Seirbhís Sláinte Níos Fearr á Forbairt | Building a Better Health Service

hpsc

Annual Epidemiological Report

October 2019

Measles in Ireland, 2018

Key Facts

There were 76 measles cases (1.6/100,000) in 2018 compared to 25 cases in 2017.

Seventy-three cases in 2018 were classified as confirmed, two were classified as probable and one was classified as possible.

There were five outbreaks notified with a total of 67 cases and an additional two pairs of linked cases.

The highest age specific incidence rate was in those aged less than one year old.

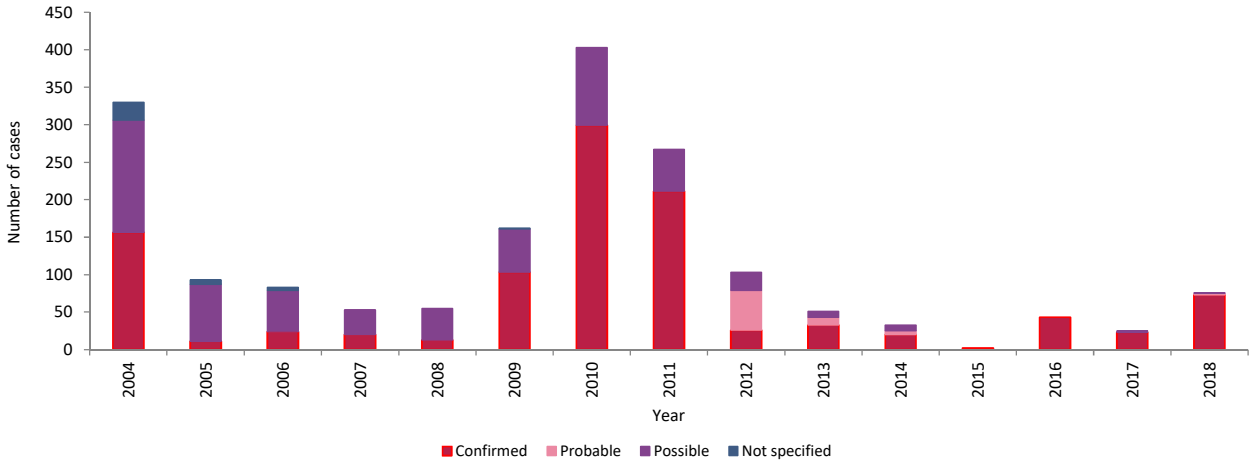
Nearly two-thirds of cases were aged >=15 years and nearly two thirds of cases were male.

Suggested citation: HSE Health Protection Surveillance Centre. Measles in Ireland, 2018. Dublin: HSE HPSC; 2019

Epidemiology

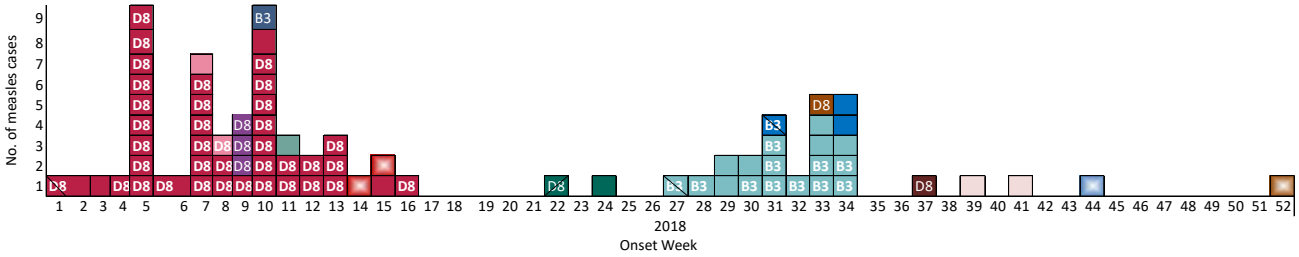
There were 76 measles cases (1.6/100,000) in 2018 compared to 25 in 2017 and 43 cases in 2016 (figure 1). Seventy-three cases in 2018 were classified as confirmed, two were classified as probable and one was classified as possible. There were five outbreaks with a total of 67 cases and an additional two pairs of linked cases.

Figure 1. Number of measles cases by year and case classification, 2004-2018



Measles cases in 2018 by onset week are shown in figure 2.

Figure 2. Measles cases in 2018 by onset week



Legend

Outbreak 1: N=42. Oubreak with cases in four HSE Areas-E, MW, SE, W. Index case imported. 40 confirmed and 2 probable.

Outbreak 1

Imported index case, genotype D8

Genotype D8

Classified as confirmed, Not genotyped.

Classified as probable

Two linked cases in the HSE E Area (no outbreak code). N=2. Both classified as confirmed.

2 linked cases

Classified as confirmed, Not genotyped.

Genotype D8

Outbreak 2: N=3. Outbreak in a family in the HSE E. Linked to an imported case from France, the imported case was not notified in Ireland. Three classified as confirmed.

Outbreak 2

Genotype D8

HSE W: Genotype B3, Imported from United Kingdom

HSE W: Classified as confirmed, Not genotyped, Origin of infection not identified.

Two linked cases in the HSE S (no outbreak code)

2 linked cases

Genotype D8, Exposure thought to have occurred in a university setting.

Classified as confirmed, Not genotyped.

Outbreak 3: N=17. Outbreak in the HSE E. Imported from Romania. 17 classified as confirmed.

Outbreak 3

Index, Genotype B3, Imported from Romania

Genotype B3

Classified as confirmed, Not genotyped.

Outbreak 4: N=3. Outbreak in the HSE SE. Index case had not travelled abroad.

Outbreak 4

Index, Genotype B3, Origin not identified but virus had 5 nucleotide differences from the other circulating B3 viruses, this sequence was not detected in any previous or subsequent samples tested.

Classified as confirmed, Not genotyped..

HSE S: Classified as confirmed, Imported-case attended music festival in Croatia

HSE E: Classified as confirmed, Imported- from Thailand or in transit

Outbreak 5: N=2. Outbreak in the HSE E. Not imported- index believed to be exposed at a third level college fair

Outbreak 5

Classified as confirmed, Not genotyped

HSE NE: Classified as possible, Not epi-linked, Not imported

HSE E: This case was notified in 2019 (and so is in the 2019 dataset) but onset in late December 2018. Classified as possible. Country of infection recorded as unknown.

The first case of measles was notified in January 2018. This confirmed case had exposure to measles outside Ireland. A further forty-one measles cases, notified between January and April 2018, were linked to this case. Forty of the 42 cases were classified as confirmed and two were classified as probable. Measles virus from 36 cases were genotyped and all 36 were genotype D8. Thirty of the cases were in the HSE MW, 10 were in the HSE SE, one was in the HSE E and one was in the HSE W. The cases occurred in both adults and children with half (n=21) aged 20 years or older and two thirds of cases (n=28) aged 15 years or older. Nearly two-thirds (64%, n= 27/42) of cases were male. The majority (79%, n=33) were unvaccinated, three had one dose of MMR (one of these was self-reported and one was vaccinated six days prior to onset), one had two MMR doses (both vaccine dates were reported) while for five cases vaccination status was recorded as unknown (all five cases were aged>=28 years). Twenty one cases were hospitalised. The places where the case most likely acquired measles were recorded for 33 cases and were recorded as home (n=24), work (n=6), hospital out-patient (n=1), other healthcare facility (n=1) and overseas (n=1).

Two linked cases in a private house in the HSE E, with onset dates in mid to late February, were notified in early March. Both cases were confirmed; measles virus from one case was genotyped and this was genotype D8. This virus cannot be differentiated from other circulating D8 viruses at that time. The country of infection for both cases was recorded as Ireland. One case was unvaccinated while the vaccination status of the second case was unknown. Both cases were in the age group 20-24 years.

A family outbreak, with onset dates in late February, was notified in the HSE E in early March with three linked cases. These cases were epi-linked to a case visiting from France; the case from France was not notified in Ireland. All three cases in Ireland were unvaccinated. All three were classified as confirmed and measles virus from all three was genotype D8. They had one nucleotide difference from the other genotype D8s circulating in Ireland at the time, fitting with importation. There were identical cases of this sequence identified in France and Spain around this time. No other cases were identified in Ireland with this exact sequence.

One adult case was notified in mid-March (onset in early March) in the HSE W. The country of infection was the United Kingdom. This case was unvaccinated, classified as confirmed and had genotype B3 measles virus.

In early April an infant case, with onset in mid-March, was notified in the HSE W. The case was classified as confirmed but genotyping was not possible. Case (infant) was too young for vaccination. Country of infection was Ireland, however, the origin of the infection was not identified.

Following consideration of the numbers of measles notifications, that measles cases had occurred in four HSE Areas and risks to the rest of the HSE Areas a national measles outbreak control team was convened in April.

In mid-June two linked cases were notified in the HSE S. One of these cases was unvaccinated and third level was recorded as the place the case most likely acquired measles. The measles virus genotype was D8 and was homologous to genotype D8s that were circulating in Ireland earlier in the year. The second case was vaccinated 11 days prior to onset and it was unclear if this was a case of attenuated measles following exposure or mini measles following MMR vaccination. This second case was IgM measles weakly positive and there was insufficient sample for measles PCR testing or genotyping.

In early July the national outbreak control team was disbanded as no further cases were identified with links to previously reported outbreaks.

In mid/late July a new measles outbreak started in the HSE E. The index case, with onset in early July, had recently returned from Romania where measles outbreaks were occurring. The index case was admitted to a Dublin hospital for a measles related complication (viral meningitis) but was undiagnosed with measles at the time of admission. The outbreak was first identified when a contact of the index case was admitted to hospital in mid July.

In total 17 cases were linked to the outbreak, all 17 were confirmed and measles virus from all 11 genotyped were genotype B3. There were identical cases of this sequence identified in Romania around this time. This strain was also detected throughout Europe during 2018.

The majority (71%, n=12** included here is an infant case that is recorded on CIDR as having a dose of MMR but vaccination date is nearly one month after onset) of the 17 cases were unvaccinated, one was reported to have one dose of MMR, two were reported to have two doses of MMR (health care staff) while vaccination status was unknown/unreported for two. All three cases reported to have had MMR had no vaccine dates or other vaccine details reported, however two of them had occupational health records of vaccination (two doses). No onward transmission was identified for the two cases with two MMR doses reported. The last case was at the end of August 2018. Cases occurred in children and adults. Just over half (53%, n=9/17) of these cases were aged >=15 years and the majority (71%, n=12/17) were male. Where most likely acquired measles was recorded as home (n=7), work (n=2), hospital out-patient (n=2), hospital in-patient (n=1), overseas (n=1), and was unrecorded for four cases.

In early August a confirmed measles case was notified in the HSE SE. This case had measles virus genotype B3 but it had 5 nucleotide differences compared to the B3 circulating in the HSE E. Two linked cases with onset in mid-August were subsequently notified. All three cases were in adults and vaccination status of all three cases was unknown. The index case had not travelled abroad and while the origin of the infection was not identified as the strain was distinct from other strains identified in Ireland in 2018 this case was believed to be imported.

In later August, a confirmed case was notified in the HSE S. The case was vaccinated with one dose of MMR and was believed to be infected at a music festival in Croatia. The case was classified as confirmed and the measles virus genotype was D8. The sequence of this virus was different to other circulating D8 viruses in Ireland during 2018.

In mid-September, an adult case was notified in the HSE E. The case was unvaccinated, classified as confirmed and had measles virus genotype D8. The case reported travel to Thailand. Country of infection was not recorded on CIDR as infection may have been acquired either in Thailand or possibly in transit.

In late September a case was notified in the HSE E. No links to other cases could be identified; however, the case attended a large third level college fair with hundreds of participants and representatives hosting stalls from Ireland and outside Ireland (mainly United Kingdom). A linked case with onset in mid October was subsequently notified. The

first case was unvaccinated while the vaccination details were not reported for the linked case. Both cases were 15-19 years. Both cases were confirmed but measles virus from neither case was genotyped.

In mid-November one case classified as possible was notified in the HSE NE. This case was in an infant too young to be vaccinated. A sample was requested for laboratory testing but no evidence that it was done. No epidemiological links to any other cases were identified.

The total 76 cases ranged in age from seven months to 52 years with a median age of 19 years and a mean age of 20 years. While nearly two thirds of cases were aged 15 years or older (figure 3) the highest age specific incidence rates were in those less than one year of age (figure 4). Nearly two thirds (66%, n=50) of the cases were male were male.

Figure 3. Number of measles cases in 2018 by age group and case classification

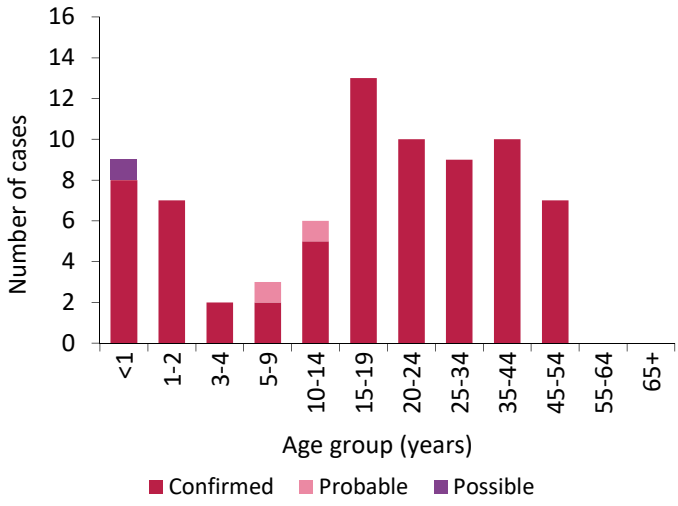
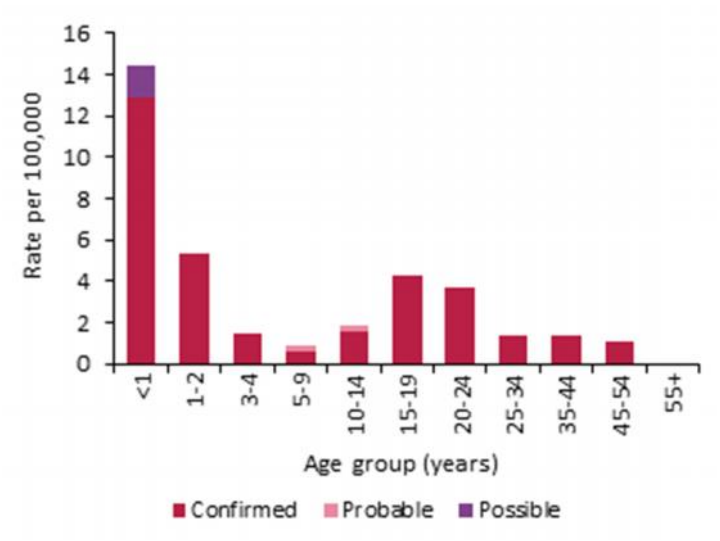


Figure 4. The age specific incidence rate (per 100,000) of measles cases in 2018 by age group and case classification



Of the 76 cases, 55* (72%) were unvaccinated (* included here is an infant case that is recorded on CIDR as having a dose of MMR but vaccination date is nearly one month after onset). Six (8%, n=6/76) had one dose of MMR. Four of those with one MMR dose had the vaccination date recorded and two of these were vaccinated six and 11 days prior to onset, respectively. Three (4%, n=3/76) were reported to have two doses of MMR; vaccination dates were only reported for one of these on CIDR, however, the other two had occupational health records of vaccination. For 12 (16%) of the 76 cases the MMR vaccination was unknown or unreported.

Of the 76 cases, 31 (41%) were hospitalised. Length of hospitalisation was reported for 27 cases with a median duration of stay of four days (range one to 9 days). Reported complications of measles included pneumonia (n=5), respiratory tract infection (n=2), meningitis (n=1), seizures (n=1), and dehydration (n=1).

The country of birth was recorded as Ireland for 50 cases; country of birth was outside of Ireland for 11 cases and was unknown or not specified for 15 cases.

Of the 76 cases, the setting where the case most likely acquired measles was reported as home (47%, n=36), work (11%, n=8), overseas (7%, n=5), hospital out-patient (4%, n=3), hospital in-patient (1%, n=1), other healthcare facility (1%, n=1), third level (1%, n=1), and was unreported for the remainder (28%, n=21).

A breakdown of the total cases and the crude incidence rate per 100,000 population by HSE Area is given in table 1.

Table 1. Number of measles cases and the crude incidence rate per 100,000 population (CIR) by HSE Area in 2018

HSE Area	Number	CIR
HSE E	26	1.5
HSE M	0	0.0
HSE MW	30	7.8
HSE NE	1	0.2
HSE NW	0	0.0
HSE SE	13	2.5
HSE S	3	0.4
HSE W	3	0.7
Total	**76**	**1.6**

The information presented above are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 21/10/2019, and also on information from HSE Areas as part of outbreak control team meetings/minutes/communications and also on NVRL data that were provided for and included in the measles and rubella annual status report for the WHO Regional Verification Committee for Measles and Rubella Elimination. The CIDR figures may differ slightly from those published previously due to ongoing updating of notification data on CIDR. The 2016 census data was used here to calculate rates.

WHO require information on discarded measles cases ie measles cases investigated and who were found not to meet the case definition. The HSE Areas reported the number of discarded CIDR cases to HPSC. For 2018, 359 cases were discarded from CIDR as following investigation they were not considered to be measles cases. Discarded cases are not available in CIDR for reporting and are not included in the analysis above. A further 33 cases not entered on CIDR were known to be investigated and found not to be measles.

The Regional Verification Commission for Measles and Rubella Elimination (RVC) was established in the WHO European Region in 2011 to evaluate the documentation submitted by Member States with a view to verifying the elimination of measles and rubella at the

regional level. The RVC has recommended establishment of national verification committees (NVC) in all Member States and suggested a standard format for annual status reports from countries. These reports include information on measles and rubella epidemiology, virologic surveillance supported by molecular epidemiology, the analysis of vaccinated population cohorts, the quality of surveillance, and the sustainability of the country's National Immunisation Programme. The review and evaluation of annual national reports will continue for at least three years after the RVC confirms that, according to established criteria, endemic measles and rubella transmission have been interrupted in all Member States of the Region. Only then can Regional elimination be declared.[1] The WHO European RVC concluded at the seventh meeting of the European RVC for measles and rubella elimination in June 2018 that endemic transmission of measles remained interrupted in Ireland in 2017 and verified that measles has been eliminated.[2] At the eighth European RVC meeting in June 2019 the RVC concluded that endemic transmission of both measles and rubella remained interrupted in Ireland in 2018 and confirmed that measles- and rubella-elimination have been sustained.[3] This is a huge achievement for Ireland. However, this elimination status needs to be sustained so vigilance is required as measles is easily imported and spread. Gaps in immunity among children and young adults need to be addressed so that 95% uptake of two doses of MMR vaccine is achieved. All suspect measles cases should be notified to public health and specimens sent for testing to confirm or outrule measles.

Laboratories in Ireland that perform measles/rubella investigations in their own laboratories are requested to send all positive samples for measles or rubella for confirmatory testing to the WHO Measles/Rubella National Laboratory at the National Virus Reference Laboratory (NVRL). In addition, a selection of negative specimens should also be referred. Genotyping is undertaken in the NVRL on a selection of specimens.

Acknowledgements

HPSC would like to thank all those who provided data for this report –Departments of Public Health, NVRL, laboratories and clinicians.

Report prepared by:

Sarah Gee and Suzanne Cotter, HPSC

References

1. World Health Organization Regional Office for Europe (WHO/Europe). Regional Verification Commission for Measles and Rubella Elimination (RVC). Available at http://www.euro.who.int/en/health-topics/communicable-diseases/measles-and-rubella/activities/regional-verification-commission-for-measles-and-rubella-elimination-rvc

2. World Health Organization Regional Office for Europe (WHO/Europe). 7th Meeting of the European Regional Verification Commission for Measles and Rubella Elimination (RVC), 13-15 June 2018. Copenhagen: WHO/Europe; 2018. Available at http://www.euro.who.int/__data/assets/pdf_file/0008/378926/7th-RVC-Meeting-Report-FINAL.pdf

2. World Health Organization Regional Office for Europe (WHO/Europe). 8th Meeting of the European Regional Verification Commission for Measles and Rubella Elimination (RVC), 12-14 June 2019. Copenhagen: WHO/Europe; 2019. Available at http://www.euro.who.int/en/health-topics/communicable-diseases/measles-and-rubella/activities/regional-verification-commission-for-measles-and-rubella-elimination-rvc/conclusions-of-the-8th-meeting-of-the-european-regional-verification-commission-for-measles-and-rubella-elimination-rvc