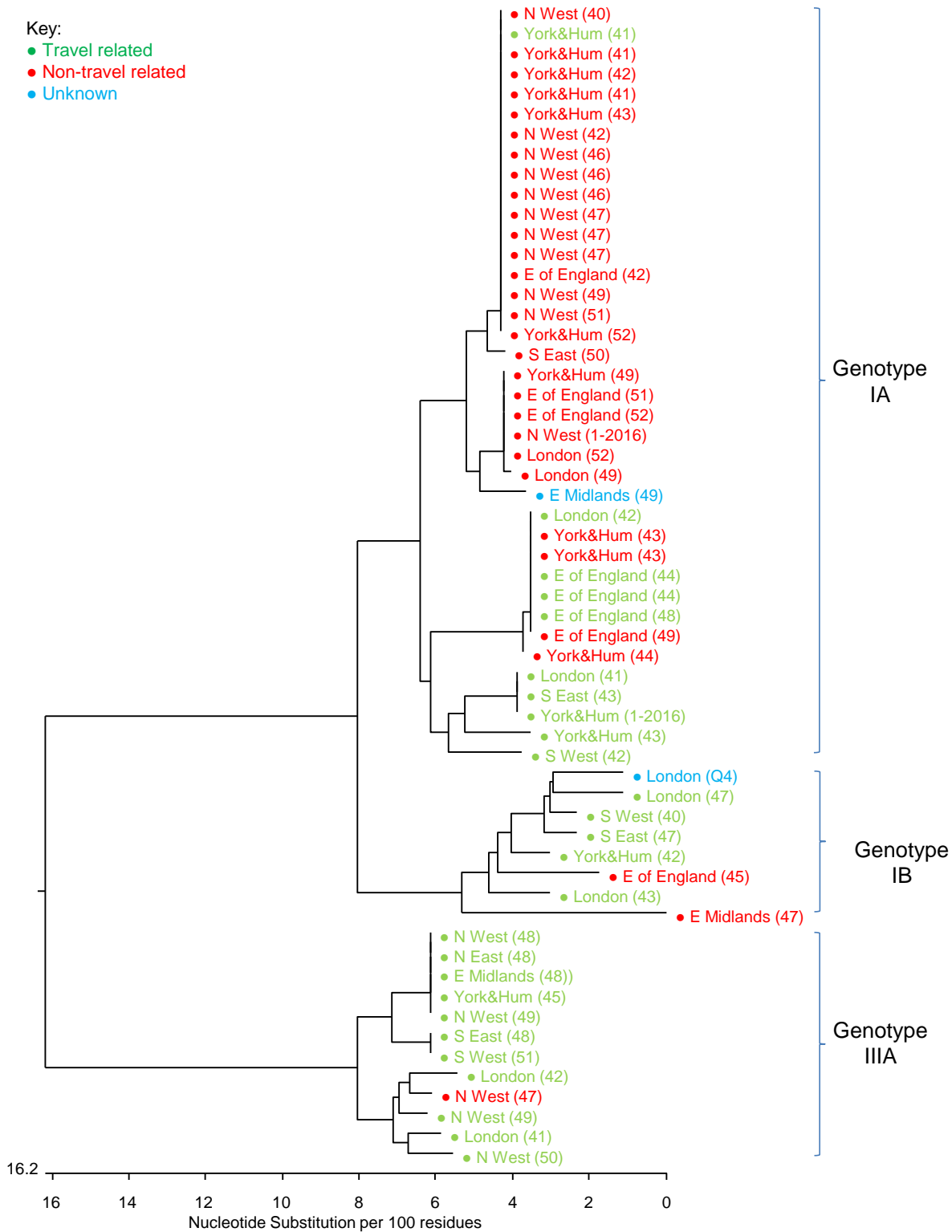


Reference laboratory confirmation and phylogeny of hepatitis A infection

Of the 105 patients notified as having acute HAV infection during the last quarter of 2015, 65 had samples forwarded to the Virus Reference Department for confirmation. Sixteen of the patients were not confirmed to have acute HAV infection. The remaining 49 patients were confirmed to have acute HAV infection. In addition, nine patients were confirmed to have acute HAV infection that had not been reported through the laboratory reporting system, with the exception of one, they were all recorded on HPzone.

A total of 58 patients could be genotyped over this period; 35 were genotype IA (60.3%), 11 were genotype IB (19%) and 12 were genotype IIIA (20.7%). Of these samples 26 were associated with travel (44.8%), 30 had no travel history (51.7%) and two had no information (3.5%). This information is presented as a phylogenetic tree. Each sequence is represented by a dot with the patient region and the week of sampling in brackets.

Figure 2. Phylogenetic tree of genotype IA, IB, and IIIA sequences October-December 2015 (n=58)



Laboratory reports of hepatitis C in England and Wales (October-December 2015)

There were a total of 2,942 laboratory reports of hepatitis C reported to PHE between October and December 2015. There was an 8.1% increase in the number of reported cases compared to the third quarter of 2015 (n=2,721), and a 0.7% increase on the same quarter in 2014 (n=2,922).

Age-group and sex were well reported (>98% complete). Where known males accounted for 70.1% of reports (2,036/2,904) which is consistent with previous quarters. Adults aged 25-44 years accounted for 50.2% of the total number of hepatitis C reports.

Table 1. Laboratory reports of hepatitis C in England and Wales, October-December 2015

Age group	Male	Female	Unknown	Total
<1 year	3	4	0	7
1-4 years	2	3	0	5
5-9 years	3	0	0	3
10-14 years	1	0	0	1
15-24 years	53	39	4	96
25-34 years	423	198	5	626
35-44 years	596	234	12	842
45-54 years	528	206	7	741
55-64 years	313	102	2	417
>65 years	102	81	1	184
Unknown	12	1	7	20
Total	2036	868	38	2942

Infection report

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Group A streptococcal infections: fourth update on seasonal activity, 2015/16

Substantial declines in scarlet fever have been noted since Easter indicating that the season's peak has passed [1]. Invasive GAS (iGAS) disease notifications remain elevated although similarly showing signs of seasonal decline.

Scarlet fever

A total of 12,906 scarlet fever notifications have been made in England so far this season (week 37 of 2015 to week 17 of 2016). Notifications peaked in week 12 of 2016 with 1400 notifications, after which there has been an unsteady decline with 477 notifications in week 17 (see figure). GP consultations showed a similar pattern with some recent elevation but a general pattern of seasonal decline [2].

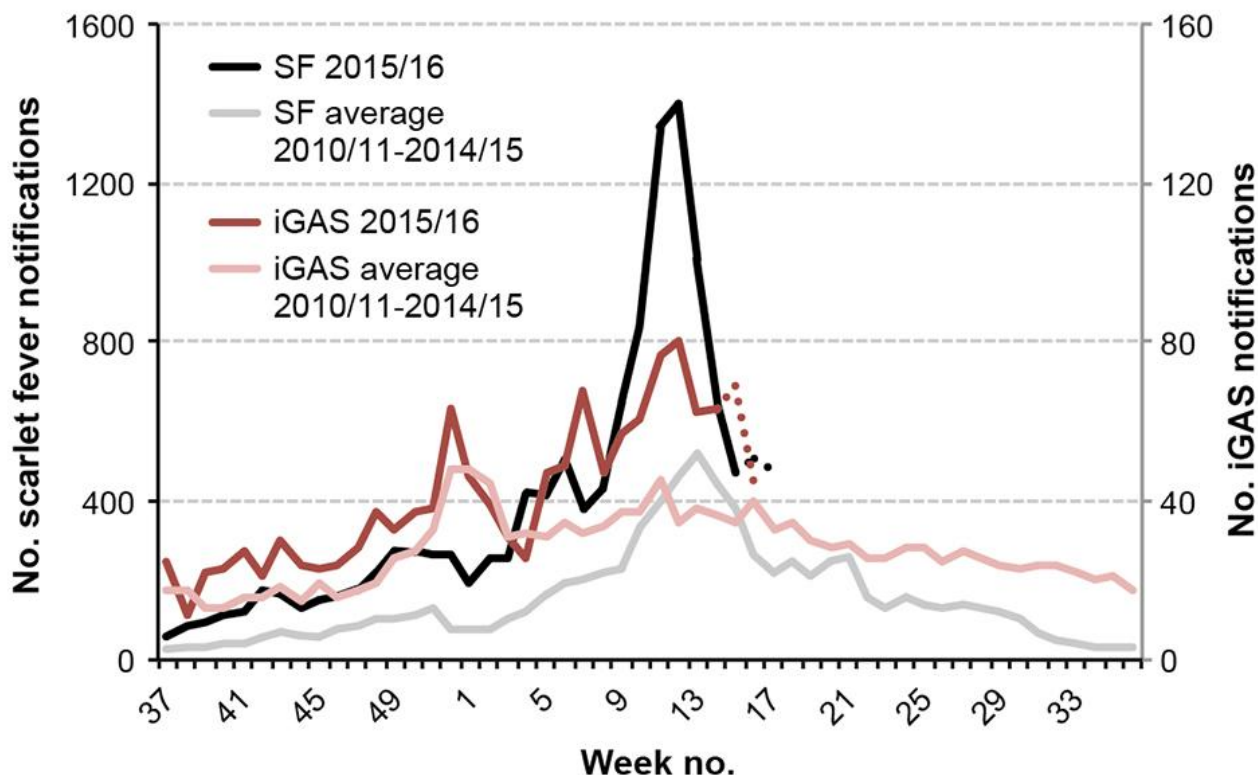
Scarlet fever notifications remain elevated in most areas in England compared with the same period last year, although the scarlet fever season appears to have peaked in all parts of England in the last two weeks of March. The areas with the highest notification rates so far this season are East Midlands (39.3 per 100,000 population), Cheshire & Merseyside (32.5), Yorkshire & the Humber (31.2) and Wessex (31.0). London has the lowest scarlet fever notification rate (14.7/100,000).

The age distribution of scarlet fever cases notified this season remains similar to previous years, with 89% of cases reported in children under 10 years of age (median four years; range <1 year to 91 years). The incidence of scarlet fever in children ranged from 22.1 per 100,000 population in 10 to 14 year-olds to 244.3 per 100,000 population in 1 to 4 year-olds this season.

Invasive group A *Streptococcus* infection

A total of 1333 reports of iGAS disease have been notified through routine laboratory surveillance in England so far this season (weeks 37 to 16); this is 45% higher than the average for the same period in the previous five years (922 reports; range 770-1054; see figure).

Weekly scarlet fever and iGAS notifications in England, 2010/11 onwards*



* Dashed lines are values that may increase as further notifications are expected.

Geographical variation in iGAS infection notification rates were seen across England, with all but one of 15 English regions reporting higher than average iGAS cases so far this season. The areas with the highest population rates, so far this season, are Devon, Cornwall & Somerset (3.9 per 100,000 population), Yorkshire & Humber (3.7/100,000), and the North East (3.4).

The rate of iGAS infection so far this season has been higher in all age groups except for those aged between 65 to 74 years compared with the same period last year. The highest rates were in the elderly (>75 years) at 7.7/100,000, and the lowest in 10 and 14 year-olds (0.7). Overall, 16% of infections reported in the season to date have been in children under 10 years, within the range for the previous five seasons (mean 15%; range 13% to 17%).

There have been 902 iGAS isolates sent to the national reference laboratory for *emm* strain diversity testing in the current season (September 2015 to March 2016) to date, the results indicating that *emm* st1 is the most common (30% of referrals) followed by *emm* st12 (12%) and *emm* st89 (11%). No novel strains or unusual increases in specific strain types have been seen to date.

Antimicrobial susceptibility results at this point in the season are within normal levels, with non-susceptibility to erythromycin and clindamycin seen in 5% of GAS sterile site isolates (normal range 2-5%) and non-susceptibility to tetracycline seen in 11%. All isolates remain susceptible to penicillin.

Discussion

Levels of scarlet fever are declining but remain elevated, and in some areas a small resurgence in disease incidence has been seen following Easter and the school holidays. The continued elevation of invasive GAS disease in 2016 compared with recent years is of concern and continued vigilance is recommended.

Invasive disease isolates and those from suspected clusters/outbreaks should be submitted to the Respiratory and Vaccine Preventable Bacteria Reference Unit at Public Health England, 61 Colindale Avenue, London NW9 5HT. Relevant guidelines/FAQs are available on the PHE website, as follows:

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

References

1. PHE. [Group A streptococcal infections: third update on activity during the 2015/16 season.](#) *Health Protection Report* 2016; **10**(14): infection report.
2. PHE. [GP in-hours consultations bulletin: 5 May 2016 week 17.](#)

Infection report

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Respiratory

Laboratory reports of respiratory infections made to PHE from PHE and NHS laboratories in England and Wales: weeks 14 to 17, 2016

Data are recorded by week of report, but include only specimens taken in the last eight weeks (i.e. recent specimens)

Table 1. Reports of influenza infection made to CIDSC, by week of report

Week	Week 14	Week 15	Week 16	Week 17	Total
Week ending	10/4/2016	17/4/2016	24/4/2016	1/5/2016	
Influenza A	378	374	158	125	1035
Isolation	25	9	5	2	41
DIF *	25	30	10	10	75
PCR	278	320	127	102	827
Other †	50	15	16	11	92
Influenza B	400	324	251	198	1173
Isolation	42	21	13	13	89
DIF *	28	36	16	16	96
PCR	302	248	206	163	919
Other †	28	19	16	6	69

* DIF = Direct Immunofluorescence. † Other = "Antibody detection - single high titre" or "Method not specified".

Table 2. Respiratory viral detections by any method (culture, direct immunofluorescence, PCR, four-fold rise in paired sera, single high serology titre, genomic, electron microscopy, other method, other method unknown), by week of report

Week	Week 14	Week 15	Week 16	Week 17	Total
Week ending	10/4/2016	17/4/2016	24/4/2016	1/5/2016	
Adenovirus *	106	128	84	135	453
Coronavirus	89	74	54	67	284
Parainfluenza†	111	103	92	142	448
Rhinovirus	230	192	150	288	860
RSV	124	87	80	72	363

* Respiratory samples only. † Includes parainfluenza types 1, 2, 3, 4 and untyped.

Table 3. Respiratory viral detections by age group: weeks 14-17/2016

Age group (years)	<1 year	1-4 years	5-14 years	15-44 years	45-64 years	≥65 years	Un-known	Total
Adenovirus *	82	126	32	124	62	25	2	453
Coronavirus	37	31	12	36	60	108	–	284
Influenza A	30	84	27	189	231	286	–	847
Influenza B	62	126	100	499	201	322	–	1310
Parainfluenza †	118	102	17	40	72	99	–	448
Respiratory syncytial virus	94	74	22	74	49	49	1	363
Rhinovirus	269	174	57	123	111	125	1	860

* Respiratory samples only.

† Includes parainfluenza types 1, 2, 3, 4 and untyped.

Table 4. Laboratory reports of infections associated with atypical pneumonia, by week of report

Week	Week 14	Week 15	Week 16	Week 17	Total
Week ending	10/4/2016	17/4/2016	24/4/2016	1/5/2016	
<i>Coxiella burnettii</i>	–	–	–	–	0
Respiratory <i>Chlamydia</i> sp. *	3	3	1	1	8
<i>Mycoplasma pneumoniae</i>	11	17	15	3	46
<i>Legionella</i> sp.	10	3	3	4	20

* Includes *Chlamydia psittaci*, *Chlamydia pneumoniae*, and *Chlamydia* sp detected from blood, serum, and respiratory specimens.

Table 5. Reports of Legionnaires Disease cases in England and Wales, by week of report

Week	Week 14	Week 15	Week 16	Week 17	Total
Week ending	10/4/2016	17/4/2016	24/4/2016	1/5/2016	
Nosocomial	–	–	–	–	0
Community	4	1	2	1	8
Travel Abroad	4	2	1	2	9
Travel UK	2	–	–	1	3
Total	10	3	3	4	20
Male	7	3	1	2	13
Female	3	–	2	2	7

Twenty cases were reported with pneumonia. Thirteen males aged between 31 and 88 years and seven females aged 51-84 years. Eight cases had community-acquired infection. One death was reported in a 88 year-old male.

Twelve cases were reported with travel association: Cruise/Germany/Spain (1), Czech Republic (1), India (1), Indonesia (1), Jamaica (1), Morocco (1), Sri Lanka (1), Turkey (1), United Arab Emirates (1) and United Kingdom (3).

Table 6. Reports of Legionnaires Disease cases in England and Wales, by PHE Centre: weeks 14-17/2016

Region/Country	Nosocomial	Community	Travel Abroad	Travel UK	Total
North of England					
North East	–	–	–	–	0
Cheshire & Merseyside	–	–	–	–	0
Greater Manchester	–	–	–	1	1
Cumbria & Lancashire	–	–	1	–	1
Yorkshire & the Humber	–	1	1	–	2
South of England					
Devon, Cornwall & Somerset	–	1	–	–	1
Avon, Gloucestershire & Wiltshire	–	1	–	–	1
Wessex	–	–	–	–	0
Thames Valley	–	–	1	–	1
Sussex, Surrey & Kent	–	–	3	–	3
Midlands & East of England					
East Midlands	–	2	–	2	4
South Midlands & Hertfordshire	–	1	1	–	2
Anglia & Essex	–	–	–	–	0
West Midlands	–	2	1	–	3
London Integrated Region					
London	–	–	1	–	1
Public Health Wales					
Mid & West Wales	–	–	–	–	0
North Wales	–	–	–	–	0
South East Wales	–	–	–	–	0
Miscellaneous					
Other	–	–	–	–	0
Not known	–	–	–	–	0
Total	0	8	9	3	15