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Annual summary of respiratory *Mycoplasma pneumoniae* laboratory surveillance data, England and Wales, 2017

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Summary

A total of 550 cases of *Mycoplasma pneumoniae* (Mpn) infection were reported to Public Health England (PHE) during 2017, a decrease from 703 cases in 2016. The proportion of overall cases reported by genomic methods has also decreased from 34% in 2016 to 12% in 2017.

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 2012 to December 2017 in England and Wales (EW), extracted from the 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 the Office for National Statistics (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

In 2017, 550 cases of Mpn were reported to PHE, a reduction from 703 cases reported in 2016. Following relatively high case numbers in 2012, the number of reported cases of Mpn appeared to decline over 2013 and 2014; case numbers and the overall population rate of detection appeared to increase again during late 2015 and 2016, before falling to a similar rate in 2017 to that observed in 2014/15 (Table 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 late 2011/early 2012 and late 2015/early 2016, with smaller seasonal peaks in 2013, 2014 and 2017. This trend is consistent with previously-observed epidemic peaks in Mpn incidence at 3 to 4 year intervals, interspersed with smaller seasonal peaks [2].

In recent years, an increasing proportion of cases have been detected using genomic methods, for example, PCR. In 2017, however, the proportion of cases with genomic detection decreased to 12% compared with 34% in the previous year (Table 2). No corresponding large increase in the number of cases detected by serological methods was observed from 2016 to 2017, with 462 and 485 cases, respectively (Table 3).

Case numbers are similar in males and females, and this has remained unchanged, despite fluctuation in overall case numbers during the last 6 years.

Table 1: Annual counts of Mpn cases reported (all methods): 2012 to 2017

Year	Cases	Gender			Overall rate of detection/million population
		Male	**Female**	**Unknown**	
2012	658	329	321	8	11.63
2013	470	234	234	2	8.25
2014	429	211	216	2	7.47
2015	578	288	289	1	9.98
2016	703	351	348	4	12.09
2017	550	283	265	2	9.42

Table 2: Annual counts of Mpn cases reported (genomic methods): 2012 to 2017

Year	Cases	Gender			Overall rate of detection/million population
		Male	Female	Unknown	
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	2.78
2016	241	119	122	0	4.12
2017	65	35	30	0	1.11

Table 3: Annual counts of Mpn cases reported (serological methods): 2012 to 2017

Year	Cases	Gender			Overall rate of detection/million population
		Male	Female	Unknown	
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	7.20
2016	462	232	226	4	7.91
2017	485	248	235	2	8.30

Distribution of Mpn cases by age group, England and Wales, 2012 to 2017

The highest numbers of cases reported in 2017 are observed in the 15 to 44 year age group (Tables 4 and 5); and this has remained consistent since 2012.

Case numbers diagnosed by genomic methods increased consistently between 2012 and 2016 in all age-groups under 65 years (Table 4), but decreased in all age groups in 2017.

Table 4: Annual counts and proportions of Mpn cases by age group (genomic methods)

Year	Number of cases per age group in years (%)							Total cases
	0 to 4	**5 to 9**	**10 to 14**	**15 to 44**	**45 to 64**	**65+**	**Unknown**	
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
2016	76 (31.5)	22 (9.1)	7 (2.9)	103 (42.7)	27 (11.2)	6 (2.5)	0 (0.0)	241
2017	17 (26.2)	4 (6.2)	5 (7.7)	22 (33.8)	13 (20.0)	4 (6.2)	0 (0.0)	65

Table 5: Annual counts and proportions of Mpn Cases by age group (serological methods), 2012 to 2017

Year	Number of cases per age group in years (%)							Total cases
	0 to 4	**5 to 9**	**10 to 14**	**15 to 44**	**45 to 64**	**65+**	**Unknown**	
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
2016	38 (8.2)	47 (10.2)	42 (9.1)	181 (39.2)	81 (17.5)	69 (14.9)	4 (0.9)	462
2017	51 (10.5)	69 (14.2)	59 (12.2)	158 (32.6)	76 (15.7)	72 (14.8)	0 (0.0)	485

Distribution of Mpn cases by geographical region

Large regional differences in case numbers are noted, which may be due to presumed differences in testing algorithm. Overall, the highest proportion of Mpn cases in 2017 has been reported in the Midlands and East of England region. All regions reported fewer cases in 2017 than in 2016, with large reductions in genomic detections in the North and South of England regions and in London (Tables 6 and 7).

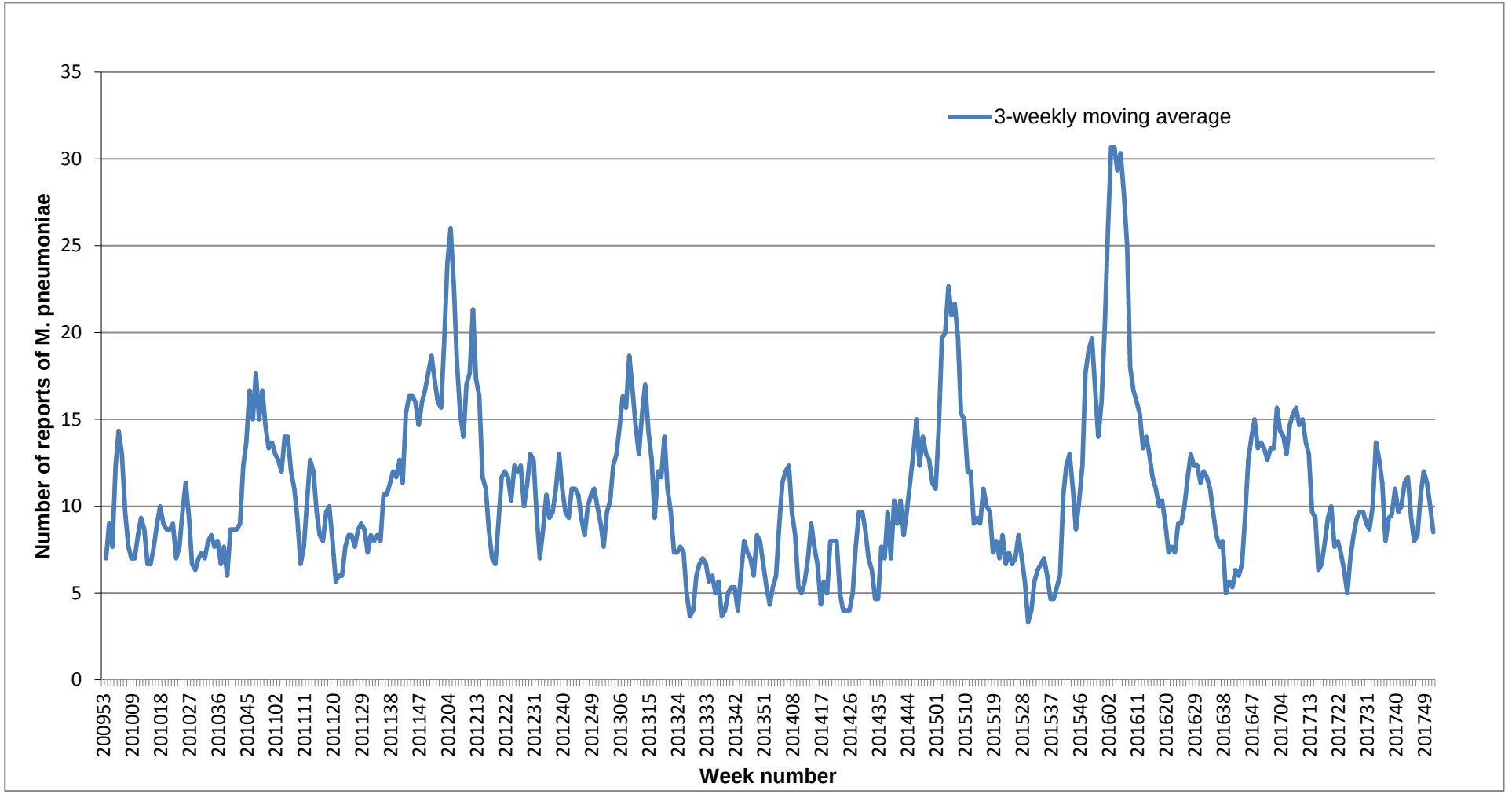
Table 6: Annual counts and proportions of total Mpn cases by England and Wales region (genomic methods), 2012 to 2017

Year	Cases per region (%)					Total cases
	London	**Midlands and East**	**North**	**South**	**Wales**	
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
2016	81 (33.6)	2 (0.8)	93 (38.6)	64 (26.6)	1 (0.4)	241
2017	36 (55.4)	1 (1.5)	14 (21.5)	14 (21.5)	0 (0.0)	65

Table 7: Annual counts and proportions of total Mpn cases by England and Wales region (serological methods), 2012 to 2017

Year	Cases per region (%)					Total cases
	London	**Midlands and East**	**North**	**South**	**Wales**	
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
2016	4 (0.9)	218 (47.2)	116 (25.1)	121 (26.2)	3 (0.6)	462
2017	6 (1.2)	201 (41.4)	125 (25.8)	147 (30.3)	6 (1.2)	485

Figure 1: Laboratory detection of Mpn in England and Wales (all methods) from 2010 to 2017 (3-weekly moving average).



Note:

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.

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References

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