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First WHO global antimicrobial resistance surveillance report

The international nature of the public health threat posed by antimicrobial resistance, and the need for a better-coordinated international response, are the subject of the recently-published, first World Health Organization global AMR surveillance report [1,2].

The report presents detailed AMR data, obtained from 114 countries, covering seven specific bacterial pathogens and nine bacteria-antibacterial drug combinations deemed to be of public health importance because of their association with healthcare-associated and/or community-acquired infections.

The seven bacterial pathogens for which detailed data are presented are *Escherichia coli*, *Klebsiella pneumonia*, *Staphylococcus aureus, Streptococcus pneumonia,* non-typhoidal salmonella, shigella species and *Neisseria gonorrhoeae* (see table). Very high rates of resistance were reported from all WHO regions for *Escherichia coli*, *Klebsiella pneumonia* and *Staphylococcus aureus* .

Antibacterial resistance (ABR) is a particular focus of the report because WHO has identified an urgent need for better coordination and harmonization of surveillance activities relating to drug resistance in this category of microorganisms.

In contrast, surveillance systems concerned with other antimicrobial drug resistance – eg in TB, malaria and HIV – are better established and many lessons have been learned from related disease-specific interventions. Nevertheless, these drug-resistant infections remain a significant public health threat, the WHO report notes. Key concerns identified are: under-reporting of multi-drug resistant TB, the spread of drug-resistant malaria strains and increasing levels of transmitted anti-HIV drug resistance.

Bacteria commonly causing infections in hospitals and in the community

Name of bacterium/ resistance (Examples of typical diseases)	**No. of WHO's 194 member states providing data**	**WHO regions with national reports of 50% resistance or more**
Escherichia coli (Urinary tract infections, bloodstream infections.)		
- vs 3rd generation cephalosporins;	86	5/6
- vs fluoroquinolones	92	5/6
Klebsiella pneumoniae (Pneumonia, bloodstream infections, urinary tract infections)		
- vs 3rd generation cephalosporins;	87	6/6
- vs 3rd carbapenems.	71	2/6
Staphylococcus aureus (Wound/bloodstream infections)		
- vs methicillin ("MRSA")	85	2/6

Bacteria mainly causing infections in the community

Name of bacterium/ resistance (Examples of typical diseases)	**No. of WHO's 194 member states providing data**	**WHO regions with national reports of 25% resistance or more**
Streptococcus pneumoniae (Pneumonia, meningitis, otitis)		
- non-suceptible/resistant to penicillin.	67	6/6
Non-typhoidal salmonella (Foodborne diarrhoea, bllodstream infections)		
- vs fluoroquinolones.	68	3/6
Shigella species (Diarrhoea - "bacillary dysenteria")		
- vs fluoroquinolones.	35	2/6
Neisseria gonorrhoeae (Gonorrhoea)		
- vs 3rd generation cephalosporins.	42	3/6

References

1. WHO. “Antimicrobial resistance: global report on surveillance 2014”.

2. WHO. “WHO's first global report on antibiotic resistance reveals serious, worldwide threat to public health”, 30 April 2014.

Infection reports

Volume 8 Number 20 Published on: 23 May 2014

Immunisation

Laboratory confirmed cases of measles, mumps and rubella, England: January to March 2014

Data presented here are for the first quarter of 2014 (ie January to March). Cases include those confirmed by oral fluid testing (IgM antibody tests and/or PCR) at the Virus Reference Department, Colindale and national routine laboratory reports (mumps infections only) (table 1). Analyses are by date of onset and regional breakdown figures relate to Government Office Regions.

Quarterly figures for cases confirmed by oral fluid antibody detection only from 1995 and annual total numbers of confirmed cases by region and age are available from:

- http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733778332
- http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733841496
- http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733752351.

Table 1. Laboratory-confirmed cases of measles, mumps and rubella and oral fluid IgM antibody tests in notified cases: weeks 1-13/2014

Notified and investigated cases						**Confirmed cases**		
Infecting virus	Cases reported to HPUs in England*	Oral fluid testing					Other samples	**Total**
		Number tested	% of reported cases tested	*Total positive*	*Recently vaccinated*	Confirmed infections		
Measles	657	697**	106.0%	*84*	*18*	66	4	**70**
Mumps	2743	2126	77.5%	*744*	*7*	737	110	**847**
Rubella	124	116	93.5%	*1*	*1*	–	–	–

* This represents the number of infections reported as possible cases and investigated by individual PHE Centres in England.

** Some cases may have been notified late.

Measles

Seventy measles infections were confirmed in England between the beginning of the year and end of March, an increase on the 24 cases of measles observed between October and December 2013 [1].

More than 40% of the cases in the current quarter were reported from London (30 cases), although all regions reported cases. Across the UK, an additional 18 infections were confirmed by oral fluid testing, 16 from Wales and one each from Scotland and Isle of Man.

The majority (41/70, 59%) of the English measles cases this quarter were in children and adolescents: 12 (17%) under one year; 18 (26%) aged one to four years; five (7%) aged five to nine year, three (4%) aged 10 to 14 years; three (4%) aged 15 to 18 years. The remaining 29 adult cases (41%) were aged 19 to 53 years. Three cases reported receiving one dose and four cases reported receiving two doses of a measles-containing vaccine.

Twenty-seven (39%) of the cases reported in the period reported a history of recent travel; 16 to Philippines, six to India and one each to Dubai, Spain, Thailand, France and Australia [2].

In 2013, 10,271 cases were reported within the European Union and European Economic Area (EU/EEA) with the majority (91%) of cases reported from five countries (including the UK). The number of cases observed in 2013 remains low compared to the epidemic years 2010 and 2011, however, eight cases were complicated by acute measles encephalitis, and there were three deaths. WHO has published the framework for the verification process of the measles and rubella elimination in the WHO European region [3].

Mumps

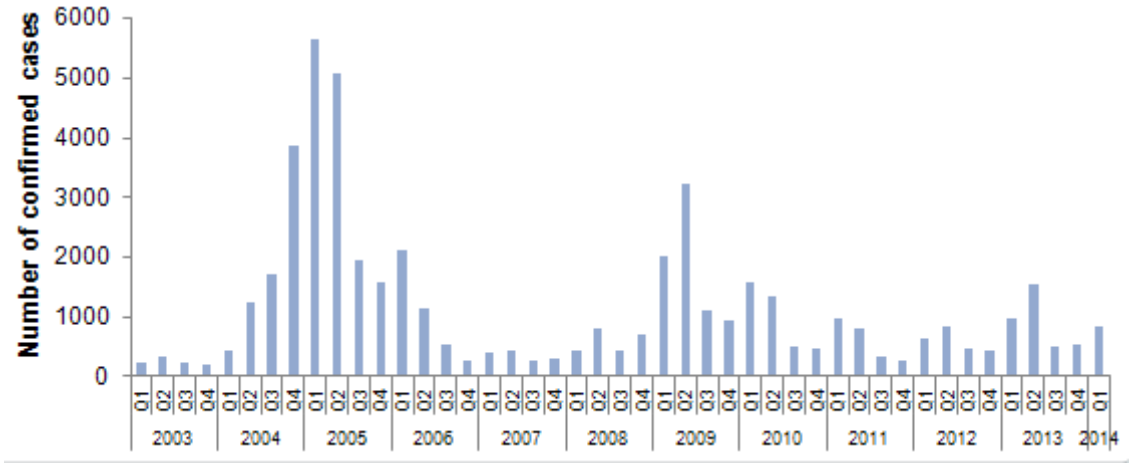
There were 847 laboratory confirmed cases of mumps with onset in the first quarter of 2014, compared to the 520 cases reported in the last quarter of 2013. This follows the trend observed over the last decade of an increase in cases in first quarter of the year compared to the previous quarter (see figure) [1]. Cases continue to be identified predominantly in young adults between 15 and 30 years of age (664/847 78%, table 2). Nearly 40% of all cases this quarter have received at least one dose of MMR vaccination in childhood, suggesting that some waning immunity may be contributing to transmission. Mumps cases were identified in all regions of England although half of all cases were identified in London, the South East and the South West regions (table 2).

Table 2: Laboratory confirmed cases of mumps by age group and region, England: weeks 1-13/2014

Region	<1	1-4	5-9	10-14	15-19	20-24	25+	Total
North East	–	1	–	–	6	9	8	**24**
North West	–	2	3	3	22	29	34	**93**
Yorks. & Humber	–	1	1	5	13	21	27	**68**
East Midlands	–	1	–	1	32	15	8	**57**
West Midlands	–	1	–	2	23	46	41	**113**
East of England	–	2	3	8	25	17	15	**70**
London	–	1	5	6	36	45	66	**159**
South East	–	1	2	7	44	39	41	**134**
South West	–	2	–	13	36	45	33	**129**
Total	**–**	**12**	**14**	**45**	**237**	**266**	**273**	**847**

The figure shows that the level of mumps confirmed in this quarter is similar to that reported in the first quarter of non-peak years since 2003. With the exception of 2004, the number of cases reported in the second half of each year has been lower than in the first half.

Laboratory confirmed cases of mumps by quarter, England, 2003-2014



Rubella

No cases of rubella were confirmed in the reporting quarter compared to three cases identified in the last quarter of 2013 [1].

Countries within the EU/EEA with established rubella surveillance identified very few rubella infections. Poland was the only country with an on-going outbreak, reporting 99% of the 38,847 clinical rubella cases in 2013, however none of these were laboratory confirmed [4].

References

1. PHE (2014). Laboratory confirmed cases of measles, mumps and rubella, England and Wales: October to December 2013. *HPR* **8**(8): immunisation.

2. PHE (2014). UK measles cases in travellers returning from the Philippines. *HPR* **8**(5): news.

3. World Health Organisation (2014). *Eliminating measles and rubella: framework for the verification process in the WHO European Region.*

4. European Centre for Disease Prevention and Control (2014). Surveillance report: *Measles and rubella monitoring*: February 2014.

Laboratory confirmed reports of invasive meningococcal infections in England: 2012/2013 annual data by epidemiological year

This report presents data [1] on laboratory confirmed invasive meningococcal disease (IMD) for the last complete epidemiological year, 2012/2013. Epidemiological years run from 1 July in one year to the 30 June the following year. When most cases of a disease arise in the winter months, as for IMD, epidemiological year is the most consistent way to present the data when comparing years as the peak point will definitely be captured in an epidemiological year whereas it may fall across two calendar years or two seasonal peaks could be captured in a single calendar year.

In England between 1 July 2012 and 30 June 2013 a total 769 confirmed cases of IMD were reported to Public Health England (PHE).This was a 5% increase from the 730 cases reported in 2011/2012. Thirty-one cases of IMD were additionally reported in Wales. In England over the last 10 years there has been an overall decline in confirmed IMD cases observed in all age groups, with total cases in 2012/13 at almost half of the 1438 cases reported in 2003/2004 (figure 1). The incidence [2] of IMD in England has decreased from 3 per 100,000 in 2003/2004 to 1 per 100,000 in 2012/2013. The fall in incidence has been most marked in individuals under 25 years of age.

In 2012/2013, 48% (368/765) of all IMD cases were aged less than five years. Adults aged 25 years or older accounted for 28% of cases (212/765) followed by younger adults aged 15 to 19 years (10%; 80/765) (table 1). Incidence of IMD was highest in infants aged less than one year (23 per 100,000) followed by children aged between one and nine years (5 per 100,000) (figure 2). A third (32%; 245/769) of all cases in 2012/2013 were reported between January and March (Q1) 2013.

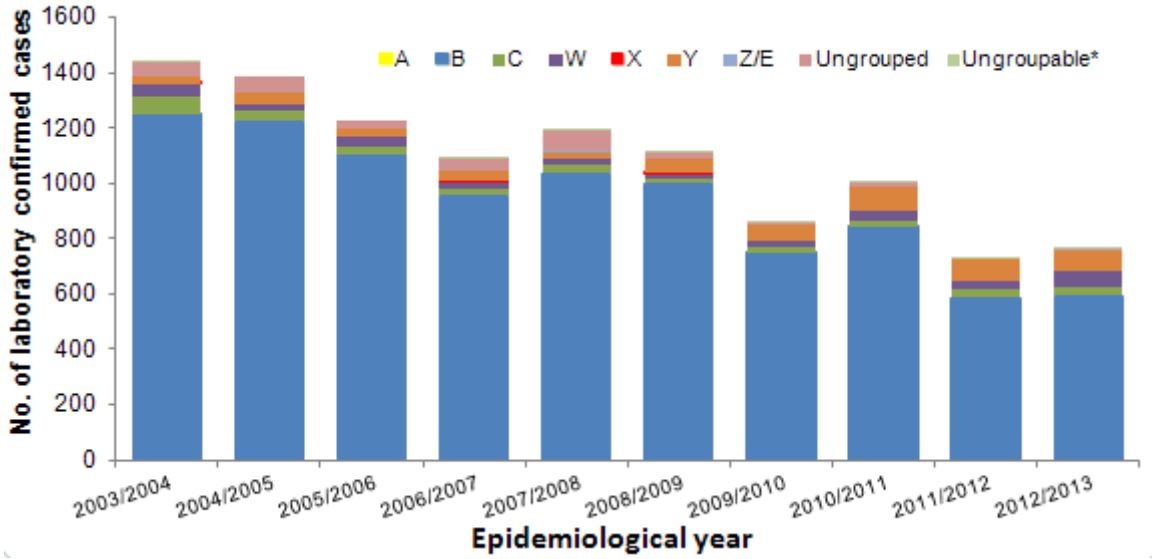
Of the 769 cases of IMD reported in 2012/2013 the majority of cases (77%; 595/769) were capsular group B, 10% (n=75) were group Y, 7% (n=55) group W and 4% (n=33) group C. This was similar to the distribution of capsular groups in 2011/12 when: 80% (587/730) were capsular group B; 11% (n=77) group Y; 4% (n=30) group W; and 4% (n=29) group C. There was, however, an increase in Group Y IMD from 30 to 55 cases, the highest number of cases reported in the last 10 years. In 2012/2013 there were no reported cases of capsular groups A,X and Z/E (table 2).

Ninety-four percent (346/368) of children with IMD aged less than five years were confirmed as capsular group B followed by group W (2%; 9/368) and Y (2%; 6/368). Of adults with IMD aged 25 years or older more than half (52%; 110/212) were confirmed as capsular group B, followed by 22% (n=47) with group Y, 15% (n=32) with group W and 10 (n=21) with group C (table 2).

Twenty-four percent (n=145) of group B cases were under one year of age with 34% (201/594) aged between one and four years. Of the 33 group C cases reported in 2012/13; 64% (21/33) were aged 25 years or older, 18% (n=6) were aged 15 to 24 years, 12% (n=4) were aged between 10 and 14 years and one case aged less than five years. More than half (62%; 34/55) of group W cases were aged 25 years or older with 18% (n=10) aged between 15 and 19 years and 16% (n=9) aged less than five years. Individuals aged 25 years and older accounted for two-thirds (65%; 47/72) of capsular group Y cases with 22% (n=16) aged between 15 and 24 years.

Of the 769 cases reported in England in 2012/2013, 41 individuals were reported to have died (5% case fatality rate [CFR]) [3]. Capsular group B accounted for 54% (n=22) of all deaths with a CFR of 3.7%. Group Y IMD had a reported CFR of 14.7% (11/75), group W had a CFR of 12.7% (7/55) and there was one group C death reported (CFR 3.0%). Adults aged 25 years and over accounted for half of all reported deaths (54%; 22/41), a quarter (27%; 11/41) of deaths were in children aged less than 5 years and 12% (n=5) were aged between 15 and 19 years. Two deaths were reported in Wales, both capsular group B and aged between five and nine years.

Figure 1. Invasive meningococcal disease in England by capsular group: 2003/2004 to 2012/2013



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

Table 1. Invasive meningococcal disease in England by capsular group and age group at diagnosis: 2012/2013

Capsular groups / Age groups	<1	1-4	5-9	10-14	15-19	20-24	25+	N/K	Total
A	–	–	–	–	–	–	–	–	–
B	145	201	42	19	53	24	110	1	595
C	–	1	1	4	3	3	21	–	33
W	4	5	1	1	10	2	32	–	55
X	–	–	–	–	–	–	–	–	–
Y	4	2	1	2	12	4	47	3	75
Z/E	–	–	–	–	–	–	–	–	–
Ungrouped	1	–	1	–	–	–	1	–	3
Ungroupable*	3	2	–	–	2	–	1	–	8
Total	157	211	46	26	80	33	212	4	769

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

Figure 2. Incidence of invasive meningococcal disease in England: 2003/2004 to 2012/2013

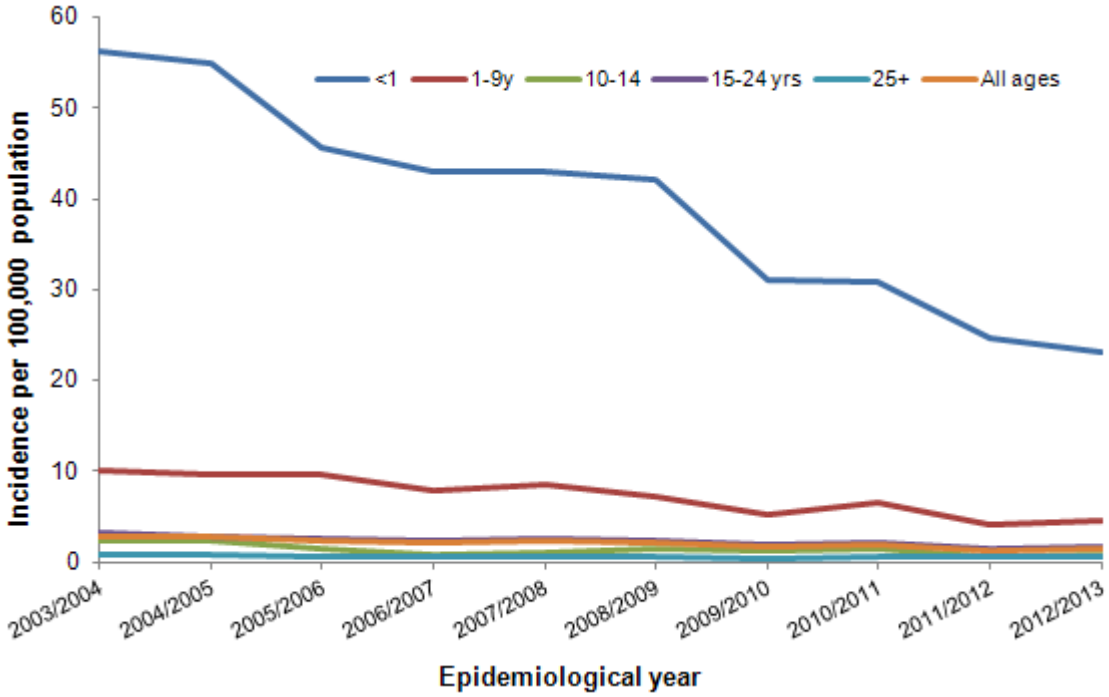


Table 2. Invasive meningococcal disease in England by capsular group and laboratory testing method: 2011/2012 and 2012/2013

Capsular groups	Blood and/or CSF culture		Blood and/or CSF PCR		Other sites culture		Annual total	
	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13
A	–	–	–	–	–	–	–	–
B	244	257	332	331	11	7	587	**595**
C	14	26	15	6	–	1	29	**33**
W	25	45	4	8	1	2	30	**55**
X	–	–	–	–	–	–	–	–
Y	58	61	16	8	3	6	77	**75**
Z/E	1	–	–	–	–	–	1	**0**
Ungrouped	–	–	5	3	–	–	5	**3**
Ungroupable*	1	6	–	–	–	2	1	**8**
Total	**343**	**395**	**372**	**356**	**15**	**18**	**730**	**769**

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

References

1. Data source: PHE Meningococcal Reference Unit, Manchester.

2. Office of National Statistics 2011 population estimates: http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates.

3. Death data from the Office of National Statistics includes all deaths coded to meningitis or meningococcal infection as a cause of death and linked to a laboratory-confirmed case.

Infection reports

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Zoonoses

Common animal associated infections quarterly report (England and Wales) – first quarter 2014

This quarterly report, produced by the Emerging Infections and Zoonoses Section at Public Health England Centre for Infectious Disease Surveillance and Control, and the Health Protection Division of Public Health Wales, summarises confirmed cases of zoonoses reported in England and Wales between January and March 2014 (first quarter; weeks 01-13).

Animal associated infections in England and Wales: laboratory reports to LabBase (unless otherwise specified) by specimen date, weeks 01-13/14

Disease (Organism)	Reports for weeks 01-13	
	2014*	2013
Anthrax (*Bacillus anthracis*)	–	1
Brucellosis** *(Brucella spp.)*	2	1
Hepatitis E**	200	147
Hydatid** (*Echinococcus granulosus*)	6	3
Leptospirosis** *(Leptospira spp.)*	5	14
Lyme borreliosis** # (*Borrelia burgdorferi*)	30	106
Pasteurellosis *(Pasteurella spp.)*	105	136
Psittacosis (*Chlamydophila psittaci)*	4	7
Q-fever *(Coxiella burnetii)*	11	8
Toxoplasmosis**# *(Toxoplasma gondii)*	92	70

* Provisional data.
** Enhanced surveillance system.
# Based on date specimen received

Anthrax

There were no cases reported in the first quarter of 2014.

Brucellosis (data from the Brucella Reference Laboratories)

There were two reports of brucellosis reported during the first quarter of 2014, compared with one during the first quarter of 2013. One infection confirmed as *Brucella melitensis* was in a 43 year old female and one identified by serology (*Brucella* spp.) in a 45 year old male; both are understood to be from countries where brucellosis is endemic.

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

There were 200 cases of Hepatitis E in the first quarter of 2014 compared to 147 in the same quarter of 2013. This is consistent with the on-going increase in cases observed since 2010[1].

One hundred and thirty-two cases (66%) were male (aged 19-88 years, median 63) and 67 (33.5%) were female (aged 22-93 years, median 58). Older men predominate and this is a persisting observation, although the excess remains unexplained. Cases were reported from all regions. The majority of cases (92%, n=185) had no apparent travel history.

	Weeks 40-52/13			
Age Group	Male	Female	Unknown	Total
0-14	–	–	–	–
15-24	3	1	–	4
25-44	14	13	1	28
45-64	50	26	–	76
>64	65	27	–	92
Total	**132**	**67**	**1**	**200**

Hydatid disease (data from the Parasitology Reference Laboratory)

Six reports of hydatid disease were received during the first quarter of 2014, compared with three cases during the first quarter of 2013. Four cases were in males, aged 22 to 83 years and two in females aged 29-39 years. All infections are believed to have been acquired outside the UK.

Leptospirosis (data from the Leptospira Reference Unit)

There were five cases of leptospirosis reported in the first quarter of 2014, compared with 14 in the first quarter of 2013. Of these, three cases were known to have been indigenously acquired, two (one identified as *L.* Hardjo and the other *L.* Icterohaemorrhagiae) were in farmers and one infection, in which the serovar was not determined, was acquired whilst cleaning a slurry pit. All of three indigenous cases were males, aged between 40 and 50 years of age. Two infections were acquired overseas in males aged 20 to 50 years, one in the Caribbean and one in Japan; the serovars were not determined for these cases and further information is awaited on activities undertaken prior to the infection.

Confirmations by PCR (undertaken by the Leptospira Reference Unit [LRU] and the Rare and Imported Pathogens Laboratory, Porton) remain a developmental test with limited technical validation. Clinicians are asked to submit a second specimen from the patient to the LRU, together with exposure and clinical histories, as this increases the likelihood that the infecting serovar can be identified.

Lyme disease

There were technical issues with obtaining the 2014 quarter 1 data – this information will be updated as soon as possible.

There were 30 confirmed cases of Lyme borreliosis reported through LabBase during the first quarter of 2014, compared with 106 in the first quarter of 2013.

Information on cases remains limited at this stage however infection was reported in 14 females and 16 males with ages ranging from 10 to 65 years (median=37). Reports were received from patients in 6 regions of England and Wales with 60% of reports from the South East (37%) and South West (23%) regions of England.

Pasteurellosis

One hundred and five cases of pasteurellosis were reported in the first quarter of 2014, compared with 136 in the first quarter of 2013: *Pasteurella multocida* (74 cases, 70.5%), *Pasteurella pneumotropica* (3 cases, 2.8%) and *Pasteurella* sp. (28 cases, 26.7%).

Thirty-eight of the cases were male (1-89 years, median 49) and 67 were female (3-92 years, median 63). One death with renal failure was reported. The North of England reported the most cases (26), and Wales reported the fewest (10). Of the six cases giving an animal exposure, four reported cat bites and two reported dog bites.

	Weeks 01-13/14	
Age group	Male	Female
0-14	3	3
15-29	4	7
30-39	3	6
40-49	9	8
50-59	3	7
60-69	8	11
70-79	6	13
80+	2	12
Total	**38**	**67**

Psittacosis

Four cases of psittacosis were diagnosed in the first quarter of 2014, compared with seven during the first quarter of 2013. One case was male (aged 70) and three were female (aged 37-42 years, median 39). Three of the cases were from the South of England, one from the East of England.

Note: Serological tests for respiratory chlamydophila 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 11 cases of Q fever reported in the first quarter of 2014, compared with eight in the first quarter of 2013. Five cases were male (aged 18-57 years, median 43) and 6 were female (aged 26-82, median 57). Five cases were reported by the South of England, and three each by the North of England and London.

Toxoplasma (Data from the Toxoplasma Reference Unit)

There were 92 cases of *Toxoplasma* infection in the first quarter of 2014, compared with 70 cases in the first quarter of 2013. Nine cases reported ocular symptoms. Nine cases occurred in pregnant women and there were six confirmed congenital cases, of which two were twins.

Tables: Laboratory confirmed cases of Toxoplasma infection (week 01-13, 2014)

Age group	Male	Female	Unknown	Total
Foetus	–	–	2	2
0	2	1	1	4
1-9	1	1	–	2
10-14	1	–	–	1
15-24	6	6	–	12
25-44	18	24	2	44
45-64	10	9	2	21
>64	1	4	–	5
Unknown	–	1	–	1
Total	**39**	**46**	**7**	**92**

Age group	Con-genital	Pregnant	HIV	Organ donor	Organ recipient	Other (Immuno-competent)	Other (Immuno-suppressed)	Unknown*	Total
Foetus	2	–	–	–	–	–	–	–	2
0	4	–	–	–	–	–	–	–	4
1-9	–	–	–	–	–	2	–	–	2
10-14	–	–	–	–	–	1	–	–	1
15-24	–	–	2	–	–	9	–	–	11
25-44	–	8	6	–	–	29	1	–	44
45-64	–	–	3	–	2	14	3	–	22
>64	–	–	2	–		2	1	–	5
unknown	–	1	–	–	–	–	–	–	1
Total	**6**	**9**	**13**	**–**	**2**	**57**	**5**	**–**	**92**

* No clinical details or information given.

Other zoonotic organisms

Other zoonotic infections of interest diagnosed in the first quarter of 2014 were as follows:

- Five cases of *Capnocytophaga sp.* infection; two infections were in females aged 73 and 76 years, and three were in males aged 13, 67 and 85 years. All the infections were bacteraemias.
- Two cases of *Erysipelothrix sp,* one of which was speciated as *E. rhusiopathiae*, Both cases were male, (aged 71 and 87) and had bacteraemia.
- Three cases of *Mycobacterium marinum,* two in females aged 51 and 67 years and one was in a male aged 61 years. All had tissue infections.
- One *Streptococcus zooepidemicus* bacteraemia in a 73 year old female

Reference

1. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HepatitisE/Surveillance/