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## Laboratory confirmed pertussis in England: data to end-October 2014

*This news report presents current pertussis activity to 31 October 2014, updating the previous report that included data to the end of August 2014 [1].*

Overall pertussis activity in England in 2014 persists at raised levels compared to the years preceding the national outbreak declared in 2012 (see figure) [2]. Expected seasonal increases were observed in August and September with confirmed cases falling in October.

The pertussis vaccination in pregnancy programme was introduced in October 2012 to protect infants in their first few weeks of life. Confirmed pertussis cases in infants less than six months of age have remained low despite the continued high activity in other age groups. The immunisation programme for pregnant women continues to be important, particularly in light of the ongoing raised levels of pertussis in those from one year of age and recent infant deaths. There have been recent key publications on the high effectiveness and safety of the programme [3,4,5].

Available data relating to the coverage, effectiveness and safety of the immunisation programme for pregnant women, its impact on disease and current epidemiology were considered by the Joint Committee on Vaccination and Immunisation (JCVI) in June 2014 and the committee advised that the programme should be continued for at least a further five years [6].

In infants under three months of age low numbers of cases have been sustained since December 2012 with fewer than 10 cases per month reported up to August 2013 and six or fewer reported each month between September 2013 and March 2014. Cases increased from April 2014, in line with expected seasonal increases, peaking at 21 cases in July 2014, the highest number of monthly cases since the 23 reported in November 2012. The number of cases aged under three months, or aged 6-11 months, confirmed between January and October 2014 exceeds the total number reported in 2013 for these age groups. The greatest reduction in disease since the peak in 2012 has, however, been in infants under six months of age. Disease incidence has, as expected, continued to be highest in this age group but case reports are now in line with those seen before the 2012 peak. There have been seven deaths reported in young babies (under 10 weeks) diagnosed with pertussis this year. Ten deaths have been reported in

young babies with confirmed pertussis who were born after the introduction of the pregnancy programme on 1 October 2012. Nine of these 10 babies were born to mothers who had not been vaccinated against pertussis, all of the 10 babies were too young to be fully protected by vaccination themselves and none had received their first dose of pertussis-containing vaccine.

Pertussis activity in infants aged six to 11 months and one to four years of age remained low but confirmed cases were higher to the end of October 2014 than the equivalent period in the previous six years, other than the peak in 2012. Whilst small numbers of cases were confirmed in those aged five to nine years, these increased slightly from February 2014 and in the first 10 months of 2014 exceeded the total in 2013. Cases in this age group persist at levels notably higher than those confirmed prior to 2012.

Pertussis activity in adolescents, teenagers and adults (aged from 10 years of age) continued to decrease overall (see table 1) with a small seasonal peak into August and September 2014. Overall, confirmed cases of pertussis were lower between January and October 2014 than in the first 10 months of the two preceding years but cases continued to exceed those confirmed in years prior to 2012. This pertussis activity has been observed across all regions in England with relatively high numbers of cases in 2014 reported from Yorkshire and Humber and from Surrey, Sussex and Kent (see table 2).

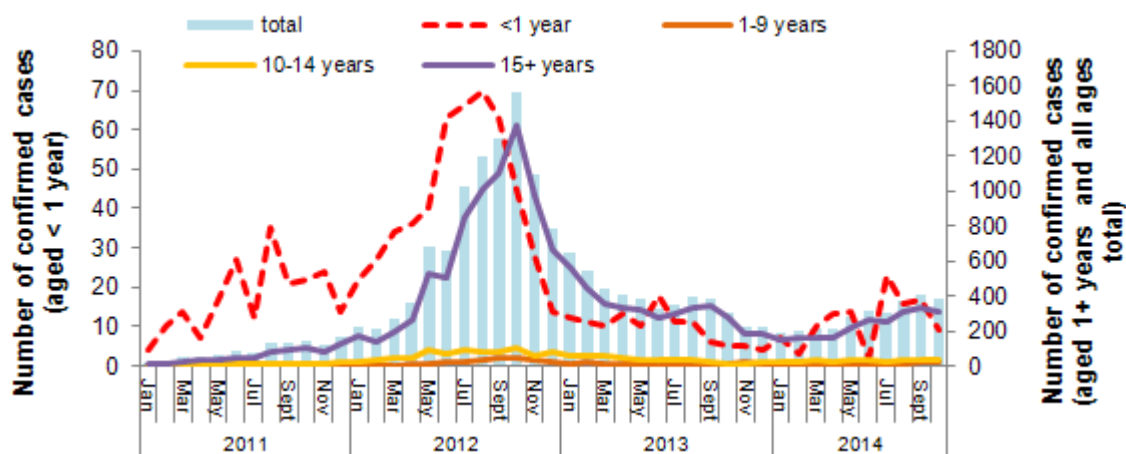
The pertussis vaccination in pregnancy programme continues to be important for the prevention of serious disease and death in young babies. To optimise protection of their babies, women should ideally be immunised between 28 and 32 weeks gestation but may be immunised up to week 38 of pregnancy. Pregnant women who remain unprotected can be offered vaccination after 38 weeks as can new mothers who have not been vaccinated in pregnancy. Vaccination at this stage is not ideal, however, as it would potentially only directly protect the mother against disease and thereby just reduce the risk of exposure to her infant.

The latest vaccine uptake report for April to August 2014 estimates that approximately 54% of all pregnant women in England are currently being vaccinated in pregnancy [7]. This is important because around 75% of all cases of pertussis in babies occur before they can be protected by even the first dose of infant vaccine and when there is a high risk of serious disease. The babies that have died from pertussis in England over recent years all acquired pertussis in the first few weeks of life and nine of the 10 babies who died between January 2013 and October 2014 were born to mothers who were not vaccinated during pregnancy.

Information generated from the pertussis immunisation in pregnancy programme in England has shown high levels of protection against disease in babies born to vaccinated women. Babies

born to women vaccinated at least a week before delivery had a reduction in the risk of disease in their first weeks of life of greater than 90% when compared to babies whose mothers had not been vaccinated [3,5]. In addition, no safety concerns were found relating to pertussis vaccination in pregnancy in a study undertaken by the Medicines and Healthcare Products Regulatory Agency [4].

**Provisional number of laboratory confirmed cases of pertussis in England by age group and month: January 2011 to October 2014**



**Table 1. Provisional number of laboratory confirmed cases in England, 2008-2014 by age group: January to August**

Year	Month	<3 months	3-5 months	6-11 months	1-4 years	5-9 years	10-14 years	15+ years	All ages
2008	Jan - Aug	135	24	6	18	13	103	311	610
2009	Jan - Aug	75	19	1	18	19	67	277	476
2010	Jan - Aug	40	7	2	7	9	30	151	246
2011	Jan - Aug	101	19	6	8	11	61	294	500
2012	Jan - Aug	285	58	15	35	89	483	3655	4620
2013	Jan - Aug	66	23	7	36	64	362	2933	3491
2014	Jan - Aug	69	10	9	24	77	233	1678	2100

**Table 2. Provisional number of laboratory confirmed cases in England, 2008-2014 by PHE Region and PHE Centre: January to August**

	2008	2009	2010	2011	2012	2013	2014
PHE Region and Centre	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug
London	68	62	29	55	348	362	325
Anglia and Essex	46	41	11	41	375	291	164
East Midlands	42	38	13	53	509	389	160
South Midlands and Hertfordshire	19	9	7	28	214	109	85
West Midlands	56	30	10	32	320	283	177
Midlands and East of England Total	163	118	41	154	1418	1072	586
Cheshire and Merseyside	31	22	8	14	75	119	60
Cumbria and Lancashire	19	30	22	32	95	82	31
Greater Manchester	18	8	9	11	126	75	51
North East	34	14	28	46	193	188	47
Yorkshire and Humber	41	36	26	37	568	388	300
North of England Total	143	110	93	140	1057	852	489
Avon, Gloucestershire and Wiltshire	72	49	14	42	593	342	118
Devon, Cornwall and Somerset	32	24	28	20	198	200	81
Sussex, Surrey and Kent	43	50	13	53	540	435	275
Thames Valley	56	39	21	22	173	85	101
Wessex	33	24	7	14	293	143	125
South of England Total	236	186	83	151	1797	1205	700
England Total	610	476	246	500	4620	3491	2100

## References

1. Confirmed pertussis cases in England and Wales: update to end-August 2014, *HPR* 8(38): news, 3 October 2014.
2. The outbreak was declared in April 2012 in response to the ongoing increased pertussis activity (see *HPR* 6(15)).
3. Amirthalingam G, Andrews N, Campbell H, *et al.* Effectiveness of maternal pertussis vaccination in England: an observational study, *Lancet* 2014.
4. Donegan K, King B, Bryan P. Safety of pertussis vaccination in pregnant women in the UK: observational study, *BMJ* 2014.
5. Dabrera G, Amirthalingam G, Andrews N *et al* (2014). A case-control study to estimate the effectiveness of maternal pertussis vaccination in protecting newborn Infants in England and Wales, 2012–2013, *Clinical Infectious Diseases* (online), 19 October.
6. Joint committee of Vaccination and Immunisation minutes.
7. Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, October 2012 to March 2014 (PHE statistics).

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## **Surgical site infection surveillance in NHS hospitals in England, 2013/14**

A report summarising data collected by 235 NHS hospitals and independent NHS Treatment centres in England between April 2009 and March 2014, as part of the PHE surveillance of surgical site infections (SSI) programme, has been published on the GOV.UK website [1].

The report presents the rate of SSIs for 17 categories of surgical procedures based on infections detected during the patient's post-operative stay (inpatient SSIs) combined with infections detected on re-admission after initial discharge (readmission SSIs). Readmission surveillance became a requirement from July 2008; prior to this readmission cases were collected on a voluntary basis.

NHS Trusts in England performing orthopaedic surgery in one of the four mandatory surveillance categories (hip prosthesis, knee prosthesis, reduction of long bone fracture and repair of neck of femur) are required to undertake SSI surveillance in at least one of these surgical categories for a minimum of one quarter per financial year. NHS Trusts also have the option of participating in any of the additional 13 surgical categories included in the national surveillance scheme.

Surveillance of surgical site infections is undertaken by hospitals in England using standard definitions for infections that affect the superficial incisional site, the deeper layers or those involving the joint or organ-space as outlined in the surveillance protocol [2]. Patients are systematically, prospectively followed-up to identify infections occurring within 30 days of surgery or within one year if a prosthetic implant is used. Surveillance of SSI outcome is now complemented by measurement of process indicators as outlined in the NICE SSI quality standards [3]. This tool provides an effective means to monitor the quality of patient care based on seven standards.

The report describes hospital participation in surveillance over time, data quality indicators, trends and risk factors for SSI. An accompanying supplement lists orthopaedic SSI rates by named NHS Trust, also available in due course from the NHS Choices website.

Key findings are:

- data on 594,855 surgical procedures and 8,458 inpatient/readmission SSIs, from 17 surgical categories, were collected by 234 NHS hospitals and independent sector NHS treatment centres in the five-year period between 2009/10 and 2013/14;
- in 2013/14, 143 NHS Trusts and an additional eight NHS treatment centres participated in the mandatory orthopaedic surveillance, contributing data on 102,570 procedures. One eligible NHS Trust did not participate. Of those that participated, 10 NHS Trusts were identified as high outliers with an incidence of SSI higher than expected nationally. An additional seven were identified as low outliers. All 17 NHS Trusts have been contacted and encouraged to review their clinical and surveillance practices;
- between 2008/9 and 2013/14, a significant decrease in the inpatient/readmission SSI incidence was found for repair of neck of femur and reduction of long bone fracture, reaching 1% in each category in 2013/14. No trends in SSI for hip and knee prosthesis were found with the incidence remaining low (<1%) in these categories;
- analysis of hospital-level trends for the orthopaedic categories showed that the majority of centres exhibited stable or decreasing trends over time;
- among non-orthopaedic categories, a significant increasing trend in SSI was found for spinal surgery with an SSI rate of 1.3% in 2013/14; a significantly decreasing trend was found for patients undergoing bile duct/liver/pancreatic and gastric surgery;
- Staphylococcus Aureus as a reported cause of inpatient SSIs accounted for 16% of cases in 2013/14. This followed a decreasing trend from 2006/07 due to decreases in methicillin-resistant Staphylococcus Aureus (MRSA). Enterobacteriaceae increased from 2008/9 and accounted for 26% of cases by 2013/14
- in 2013/14, Staphylococcus Aureus was the predominant organism in orthopaedic and spinal surgery accounting for  $\geq 40\%$  of cases. Coagulase-negative staphylococci and enterobacteriaceae were predominant in coronary artery bypass graft and large bowel surgery respectively.

## References

1. "Surveillance of surgical site infection in NHS hospitals in England, 2013/14" (PHE, December 2014).
2. PHE (2013). "Protocol for the surveillance of surgical site infection (version 6, June 2013)".
3. NICE (2103). Surgical Site Infection Quality Standards, QS49.

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## **Ebola international epidemiological summary (at 9/12/2014)**

Up to the end of 9 December (7 December for Liberia), a total of 18,152 clinically compatible cases (CCC) of Ebola virus disease (EVD) have been reported in the five currently affected countries (Guinea, Liberia, Sierra Leone, the USA and Mali) and three previously affected countries (Nigeria, Spain and Senegal) since December 2013. There have been at least 6,548 deaths, but the true numbers are not known due to continued under-reporting. Case fatality rates remain high across Guinea, Liberia and Sierra Leone where for reported cases with a definitive outcome the case fatality rate is 76%.

The trends in national incidence continue to vary Guinea, Liberia and Sierra Leone. In Guinea, a slight increase in incidence nationally has been observed since early October. In Liberia, reported case incidence is declining nationally but hotspots of disease continue. Montserrado county, which includes the capital Monrovia, continues to report the majority of new cases. In Sierra Leone, transmission remains persistent and intense in a number of districts with the exception of the south Freetown. Freetown remains the worst affected area, reporting a third of all newly confirmed cases in the last full week of epidemiological data.

The total number of EVD CCC reported in Mali stands at eight. As of 11 December, the number of cases associated with the Bamako cluster remains at seven, five of whom have died. The two surviving cases in this cluster have tested EVD free and have been released from hospital. The situation in Bamako looks encouraging but given the porous nature of the Mali–Guinea border, the risk of further importation of cases is recognised.

To date, a total of 23 EVD cases have been cared for outside of Africa; 18 repatriated cases (hospitalised in USA, Spain, UK, Germany, France, Norway, Switzerland, Italy and the Netherlands), two imported cases (both diagnosed in USA) and three incidents of local transmission (in Spain and USA).



The table below summarises Ebola virus disease international epidemiological information as at 9 December 2014 (7 December for Liberia).

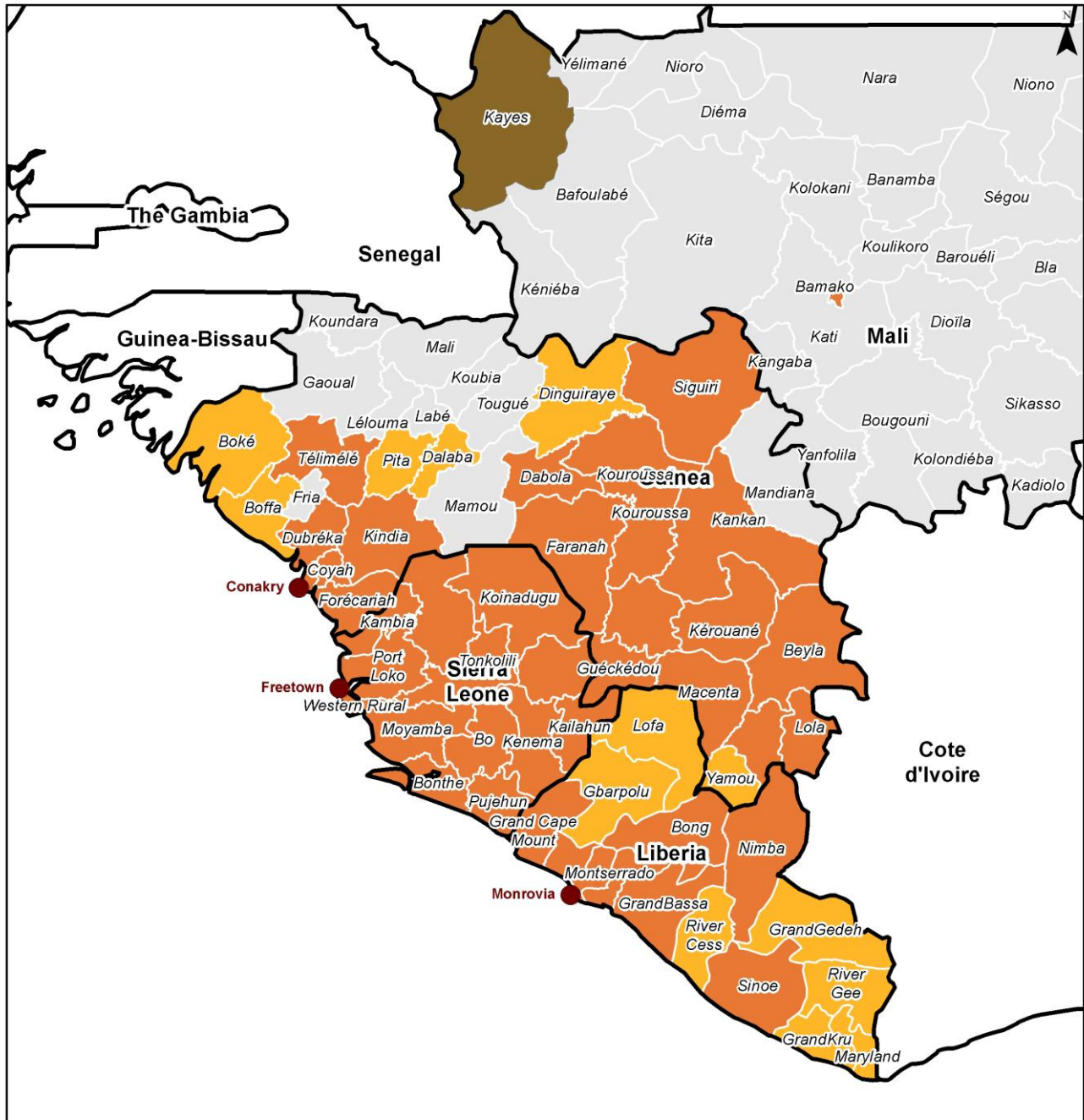
<b>Country</b>	<b>Total CCCs</b>	<b>Total deaths</b>	<b>Current status</b>
Guineau	2339	1454	Ongoing transmission
Liberia	7765	3222	Ongoing transmission
Sierra Leone	8014	1857	Ongoing transmission
Mali	8	6	Awaiting EVD-free status
Nigeria	20	8	EVD free
Senegal	1	0	EVD free
Spain	1	0	EVD free
USA	4	1	Awaiting EVD-free status
<b>TOTAL</b>	<b>18,152</b>	<b>6548</b>	

The latest PHE information on the international epidemiological situation can be found in the agency's weekly Ebola Epidemiological Update at:

<https://www.gov.uk/government/publications/ebola-virus-disease-epidemiological-update>.

See also [Ebola Outbreak Distribution Map](#) below.

# Ebola Outbreak Distribution Map



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<ul style="list-style-type: none"> <li><span style="color: red;">●</span> Capital Cities</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px; vertical-align: middle;"></span> Country Boundaries</li> </ul> <p><b>WHO data as of 7 December (3 December for Liberia)</b></p>	<p><b>Transmission in last 21 days by district</b></p> <ul style="list-style-type: none"> <li><span style="background-color: #8B4513; display: inline-block; width: 15px; height: 10px; vertical-align: middle;"></span> Single imported case</li> <li><span style="background-color: #FF8C00; display: inline-block; width: 15px; height: 10px; vertical-align: middle;"></span> Active</li> <li><span style="background-color: #FFD700; display: inline-block; width: 15px; height: 10px; vertical-align: middle;"></span> No longer active</li> <li><span style="background-color: #D3D3D3; display: inline-block; width: 15px; height: 10px; vertical-align: middle;"></span> Unaffected</li> </ul>
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## Infection Reports

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### Enteric

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## Enteric

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### General outbreaks of foodborne illness in humans, England and Wales: weeks 45-48/2014

Preliminary information has been received about the following outbreaks.

PHE Centre/ Health Protection Team	Organism	Location of food prepared or served	Month of outbreak	Cases positive	Number ill	Suspect vehicle	Evidence
Yorkshire and Humberside	Campylobacter	Restaurant	November	12	Not known	N/k	N/k
North East	Clostridium perfringens	Other	November	14	2	Chicken bouillon paste, carrots	D
Cumbria and Lancashire	Salmonella spp, non-typhoidal or unspecified	Other	November	16	4	N/k	N/k

D = Descriptive epidemiological evidence: suspicion of a food vehicle in an outbreak based on the identification of common food exposures, from the systematic evaluation of cases and their characteristics and food histories over the likely incubation period by standardised means (such as standard questionnaires) from all, or an appropriate subset of, cases.

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## Salmonella infections (faecal specimens) England and Wales, reports to Public Health England (salmonella data set): October 2014

Details of 762 serotypes of salmonella infections recorded in October are given below.

In November 2014, 45 salmonella infections were recorded.

Organism	Cases: October 2014
S. Enteritidis PT4	4
S. Enteritidis (other PTs)	157
S. Typhimurium	142
S. Virchow	18
Others (typed)	405
<b>Total salmonella (provisional data)</b>	<b>726</b>

## Common gastrointestinal infections, England and Wales, laboratory reports: weeks 45-48/2014

Laboratory reports	Number of reports received				Total reports 45-48/14	Cumulative total	
	45/14	46/14	47/14	48/14		1-48/14	1-48/13
Campylobacter	992	806	907	791	3496	55504	55549
<i>Escherichia coli</i> O157 *	23	19	9	17	68	879	786
Salmonella †	76	38	18	11	143	5937	6904
<i>Shigella sonnei</i>	21	17	18	32	88	1002	913
Rotavirus	27	22	32	27	108	4215	14753
Norovirus	114	81	64	70	329	4870	6369
Cryptosporidium	81	54	56	50	241	3355	3290
Giardia	71	57	61	61	250	3508	3328

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

† Data from GBRU.

Note: A new laboratory reporting system (SGSS) was commissioned on 1 December 2014; direct comparisons between previously published data (generated by the LabBase2 system) may not be valid.

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## **Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 45-48/14**

The hospital norovirus outbreak reporting scheme (HNORS) recorded 56 outbreaks occurring between weeks 45 and 48, 2014, 47 (84%) of which led to ward/bay closures or restriction to admissions. Forty-one outbreaks (73%) were recorded as laboratory confirmed due to norovirus.

From week 1 (January 2014) to week 48 (week beginning 24 November 2014) 572 outbreaks have been reported. Ninety-three per cent (531) of reported outbreaks resulted in ward/bay closures or restrictions to admissions and 66% (375) were laboratory confirmed as due to norovirus (see table below).

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

In the current season † (from week 27, 2014, to week 39, 2015) to date, there were 1529 laboratory reports of norovirus. This is 5% lower than the average number of laboratory reports for the same period in the seasons between 2009/10 and 2013/2014 (1614)\* (see graphs below). The number of laboratory reports in the most recent weeks will increase as further reports are received.

† 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.

\* The 2012/2013 season began earlier than normal so comparisons with that year would not be valid.

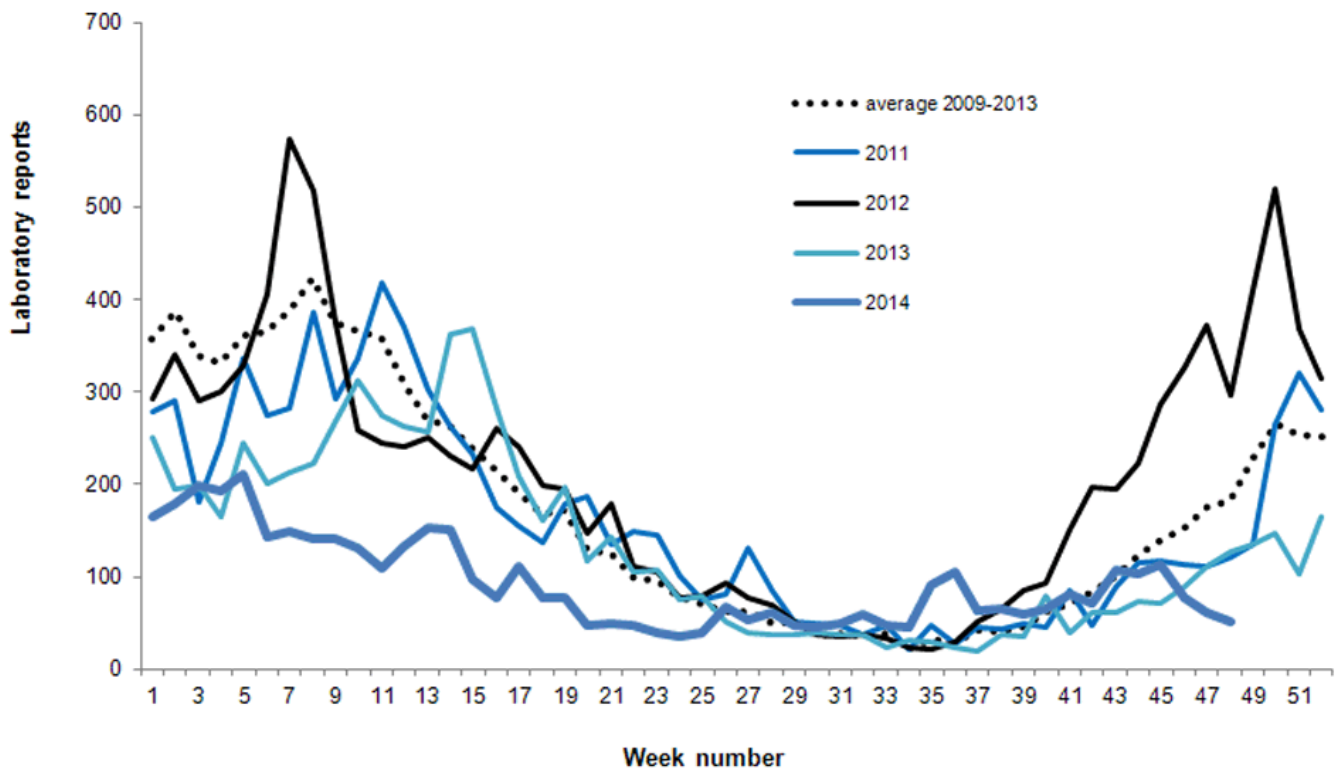
Note: Note: A new laboratory reporting system (SGSS) was commissioned on 1 December 2014; direct comparisons between previously published data (generated by the LabBase2 system) may not be valid.

**Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 45-48/2014 (and 1-48/2013)**

Region/ PHE Centre	Outbreaks between weeks 45-48/2014			Total outbreaks 1-48/2013		
	Outbreaks	Ward/bay closure*	Lab- confirmed	Outbreaks	Ward/bay closure*	Lab- confirmed
Avon, Gloucestershire and Wiltshire	2	2	2	62	62	39
Bedfordshire, Hertfordshire and Northamptonshire	–	–	–	–	–	–
Cheshire and Merseyside	2	1	1	3	2	2
Cumbria and Lancashire	1	1	1	22	22	12
Devon, Cornwall and Somerset	3	2	2	60	58	35
Greater Manchester	–	–	–	15	14	4
Hampshire, Isle of Wight and Dorset	4	4	3	28	28	17
Lincolnshire, Leicestershire, Nottinghamshire and Derbyshire	5	4	5	46	44	37
London	–	–	–	7	7	5
Norfolk, Suffolk, Cambridgeshire and Essex	–	–	–	–	–	–
North east	15	12	10	75	64	48
Sussex, Surrey and Kent	–	–	–	24	24	17
Thames Valley	2	1	1	17	14	6
West Midlands	16	16	10	95	93	53
Yorkshire and the Humber	6	4	6	118	99	100
<b>Total</b>	<b>56</b>	<b>47</b>	<b>41</b>	<b>572</b>	<b>531</b>	<b>375</b>

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

### Current weekly norovirus laboratory reports compared to weekly average 2006-2010



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

