



Infection report

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Voluntary surveillance of *Clostridium difficile*, England, Wales and Northern Ireland: 2013

These analyses are based on data extracted from Public Health England's (PHE) voluntary surveillance database, LabBase2, on the 15th January 2014 for the period 1990-2013. The data presented here differ in some instances from data in earlier publications due to the inclusion of late reports.

Rates were calculated using 2012 mid-year resident population estimates based on the 2011 census for England, Wales, and Northern Ireland [1][2]. Geographical analyses were made based on the residential location of the patient with reference to the former Government Office Region, rather than the Public Health England Centre areas created in April 2013 when Public Health England was established; this is due to the availability of data in this breakdown at the time of producing the report.

The report includes analyses on the trends, age and sex distribution, as well as the geographical distribution of cases of *Clostridium difficile* in England, Wales and Northern Ireland.

For data from the mandatory surveillance of *Clostridium difficile* in England please go to:

<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/ClostridiumDifficile/EpidemiologicalData/MandatorySurveillance/>

Key points

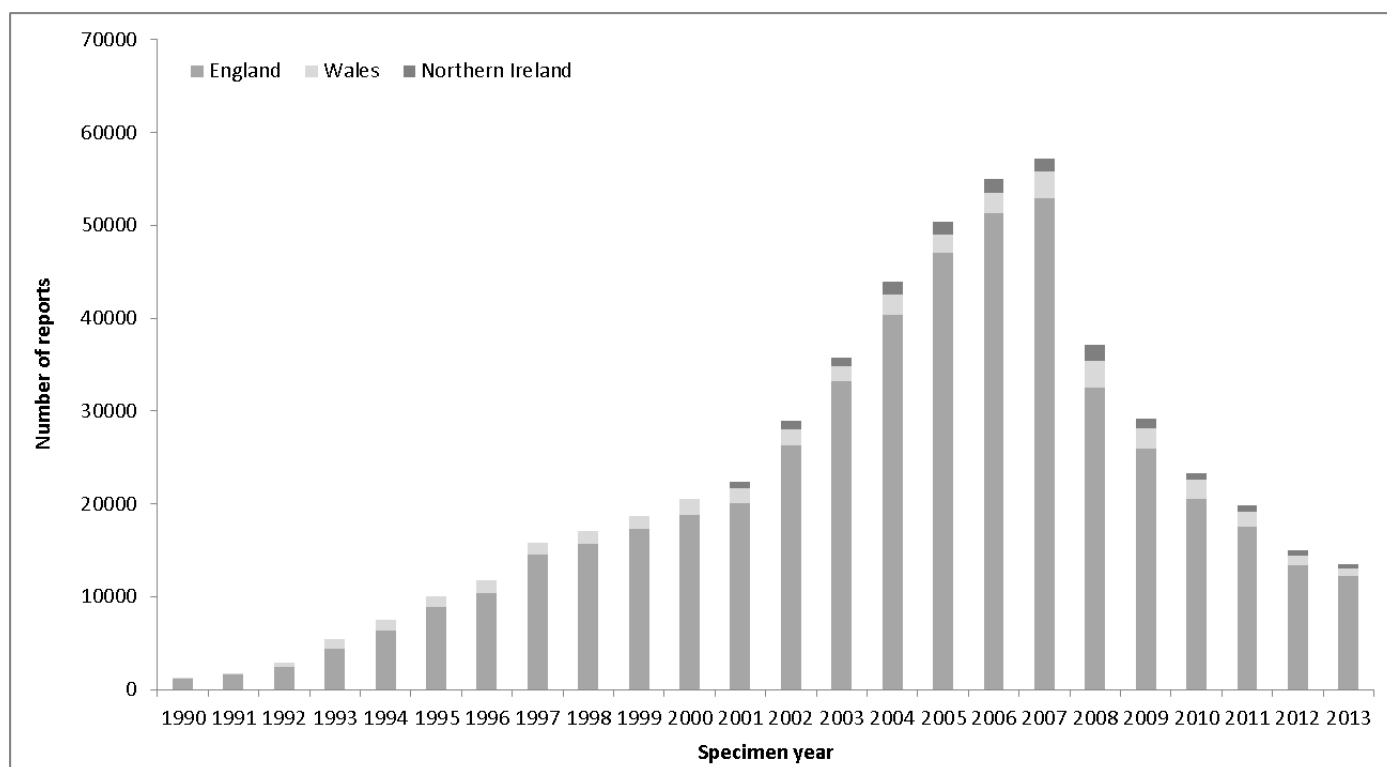
- This update describes laboratory reports of *Clostridium difficile* (*C. difficile*) for the period January to December 2013. Reports are made on a voluntary basis to PHE from laboratories in England, Wales, and Northern Ireland. *C. difficile* is usually identified by detection of *Clostridium difficile* toxins from diarrhoeal stool specimens, in conjunction with a first-step/screening method, but cases detected using alternative methods such as culture may also be reported to the voluntary surveillance scheme.
- There were 13,547 reports in 2013, comprising 12,240 (90.4%) from England, 781 (5.9%) from Wales and 526 (3.9%) from Northern Ireland. This was an overall 9.8% decrease in the number of *C. difficile* laboratory reports compared with 2012.
- The reported incidence of *C. difficile* per 100,000 population decreased between 2012 and 2013 in England, Wales and Northern Ireland from 25.1 to 22.9, 31.5 to 25.4 and 33.0 to 28.8, respectively.
- Three-quarters of reported cases (76.2%) were in the 65 years and over age group.
- The number of laboratories across England, Wales and Northern Ireland reporting cases of *C. difficile* has decreased by 4.5% from 157 in 2012 to 150 in 2013.

Trends in total voluntary reports: 1990 to 2013

In 2013, PHE received 13,547 reports of *C. difficile* positive faecal specimens, a 9.8% decrease on the 15,011 reports received during 2012 (Figure 1, Appendix Table 1). The 2013 total reports comprised 12,240 (90.4%) from England, 781 (5.9%) from Wales and 526 (3.9%) from Northern Ireland. This reflects a decrease of 8.9% in England, 19.4% in Wales, and 12.6% in Northern Ireland since 2012.

There was a 4.5% decrease in the number of laboratories across England, Wales and Northern Ireland reporting cases of *C. difficile*, from 157 in 2012 to 150 in 2013. This may be as a result of laboratory re-organisations.

Figure 1. Voluntary laboratory reports of *C. difficile* positive faecal specimens: England, Wales and Northern Ireland 1990-2013***

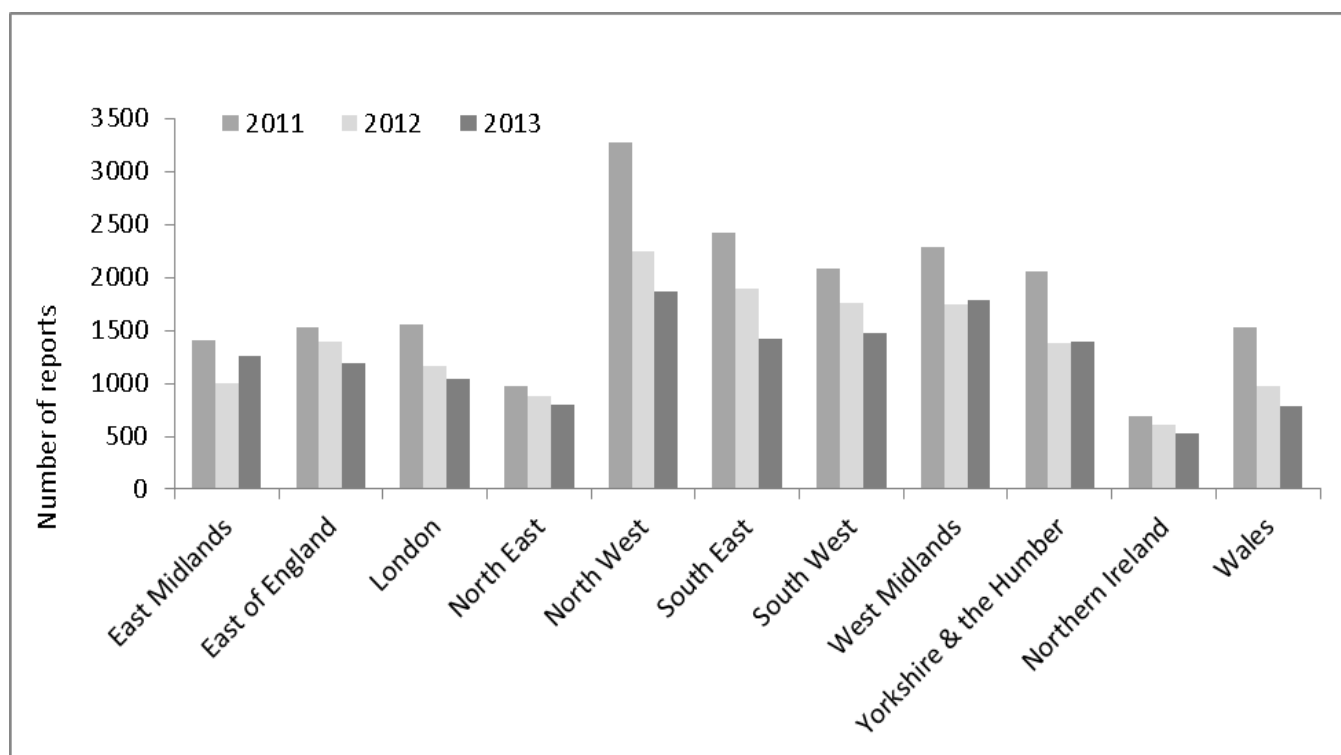


*Date from 2013 are provisional (date was extracted on 15th January 2014)

**Northern Ireland reports included from 2001

While the decrease in the number of *C. difficile* reporting in England has dropped by 30.4% (from 17,593 to 12,440) between 2011 and 2013, this ranged from 10.6% (1,413 vs. 1,263 reports) in the East Midlands to 43.0% in the North West region (3,270 vs. 1,865, respectively). The proportionately larger decrease in reports of *C. difficile* in the North West (43%) in comparison with the other regions in England (30%) is unexplained. Also of note, the comparatively lower decrease of 10.6% in the East Midlands region is largely due to an increase of 26.4% in reporting between 2012 and 2013 (999 and 1,263, respectively). Two other regions reported minor increases (<3%) in *C. difficile* between 2012 and 2013, these were in the West Midlands and Yorkshire and the Humber regions of England. However, the overall decreasing trend in the voluntary reports of *C. difficile* in England between 2009 and 2013 is mirrored in the mandatory surveillance data [3], suggesting that this is likely a true decrease and not due to incomplete reporting.

Figure 2. Voluntary laboratory reports of *C. difficile*: English health regions, Wales and Northern Ireland 2011-2013*



* Data from 2013 are provisional (data extracted on 15th January 2014)

Regional distribution of *C. difficile*

Variation in the rates of *C. difficile* reports were noted between England, Wales and Northern Ireland in 2013. The Northern Ireland reported rate was the highest at 28.8 per 100,000 population, greater than Wales (25.4 per 100,000) and England (22.9 per 100,000). The rate in Wales for the previous four years was markedly higher than in 2013; however, between 2011 and 2012 there was a 36.5% decrease in Wales' *C. difficile* rate, which is a substantial proportion of the 64.2% overall decrease seen since 2009 (see Table 1).

The overall rate of *C. difficile* laboratory reports for England, Wales and Northern Ireland was 23.2 per 100,000 population in 2013, a 9.8% decrease from 25.7 per 100,000 in 2012.

The rates of *C. difficile* positive reports have continued to fall year-on-year for the majority of regions in England; the overall rate for England has fallen from 48.5 per 100,000 in 2009 to 22.9 per 100,000 in 2013, representing a 52.8% decrease (Table 1). However, the regions within England reported a variation of *C. difficile* rates, ranging from 12.6 per 100,000 population in London to 31.7 per 100,000 population in the West Midlands (Figure 3).

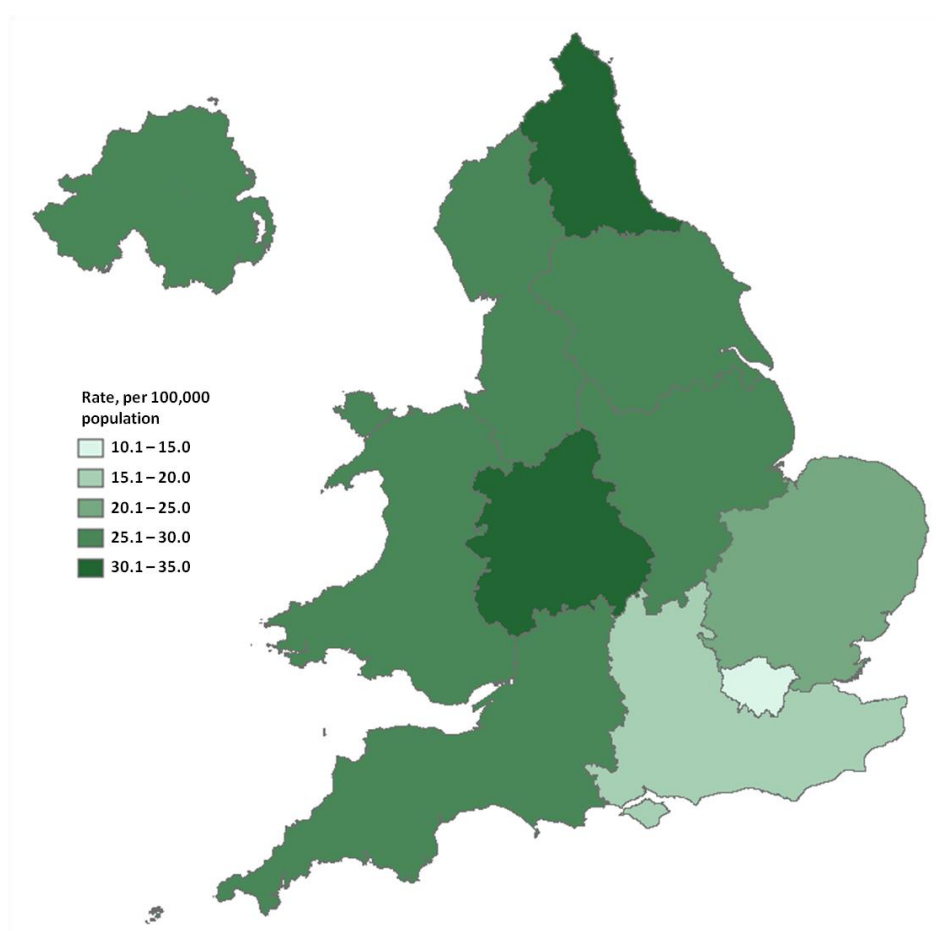
In addition, the reported rates of *C. difficile* in Northern Ireland have also fallen year-on-year since 2009 (48.4% decrease in reports between 2009 and 2013, respectively) (Table 1).

Table 1. Region-specific rates of *Clostridium difficile* in England, Wales and Northern Ireland, 2009-2013*, per 100,000 population

Region	2009	2010	2011	2012	2013
East Midlands	38.2	31.3	30.9	21.9	27.7
East of England	43.3	34.1	25.9	23.7	20.1
London	51.0	24.9	18.8	14.0	12.6
North East	48.8	39.5	37.6	33.8	30.7
North West	69.3	60.1	46.2	31.6	26.3
South East	38.2	34.6	27.7	21.6	16.3
South West	45.2	37.2	38.9	32.9	27.6
West Midlands	52.2	47.4	40.5	30.8	31.7
Yorkshire & the Humber	47.9	39.3	38.7	25.8	26.3
England	48.5	38.4	32.9	25.1	22.9
Wales	71.0	68.5	49.6	31.5	25.4
Northern Ireland	55.9	38.1	37.8	33.0	28.8
England, Wales & Northern Ireland	49.9	40.0	33.9	25.7	23.2

* Data from 2013 are provisional (data extracted on 15th January 2013)

Figure 3. Geographic distribution of *Clostridium difficile* rates per 100,000 population, England, Wales and Northern Ireland: 2013*



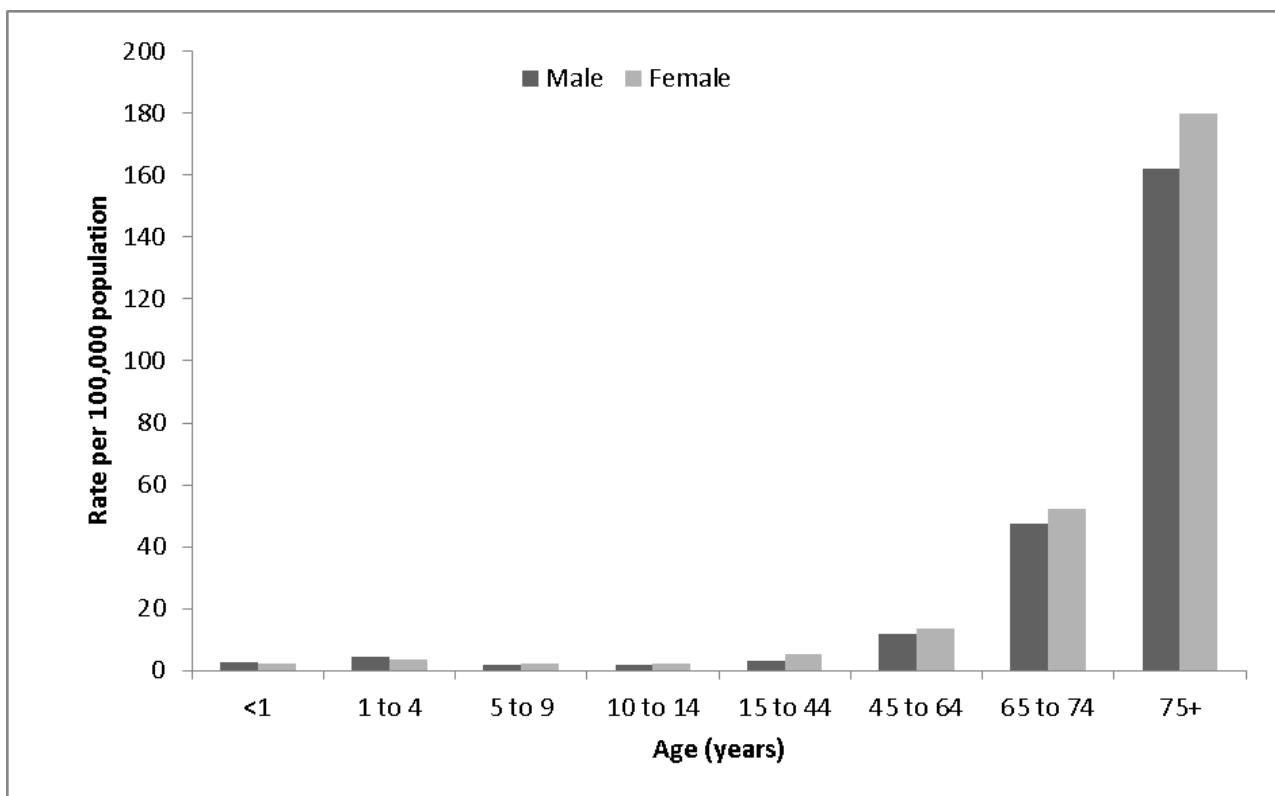
*Data from 2013 are provisional (data was extracted 15th January 2014)

Age and sex-specific rates of *C. difficile*

The age distribution of reports did not change substantially in 2013 in comparison to reports from 2012 [4]. The highest age-specific rate was in those aged 75 years and over (172.9 per 100,000 population), and the rate for females was slightly higher than that for males in this age group (179.9 and 162.0 per 100,000 population, respectively) (Appendix Table 2). The second highest rate was for the 65 to 74 age group, with rates among females and males 52.2 and 47.2 per 100,000, respectively (Figure 4 & Appendix Table 2). Overall, 76.2% of *C. difficile* reports were in patients aged 65 years and over. These results are similar to those obtained from previous reports [4][5].

Overall, the rates of *C. difficile* in 2013 were higher in females (27.5 per 100,000) than males (19.6 per 100,000), and compared with 2012, the number of reports decreased by a greater percentage among males than females (9.7% vs. 9.0%, respectively).

Figure 4. Age specific rates[†] of *C. difficile* from laboratory reports under voluntary reporting scheme: England, Wales and Northern Ireland, 2013*



* Data from 2013 are provisional (data was extracted on 15th January 2014)

[†] Rates are calculated using 2012 ONS mid-year population estimates

Discussion

- Voluntary *C. difficile* reports peaked in 2007 (Figure 1) but have since been decreasing in line with mandatory surveillance reports [3]. The most likely reason for this is the introduction of measures aimed at reducing incidence of *C. difficile*, for example enhanced infection control procedures with emphasis on hand washing, antibiotic prescribing policies, and isolation of infected patients [6][7].
- The majority of region-specific *C. difficile* rates have been decreasing since 2009 with Wales (64.2%) showing the largest decreases between 2009 and 2013 compared with England (52.8%) and Northern Ireland (48.4%). The reasons for these regional differences, as well as those within England, require further investigation.
- Wales' *C. difficile* rate had a relatively greater decrease (19.4% between 2012 and 2013) in comparison with Northern Ireland (12.6%) and England (8.9%).
- Age-specific rates show that *C. difficile* mainly affects older patients with the highest rate in people aged 75 years and older (172.9 per 100,000 population); the second highest rate was in those aged 65 to 74 years. In fact 76.2% of all reports were in those aged 65 years and above. These results are similar to those obtained in previous years [4][5].
- The overall rate was higher in females than males (27.5 and 19.6 per 100,000 population, respectively). The reason for this gender disparity requires further investigation.

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Acknowledgements

We are grateful to microbiology colleagues in NHS acute Trusts for their contributions to this reporting scheme, as well as efforts from colleagues in the regional offices of Public Health England.

Appendix

Table 1. Number of voluntary reports of *C. difficile* positive faecal specimens in England, Wales and N. Ireland 1990-2013***

Year	England	Wales	Northern Ireland	England, Wales & Northern Ireland
1990	1,172	22	--	--
1991	1,591	70	--	--
1992	2,423	506	--	--
1993	4,439	993	--	--
1994	6,387	1,083	--	--
1995	8,905	1,134	--	--
1996	10,440	1,290	--	--
1997	14,541	1,331	--	--
1998	15,721	1,397	--	--
1999	17,279	1,438	--	--
2000	18,783	1,744	--	--
2001	20,064	1,599	689	22,352
2002	26,357	1,710	930	28,997
2003	33,200	1,587	1,016	35,803
2004	40,414	2,114	1,388	43,916
2005	47,019	1,957	1,412	50,388
2006	51,272	2,255	1,429	54,956
2007	52,961	2,883	1,384	57,228
2008	32,584	2,860	1,672	37,116
2009	25,952	2,182	1,019	29,153
2010	20,559	2,106	695	23,360
2011	17,593	1,525	689	19,807
2012	13,440	969	602	15,011
2013	12,240	781	526	13,547

* Data from 2013 are provisional (data was extracted on 15th January 2014)

** Northern Ireland reports reported from 2001

Appendix

Table 2. Age and sex distribution of voluntary laboratory reports of *C. difficile* in England, Wales and Northern Ireland, 2013*

Age Group (Years)	Male	Female	Unknown	Total	Rate per 100,000		
					Male	Female	Total
<1	11	8	8	27	2.9	2.2	3.7
1 to 4	64	51	1	116	4.4	3.7	4.1
5 to 9	29	36	0	65	1.7	2.3	2.0
10 to 14	29	34	2	65	1.8	2.2	2.0
15 to 44	369	620	7	996	3.3	5.5	4.4
45 to 64	827	993	1	1,821	11.7	13.7	12.7
65 to 74	1,174	1,397	6	2,577	47.2	52.2	49.9
75+	2,966	4,764	17	7,747	162.0	179.9	172.9
Unknown	1	8	124	133	--	--	--
Total	5,470	7,911	166	13,547	19.6	27.5	23.9

* Data from 2013 are provisional data (data extracted on 15th January 2014)