



Infection reports

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Immunisation

Laboratory reports of hepatitis A infection, and hepatitis C: 2013

1. Laboratory reports of hepatitis A infection: 2013

During 2013, there were 283 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=53), no cases of hepatitis A were reported in the under-1-year of age group. More reports were received for females than males during the second and third quarter of 2013, with more reports among males during the fourth quarter, and the same number of reports received for female and males during the first quarter (table 1).

Table 1. Laboratory reports of hepatitis A by age, sex, and quarter, England and Wales, 2013*

| Age group (years) | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Total |
|-------------------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|------------|
| | Jan-Mar | | | Apr-Jun | | | Jul-Sep | | | Oct-Dec | | | |
| | 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 | 1 | 1 | 0 | 5 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 11 |
| 5 to 9 | 0 | 5 | 0 | 6 | 5 | 0 | 3 | 2 | 0 | 6 | 3 | 0 | 30 |
| 10 to 14 | 1 | 4 | 0 | 4 | 4 | 0 | 4 | 1 | 0 | 2 | 3 | 0 | 23 |
| 15 to 24 | 7 | 5 | 0 | 6 | 2 | 0 | 9 | 3 | 0 | 3 | 5 | 0 | 40 |
| 25 to 34 | 4 | 8 | 0 | 17 | 8 | 0 | 3 | 5 | 0 | 2 | 6 | 0 | 53 |
| 35 to 44 | 5 | 2 | 0 | 4 | 4 | 0 | 1 | 2 | 0 | 2 | 3 | 0 | 23 |
| 45 to 54 | 2 | 2 | 0 | 5 | 0 | 0 | 0 | 3 | 0 | 4 | 6 | 0 | 22 |
| 55 to 64 | 6 | 5 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 4 | 4 | 0 | 25 |
| ≥65 | 10 | 4 | 0 | 11 | 5 | 0 | 10 | 3 | 0 | 4 | 8 | 0 | 55 |
| NK | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Total | 36 | 36 | 0 | 58 | 30 | 0 | 34 | 22 | 0 | 28 | 38 | 1 | 283 |

* 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 2013, the greatest number of hepatitis A reports were from the London (n=91) and West Midlands (n=29) regions (table 2). The comparatively high number of reports from London and the West Midlands was consistent with previous years. Overall, there was a similar number of reports received during 2013 (n=283) compared to 2012 (n=288).

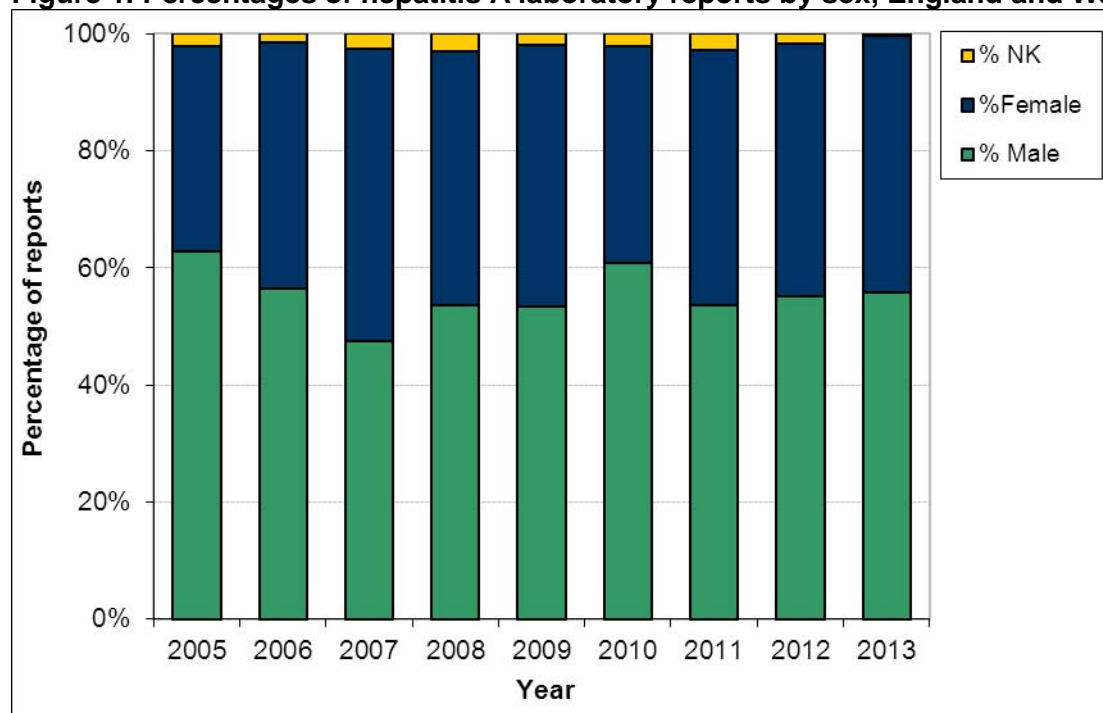
The overall trend has been a decline in the number of reports since 2005. The increased number of reports during 2010 was due to unrelated outbreaks of hepatitis A in the London and the South West regions. Due to the small number of laboratory reports per PHE Centre for all centres apart from London 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 (2005-2013)

| PHE Centre | Year | | | | | | | | |
|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Anglia & Essex | 27 | 22 | 24 | 23 | 28 | 25 | 17 | 17 | 17 |
| Avon, Gloucestershire & Wiltshire | 27 | 24 | 23 | 20 | 11 | 23 | 7 | 6 | 14 |
| Cheshire & Merseyside | 33 | 14 | 5 | 5 | 11 | 10 | 5 | 7 | 9 |
| Cumbria & Lancashire | 34 | 18 | 5 | 14 | 13 | 15 | 4 | 5 | 12 |
| Devon, Cornwall & Somerset | 12 | 10 | 7 | 6 | 8 | 15 | 3 | 9 | 8 |
| East Midlands | 25 | 14 | 13 | 17 | 11 | 8 | 6 | 7 | 8 |
| Greater Manchester | 69 | 38 | 53 | 29 | 40 | 31 | 15 | 16 | 13 |
| Kent, Surrey & Sussex | 15 | 14 | 19 | 24 | 30 | 17 | 23 | 23 | 15 |
| London | 29 | 47 | 50 | 54 | 54 | 72 | 69 | 72 | 91 |
| North East | 31 | 12 | 14 | 5 | 8 | 12 | 10 | 13 | 10 |
| South, Midlands & Hertfordshire | 18 | 19 | 7 | 13 | 13 | 11 | 7 | 7 | 6 |
| Thames Valley | 8 | 11 | 10 | 35 | 14 | 9 | 14 | 9 | 11 |
| Wessex | 16 | 10 | 6 | 11 | 12 | 12 | 8 | 9 | 10 |
| West Midlands | 58 | 66 | 71 | 67 | 59 | 63 | 41 | 44 | 29 |
| Yorkshire & Humber | 67 | 54 | 36 | 27 | 34 | 40 | 23 | 36 | 19 |
| Wales | 16 | 25 | 20 | 10 | 12 | 9 | 5 | 8 | 11 |
| Total | 485 | 398 | 363 | 360 | 358 | 372 | 257 | 288 | 283 |

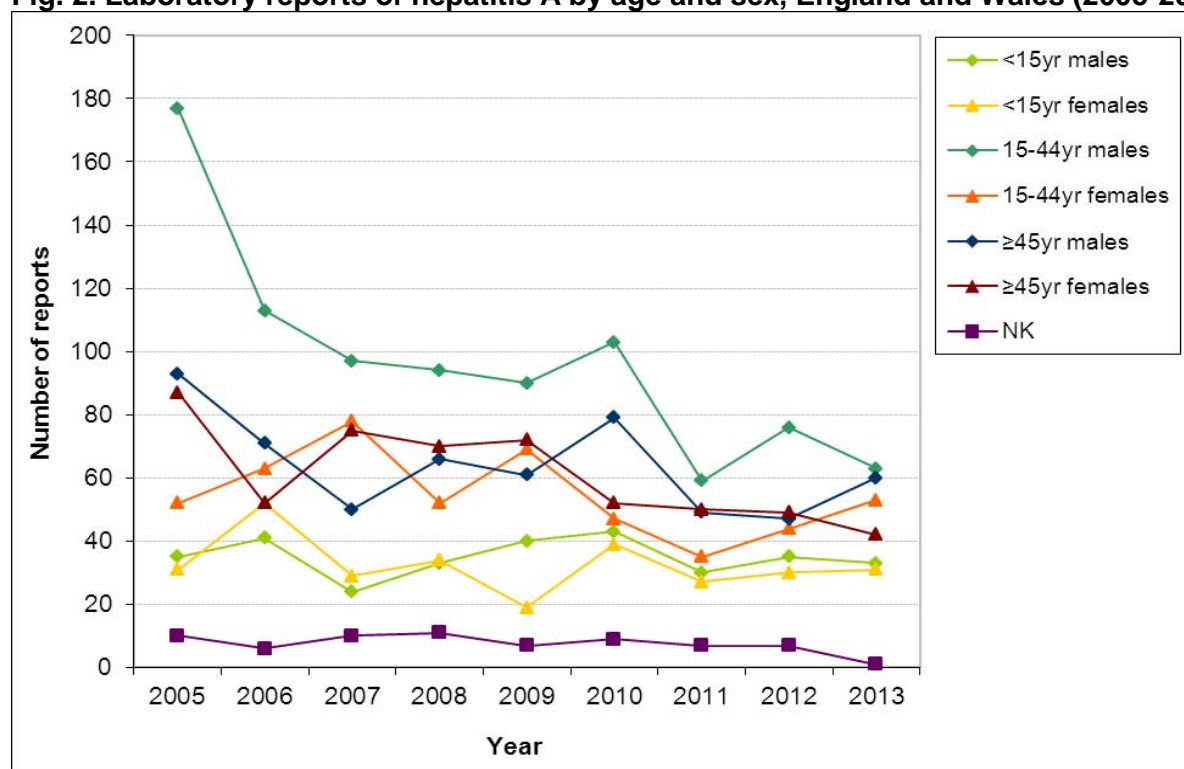
Age and gender were well completed each year (>96% complete) (figure 1). Where known, males accounted for 56% (156/280) of reports during 2013 (figure 1). As reported last year, since 2005 the majority of reports were among males for all years excluding 2007 (figure 1). The proportion of reports among males has varied slightly each year; overall males have accounted for 57% of hepatitis A laboratory reports during this period (range 49-64%).

Figure 1. Percentages of hepatitis A laboratory reports by sex, England and Wales (2005-2013)



In 2013, the number of reports received from 15 to 44 year old males declined compared to 2012, whereas the number of reports received from males 45 years and over increased (figure 2). In comparison previously reported increase in the number of reported received from 15 to 44 year old females was sustained. During 2013, males accounted for 69% of reports among the 45 years and over age group, 54% of reports in the 15 to 44 age group, and 52% of reports in the under 15 years age group. In comparison during 2012 males accounted for 63% of reports in the 15 to 44 years age group.

Fig. 2. Laboratory reports of hepatitis A by age and sex, England and Wales (2005-2013)



As reported previously, there was no risk factor information reported for anything other than recent travel in 2013. Travel history was available for only 14% of reported cases, compared to 2012 when 21% 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 (2005-2013)

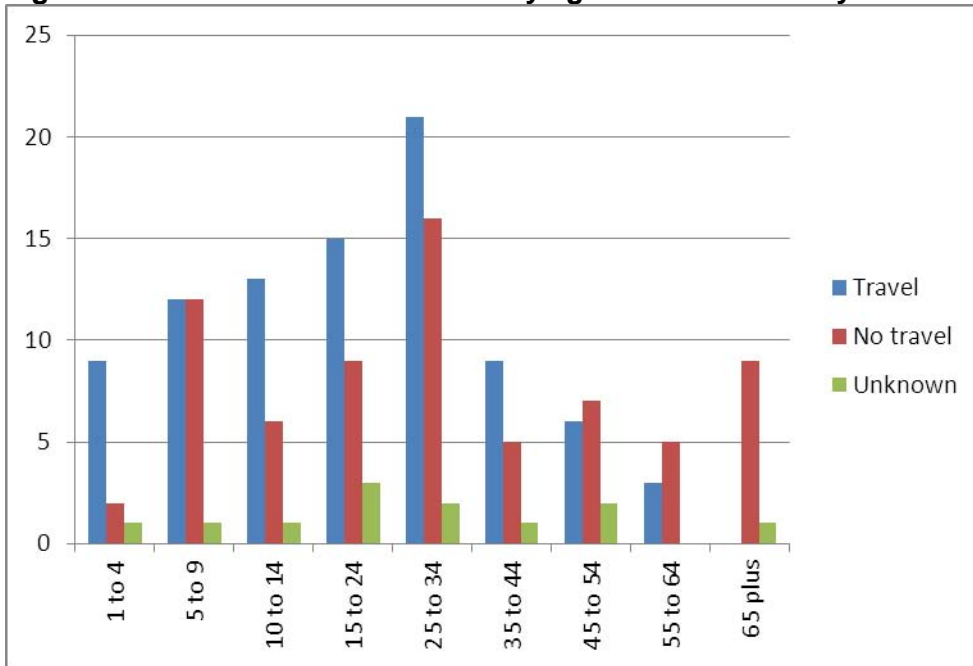
| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|--------------|--------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|
| Number of reports | 485 | 398 | 363 | 360 | 358 | 372 | 257 | 288 | 283 |
| Number (%) aged 15-44 years | 236 (48%) | 181 (46%) | 178 (50%) | 151 (43%) | 161 (46%) | 154 (42%) | 96 (38%) | 120 (43%) | 116 (43%) |
| Number (%) male | 305 (63%) | 225 (57%) | 172 (47%) | 193 (54%) | 191 (53%) | 226 (61%) | 138 (54%) | 159 (56%) | 156 (55%) |
| Number (%) with travel history | 15 (3.1%) | 37 (9.3%) | 49 (13.5%) | 58 (16.4%) | 61 (17.3%) | 64 (17.4%) | 58 (23%) | 58 (21%) | 41 (14%) |

Reference laboratory confirmation and phylogeny of hepatitis A infection: 2013

Of the 283 laboratory reports of acute HAV infection during 2013, 195 (68.9%) had samples forwarded to the Virus Reference Department (VRD) for confirmation by serology or by HAV RNA or by both. Of the 88 (31.1%) cases who did not have a sample forwarded to VRD for confirmation, one was a duplicate entry and 10 had samples forwarded for HEV testing, one of which was confirmed as a case of acute HEV infection.

Acute HAV infection was not confirmed in 29.7% (58/195) of the forwarded samples. The remaining 137 (70.3%) cases were confirmed to have acute HAV infection. In addition 34 cases were confirmed to have acute HAV infection that had not been reported through the laboratory reporting system although, with the exception of one case from Wales, they were recorded in HPzone. Of the 171 confirmed cases, 88 (51.5%) reported a travel history, 70 (40.9%) had no travel history and 13 (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 3. Confirmed HAV infections by age and travel history: Jan – Dec 2013

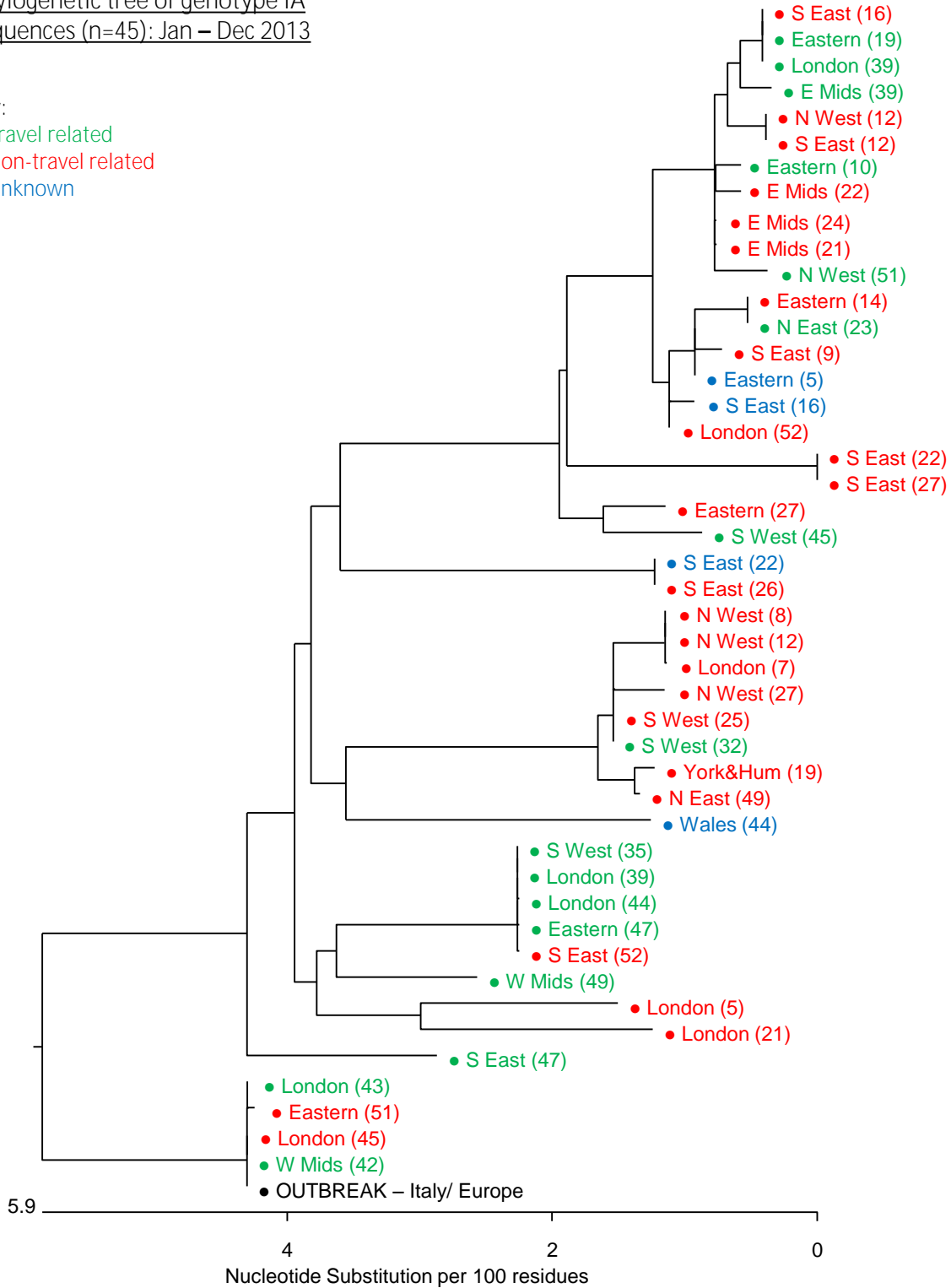


It was possible to genotype samples from 168 cases of the 171 confirmed infections; 45 (26.8%) were genotype IA, 68 (40.5%) were genotype IB and 55 (32.7%) were genotype IIIA. This sequence information for each genotype is presented as phylogenetic trees. Each sequence is represented by a dot with the patient region and the week of sampling in brackets.

Phylogenetic tree of genotype IA sequences (n=45): Jan – Dec 2013

Key:

- Travel related
- Non-travel related
- Unknown

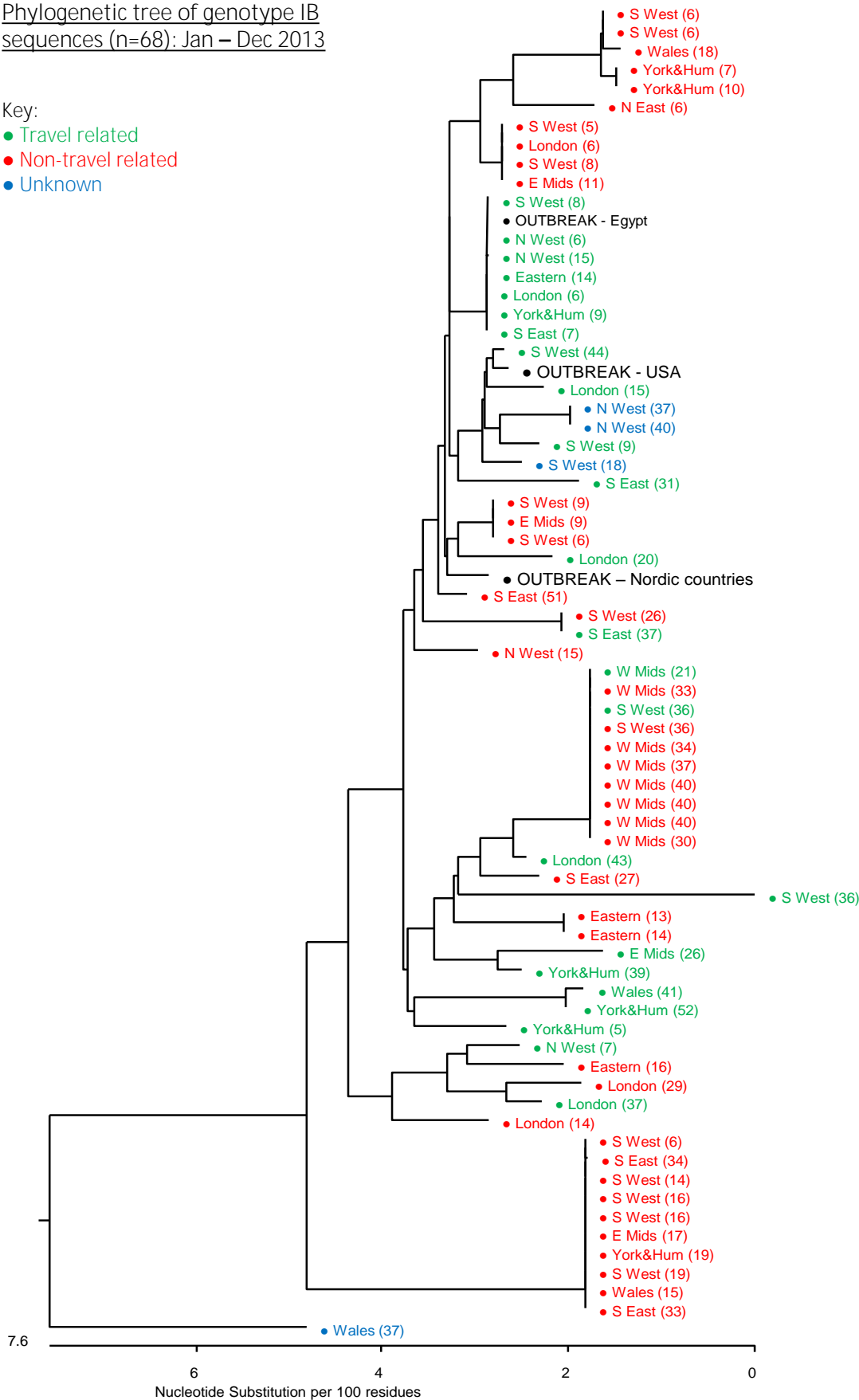


Just over half of the cases with genotype IA had no travel history (25/45, 55.5%). During 2013 there was a large European outbreak involving genotype IA which was first identified in Italy [1]. The strain involved in this outbreak was observed in four cases reported in England, two who had travelled to Italy and two who had no travel history. One other sequence was observed in five cases reported in England; this strain has commonly been seen in Eastern Europe [2] and four of these individuals reported travel to countries in this region.

Phylogenetic tree of genotype IB sequences (n=68): Jan – Dec 2013

Key:

- Travel related
- Non-travel related
- Unknown

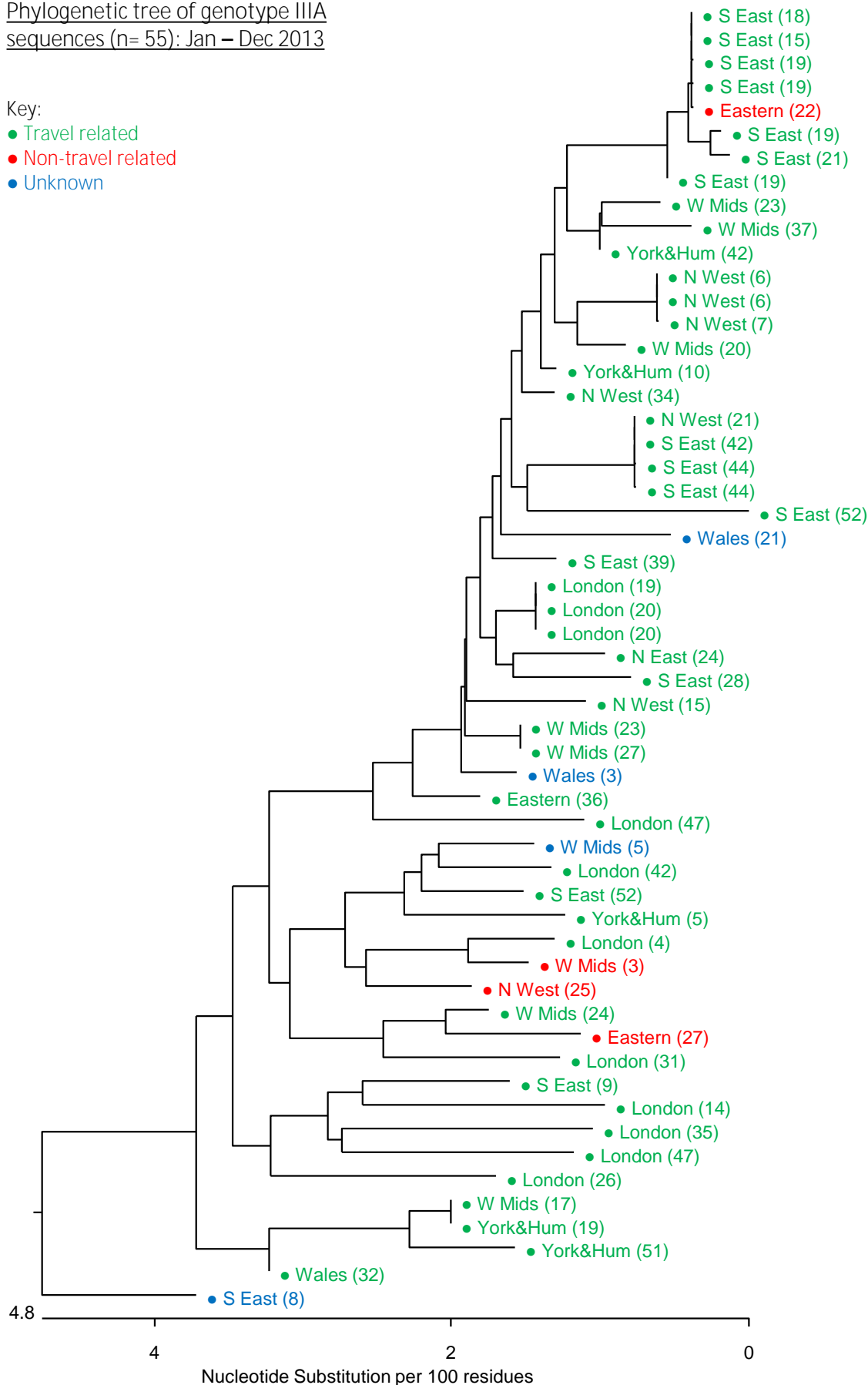


As with genotype IA the majority of genotype IB samples had no travel history (40/68, 58.8%). During 2013 there were three international outbreaks involving different IB strains, one affecting travellers to Egypt [3], one food-borne outbreak in the USA [4] and one food-borne outbreak affecting the Nordic countries [5]. England and Wales were only affected by the Egyptian outbreak with seven patients returning from holiday infected by the outbreak strain. Nationally there were two outbreaks affecting multiple individuals who had no travel history. The first was a community outbreak mainly in the West Midlands with 10 cases where the most likely source was a non-immune traveller returning from Kenya. The second cluster comprised 10 cases in England and Wales and also cases in Ireland and Scotland; the source was never identified.

Phylogenetic tree of genotype IIIA sequences (n= 55): Jan – Dec 2013

Key:

- Travel related
- Non-travel related
- Unknown



In contrast to genotypes IA and IB, the majority of cases with genotype IIIA had a travel history (47/55, 85.5%). There were no international outbreaks involving genotype IIIA during 2013 but there were at least five outbreaks in England caused by non-immune travellers most of whom were children. Each of these outbreaks could have been prevented by pre-holiday immunisation but travellers may not perceive themselves to be at risk if they grew up in an endemic area and are travelling “home” to visit friends and relatives [6].

Summary

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 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 a known travel history. Typing has also enabled seemingly unrelated cases to be linked and has identified numerous clusters over the year. All laboratories should send hepatitis A serum samples to PHE Colindale's Virus Reference Department for confirmation.

References

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2. Laboratory reports of hepatitis C: 2013

During 2013, there were 11,692 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, 2013*

| Age group (years) | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Total |
|-------------------|------------|--------------|-----------|------------|--------------|-----------|------------|--------------|-----------|------------|--------------|-----------|---------------|
| | Jan-Mar | | | Apr-Jun | | | Jul-Sep | | | Oct-Dec | | | |
| | Female | Male | NK | Female | Male | NK | Female | Male | NK | Female | Male | NK | |
| <1 | 3 | 3 | 0 | 3 | 3 | 0 | 2 | 6 | 0 | 4 | 3 | 0 | 27 |
| 1 to 4 | 1 | 3 | 0 | 1 | 1 | 0 | 1 | 5 | 1 | 1 | 1 | 0 | 15 |
| 5 to 9 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 7 |
| 10 to 14 | 1 | 1 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 13 |
| 15 to 24 | 72 | 72 | 3 | 64 | 88 | 4 | 60 | 71 | 4 | 59 | 59 | 3 | 559 |
| 25 to 34 | 264 | 466 | 13 | 302 | 520 | 12 | 260 | 468 | 17 | 247 | 457 | 11 | 3,037 |
| 35 to 44 | 239 | 611 | 11 | 251 | 661 | 16 | 203 | 624 | 12 | 196 | 571 | 12 | 3,407 |
| 45 to 54 | 167 | 503 | 13 | 172 | 507 | 7 | 169 | 483 | 5 | 186 | 501 | 8 | 2,721 |
| 55 to 64 | 81 | 219 | 6 | 133 | 217 | 0 | 104 | 227 | 2 | 89 | 212 | 3 | 1,293 |
| ≥65 | 56 | 69 | 2 | 53 | 73 | 2 | 59 | 85 | 1 | 51 | 62 | 1 | 514 |
| NK | 6 | 6 | 6 | 3 | 8 | 33 | 7 | 13 | 4 | 2 | 8 | 3 | 99 |
| Total | 890 | 1,954 | 54 | 983 | 2,084 | 74 | 866 | 1,984 | 46 | 837 | 1,879 | 41 | 11,692 |

* 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 12% increase in the number of reports received during 2013 compared to 2012 (11,692/11,360).

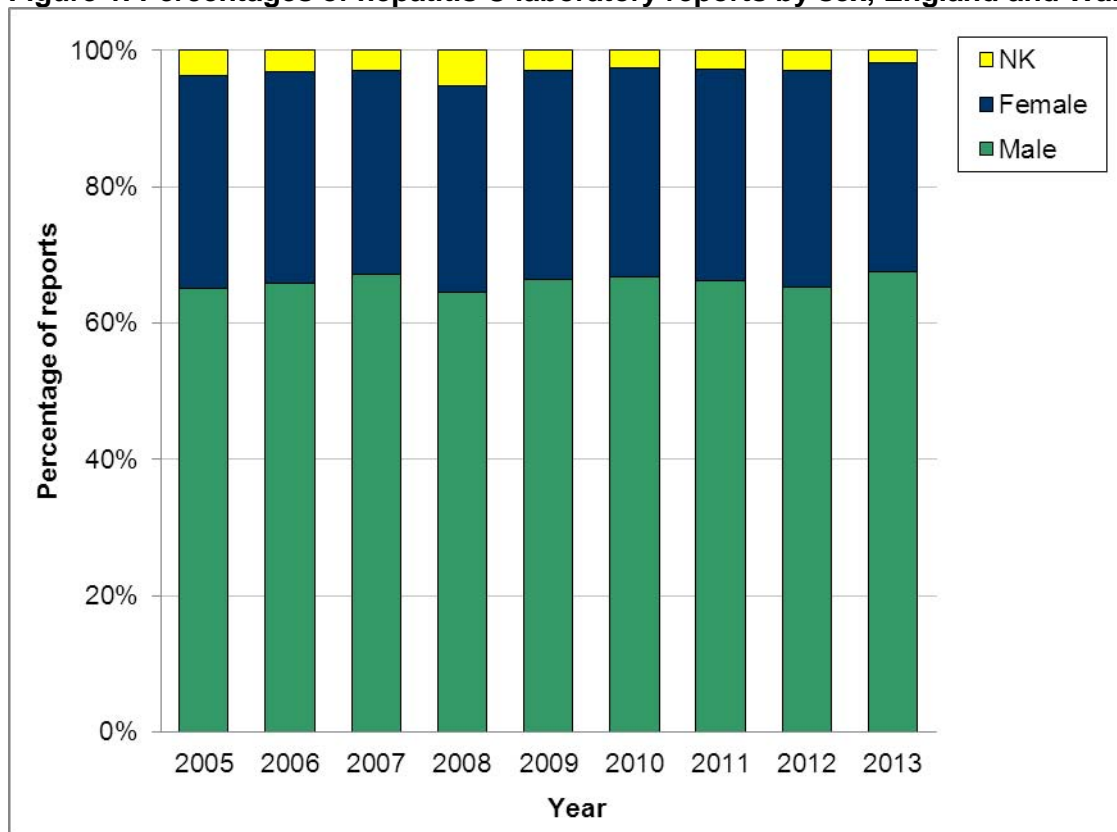
The number of laboratory reports by PHE Centre is presented below. Reports were assigned to a PHE Centre according to i) the patient's place of residence ii) the postcode of the patient's registered GP practice, iii) the postcode of the source laboratory. During 2013, the greatest number of hepatitis C reports were received from the London (n=3,079) and Yorkshire and Humber (n=1,453) 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 |
| Anglia & Essex | 482 | 500 | 500 | 566 | 499 | 447 | 533 | 522 | 507 |
| Avon, Gloucestershire & Wiltshire | 296 | 515 | 693 | 661 | 595 | 285 | 484 | 687 | 511 |
| Cheshire & Merseyside | 447 | 442 | 410 | 318 | 320 | 287 | 243 | 234 | 403 |
| Cumbria & Lancashire | 448 | 412 | 497 | 499 | 639 | 556 | 517 | 527 | 486 |
| Devon, Cornwall & Somerset | 214 | 219 | 237 | 300 | 244 | 273 | 275 | 284 | 298 |
| East Midlands | 439 | 258 | 395 | 590 | 578 | 507 | 672 | 669 | 542 |
| Greater Manchester | 608 | 518 | 838 | 848 | 1,189 | 1,014 | 790 | 1,072 | 1,103 |
| Kent, Surrey & Sussex | 217 | 257 | 569 | 663 | 752 | 752 | 871 | 887 | 715 |
| London | 807 | 1,193 | 1,015 | 962 | 848 | 954 | 1,998 | 2,754 | 3,079 |
| North East | 283 | 247 | 140 | 168 | 272 | 296 | 298 | 299 | 361 |
| South Midlands & Hertfordshire | 168 | 181 | 202 | 226 | 204 | 155 | 313 | 235 | 191 |
| Thames Valley | 29 | 34 | 127 | 298 | 253 | 270 | 207 | 264 | 255 |
| Wessex | 262 | 237 | 196 | 277 | 301 | 325 | 435 | 341 | 331 |
| West Midlands | 574 | 490 | 612 | 674 | 864 | 783 | 770 | 739 | 777 |
| Yorkshire & Humber | 1,021 | 1,456 | 1,372 | 1,346 | 1,090 | 980 | 1,511 | 1,371 | 1,453 |
| Wales | 277 | 318 | 325 | 481 | 342 | 309 | 477 | 475 | 680 |
| Total | 6,572 | 7,277 | 8,128 | 8,877 | 8,990 | 8,193 | 10,394 | 11,360 | 11,692 |

Age and gender were well completed each year (>94% complete) (figure 1). Where known, males accounted for 69% (7,901/11,477) of reports during 2013 which was consistent with previous years (figure 1). In total, males have accounted for 68% of reports during this period.

Figure 1. Percentages of hepatitis C laboratory reports by sex, England and Wales (2005-2013)



During 2013, where known 60% of hepatitis C reports were among the 15 to 44 year old age group, a further 39% 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 (2005-2013)

