Public Health England

Protecting and improving the nation's health

Laboratory confirmed cases of measles, rubella and mumps, England: July to September 2019

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Measles, rubella and mumps are notifiable diseases and healthcare professionals are legally required to inform their local Health Protection Team (HPT) of all suspected cases. National enhanced surveillance including oral fluid (OF) testing of all suspected cases is provided through the Virus Reference Department (VRD) at Colindale to support and monitor progress towards WHO measles and rubella elimination targets.

The two key WHO indicators for measuring the performance of national measles and rubella surveillance systems are the rate of laboratory investigations (at least 80% of suspected cases) and the rate of discarded cases (at least two per 100,000 population). In order to achieve these targets, the focus is on ensuring that all suspected cases are appropriately tested. IgM serology testing and oral fluid testing are the only two tests considered adequate by WHO for confirming and importantly discarding suspected measles and rubella cases. Recent infection is confirmed by measuring the presence of IgM antibodies or detecting viral RNA (by PCR) in these samples.

Samples that have been confirmed positive for measles or rubella are further sequenced and entered on the WHO global Measles Nucleotide Surveillance (MeaNS) or the Rubella Nucleotide Surveillance (RubeNS) system respectively which are hosted at the National Reference Laboratory. Genotyping and further characterisation of measles and rubella is used to support investigation of transmission pathways and sources of infection.

Data presented here are for the third quarter of 2019 (i.e. July to September). Analyses are done by date of onset of rash/symptoms and regional breakdown figures relate to Government Office Regions.

Historical annual and quarterly measles, rubella and mumps epidemiological data are available here from 2013 onwards:

- https://www.gov.uk/government/publications/measles-confirmed-cases
- https://www.gov.uk/government/publications/mumps-confirmed-cases
- https://www.gov.uk/government/publications/rubella-confirmed-cases

Results from all samples tested at Colindale are reported on the MOLIS/LIMS system and reported back to the patient's GP and local HPT. HPTs can also access the results of samples which have been processed by the VRD in the previous 100 days through the MRep site.

Table 1: Total suspected cases of measles, rubella and mumps reported to Health Protection Teams with breakdown of: a) proportion tested by Oral Fluid (OF); b) cases confirmed (all tests) nationally at the Virus Reference Department (VRD), Colindale, and at local NHS hospital and private laboratories; c) discard rate (all tests): weeks 27-40 / 2019.

	Total suspected cases*	Number (%) tested by OF. **Target: 80%**	**Number of confirmed infections**					** Discard rate based on negative tests per 100,000 population (all samples)
			Samples tested at VRD			**Samples tested locally**	**Total**	
			OF IgM positive samples	OF PCR positive samples	All other positive samples			
Measles	1004	654 (65%)	85	33	11	6	135	1.60
Rubella	71	64 (90%)	1	–	1	–	2	0.34
Mumps	3915	2251 (57%)	466	11	57	–	536	N/A

*This represents all cases reported to HPTs in England i.e. possible, probable, confirmed and discarded cases on HPZone.

**The rate of suspected measles or rubella cases investigated and discarded as non-measles or non-rubella cases using laboratory testing in a proficient laboratory. The annual discard rate target set by WHO is 2 cases per 100,000 population. We present quarterly rates here with an equivalent target of 0.5 per 100,000 population

Measles

In England, 135 new measles infections were confirmed in the period between July and September 2019 compared to 301 in the previous quarter of 2019 [1] (figure1).

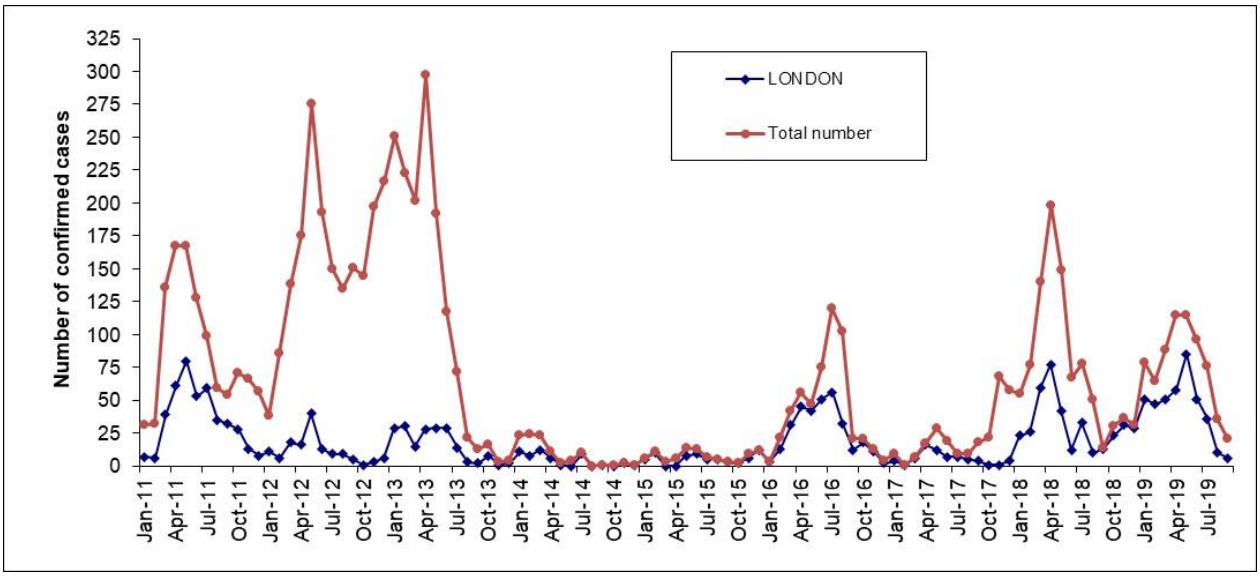
This quarter the greatest burden of cases was in London, mainly in small family clusters and the community. Additionally, there have also been small clusters in the East Midlands, East of England, South East, South West and Yorkshire and Humber regions.

In total this quarter there were 13 of cases (10%) associated with recent travel abroad: three were associated with recent travel to Europe, two were linked to travel to Asia, four to New Zealand or Australia, two to the Middle East and one to South America.

Most of the laboratory confirmed cases remain (69%; 93/135) in young people and adults aged 15 years and over and the hospitalisation rate of 34% reflects that. Eighty eight percent of cases were unimmunised, three cases reported receiving one dose of a measles containing vaccine and 13 individuals reported receiving two doses.

In August, PHE was notified of a death from measles encephalitis in a 61-year-old man with underlying immunosuppression following exposure on a flight.

Figure 1. Laboratory confirmed cases of measles by month of onset of rash/symptoms reported, London and England: January 2014 – September 2019



All the measles cases that had genotyping information available (109/135, 80%) this quarter were either B3 or D8. In the 12 months up to September 2019, 13 331 cases of measles were reported to the European Centre for Disease Prevention and Control (ECDC) [2]. Most of the cases in this 12-month period were reported by France (2 699), Italy (1811), Poland (1582), Romania (1485) and Bulgaria (1175), accounting for 66% of the cases in the region.

In order to monitor importations and chains of transmission it is essential that every suspected case is tested with an Oral Fluid Test (OFT); this includes cases that are

confirmed locally. This quarter an oral fluid sample was taken on only 65% of all suspected measles cases, well below the 80% WHO target (table 1).

Wales identified seven lab-confirmed measles cases and Scotland reported four. No new cases of measles were reported from Northern Ireland this quarter.

The UK measles and rubella elimination strategy was published in January 2019 aiming to achieve a future without endemic measles, rubella and congenital rubella [3]. In September 2019 the WHO confirmed that the UK lost its measles elimination status and was once again considered to have endemic measles transmission on the basis of the evidence provided on measles cases and chains of transmission in 2018. A tripartite Measles and Rubella Elimination Board has been established to oversee the implementation of the strategy recommendations and redouble efforts to achieve and maintain measles elimination for future generations. (Health Protection Teams have been advised to add the congregation context "Measles2019" to all measles cases reported from 1 January 2019.

Table 2. Laboratory confirmed cases of measles by age group and region, England: weeks 27-40 / 2019

Region	Under 1 year	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	>35 years	Total
East Midlands	1	–	–	2	7	1	1	1	3	16
East of England	–	–	2	1	2	3	3	2	6	19
London	2	7	6	9	2	10	2	6	12	56
North East	–	–	–	–	–	1	–	–	1	2
North West	–	–	–	–	–	1	–	–	–	1
South East	–	6	2	1	2	2	2	1	5	21
South West	–	–	–	–	4	3	2	1	2	12
West Midlands	–	1	–	–	–	–	1	–	–	2
Yorkshire & Humb'r	–	–	2	–	–	1	1	1	1	6
Total	**3**	**14**	**12**	**13**	**17**	**22**	**12**	**12**	**30**	**135**

Rubella

In the period between July and September 2019 in England one case of rubella was confirmed in a pregnant woman who was fully immunised, this has been classified as a re-infection. In addition, another case of rubella was confirmed in a child under the age of one.

In the 12 months up to September 2019, ECDC reported 420 rubella cases across the EU countries with the majority in Poland, Germany, Italy, and Spain [3].

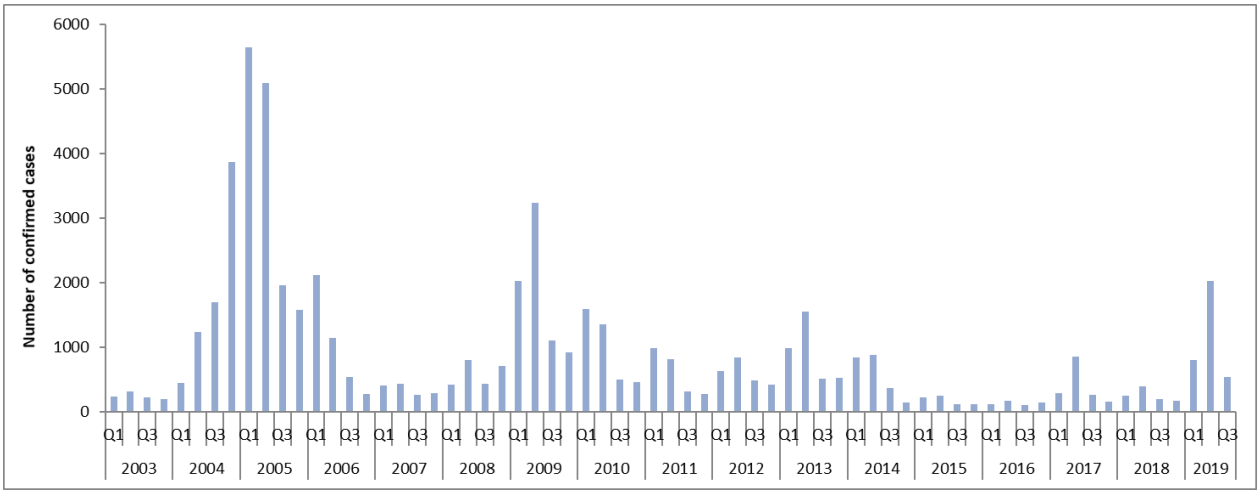
Mumps

The increase of mumps infections seen in the first two quarters of this year has tailed off with 533 laboratory confirmed mumps infections in the period between July and September. This number is still higher than what was observed in the same period in the previous two years (2017- 259 cases and 2018- 201 cases) and brings the total number of mumps cases for the year to date to 3602 [1] (Figure 2). Mumps cases were reported in all regions of England (table 3) predominantly in young adults aged 15 to 34 years (401/533, 75%). Over half (338/533, 63%) of the cases this quarter were unvaccinated. Although mumps in fully vaccinated individuals can occur, due to secondary vaccine failure, it is less likely to lead to complications requiring hospitalisation such as orchitis and meningitis.

Table 3. Laboratory confirmed cases of mumps by age group and region, England: weeks 27-40/2019

Region	<1	1-4	5-9	10-14	15-19	20-24	25+	NK	Total
North East	–	1	2	3	7	5	11	–	29
North West	–	–	4	2	23	26	38	–	93
Yorkshire & Humber	–	–	–	–	7	12	18	–	37
East Midlands	–	1	1	3	6	13	17	–	41
West Midlands	–	1	1	3	19	17	19	–	60
East of England	–	–	–	1	5	18	20	–	44
London	–	1	–	1	6	22	69	–	99
South East	–	1	1	3	10	22	39	–	76
South West	–	–	1	1	9	23	20	–	54
Total	**–**	**6**	**10**	**17**	**92**	**158**	**251**	**–**	**533**

Figure 2. Laboratory confirmed cases of mumps by quarter, England: 2003-2019



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2. ECDC (November 2019). Monthly measles and rubella monitoring report.
3. Measles and rubella elimination UK strategy 2019: https://www.gov.uk/government/publications/measles-and-rubella-elimination-uk-strategy.
4. PHE (2019). Internal Briefing Note: Update on mumps epidemiology in England.

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-class science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health Social Care, and are a distinct delivery organisation with operational autonomy to advise and support government, local authorities and the NHS in a professionally independent manner.

About 'Health Protection Report'

'Health Protection Report' is a national public health bulletin for England and Wales, published by Public Health England. It is PHE's principal channel for the dissemination of laboratory data relating to pathogens and infections/communicable diseases of public health significance and of reports on outbreaks, incidents and ongoing investigations.

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