



1.1. Incidence of measles (P-5)

1.1.1. Documentation sheet

Description	Incidence of measles per million inhabitants
Calculation	Number of cases of measles notified in a given year, divided by the population
Rationale	<p>Measles is a highly communicable disease caused by the measles virus; complications are frequent (30%), and very severe complications occur in 4 out of 1000 cases in developed countries (death or encephalopathy with permanent brain damage) (1). In the pre-vaccine era, measles was endemic in Belgium as in all European countries, and most children got infected by regular outbreaks. Immunisation against measles has completely changed the epidemiology of the disease: in Europe, the incidence has fallen dramatically, however, limited outbreaks remain common in countries where subgroups of the population have low levels of immunity. The European countries have committed to eliminating measles, as proposed by the WHO Regional Office for Europe (2). The target is to reach an incidence rate lower than 1 per million inhabitants (2).</p> <p>In Belgium, vaccination against measles was introduced in the vaccination schedule in 1985 (single dose) and 1995 (2 doses). The Superior Health Council has published a recommendation to reach 95% coverage for each dose of the measles vaccination (3). In 2021, the vaccination calendar was updated to advance the age at the second dose (3).</p>
Primary data source	Sciensano, Service Epidemiology of Infectious Diseases
Source of results	<p>For Belgium: Sciensano, Service Epidemiology of Infectious Diseases (5)</p> <p>For Europe: ECDC publishes monthly data based on TESSy inputs from each member state. These data are available via https://atlas.ecdc.europa.eu/public/index.aspx.</p>
Technical definitions	<p>Case definition: cases are defined by the EU as “possible” (clinical only), “probable” (clinical and an epidemiological link with a confirmed case) or “confirmed” (clinical and laboratory) (6). All 3 categories of cases are pooled and reported together for the computation of incidence. From 2003 to 2009, cases were reported through a network of paediatricians, PediSurv, at Sciensano. Mandatory notification in Belgium has only started in June 2009. Since 2010 cases have been reported by several sources to Sciensano:</p> <ul style="list-style-type: none"> • national reference centre for measles, mumps and rubella [https://nrchm.wiv-isp.be/fr/centres_ref_lab/mesles_et_rubellavirus/default.aspx] • sentinel laboratories [https://epidmio.wiv-isp.be/ID/Surveillance/Pages/sentinelLabs.aspx] • mandatory notification in the three regions • network of paediatricians Pedisurv [https://www.sciensano.be/fr/surveillance-des-maladies-infectieuses-chez-les-enfants-pedisurv] <p>The records are pooled based on an identifying key to avoid duplicates.</p> <p>When reporting to WHO on the country’s status related to the elimination process, the incidence is calculated using only the non-imported cases of measles.</p>
International comparability	<p>Availability: yes, data are published by ECDC, OECD and WHO</p> <p>Standardisation: the data sources and the exhaustiveness of the coverage differ between the countries. Caution is required when interpreting the data because of the diversity of the surveillance systems.</p>



Limitation	Although the cases are reported by several sources to Sciensano, some cases can remain undiagnosed and some may be diagnosed but not reported to one of the used sources (underreporting). This may result in an underestimation of the incidence.
Related indicators	Measles vaccination

1.1.2. Results

Belgium

In 2020, 47 cases of measles (1 imported) have been reported and only 7 cases (2 imported) in 2021, compared to 480 cases in 2019 (epidemic year).

The estimated measles incidence was 4.0 cases per million inhabitants in 2020 and 0.4 cases in 2021. In 2020, the incidence was highest in Brussels (9.9 per million), followed by Wallonia (4.7) and Flanders (2.6). In 2021, no case was reported in Brussels, and Wallonia and Flanders had the same incidence (0.5).

In 2020, after reaching the threshold of 36 months of interrupted endemic transmission, measles was declared eliminated in Belgium (7). However, measles cases have been strongly influenced by the pandemic and the

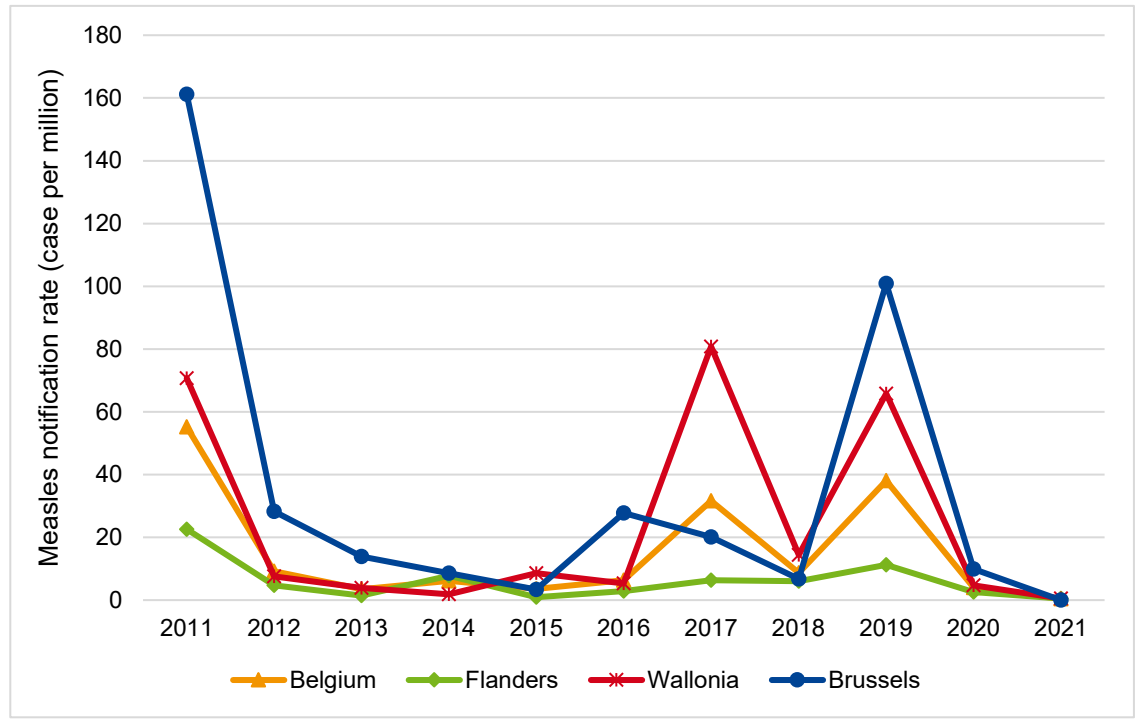
control measures. Given the low coverage of the second dose of the vaccine, build-up of susceptible individuals and continued measles circulation abroad (including neighbouring countries), there is still a high risk of measles outbreaks in Belgium.

Time trends

Figure 1 shows the evolution of the notification rate in Belgium and by region. Three major epidemics have taken place in Belgium since 2010; in 2011 (55.2 cases per million), in 2017 (31.6 per million), and in 2019 (38.1 per million). Between the epidemic years, the estimated incidence of measles fluctuated between 3 and 9 cases per million inhabitants. The majority of cases since 2020 have been notified in January and February 2020. Since the start of the COVID-19 epidemic, few cases have been reported. This can be explained by the restriction's measures causing a likely decrease in cases but under-reporting cannot be excluded (5).



Figure 1 – Measles notification rate (per million) in Belgium, by region (2011-2021)



Source: *Epidemiological surveillance of measles, Sciensano (5)*

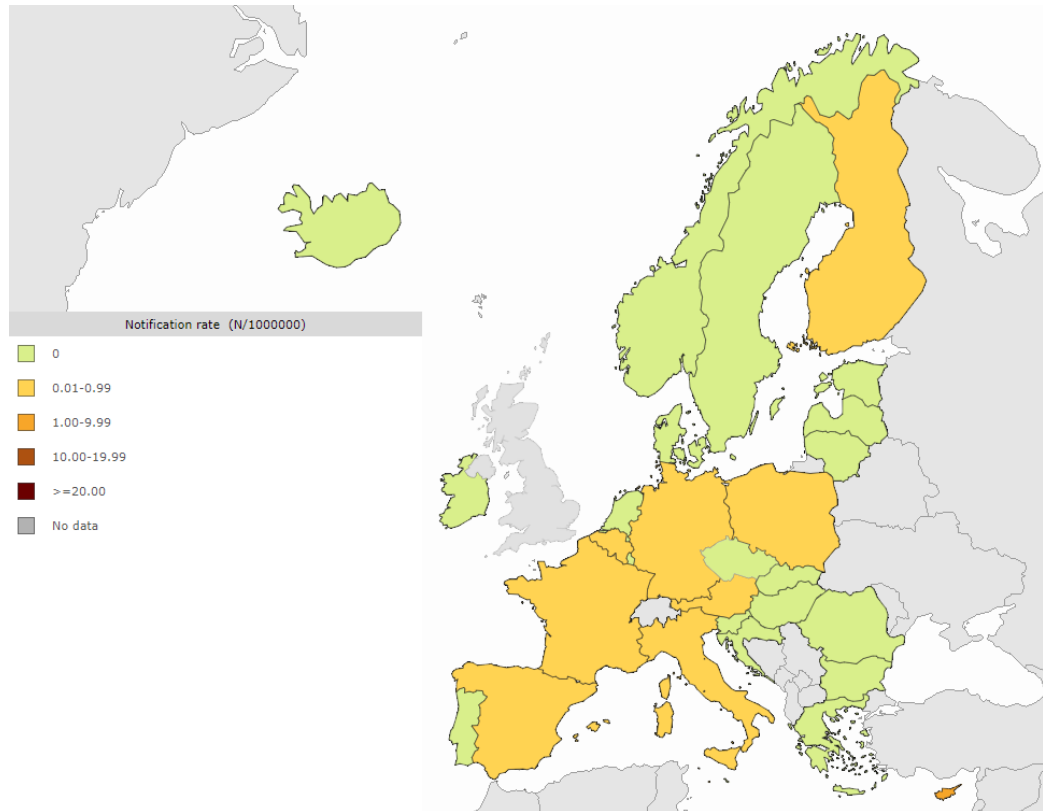
International comparisons

Figure 2 shows the notification rate by EU-country in 2021. The decrease in the notification rate since 2020 has been observed in all countries. All countries, (except Cyprus with 1.1 per million), had a notification rate below 1 per million or reported no case in 2021.

Figure 3 shows the evolution of the notification rate by country since 2010. We see that the measles virus is circulating at a low level in Europe, with regular outbreaks occurring in some countries, and moving to other countries from one year to another. The decrease in 2020 and 2021 was observed in all countries.



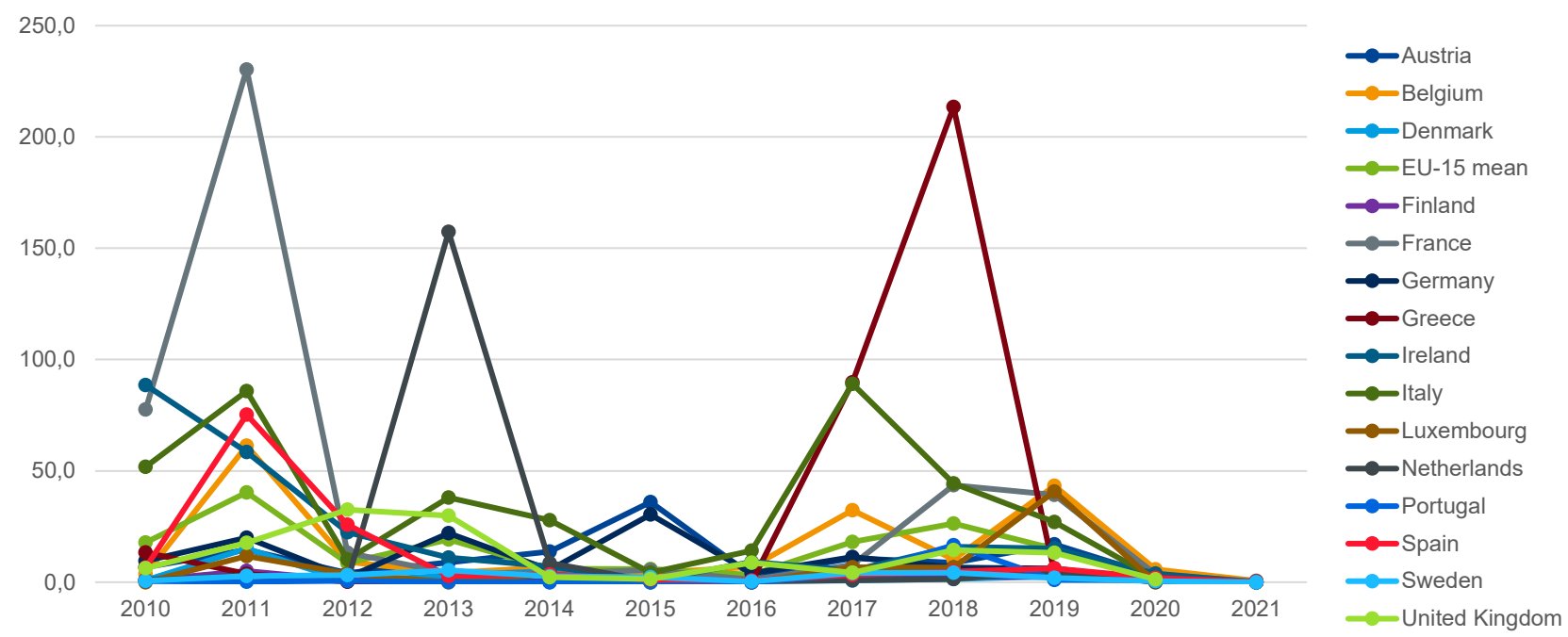
Figure 2 – Measles notification rate (cases per million) in 2021, by country, ECDC



Source: ECDC surveillance, <https://atlas.ecdc.europa.eu/public/index.aspx>



Figure 3 – Measles notification rate (cases per million), EU-15 comparison, 2010-2021



Source: ECDC surveillance, <https://atlas.ecdc.europa.eu/public/index.aspx>

Discussion

The substantial decrease in the estimated incidence of measles in Belgium and Europe is likely due to the restrictions put in place to stop the transmission of COVID-19. However, underreporting or delays in the notification of measles during the COVID-19 epidemic cannot be excluded. The WHO target of <1 case per million inhabitants has been reached in 2021 for the first time in Belgium. Despite these encouraging trends, it is important to note the low vaccine coverage and the rising trend in the number of cases in Europe in the last few years.

The vaccine coverage in Belgium reaches a good level for the first dose (96%) but the coverage for the second dose is insufficient (83%) (5).



Key points

- **The incidence rate of measles in Belgium has substantially decreased since 2020. In 2020, measles has been declared eliminated in Belgium. However, there is still a high risk of measles outbreaks in Belgium.**
- **Despite the progress due to the restrictions linked to the COVID-19 epidemic, measles elimination remains a challenge at the EU as well as at the Belgian level.**
- **To continue the efforts towards the elimination of measles, a sufficient level of coverage for the first and second vaccination doses should be reached (95%), which is not yet the case for the 2nd dose in Belgium.**

References

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