



Annual report of *Mycoplasma pneumoniae* laboratory surveillance data, 2015, England and Wales

Summary

A total of 578 cases of *Mycoplasma pneumoniae* (Mpn) infection were reported during 2015, an increase from 429 cases in 2014. The proportion of cases reported by genomic methods has increased from 12% in 2014 to 28% in 2015.

Background

Mycoplasma pneumoniae (Mpn) is a bacterium that causes acute respiratory illness ranging in severity from mild illness to severe pneumonia. It can be fatal in some cases and has rarely been associated with severe complications such as encephalitis. Further information can be found on the [PHE *Mycoplasma pneumoniae* web page](#).

These analyses are based on laboratory reports of Mpn from January 2010 to December 2015 in England and Wales (EW), extracted from Public Health England's (PHE) voluntary surveillance database Second Generation Surveillance System (SGSS).

Laboratory reports included were limited to the following methods and samples:

- serological methods (antibody detection, antibody rising titre, IgM detection, antigen detection) on blood, serum or plasma
- genomic methods, including polymerase chain reaction (PCR) on blood, serum, plasma, throat, nose/nasal, bronchial, upper respiratory tract, broncho-alveolar lavage (BAL), alveolar, naso-pharyngeal aspirate (NPA), endotracheal aspirate, trachea or sputum

Rates of laboratory detection were calculated using mid-year resident population estimates for the respective year from ONS [1]. Geographical analyses by region were based on location of the reporting laboratory.

The data presented here may differ in some instances from those in **earlier publications**, partly due to the inclusion of late reports.

It is recommended that results from serological analyses are interpreted with caution, as genomic methods are considered to produce a more robust indication of acute infection.

Overall number of Mpn cases reported

Following relative low case numbers in 2010 and an increase in 2011/2012, the number of cases of Mpn appeared to decline over 2013 and 2014; with case numbers and the overall population rate of detection appearing to increase again during 2015 (Table 1 and figure 1).

Trends in reporting of Mpn cases (combined genomic and serological methods) can be observed in Figure 1, where 3-weekly moving average numbers of cases are displayed. Distinct peaks are observed in early 2012 and 2015, with smaller seasonal peaks in late 2010, early 2013 and late 2015. The first 2015 peak is lower than that in 2012.

Traditionally serological methods have been the mainstay of diagnosis (table 3). However, over the past two years, an increasing proportion of cases have been detected using genomic methods, ie PCR (Table 2). The majority of cases, however, are still reported by serological methods (Table 3).

Case numbers are similar in males and females, and this ratio has remained unchanged, despite changes in overall case numbers during the last six years.

Table 1: Annual number of Mpn cases reported by sex (all methods): 2010 – 2015

Year	Cases	Gender			Overall rate of detection/million population
		Male	Female	Unknown	
2010	503	240	257	6	9.1
2011	574	272	293	9	10.2
2012	658	329	321	8	11.6
2013	470	234	234	2	8.3
2014	429	211	216	2	7.5
2015	578	288	289	1	10.07

Table 2: Annual number of Mpn cases reported by sex (genomic methods): 2010 – 2015

Year	Cases	Gender			Overall rate of detection/million population
		Male	Female	Unknown	
2010	2	0	2	0	0.04
2011	10	8	0	2	0.18
2012	14	7	7	0	0.25
2013	8	4	4	0	0.14
2014	52	29	23	0	0.91
2015	161	78	83	0	2.80

Table 3: Annual number of Mpn cases reported by sex (serological methods): 2010 – 2015

Year	Cases	Gender			Overall rate of detection/million population
		Male	Female	Unknown	
2010	501	240	255	6	9.01
2011	564	264	293	7	10.04
2012	644	322	314	8	11.38
2013	462	230	230	2	8.11
2014	377	182	193	2	6.57
2015	417	210	206	1	7.26

Distribution of Mpn cases by age group, England and Wales, 2010-2015

The highest numbers of cases are observed in the 15-44 year age group (Tables 4 and 5); and this has remained consistent since 2010.

Case numbers diagnosed by genomic methods appear to have increased consistently up to 2015 in all age-groups (table 4).

Table 4: Annual numbers of Mpn cases by age group (genomic methods)

Year	Number of cases per age group in years (%)							Total cases
	0-4	5-9	10-14	15-44	45-64	65+	Unknown	
2010	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2
2011	1 (10.0)	2 (20.0)	0 (0.0)	4 (40.0)	3 (30.0)	0 (0.0)	0 (0.0)	10
2012	3 (21.4)	3 (21.4)	0 (0.0)	6 (42.9)	1 (7.1)	1 (7.1)	0 (0.0)	14
2013	2 (25.0)	0 (0.0)	1 (12.5)	3 (37.5)	2 (25.0)	0 (0.0)	0 (0.0)	8
2014	20 (38.5)	9 (17.3)	0 (0.0)	19 (36.5)	3 (5.8)	1 (1.9)	0 (0.0)	52
2015	53 (32.9)	17 (10.6)	6 (3.7)	58 (36.0)	16 (9.9)	11 (6.8)	0 (0.0)	161

Table 5: Annual numbers of Mpn Cases by age group (serological methods)

Year	Number of cases per age group in years (%)							Total cases
	0-4	5-9	10-14	15-44	45-64	65+	Unknown	
2010	64 (12.8)	75 (15.0)	55 (11.0)	194 (38.7)	79 (15.8)	34 (6.8)	0 (0.0)	501
2011	63 (11.2)	101 (17.9)	65 (11.5)	216 (38.3)	69 (12.2)	49 (8.7)	1 (0.2)	564
2012	79 (12.5)	80 (12.4)	65 (10.1)	237 (36.8)	115 (17.9)	68 (10.6)	0 (0.0)	644
2013	33 (7.1)	54 (11.7)	41 (8.9)	151 (32.7)	102 (22.1)	81 (17.5)	0 (0.0)	462
2014	27 (7.2)	36 (9.5)	27 (7.2)	152 (40.3)	60 (15.9)	74 (19.6)	1 (0.3)	377
2015	26 (6.2)	49 (11.8)	32 (7.7)	162 (38.8)	87 (20.9)	60 (14.4)	1 (0.2)	417

Distribution of Mpn cases by geographical region

Large regional differences in case numbers are noted, due to presumed differences in testing algorithm. Overall, the highest proportion of Mpn cases has been reported in northern England, with decreasing serological reports over the past two years. Genomic reports have increased in the North, South and London regions in 2015 (Tables 6 and 7), which is likely due to increasing implementation of molecular testing. The overall proportions of cases reported have also increased in London and the Midlands/East, and decreased in Wales. Such regional differences are likely to reflect variations in routine testing practices.

Colleagues are kindly requested to refer all positive specimens or DNA extracts for molecular detection of mutations associated with macrolide resistance to the reference laboratory, RVPBRU, BRD, PHE Colindale.

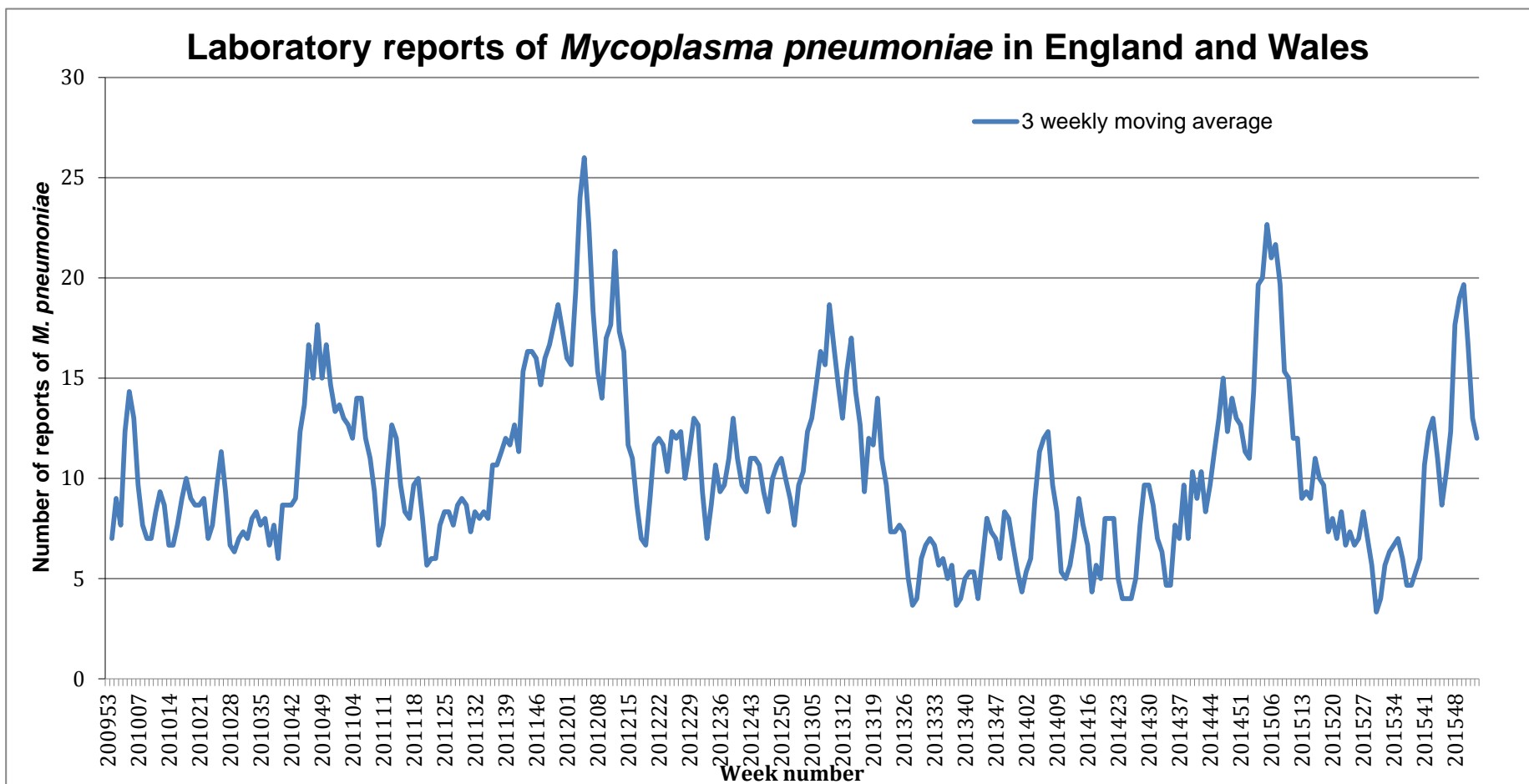
Table 6: Proportions of total annual Mpn cases by England and Wales region (genomic methods), 2010-2015

Year	Cases per region (%)					Total cases
	London	Midlands and East	North	South	Wales	
2010	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	2
2011	0 (0.0)	0 (0.0)	3 (30.0)	6 (60.0)	1 (10.0)	10
2012	1 (7.1)	1 (7.1)	2 (14.3)	9 (64.3)	1 (7.1)	14
2013	0 (0.0)	2 (25.0)	1 (12.5)	5 (62.5)	0 (0.0)	8
2014	11 (21.2)	5 (9.6)	10 (19.2)	24 (46.2)	2 (3.8)	52
2015	56 (34.8)	1 (0.6)	59 (36.6)	45 (28.0)	0 (0.0)	161

Table 7: Proportions of total annual Mpn cases by England and Wales region (serological methods), 2010-2015

Year	Cases per region (%)					Total cases
	London	Midlands and East	North	South	Wales	
2010	2 (0.4)	129 (25.7)	249 (49.7)	75 (15.0)	46 (9.2)	501
2011	4 (0.7)	162 (28.7)	245 (43.4)	109 (19.3)	44 (7.8)	564
2012	3 (0.5)	188 (29.2)	337 (52.3)	90 (14.0)	26 (4.0)	644
2013	0 (0.0)	142 (30.7)	240 (51.9)	57 (12.3)	23 (5.0)	462
2014	2 (0.5)	149 (39.5)	171 (45.4)	45 (11.9)	10 (2.7)	377
2015	5 (1.2)	190 (45.6)	139 (33.3)	79 (18.9)	4 (1.0)	417

Figure 1: Laboratory detection of Mpn in England and Wales (all methods) from 2010 to 2015 (3-weekly moving average).



Acknowledgements

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References

1. Office for National Statistics (ONS) mid-year population estimates for England and Wales, <http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/index.html>.

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