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Annual summary of respiratory *Mycoplasma pneumoniae* laboratory surveillance data:

England and Wales, 2019

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339

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Contents

Summary

A total of 732 cases of *Mycoplasma pneumoniae* (Mpn) infection were reported to Public Health England (PHE) during 2019, an increase from 393 cases in 2018; this represents the highest annual number of cases reported since these data were first compiled (2010). This is consistent with the cyclical pattern in peak Mpn infection acitivty that has previously been seen.

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 to December 2019 in England and Wales, extracted from the PHE voluntary surveillance database Second Generation Surveillance System (SGSS) with data provided from the previous 5 full years for context and comparison.

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
- nucleic acid amplification testing (NAAT), 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 from the Office for National Statistics (ONS) for the respective year in England [1] and Wales [0]. Geographical analyses by region were based on location of the reporting laboratory.

The data presented here may differ from those in earlier publications due to the inclusion of late reports.

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

Overall number of Mpn cases reported

In 2019, 732 cases of Mpn were reported to PHE, an 86% increase from the 393 cases reported in 2018. Following relatively low case numbers in 2014, the number of reported cases of Mpn and the overall population rate of detection increased during late 2015 and 2016, before falling back in again 2017 and 2018, with a further increase observed in 2019 (Table 1).

Longer-term trends in reporting of Mpn cases (combined NAAT 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, late 2015/early 2016 and in 2019, with smaller seasonal peaks in 2013, 2014, 2017 and 2018. This trend is consistent with previously-observed epidemic peaks in Mpn incidence at 3 to 4 year intervals, interspersed with smaller seasonal peaks [3]. The winter seasonal peak in 2019 did not appear as high as the last epidemic peak in 2016, but cases in 2019 appeared to be spread more consistently throughout the year than in 2016. This is consistent with the cyclical pattern in peak Mpn infection acitivty that has previously been observed.

The proportion of cases detected using NAAT methods, for example PCR, has increased to 21.3%, compared with 14% in 2018; however this is still lower than the 34% in 2016. It is considered that NAAT methods produce a more robust indication of acute infection than serological methods, although the latter still appears to be more widely used. Case numbers reported in 2019 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): 2014 to 2019

Year	Cases	Sex			Overall rate of detection per million population[1, 2]
		Male	**Female**	**Unknown**	
2014	429	211	216	2	7.47
2015	578	288	289	1	9.98
2016	703	351	348	4	12.04
2017	550	283	265	2	9.39
2018	393	199	191	3	6.65
2019	732	365	363	4	12.39

Population estimates for 1: England; 2: Wales

Table 2: Annual counts of Mpn cases reported (NAAT methods): 2014 to 2019

Year	Cases	Sex			Overall rate of detection per million population[1, 2]
		Male	**Female**	**Unknown**	
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
2018	58	28	30	0	0.99
2019	156	77	79	0	2.64

Population estimates for 1: England; 2: Wales

Table 3: Annual counts of Mpn cases reported (serological methods): 2014 to 2019

Year	Cases	Sex			Overall rate of detection per million population[1, 2]
		Male	**Female**	**Unknown**	
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
2018	335	171	161	3	5.71
2019	576	288	284	4	9.75

Population estimates for 1: England; 2: Wales

Distribution of Mpn cases by age group, England and Wales, 2014 to 2019

The highest numbers of cases reported in 2019 are observed in the 15 to 44 year age group (Tables 4 and 5); and this has remained consistent since 2014.

Case numbers diagnosed by NAAT methods increased consistently between 2014 and 2016 in all age-groups under 65 years (Table 4), but decreased in all age groups in 2017 and 2018 before increasing again in 2019.

Table 4: Annual counts and proportions of Mpn cases by age group (NAAT methods), 2014 to 2019

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	
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
2018	26 (44.8)	5 (8.6)	3 (5.2)	16 (27.6)	5 (8.6)	3 (5.2)	0 (0.0)	58
2019	45 (28.8)	21 (13.5)	12 (7.7)	51 (32.7)	20 (12.8)	7 (4.5)	0 (0.0)	156

Table 5: Annual counts and proportions of Mpn cases by age group (serological methods), 2014 to 2019

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	
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
2018	20 (6.0)	44 (13.1)	27 (8.1)	110 (32.8)	55 (16.4)	79 (23.6)	0 (0.0)	335
2019	41 (7.1)	58 (10.1)	48 (8.3)	211 (36.6)	105 (18.2)	111 (19.3)	2 (0.3)	576

Distribution of Mpn cases by geographical region

Large regional differences in case numbers are noted in tables 6 and 7 below, which may be due to differences in testing algorithm. Overall, the highest proportion of Mpn cases in 2019 were reported in the South and the Midlands/East of England regions; accounting for 86% of the cases detected by serological methods. All regions reported higher case numbers in 2019 than in 2018, with the North (46.8%) and London (38.5%) regions reporting the majority of cases detected by NAAT methods.

Table 6: Annual counts and proportions of total Mpn cases by England and Wales region (NAAT methods), 2014 to 2019

Year	Cases per region (%)					Total cases
	London	**Midlands and East**	**North**	**South**	**Wales**	
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
2018	31 (53.4)	0 (0.0)	20 (34.5)	7 (12.1)	0 (0.0)	58
2019	60 (38.5)	0 (0.0)	73 (46.8)	23 (14.7)	0 (0.0)	156

Table 7: Annual counts and proportions of total Mpn cases by England and Wales region (serological methods), 2014 to 2019

Year	Cases per region (%)					Total cases
	London	**Midlands and East**	**North**	**South**	**Wales**	
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
2018	5 (1.5)	156 (46.6)	89 (26.6)	80 (23.9)	5 (1.5)	335
2019	7 (1.2)	231 (40.1)	65 (11.3)	267 (46.4)	6 (1.0)	576

Figure 1: Laboratory detection of Mpn in England and Wales (all methods) from 2010 to 2019 (3-weekly moving average).
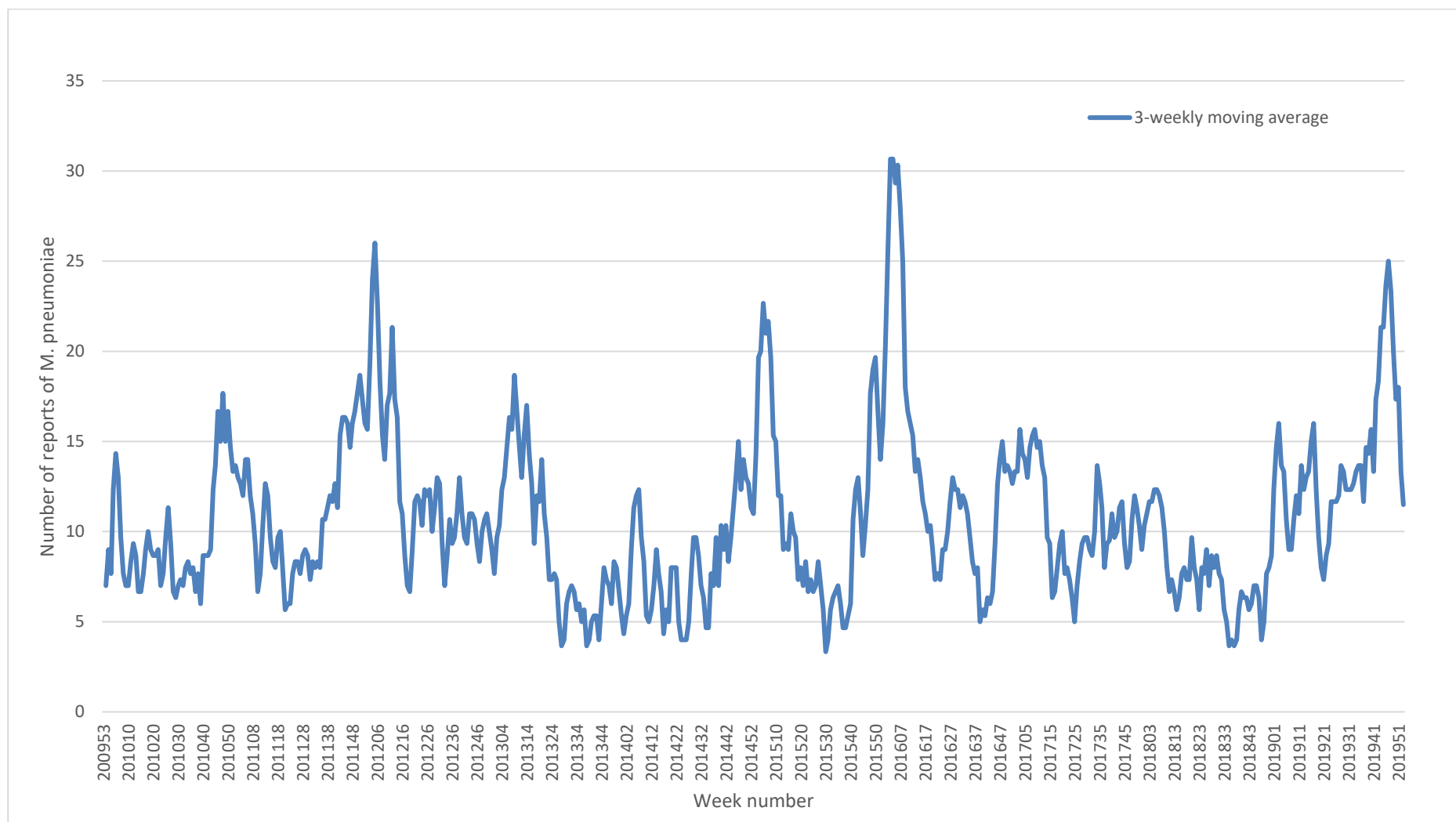
Note:

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.

Acknowledgements

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References

1. Office for National Statistics (ONS) mid-year population estimates for England
   https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/population
   estimates/timeseries/enpop/pop

2. Office for National Statistics (ONS) mid-year population estimates for Wales
   https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/population
   estimates/timeseries/wapop/pop

3. Chalker VJ, Stocki T, Mentasti M, Fleming D, Sadler C, Ellis J, Bermingham A, Harrison T, 2011. Mycoplasma pneumoniae infection in primary care investigated by real-time PCR in England and Wales. Eur J Clin Microbiol Infect Dis (2011) 30:915-921.