

Mumps

Reporting on 2014 data retrieved from TESSy* on 7 July 2016
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Key facts

- In 2014, 11 069 cases of mumps were reported to TESSy.
- The notification rate was 2.5 cases per 100 000 population, less than half the notification rate observed in 2012 and 2013.
- Young children and adolescents were the most affected age groups.
- The majority of cases were vaccinated, a third with two or more doses.
- The current epidemiology of mumps in Europe may be largely explained by waning immunity and a growing susceptible population.
- High vaccination coverage is of paramount importance to prevent mumps outbreaks.

Methods

Click here for a detailed description of the methods used to produce this annual report

ECDC has coordinated the surveillance of mumps at the European level since the transfer of EUVAC.NET (European surveillance network for selected vaccine-preventable diseases, hosted by Statens Serum Institute, Denmark) to ECDC in 2011.

- In 2014, 28 EU/EEA Member States routinely reported mumps data to TESSy.
- The majority of Member States reported data on mumps in accordance with the 2008 or 2012 EU case definition (Commission Implementing Decision 2012/506/EU of 8 August 2012 of the European Parliament and of the Council).
- The majority of Member States reported data from comprehensive, passive surveillance systems with national coverage. For a summary of the surveillance systems characteristics in each Member State, please refer to the Annex.

Epidemiology

In 2014, 28 EU/EEA countries provided mumps surveillance data. In total, 11 069 cases of mumps were reported, of which 5 342 (48%) were laboratory-confirmed. Iceland reported zero cases, while Austria, France and Lichtenstein did not report data. The notification rate of confirmed cases was 2.5 per 100 000 population, less than half the notification rate observed in 2012 (5.4) and 2013 (5.9) (Table 1 and Figure 1).

Slovakia reported the highest notification rate (28.8 cases per 100 000), followed by Ireland (16.0), Poland (6.6) and the Czech Republic (6.4) (Table 1 and Figure 2).

Since 2013, notable increases in the notification rate were observed in Slovakia (4.0 cases per 100 000 in 2013 to 28.8 cases per 100 000 in 2014) and Ireland (4.8 in 2013 to 16.0 in 2014). A substantial decrease in the notification rate was reported by Belgium (40.8 in 2013 to 2.0 in 2014), following a large outbreak in 2012–2013 for which mandatory reporting was introduced [1]. Notable decreases were also observed in the Czech Republic (14.8 in 2013 to 6.4 in 2014) and Spain (12.4 in 2013 to 2.2 in 2014) (Table 1).

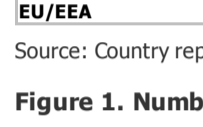
Table 1. Reported mumps cases: number and rate per 100 000 population, EU/EEA, 2010–2014

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Country	2010		2011		2012		2013		National data	Report type	2014			
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate			Reported cases	Rate	ASR	Confirmed cases
Austria	15	0.2	25	0.3	17	0.2	-	-	-	-	-	-	-	
Belgium	30	0.3	15	0.1	2684	24.2	4554	40.8	Y	C	228	2.0	2.1	228
Bulgaria	317	4.3	139	1.9	58	0.8	25	0.3	Y	C	31	0.4	0.5	4
Croatia	40	0.9	-	-	0	0.0	32	0.8	Y	C	32	0.8	0.8	0
Cyprus	2	0.2	0	0.0	3	0.3	0	0.0	Y	C	1	0.1	0.1	1
Czech Republic	1068	10.2	2885	27.5	3902	37.1	1553	14.8	Y	C	677	6.4	7.2	333
Denmark	32	0.6	13	0.2	15	0.3	59	1.1	Y	C	42	0.7	0.8	42
Estonia	13	1.0	8	0.6	4	0.3	12	0.9	Y	C	10	0.8	0.8	7
Finland	4	0.1	2	0.0	3	0.1	1	0.0	Y	C	2	0.0	0.0	2
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	Y	C	835	1.0	1.2	543
Greece	2	0.0	1	0.0	2	0.0	0	0.0	Y	C	1	0.0	0.0	1
Hungary	0	0.0	5	0.1	4	0.0	8	0.1	Y	C	2	0.0	0.0	2
Iceland	2	0.6	0	0.0	0	0.0	1	0.3	Y	C	0	0.0	0.0	0
Ireland	120	2.6	73	1.6	44	1.0	222	4.8	Y	C	739	16.0	16.8	298
Italy	909	1.5	965	1.6	975	1.6	746	1.2	Y	C	191	0.3	-	191
Latvia	3	0.1	10	0.5	41	2.0	15	0.7	Y	C	11	0.5	0.6	5
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	87	2.8	64	2.1	62	2.1	67	2.3	Y	C	45	1.5	1.6	45
Luxembourg	-	-	0	0.0	0	0.0	4	0.7	Y	C	1	0.2	0.2	1
Malta	2	0.5	0	0.0	2	0.5	2	0.5	Y	C	3	0.7	0.7	3
Netherlands	424	2.6	642	3.9	408	2.4	201	1.2	Y	C	38	0.2	0.2	34
Norway	12	0.2	16	0.3	30	0.6	35	0.7	Y	C	18	0.4	0.4	18
Poland	2754	7.2	2585	6.8	2773	7.3	2436	6.4	Y	A	2508	6.6	6.3	1
Portugal	140	1.3	134	1.3	160	1.5	159	1.5	Y	C	82	0.8	0.9	4
Romania	242	1.2	202	1.0	163	0.8	98	0.5	Y	C	107	0.5	0.6	28
Slovakia	2	0.0	2	0.0	5	0.1	218	4.0	Y	C	1559	28.8	30.4	426
Slovenia	5	0.2	4	0.2	8	0.4	1	0.0	Y	C	1	0.0	0.0	1
Spain	1351	2.9	2027	4.3	5551	11.9	5813	12.4	Y	C	1026	2.2	2.4	247
Sweden	24	0.3	38	0.4	33	0.3	44	0.5	Y	C	21	0.2	0.2	19
United Kingdom	4383	7.0	2714	4.3	2699	4.3	4568	7.1	Y	C	2858	4.4	4.6	2858
EU/EEA	11983	3.3	12569	3.5	19646	5.4	20874	5.9	-	C	11069	2.5	2.6	5342

Source: Country reports. Legend: Y = yes, N = no, C = case based, A = aggregated, - = no data reported, ASR: age-standardised rate, - = no notification rate calculated

Figure 1. Number of reported mumps cases, EU/EEA, 2014



Source: Country reports from Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Figure 2. Number of reported mumps cases per 100 000 population, EU/EEA, 2014

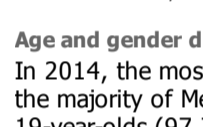


Source: Country reports from Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Age and gender distribution

In 2014, the most affected age group were the 5–9-year-olds, with a notification rate of 9.0 cases per 100 000 population (Figure 3). This was the most affected age group in the majority of Member States, particularly Slovakia (165.6 cases per 100 000 population) and Poland (44.3). Slovakia also reported high rates among 10–14- (153.5) and 15–19-year-olds (97.7). The second highest notification rate in Europe was observed among 15–19-year-olds (8.2 cases per 100 000), followed by 1–4- (6.4) and 10–14-year-olds (6.4). Fifteen-to-nineteen-year-olds were the most affected age group in the Czech Republic, Ireland, Malta and the United Kingdom. In Ireland, 87% of cases were aged 15 years or older. Males (2.8 cases per 100 000 population) were more often affected than females (2.2 per 100 000) in all age groups, with a male-to-female ratio of 1.3:1.

Figure 3. Reported mumps cases, by age and gender, EU/EEA, 2014

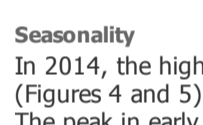


Source: Country reports from Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Seasonality

In 2014, the highest number of cases was reported at the end of the year and in early spring, whereas the lowest numbers were reported during summer and early autumn (Figures 4 and 5). In previous years, a peak of reported mumps cases was usually seen in early spring. This seasonality is compatible with the known epidemiology of mumps. The peak in early spring was driven by a higher number of cases reported by the United Kingdom (414 cases in April 2014), whereas the winter peak was predominantly due to increases in the number of cases reported by Ireland and Slovakia (200 and 284 cases reported in December 2014, respectively).

Figure 4. Seasonal distribution of reported cases of mumps, EU/EEA, 2014 compared with 2010–2013



Source: Country reports from Cyprus, the Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Figure 5. Trend and number of reported cases of mumps, EU/EEA, 2010–2014



Source: Country reports from Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Sweden, the United Kingdom.

Vaccination status

Data on vaccination status were available for 9 305 cases (84%). Of these 9 305 cases, 3 066 (33%) were unvaccinated, 2 634 (28%) were vaccinated with one dose, 3 055 (33%) with two doses, and 50 (0.5%) with three or more doses. Five hundred cases (5%) had been vaccinated with an unknown number of doses. Among laboratory-confirmed cases, 47% were unvaccinated, compared to 15% and 25% of probable and possible cases, respectively.

Outcome

Outcome was known for 6 227 cases, 56% of all cases. No deaths were reported in 2014.

Hospitalisation and complications

Of 5 031 cases with known hospitalisation status, 398 (8%) were hospitalised. Data on complications were reported in 3 118 cases, of which 2 830 (90%) had no complication. There were 117 cases of orchitis, 28 cases of pancreatitis, 18 cases of meningitis and three cases of encephalitis. Two cases were complicated with both meningitis and orchitis. Unspecified complications (‘other’) were reported for another 120 cases. Complications were more frequently reported in adolescents and young adults than in children.

Discussion

In 2014, the notification rate of mumps cases was less than half the notification rate observed in 2012 and 2013. This was predominantly driven by a decrease in the number of cases reported by Belgium and Spain. The decrease in Belgium is likely to be due to a switch back to a sentinel surveillance system from mandatory reporting at the end of 2013. Mandatory notification was introduced in 2012 because of a large outbreak. Some Member States, such as Ireland and Slovakia, did report notable increases in the number of cases. The highest age-specific notification rates in Europe were observed in 5–9- and 15–19-year-olds, although the most affected age groups differed between Member States. Several factors may explain the observed differences in the epidemiology between Member States, including differences in surveillance systems, historical or current vaccination policies, and vaccination coverage levels.

The fact that all EU/EEA Member States have added mumps vaccination to their routine childhood immunisation schedules has significantly reduced the associated disease burden compared to the pre-vaccine period. However, of the mumps cases in Europe in 2014 for which vaccination status was known, the majority were vaccinated, a third of them with at least two doses. Several outbreaks in populations with high vaccination coverage have occurred in recent times, particularly among populations of teenagers and young adults, both in Europe and around the world [1–5]. This may be due to waning immunity in the absence of natural boosting. Studies have shown that the time between the first and second dose [6] and the time after vaccination [1] may play a role in susceptibility to mumps infection, while the immunogenicity and effectiveness varies according to the vaccine strain [7,8]. Also, social conditions that facilitate intense exposure, for example in universities, may increase the transmission of the virus [1,3,5].

Low vaccination coverage may also play a role, as it is associated with a higher risk of mumps outbreaks [6,9], while the risk of complications following mumps infection is lower in previously vaccinated persons than in non-vaccinated individuals [10,11]. In Europe, data are consistent with the understanding that complications are more frequently reported in adolescents and young adults than in children [12].

Public health conclusions

Further research into waning immunity to mumps virus is needed in order to improve future immunisation programmes. Meanwhile, maintaining a high coverage with two doses of measles, mumps and rubella (MMR) vaccine is of paramount importance to prevent mumps outbreaks. Revaccination of adolescents and young adults may be considered to increase vaccination coverage and combat waning immunity, particularly among those who received less than two doses of the vaccine during childhood [6]. The protective effect of vaccination on disease severity is critical and should be considered in current and future mumps prevention and control strategies.

Since all European countries use MMR vaccines in their national childhood immunisation programmes, mumps prevention benefits indirectly from the efforts made to reach the goal of eliminating measles and rubella in Europe.

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Additional information

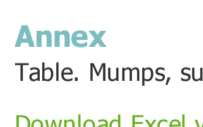
ECDC Surveillance Atlas of Infectious Diseases

Annual Epidemiological Report 2014 – vaccine-preventable diseases: http://www.ecdc.europa.eu/en/publications/_layouts/forms/Publication_DispForm.aspx?List=4f55ad51-4aed-4d32-b960-af70113dbb90&ID=1277

Annex

Table. Mumps, surveillance systems overview, 2014

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* The European Surveillance System (TESSy) is a system for the collection, analysis and dissemination of data on communicable diseases. EU Member States and EEA countries contribute to the system by uploading their infectious disease surveillance data at regular intervals.