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## News

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### **Good practice standard for serology assays in the clinical laboratory re-issued**

UK Standards for Microbiology Investigations (UK SMI) have re-issued a quality document UK SMI Q7: Good Practice when Undertaking Serology Assays for Infectious Diseases.

Conventionally, microbiology and virology laboratories perform microbial serology assays. However, in an increasing number of laboratories some tests are performed using analysers on automated blood sciences tracks. This document recognises the importance of the critical pre-analytical, analytical and post-analytical steps and procedures which are essential to the delivery of a high quality service [1,2]. It discusses the good practice that should be exhibited in all laboratories to support the delivery of quality test data and to facilitate a sound approach to the management of laboratory testing, including conduct, reporting and archiving [3].

Sections of the document that have been updated include those on evaluation, validation and verification of assays in the laboratory. In addition, details of the evidence grading system, now applied to references in all new SMIs, are included.

#### **References**

1. Laposata M, Dighe A (2007). "Pre-pre" and "post-post" analytical error: high-incidence patient safety hazards involving the clinical laboratory. *Clin Chem Lab Med* **45**: 712-9.
2. Institute of Biomedical Science (2009). Patient sample and request form identification criteria.
3. European Committee on Standardization (2012). Medical laboratories: requirements for quality and competence (ISO 15189: 2012).

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### **Childhood influenza vaccination pilot programme: 2014/15 report**

The UK has recently started the introduction of a universal influenza vaccine programme – eventually to cover children from two to 17 years of age – over a number of seasons. The ultimate aim of the programme is to not only directly protect the targeted children themselves, but also to protect the wider community (eg the elderly) by reducing transmission in the population. Pilots have been initiated in England to investigate the acceptability, and best means of delivery of, a future universal national programme that would target school age children.

Following the successful implementation of the second year of the pilot programme – covering the 2014/15 influenza season – PHE recently published a report on the cumulative uptake achieved, also providing analysis of the most successful means of delivery and information about consents, refusals, contraindications and population level predictors of reduced vaccine uptake [1].

The report covers flu vaccinations administered as part of the school-age pilot programme from 1 September 2014 to 31 January 2015. It notes that “promising” uptake levels were achieved across most pilot areas in children of primary and secondary school age (4-13 years), demonstrating the feasibility of rolling out the programme to older children nationally.

The analysis showed that uptake was consistently higher when the programme was delivered through schools, rather than through pharmacy and GP settings. Refusal and non-response rates increased with increasing age and were higher in certain geographical areas, in particular London. Vaccine uptake was found to be significantly lower in areas which were more deprived and had a higher proportion of the population from a Black and Minority Ethnic group.

The findings of the report will help to inform the ongoing development of strategies to further improve uptake levels.

## **Reference**

1. PHE (April 2016). Childhood Influenza Vaccination Pilot Programme, England 2014/15: end of season report.
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## **Health and Safety Laboratory health risk assessment course**

The HSE’s Health and Safety Laboratory is running a one-day course for health and safety practitioners on health-risk assessments relating to hazardous substances, noise and vibration. The course is designed to help practitioners better understand the ‘invisible’ risks associated with hazardous substances, noise and vibration. It will cover how risk assessments should be conducted to meet legal requirements and how they should fit into overall risk management programmes.

### **Programme and online booking:**

[Improving Your Health Related Risk Assessments](#), HSL Training Unit, Harpur Hill, Buxton, Derbyshire SK17 9JN.

**Enquiries:** [training@hsl.gsi.gov.uk](mailto:training@hsl.gsi.gov.uk).

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## Infection reports

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### Infection Reports

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#### Zoonoses

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# Infection reports

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## Zoonoses

### Common animal associated infections quarterly report (England and Wales): first quarter 2016

This quarterly report, produced by the Emerging Infections and Zoonoses Section at Public Health England, and the Health Protection Division of Public Health Wales, summarises confirmed cases of zoonotic infection reported in England and Wales between January and March 2016 (first quarter; weeks 1-13).

#### Animal associated infections in England and Wales: laboratory reports to SGSS<sup>†</sup> (unless otherwise specified) by specimen date, Q1 (weeks 1-13/16)

Disease (Organism)	Reports for weeks 01-13	
	2016*	2015
Anthrax ( <i>Bacillus anthracis</i> )	–	–
Brucellosis ( <i>Brucella spp.</i> )	2	1
Hepatitis E	219	206
Hydatid ( <i>Echinococcus granulosus</i> )	3	5
Leptospirosis ( <i>Leptospira spp.</i> )	3	8
Lyme borreliosis ( <i>Borrelia burgdorferi</i> )		
All cases	97	83
Acute infections	54	32
Pasteurellosis ( <i>Pasteurella spp.</i> )	110	139
Psittacosis ( <i>Chlamydophila psittaci</i> )	4	4
Q-fever ( <i>Coxiella burnetii</i> )	6	5
Toxoplasmosis # ( <i>Toxoplasma gondii</i> )	62	88

<sup>†</sup> Second Generation Surveillance System has now replaced LabBase

\* Provisional data

# Based on date specimen received

## Anthrax

There were no cases reported in the first quarter of 2016.

## Brucellosis (data from the Brucella Reference Laboratories)

There were two cases of brucellosis reported in the first quarter of 2016 compared to one in the first quarter of 2015. Both cases were male aged between 25 and 44 years, and their infections were due to *Brucella melitensis*. They are understood to have acquired their infections in countries where brucellosis is endemic.

## Hepatitis E (data from Public Health Laboratory Birmingham, and Blood Borne Virus Unit Colindale)

There were 219 cases of hepatitis E in the first quarter of 2016 compared to 206 in the same quarter of 2015. One hundred and forty-seven cases (67%) were male (aged 21-86 years, median 60) and 70 (32%) were female (aged 26-87 years, median 57) (the gender of the remaining two was not reported). The persisting observation of the predominance of older men (see table below) remains unexplained. Cases were reported from all regions. The majority of cases (84%, n=184) had no apparent travel history.

The number of cases is consistent with the on-going increase observed since 2010 [1].

### Laboratory confirmed cases of Hepatitis E infection (week 1-13, 2016)

Age Group	Male	Female	Unknown	Total
0-14	–	–	–	0
15-24	5	–	1	6
25-44	27	13	1	41
45-64	53	33	–	86
>64	62	24	–	86
Unknown	–	–	–	–
<b>Total</b>	<b>147</b>	<b>70</b>	<b>2</b>	<b>219</b>

## Hydatid disease (data from the Parasitology Reference Laboratory)

There were three cases of hydatid disease (*Echinococcus granulosus*) reported in the first quarter of 2016, compared to five cases in the first quarter of 2015. Two of the cases were male aged between 25 and 44 years, while the third case was female aged over 65 years. All are understood to have acquired their infections in countries overseas where the disease is endemic.

## Leptospirosis (data from the Leptospira Reference Unit)

There were three cases of confirmed leptospirosis reported in the first quarter of 2016, compared with 8 in the first quarter of 2015.

Two cases were male (aged 24 and 65 years), and one was female (aged 26 years). One case was reported from each of the East of England, the South West and Wales. One had travelled to Mexico, and one worked in a plant nursery. None of the cases mentioned specific water exposure or contact with rats.

**Lyme disease** (data from the Rare and Imported Pathogens Laboratory, Porton)

A total of 97 cases of laboratory confirmed Lyme disease were reported during the first quarter of 2016, compared with 83 during the first quarter of 2015. Of these cases, 54 were acute (including seven with neuroborreliosis) and 43 were longstanding.

Of the acute cases, 23 were male (aged 3-93 years, median 45) and 31 were female (aged 8-74 years, median 45).

Three (5.6%) of the acute cases reported foreign travel: one each to Sri Lanka, Hungary and Poland. Nine acute cases reported an insect bite, of whom eight specified a tick bite. Five cases reported erythema migrans as a presenting symptom.

**Laboratory confirmed cases of *Lyme borreliosis* (weeks 1-13, 2016): age group by sex; region of reporting laboratory**

Age Group	Male	Female	Total
0-14	3	2	5
15-24	3	3	6
25-34	–	1	1
35-44	5	9	14
45-54	2	7	9
55-64	5	4	9
65-74	3	5	8
75+	2	–	2
<b>Total</b>	<b>23</b>	<b>31</b>	<b>54</b>

Region	Cases
East Midlands	2
East of England	4
London	16
North East	–
North West	6
South East	14
South West	11
Wales	1
West Midlands	–
Yorkshire & Humber	–
<b>Total</b>	<b>54</b>

**Note:** Specimens sent for *Lyme borreliosis* referral testing should be accompanied by a completed referral form:  
<https://www.gov.uk/lyme-borreliosis-service>.

## Pasteurellosis

There were 110 confirmed cases of pasteurella reported in the first quarter of 2016. This compares with 139 reported in the same quarter of 2015. The following species were reported: *Pasteurella multocida* (76 cases), *P. canis* (12 cases), *P. pneumotropica* (1 case), *Pasteurella* other named (6 cases) and *Pasteurella* sp. (15 cases).

Sixty five of the cases were female (aged 3-88 years, median 62) and 45 were male (aged 0-88 years, median 48). The South East of England reported the most cases (n=19), and Wales reported the fewest (n=0). Seven of the cases were associated with dog bites, and seven with cat bites. One further case specified an 'animal bite'.

A 87 year old female from the East Midlands was reported to have died.

### Laboratory confirmed cases of pasteurellosis (week 1-13, 2016)

Age group	Male	Female
0-14	4	3
15-29	6	4
30-39	4	3
40-49	9	4
50-59	7	15
60-69	8	19
70-79	5	10
80+	2	7
<b>Total</b>	<b>45</b>	<b>65</b>

## Psittacosis

Four cases of psittacosis were diagnosed in the first quarter of 2016, the same number as in the first quarter of 2015. Three cases were female (ages 28, 39 and 62 years), and one case was male (age 53 years). Two cases were reported by the South West of England, and one each by the East of England and the West Midlands.

Note: Serological tests for respiratory chlamydia infections cannot consistently distinguish psittacosis. The cases reported above have been identified by reporting laboratories as infection with *Chlamydia psittaci*.

## Q fever (data from the Rare and Imported Pathogens Laboratory, Porton, and Bristol Reference Laboratory)

There were six cases of Q fever reported in the first quarter of 2016, compared with five cases in the first quarter of 2015. Four were male (aged 37-72 years, median 70) and two were female (ages 51 and 53 years). Three were reported by the South West of England, and one each by London, the South East and the West Midlands.

## Toxoplasma (Data from the Toxoplasma Reference Unit)

There were 62 cases of toxoplasmosis reported in the first quarter of 2016, compared with 88 cases in the first quarter of 2015. One case reported ocular symptoms. Six cases occurred in pregnant women.

In addition, there were three unconfirmed congenital cases reported, all linked to pregnant cases in this quarter (and not included in the numbers given for this report).

### Laboratory confirmed cases of toxoplasma infection (weeks 01-13, 2016): age group by sex; age group by clinical category

Age Group	Male	Female	Unknown	Total
0	–	–	–	0
1-9	1	1	–	2
10-14	1	–	–	1
15-24	5	4	1	10
25-44	12	22	–	34
45-64	5	6	–	11
>64	1	2	1	4
<b>Total</b>	<b>25</b>	<b>35</b>	<b>2</b>	<b>62</b>

Age Group	Cong-enital	Pregnant	HIV	Transplant donor	Transplant recipient	Other (immuno-competent)	Other (immune-suppressed)	Total
0	–	–	–	–	–	–	–	0
1-9	–	–	–	–	–	2	–	2
10-14	–	–	–	–	–	1	–	1
15-24	–	–	–	–	–	10	–	10
25-44	–	6	1	1	1	24	1	34
45-64	–	–	2	–	1	6	2	11
>64	–	–	–	–	–	3	1	4
<b>Total</b>	<b>-</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>46</b>	<b>4</b>	<b>62</b>

## Other zoonotic organisms

Other zoonotic infections of interest diagnosed in the first quarter of 2016 were as follows:

- Two cases of *Capnocytophaga* were reported, one of which was bacteraemic and one was diagnosed by culture from a wound. One case was a 62 year old male, and the other a 65 year old female. One case was reported by the East of England, and the second by London;
- One case of *Corynebacterium ulcerans* was reported, diagnosed by culture from a toe. The case was a 57 year old female from Yorkshire and Humber;
- Eight cases of *Erysipelothrix rhusiopathiae* were reported in seven males (aged 46-71 years, median 62) and one female (48 years). Three were bacteraemic; other specimen types included tissue and sputum. Five of the cases were reported by the East Midlands, and one each by the North West, South East and Yorkshire and the Humber;
- Three cases of *Mycobacterium marinum* were reported in two males (aged 68 and 77 years) and a female (aged 71 years). All three were diagnosed by culture from tissue samples. Two of the cases were reported by the East of England, and one by the West Midlands;
- One case of *Streptococcus canis* was reported in a 63 year old male from the West Midlands. He was diagnosed by culture from a wound.

## Reference

1. <https://www.gov.uk/government/publications/hepatitis-e-symptoms-transmission-prevention-treatment/hepatitis-e-symptoms-transmission-treatment-and-prevention>
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# Infection reports

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## Enteric

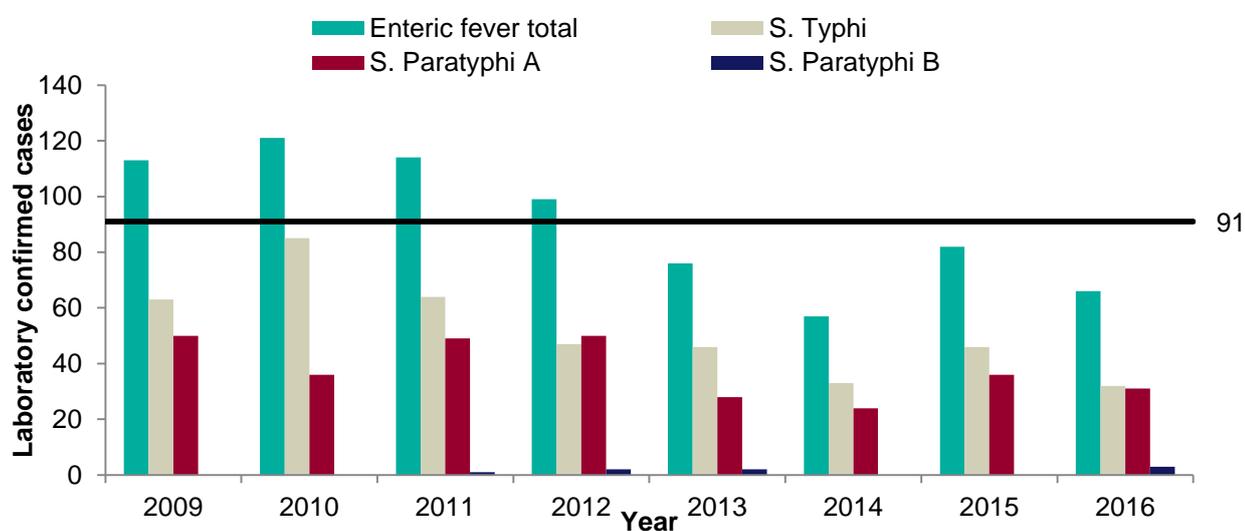
### Enteric fever surveillance quarterly report (England, Wales and Northern Ireland): first quarter 2016

*This quarterly report summarises the epidemiology of laboratory confirmed cases of typhoid and paratyphoid reported in England, Wales and Northern Ireland (EWNI) between January and March 2016. It includes both reference laboratory and enhanced enteric fever surveillance data. All data for 2016 presented below are provisional; more detailed reports will be produced on an annual basis. More information about enteric fever surveillance, including previous reports, is available on the PHE website [1].*

#### National summary

In the first quarter (Q1) of 2016, 66 laboratory confirmed cases of enteric fever were reported in England, Wales and Northern Ireland (table 1), 20% lower than Q1 2015 (82 cases) and 27% below the rolling mean (91 cases) for Q1 2009 to 2016 (figure 1).

**Figure 1. Laboratory confirmed cases of enteric fever by organism, England, Wales and Northern Ireland: Q1 2009 – 2016**



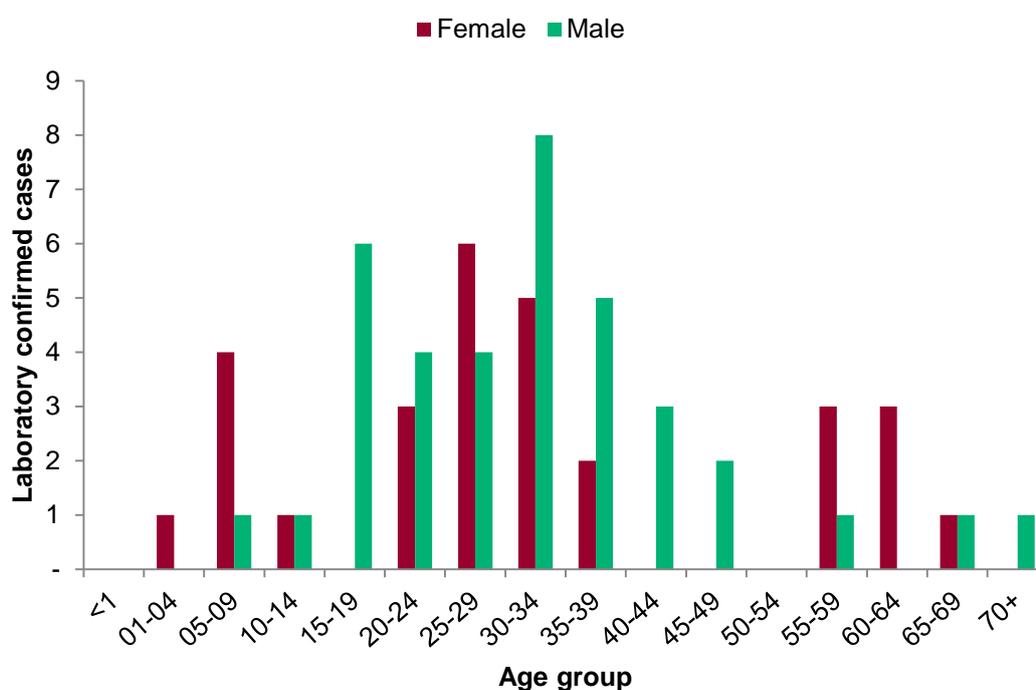
**Table 1. Laboratory confirmed cases of enteric fever, England, Wales and Northern Ireland: Q1 2009 – 2016**

Organism	Laboratory confirmed cases							
	Q1 2016	Q1 2015	Q1 2014	Q1 2013	Q1 2012	Q1 2011	Q1 2010	Q1 2009
<i>Salmonella</i> Typhi	32	46	33	46	47	64	85	63
<i>Salmonella</i> Paratyphi A	31	36	24	28	50	49	36	50
<i>Salmonella</i> Paratyphi B	3	-	-	2	2	1	-	-
<i>Salmonella</i> Paratyphi C	-	-	-	-	-	-	-	-
<i>Salmonella</i> Typhi and Paratyphi A	-	-	-	-	-	-	-	-
<b>Enteric fever total</b>	<b>66</b>	<b>82</b>	<b>57</b>	<b>76</b>	<b>99</b>	<b>114</b>	<b>121</b>	<b>113</b>

### Age/sex distribution

In Q1 2016, the median age of all cases was 30 years and 17% (11/66) were aged 16 years and under (figure 2). Females accounted for 44% of all cases in Q1 2016.

**Figure 2. Laboratory confirmed cases of enteric fever by age and sex (N=66): Q1 2016**



### Geographical distribution

Table 3 shows the cases reported by the PHE Centres (PHECs) in Q1 2016 compared to Q1 2015. For all reported cases, the geographical regions have been assigned using the residential postcode where this was available, otherwise referring diagnostic laboratory locations were used. London usually reports the highest proportion of cases in England (43% in Q1 2016 and 44% in Q1 2015), although reported a 25% decrease in cases reported compared to Q1 2015.

**Table 3. Cases of enteric fever by geographical distribution, England, Wales and Northern Ireland: Q1 2016 and 2015.**

Geographical area	Q1 2016	Q1 2015	% change between 2015 and 2016
London, PHEC	27	36	-25.0%
Yorkshire and Humber, PHEC	9	6	50.0%
South East, PHEC	7	12	-41.7%
North West, PHEC	7	5	40.0%
East of England, PHEC	5	3	66.7%
South West, PHEC	4	2	100.0%
West Midlands, PHEC	2	11	-81.8%
East Midlands, PHEC	1	4	-75.0%
North East, PHEC	1	3	-66.7%
England subtotal	<b>63</b>	<b>82</b>	<b>-23.17%</b>
Wales	2		-
Northern Ireland	1		-
<b>Total EWNI</b>	<b>66</b>	<b>82</b>	<b>-19.5%</b>

### Travel history

In Q1 2016, travel history was available for 61 of the 66 cases; of which 57/61 cases (93%) were presumed to have been acquired abroad (51 who had travelled abroad from the UK and four new entrants to the UK; reason for travel was unknown for seven cases). The remaining four cases had not travelled outside the UK in the 28 days prior to onset of symptoms.

### Travel-associated cases

Country of travel was known for all 51 cases that had travelled abroad from the UK.

Travel-associated cases were likely to have acquired their infection in: India (23), Pakistan (17), Bangladesh (six), Myanmar (four), Nepal, Nigeria, Austria\*, Qatar, Afghanistan, Indonesia (one each).

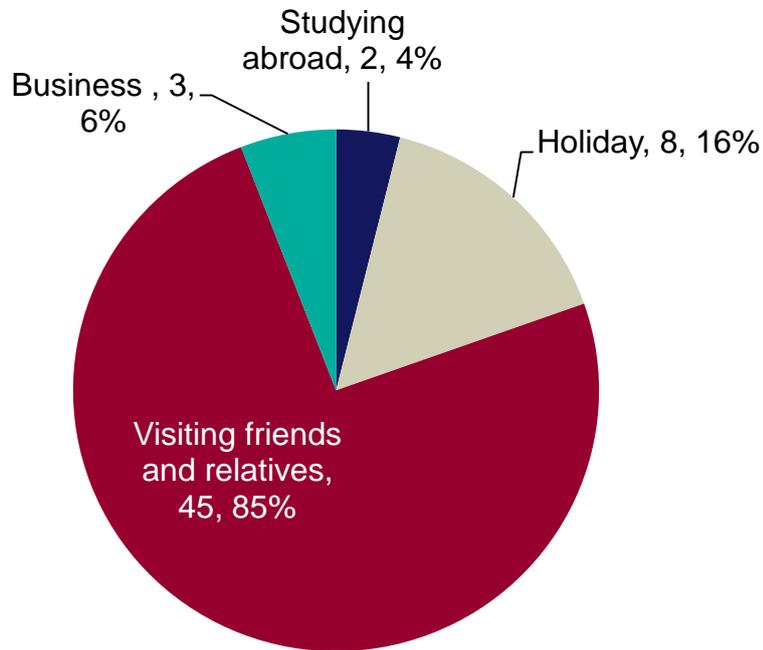
\*Note that Austria is not typically an endemic country for typhoid or paratyphoid, but this case has been included as travel-associated cases in the absence of an alternative source of infection in the UK.

Where multiple countries of travel have been stated by the case, only risk countries, as identified by the National Travel Health Network and Centre [3], were included for analysis. If a case travelled to multiple risk countries each country was counted individually. India and Pakistan continue to be the most frequently reported countries of travel for Q1 2016.

## Reason for travel

Reason for travel was known for all 51 cases who travelled abroad from the UK. Among those, 75% of cases (38/51) travelled to visit friends and relatives (figure 4).

**Figure 4. Laboratory-confirmed cases of enteric fever that have travelled abroad from the UK (N=51) by reason for travel: Q1 2016**



## Non-travel-associated cases

There were four non-travel-associated cases reported in Q1 2016. One of these is likely to be a secondary case resulting from contact with others who have recently travelled to endemic regions, although none of these contacts had claimed to have had enteric fever.

The remaining three cases stated that they had not been in recent contact with a probable or confirmed case prior to the onset of illness. No other possible sources of infection for these three cases have been identified.

## Data sources and acknowledgements

Data were collated and analysed by the Travel and Migrant Health Section, National Infections Service, Colindale. Laboratory data were provided by Gastrointestinal Bacterial Reference Unit, National Infections Service, Colindale. Other surveillance data were provided by Environmental Health Officers and local health protection colleagues in PHE and Wales and Northern Ireland through enteric fever enhanced surveillance.

## References

1. GOV.UK website. Typhoid and paratyphoid: guidance, data and analysis. Available at: <https://www.gov.uk/government/collections/typhoid-and-paratyphoid-guidance-data-and-analysis>
2. National Travel Health Network and Centre (NaTHNaC) website. Available at: <http://travelhealthpro.org.uk/>

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## Infection reports

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### Enteric

- ▶ **General outbreaks of foodborne illness in humans, England and Wales: weeks 14-17/2016**
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### General outbreaks of foodborne illness in humans, England and Wales: weeks 14-17/2016

Preliminary information has been received about the following outbreaks.

PHE Centre/ HPT	Organism	Location of food prepared or served	Month of outbreak	Number ill	Cases positive	Suspect vehicle	Evidence
East Midlands North	Shigellosis (Bacillary Dysentery)	New Mills	April	21	Not known	Not known	n/a
Thames Valley	Norovirus	Ye Olde Leathern Bottle, Wokingham, Berkshire	April	6	Not known	Not known	n/a
West Yorkshire	<i>Escherichia coli</i> O157	Elmgrove Children's Home, Heckmondwike, Kirklees, W Yorkshire	April	2	Not known	Not known	n/a
East Midlands North	Norovirus	Hobsons Choice, Kettering, Northamptonshire	April	4	4	Not known	n/a

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### Salmonella infections (faecal specimens) England and Wales, reports to Public Health England (salmonella data set): March-April 2015

Details of 435 serotypes of salmonella infections recorded in March 2016 are given in the table below. In April 2016, 293 salmonella infections were recorded.

Organism	Cases: March 2016
S. Enteritidis	84
S. Typhimurium	87
S. Virchow	5
Others (typed)	259
<b>Total salmonella (provisional data)</b>	<b>435</b>

Note: Following the introduction of a new laboratory reporting system (SGSS) in December 2014, direct comparisons with data generated by the previous system (LabBase2) may not be valid.

## Common gastrointestinal infections, England and Wales, laboratory reports: weeks 14-17/2016

Laboratory reports	Number of reports received				Total reports	Cumulative total	
	14/16	15/16	16/16	17/16		14-17/16	1-17/16
Campylobacter	642	664	687	707	2700	11670	14489
Escherichia coli O157 *	10	6	2	–	18	73	98
Salmonella †	110	68	101	14	293	1567	1629
Shigella sonnei	16	22	11	16	65	220	267
Rotavirus	65	49	57	60	231	652	1619
Norovirus	275	222	211	209	917	3329	3742
Cryptosporidium	73	120	120	119	432	1055	755
Giardia	81	52	77	79	289	1079	1091

\*Vero cytotoxin-producing isolates: data from PHE's Gastrointestinal Bacteria Reference Unit (GBRU).

† Data from GBRU.

## Less common gastrointestinal infections, England and Wales, laboratory reports: weeks 14-17/2016

Laboratory reports	Total reports 14-17/2016	Cumulative total to 17/2016	Cumulative total to 17/2015
Astrovirus	29	125	179
Sapovirus	26	125	179
<i>Shigella boydii</i>	8	17	23
<i>Shigella dysenteriae</i>	5	16	10
<i>Shigella flexneri</i>	33	130	234
<i>Plesiomonas</i>	5	16	18
<i>Vibrio</i> spp.	7	22	18
<i>Yersinia</i> spp	1	15	10
<i>Entamoeba histolytica</i>	4	13	27
<i>Blastocystis hominis</i>	11	39	46
<i>Dientamoeba fragilis</i>	6	18	2

## Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 14-17/2016

The hospital norovirus outbreak reporting scheme (HNORS) recorded 46 outbreaks occurring between weeks 14 and 17, 2015, all of which led to ward/bay closures or restriction to admissions. Thirty-three outbreaks (72%) were recorded as laboratory confirmed due to norovirus (see table). For the calendar year 2015 – between week 1 (January) and week 17 (week beginning 25 April) – 268 outbreaks were reported. Ninety-seven per cent (259) of reported outbreaks resulted in ward/bay closures or restrictions to admissions and 80% (215) were laboratory confirmed as due to norovirus (see table).

### Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 14-17/2016 (and 1-17/2016)

Region/ PHE Centre	Outbreaks between weeks 14-17/2016			Total outbreaks 1-17/2016		
	Outbreaks	Ward/bay closure*	Lab- confirmed	Outbreaks	Ward/bay closure*	Lab- confirmed
Avon, Gloucestershire and Wiltshire	14	14	11	39	39	28
Bedfordshire, Hertfordshire and Northamptonshire	–	–	–	–	–	–
Cheshire and Merseyside	4	4	4	4	4	4
Cumbria and Lancashire	–	–	–	13	13	8
Devon, Cornwall and Somerset	9	9	6	17	17	12
Greater Manchester	3	3	2	10	10	8
Hampshire, Isle of Wight and Dorset	5	5	4	25	25	21
Lincolnshire, Leicestershire, Nottinghamshire and Derbyshire	–	–	–	12	11	11
London	–	–	–	12	11	11
Norfolk, Suffolk, Cambridgeshire and Essex	–	–	–	–	–	–
North east	–	–	–	5	4	5
Sussex, Surrey and Kent	5	5	5	5	5	5
Thames Valley	1	1	1	11	11	9
West Midlands	7	7	3	26	25	21
Yorkshire and the Humber	1	1	–	54	51	45
<b>Total</b>	<b>46</b>	<b>46</b>	<b>33</b>	<b>39</b>	<b>259</b>	<b>215</b>

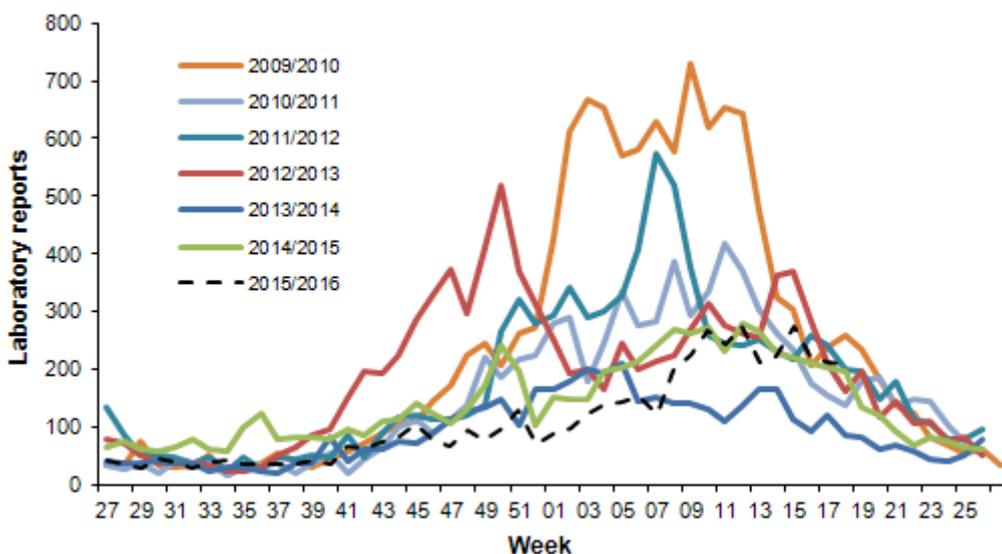
\* Note: not all outbreaks result in whole wards closures, some closures are restricted to bays only.

## Seasonal comparison of laboratory reports of norovirus (England and Wales)

In the current season to date† (from week 27, 2015, to week 17, 2016), there were 3329 laboratory reports of norovirus. This is 20% lower than the average number of laboratory reports for the same period in the seasons between 2009/10 and 2014/2015 (4151).

† The norovirus season runs from July to June (week 27 in year one to week 26 in year two) in order to capture the winter peak in one season.

### Current season's laboratory reports (to week 17, 2016) compared to previous seasons' weekly average (England and Wales)



### Calendar year 2015 (to week 8) norovirus laboratory reports compared to previous years' weekly mean (2009-2014)

